

Urban sprawl mitigation measures towards Sustainable urbanization and Smart Growth in relation to consumer behavior -Amman case study

Nour Abdeljawad^{1*}, Szente Viktoria¹, Orsolya Szigeti¹, Imre Nagy²

¹ Doctoral School of Management and Organizational Science, Faculty of Economic Science, Hungarian University of Agriculture and Life Sciences Kaposvár Campus (MATE)

² University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management, Novi Sad, Serbia

Correspondence Author Email: Nour.Abdeljawad@phd.uni-mate.hu

ABSTRACT

It is important to achieve sustainability through the management of the urban environment to maintain what is unsustainable due to urbanization and urban development so as to manage the urban suburbs through consumer behavior. In recent years, with population growth, population mobility, and urbanization, urban sprawl has become a real issue. Urban sprawl is an extensive research topic in urban studies. The expansion increases the cost of infrastructure such as highways, parking, water, transportation, congestion issues, electricity costs. In addition, it will cause more energy consumption, the appearance of pollution, and the removal of land. Public perception and opinion on the effects of urban sprawl are important factors in policymaking. This article attempts to review the publications and the effects of the urban-suburban sprawl obtained from different databases on citizens and their behavior as consumers. The focus of the present study is on Jordan, specifically Amman, Jordan's capital city, which grew from a small city with a population of 2000-3000 people in 1920 to a metropolitan center with more than 4 million inhabitants in 2021, resulting in dramatic population growth. Some of the issues of urban development in the Middle East are the physical situation, fast growth, and polarized social structure. In addition, for this paper, some information regarding other countries was reviewed. A content analysis technique was utilized to analyze the data. The findings indicate that even though efforts are being made to obtain sustainable urbanization, yet Amman needs more efforts from the government of Jordan. This study will be helpful for the administrators to seek information for better stability in their process of urbanization.

Keywords: customer behaviour, urban, sprawl, energy efficiency, urban growth, sustainable development

INTRODUCTION

The changing role of cities in globalization has become a major theme in urban research. A series of studies have deepened the question of the rise of cities and in particular metropolises in a new world order based on the dematerialization of exchanges and the capacity of certain spaces to attract activities with high added value (Hadad, & Bratianu, 2019). Others have taken an interest in urban management models and have insisted on the preponderant place of cities in the development, dissemination, and reception of so-called neoliberal urban models in a context of generalized competition (Pinson et al., 2016). Added to this are works on “policy transfers” or “lesson-drawing” (Keil, 2002)

Recent literature tends to break with an overly typological and hierarchical analysis of relations between cities. The emphasis on the dynamic nature of interactions between territories and globalized flows of agents and models calls into question the essentialism of the North/South and local/global dichotomies (Bassolas et al., 2019). More detailed analyzes of the urban trajectories of cities in the South reject the postulate of unilateral transfers by demonstrating the importance of local arrangements and insisting on the co-learning relationships between local and international actors (Shamal et al., 2019). Thus, the approach in terms of global cities

Sustaining what is unsustainable due to urbanization and urban growth toward achieving SDG11 by urban environmental management to manage urban-suburban sprawl by consumer behaviour.

Urban sprawl has become an actual problem with population growth, population mobility, and urbanization in recent years. Urban sprawl is a broad research topic in urban studies. Sprawl increases the cost of infrastructures such as highways, parking, water, transportation, congestion-related issues, electricity costs. Also, it will cause the usage of more energy, the emergence of pollution, and eliminate lands. This paper attempt to review publications on shedding the light that citizen as a consumer and their behaviour have the impacts of urban-suburban sprawl.

Objective

- To investigate different socioeconomic factors as well as the perceptions of household energy consumption, water resource shortage and travel behaviors associated with urban/suburban sprawl.
- To find out the connection between Environmental Values and Sustainable Consumption of urban sprawl and land use and how this research contributes to consumer behaviour theory and practice.

The structure of our paper is as follows: first, the introduction, both study area and research methodology, is presented in Section 2. The literature is presented in Section 3, and a discussion follows in Section 4. We finish with conclusions in Section 5.

METHOD

This paper attempt to review publications on shedding the light that citizen as a consumer and their behavior have the impacts of urban-suburban sprawl extracted from the different scientific databases, namely google scholar, Scopus and ScienceDirect etc.

The focus is on Jordan and in particular, on Amman, the capital city of Jordan transformed from a small city with a population of 2000-3000 in 1920 to a metropolitan area with more than 4 million people in 2021, which led to drastic growth spurts. The physical situation, accelerated growth, and polarized social structure are considered to be some of the issues of urban development in the Middle East. In addition to that, some information about other countries was also reviewed for this paper.

DISCUSSION

This study was aimed to investigate different socioeconomic factors as well as the perceptions of household energy consumption, water resource shortage, and travel behaviors associated with urban/suburban sprawl. In addition to that, another aim of the study is to find out the connection between Environmental Values and Sustainable Consumption of urban sprawl and land use and how this research contributes to consumer behaviour theory and practice. The information gathered from the article reviews is stated as follows.

THE ORIENTATION OF URBAN SERVICES

The orientation of urban services is a dimension of state intervention. It depends on decision-making inside and outside government institutions and is specified in the direction of its production, distribution, and consumption in a double sense, towards obtaining profit or economic accumulation, that is, as exchange goods; or towards broad social integration in its consumption, the satisfaction of the need served by services, as accessible consumer goods. The orientation of urban services also refers to their definition as parts of a territorial totality (urban-territorial) or a sector within the set of economic activities without being associated with urban reproduction.

The urban orientation in the second period corresponds to the predominance of modernist and regulatory urbanism. The State is the producer of norms and is responsible (particularly financial) for producing the city's material supports. With the neoliberal restructuring, the market becomes the main mechanism for coordinating the production of urban materials, either through the privatization of urban public companies or through the hegemony of private capital in the production of residential spaces and commercial areas of the city (O'Brien et al., 2019).

In these global contexts, particular orientations are given that are specified through interventions that apply two types of instruments. Direct instruments, which can be specific, such as carrying out works (infrastructure, equipment), production of goods (from construction materials to water purification), and provision of services (electricity distribution, collection, and disposal of solid waste, etc.) or general in the case of fiscal policies, social policies, etc. And indirect instruments that operate on the parameters of the behavior of the actors (state, commercial, and community) by means of different systems of norms (Escobedo et al., 2019).

Territorial norms regulate the ordering of the territory, urbanization processes, production, and use of urban land; to this end, they establish the conditions of urbanization, including the existence of infrastructures and services. In a restricted sense, they are regulations on urban land and its uses that try to articulate the capitalist production of the city with its results in terms of its ability to withstand urban agglomeration, indicating the conditions to

produce land and its commercialization. But, in a broad sense, these norms suppose the possibility of the orientation of urbanization, including social and environmental dimensions (Surya, Ahmad, Sakti, & Sahban, 2020).

Sectoral norms regulate the technical and economic components of the production, circulation, and consumption of services and infrastructures. Conventionally, they have been understood as the result of tensions inefficiency/equity, the former associated with profitability.

Environmental standards refer to the relationship of urban services with the natural conditions of social reproduction, considering their sustainability. They largely focus on the different types of pollution that derive from urban life (from water, soil, and air) as well as the consumption of non-renewable resources. Sanitation services are a key aspect to control some of the main pollution processes. Thus, the regulation introduces tensions in the orientation of the service production processes, between commodification and de-commodification.

Consider urban policies, social policies, and environmental policies. Urban policies refer to government actions aimed at the production of land, housing, infrastructure and equipment, or the provision of services, to guarantee the configuration and operation of agglomerations for the consumers according to the guidelines that are assumed. Social policies apply to the redistributive dimensions of services and the recognition of rights (of citizenship) of users. They seek to generate conditions of equity and integration in the management of services, sustain social activities in an integrated manner and legitimize the urban order. Environmental policies, such as those aimed at the sanitation of water basins, call into question territorial aspects and the coverage of sanitation services.

This article studies the conditions of the implementation in Amman, Jordan, etc., of transport and mobility policies that claim the principles of sustainable development.

It intends to place the problem at the level of more territorial issues linked on the one hand to the ambiguities of the processes of decentralization and democratization in an authoritarian and clientelist regime (Karmel, 2021) and on the other hand to the demands of an educated middle class, which finds in the issue of the living environment a field of struggle. This reflection is based on fieldwork involving interviews with local and national mobility managers in Jordan and representatives of development organizations and donors. It is enriched by critical reading of the main planning documents produced at the local and national level and daily reading of the Jordanian press and forums published on the Internet. Finally, we will see how the mobilization of international expertise, the inclusion in networks of cities, and the adoption of "good practices" in terms of sustainable management of urban mobility are part of the will of influence of the municipality of Amman while supporting the demand made by some of its elites for better management of urban life.

CONSUMER DEMAND

Chin (2002) indicates that Changes in housing demand and transportation changes are considered as the primary factors of suburban expansion. A rise in the demand for housing accompanied the expansion in the population of cities. The population had to be housed elsewhere due to a scarcity of available housing in the main cities. Higher levels of income, increasing personal mobility, and advances in transportation, which includes not only

residential growth but also manufacturing and services. Advocates of the free market approach see the development as a result of customer demand for low-density housing.

Consumer demand for single-family low-density housing is acknowledged, although some argue that this demand has been controlled by government subsidies (i.e., tax incentives). Chin (2002) concludes that governmental policies can influence consumer demand. Government interventions on density and spatial patterns may be more relevant than consumer preferences.

HUMAN ACTIVITY AND LAND USE

Human activities have the potential to affect land use in a variety of ways, including direct urban land expansion (i.e., a rise in built-up area) and indirect land usage (i.e., consumption of products and services). It is critical for consumers to be aware of all of their consumption's direct and indirect land consequences. In order to lower personal consumer behavior land footprint, consumer behavior adjustments could compete with housing/location choices. Consumer preferences for housing locations and types (e.g., prefer to live in apartments in the city versus larger lot size single-family houses in the suburbs/rural area) and personal mobility (e.g., prefer to drive every day versus take public transportation) can have a significant impact on land resources (Zeng and Ramaswami, 2020). Outer suburbs and low-density sprawl areas need greater attention because their land use efficiency is substantially lower (Zeng and Ramaswami, 2020).

According to Steve Raynor (2012), increasing urbanization represents an opportunity to take advantage of the population and infrastructure density characteristics of urban form to develop solutions that can help mitigate climate change, replenish or rejuvenate resources, and improve the environment. Perhaps more importantly, it should be possible to integrate these components into the future design of urban form to improve human health and well-being, create greener urban areas, and build and maintain a sense of community among urban residents by working at the intersections of policy, energy technology research and development, human and consumer behavior, and landscape and greenway planning (Jombach et al, 2016).

IMPACT OF URBANIZATION ON HEALTH

Cities have a direct and indirect impact on health, and the majority of urban health issues are caused by interconnected variables. The influencing elements in the dimension of urban development should embrace a wide range of urban features. However, it must take into account all urban elements in terms of the physical, social, and economic environments of urban regions, as well as people's way of life and behavior.

Another concern is that several studies have found a correlation between urban sprawl and consumer obesity, with urban planning and sprawl serving as key environmental drivers of physical activity among city dwellers. Consumers who lived in more widespread low density areas walked less and weighed more than those who lived in less sprawled compact areas. According to studies, more walkways, denser interconnected streets, and a mix of business and residential uses encourage customers to go longer distances than they would otherwise (Ewing et al, 2014; Chandrabose et al., 2021).

The evidence based on citizens' perceptions of the quality of local government plans and services could show how people view the quality of local government planning and

management. It can be observed that the physical environment plays an important role in supporting systematic environmental management, the creation and promotion of eco-industrial cities, and the construction of a safe transportation network and logistics system. As a result, quantifying individual level contextual variances based on individuals' perceptions of health and well-being can provide useful information for improving built environments and measuring community health behaviors. This is due to considerable discoveries indicating a link between urban setting and health-related quality of life. Finally, people and communities should be considered for their ability to access high-quality services and infrastructure to support the city's continued expansion in terms of basic infrastructure, adequate utility systems, and effective provision (Iamtrakul and Chayphong, 2021).

IMPACT OF URBAN SPRAWL ON DISASTERS

Because of the rising population in urban regions, these places are more vulnerable to natural and caused disasters. Because of the rural-urban movement syndrome, there is a pressing need to construct buildings. However, in the rush to have these buildings created under emergency conditions, bad construction practices may creep in, putting these structures at risk of collapsing completely. Because of the strain of a large number of people, some buildings may be used for purposes that are incompatible with the standards established during their construction. Whatever the source of the threat (natural or human-made), cities are particularly susceptible to damage. According to the United Nations Environmental Program, 75% of the world's population lives in areas that were hit by natural disasters between 1980 and 2000, and this figure is expected to rise. Over the past 50 years, natural disasters such as earthquakes have remained stable, whereas weather-related disasters have increased significantly. The study found that population expansion, urbanization, environmental degradation, increasing mobility, aging infrastructure, and other factors were recognized as key drivers of natural or induced disasters, among other things.

Because of the high concentration of people in urban areas and the poor condition of building structures, urban areas are particularly vulnerable to certain man-made and natural disasters. Natural catastrophes are more often and more severe in metropolitan areas, and they also affect a greater number of people. Building collapses in Nigeria's urban areas, such as Lagos and Port-Harcourt, have been reported at a higher rate than those in the country's rural regions (Obi Lawrence, 2022). Amman is also among the most vulnerable to flash floods and epidemics due to its huge population and urban sprawl, which put a strain on water, sanitation, and drainage facilities based on the flood hazards map for Jordan published in June 2019.

IMPACT OF URBANIZATION ON ENERGY RESOURCES

When energy is scarce and expensive, everything we try to accomplish becomes much more difficult, including growing food, getting other resources such as freshwater, conveying and processing information, and defending ourselves. Rubiera Morollón et al. (2016) empirical research also proved that the urban sprawl in Spain would significantly increase the consumption of electricity. This definition underlines the undeniable importance of energy in man's life. Rural residents dream of living in urban cities and towns because of the abundance of energy resources and their applications. Energy is a driving force behind the availability and operation of industries, as well as the convenience of living in cities and towns. There are two

types of energy resources: renewable and non-renewable. Renewable energy supplies can be replenished in a short amount of time and are not exhaustible, whereas non-renewable energy cannot be depleted without prompt replenishment and has a perceived negative impact on the environment.

It is critical to implement energy efficiency technology through sophisticated technologies or sustainable practices. Many efforts have concentrated on energy efficiency regulation and technology, but this is insufficient because user habits and consumer behavior are major variables in determining how much energy is consumed. Dar-Mousa and Makhamreh, 2019 stated that the socio-economic factors influencing electricity consumption rates revealed that the distribution pattern of energy consumptions can be ascribed to a variety of factors, including social behavior, economic situations, and energy consumption patterns. As shown in Figures 1 and 2 which demonstrate the general trends of the electricity demand in Jordan. This discovery is similar to the findings of the Urban "NEXUS" Approach, which asserted that economic conditions influence individual consumer and social behavior and vice versa, but that these factors are not restricted to economic and social issues. According to Cartes and colleagues (2007), combining integrated energy systems with green development (also known as smart development) can result in "lower operating costs for residents, increased comfort, higher perceived value, reduced sprawl, and environmental protection (Jombach et al, 2016). Smart energy solutions are most effective when combined with other sustainable solutions, such as increasing information and awareness among stakeholders about their energy consumption, their options for reducing energy use, and the application of other smart energy solutions in the Consumer Behavior Management domain. Other solutions in this arena include demand management actions that change consumer behavior to lower energy demand (Mosannenzadeh et al, 2017).

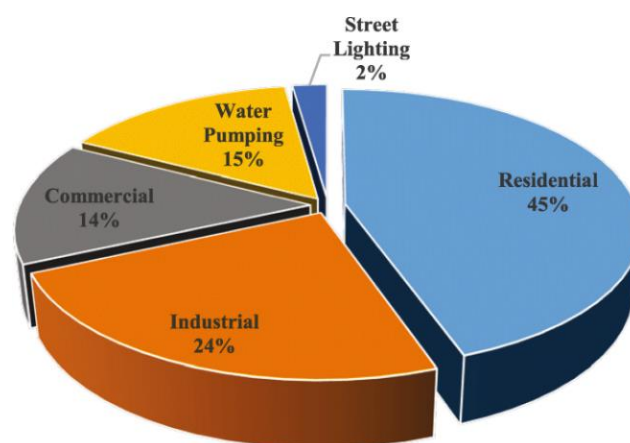


Figure 1: Electricity consumption in Jordan.

Source: Almuhtady et al, 2019

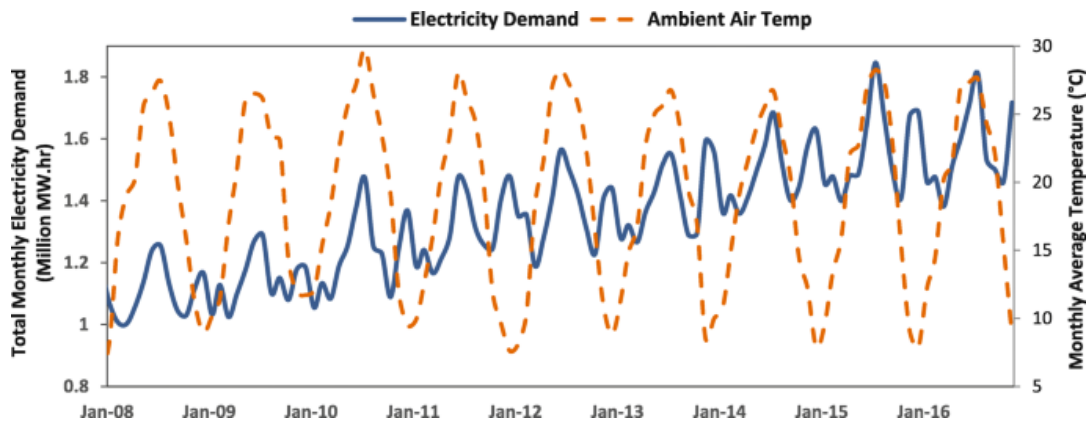


Figure 2: Comparing electricity demand and seasonal temperature from 2008 to 2016 in Jordan

Source: Almuhtady et al, 2019

URBAN GROWTH, SPRAWL AND CO2 EMISSION

The largest source of CO₂ emissions is urban activity. of global energy use is accounted for by cities, Cities consume over two-thirds of global energy production, and with the developing world's urban population expected to exceed 5 billion by 2050, ideas for combining urbanization and sustainability are vital and urgent. For instance, when rural residents relocate to metropolitan regions, their lifestyles alter from rural to urban, affecting consumer needs and behaviors (Guo et al., 2011). As a result, the change affects consumer's direct energy consumption and CO₂ emissions, as well as the demands for other goods and services, resulting in increased energy consumption and CO₂ emissions (Zhang and Lin, 2012; Cheng and Hu, 2022).

Despite the government's efforts to decentralize economic operations, Amman remains Jordan's most important financial center. More than 80% of all industrial services are located in the northeastern part of Zarqa. One of the major sources to environmental pollution is economic expansion. Natural resources use production capacity as long as economic development occurs, increasing waste levels and GHG emissions. CO₂ emissions are increasing due to urban population growth and rising energy use. (Abdeljawad and Nagy, 2021).

URBAN GROWTH, LAND USE AND AGRICULTURE

Land is becoming increasingly scarce as a resource around the world, and this is true not only for primary production but also for urban development as the world's population grows at an unprecedented rate. Environmental controls, land use rules, and increases in energy costs all have an impact on the public's behavior and preferences, making them difficult to analyze. Both agricultural output and food transportation from producer to consumer are slowed as productive land is encroached upon by urban development.

As a result of the increased demand for housing units (Al Tarawneh 2014; Al-Bilbisi 2012), land prices will rise, causing farmers and landowners to quit their agricultural lands and operations.

One of the most serious threats to the natural environment in major cities is urban sprawl on agricultural fields. Most countries around the world faced a dilemma as a result of rapid population growth, urbanization, and resource consumption that deviated from

sustainability principles (Al Tarawneh, 2014). Agricultural land contributes to food security, air pollution reduction, heat mitigation, and air movement and humidity regulation. Thus, it is important to control the rapid sprawl of urban areas, and a sustainable and planned growth of urban land should be promoted.

URBAN GROWTH, SPRAWL AND WATER RESOURCES

From the perspectives of population growth, consumer behavior, and pricing, income, and land use regulations, the patterns of land use and their relationship to urban water resources are investigated (khan, 2008). Demand management approaches encourage the use of efficient technologies, they also address the importance of customer behavior. According to Thneibat (2016), present demand management plans do not take into account the impact of both technology and consumer behavior on water demand at the same time. Due to price inelasticity, a pricing policy may not result in a considerable reduction in water use (Olmstead et al., 2007).

URBAN GROWTH, URBAN SPRAWL AND TRANSPORTATION

Growth of automobile use is forced by public subsidies rather than market. Some argue that government subsidies for automobile use are to blame for this expansion and, as a result, for the increase in urban sprawl. The single most important enabling factor leading to urban sprawl is the shift in mode of transportation, which provides enhanced mobility and allows for population outward expansion (Chen, 2002).

Transit is one of Amman's major environmental, economic, and social concerns, with just 30% of Jordanians using public transportation (Hadjidimoulas,2018). Behavioral and cultural difficulties are one of the most significant barriers to mobility in GAM. GAM is home to about 70% of all Jordanian automobiles, making it a substantial source of pollution. Most people prefer to drive their own cars or take taxis, which is why, according to CEIC, there were 655,323 motor vehicles registered in GAM in 2017 (Amman -Economic Indicators,2015), serving 1,966,000 people during the same period, implying one car for every three people. The current road system causes substantial traffic congestion and massive volumes of pollution from vehicles (Abdeljawad and Nagy, 2021).

Transportation uses a lot of natural resources, especially land and energy, and it can also pollute the air. Consumer behavior shifts as a result of their choices. No behavior modifications are feasible if consumers have no say in the trip choosing process. Given a consumer's mobility needs, research focused on measures to reduce the energy and environmental impacts of urban form must focus on how to provide a sufficient range of energy efficient and non-polluting transportation options.

Planners and policymakers can more successfully align policy with preference to efficiently address the demands of the current land-use and transportation system by understanding the trade-offs between policy mixtures. A consumer-driven policy mix can sway families toward a more compact and accessible metropolis or a sprawling, revenue-generating city. Policymakers may be interested in learning how different land-use and transportation regulations affect consumer behavior, as well as whether the policies complement or contradict one another. At the price of citywide performance, an integrated consumer-driven policy mix can deliver targeted increases in tax revenue, accessibility, and urban compactness (GAO and Sprague, 2020).

To reduce the need for driving, urban planners and related professions propose a number of strategies, the most prominent of which is to utilize land use planning to bring origins and destinations closer together. Increasing density reduces journey distances, increases the likelihood of walking and cycling, and reduces overall vehicle use. Such concepts aren't new. Bringing trip origins and destinations closer together has been suggested as a critical step in reducing overall travel distances and addressing transportation concerns by several movements in the policy, planning, and design professions. The threat of urban sprawl spurred the movement as early as the 1950s. Multiple organizations and disciplines continue support this approach to land use-transportation today. Several experts in the field of consumer behavior have advocated that bringing local shopping choices closer to consumers and residential areas can improve store accessibility (Horning et al, 2008).

Jordan's case

In this context, the case of Jordan is particularly interesting to study because of the country's openness to international institutions (IMF, WTO) after the economic crisis of the late 1980s and the importance of the relations it maintains with major humanitarian and development organizations, following the reception of a large number of refugees (Vollmann et al., 2020). The resulting new models of public management – which are reflected in the extensive use of privatizations and public-private partnerships – have led many authors to approach the production of the Jordanian city through the prism of conversion to neoliberalism (Taamneh et al., 2020).

Jordanian cities have great morphological and historical differences, and it is right from the outset to distinguish Amman from the rest of them. Its functions as a capital combined with the variety of its population mean that it fully plays its urban role as a place for maximizing social interactions. Within the malls, in the gardens, in the squares of the city's most affluent neighborhoods, the inhabitant of Amman manages to escape the heavy social control of a conservative society that watches over its women and its deviants (Gelfand, 2019).

Growing urbanization poses new challenges to the regime, both in terms of controlling urban sprawl, access to services for the poorest populations of Palestinian refugees in Amman, Zarqa, and Irbid, and security as the tribal conflicts in the city continue to multiply (Evans, 2021; Clark, 2018).

In this, we will question the ability of the sustainable development paradigm to legitimize the implementation of contested public policies in the context of the breakdown of urban and interurban government structures (Muehlenhoff, 2017).

Moreover, without calling into question the link between sustainable development and green capitalism, we will see that the important debates sparked by the desire to implement sustainable mobility policies in Amman are not limited to the simple question of whether to adopt neoliberal policies (Barthel, 2016).

CONTEXTUAL ELEMENTS: A RAPIDLY GROWING CAPITAL IN SEARCH OF INTERNATIONAL RECOGNITION

A macrocephalic capital with nearly half of the country's population, the municipality of Amman (Greater Amman Municipality or GAM) has experienced exponential growth following the massive influx of Palestinian, Iraqi, and then Syrian refugees since 1948. Moreover, in the 2000s, following the assassination of Lebanese Prime Minister Rafiq Hariri,

the city benefited from a postponement of investments, particularly from the Gulf, a source of significant capital flows, causing an unprecedented real estate boom (Vloeberghs, 2016).

In this context, the GAM is undertaking, with the support of international partners, an important reflection on its urban management, which places a strong emphasis on sustainability. In 2004, the municipality received support from the World Bank to develop a "City-wide strategy" in partnership with the Arab Urban Development Institute (AUDI) located in Riyadh and the French Development Agency (AFD). This strategy, reinforced by the United Nations Cities Alliance program, aims to promote the Jordanian capital as a pilot city in terms of sustainable urban development at the scale of the Middle East and North Africa region (Sachs et al., 2021). It was supplemented in 2006 by the royal decision to provide the GAM with an urban planning master plan intended to plan urban development by 2025 and raise the capital to the rank of major international metropolises. In particular, this involves creating a terrain conducive to economic development and attracting foreign investment in a period of strong growth, which is assumed to be long-lasting (O'Brien et al., 2019). For this, the King appoints a new mayor, Omar Maani, who is instructed "to invite experts from all over the world" and create an example that could subsequently be replicated in other Jordanian cities (Khirfan et al., 2013).

Mr. Maani thus called on three Toronto architecture and urban planning firms, some of whose members would carry out missions lasting several months in Amman. He created a think-tank at the municipality's service, the Amman Institute (AI), most of whose members, vastly overpaid compared to the rest of the municipal employees, are graduates of major foreign universities. It is interesting to note how the Amman Institute describes itself in its 2010 bid for the award for planning excellence from the Canadian Institute of Planners – that the firms BearingPoint and Planning Alliance had obtained in 2008 for the urban plan of Amman:

“(The Amman Institute) has created an institutional environment suitable for young and bright minds to flourish and make a significant contribution to the development of their country, retaining talent and encouraging those who have left to come back home (...) AI employees come from very famous institutions like MIT, UofT, London School of Economics, Arizona State University, University of Illinois and the University of California at Berkeley to name a few” (Debruyne & Parker, 2015, p. 2, author's translation).

The fifty or so members of the Amman Institute and Canadian urban planners worked together within a structure called the Program Management Unit (Khirfan, 2011), thus sharing their knowledge and visions of the city in learning processes at the double meaning. The resulting Master Plan received the World Leadership Award in Town Planning in 2007, awarded by the World Leadership Forum.

What can we learn from this large-scale undertaking supported by the municipality? First, Amman, then experiencing strong economic and demographic growth, sought to place itself in the field of competitive cities and tended to play an important comparative advantage in the region: strong political stability conducive to economic development, mainly tertiary. The municipality then tends to promote its image internationally by promoting a form of urban planning excellence based on transnational know-how and the mobilization of the principles of sustainable urban development, the modalities of which we will see below.

SUSTAINABLE MOBILITY AS AN URBAN PROMOTION STRATEGY IN THE ERA OF NETWORKED CITIES FROM THE UNSUSTAINABLE CITY TO SUSTAINABLE MOBILITY.

Anyone living or having stayed in Amman could testify to the poor quality of transport conditions (Tiltnes et al., 2019). Long subject to *laissez-faire*, the public transport sector, mainly made up of micro-operators, most of whom own only one vehicle, is struggling to adapt to the growing urban expansion of the capital. "Municipal" transport is provided by a bus company whose privatization in the 2000s ended in failure, and which is currently 61% owned by the GAM. The company, largely under-equipped, not benefiting from sufficient investment, delivers a poor-quality service which gives rise to recurring complaints from users – at the beginning of 2015, a student suffered burns following a technical deficiency in the equipment (Jordan Times, April 2015). Thus, the poorest populations are captive to inefficient and disorganized public transport, while the wealthiest travel only by private car. The conditions for pedestrians are very difficult and cyclists non-existent.

It goes without saying that the image of a city that is increasingly congested, polluted, sometimes dangerous in terms of road safety, and with difficult travel conditions does not sit well with the objectives of a competitive, attractive, modern, promoted by Toronto planners and the Amman Institute. In January 2014, the business magazine *Venture* published an article entitled "city of inconvenience," echoing the annual study of the Economist Intelligence Unit (EIU) on the quality of urban life, which places Amman in 103rd place. Position in a ranking of 140 cities. A whole paragraph of the article is devoted to the negative externalities produced by the deplorable mobility conditions. In response, major public transport improvement projects are being implemented as part of a larger green growth plan for the capital. They mobilize international networks of expertise and "best practices" in sustainable mobility and are the subject of significant marketing promotion (Tiltnes et al., 2019).

In 2007, within the framework of the elaboration of the urban planning master plan of Amman, the municipality acquired by royal decree the competence in the management of urban public transport, previously held at the national level. A traffic and public transport management department - headed by a Jordanian expert who had just returned from the United States where he had done his doctoral thesis and worked for twenty years - was then created with the project of investing a billion dollars in transport over the next five years (Khirfan, 2011). The transport plan put in place by the municipality of Amman reinforces the objectives of its urban plan: the desire to make certain streets of the old center pedestrianized goes hand in hand with the enhancement of the built heritage; the planning of high-capacity transport projects Bus Rapid Transit (BRT) is integrated into the development of densification corridors. Moreover, it includes bearing of largely overvalued objectives, such as increasing the modal share of public transport from 13 to 40% between 2010 and 2025. This policy is part of a large-scale planning sequence that is supposed to give the capital an international influence (Lawson, 2021; Knowles et al., 2020).

Widely promoted by the World Bank the BRT is also a very popular tool in greenhouse gas reduction projects that associate local communities with supranational environmental agencies. This is notably the case of the Global Environment Facility, a financial mechanism of the UNFCCC which, in 2000, created the program entitled "Promoting Environmentally Sustainable Transport. " However, a complementary tool was created in 2006 to support softer

measures such as planning. The use of BRT is thus a good way to obtain climate funds and international loans. Thus, the French Development Agency - which also supported the creation of an urban transport plan for the capital published in 2010 granted a loan of 166 million dollars to the municipality of Amman for the completion of a first phase of BRT from that same year (Abu-Hamdi, 2015).

Amman, who wishes to adopt a strong position in terms of urban sustainability, intends to widely mobilize the BRT tool as part of its green growth plan, the Amman Green Growth Program, developed by the Amman Institute .in partnership notably with the carbon finance unit of the World Bank. This plan deals with various areas of municipal management including water, energy, waste management, nature in the city with the reduction of heat islands and transport, and proposes measures to reduce gas emissions greenhouse, improve air quality, etc for the better living atmosphere for the consumers. It is part of the Amman master plan approach and pursues the same objectives of renewing urban management and making the capital more visible. The implementation of BRT should thus reduce 6.6 thousand tonnes of CO₂ per year and a total reduction of 280 tonnes over the next 30 years (Keskin, 2019).

This green growth strategy is also bearing fruit in terms of international communication: an article published in 2012 by the US Green Building Council (usgbc.org, January 2012) encourages American cities to follow the example of Amman. The New York Times title in 2010 “Sidewalks and an identity sprout in Jordan's capital.” It also allows Amman to fit into networks of prestigious cities, such as the C40, a network of metropolises resulting from an approach undertaken in 2005 by the mayor of London and relayed by his counterparts in Toronto and New York and whose purpose is to “address the issue of climate change by developing policies and programs that generate measurable reductions in greenhouse gases and climate risk” (Rosas-Satizábal & Rodriguez-Valencia, 2019). Amman is part of its steering committee and the “100 Resilient Cities” network sponsored by the Rockefeller Institute. Thus, this allows it to fit into the networks of resilience, a fashionable notion that is becoming operational and federating, not without dangerous recoveries (Surmacz, 2018).

Far from being reduced to a whim of financial backers, the mobilization of the paradigm of sustainable development by the city of Amman is done within the framework of a positioning strategy on a regional or even international scale in a context of competition between the cities. The presence of over-qualified technicians, the mastery of the springs of the mobilization of international aid allows the GAM to have real control over this process, contrary to the somewhat clear-cut assertions of radical geographers who reduce the role of the countries of the South to that of “followers” (Goodhart, 2018).

Moreover, far from being limited to a simple conversion to neoliberalism through green capitalism and a desire for urban promotion through the development of environmental amenities and the minimization of urban nuisances, the adoption of measures for sustainable mobility mobilizes an ecosystem of actors larger than simple political decision-makers and municipal technicians. It deeply questions the modes of urban management, the question of the territorial scales of action, and awakens social tensions in Jordanian society.

However, as cities move toward low-emission mobility, municipal governments must provide the necessary environment for consumers and businesses to switch to cleaner mobility. This includes the provision of scrappage schemes under which small businesses can trade high-emission vehicles at a financial cost, provide subsidies for the purchase of low-emission

vehicles, and invest in electric charging infrastructure. It is safe to say that low-emission vehicles are the easiest for high-income earners, but it is also a big challenge for low-income people, as shown in figure 3.

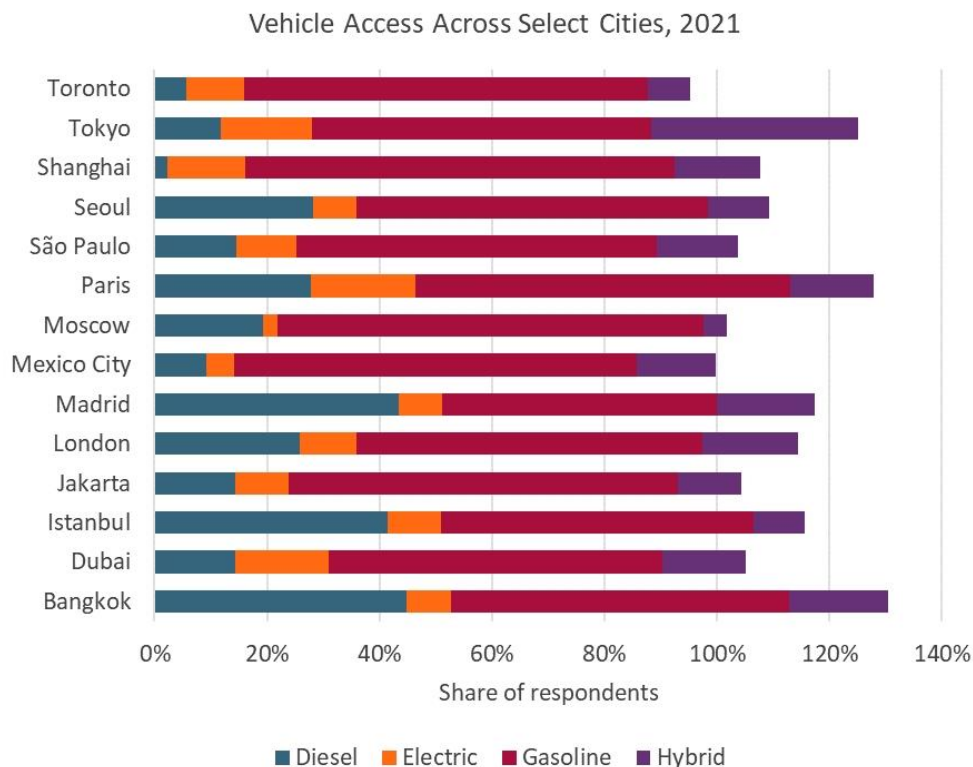


Figure 3: Vehicles Access across cities, 2021

Source: Euromonitor International from national statistics/UN

It is interesting to study in more detail the local influence of these “sustainable mobility networks” and the actors who defend this principle on different political scenes. In fact, this makes it possible to reinforce the first argument according to which the institutions and societies of the South are not simple receptacles for management principles coming from the North and to show that the adoption of certain positions can be motivated by great diversity. Reasons depending on the person. On the other hand, the analysis of the links between sustainable development and neoliberal rationality, was put forward by several researchers (ElAlfy et al., 2020; Shi et al., 2019).

Jordan has fertile ground for associations due to its proximity to Western donors who value projects led by civil society. It manifests the desire to give itself an image of a liberal constitutional monarchy, and there is an educated and dynamic youth in the country. Many organizations also make demands, particularly in terms of environmental protection, human rights defense, women's rights recognition, promotion of citizens' initiatives, etc. Some of them thus benefit from financial and technical support from international donors. For export logistics, this difference is due to the need for urban growth where consumer demand is a strong geographical area. All distributions ranging from manufacturers to consumers are rarely monitored. Although the last mile is known to represent an important factor in shipping

This is notably the case of the Ma'an Nasel campaign (which translates as “together we arrive”) launched at the beginning of 2015 with the aim of obtaining the authorities' recognition of public transport as a national priority. This campaign is carried by the Jordanian citizen

platform Taqaddam which presents itself as an interactive and informative activist platform, active on the web, and involved in the organization of debates, awareness, and information campaigns around the promotion of "modern and democratic citizenship." With some support from Parliament, the association is carrying out a series of actions to raise awareness of the challenges of improving public transport. Among these actions, the publication of a study carried out by another association (Ryan, 2018).

The members of these last two associations belong to what could be called a Jordanian international elite. Highly educated, with a perfect command of English, and many of them have done their (long) studies abroad, they are very aware of the urban functioning of Western cities to which they refer and which they sometimes present in a somewhat idealized way. These people have good relations with GAM decision-makers, some of whom they know personally (one of the founding members of Ma'an Nasel is a former employee of the municipality of Amman). As a result, they form what could be called an "epistemic community," "a set of actors who share a set of values, diagnoses, and solutions in order to address problems in order to improve human well-being". This community will form what Allal named an "international developmental configuration" in his study of the learning of democratization and "good governance" policies in Morocco in Tunisia: a "system of actors, made up of elites who are both cosmopolitan, marked by a set of specific dispositions, by a common professional culture, and more or less anchored in national society" (Allal, 2010).

Indeed, within the framework of controversial urban renewal projects and without going into details, the "rationalization" of the transport system has in particular caused the relocation to the outskirts of the two most important bus stations in Amman, guarantors of access to the center of modest populations from outlying towns.

Moreover, the choices made in the layout of the BRT leave doubts as to the real objective of this tool, between improving mobility for the poorest and creating an urban marketing tool. The mobilization of the paradigm of sustainability, international "good practices" and fantasized imagery of the Western city seems to serve as a tool of governmentality to benefit a certain vision of urban order. These models are indeed producers of a form of consensus that legitimizes the action of decision-makers mainly concerned with the promotion of the city on the international scene and the normalization of urban behavior (Schwanen, 2021). However, we will see that this consensus struggles to extend beyond the "epistemic community" previously described and that the normalizing power of the mobilization of the paradigm of sustainable development comes up against major territorial conflicts and long-lasting power struggles.

INTERNATIONAL URBAN STRATEGY AND LOCAL CONFLICTS. GAMES OF SCALES AND GAMES OF POWER

The mobilization of international slogans such as "sustainable development" and "good governance" applied to urban management is also an opportunity for the municipality of Amman. Indeed, this allows it to gain autonomy in a context of strong tensions between the very bureaucratic and centralized character of the Jordanian State and its desire to create exceptional entities managed according to neoliberal principles and supposed to play a driving role in the country's economy (Debruyne and Parker, 2015). The capital, macrocephalic, thus has a per capita budget far superior to other municipalities. In addition, since 1995, the GAM

has benefited from an exceptional territorial status: its mayor is appointed by the government from among those close to the King, as is a third of its municipal council. The capital also benefits from incomparable human resources because of the Jordanian municipal staff, who are usually overstaffed and poorly trained. As part of the controversial national municipal mergers initiated in 2001, Amman included several neighboring municipalities within it in 2007, thus doubling its scope of action and ensuring control of the future front of urbanization towards the South-West (Al-Haija, Potter, 2013).

However, in the turmoil of the Arab Spring, the municipality's achievements are strongly contested. The protests for democracy and against corruption were accompanied by a questioning of the new municipal borders, particularly by the tribal leaders.

The BRT project - otherwise highly contested - was also suspended due to irregularities in the calls for tenders. The mayor of Amman Omar Maani was dismissed, and the Amman Institute dissolved. In a statement to the Jordan Times, the municipality's transport department director denounces a political affair (May 2012). According to a GAM executive, the rise of the municipality has worried some members of Parliament accustomed to benefiting from privileges in the management of municipal affairs. The ethnicization of the municipality's government, the assertion of the logic of efficiency can be perceived as a danger for the old elites. In addition, the BRT, whose work was launched in haste without any real consultation, was poorly perceived by some of the inhabitants, in particular, because of the significant inconvenience caused to car traffic (Gullusci, 2021). Same is the situation with the consumers in Amman owning of cars could lead to increase in traffic, metropolitan cities in well-established cities of Europe prefer their citizens to travel by public transport.

The "paradigm shift" in the words of the mayor of Amman (Ayadi & Sessa, 2020) that the municipality intends to stimulate through the dynamics of sustainable development is carried by a multitude of national or international actors with multiple, sometimes divergent rationalities on the background (Ferreira & Allegretti, 2019).

THE THREE-AGE THEORY IN INDUSTRIALIZED COUNTRIES

The issue of the interaction between urban form and daily mobility is a subject that has preoccupied researchers since the automobile revolutionized transport and encouraged urban sprawl (Osborne, 2020). During the 1970s, a change in urban growth was observed in many industrialized countries. It is no longer constituted by the densification of intramural buildings but, on the contrary, by spatial spreading (Desrousseaux et al., 2019). Housing areas extend to the outskirts while economic activities remain concentrated in urban centers to provide better places to the consumers. This is the beginning of the phenomenon of peri-urbanization, which has spread to all the territories by generating spatial imbalances in the territories with a habitat that has been diluted in space.

The first age is that of the pedestrian city characterized by obligatory proximity. It is very dense and extends over a maximum radius of 5 kilometers with a mixture of jobs and residences. The second age is the radial city or city of public transport. The advent of public transport allows the city to extend over a perimeter of 30 kilometers. This extension is done "in glove fingers" along mass transport lines, especially railway lines. Urbanization develops mainly around nodes that correspond to public transport stations with the creation of the suburban territory. Finally, the automobile city is populated by city dwellers who are faster,

more flexible, less constrained. This is a spatial transformation that Kärholm et al. (2014) did not hesitate to consider as the passage from the compact city, a pedestrian city where places of residence and activities merge, to the fragmented city, automobile city. According to them, the change in mobility conditions is a triggering factor for “urban recomposition.” Moreover, the adaptability and flexibility of the automobile mode allow urban development to free itself from major traffic routes—urbanization proceeds by filling in interstitial voids at low density (Geyer, 2021; Naidja & Benidir, 2021).

The generalized use of motorized vehicles by influencing urban development policies and the strategies of individual and economic players has led to an urban recomposition that is particularly unfavorable to walking. Talking about the modification of the relationship between space and time, Turok (2001) demonstrates that the acquisition of the individual car has reinforced this tendency to locate in the peripheries. It is necessary to leave the city center and compulsory to live in the outskirts. The phenomenon has accelerated due to the ever-greater increase in travel speeds (technical performance of vehicles, circulation on expressways such as motorways, bypasses) and improved paved roads' network. Große et al. (2018) has shown to what extent the use of an individual vehicle is essential for the daily journeys of the inhabitants of peri-urban municipalities. Peri-urban public transport on the road is not sufficiently efficient and attractive compared to the private car. From now on, the compact city tends to disappear under these new practices (Bartle & Chatterjee, 2019). As a result, people are building more and more individual houses on the outskirts of towns. Housing at a lower cost of the margins has been acclaimed because the means of transport have accompanied, even initiated, the desire of city dwellers to have larger dwellings, both close to the city and to nature, in addition to that it is also helpful for consumers.

In the same vein, several hypotheses have been put forward by Speer and Goldfischer (2020) to explain this phenomenon of peri urbanization. According to Morange (2015), the public authorities could not control the space and pursue the colonial urbanization model. In response the development of self-production of housing on the outskirts from the seventies reproduced the classic form of the concession, enclosed plot built around an interior courtyard that can be shared by several households (Farinella & Saitta, 2019). Neither the quantity nor even less the quality of urban infrastructures occupies a prominent place in residential strategies for consumers (Farinella & Saitta 2019; Ikpo, 2015)

The lack of correlation between the indicators of urbanization and industrialization and the non-correspondence of the demographic increase with the growth of urban employment, particularly industrial (Nathaniel et al., 2021). While land, infrastructure, and services are incorporated into the universal and hegemonic commodification of capitalism, and the states do not develop sufficient redistributive decommmodification policies, an important part of the urban population cannot access those goods due to lack of sufficient monetary resources.

As a consequence, together with the urbanization processes organized with a predominance of the capitalist logic of profit and the political logic of the State (Adebayo et al., 2021), "popular urbanization" or "popular habitat" arises.

This denomination hides a heterogeneity of situations. From production with a predominance of the logic of necessity, destined for direct consumption in situations of "self-construction" or "self-supply," and therefore of a "pre-commercial" nature (Jaramillo, 2017), until the existence of simple mercantile production processes of urban goods (Hettiarachchi et

al., 2018). The ("informal") production of land accessible to low-income groups, whether through invasions ("self-supply") or irregular subdivisions ("informal market"), tends to develop on the periphery, with land available and prices low, among other reasons due to the lack of basic infrastructure.

Something analogous occurs with popular urbanization in consolidated areas where the networks pass in the vicinity of the settlements, and their densification is possible due to greater occupation or through the informal rental market (Azhar et al., 2021). Therefore, the informal production of the city generates a "multidimensional phenomenon" that: involves tenure issues (legal occupancy rights, title registration, etc.); compliance with urban norms and regulations (lot sizes, tolerance for public spaces, street layout, etc.) (Collier, & Venables, 2014)

The processes of popular urbanization have a recommodifying significance of urban goods, allowing their access without the need for the monetary resources required by the formal market. By burdening the resources of needy families (essentially their workforce), they consolidate inequalities, in what Kowarick (1983) called urban spoliation. The simple mercantile production of the city also allows access to these goods to the population with lower incomes (Jaramillo, 2017) by reducing the need for monetary resources.

The transport sector, which has been growing strongly for more than two decades, now represents nearly 70% of the consumption of petroleum products in Jordan. Analyses of automobile energy consumption show that it is determined by economic growth, fuel prices, and the adoption of new technologies. The downward trend in registrations of private individuals observed for more than ten years on the automobile market and recently curbed by subsidy measures (scrapage bonus), as well as the appearance of new competing automobile mobility services in car ownership, lead to questions about the overall trend of the car market and the changes that it is possible to envisage

Opposite Al-Balad (downtown), memory of the capital but center in decline, too crowded and popular for the local authorities, will rise, paradoxically, this new flashy city center combining modernity and luxury intended for the wealthy classes. To believe that development only benefits those who have the financial means, that the practice of a form of nepotism is openly affirmed and that behind the new showcase city center of Jordan, is hidden, in the background, increased maldevelopment. Furthermore, the recent decision by the Greater Amman Municipality to rehabilitate public spaces in neighbour probably disguises a desire to gentrify the surroundings of the new city center, perhaps to further confine the popular fringe to the East?

Would not the new city center thus constitute a closed vase for the legitimate population to the detriment of a city center for the urban and city population? On the scale of the city, as a counterweight to this future center reflecting the regime's vision, wouldn't Al-Balad be more of a privileged space for protest speech, the theater of conflicts in the making? This project, in the long term, could therefore further deconstruct the Jordanian identity more than it would feed it as he claims.

However, this phenomenon is no exception in the Middle East, Beirut is an illustration of it (Summer, 2005), and it also finds other echoes in the Arab world, such as in Cairo (Denis, 2006). But what are the public spaces which, today, anywhere in the world, can claim to guarantee everyone to meet and find their way around?

CONCLUSION

In popular culture, urban sprawl is ill-defined and often misunderstood, with a negative connotation. Economists should consider whether specific patterns of urban land use are the result of effective resource allocation. Theoretical economic modeling has been used to illustrate that sprawl, rather than reducing economic efficiency, often increases it. More sprawl may result in less traffic congestion. In general, job suburbanization increases sprawl but improves economic efficiency. Limiting sprawl in certain places with direct land use management may promote sprawl in others, and overall sprawl in all cities may increase. Many studies empirically implemented general equilibrium models show that urban population growth creates more urban sprawl, but the increase in travel times that comes with it is quite little, contrary to popular opinion.

Rapidly developing cities have a number of difficulties that can lead to a dependence on automobiles. In a time of rapid urbanization, limiting car-oriented urban development is critical to achieving the Sustainable Development Goals and climate agreements. Evidence suggests that not only is it possible to decouple economic growth from automobile use, but that it is also highly desirable in cities to attain prosperity, efficiency, inclusivity, and physical and mental well-being (among other things).

Urban growth borders, which limit urban sprawl by boosting land prices, cause significant deadweight losses and should be considered as socially intolerable, but they are frequently not. Corrective taxes for negative externalities like road congestion, as well as property tax reforms to minimize or eliminate distortive taxation, are both beneficial policies. In a variety of situations, such fiscal policies boost welfare through promoting urban sprawl.

In this article, we have tried to qualify the theses of the conversion to neoliberalism, the unilateral transfer of “good practices,” and the passivity of the countries of the South in the adoption of international models. The mobilization of the theme of urban sustainability in the context of the development of a model urban planning master plan is the result of a controlled urban strategy. The municipality of Amman was able to mobilize international networks and take advantage of their contributions in a context where it had an opportunity to stand out from other cities in the region.

However, we have seen that this “paradigm shift” in urban management cannot be reduced to a desire for urban marketing and international promotion. It is also a question of a position in the national governance system which asserts legitimacy through expertise and the mobilization of “good practices” in urban management. However, this utopian and above-ground vision of a modern capital faces significant contradictions in many respects. Therefore, the last five years have been a period of constant adjustments between the desire for urban planning in accordance with international best practices and the reality on the ground, between an ideal of good management and the social and spatial practices of the population.

Tool for urban promotion and networking of the capital, on the one hand, is a means of capturing international funding within the framework of green projects. On the other hand, the mobilization of sustainable urban development is also a means of empowering the capital and standardizing the urban practices of populations who are not fooled on this subject. Therefore, there are several levels of challenges for constructing this new model of urban management. But also, several reading grids in the criticism of this model, whether in terms of

neocolonial policies, spatial injustices, power, or domination. All of them have their logic and their interest in the perspective of a search for fairer urban models

In conclusion, the findings show that, while attempts are being made to achieve sustainable urbanization, Amman still requires additional efforts from Jordan's government. For instance, Climate change is caused by people behaviour who are living, moving, and consuming in cities, not just by urbanization and its accompanying infrastructure.

Sustainable mobility as an urban promotion strategy in the era of networked cities from the unsustainable city to sustainable mobility.

Because rules, policies, and plans are ineffective in controlling, monitoring, and governing urban expansion, the government should create policies and regulations to regulate and monitor urban sprawl on agricultural land based on a comprehensive picture of urban expansion trends and patterns. (Al-kofahi et al, 2018). Smart city policy would aim to improve renewable energy generation and enhance water and air quality in Jordanian cities towards achieving sustainable urban development. Advantages of smart growth include lower operating expenses for inhabitants, better comfort, higher perceived value, less sprawl, less pollution, and environmental protection. Despite the fact that many urban planners and architects favor the vertical and compact city concept as a solution to land shortages, urban sprawl, and environmental degradation, few studies on consumer needs, perceptions, and reactions have been done.

REFERENCES

- Ababsa, M. (2011). Citizenship and Urban Issues in Jordan.
- Abdeljawad, N., & Nagy, I. (2021). Urban Environmental Challenges and Management Facing Amman Growing City. *Review of International Geographical Education Online*, 11(5), 2991–3010.
- Abu al Haija, A., & Potter, R. B. (2013). Greater Amman: metropolitan growth and scenarios for sustainable urban development.
- Abu-Hamdi, E. M. (2015). *Unplanning the City: Patrimonial Governance, Unregulated Development, and Neoliberal Urban Transformation in Amman, Jordan*. University of California, Berkeley.
- Adebayo, T. S., Ramzan, M., Iqbal, H. A., Awosusi, A. A., & Akinsola, G. D. (2021). The environmental sustainability effects of financial development and urbanization in Latin American countries. *Environmental Science and Pollution Research*, 28(41), 57983-57996.
- Al-Bilbisi, H. H. (2012). A Two-Decade Land Use and Cover Change Detection and Land Degradation Monitoring in Central Jordan Using Satellite Images. *Jordan Journal of Social Sciences*, 166(745), 1–34.
- Allal, L. (2010). Assessment and the regulation of learning. *International encyclopedia of education*, 3, 348-352.
- Al-Kofahi, S. D., Hammouri, N., Sawalhah, M. N., Al-Hammouri, A. A., & Aukour, F. J. (2018). Assessment of the urban sprawl on agriculture lands of two major municipalities in Jordan using supervised classification techniques. *Arabian Journal of Geosciences*, 11(3), 45. <https://doi.org/10.1007/s12517-018-3398-5>
- Almuhtady, A., Alshwawra, A., Alfaouri, M., Al-Kouz, W., & Al-Hinti, I. (2019). Investigation of the trends of electricity demands in Jordan and its susceptibility to the ambient air temperature towards sustainable electricity generation. *Energy, Sustainability and Society*, 9(1), 39.

<https://doi.org/10.1186/s13705-019-0224-1>

- Al Tarawneh, W. (2014.). Urban Sprawl on Agricultural Land (Literature Survey of Causes, Effects, Relationship with Land Use Planning and Environment) A Case Study from Jordan (Shihan municipality areas). *J Environ Earth Sci* 4(20):97–124.
- Ayadi, R., & Sessa, C. (2020). Blue Transition Policy Roadmap.
- Azhar, A., Buttrey, H., & Ward, P. M. (2021). “Slumification” of Consolidated Informal Settlements: A Largely Unseen Challenge. *Current Urban Studies*, 9(3), 315-342.
- Barthel, P. A. (2016). 13 Sustainable urban development. *The Transnational Middle East: People, Places, Borders*, 255.
- Bartle, C., & Chatterjee, K. (2019). Employer perceptions of the business benefits of sustainable transport: A case study of peri-urban employment areas in South West England. *Transportation Research Part A: Policy and Practice*, 126, 297-313.
- Bassolas, A., Barbosa-Filho, H., Dickinson, B., Dotiwalla, X., Eastham, P., Gallotti, R., ... & Ramasco, J. J. (2019). Hierarchical organization of urban mobility and its connection with city livability. *Nature communications*, 10(1), 1-10.
- Cartes, D., Ordonez, J., Harrington, J., Cox, D., & Meeker, R. (2007). Novel Integrated Energy Systems and Control Methods with Economic Analysis for Integrated Community Based Energy Systems. 2007 IEEE Power Engineering Society General Meeting, 1–6. <https://doi.org/10.1109/PES.2007.386296>
- Chin, N. (2002). Unearthing the roots of urban sprawl: A critical analysis of form, function and methodology.
- Cheng, Z., & Hu, X. (2022). The effects of urbanization and urban sprawl on CO2 emissions in China. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-022-02123-x>
- Clark, J. A. (2018). II. Centralization and “Decentralization” in Jordan. In *Local Politics in Jordan and Morocco* (pp. 78-121). Columbia University Press.
- Collier, P., & Venables, A. J. (2014). Housing and urbanization in Africa: Unleashing a formal market process. World Bank policy research working paper, (6871).
- Dar-Mousa, R. N., & Makhmreh, Z. (2019). Analysis of the pattern of energy consumptions and its impact on urban environmental sustainability in Jordan: Amman City as a case study. *Energy, Sustainability and Society*, 9(1), 15. <https://doi.org/10.1186/s13705-019-0197-0>
- Debruyne, P., & Parker, C. (2015). Reassembling the Political: Placing Contentious Politics in Jordan. In *Contentious Politics in the Middle East* (pp. 437-465). Palgrave Macmillan, New York.
- Desrousseaux, M., Schmitt, B., Billet, P., Béchet, B., Bissonnais, Y. L., & Ruas, A. (2019). Artificialised land and land take: What policies will limit its expansion and/or reduce its impacts?. In *International Yearbook of Soil Law and Policy 2018* (pp. 149-165). Springer, Cham.
- ElAlfy, A., Palaschuk, N., El-Bassiouny, D., Wilson, J., & Weber, O. (2020). Scoping the evolution of corporate social responsibility (CSR) research in the sustainable development goals (SDGs) era. *Sustainability*, 12(14), 5544.
- Ewing, R., Meakins, G., Hamidi, S., & Nelson, A. C. (2014). Relationship between urban sprawl and physical activity, obesity, and morbidity – Update and refinement. *Health & Place*, 26, 118–126. <https://doi.org/10.1016/j.healthplace.2013.12.008>

- Escobedo, F. J., Giannico, V., Jim, C. Y., Sanesi, G., & Laforteza, R. (2019). Urban forests, ecosystem services, green infrastructure and nature-based solutions: Nexus or evolving metaphors?. *Urban Forestry & Urban Greening*, 37, 3-12.
- Euromonitor. Three Ways to Achieve Sustainable Urban Mobility. (2021, November 24). <https://www.euromonitor.com/article/three-ways-to-achieve-sustainable-urban-mobility>
- Evans, A. C. (2021). A ‘Crisis of Identity’? Palestinian Christian contributions to Amman’s modern urbanity. *Contemporary Levant*, 1-15.
- Farinella, D., & Saitta, P. (2019). Messina Today: Representation, Identity, and Mobilization for Change. In *The Endless Reconstruction and Modern Disasters* (pp. 233-271). Palgrave Macmillan, Cham.
- Ferreira, I., & Allegretti, G. (2019). Local democratic innovations in Africa. In *Handbook of Democratic Innovation and Governance*. Edward Elgar Publishing.
- Chandrasekhar, M., Owen, N., Hadgraft, N., & Sugiyama, T. (2021). Relationship of Urban Sprawl with Overweight and Obesity: Roles of Physically-Active and Sedentary Travel Behaviours. *International Journal of Epidemiology*, 50(Supplement_1), dyab168.117. <https://doi.org/10.1093/ije/dyab168.117>
- Gao, H. O., & Sprague, C. (2020). The Effects of Land-use Policy on Commuting Distance and Road Related Adverse Health Outcomes [Report]. <https://ecommons.cornell.edu/handle/1813/69853>
- Gelfand, M. (2019). Rule makers, rule breakers: Tight and loose cultures and the secret signals that direct our lives. Scribner.
- Geyer, H. S. (2021). Negotiating grey spaces: A Southernised Relational Analysis of Customary Land-use Regulation Mechanisms in Peri-urban Informal Mixed-use Developments-A case study of the Helderberg District in Cape Town.
- Goodhart, M. E. (2018). *Injustice: Political theory for the real world*. Oxford University Press.
- Große, J., Olafsson, A. S., Carstensen, T. A., & Fertner, C. (2018). Exploring the role of daily “modality styles” and urban structure in holidays and longer weekend trips: Travel behaviour of urban and peri-urban residents in Greater Copenhagen. *Journal of Transport Geography*, 69, 138-149.
- Gullusci, M. (2021). *Pathways to Transit Equity in the Suburbs: A Study of Brampton, Ontario*.
- Guo, Z., Agrawal, A. W., & Dill, J. (2011). Are Land Use Planning and Congestion Pricing Mutually Supportive?: Evidence From a Pilot Mileage Fee Program in Portland, OR. *Journal of the American Planning Association*, 77(3), 232–250. <https://doi.org/10.1080/01944363.2011.592129>
- Hadad, S., & Bratianu, C. (2019). Dematerialization of banking products and services in the digital era. *Management & Marketing*, 14(3).
- Hadjidimoulas, C. (2018). Methane Gas Emissions: Methods of Improving the Efficiency of the Biggest Landfill Gas Waste to Energy Project in the Middle East Installed in Amman, Jordan. *OALib*, 05, 1–35. <https://doi.org/10.4236/oalib.1104476>
- Hettiarachchi, H., Ryu, S., Caucci, S., & Silva, R. (2018). Municipal solid waste management in Latin America and the Caribbean: Issues and potential solutions from the governance perspective. *Recycling*, 3(2), 19.
- Horning, J., El-geneidy, A., & Krizek, K. (2008). Perceptions of Walking Distance to Neighborhood Retail and Other Public Services. Undefined. <https://www.semanticscholar.org/paper/Perceptions-of-Walking-Distance-to-Neighborhood->

- and-Horning-El-geneidy/38cd68269c246567ad4f12a37d21b11d0f26baac
- Iamtrakul, P., & Chayphong, S. (2021). The perception of Pathumthani residents toward its environmental quality, suburban area of Thailand. *Geographica Pannonica*, 25(2), 136-148.
- Ikpo, L. G. (2015). *Côte d'Ivoire: An African Economic Model Transformed into a Chaotic Arena from September 19th, 2002 until April 11th, 2011*. Xlibris Corporation.
- Jaramillo González, E. S. (2017). Structural heterogeneity in capitalism: a view from the Marxist abstract labor theory of value.
- Jombach, S., Valánszki, I., Filep-Kovács, K., J. Gy., Ryan, R.L, Lindhult, M. S., & Kollányi, L. (2016). Proceedings of 5th Fábos Conference on Landscape and Greenway Planning (Budapest, 01 July, 2016).
- Karmel, E. J. (2021). Designing Decentralization in Jordan: Locating the Policy among the Politics. *Middle East Law and Governance*, 1(aop), 1-30.
- Kärrholm, M., Nylund, K., & de la Fuente, P. P. (2014). Spatial resilience and urban planning: Addressing the interdependence of urban retail areas. *Cities*, 36, 121-130.
- Keil, R. (2009). The urban politics of roll-with-it neoliberalization. *City*, 13(2-3), 230-245.
- Keskin, H. (2019). The cost-effectiveness analysis of transition from brt system to bi-articulated trolleybus system in İstanbul (Master's thesis, Sosyal Bilimler Enstitüsü).
- Khan, S. (2008). An energy saving program for bangladesh, for reducing load shedding, and for continuity of power for IT sector. 2008 11th International Conference on Computer and Information Technology, 753–757. <https://doi.org/10.1109/ICCITECHN.2008.4802993>
- Khirfan, L. (2011). From Toronto to Amman: The cross-national transfer of planning knowledge. *Planning Theory & Practice*, 12(4), 525-547.
- Khirfan, L., Momani, B., & Jaffer, Z. (2013). Whose authority? Exporting Canadian urban planning expertise to Jordan and Abu Dhabi. *Geoforum*, 50, 1-9.
- Knowles, R. D., Ferbrache, F., & Nikitas, A. (2020). Transport's historical, contemporary and future role in shaping urban development: Re-evaluating transit oriented development. *Cities*, 99, 102607.
- Kowarick, L. (1983). The pathways to encounter reflections on the social struggle in São Paulo. CEDEC.
- Lawson, E. (2021). *A City Divided: A GIS-Informed Study of Urban Planning in Amman, Jordan*.
- Mosannenzadeh, F., Bisello, A., Vaccaro, R., D'Alonzo, V., Hunter, G. W., & Vettorato, D. (2017). Smart energy city development: A story told by urban planners. *Cities*, 64, 54–65. <https://doi.org/10.1016/j.cities.2017.02.001>
- Morange, M. (2015). Street trade, neoliberalisation and the control of space: Nairobi's Central Business District in the era of entrepreneurial urbanism. *Journal of Eastern African Studies*, 9(2), 247-269.
- Muehlenhoff, H. L. (2017). Victims, soldiers, peacemakers and caretakers: the neoliberal constitution of women in the EU's security policy. *International Feminist Journal of Politics*, 19(2), 153-167.
- Naidja, H., & Benidir, F. (2021). From the Gate to the Gateway: The Impact of Colonial Intervention upon the Entries of the City of Constantine. *Algerian Journal of Human and Social Sciences*, 5(2), 158-175.

- Nathaniel, S. P., Nwulu, N., & Bekun, F. (2021). Natural resource, globalization, urbanization, human capital, and environmental degradation in Latin American and Caribbean countries. *Environmental Science and Pollution Research*, 28(5), 6207-6221.
- O'Brien, P., O'Neill, P., & Pike, A. (2019). Funding, financing and governing urban infrastructures. *Urban Studies*, 56(7), 1291-1303.
- O'Brien, P., Pike, A., & Tomaney, J. (2019). Governing the 'ungovernable'? Financialisation and the governance of transport infrastructure in the London 'global city-region'. *Progress in Planning*, 132, 100422.
- Obi Lawrence, E. (2022). Engineering strategies towards the cataclysmic impacts of Urbanisation on water resources sustainability.
- Olmstead, S. M., Michael Hanemann, W., & Stavins, R. N. (2007). Water demand under alternative price structures. *Journal of Environmental Economics and Management*, 54(2), 181–198. <https://doi.org/10.1016/j.jeem.2007.03.002>
- Osborne, J. F. (2020). *The Syro-Anatolian City-States: An Iron Age Culture*. Oxford University Press, USA.
- Pinson, G., & Morel Journel, C. (2016). The neoliberal city—theory, evidence, debates. *Territory, Politics, Governance*, 4(2), 137-153.
- Rosas-Satizábal, D., & Rodriguez-Valencia, A. (2019). Factors and policies explaining the emergence of the bicycle commuter in Bogotá. *Case studies on transport policy*, 7(1), 138-149.
- Ryan, C. R. (2018). IV. The Hirak and Changes in Political Activism. In *Jordan and the Arab Uprisings* (pp. 65-89). Columbia University Press.
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., & Woelm, F. (2021). *Sustainable development report 2020: The sustainable development goals and covid-19 includes the SDG index and dashboards*. Cambridge University Press.
- Schwanen, T. (2021). Achieving just transitions to low-carbon urban mobility. *Nature Energy*, 6(7), 685-687.
- Shamal, A. D., Kamw, F., Zhao, Y., Ye, X., Yang, J., & Jamonnak, S. (2019, October). An open source trajanalytics software for modeling, transformation and visualization of urban trajectory data. In *2019 IEEE Intelligent Transportation Systems Conference (ITSC)* (pp. 150-155). IEEE.
- Shi, L., Han, L., Yang, F., & Gao, L. (2019). The evolution of sustainable development theory: Types, goals, and research prospects. *Sustainability*, 11(24), 7158.
- Speer, J., & Goldfischer, E. (2020). The city is not innocent: Homelessness and the value of urban parks. *Capitalism Nature Socialism*, 31(3), 24-41.
- Surmacz, B. (2018). City diplomacy. *Barometr Regionalny. Analizy i Prognozy*, 16(1), 7-18.
- Surya, B., Ahmad, D. N. A., Sakti, H. H., & Sahban, H. (2020). Land use change, spatial interaction, and sustainable development in the metropolitan urban areas, South Sulawesi Province, Indonesia. *Land*, 9(3), 95.
- Taamneh, M., Rawabdeh, M. A., & Abu-Hummour, A. M. (2020). Evaluation of decentralization experience through political, administrative, and fiscal indicators: The case of Jordan. *Journal of Public Affairs*, 20(2), e2026.
- Thneibat, M. M. (2016). *Policy design tool for managing indoor residential water demand in water-scarce regions [PhD Thesis]*. Purdue University.
- Tiltnes, Å. A., Zhang, H., & Pedersen, J. (2019). *The living conditions of Syrian refugees in Jordan*. Oslo: Fafo.

- Turok, I. (2001). Persistent polarisation post-apartheid? Progress towards urban integration in Cape Town. *Urban studies*, 38(13), 2349-2377.
- Vloeberghs, W. (2016). Rafiq Hariri as a Lebanese Actor: Lifetime. In *Architecture, Power and Religion in Lebanon* (pp. 27-88). Brill.
- Vollmann, E., Bohn, M., Sturm, R., & Demmelhuber, T. (2020). Decentralisation as authoritarian upgrading? Evidence from Jordan and Morocco. *The Journal of North African Studies*, 1-32.
- Zhang, C., & Lin, Y. (2012). Panel estimation for urbanization, energy consumption and CO2 emissions: A regional analysis in China. *Energy Policy*, 49, 488–498. <https://doi.org/10.1016/j.enpol.2012.06.048>
- Zeng, L., & Ramaswami, A. (2020). Impact of Locational Choices and Consumer Behaviors on Personal Land Footprints: An Exploration Across the Urban–Rural Continuum in the United States. *Environmental Science & Technology*, 54(6), 3091–3102. <https://doi.org/10.1021/acs.est.9b06024>