

URBAN SPRAWL Causes, Effects and Remedies for Indian cities

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Abstract: Global trends of expanding cities to meet the requirement of increasing population always have been concern for environmental exploitation. Worldwide trends of overlaying urban areas over the rural one is defining the much more crafted texture of the city but the process often expels out the life from the city. The problem caused are varying as per the cities. In developed nations people love to settle on outskirts for better living space but developing nation are striving hard to provide one's own space to everyone. Urban sprawl is an issue that has allocated many discussions to itself in academics. Regarding to mentioned issues in cities, this article attempts to surveys the results of sprawl by precise cognition of characteristics and causes and introduces correct remedies at the end of it. Re-densification of suburbs, improving their walkability, avoiding change in land use and mixing the use with proper effective policy measure are some of the efforts which can be made towards to control the sprawl. The method of the study adopts the study made earlier in the various components of urban related issues and their findings.

Keywords: urbanization, sprawl, mix land use, density, walk ability.

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I. Introduction

India is urbanizing fast. Such a fast urbanization entails not only movement of population from rural to urban areas but also interchange of values, beliefs and attitudes thereby causing rapid transformation of individuals, society and cities. This form the context of urban issues in Indian cities where the consideration is on providing the maximum covered space for living. The cause for the social disharmony in cities is the difference among the residents in terms of spaces, economy and culture. The solution of the problem lies in strengthening the sense of our cities where the focus is not only development but also the quality of space, resource utilization and reducing effects on nature. Although sprawl is a worldwide phenomenon, but it should be indicated that it's different by environmental, economic, social and political situations. In recent decades, urban growth has not been adopted with residents needs and as a result of this process, many lands have been utilized for construction.

Indian cities are expanding on the outskirts of existing one with several high rise structure that changes the morphology of the city and are found to be exactly different in character. Globally the factors for the urban sprawl are different but Indian cities are spreading to cater to its huge population. So far 46 Indian cities have population more than a million.^[3]

II. Objectives

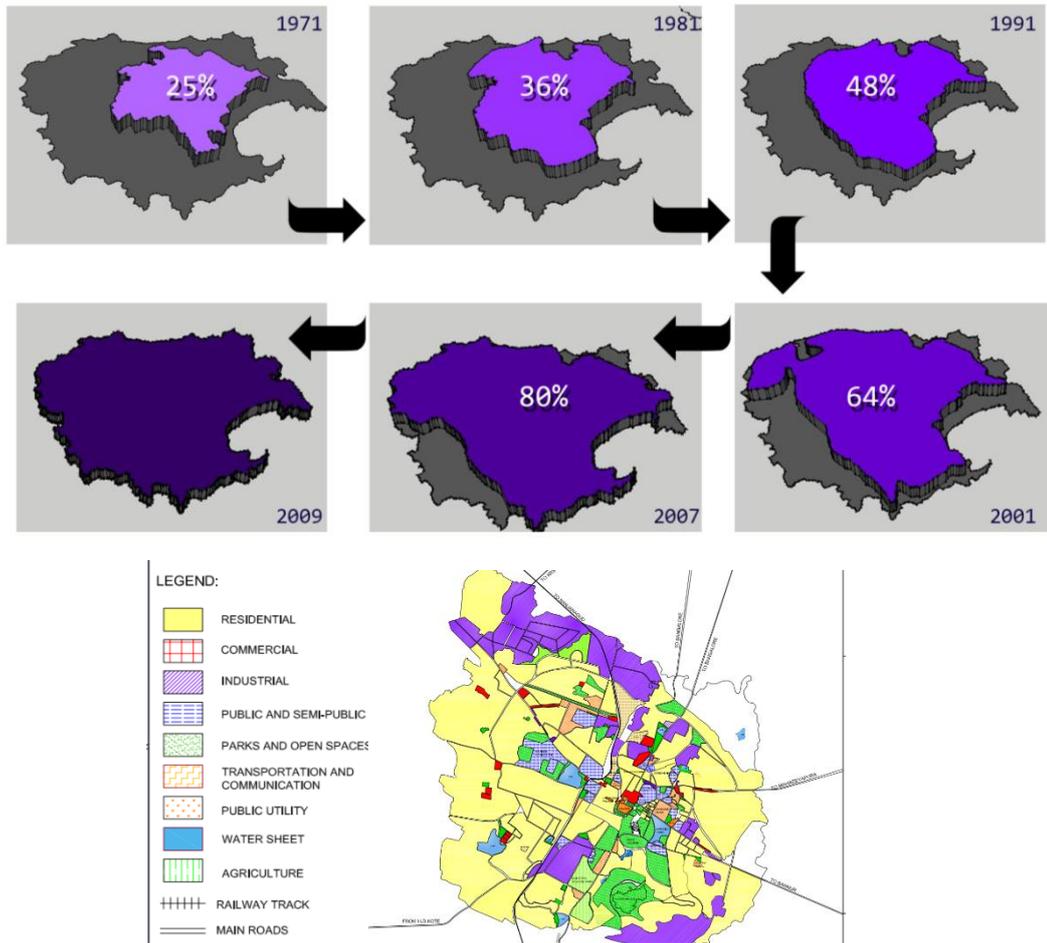
The objective of the urban sprawl study is to understand the factors for the phenomena. Analyze and evaluate the urban happening and there effects on the urban quality in terms of space as well as on the public of any city. This include the pros and cons of the sprawl. The desired form of our future cities require certain things which include certain physical as well as non-physical attributes. The research work is on the specifying those points and how to promote the quality of our cities. The prime concern is on the improvement of the spatial quality of the city from the work of notable urban designer, social workers and architects and authors. The methodology for the objective is through:

1. To expose the prime determinants of urbanization
2. To analyze the ongoing trends in rural and urban population
3. To evaluate the process of urbanization
4. To assess the challenges involved in urbanization and urban quality
5. To endorse remedial measures for urban associated challenges

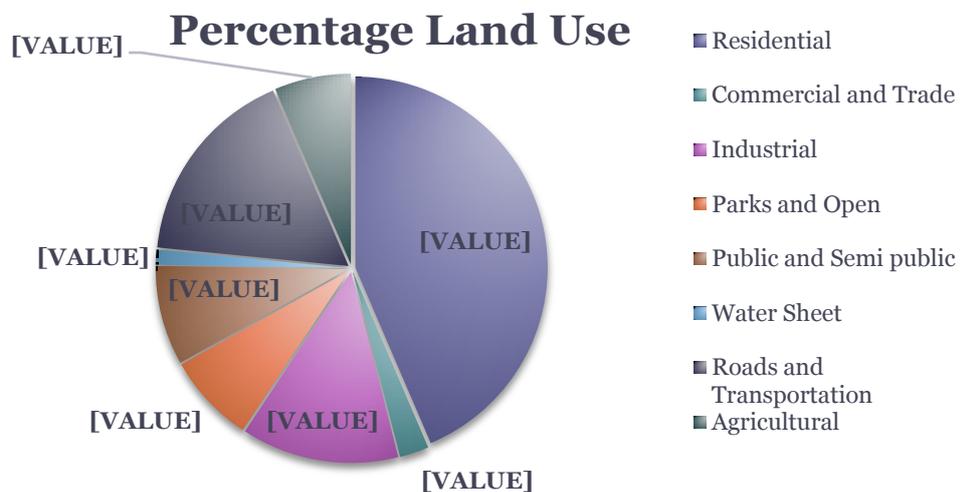
III. Urbanizing Trends

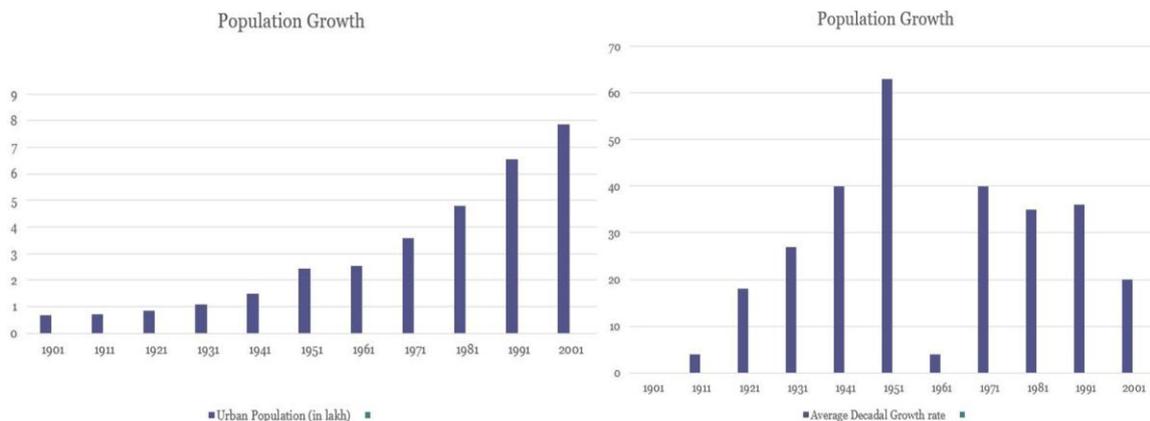
Mysore is the city in the state of Karnataka, India. Located at the base of the Chamundi Hills about 146 km southwest of the state capital Bangalore, it is spread across an area of 128.42 km². Tourism is the major industry in Mysore. The growth of the information technology industry in the first decade of the 21st century has

resulted in the city emerging as the second largest software exporter in Karnataka and now the important IT hub of the nation.



Last 50 years Mysore has increased 4 times in area while the population has grown thrice. This shows that the overall human density of the city has been reduced and surely this is the situation of sprawl. New areas developed in the city are homogenous in nature and majorly residential land cover is seen in new map of the city. 43% of the land is under the pure residential activity in spite of Mysore being rich in terms of industries. Only 6% land is left for the purpose of agriculture.





Land use plan of the Mysore indicates how the residential activity are spreading out of the city and new development of the city is homogenous in nature. With the economic boom of the city it became possible for the population growth of the city. Last two decade of the last century saw the population being doubled. In spite of this growth is not accelerated but the city is already at the saturation level.

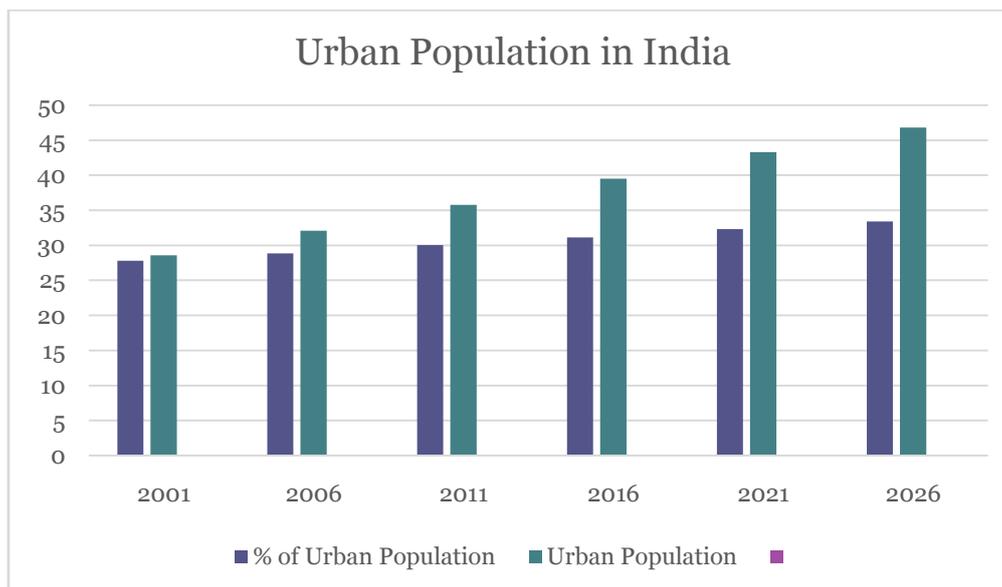
IV. Causes

The various causes for the urban sprawl are:

4.1 Population Growth

The first and foremost reason of urban growth is increase in urban population. Rapid growth of urban areas is the result of two population growth factors:

- a. Natural increase in population, and
- b. Migration to urban areas.



Urban population figures are in multiple of ten million.

Source: The report of national population of India.

Natural population growth results from excess of births over deaths. Migration is defined as the long-term relocation of an individual, household or group to a new location outside the community of origin. In the recent time, the movement of people from rural to urban areas within the country (internal migration) is most significant. Although very insignificant comparing the movement of people within the country; international migration is also increasing. International migration includes labor migration, refugees and undocumented migrants. Both internal and international migrations contribute to urban growth. Case particular India where the urban population is increasing very fast.

4.2 Commercial factors

Resource utilization is meant nothing when it comes to the commercial factors. Development cost for the new one is less than to maintain what is already existing. New development outside the city on cheaper agricultural land is more profitable for the developers. Occupant to these areas also find them more economical therefore this chain of production and consumption is maintained. In this process excessive is produced sometimes which then comes to no use.

4.3 Changing lifestyle

With the technology playing its role it also pleases to the people to find their own life outskirts. Living in consolidation is being avoided as it may be messy sometimes. Easy transportation methods, infrastructure and connectivity through web never makes them to miss on the city life in the suburbs. People enjoy their life in their own small world which decrease their social life.

V. Challenges

The way India is growing in terms of its cities various challenges appear in its way. Being a developing country, crucial becomes the decision making of whether to follow or not to. Such challenge need to be addressed for improved city conditions.

5.1 Land use

In line with the development of urbanization, arable land is decreasing dramatically, which presents the threat to the food security for human being. It is therefore essential to understand the level of impacts of urbanization on the land use change. Land use and land cover change has become an important component in current strategies for managing natural resources and monitoring environmental changes for sustainable environmental planning and management. Prevention of agriculture land in the fringe area of expanding cities is a vital for preserving and maintaining open space and therefore environmental qualities. In India the distinctive boundary lines indicating the change in land use doesn't not comply with the growth of the cities. Expansion of the city boundary is always on the cost of reducing agricultural land.

5.2 Amenities

Access to basic amenities is the most important aspect of the quality of urbanization. The amenities like electricity, water, sanitation and clean fuel are the critical determinants of living conditions and health of the urban people ^[12]. Access to basic amenities varies in accordance with the size categories of cities and towns except for toilet facility and sanitation. Many small urban centers have no financial capacity and lack technical capabilities to design projects and raise funds from the market.

5.3. Slums

Development of slums is another prime challenge in the suburbs of Indian cities. The natural development of unchecked, unexpected and random growth of urban areas is the growth and spread of slums and unlawful resident settlements which present a prominent feature in the environmental structure of Indian cities, particularly of urban centers. The fast urbanization in combination with industrialization has resulted in the enlargement of slums.

5.4. Economic development

Sprawl 'is usually accepted as being inordinately costly to its occupants and to society (Harvey and Clark 1965). Cities have experienced an increase in demand for public services and for the maintenance and improvement of urban infrastructures (Barnes et al. 2001) such as fire-service stations, police stations, schools, hospitals, roads, water mains, and sewers in the countryside. Sprawl requires more infrastructures, since it takes more roads, pipes, cables and wires to service these low-density areas compared to more compact developments with the same number of households. Other services such as waste and recyclables collection, mail delivery and street cleaning are costlier in low-density developments, while public transit is impractical because the rider density needed to support a transit service is not there.

5.5. Degrading Quality Of Life

Sprawl is generally blamed for its negative impacts on public health. ^[11]Urban sprawl directly impacts traffic congestion, reduced social interaction, high oil consumption, and many other transportation issues. It is evident that it has negative impacts on both air quality and public health, which affects the human condition. This results in health issues for inner-city residents and air pollution. Air pollution causes severe breathing problems, skin diseases, and other health problems. People with health problems such as asthma, heart and lung disease may also suffer more when the air is polluted. Old-fashioned neighborhoods with compact housing, front porches, a corner store, and a school two blocks away were much more conducive to social interactions. It

was possible to feel a sense of belonging and community. Now, in sprawled generic housing tracts, many people never meet their neighbors as they pass them in their cars. It's rare for neighborhood events to occur. As people spend more time on more crowded roads, an increase in these psychological health-outcomes might be expected. Longer travel-time also reduces time available for work, leisure, and family. Families who cannot afford housing to live within the city may suffer from distress that may cause negative impacts on a community's overall health.^[9]

6.6. IMAGE OF THE CITY

Sprawl add on the new development over the new one in contradiction to what already is present. The essence of the city is lost over the issues regarding the cost of development. A position that has made for a tendency to place the problems of urban development in a perspective of quantity rather than quality, of provision rather than upkeep. In a way this sparse development is much more against the dense fabric of older Indian cities, therefore the new add-ons to the cities are almost same so there is loss of the image of city.

5.7. SUSTANABILITY

Higher densities mean shorter trips but more congestion. Even though vehicles are not as fuel-efficient in dense areas owing to traffic congestion, fuel consumption per capita is still substantially less in dense areas because people drive so much less.^[7] Urban sprawl causes more travel from the suburbia to the central city and thus more fuel consumption. Furthermore, it also causes traffic congestion. More cars on the roads driving greater distances are reason for traffic gridlock resulting in more fuel consumption.

In areas where sprawl is not controlled, the concentration of human presence in residential and industrial settings may lead to an alteration of ecosystems patterns and processes. Development not only decreases the amount of forest area, farmland, woodland and open space but also breaks up what is left into small chunks that disrupt ecosystems and fragment habitats^[8]. Roads, power lines, subdivisions and pipelines often cut through natural areas, thereby fragmenting wildlife habitat and altering wildlife movement patterns. The fragmentation of a large forest into smaller patches disrupts ecological processes and reduces the availability of habitat for some species. Some forest fragments are too small to maintain viable breeding populations of certain wildlife species.

VI. Remedies

Urban sprawl in India and worldwide is considered as our mistakes in the past. Endorsing remedial measure to them can better the picture now. It isn't an alternative but becomes extremely essential as to bring back life to the cities. Measure which can help us out are:

6.1 Re-Densification

Density of an urban space can be seen as:

- i. Spatially in terms of the perceived environment, where it is the relationship among elements which is important (height, spacing and juxtaposition), so that it may be hypothesized that high perceived density is the high degree of enclosure, intricacy of spaces, high activity levels, many uses and so on since all of these tends to result in higher rates of information from the environment itself.^[10]
- ii. In terms of social interaction – actual, desired or perceived, involved are the various sensory modalities, the mechanism for controlling interaction levels – spacing, physical elements territorial boundaries, hierarchy, the size and nature of the group, its homogeneity, rules for behavior and so on and how the facilities available are used – all of which affect the rate of social interaction.

Since the density becomes an integral component of urban planning but it is mostly ignored in India which has led to further sprawls. Master Plans do not incorporate density as a tool for development. Socio-economic characteristics of density have an important role to play in India. Government programs like JNNURM are Promoting densification of inner core but never consider the sprawl over of the cities. Resulting policy gaps needs to be addressed. Bhopal is considering Re-densification as an important tool to counter the challenges of the city. Bhopal Development Authority (BDA) is coming up with a plan for the re-densification of TT Nagar, considering the fast pace of development near the New Market, decided to improve the infrastructure. The re-densification is taking place on 100 acres of government land. The plan includes the construction of 3500 houses and also the infrastructure development of the north and south part of the locality.

6.2 Mix-Use

Research evidence shows that mixed land use (i.e. the presence of multiple destinations) is a key factor influencing neighborhood walkability, travel costs and fuel use.^[11] In this process if we consider creating mix use spaces rather than sparse development, we can strengthen the newly settled communities and the life to the new city can be added which is often expelled out due to the urban sprawl.

Jane Jacobs' observations about the way cities work and don't work revolutionized the urban planning profession. Thanks to Jacobs, ideas once considered lunatic, such as mixed-use development, short blocks, and dense concentrations of people working and living downtown, are now taken for granted.^[4]

Encourage Successful mixed use areas can be achieved through:

- Locating development within easy walking distance (400 meters) of high quality public transport corridors or other public transport operating at a frequency of four or more services per hour in the off-peak.*
- Providing a range of development types that allow for a mix of day and night time activities supported by dense residential activity that aids with natural surveillance and provides a 'base load' of activity.*
- Ensuring that surrounding transport networks and adjoining development is integrated with the new development.*
- Providing high amenity open space and recreation areas especially for children in the new development areas.*
- Proper designing of the furniture, lighting, footpaths, signage and road cross keeping in mind how important is it for the new occupants of the city.

**Points have been adapted from the NSW Premiers Council for Active Living: Designing Places for Active Living*

Rule of thumb a mix of land uses, including residential, and access to the shops and services required for daily living that is well integrated with public transport, designed to maximize surveillance and to be safe from traffic will support the use of active forms of transport. A wider range of regional transport services will be supported as density of activity increases.^[5]

The study on population density of the city Nagpur indicates that both totally commercial and totally residential areas are not appreciated by the people. From the literature study it was observed mixed land use is influenced by various socio-economic and physical factors. This relationship has been established in the case studies of five neighborhoods with varying mix and distance from CBD in the context of Nagpur city, India. It was observed that mix of uses in close proximity is a preferred choice of all the user groups. The empirical study led to the conclusion that areas which are socio-economically important and environmentally favored are preferred as compared to commercially dominant high dense or sparse development areas. The case study indicated that mixed land use scenario is similar and comparable with the literature study. The major problem arises when the land use mix has high commercial use or when there is a total segregation. Thus, it can be concluded that optimum mixed use leads to sustainable lifestyle.^[10]

6.3 Walkability

Indian cities were built for walking and cycling. However, rapid motorization combined with limited attention to pedestrian facilities has inadvertently resulted in a decrease in the overall mode share for non-motorized transport. Strategies must be introduced in order for people to reclaim the urban environment overrun by motor vehicles. Policies and investments provide an impetus to transform Indian cities, encourage pedestrian movement and allow people to enjoy better mobility and quality of life.^[2]

To make city walkable certain parameters are listed as follows:

- A center.
- Mixed use: Affordable housing located near businesses.
- Parks and public space.
- Pedestrian design.
- Schools and workplaces.
- Streets designed for bicyclists, pedestrians, and transit.

In recent times many Indian cities are opting their mind shift towards the more walkable cities.

Bangalore is trying to give world class pedestrian facilities to the people of Bangalore. Lucknow, under some political influence only has provided cycle tracks in the city but not so efficient to be used. Other cities such as Ahmedabad and Pune are focusing on walkability issues too.

Pune Municipal Corporation (PMC) has, in recent times, taken some initiatives to improve the conditions for walking and cycling in the city. These include:

- The creation of a Non-motorized Transport (NMT) cell to exclusively address concerns of walking and cycling infrastructure
- Improvement of some junctions such as the Pune University junction to make it easier for pedestrians to cross
- A World Bank funded project to improve cycling in the catchments area of the pilot BRT corridor
- Adoption of some roads for improvement in pedestrian facilities

Not only are walking and cycling good, lots of people do it too. More than 40% of all trips in Pune are made by foot or bicycle. However, it is still not easy to walk or cycle in Pune today. Activities such as turning right or driving at night can be particularly hazardous.

National Urban Transport Policy has now placed a major emphasis on the rights of pedestrians and cyclists. The NUTP 2006 recognizes the important role that walking and cycling can play in improving both the mobility and livability of a city.

6.4 Land Use Change

Creating urban boundaries in edges of cities will control urban sprawl. In this regard, only constructing in inner districts will be allowed and urban size will not be extended. In a need to expand the inner core of the city will receive more investment on the infrastructure, profiting both the new and existing users. Restricting the land use change will also preserve our resources essential for sustainable development.

To avoid land use change due to the sprawl of the cities the local bodies or organization have to be strong enough to resist the changes. A certain level of awareness among the local people can help in their land and also important for the ecological purposes. India has already seen some of the revolution of such kinds.

6.5 Efficient Policy

According to the negative results of urban sprawl, it is necessary to develop policies to decrease its negative effects. There are many policies that each one concentrates on different aspect of this issue.

- Participate in providing infrastructure costs: Surveys show that urban sprawl has got costs 20 times more than the normal growth because of needs to new ways, schools, housing and public services ^[6]. So increasing resident's share of costs plays an important role in controlling sprawl.
- Betterment of low-income household's living conditions: One important part of residents in suburb is people who migrate for improvement of their family life. Preparation of affordable housing and regional subsidies are some solutions for improving their living condition.
- Development of urban spaces: Providing proper open spaces for the purpose of recreation which can be considered as by people as their own space.
- Urban consolidation: Urban consolidation has been introduced as a solution for more appropriate utilization of lands and infrastructures in the built up area of a city.
- Support smart growth strategies: Smart growth concentrate on compact development and redevelopment built up area in a city.
- Integrated transit system: It reduces the dependency on public transport and avoid the settlement of the people outside the city.

VII. Conclusion

Regardless of positive results of urban sprawl, the issue finally leads to some problems in cities, new districts and urban regions that we can mention to decline in inner city, traffic and congestion, long travels, increase in infrastructure costs and reduction of environment quality and social interactions. Efforts are needed in providing infrastructure costs, control travels, create urban boundaries, redevelopment of inner-core regions, support smart growth strategies, increase density and create compact city, strength the role of local public and authorities. At the end, over mentioned point's we have to indicate that regardless of proposed policies, there is no such particular solution for this issue and it needs more researches in different aspects. Moreover, according to the regions and cities characteristics, we might require to understand the reasons specific and their custom made solutions to control urban sprawl. Promoting and encouraging more urban designers through appreciating their work is something that can really change the picture.

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