Controversial Issues Relevant to Sustainable Urbanism: A Review of Global Urban Tendencies

Abbas M. Hassan [1*], Hyowon Lee [2]

[1] *Al-Azhar University*, EGYPT
[2] *Chonnam National University*, KOREA

Corresponding Author: arch_abbas2002@yahoo.com

ABSTRACT

Academic urban debates shrouded with paradox render the transition to sustainable urban development (SUD) vague and unclear. The premise of this study is that the elimination of the controversial points included in each issue, in addition to reconciliation among these issues, may propel SUD. Therefore, this study dialectically discusses five urban issues: urban form, urban growth, transportation, urban vegetation, and governance (social participation). These issues were chosen among ten issues reviewed in a previous study in order to highlight controversial aspects and how to overcome them. The study suggests that the sociocultural dimension is an overlooked aspect in urban issues, and this may be a major reason for the conflict among academics. Further, this study concludes that governance is a major coordinator that can remedy the controversial points related to urban problems. Transportation is the second mediation among urban form, growth, and vegetation. Therefore, greater concern with governance and transportation in any urban planning policy improves current and future sustainable developments.

Keywords: sustainable urban development, dialectical urban issues, urban form, urban growth, transportation, urban vegetation, governance

INTRODUCTION

The aim of sustainable urban development (SUD) is still vague due to the overlapping of some urban issues as well as the contradictions embedded in each one. Significant disputes have occurred among academics in regards to some urban issues (Hassan and Lee 2015); for instance, some academics advocate for containment whereas others are protagonists of urban sprawl; some think that physical form can create SUD whereas others oppose this idea, emphasizing instead on the relevance of human dimensions. This study therefore supposes that the conflicts involved in these issues may be a major obstacle against the potential implementation of scientific findings in real urban planning. The decision-maker, for instance, cannot adopt questionable findings derived from a dialectical issue and then implement such findings in the real world. Indeed, this would be a professional gamble if this were how business was conducted regularly.

In a previous study, we have reviewed ten issues related to urban planning and development (Hassan and Lee, 2015); however, in this study, we focus on the five most salient issues from a dialectical perspective. These issues are transportation, governance, urban form, urban growth, and urban vegetation. These issues have been chosen based on two factors. The first is that these issues have appeared superior among the ten issues addressed in the previous study, and the second is that the five issues are vigorously correlated with each other and encompass an evident controversy among academics. The relation between the urban form and transportation system is

undeniable, and their consequences on urban sprawl and urban vegetation are equally as evident. In addition to these issues, social participation still struggles to greatly contribute to SUD.

This study aims to identify those urban issues that are shrouded by contradictions through a review of controversial issues, and to reveal the reasons that trigger conflict in each issue. Further, this study aims to identify the prominent issues that can first play the role of coordinator among the urban issues, then propel towards SUD. This study therefore attempts to find a compromise regarding the following controversial questions:

- What is a city? Is it a physical or social entity?
- Which kind of urban growth is better: containment or urban sprawl?
- What do urban residents really want: greater walkability or more automobility?
- Which is more sustainable: the green heart or the greenbelt?
- Is social engagement (governance) permissible before or after promoting educational awareness?

The structure of this study is divided into three major parts. After an introduction, we aim to provide globally applicable information on these five issues exclusively, highlighting some informative models related to each issue collected from different countries. This section is thus important in terms of identifying recent global concerns with the five issues. The second portion centers on the disputes on the five issues, and is thus complementary to the first section in that it specifically discusses the points of conflict among academics. Therefore, this chapter mirrors the potential problems that undermine SUD. Finally, the third part of this study aims to reveal a compromise for those clashes raised in the previous issues through logical proofs.

SALIENT ISSUES RELEVANT TO SUD

Five urban issues tangled together have been observed from a previous study that reviewed ten urban issues (Hassan and Lee, 2015). The ten themes can be classified both quantitatively and qualitatively as shown in **Figures 3** and **4**. The quantitative criterion is the maximum number of discussions on a specific issue, regardless of the study's location (if the issue was mentioned in a specific country once, it would be counted as 1 discussion; if it was mentioned twice, it would be counted as 2). However, this criterion cannot indicate the prevalence of a certain challenge on a global scale; it merely provides information on local policy. In this chapter, we exclusively show the informative models relevant to these issues, and then articulate the global attention towards these issues.

Informative Models Relevant to the Five Topical Urban Issues

Table 1 shows some informative models related to the five urban issues. These models are considered to be an introduction to the dialectical debate, and they include lessons learned from specific regions and can thus contribute firsthand to planners who deal with similar regions. Therefore, **Table 1** encompasses the zones of study, the discussed issues, the findings or limitations related to each case, and the dates of study.

Global Attention towards these Issues

Kerby (2013) argued that now is the time to take global urban society into consideration and rethink how we see cities, nations, and ourselves. Thus, this chapter attempts to broadly understand sustainable urban development.

Due to the current population explosion occurring in Asian countries such as China, India, and Bangladesh, concerns surrounding urban issues arguably greater in Asia than in other countries. By 2025, 16 out of 27 mega-cities, including more than 10 million people, will reside in Asia (Lehmann, 2010; Roy, 2009). Therefore, we can understand the results of **Figure 1** which show the quantitative and qualitative superiority of Asian countries in regards to the five urban issues addressed. As **Figure 2** illustrates, China is ranked the first among all Asian countries, whereas India is ranked second.

As shown in **Figure 3**, transportation, governance, and educational consciousness are quantitative issues that are of the most significant concern in Asia, followed by issues of urban form, land use, and urban sprawl. It is worth mentioning that the arrangement of the quantitative issues may be slightly changed due to scope of review. As **Figure 5** shows, governance and educational consciousness are considered to be the qualitative issues of greatest concern in Asia, followed by issues of transportation and urban sprawl. Recently, it was observed that Asian governments pay attention to cultural awareness and governance as effective tools that contribute to the transition into sustainable development (SD). Public awareness of governance and engaging human dimensions in the urban process are both promising in reconciling urban planning policy. Authorities often enact decisions without residents' input, and thus the policy often cannot be carried out. In Mexico, for instance, the authorities imposed an embargo on private automobile use one business day per week, but the residents circumvented this decision by buying and utilizing other kinds of motor vehicles (Vallance et al., 2012). Eventually the policy failed because it was assigned without governance.

Table 1. Five topical urban issues raised by countries concerned with SUD

Country	Case study	Issues	Findings/Limitations	References
China	Tianzifang	Governance & educational consciousness	Governance based on self-financing and self-organizing community participation produced a sustainable urban development.	Yung et al., 2014
China & UAE	Dongtan & Masdar city	Governance & educational consciousness	Promoting educational consciousness and urging people to participate in life takes priority rather than providing instant eco-cities.	Premalatha et al., 2013
China	Jiaozuo	City form & land use	The transformation of industrial bases impacts urban growth and its direction.	Shao and Zhou, 2011
China	Hong Kong	City form & land use	Sky gardens confront the lack of greeneries existing in the compact city.	Tian and Jim, 2011
China	Linco in Taiwan	City form & land use	In multi-center developments, the growth pole has an effect range within a 600-meter radius.	Change and Chiu, 2013
China	Hong Kong	Urban green areas	- Greeneries are very effective when they are located close to pedestrians. - In regards to coolness, trees are more efficient than grasses.	Ng et al., 2012
China	Hengshui Lake	Urban green areas	Biodiversity is not enough to achieve SUD; residents need to develop green industries to create real sustainability.	P.E. et al., 2013
China	Tianjin	Urban sprawl	Friendly pedestrians' paths bring residents closer and give a real feeling of the constructed environment behind the blueprints.	Caprotti, 2014; Rehan, 2013
China, India, & Indonesia	Ningbo, Kanpur, & Solo	Urban sprawl	Asian governments failed to reach an adequate urban transport plan.	Dimitriou, 2006
China	Nonspecific city	Transportation	The tricycle is an ideal transportation method for micro-enterprises and short-haul transportation.	Norcliffe, 2011
China	Xiguan, Guangzhou	Transportation	- Local residents find it difficult to live close to workplaces due to a lack of affordable houses. - Female workers desire to live near their workplaces more than males do.	Lau, 2013
China	Taiwan	Transportation	Use of biodiesel and non-motorized vehicles are needed in Taiwan.	Shiau, 2012
China	Beijing	Transportation	Lack of greenbelts as well as the overconcentration of urban activities in the city center causes dispersed suburbs, and undermines the establishment of the nodal characteristics of the suburbs.	(Yang et al., 2012)
India	Nagpur city	Urban green areas	Green areas must be distributed efficiently over the whole city.	Chaturvedi et al., 2013
India	Bangalore	Urban green areas	The green heart lasts more than the greenbelt due to urban sprawl.	Nagendra et al., 2012
India	Chennai	Urban green areas	Trees reduce the outdoor temperature much better than grasses.	Muthulingam and Thangavel, 2012
India	Delhi/Stockholm	Urban sprawl	- The socioeconomic conflict determines the sustainable transportation pattern. - In India, non-motorized means are dominant. However, car dependence is very high in Sweden.	Thynell, 2010
Bangladesh	Dhaka	Urban form and land use	DMDPSS as a software helps the residents to allot lands for different uses easily and effectively.	Roy, 2009
Bangladesh	Siliguri City	Urban sprawl	The Bengal government attempts to convert Siliguri City into walkable city.	Bhattacharyya and Mitra, 2013
Indonesia	Jabodetabeck	Urban form & land use	Multi-center urban developments are considered efficient urban forms.	Xuesong et al., 2008
Indonesia & Japan	Yogyakarta & Matsuyama	Transportation	The initiative of "omnibus" in Japan may work effectively in the highly populated Indonesian cities such as Yogyakarta.	Dirgahaayani and Nakamura, 2012
Malaysia	Kuala-Lumpur	Governance & educational consciousness	Educational level is an effective factor in creating sustainable development.	Latif et al., 2013
S. Korea	S. Korea	Governance & educational consciousness	Safe and cost-effective urban development can be attained through residents' engagement in making a decision with governmental authorities.	Choi and Ahn, 2013
Lebanon	Lebanon	Governance & educational consciousness	Societal involvement in the redevelopment process improves sustainable development.	El-Asmar and Taki, 2014

Table 1 (continued). Five topical urban issues raised by countries concerned with SUD

Country	Case study	Issues	Findings/Limitations	References
Japan, France, & Sweden	Tokyo, Paris, & Stockholm	Urban form & land use	Underground spaces can promote the performance of urban development, especially the facilities of infrastructures.	Bobylev, 2009; Hassan and Lee, 2015
Palestine	Gaza	Governance & educational consciousness	Trustful relationships are a major pillar to building a sustainable community, despite the fact that for the people of Gaza District, the human conditions are among the worst globally.	Jabreen and Garmon, 2010
Egypt	New developments	Urban form & land use	The new developments and cities are burdensome to the existing old cities due to a lack of facilities and services.	Shaalan, 2013
Tunisia	Tunisia	Transportation	Non-motorized means of transportation are urgently needed, especially following a high dependence on private cars.	Al-Hinti et al., 2007; Abdallah et al., 2013
EN	European Nations	Transportation	After carrying out the CIVITAS initiative (CIty-VITAlity-Sustainability, and is an initiative of the European Union to implement sustainable, clean, and energy-efficient urban transport measures. CIVITAS is coordinated by cities), there is a gap between the theory and implementation.	Dziekan, 2012; Lindholm, 2010
Finland	Helsinki	Governance & educational consciousness	The direct engagement of individuals in real life is the best way to promote helpful human behavior.	Salonen and Ahlberg, 2013
Bulgaria	Bulgaria	Governance & educational consciousness	The mindset of students and teachers changes due to sustainability topics incorporated in the curriculum.	Dimitrova, 2014
Scotland	Carigmillar in Edinburgh	Governance & educational consciousness	The inclusion of mixed-income residents improves the built environment.	Deakin, 2012
Poland	Warsaw	Urban green areas	The designating of 45 % of urban lands as biologically vital areas contributes to creating a human thermal comfort.	Szulczeweska et al., 2014
Spain	Spain	Transportation	- Cordoning taxes is not an effective solution for transportation problems. - The running cost of an electric car is less than that of an oil-dependent car.	Colmenar-Santos et al., 2013
UK, US, Australia, France, & Singapore	London, Seattle, Sydney, Paris, & Singapore	Transportation	- There is a diversity and imbalance in the capacity of cities relevant to sustainable transport. - London is significant in the public transportation service, emergency and smart transportation systems.	Debnath et al., 2014
US	Atlanta, Georgia	Transportation	Transportation is a major determinant of the energy performance of commercial office buildings/sites.	Weigel, 2014
US	New York	Urban green areas	Insufficient green areas and their cultivation cause health and social problems, such as increasing obesity rates and the lack of a sense of safety.	Lovasi et al., 2013
Latin America	Atibaia, Sao Paulo, & Brazil	Urban green areas	The history of city margins should be reviewed to evaluate the efficiency of green areas.	Sperandelli et al., 2013
Latin America	Agua Braca, Sao Paulo, & Brazil	Transportation	The potential of energy efficiency in urban transportation is much higher than in buildings. Thus, the strategy to save energy gives priority to achieve so through the transportation sector.	Marins and Roméro, 2013

In addition to the rising trend in Asian cities toward urban sprawl, urban growth has not been able to alleviate the compactness inherited in most of these cities (Lehmann, 2013), and urban vegetation is not given the same concern as the attention paid to other issues as shown in **Figures 3** and **4**. This may be attributed to the paradox between the compactness trend and urban areas necessary for vegetative growth. Other countries differ from Asian countries in that there has been a revival of compact patterns that arise without compromising green areas. For example, in the case of Norway, 13 of its largest cities are subject to a rehabilitation process aiming at converting to more compact cities from 2008 to 2014 (Hofstad, 2012). Therefore, Asian cities may not have sufficient potential to solve that dialectic affair.

In Europe, the issue of transportation is given the most significant attention, followed by the issues of governance and educational consciousness as shown in **Figures 3** and **4**, while the other issues are insignificantly addressed. The relevance of social participation and promoting cultural awareness towards ecology and urbanism has gained consensus and become an important question in both Asia and Europe. The transportation issue is given significant attention in America and Australia, while the issue of urban green areas is ranked second. This may be attributed to the obesity rate, which has increased in America. However, SD is a place-dependent concept
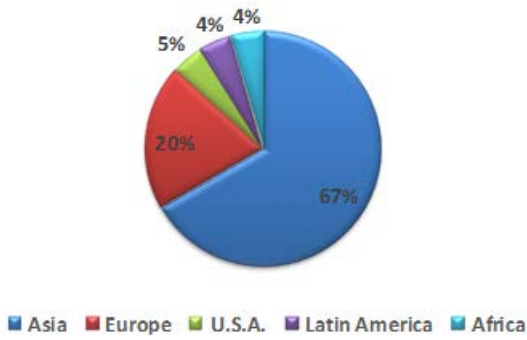
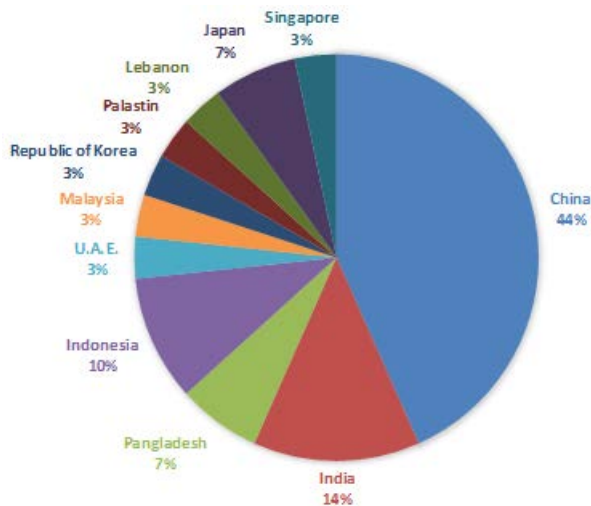**Figure 1.** The share of each continent with respect to issues of SUD according to papers survey

Figure 2. Asian countries and percentages of emergence in the survey sample (China has the greatest share followed by India, Indonesia, and Bangladesh)
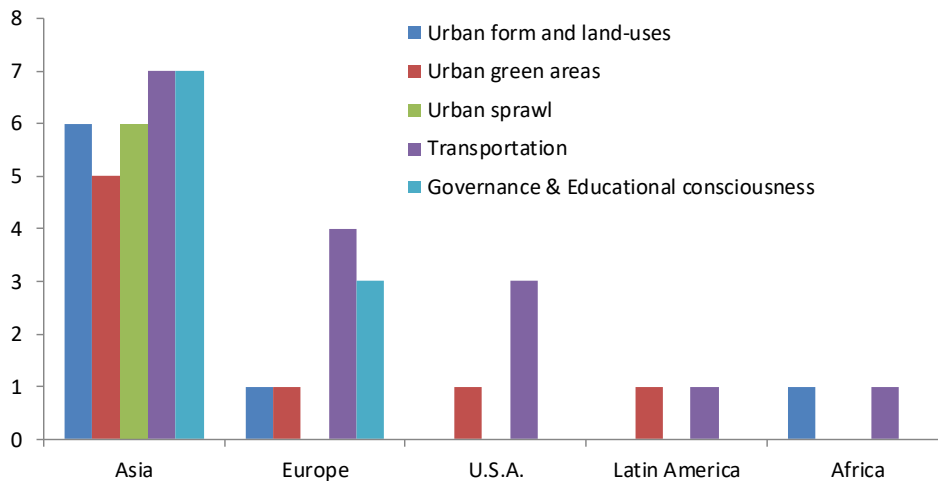

Figure 3. The quantitative gauge for the five topical issues raised by continents concerned with SD throughout the world (Transportation is the globally dominant issue)

(Pow and Neo, 2013). In Latin America and Africa, the importance of transportation has drawn a great deal of attention, but there is no prominent urban issue as shown in **Figures 3** and **4**.

Dialectical Points Related to the Five Issues

The paradox included in the scientific debates surrounding these issues may prove to be a major barrier against transition to SUD. Those responsible for decision-making and enacting change may be hesitant towards controversial issues surrounding SUD, and thus the channel linked between scientific research and urban planning development will be blocked because of the contradictions of academics and theorists. Following, we highlight some of the controversies relevant to the five urban issues.
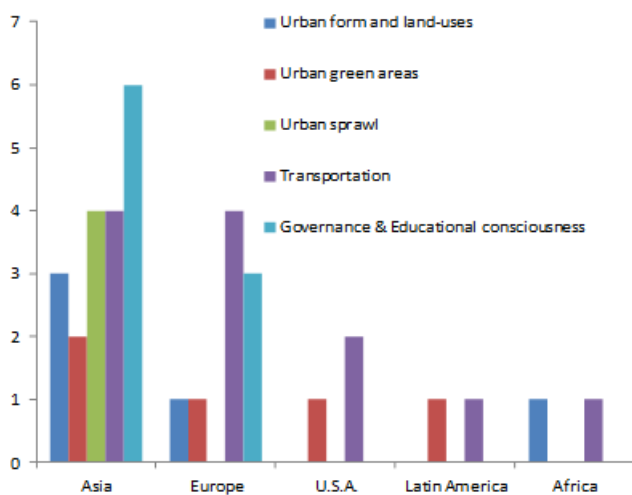
Figure 4. The qualitative gauge for the five topical issues raised by continents concerned with SD (Governance (social participation) and transportation issues are the salient global qualitative issues)

Urban Form: Physical versus Sociocultural

Hall (1988) proclaimed that the city is an apparent physical fact. It is formed through the relation between the edge and the center, the activities spaces and movement spaces, and the built areas and open green areas (Chapin, 1965). However, Bridge and Watson (2000) argued that the cities are the positive outcome of imagination, affecting the ability to imagine, and as such, if the city enhances only material relations, the imagination derived from it will be physical, and thus human values will vanish and the city will lose its appeal.

Neuman (2005) professed that urban form is the production of a two-way process, the structure that shapes process and, at the same time, the structure that emerges from that process. Therefore, if the urban form is manipulated as a physical form exclusively, it will no longer be capable of keeping up with social and political changes (Bonnes et al., 2007; Soneryd, 2004). A city's form alters due to changes in, for example, political systems and demographic structures. For example, the compact socialist cities located in East-Central Europe are no longer compact as they began to rapidly sprawl after the fall of socialism (Hirt, 2013). On the other hand, some cities in advanced capitalist countries are shrinking due to the steady decrease in number of residents resulting from declining birth rates and increased immigration to larger cities. Indeed, shrinkage rates are expected to accelerate in the near future (Grobmann et al., 2013). We can argue that the master plan of any city, which produces the first physical form, will be followed by several plans that will be controlled by the emerging political, sociocultural conditions. Thus, decision-makers should prepare a sustainable plan (namely, a flexible plan with different green alternatives for urban planning) and policies to deal with the changeable conditions that have recently come about.

In his book "Sustainable Urban Design: the Next Step" Meijer et al. (2011) suggested that a sustainable city form requires good land use allocation through residents' participation in the spatial development. The use of underground spaces can facilitate the circulation and accessibility of a compact pattern. However, further tools are needed to help determine the ideal land use, and to determine the best way to create sustainability. In response to this need, Roy (2009) developed the DMDPSS software based on GIS and MS access database to determine how to promote sustainable urbanization in the rapidly growing city of Dhaka in Bangladesh. The favorable and simple interface of this software helps residents allot land to varied uses of land. As evidenced in this case, effective participation is thus necessary in sustainable spatial development. In this context, Castells (1983) professed that the city is the physical foundation of most human expertise. If the current experience has been formed autonomously, the corollary would be a selfish city that would essentially serve the elite regardless of any other dimensions. Meijer et al. (2011) agree with Neumann (2005) that although physical form can partially create sustainable urbanism, it can never form it completely.

Urban Growth: Defining Urban Sprawl

Unlike the notion that urban growth is related to population growth, urban sprawl is considered an anomalous base. The total built-up area growth of Italy and Greece, for instance, will increase by 0.5% from 2000 to 2050, despite the fact that the population in each country will remain constant during the same period (OECD, 2012). On the other hand, some countries, such as South Korea, Japan, Portugal, Slovenia, the Slovak Republic, Hungary, and Germany, will witness an increase in the total built-up area, with ratios ranging from 0.1% to 0.8% from 2000
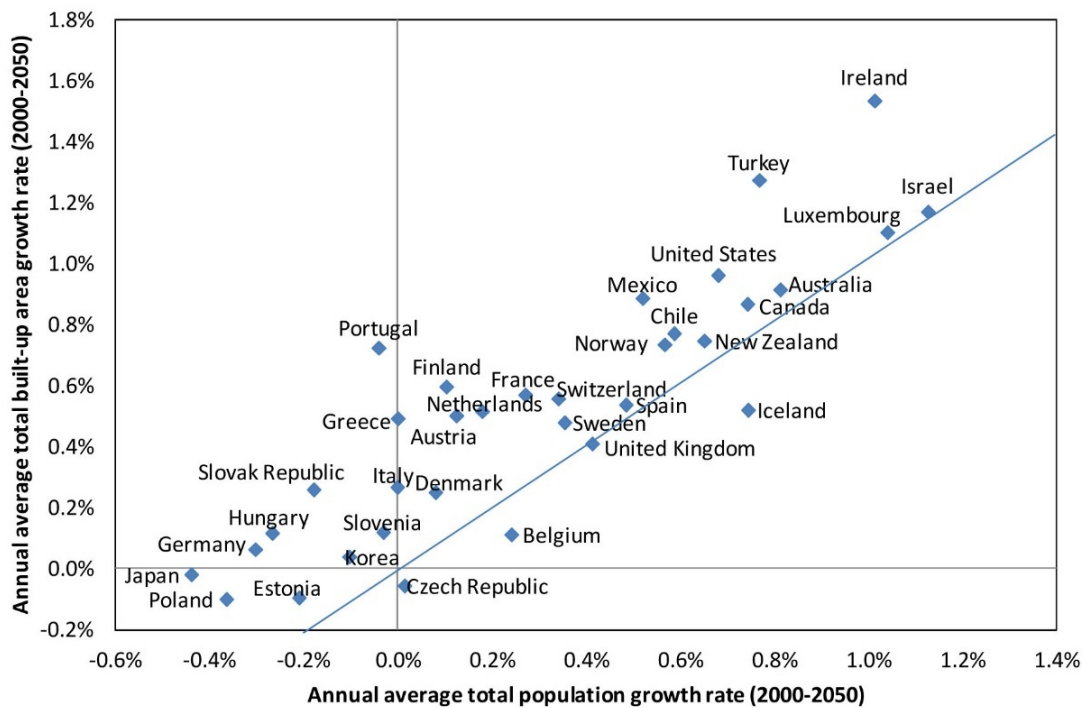
Figure 5. Comparison of population and the built-up area's growth rate by OECD countries between 2000 and 2050 (OECD, 2012)

to 2050 despite a population decrease during the same period (OECD, 2012) (**Figure 5**). This simply means that urban growth is based neither on the population increase, nor retardation.

One of the most dialectical obstacles that decision-makers face when they deal with urban sprawl is that there is no precise definition for urban sprawl, nor any precise method of measuring it. Its definition as redundant urban growth (Brueckner, 2001), urban sprawl is not clear in cases of steadily increasing populations, such as in Ireland and Turkey (see **Figure 5**).

Urban sprawl has also been defined as a phenomenon of low density which is related to population and buildings (El-Nasser and Overberg, 2001; Lopez and Hynes, 2003). However, this definition is not applicable in communities that are dependent on dispersed urban policy, such as in the case of American family dwellings. There is a third definition that characterizes urban growth according to three qualities: population dispersed in low-density areas, vigorously detached buildings, and urban forms beyond outskirts (Schneider and Woodcook, 2008). This definition also faces the previously mentioned criticisms, however. In fact, the controversial perspectives on the meaning of urban sprawl are considered one of the challenges against remedying urban planning development. We suggest that urban sprawl is a phenomena created by psychological, sociocultural, and economic motifs that are rendered by some residents when the city loses its vibrancy. It mostly appears in outskirts and fringes, but sometimes it emerges inside the city itself when residents immigrate to other places when the city becomes unappealing to residents, such as in the case of shrunken or dead cities, for example.

Unlike urban sprawl, compactness has been revived in order to protect arable countryside lands (Mclaren, 1992) and enhance the environmental condition after the 1970s energy crisis through supporting public transportation and protecting road infrastructure (Meadows et al., 1972). The compact pattern has been adopted in Holland from 1970 to 2000, and Geurs and Wee (2006) argued that this policy helped the Netherlands to decrease urban sprawl and dependence on automobiles, therefore contributing to reducing environmental emissions, noise levels, and social segregation. Another example is that of the residential or working compounds assembled around public transportation nodes in Hague, which decreased transportation volume during the rush hours from 5% to 10% (Ministry of Transportation, Public Works and Water Management, 1990).

In 1990, the UK adopted the compact pattern as a strategy for SUD (Commission of the European communities, 1990). ECOTEC (1993) conducted a study that assessed the relation between population density and the fuel consumed by transportation. The study concluded that the consumption of fuel reduces with the increase of population density, and further that American cities consume double the amount of fuel consumed by Australian cities, and four times more than European cities (Newman and Kenworthy, 1989a, 1989b). As a result, public outcry in the US called for compactness, and this new advocacy became known by many different names such as transit-oriented development and neo-traditional developments (Handy, 1992). Katz (1994) believed that containment encourages residents to strengthen social relations among communities, and critics of zoning and

suburbs agree with Katz regarding this question (Duany et al., 2001; Krier, 1998). Holden and Norland (2005) carried out a survey on eight residential zones in Oslo, which revealed that the policy of containment referred to as the "new inner city" is considered more sustainable than urban sprawl.

Though there are advantages of compactness, the trend of containment is still a dialectical issue. Breheny (1995) evaluated the energy consumed in compact and dispersed zones, and found that the energy saved through compacted developments is very limited. Furthermore, the relation between high population density and decreasing travel has not yet been resolved (Breheny, 1992; Hall, 2001); Ewing (1997) proclaimed that no relationship exists between high population density and lessening driving. Bouwman (2000) added that highly populated areas do not trigger the reduction of transportation fuel, and the reduction rate did not exceed 5% among different urban patterns. Further, an empirical study conducted by Wirth (1938) to identify the influence of high population density on individual behaviors led Wirth to argue that a high population density causes psychological pressures on residents, and negatively impacts their relationships. Further, Garcia and Riera (2003) indicated that the vitality and wellbeing in the less compact developments is better than the areas that are highly compact.

From our view, the arguments supporting and opposing compactness reveal the essence of the issue. All theorists have built their views on material factors such as consumption of fuel, population density, and amount of travel. Therefore, the contradictions apparent in the results are the corollary of ignoring sociocultural factors as a major determinant able to form a sustainable pattern of urban growth. The resident living in a highly populated area who works far from home suffers greatly through daily transportation, traffic congestion, pollution, and time loss, to name a few. Hence, we could understand compactness as a comprehensive pattern beginning with the individual resident and ending with the physical urban assets.

Transportation: Automobility or Walkability

> "*Sometimes city roads are paved to hell*"
> - Glaeser, 2011, p. 2

Transportation has had a significant impact on city form and energy; however, some sectors consume energy more than transportation. Buildings in the US in 1950, for instance, consumed 38% of energy, whereas transportation consumed 27 percent. This issue has been resolved by Weigel (2014), who has applied a calculation framework based on data from simulation and travel demand models to evaluate the prospects of transportation and building energy consumption of commercial office buildings/sites in Atlanta, Georgia. Weigel found that transportation is a major factor of the energy performance in commercial office buildings/sites. The potential of energy efficiency in urban transport is much higher than in buildings. For example, the strategy adopted to reserve energy in Agua Braca, Sao Paulo gives priority to achieve it through the transportation sector (Marins and Roméro, 2013). Therefore, we can understand that the potential to save energy through changes to the transportation sector is very promising.

Academics split up into two teams regarding the transition to sustainable transportation. The first group calls for boosting the physical system of transportation such as vehicle conditions, road infrastructures, and traffic laws and taxes. The other group is more concerned with passive changes such as encouraging walkability or non-motorized vehicles. The opposition of the two sides is considered a dialectical issue and has not been resolved because it is vigorously tangled with the two issues previously mentioned: urban growth and urban form.

Regarding the first team, Dirgahayani and Nakamura (2012) stated that the Japanese initiative of the urban mobility "omnibus" established in Matsuyama could be an effective transport means if it is implemented in highly populated cities such as Yogyakarta, Indonesia. Thus, success of the "omnibus" as a physical transport tool depends on population density, and the urban form with sociocultural characteristics is a major parameter in this initiative.

Delucchi and Kurani (2014) argued that economic, environmental, and social urban problems are not firsthand results of automobility or suburbs per se, but are instead consequences of using heavy-motor vehicles and high kinetic energy. Delucchi and Kurani (2014) suggested the creation of an urban settlement with a new transportation infrastructure based on the design of two citywide, independent travel networks. The first path will serve the heavy-motor vehicles with high kinetic energy, while the second will be assigned to the low-speed transportation means. As this infrastructure may provide a sustainable transport system, Delucchi and Kurani suggest that physical solutions may propel a sustainable transportation system and contribute to solving the problem of urban sprawl.

In Spain, Colmenar-Santos et al. (2013) recorded the consumption of oil by the transportation sector. They compared the cost of oil consumption with the cost of electric power consumption for private and public vehicles used on Spanish streets, and found that electric vehicles have a lower cost of energy consumption and are environmentally cleaner than oil-based vehicles from the comprehensive economic view relevant to ecological aspects. In an oil-rich country such as Iran, a repressive method has been adopted to decrease fuel consumption

through raising fuel costs for personal transportation systems and improving the bus rapid transit and subway (Shakibaei et al., 2011). We suggest that the policy adopted by Iran cannot undermine the dependence on private cars, and further that the rising cost of fuel is not a consideration for people who possess automobiles. In the same vein, Abdallah et al. (2013) have criticized Tunisian policies that promote extra investment in road networks and that create a cordon of taxes to confront traffic congestion, declaring that these policies only provide temporary relief.

Regarding the second team concerned with making more subtle changes through passive techniques, the sustainable transportation strategies in Taipei City, for example, have been assessed through an analytical hierarchy process using the Dempster-Shafer theory. Shiau (2012) proclaimed that encouraging the use of biodiesel and non-motorized modes are considered preferable transport strategies in Taiwan. The non-motorized transport systems are preferred in the personal commuting and transport of commodities of micro-enterprises, and thus a tricycle, for instance, is considered the most adaptable vehicle for short-haul transportation. It is environmentally cleaner, safer, quieter, and more compatible with many micro-enterprises in China. Norcliffe (2011) believes that depending on tricycles can reduce problems of over-reliance on rapid mobility. Tunisian scholars also emphasized that the use of non-motorized transport means are strongly required, especially after the dramatic increase in the number of motorized vehicles and their negative impacts on the economy and environment (Abdallah et al., 2013; Al-Hinti et al., 2007).

While many studies suggest the use of bicycles as a light means of transportation, Passafaro et al. (2014) suggested that peoples' emotional barriers need to be removed first, before asking them to use cycles. Passafaro found that residents' attitudes vary when it comes to bicycle-riding as a means of commuting. While some residents are fearful of the risk of accidents, others prefer cycling for utilitarian reasons such as low economic cost and the potential to improve physical fitness. Some consider that riding bikes promotes a sense of freedom, beauty, and psychological wellbeing. Therefore, before depending on this mode of transport, social and emotional barriers need to be addressed carefully. Eventually, we would argue that automobility is neither made up of physical equipment, nor limited to human factors (drivers and users). Instead, automobility is a hybrid system, and should be addressed according to its two components. Therefore, urban policies related to transportation will not succeed if the related sociocultural dimensions are denied.

Urban Vegetation: Greenbelt or Green Heart

Yang et al. (2012) suggested that the lack of greenbelts around Beijing, in addition to the overconcentration of urban activities in its center, induces residents to travel longer and create dispersed suburbs that lack nodal characteristics and thus cause urban sprawl. Therefore, the greenbelt acts as a safe zone for the city, working as a psychological breath of fresh air for residents, facilitating and contributing to the reduction of urban sprawl.

Kuhn (2003) addressed the impact of the greenbelt and green heart as a landscape component in the regional city. He illustrated a greenbelt adapted with a monocentric city, where the urban areas located in the city are separated from the rural areas around them. Meanwhile, the green heart complies with a polycentric city, and connects urban and rural areas. Therefore, the greenbelt and green heart play the role of either separator or connector in urban planning. The question that naturally follows is which of the two patterns is more sustainable for urban planning and development?

Nagendra et al. (2012) answered this question indirectly: they recorded the changes of vegetation for Bangalore City, located in southern India, by analyzing the satellite images during the period from 2000 to 2007. They found that in the core of Bangalore, the vegetation areas had been preserved because this area was owned by the British military. On the other hand, the peripheral areas were vulnerable to urban growth and thus there was a lack of vegetation. Therefore, the provision of green centers appears to be more sustainable than that of greenbelts, as the latter will inevitably conflict with the chaos of urban growth. The green heart has the added contribution of keeping the city appealing, providing urban residents with social spaces for their activities, and thereby reducing travel outside of the local area (Chiesura, 2004). Green hearts also provide shade in hot, arid areas, mitigate air contaminants, decrease the effect of urban heat, reduce noise, increase urban biodiversity, and enrich aesthetic values throughout the urban environment (Chaturvedi et al., 2013; Vos et al., 2013).

On the other hand, some people may believe that there is a reason to be concerned with the greeneries on the fringes of cities rather than centers. However, we should review the history of margins of cities before professing this belief. Some fringes were originally forests, upon which urban growth has encroached. Therefore, the attention of urban vegetation may be understood in these regions, as was the case in the Atibaia region in Sao Paulo, Brazil (Sperandelli et al., 2013).

Governance: Pre-education or Post-education

"Governance refers to any social mode of co-ordination in which the aim is to control, guide or facilitate economic and social activities distributed across the landscape, including activities involved in transforming nature"   - Jonas and While, 2005, p. 73

Social participation in decision-making is one of the dialectical issues in urban development, and some planners and decision-makers consider the residents unqualified to make good decisions in urban development, especially in developing countries. In the countries involved in the Arab Spring, for instance, the political elite argued that people were not well-educated or able to determine their own fate. This was taken as pretext and used as a political umbrella for a coup against the elected regime in Egypt. Thus, the view of public participation can become somewhat clouded by controversy.

An increase in educational consciousness may be an approach toward sustainable urbanism. Dimitrova (2014) alluded to the need to teach sustainable policies and tools in higher education curriculum. After 10 years of incorporating sustainable design in the curricula in Bulgaria, the researcher observed an improvement in teachers' experiences and students' mindsets.

Latif et al. (2013) attempted to measure inhabitants' concerns about the recycling process. To facilitate this, Latif et al. (2013) applied the theory of reasoned action in a survey of 255 residents of Kuala-Lumpur. They found that the educational level of residents is an effective factor for implementing sustainability. However, educational consciousness cannot be promoted without the participation of community members in management, as this is what guarantees the success of urban policies (Jansson and Lindgren, 2012). In Helsinki, an investigation has been conducted on 198 participants to identify the challenges of sustainable development and to determine methods for their resolution. The results showed that direct participation of residents is more feasible towards the SD than the promotion of individual behaviors (Salonen and Ahlberg, 2013).

Practically, social engagement in urban development has enhanced Tianzifang's residents in China to regenerate their area sustainably based on self-financed, self-organized community participation. Governance occurred in this region through the participation of unprofessional residents, and produced positive results among sociocultural, economic, and environmental aspects, such as enriching the sense of place, raising the quality of life, and increasing the quality of social relationships and cohesion (Yung et al., 2014). Urban planners should admit that physical environment alone cannot create a sense of community (Talen, 2000), and should rather attempt to trust in residents' abilities of promoting sustainable urbanism. Even if residents faltered in implementing change, they would cope with the results of their options and learn from the outcomes of their failures,

Cities severely need to promote the level of trust among their residents as an introductory approach to governance. Jabreen and Garmon (2010) conducted 973 personal interviews in residents' homes in Gaza, Palestine to measure social sustainability, and found that trusting relationships are a major pillar to building a sustainable community in Gaza, despite that the human conditions there are considered among the worst in the world.

A survey based on interviews, questionnaires, and field observations was carried out on the coastal area of the Zouk Mosbeh zone in Lebanon to achieve a sustainable rehabilitation. The study found that sustainable development is more likely to occur when people actively participate in the redevelopment process. For example, in Zouk Mosbeh, the predicted mean vote contributes to the evaluation of the thermal comfort in the redeveloped areas (El-Asmar and Taki, 2014).

No matter the circumstance, the question of educational consciousness is not significant, whether it takes place before, or after, governance. Educational promotion should be the main concern, at the forefront of issues related to SUD.

COMPROMISES FOR THE DIALECTICAL ISSUES

As previously discussed, five critical urban issues involve significant debates, and the controversy surrounding these issues may have caused the loss of direction toward SUD. Following, we attempt to resolve these arguments logically.

Sustainable Urban Form: A Physical or Sociocultural Driver?

The potential to create a sustainable urban form through only physical alterations is a fallacy, because the urban environment has been proven to involve human activities. Therefore, if the human dimensions were not taken into consideration in urban planning trials, these trials would miss the mark eventually. In Egypt, for example, when the prominent architect Hassan Fathy planned the village of Gourna in Luxor (south of Egypt), he utilized domes as rooftops of dwellings as a thermal technique. Though the domes contributed creating thermal comfort, however, the residents refused to reside in Fathy's village. At the time, the people of Gourna believed that domes were designated exclusively to cover tombs. This fact was not taken into consideration by Fathy, and the village became a ruin due to neglecting this important sociocultural factor.

Though identification of sociocultural characteristics is an important factor in urban form, it is extremely difficult to address all or most of the human dimensions in urban planning due to diversity of aspirations, cultures, and social structures. Thus, the fulfillment of sociocultural requirements requires a flexible physical framework for the urban planning (see Formula 1). In this manner, such resilience caters to present circumstances, and will be

able to address future needs. Flexibility of urban policies requires the enhancement of trust and public engagement in management in order to formulate a public consciousness that will remain immune to current and future challenges. Further, such flexibility will help foster acceptance of and adaptation to new urban policies in addition to contributing to the success of those policies.

$$Understanding\ of\ socioculturaal\ factors \xrightarrow{\ Flexible\ urban\ policies\ } Sustainable\ urban\ form \qquad (1)$$

Urban Growth: Sprawled or Compacted?

At first glance, many academics and planners believe that the reason behind conflict between containment and sprawl is only physical. However, we propose that the essence of this conflict is derived from neglecting human factors. Traditionally, most common planners premised that the resident is a static object, not typically changing socially, culturally, economically, or psychologically. For example, an elementary school was allocated as a service for residents living in the neighborhood to enable containment. In such a situation, the planners would consider all residents to have the same sociocultural characteristics, aspirations, and plans for the future, even if they were economically equal. However, residents would attempt to place their children in a specific educational school according to their aspirations. As a result, an array of schools, such as public and private, domestic and international, and local and language schools have been established to fulfill residents' needs. In such a case, the resident may then live in a neighborhood separate from that in which his or her child receives an education. Neglect of human changes—considering the resident as a static object in the city—results in sprawl, and even the urban form is thereby physically compacted.

The influence of human changes on urban growth has been disregarded in academics' debates. In current urban planning, for instance, the resident may reside in a compacted area separate from his or her workplace, shop in a third district, and spend leisure time in the countryside. In fact, this resident lives in a compacted zone, but he or she does not enjoy the advantages of containment. The resident living in the suburbs may behave inversely, perhaps working in a downtown area, using an automobile daily and causing pollution, traffic congestion, high noise levels, and traffic accidents. This resident probably shops occasionally at the center of the city, or may simply desire to spend spare time in the city center.

The real meaning of compactness is missed in modern developments, despite its existence in the traditional developments of the past. This may be attributed to the absolute freedom provided by the automobile, in addition to the inequality of distribution of urban facilities (see Formula 2). Genuine compactness can be reached through restructuring the relation between the living places and workplaces based on equity of urban facilities.

$$Compact\ urbanism \xrightarrow{\ Missing\ Lack\ of\ social\ equity+free\ movement\ } Urban\ sprawlism \qquad (2)$$

Transportation: Automobility or Walkability?

Undoubtedly, walkability is more sustainable than automobility; however, dependence on motorized vehicles may be attributed to long destinations and urban sprawl, and may also refer to sociocultural needs. **Figure 6** illustrates these needs by observing to what extent people depend on the cars in their life through a survey of a sample of city settlers (Multiguide, 2013).

If we therefore aspire to enhance the dependence of non-motorized transportation methods or walkability, we must remedy two issues. The first issue regards how to reduce the commuting distances from and to workplaces. This issue is related to urban land-use policies, and cannot be resolved without social participation in management. The second issue is tackling the psychological barriers of utilizing non-motorized transportation methods, especially the sociocultural aspects as revealed in Formula 3.

$$Real\ compactness-automobility \xrightarrow{\ Remedy\ of\ sociocultural\ barriers\ } non-motorized\ means \qquad (3)$$

Urban Vegetation: Green Heart or Greenbelt?

The struggle between the green heart and greenbelt has emerged since the phenomena of urban sprawl. Undoubtedly, urban form determines the location and volume of urban vegetation. The relationship between a green heart and greenbelt is integrative, and not necessarily contradictory. The green heart is the gift of nature to the artificial city, the shelter where urban residents go to get rid of daily life stresses, and an air purifier and thermal urban modifier, especially in hot, arid regions.

The greenbelt is considered a buffer zone between the natural and the built environment, protecting the city from harsh weather. The greenbelt is the closest thing to a natural haven for urban residents, allowing them to escape from the built urban masses where they spend free time seasonally. It may also act as a defense area to absorb the slight urban sprawl in cases where the city population increases.
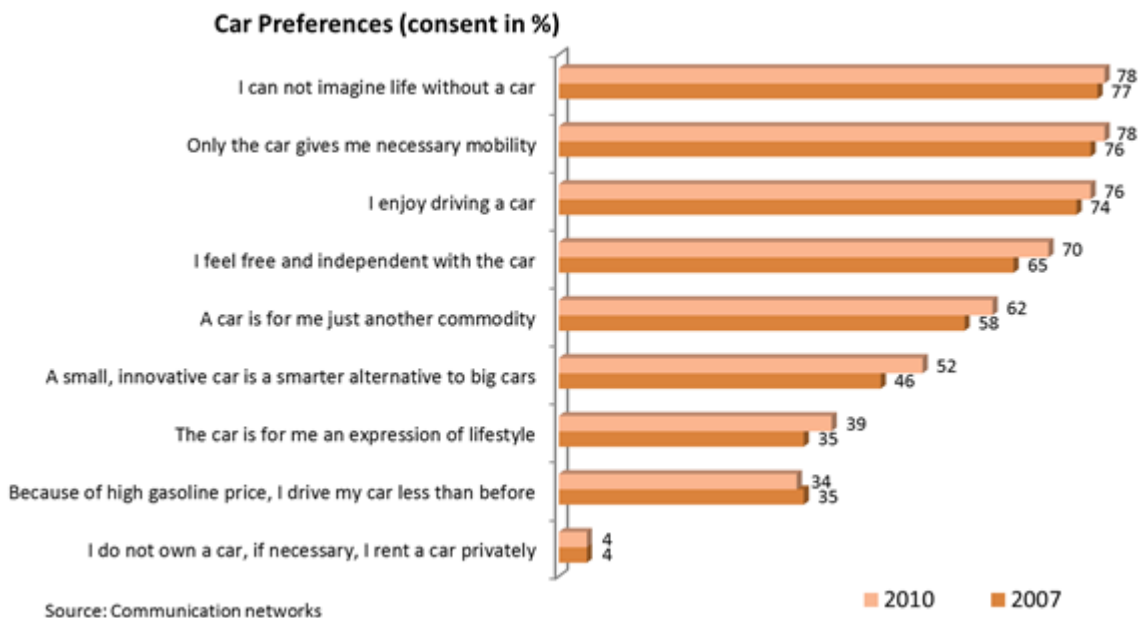
Car Preferences (consent in %)

Figure 6. The average ratio of people who prefer cars, and their feelings toward their preferences (Multiguide, 2013)

Therefore, if we really need to protect the greenbelt, urban policies should ensure the equal distribution of urban vegetation in addition to ensuring the efficiency of urban greeneries. Given the absence of equity and efficiency of urban vegetation within the city, some urban residents will inevitably infringe upon the greenbelt and may spill over to the countryside (see Formula 4).

$$Inner\ urban\ vegetation \xrightarrow{inequity+insufficient\ greeneries} vanishing\ of\ green\ belt \tag{4}$$

Governance: Before or After Educational Awareness?

The philosophy of social participation emerged from J. N. Habraken in 1961. Habraken stated in his thesis "Supports: An Alternative to Mass Housing" that individuals must engage in the urban process to guarantee its success, and the planner and local authorities should abandon their classic role in urban guardianship and give the urban residents an opportunity to plan their built environment according to their visions. Although there are numerous calls for governance, many of the dictatorial regimes throughout the world still fight against social engagement in "governance" management. The lack of cultural maturity has been taken as a pretext to compel residents to abandon governance. However, real urban experiences have proved that social participation in making public decisions triggers sustainable urbanism. Today, the urban policy of governance has been adopted significantly by some countries, notably those with democratic systems. Therefore, governance is not related to educational consciousness as much as it is considered a public right for individuals to form their own spaces.

Undoubtedly, educational awareness improves individual skills; however, real practice is the closest way to enhance urban culture. Even if residents make wrong decisions, they can accept the results of their choices and try to modify the outcome. In this way, they would obtain knowledge and learn how to repair deficiencies. Therefore, governance before and after educational awareness is administered yields almost the same results (see Formulas 5–8).

$$Urban\ poicies \xrightarrow{Governance\ with\ prior\ awareness} SUD\ (Questionable\ result:\ it\ may\ be\ just\ UD) \tag{5}$$

$$Urban\ poicies \xrightarrow{Governance\ without\ awareness} UD + Practical\ lessons\ learned \tag{6}$$

$$UD + Practical\ lessons\ learned \xrightarrow{Urban\ policies} SUD\ (Inevitable\ result) \tag{7}$$

$$Governance\ with\ prior\ awareness = Governance\ without\ awareness \tag{8}$$

CONCLUSION

The tangle among urban form, urban growth, urban vegetation, transportation, and "social participation" or governance appears complicated. However, there are two master issues that may resolve the controversies among these issues. Specifically, these issues are governance and transportation.
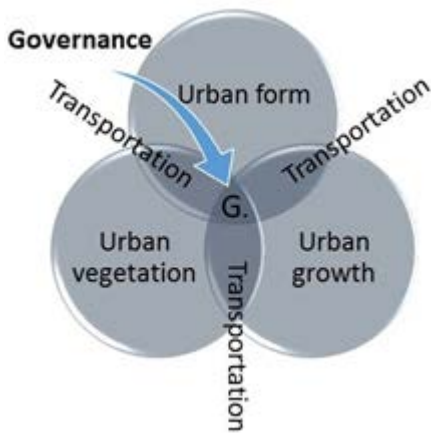
Figure 7. Governance (G) as the major coordinator of urban issues

Governance or social participation in urban management is the major coordinator among the other urban issues. Sustainable urbanism cannot be achieved in any issue without recruiting social engagement, or at least understanding sociocultural dimensions. The physical urban form needs a human touch through governance in order to thrive to become a beautifully constructed environment. Rapid urban sprawl Therefore, we can understand that the potential to save energy through changes to the transportation sector is very promising can also be tackled through social equity and participation. Some residents rush to fringes to build their own environment when authorities prohibit them from doing so within the city; lack of equality also causes such sprawl. Sustainable transport policies cannot be successful unless the many sociocultural and psychological barriers are taken into consideration.

Urban vegetation is for a reflection of the relationship between residents and local authorities: if this relationship were strong, the urban greeneries would be distributed equally and efficiently because the public parks would receive public care, and urban residents would keep close watch over and care for the green areas. However, if the link between authorities and residents is broken, the green areas are confined to private areas, such as gated communities and zones reserved for the wealthy, which in turn contributes to the erosion of the greenbelt due to urban sprawl. In short, governance is the balancing force among all other urban issues, and transportation is considered to be the second driver of these issues. **Figure 7** illustrates governance as the core issue, which is associated with transportation, outlining how concern with these two issues may propel SUD.

ACKNOWLEDGEMENTS

REFERENCES

Abdallah, K. B., Belloumi, M. and Wolf, D. D. (2013). Indicators for sustainable energy development: A multivariate cointegration and causality analysis from Tunisian road transport sector. *Renewable and Sustainable Energy Reviews,* 25, 34–43. https://doi.org/10.1016/j.rser.2013.03.066

Al-Hinti, I., Al-Ghandoor, A., Akash, B. and Ebu-Nada, E. (2007). Energy saving and CO2 mitigation through restructuring Jordan's transportation sector: The diesel passenger cars scenario. *Energy Policy*, 35, 5003–5011. https://doi.org/10.1016/j.enpol.2007.04.024

Bhattacharyya, D. B. and Mitra, S. (2013). Making Siliguri a walkable city. *Procedia - Social and Behavioral Sciences*, 96, 2737–2744. https://doi.org/10.1016/j.sbspro.2013.08.307

Bobylev, N. (2009). Mainstreaming sustainable development into a city's Master plan: A case of Urban Underground Space use. *Land Use Policy*, 26, 1128–1137. https://doi.org/10.1016/j.landusepol.2009.02.003

Bonnes, M., Uzzell, D., Carrus, G. and Kelay, T. (2007). Inhabitants' and experts' assessments of environmental quality for urban sustainability. *J. of social issues*, 63, 59-78. https://doi.org/10.1111/j.1540-4560.2007.00496.x

Breheny, M. (1992). *Sustainable development and urban form*. London: Pion.

Breheny, M. (1995). The compact city and transport energy consumption. *Trans Inst Br Geogr.,* 20(1), 81-101. https://doi.org/10.2307/622726

Bridge, G. and Watson, S. (2000). *A companion to the city*. Oxford: Blackwell.

Brueckner, J. K. (2001). Urban sprawl: diagnosis and remedies. *International Regional Science Review*, 23, 160-171. https://doi.org/10.1177/016001700761012710

Caprotti, F. (2014). Critical research on eco-cities? A walk through the Sino-Singapore Tianjin Eco-City, China. *Cities*, 36, 10–17. https://doi.org/10.1016/j.cities.2013.08.005

Castells, M. (1983). The city and the Grassroots, London: Arnold, p. XVI.

Chang, H., Chiu S. (2013). Discussion on sustainable land use allocation toward the sustainable city A practice on Linco New Town. *Procedia Environmental Sciences*, 17, 408–417. https://doi.org/10.1016/j.proenv.2013.02.054

Chapin, F. S. (1965). *Urban land use planning*. Urbana, IL: University of Illinois Press.

Chaturvedi, A., Kamble, R., Patil, N. G. and Chaturvedi, A. (2013). City–forest relationship in Nagpur: One of the greenest cities of India. *Urban Forestry & Urban Greening*, 12, 79–87. https://doi.org/10.1016/j.ufug.2012.09.003

Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning*, 68, 129-138. https://doi.org/10.1016/j.landurbplan.2003.08.003

Choi, H. S. and Ahn, K. H. (2013). Assessing the sustenance and evolution of social and cultural contexts within sustainable urban development, using as a case the MAC in South Korea. *Sustainable Cities and Society*, 6, 51–56. https://doi.org/10.1016/j.scs.2012.08.003

Colmenar-Santos, A., Borge-Diez, D., Ortega-Cabezas, P. M. and Míguez-Camiña, J. V. (2013). Macro economic impact, reduction of fee deficit and profitability of a sustainable transport model based on electric mobility. Case study: City of León (Spain). *Energy*, 65, 303–318. https://doi.org/10.1016/j.energy.2013.11.077

Deakin M. (2012). The case for socially inclusive visioning in the community-based approach to sustainable urban regeneration. *Sustainable Cities and Society*, 3, 13–23. https://doi.org/10.1016/j.scs.2011.12.001

Debnath, A. K., Chin, H. C., Haque, M. M. and Yuen, B. (2014). A methodological framework for benchmarking smart transport cities. *Cities*, 37, 47–56. https://doi.org/10.1016/j.cities.2013.11.004

Delucchi, M. and Kurani, K. S. (2014). How to Have Sustainable Transportation without Making People Drive Less or Give Up Suburban Living. *J. Urban Plann. Dev*, 140(4). https://doi.org/10.1061/(ASCE)UP.1943-5444.0000172

Dimitriou, H. T. (2006). Towards a generic sustainable urban transport strategy for middle-sized cities in Asia: Lessons from Ningbo, Kanpur and Solo. *Habitat International*, 30, 1082–1099. https://doi.org/10.1016/j.habitatint.2006.02.001

Dimitrova, E. (2014).The 'sustainable development' concept in urban planning education: lessons learned on a Bulgarian path. *Journal of Cleaner Production*, 62, 120-127. https://doi.org/10.1016/j.jclepro.2013.06.021

Dirgahayani, P. and Nakamura, F. (2012). Fostering partnerships towards sustainable urban mobility from the national to local level: Matsuyama, Japan and Yogyakarta, Indonesia. *IATSS Research*, 36, 48–55. https://doi.org/10.1016/j.iatssr.2012.01.001

Duany, A. E. and Plater-Zyberk, Speck, J. (2001). *Suburban nation*. New York: North Point Press.

Dziekan, K. (2012). Evaluation of measures aimed at sustainable urban mobility in European cities – case study CIVITAS MIMOSA. *Procedia – social and behavioral science*, 48, 3078-3092. https://doi.org/10.1016/j.sbspro.2012.06.1274

ECOTEC (1993). *Reducing transport emissions through planning*. HMSO, London.

El Asmar, J. and Taki, A. H. (2014). Sustainable rehabilitation of the built environment in Lebanon. *Sustainable Cities and Society*, 10, 22–38. https://doi.org/10.1016/j.scs.2013.04.004

El-Nasser, H. and Overberg, P. (2001). *A comprehensive look at sprawl in America*. USA Today, date: 22nd, Feburary. P1.

Ewing, R. (1997). Is Los Angeles-style sprawl desirable? *J. of the American Planning Association*, 63(1), 107-126. https://doi.org/10.1080/01944369708975728

Garcia, D. and Riera, P. (2003). Expansion versus density in Barcelona: A valuation exercise. *Urban Stud*, 40(10), 1925-1936. https://doi.org/10.1080/0042098032000116040

Geurs, K. T. and Wee, B. V. (2006). Ex-post evaluation of thirty years of compact urban development in the Netherlands. *Urban Stud*, 43(1), 139-160. https://doi.org/10.1080/00420980500409318

Glaeser, E. (2011). *The triumph of the city*. New York: Penguin.

Großmann K., Bontje M., Haase A. and Mykhnenko, V. (2013). Shrinking cities: Notes for the further research agenda. *Cities*, 35, 221–225.

Hall, P. (1988). *Cities of tomorrow*. Oxford: Blackwell.

Hall, P. (2001). Sustainable cities or town cramming? In A. Layard, S. Davoudi and S. Batty (eds.), *Planning for a sustainable future*. London: Spon.

Handy, S. (1992). Regional versus local accessibility. *Built Environment*, 18, 301-313.

Hassan A. M. and Lee, H. (2014). A theoretical approach to the design of sustainable dwellings in hot dry zones: A Toshka case study. *Tunnelling and Underground Space Technology*, 40(2), 251–262. https://doi.org/10.1016/j.tust.2013.10.017

Hassan A. M. and Lee, H. (2015). Toward the sustainable development of urban areas: An overview of global trends in trials and policies. *Land Use Policy*, 48, 199-212. https://doi.org/10.1016/j.landusepol.2015.04.029

Hassan, A. M. and Lee, H. (2015). The paradox of the sustainable city: definitions and examples. *Environment, Development and Sustainability*. https://doi.org/10.1007/s10668-014-9604-z

Hirt, S. (2013). Whatever happened to the (post)socialist city? *Cities*, 32, S29–S38. https://doi.org/10.1016/j.cities.2013.04.010

Hofstad, H. (2012). Compact city development: High ideals and emerging practices. *European Journal of Spatial Development*, 49. Available at: http://www.nordregio.se/Global/EJSD/Refereed%20articles/refereed49.pdf (Accessed 30 May 2014).

Jabareen, Y. and Carmon, N. (2010). Community of trust: A social-cultural approach for community planning and the case of Gaza. *Habitat International*, 34, 446-453. https://doi.org/10.1016/j.habitatint.2009.12.005

Jansson, M. and Lindgren, T. (2012). A review of the concept 'management' in relation to urban landscapes and green spaces: Toward a holistic understanding. *Urban Forestry & Urban Greening*, 11, 139–145. https://doi.org/10.1016/j.ufug.2012.01.004

Jonas, A. and While, A. (2005). Governance, in D. Atkinson, P. Jackson, D. Sibley and N. Washbourne (eds.), *Cultural Geography: A critical dictionary of Key concepts* (pp. 72-79). London: I.B. Tauris & Co Ltd.

Katz, P. (1994). *The new urbanism: towards an architecture of community*. New York: McGraw-Hill.

Kirby, A. (2013). Cities and powerful knowledge: An editorial essay on accepted wisdom and global urban theory [Part 1]. *Cities*, 32, 53-59. https://doi.org/10.1016/j.cities.2013.06.002

Krier, L. (1998). *Choice or fate*. Windsor, UK: Papadakis.

Kühn, M. (2003). Greenbelt and Green Heart: separating and integrating landscapes in European city regions. *Landscape and Urban Planning*, 64, 19–27. https://doi.org/10.1016/S0169-2046(02)00198-6

Latif, S. A., Bidin Y. H. and Awang, Z. (2013). Towards the Realization of Green Cities: The moderating role of the residents' education level. *Procedia - Social and Behavioral Sciences*, 85, 646-652. https://doi.org/10.1016/j.sbspro.2013.08.392

Lau, J. C. (2013). Sustainable urban transport planning and the commuting patterns of poor workers in a historic inner city in Guangzhou, China. *Habitat International*, 39, 119-127. https://doi.org/10.1016/j.habitatint.2012.11.006

Lehmann, S. (2013). Low-to-no carbon city: Lessons from western urban projects for the rapid transformation of Shanghai. *Habitat International*, 37, 61-69. https://doi.org/10.1016/j.habitatint.2011.12.014

Lehmann, S. (2010). *The principles of green urbanism: transforming the city for sustainability*. Earthscan: London.

Lindholm, M. (2010). A sustainable perspective on urban freight transport: Factors affecting local authorities in the planning procedures. *Procedia – social and behavioral science*, 2, 6208. https://doi.org/10.1016/j.sbspro.2010.04.031

Lopez, R., Hynes, H. P. (2003). Sprawl in the 1990s: measurement distribution and trends. *Urban Affairs Review*, 38, 325-355. https://doi.org/10.1177/1078087402238805

Lovasi, G. S., Schwartz-Soicher, O., Quinn, J. W., Berger, D. K., Neckerman, K. M., Jaslow, R., Lee, K. K. and Rundle, A. (2013). Neighborhood safety and green space as predictors of obesity among preschool children from low-income families in New York City. *Preventive Medicine*, 57, 189–193. https://doi.org/10.1016/j.ypmed.2013.05.012

Marins, K. R. C. C. and Roméro, M. A. (2013). Urban and Energy Assessment from a Systemic Approach of Urban Morphology, Urban Mobility, and Buildings: Case Study of Agua Branca in Sao Paulo. J. *Urban Plann. Dev.*, 139, 280-291. https://doi.org/10.1061/(ASCE)UP.1943-5444.0000149

Mclaren, D. (1992). Compact or dispersed? Dilution is no solution. *Built Environment*, 18, 268-284.

Meijer, M., Adriaens, F., Linden, O. and Schik, W. (2011). A next step for sustainable urban design in the Netherlands. *Cities*, 28, 536–544. https://doi.org/10.1016/j.cities.2011.07.001

Multiguide. (2013). Available at: http://www.multiguide.com/index.php/parking-market.html (Accessed 27 December 2013).

Muthulingam, U. and Thangavel, S. (2012). Density, diversity and richness of woody plants in urban green spaces: A case study in Chennai metropolitan city. *Urban Forestry & Urban Greening*, 11, 450–459. https://doi.org/10.1016/j.ufug.2012.08.003

Nagendra, H., Nagendran, S., Paul, S., and Pareeth, S. (2012). Graying, greening and fragmentation in the rapidly expanding Indian city of Bangalore. *Landscape and Urban Planning*, 105, 400–406. https://doi.org/10.1016/j.landurbplan.2012.01.014

Neuman, M. (2005). The compact city fallacy. *J. of Planning Education and Research*, 25, 11-26. https://doi.org/10.1177/0739456X04270466

Newman, P. and Kenworthy, J. (1989a). *Cities and automobile dependence: a sourcebook Gower, Aldershot and Brookfield Victoria*.

Newman, P. and Kenworthy, J. (1989b). Gasoline consumption and cities – a comparison of UK cities with a global survey. *Journal of the American Planning Association*, 55, 24-27. https://doi.org/10.1080/01944368908975398

Ng, E., Chen, L., Wang, Y. and Yuan, C. (2012). A study on the cooling effects of greening in a high-density city: An experience from Hong Kong. *Building and Environment*, 47, 256-271. https://doi.org/10.1016/j.buildenv.2011.07.014

Norcliffe, G. (2011). Neoliberal mobility and its discontents: Working tricycles in China's cities. *City, Culture and Society*, 2, 235–242. https://doi.org/10.1016/j.ccs.2011.11.006

OECD. (2012), Compact City Policies: A Comparative Assessment, OECD Green Growth Studies, OECD Publishing. Available at: https://doi.org/10.1787/9789264167865-en (Accessed: 26 December 2013).

Yuhong Wang, P. E., Deng, X., Marcucci, D. J. and Le, Y. (2013). Sustainable Development Planning of Protected Areas near Cities: Case Study in China. *J. Urban Plann. Dev.*, 139, 133-143. https://doi.org/10.1061/(ASCE)UP.1943-5444.0000133

Passafaro, P., Rimano, A., Piccini, M. P., Metastasio, R., … and Lettieri, C. (2014). The bicycle and the city: Desires and emotions versus attitudes, habits and norms. *Journal of Environmental Psychology*, 38, 76-83. https://doi.org/10.1016/j.jenvp.2013.12.011

Pow, C. P. and Neo, H. (2013). Seeing Red over Green: Contesting Urban Sustainabilities in China. *Urban Studies*, 50(11), 2256-2274. https://doi.org/10.1177/0042098013478239

Premalatha, M., Tauseef, S. M., Abbasi T. and Abbasi, S. A. (2013). The promise and the performance of the world's first two zero carbon eco-cities. *Renewable and Sustainable Energy Reviews*, 25, 660–669. https://doi.org/10.1016/j.rser.2013.05.011

Rehan, R. M. (2013). Sustainable streetscape as an effective tool in sustainable urban design. *HBRC Journal*, 9, 173–186. https://doi.org/10.1016/j.hbrcj.2013.03.001

Roy, M. (2009). Planning for sustainable urbanisation in fast growing cities: Mitigation and adaptation issues addressed in Dhaka, Bangladesh. *Habitat International*, 33, 276–286. https://doi.org/10.1016/j.habitatint.2008.10.022

Salonen, A. O. and Åhlberg, M. (2013). Obstacles to sustainable living in the Helsinki Metropolitan Area. *Sustainable Cities and Society*, 8, 48–55. https://doi.org/10.1016/j.scs.2013.01.001

Schneider, A. and Woodcook, C. E. (2008). Compact dispersed, fragmented, extensive? A comparison of urban growth in twenty-five global cities using remotely sensed data, pattern metrics and census information. *Urban Stud*, 45(3), 659-692. https://doi.org/10.1177/0042098007087340

Shaalan, I. (2013). Sustainable urban transformation in small cities in Egypt: a UN-habitat perspective. *Journal of Cleaner Production*, 50, 200-204. https://doi.org/10.1016/j.jclepro.2012.11.022

Shakibaei, S., Alpkokin, P. and Gunduz, U. (2011). Oil Rich Countries and Sustainable Mobility: Challenges in Tabriz. *Procedia Social and Behavioral Sciences*, 20, 171–176. https://doi.org/10.1016/j.sbspro.2011.08.022

Shao, J. and Zhou, J. (2011). Study on the influences of industry transformation on the sustainable development of resource-exhausted city space. *Procedia Engineering*, 21, 421-427. https://doi.org/10.1016/j.proeng.2011.11.2034

Shiau, T. (2012). Evaluating sustainable transport strategies with incomplete information for Taipei City. *Transportation Research Part D*, 17, 427–432. https://doi.org/10.1016/j.trd.2012.05.002

Soneryd, L. (2004). Hearing as a way of dwelling: the active sense-making of environmental risk and nuisance. *Environmental and Planning D*, 22, 237-253. https://doi.org/10.1068/d300t

Sperandelli, D. I., Dupas, F. A. and Pons, N. A. D. (2013). Dynamics of Urban Sprawl, Vacant Land, and Green Spaces on the Metropolitan Fringe of São Paulo, Brazil. *J. Urban Plann. Dev.*, 139, 274-279. https://doi.org/10.1061/(ASCE)UP.1943-5444.0000154

Szulczewska, B., Giedych, R., Borowski, J., Kuchcik, M., … and Stańczyke, T. (2014). How much green is needed for a vital neighborhood? In search for empirical evidence. *Land Use Policy*, 38, 330–345. https://doi.org/10.1016/j.landusepol.2013.11.006

Talen, E. (2000). The problem with community in planning. *J. of planning literature*, 15(2), 171-183. https://doi.org/10.1177/08854120022092971

Thynell, M., Mohan, D. and Tiwari G. (2010). Sustainable transport and the modernisation of urban transport in Delhi and Stockholm. *Cities*, 27, 421–429. https://doi.org/10.1016/j.cities.2010.04.002

Tian, Y. and Jim C. Y. (2011). Factors influencing the spatial pattern of sky gardens in the compact city of Hong Kong. *Landscape and Urban Planning*, 101(4), 299–309. https://doi.org/10.1016/j.landurbplan.2011.02.035

Vallance, S., Perkins, H. C., Bowring, J. and Dixon, J. E. (2012). Almost invisible: Glimpsing the city and its residents in the urban sustainability discourse. *Urban Studies*, 49(8), 1695-1710. https://doi.org/10.1177/0042098011417903

Vos, P. E. J., Maiheu, B., Vankerkom, J. and Janssen, S. (2013). Improving local air quality in cities: To tree or not to tree? *Environmental Pollution*, 183, 113-122. https://doi.org/10.1016/j.envpol.2012.10.021

Weigel, B. A. (2014). Estimation of Potential Transportation and Building Energy Performance of Commercial Office Site Alternatives. *J. Urban Plann. Dev.*, 141(1). https://doi.org/10.1061/(ASCE)UP.1943-5444.0000201

Xuesong, F., Akimasa, F. and Junyi, Z. (2008). Exploring sustainable urban forms for developing city based on new integrated model. *J Transpn Sys Eng & IT*, 8(5), 50-60.

Yang, J., Shen, Q., Shen, J. and He, C. (2012). Transportation impacts of clustered development in Beijing: compact development versus overconcentration. *Urban studies*, 49(6), 1315-1331. https://doi.org/10.1177/0042098011410336

Yung, E. H. K., Chan, E. H. W. and Xu, Y. (2014). Community-Initiated Adaptive Reuse of Historic Buildings and Sustainable Development in the Inner City of Shanghai. *J. Urban Plann. Dev.*, 140(3). https://doi.org/10.1061/(ASCE)UP.1943-5444.0000174