Is Smart Growth Really So Smart?

Dana Coble

Abstract The world's population has been growing at an exponential rate, increasing demands on energy and resource use and contributing to greenhouse gas (GHG) emissions and pollution. This increase in population has been primarily in urban areas. In developed countries, 75 % of the population already lives in cities and for every 1 % increase in urban population, energy consumption increases by 2.2 % (WBCSD in Energy efficiency in buildings: Business realities and opportunities. Atar Roto Presse SA, Switzerland, 2008). Clearly we are moving towards a crisis if we continue traditional methods of development. So how can cities accommodate this growth in a sustainable manner? One movement to address these issues has become increasingly popular with urban planners, environmentalists and some developers: "smart growth" (Downs, J Am Plann Assoc 71(4):367–380, 2005). This chapter will begin with a definition and overview of smart growth to familiarize readers with its basic premise and will then provide arguments both for and against implementation. Implementations will be reviewed and their results assessed, with a focus on Canadian data. Based on the data reviewed, it is the position of the author that smart growth has not achieved its intended results. This is due to both implementation issues well as with smart growth theory itself. Conflicting planning guidelines, localized authority and consumer preference have been the primary contributors preventing effective implementation, while smart growth theory has a limited approach to environmental and ecological issues. It is suggested that in better engaging stakeholders, transitioning toward regional planning and incorporating complementary initiatives, smart growth would more effectively realize the three objectives of sustainable development.

Keywords Smart growth · Sustainable growth · CaGBC's ten principles · Mixed use development · Residential densities

D. Coble (✉)
Athabasca University, #301–22 Sir Winston Churchill Avenue,
St. Albert, AB T8N 1B4, Canada
e-mail: dlcoble@aol.com

A. Khare and T. Beckman (eds.), *Mitigating Climate Change*,
Springer Environmental Science and Engineering, DOI: 10.1007/978-3-642-37030-4_1,

1 Introduction

The world's population has been growing at an exponential rate, increasing demands on energy and resource use and contributing to greenhouse gas (GHG) emissions and pollution. This increase in population has been primarily in urban areas. In developed countries, 75 % of the population already lives in cities and for every 1 % increase in urban population, energy consumption increases by 2.2 % (WBCSD 2008).

Clearly we are moving towards a crisis if we continue traditional methods of development. So how can cities accommodate this growth in a sustainable manner? One movement to address these issues has become increasingly popular with urban planners, environmentalists and some developers: "smart growth" (Downs 2005).

This chapter will begin with a definition and overview of smart growth to familiarize readers with its basic premise and will then provide arguments both for and against implementation. Implementations will be reviewed and their results assessed, with a focus on Canadian data. Based on the data reviewed, it is the position of the author that smart growth has not achieved its intended results. Reasons why this is the case will be discussed. An analysis of the effectiveness of smart growth principles in achieving sustainability objectives will follow. In conclusion, three recommendations are presented to better align urban development with the sustainability goals of government.

2 Scope and Limitations

Since smart growth principles have only been recently incorporated in many jurisdictions, quantitative data is limited. Three major Canadian cities—Calgary, Toronto and Vancouver—have substantially changed their municipal plans in the last five years and data reviewed is not resultant of current policy. It is also important to note that the literature available is based on findings during different market conditions—prior to the sub-prime crisis in the United States (US) and the global economic downturn. As a result, conclusions may not reflect current realities.

3 Definition

3.1 What is Smart Growth?

There are several definitions of smart growth—likely as many as there are of sustainability. Canada Green Building Council (CaGBC 2010) defines smart growth as "a collection of land use and development principles that aim to enhance our quality of life, preserve the natural environment, and save money over

time". The American Planning Association has called it "a way to meet the challenges of sustainability" (Jepson and Edwards 2010). Others simply suggest smart growth is a solution to address the pitfalls of urban sprawl (Downs 2005; O'Toole 2007; Suzuki and Moola 2010)—a phenomena perceived by many to be a primary contributor to increasing GHG emission levels.

Alternative planning models are frequently used to describe smart growth, such as new-urbanism, neo-traditionalism, and walkable communities. Although similar in principle, these models are geared toward individual neighborhoods rather than municipal objectives.

3.2 Objectives

The principles cited by smart growth advocates vary in scope however there are key elements in most. As the CaGBC is a federal organization with a mission to "lead and accelerate the transformation to high-performing, healthy green buildings, homes and communities throughout Canada" (CaGBC 2010), it is appropriate to use its principles as the benchmark to review implemented policies.

CaGBC's ten principles of smart growth include:

1. **Mix land uses.** Each neighbourhood has a mixture of homes, retail, business, and recreational opportunities.
2. **Build well-designed compact neighbourhoods.** Residents can choose to live, work, shop and play in close proximity. People can easily access daily activities, transit is viable, and local businesses are supported.
3. **Provide a variety of transportation choices.** Neighbourhoods are attractive and have safe infrastructure for walking, cycling and transit, in addition to driving.
4. **Create diverse housing opportunities.** People in different family types, life stages and income levels can afford a home in the neighbourhood of their choice.
5. **Encourage growth in existing communities.** Investments in infrastructure (such as roads and schools) are used efficiently, and developments do not take up new land.
6. **Preserve open spaces, natural beauty, and environmentally sensitive areas.** Development respects natural landscape features and has higher aesthetic, environmental, and financial value.
7. **Protect and enhance agricultural lands.** A secure and productive land base, such as BC's Agricultural Land Reserve, provides food security, employment, and habitat, and is maintained as an urban containment boundary.
8. **Utilize smarter, and cheaper, infrastructure and green buildings.** Green buildings and other systems can save both money and the environment in the long run.

9. **Foster a unique neighbourhood identity.** Each community is unique, vibrant, diverse, and inclusive.
10. **Nurture engaged citizens.** Places belong to those who live, work, and play there. Engaged citizens participate in community life and decision-making.

These elements are intended to be applied collectively to achieve results. For example, encouraging growth in existing communities maximizes existing infrastructure and contributes to the preservation of green space; mixed use developments facilitate the use of alternate methods of transportation. In practice however, it may be difficult to achieve these objectives concurrently. For example, preserving natural areas may increase automobile use and/or restrict housing affordability.

3.3 Design Guidelines

The design guidelines of smart growth further assist in understanding how the theory differs from traditional land planning, or "sprawl" as it is frequently called. Litman (2011) summarizes the two approaches, as shown in Table 1.

4 Advocates, Opposition and Ambivalence

There are three primary groups who extol the virtues of smart growth: environmentalists, urban planners and a select group of private real estate developers (CMHC 2005; Downs 2005; O'Connell 2009), however there are a similar amount of special interest groups who are in opposition. The majority of real estate, land development and construction industry members consider growth limitations an infringement on their economic interests; others believe strict zoning regulations violate the property rights of individuals (Litman 2011; O'Connell 2009). In addition, many opponents argue that smart growth design is not congruent with the preferred lifestyles of the majority, nor have the benefits cited by smart growth advocates been realized. The arguments in support of each position, grouped by the three pillars of sustainability—environmental, social and economic—are summarized in Table 2.

Response from the general public has been mixed. Although frequently frustrated by traffic congestion, many approve of smart growth principles in theory but are sceptical of their implementation. As a rule, when smart growth initiatives threaten to directly impact their communities, these initiatives are frequently met with strong opposition (Downs 2005; Grant 2002; O'Toole 2001).

Table 1 Comparison of smart growth and traditional design guidelines

	Smart growth	Traditional growth
Density	Higher-density, clustered activities	Lower-density, dispersed activities
Growth pattern	Infill (brown field) development	Urban periphery (greenfield) development
Land use mix	Mixed	Single use, segregated
Scale	Human scale. Smaller blocks and roads. Attention to detail, since people since people experience the landscape up close, as pedestrians	Large Scale. Larger blocks and wide roads. Less detail, since people experience the landscape at a distance, as motorists
Public services (shops, schools, parks)	Local, distributed, smaller. Accommodates walking access	Regional, consolidated, larger. Requires automobile access
Transport	Multi-modal transportation and land use patterns that support walking, cycling and public transit	Automobile-oriented transportation and land use patterns, poorly suited for walking, cycling and transit
Connectivity	Highly connected roads, sidewalks and paths, allowing more direct travel by motorized and non-motorized modes	Hierarchical road network with many unconnected roads and walkways, and barriers to non-motorized travel
Street design	Streets designed to accommodate a variety of activities. Traffic calming	Streets designed to maximize motor vehicle traffic volume and speed
Planning process	Planned and coordinated between jurisdictions and stakeholders	Unplanned, with little coordination between jurisdictions and stakeholders
Public space	Emphasis on the public realm (streetscapes, pedestrian areas, public parks, public facilities)	Emphasis on the private realm (yards, shopping malls, gated communities, private clubs)

Source Litman (2011)

5 Implementation

Various policies have been incorporated by jurisdictions to encourage smart growth, however many only consider certain components, or apply principles in an ad hoc manner, as opposed to taking the holistic approach recommended by theorists (CMHC 2005; Downs 2005; Song 2005; Staley 2006). Four primary mechanisms municipalities and regions have implemented: the encouragement mixed use development; increased densities; alternate transportation systems; and, establishment of urban growth boundaries. Of 202 US cities surveyed on their smart growth policies, 88.0 % had mixed use zoning, 62.2 % introduced higher density zoning, 56.0 % encouraged transit oriented development and 27.5 % of them had adopted an urban growth boundary (O'Connell 2009). Although exact ratios have not been calculated, Canada has followed in the footsteps of its US counterparts with similar emphases having been incorporated.

Table 2 Arguments for smart growth and traditional growth

	Arguments for smart growth	Arguments for traditional growth
Environmental	Reduces GHG emissions	Static traffic congestion because business suburbanizes as well
	Improves air quality due to less pollution	Better storm water management due to fewer impervious surfaces (sidewalks, alleys, building densities)
	Improves water quality due the preservation of ecological systems	
	Maintains biodiversity and preservation of wildlife species	
Social	Revitalizes existing neighborhoods	More prestige - especially in gated communities
	Greater community engagement	
	Better accessibility for seniors and those under driving age	More privacy in low density developments Better public services (schools, police)
	Improves quality of life, less commuting and "chauffeuring" time	Better neighborhood amenities
	Mixed housing types allow residents to remain in the community as their housing needs change	Larger homes to accommodate traditional families and traditional lifestyles
		Fewer "undesirables", less crime
Economic	Reduces transportation costs for the public	More stable property values in homogenous communities
	Reduces cost to maintain a smaller lot	Less expensive to develop greenfield sites
	Reduces infrastructure costs for municipalities	Greater demand from home buyers, retail and commercial establishments
	Revitalizes existing neighborhoods	
	Mixed housing types provides options for buyers of different income levels	Reduces investment required for costly public transit, which is used by a small percentage of the population, but borne by all taxpayers
	Provides for affordable, local food production	Protects property rights of land owners

Sources CMHC (2005), Downs (2005), Litman (2011), O'Connell (2009), O'Toole (2007), Suzuki (2003), Suzuki and Moola (2010)

5.1 Mixed Use Developments

Design guidelines and zoning amendments have been added to most Canadian cities' plans to encourage a combination of residential, retail and commercial use, primarily in an effort to revitalize inner city development (Grant 2002; O'Connell 2009). In many cases, mixed use has also meant allowing for a combination of housing types and densities (single family detached, multifamily and rental units) within an area zoned for residential use only. A significant omission from these policies has been industrial zoning. Most industrial zoning continues to be isolated and located on urban peripheries (Grant 2002).

Some suburban areas within city boundaries and in outlying municipalities have also promoted mixed use development but are less common. By 2000, approximately thirty mixed use communities were under construction across Canada (Grant 2002).

Both inner city and suburban mixed-use developments have been applied to individual sites without considering their interconnectivity to current and future development (Song 2005).

5.2 Increased Densities

Increased densities have been accommodated by mixed-use zoning and lot size reduction (O'Connell 2009). Density is also a critical component to support viable public transportation systems. CMHC (2005) suggests densities of twelve units per acre are needed to support public transport, however most zoning allows for densities of seven to eight units per acre. Density is the smart growth initiative that has received the greatest opposition by the general public and policy is less likely to mandate an increase in minimum densities as a result. US zoning verbiage generally puts a limitation on maximum densities as opposed to establishing minimum requirements, making implementation even more challenging.

5.3 Transportation Options

Plans that have encouraged both active (walking and cycling) and public transportation have been adopted by most jurisdictions encouraging smart growth (CMHC 2005). Transit plans have focused on inner city areas, as they have the highest densities to support high quality public transport.

Equal or greater funding for alternative initiatives is a cornerstone of policy, and many plans seek to limit overall road capacity while increasing public transit and improving the environment for walking and cycling (Hubbell and Colquhoun 2006; Toronto 2010; Vancouver 2007c).

5.4 Urban Growth Boundaries

The establishment of an urban growth boundary (UGB), or "greenbelt", is to serve two purposes: contain growth within the boundary's urban core, increasing density; and, designate the boundary itself as a preservation area for agricultural, ecological and/or aesthetic purposes (Ali 2008; Amati and Taylor 2010; Myung-Jin 2004). According to a study by Dawkins and Nelson, as many as one-quarter of municipalities in the US have implemented UGBs (Daniels 2010) with Portland, Oregon, being one of the first cities to have introduced legislation (introduced in 1980). The province of British Columbia created an Agricultural Land Reserve (ALR) in 1974, and although not specifically intended as an UGB, unofficially became one in 1996 through the Livable Region Strategic Plan (CMHC 2005).

Ottawa and Halifax are additional Canadian jurisdictions to have implemented UGBs and, most recently, Southern Ontario. Through its Greenbelt Act adopted in 2005, 1.8 million acres of land has been protected by this province (Ontario 2011).

6 Results

The data indicates that although some positive outcomes have been realized, smart growth policies have not significantly changed the urban landscape; performance has been comparable to cities without growth management policies (Staley 2006). A summary of results relating to CaGBC's ten principles is shown in Table 3.

Table 3 Select cities' realization of CaGBC's smart growth principles

<table>
<tr><th></th><th>Toronto</th><th>Calgary</th><th>Vancouver</th><th>Portland</th></tr>
<tr><td>Mix Land Uses</td><td colspan="4">success with inner city redevelopment of industrial sites</td></tr>
<tr><td>Build well-designed Compact Neighborhoods</td><td colspan="4">greenfield developments remain largely of traditional low-density residential designs</td></tr>
<tr><td>Provide a variety of transportation choices</td><td colspan="4">automobile use same or greater than 1990</td></tr>
<tr><td>Create diverse housing opportunities</td><td colspan="4">single family detached remains dominant</td></tr>
<tr><td>Encourage growth in existing communities</td><td colspan="4">greater growth outside urban core</td></tr>
<tr><td>Preserve open spaces, natural beauty and environmentally sensitive areas</td><td colspan="2">no policy pre 2004</td><td colspan="2">relatively intact</td></tr>
<tr><td>Protect and enhance agricultural lands</td><td colspan="2">no policy pre 2004</td><td colspan="2">relatively intact</td></tr>
<tr><td>Utilize smarter, and cheaper infrastructure and green buildings</td><td>no policy</td><td colspan="3">slightly lower infrastructure costs but higher government cost per capita; LEED standards applicable to government buildings only</td></tr>
<tr><td>Foster a unique neighborhood identity</td><td colspan="4">indeterminate</td></tr>
<tr><td>Nurture engaged Citizens</td><td colspan="2">no policy pre 2004</td><td colspan="2"></td></tr>
</table>

Sources Behan and Lea (2010), CMHC (2005), Davis (2008), O'Toole (2001), Portland (2010), Portland (2012), Vancouver (2012)

6.1 Successes

Positive outcomes have been achieved by redevelopment of inner city sites and land preservation.

6.1.1 Mixed Land Use: Inner City

Mixed-use development has been most successful in the redevelopment of brownfield sites within the urban core. Examples are Vancouver's False Creek Development, Toronto's Harborfront and Calgary's Bridgeland.

It is important to note that these redevelopment efforts are costly and time intensive. For example, the Royal Commission began the planning of Toronto's Port Lands in 1992 with the first phase of construction breaking ground a decade later (Toronto 2008). The Port Lands' master plan is still in public consultation (Toronto 2013). Vancouver's False Creek policy was adopted in 1999 with zoning approvals being finalized in 2006 (Vancouver 2007a) and Calgary's Currie Barracks encountered seven years of delays (Braid 2006).

6.1.2 Natural Land Preservation

Generally, natural and agricultural areas established by UGBs have been preserved (CMHC 2005; Daniels 2010; Portland 2012), although many caution that this may change when development reaches the constraints of the boundary, or when economic conditions make reductions to the boundary more attractive than maintaining preservation (Ali 2008; Amati and Taylor 2010; Daniels 2010).

6.2 Failures

Numerous studies suggest that these policies have done little to contain urban growth, increase densities, or reduce automobile use.

6.2.1 Mixed Land Use: Suburban Areas

Suburban mixed-use has produced less than stellar results and greenfield sites continue to be developed with single-zoned use. One of the first suburban communities to introduce mixed-use land planning was McKenzie Towne, a 2,400-acre development in South Calgary. Its first phase included commercial space the developer could neither sell nor fully rent. High-end homes adjacent to other housing types were also slow to sell (Grant 2002). These results, in combination with higher infrastructure costs associated with the design, incited the developer to revert to a conventional land plan in subsequent phases (CMHC 2005; Grant 2002).

Table 4 Population growth between central city and other CMA regions

Census metropolitan area (CMA)[a]	CMA growth 2001-2011	Central city growth 2001-2011	Non-central city growth 2001-2011	Central city growth as percentage of CMA growth (%)	Non-central city growth as percentage of CMA growth (%)
Toronto	900,167	133,566	766,601	14.84	85.16
Calgary	263,345	217,830	45,515	82.72	17.28
Vancouver	326,563	57,831	268,732	17.71	82.29
Portland, OR[b]	298,128	54,655	243,473	18.33	81.67

[a] includes urban/suburban areas
[b] data from 2000–2010
Note High central city growth for calgary is resultant of a large annexation of land into the municipality
Sources Statistics Canada (2011), US Census Bureau (2010)

6.2.2 Encourage Growth in Existing Communities

In both Canada and the US, areas outside the central cities have been growing at a faster pace than within the cities themselves (CMHC 2005; Cox 2004; Demographia 2004). Studies have calculated suburban areas have accounted for over 95 % of urban growth. Table 4 shows a chart of the urban/suburban growth breakdown for the cities included in Table 3.

Portland, Washington, DC, Minneapolis/St. Paul, Ottawa have all experienced "leapfrog development" to regions outside their UGBs as these regions were not subject to the city's development constraints (Amati and Taylor 2010; Downs 2005; Myung-Jin 2004; O'Toole 2001). For example, of the new housing units constructed in the Portland region in the 1990s, 40 % were built outside the UGB (Myung-Jin 2004).

6.2.3 Increased Densities

Inner city development of infield sites has not compensated for the increase in suburban growth, and densities have not increased significantly as a result. A reduction in household sizes has also prevented the realization of higher densities (CMHC 2005; Cox 2004). Proposed employment nodes at transit stations have been largely unrealized in Calgary due to a lack of implementation strategy, market dynamics and public opposition to increased densities (Hubbell and Colquhoun 2006) and Toronto's employment nodes have been too dispersed to significantly concentrate density (CMHC 2005).

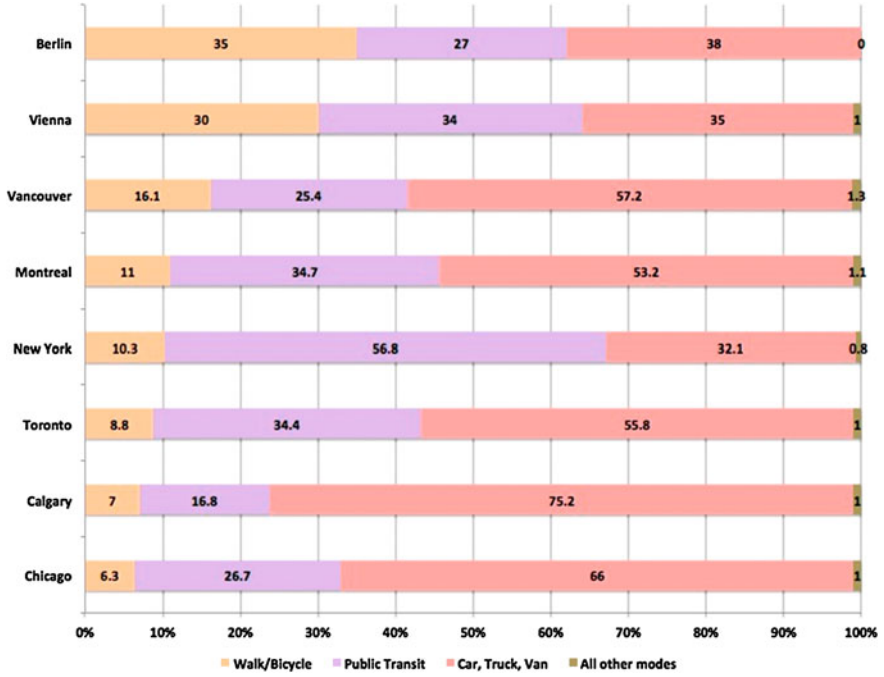

Fig. 1 Transportation modal breakdown (2007)—in percent. *Source* Behan and Lea (2010)

6.2.4 Alternate Transportation Use

Automobile usage remained relatively static in all six regions studied by CMHC (2005): up to 2 % higher in four regions and a similar decrease in the remaining two. Of eight international metropolitan areas studied (Behan and Lea 2010), the Canadian cities had the highest automobile modal share. Automobile use in these four cities ranged between 50 and 76 % whereas the two European cities usage was less than 40 % (see Fig. 1).

Portland's per capita driving increased 20 % between 1990 and 1998, despite a large funding commitment for its light rail system (O'Toole 2007), and an analysis of empirical data over a 20 year period showed no correlation to increased transit use and Portland's urban growth containment policies (Myung-Jin 2004). Light rail additions in many other US communities have also failed to alleviate traffic congestion (Downs 2005).

In addition, industrial areas provide many employment opportunities but are usually isolated from residential areas. They are poorly serviced by public transport and difficult to access by active transportation (Grant 2002). For example, employment in Calgary continues to be concentrated in the east (representing 34 % of the area's employment in 2006) while residential development continues in the west. This has further exacerbated automobile use (Hubbell and Colquhoun 2006).

Because suburban areas are growing at a faster rate than urban areas and automobile use is the primary source of transportation, private transportation use continues to grow.

6.2.5 Diverse Housing Options

In Canadian projects, apartments have higher vacancy rates in communities with apartment/owner housing mixes; apartments above stores frequently end up being leased to other businesses (Grant 2002). For sale detached residential housing continues to represent the majority of new construction (CMHC 2005; O'Toole 2001).

Although housing affordability has remained relatively static in the Canadian cities studied (CMHC 2005), affordability data includes both urban and suburban areas. Several other studies support the argument that UGBs have decreased the availability of affordable housing within the urban core (Daniels 2010; Downs 2005; Cox 2004; O'Toole 2001).

Gentrification of inner city neighborhoods have increased population within these areas, however increased densities or a mix of housing types have not been realized (Grant 2002). The improved desirability of these neighbourhoods also increased housing costs, driving out the working class and contributing to homelessness issues (Barnes and Hutton 2009; Grant 2002). Examples of this are Cabbagetown in Toronto and Yaletown in Vancouver.

6.2.6 Green Buildings and Smarter Infrastructure

Although one of CaGBC's smart growth principles, green buildings and infrastructure are rarely mentioned by other organizations advocating smart growth. Introduction of green building policies have generally been limited to government compliance to LEED (Leadership in Energy and Environmental Design) standards (Calgary 2013; Portland 2012; Vancouver 2007b). Some—including Portland and Vancouver—have provided incentives for green initiatives within commercial development (US Department of Energy 2012; Vancouver 2007b). Energy efficiency in residential construction is currently considered "best practice" by municipalities however, as required standards do not exist in any Canadian city reviewed.

Many regions have upgraded their water and sanitary services but have done so through traditional construction methods. Empirical analysis has determined infrastructure costs in higher density areas are less, but by an insignificant amount (Cox and Utt 2004). The implementation of smarter infrastructure is in review but no formal policies are in place in any city reviewed.

7 Assessment of Results

There are three primary reasons why the majority of smart growth objectives have been unsuccessful: conflicting planning guidelines; localized authority and consumer preference.

7.1 Conflicting Planning Guidelines

Although many jurisdictions have incorporated smart growth principles into their municipal plans, initiatives are still relatively recent. A standardized framework has not been established and implementation has been inconsistent (Jepson and Edwards 2010; Song 2005). Existing zoning regulations must be amended and current infrastructure design altered—processes which are traditionally slow and cumbersome (Downs 2005; Schmidt 2004).

Different departments within municipalities also have different objectives. For example, traffic planners are concerned with efficient vehicle movement and emergency response personnel concerned with site access whereas the higher densities and narrower streets recommended for smart growth design threaten to impede both (Braid 2006).

Federal and/or provincial fiscal policies—such as gas subsidies and road improvement funding—can work against local initiatives by continuing to promote the use of private vehicles (Schmidt 2004). Alberta's economic downturn in the 1990s suspended funding for Calgary's light rail transit for a decade (Hubbell and Colquhoun 2006) with a similar scenario occurring in Ontario (Get Toronto Moving Transportation Committee 2012).

7.2 Localized Authority

Unless the region is considered as a whole, uncontrolled growth in one area will undermine controlled growth in another. This has been clearly shown by the results realized in those areas having established UGBs. Not only are authoritative bodies generally unwilling to give up control of local planning, but the ability to gain consensus across boundaries is difficult (Downs 2005).

7.3 Consumer Preference

It is argued that consumers who prefer alternate modes of transportation will naturally gravitate to higher density or mixed-use developments but that does not mean the creation of these developments will change the behaviours of those who

prefer to rely on their cars (O'Toole 2007). As such, increased car use, coupled with increased densities, has contributed to traffic congestion as opposed to alleviating it.

As evidenced by the continuing trend in suburban growth, the majority of consumers—especially those with families—prefer conventional community designs. Absorption ratios are significantly higher in these areas, which encourage developers to continue using traditional land planning models to meet consumer demand (Grant 2002; Cox 2004).

For obvious economic reasons, retail establishments follow residential growth patterns. This, in combination with the popularity of big box stores and one-stop shopping, lower land costs and adequate area to accommodate automobile use, continues to encourage major retailers to invest in the suburbs rather than test unproven business models.

Consumers have proven to be fearful of policies which threaten to decrease the value of their homes (Downs 2005; Grant 2002). For this reason, higher density and adjacent lower-cost housing are two strategies which have received the greatest opposition.

The redevelopment of brownfield sites has been driven by economic interests of municipalities and specialized developers (O'Connell 2009), but has been successful because of consumer preference: these revitalized areas appeal to a segment of the population preferring an active lifestyle close to urban amenities. Also, because these sites are not valued by the neighbouring communities, less opposition has been encountered.

8 Smart Growth and Sustainability

As smart growth principles have generally not realized their intended results, an additional question should be considered: is it an implementation issue or a fundamental flaw with smart growth theory?

The most commonly cited definition of sustainable development is that of the Brundtland Commission (WECD 1987): "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Three types of needs are considered—environmental, social and economic—which are referred to as the pillars of sustainability.

Returning to CaGBC's definition of smart growth, its objectives are to "enhance our quality of life [social], preserve the natural environment [environmental] and save money over time [economic]". The effectiveness of smart growth principles in achieving these objectives follow (refer to Table 2 for a detailed list of benefits cited by proponents.)

8.1 Social

As the majority of the population continues to gravitate to low-density housing, it is reasonable to assume this is their ideal model for quality of life. In implementing increased density, it could be argued that the perceived social benefit of the few is being imposed on the many.

Other social issues, such as providing mixed housing options to facilitate choice and encourage diversity within the community, are supported by smart growth. However it has been shown the creation of diverse housing opportunities does not guarantee housing affordability. Government initiatives specifically addressing affordability issues—either through regulation or market-based incentives—must also be present.

8.2 Environmental

Density in itself does not seem to reduce automobile use (Cox 2004; O'Toole 2007) and despite significant investment in transportation systems, the automobile remains the preferred mode of transportation. This suggests that in theory the combination of density and alternate transportation modes would reduce GHG emissions, but in practice consumers must have sufficient incentive to change their behaviours.

While efforts to reduce GHG emissions through reduced automobile use are admirable, buildings are responsible for over half of all emissions (Pembina Institute 2011; Toronto 2007; Vancouver 2007c). As noted earlier, it is rare that green buildings have been considered a smart growth principle. In light of the significant impact they could have on climate change, CaGBC's inclusion better promotes the environmental objectives of smart growth.

Until a better model is discovered, land preservation is necessary to preserve ecological systems and agricultural land. As innovative technologies to provide sustainable infrastructure solutions are in development stages (Flow 2008) these preservation needs may change, however the general public also places aesthetic value on natural areas. Although the majority of urban planners have concluded acceptable areas cannot be preserved with growth continuing at current rates and densities, there is data which suggests otherwise (Cox 2004; O'Toole 2007) and further study is suggested.

8.2.1 Renewable Energy

One significant principle which is absent in the smart growth model is renewable energy. Perhaps this is because the theory was developed before renewable technologies were considered economically feasible. Today, generating clean energy, to include supplementing energy provided by the grid, are important

components of a sustainable urban environment and climate change mitigation. Due to site limitations (shading, obstructions), renewable technologies such as wind and solar power are more effective in lower density areas than higher ones (Boyd 2010). As it may not be desirable to install turbines or solar panels on agricultural or ecological land within a preservation area, lower density development alongside higher density may better support the incorporation of self-generated renewable technologies.

8.3 Economic

When combined with a case for economic vitality, such as inner city brownfield redevelopment, smart growth principles are most successful: these locations do not need preservation; existing infrastructure is maximized; and, the tax base of the city is improved (O'Connell 2009). As noted earlier however, if affordability is to be realized government intervention may be necessary.

The suggestion that money can be saved over time is unsubstantiated. Although costs of municipal infrastructure are slightly higher, the savings (calculated at approximately $40 per year per capita) may not provide sufficient justification to increase densities beyond what is preferred by the majority (Cox and Utt 2004). Furthermore, other infrastructure costs, such as public transportation, traffic calming measures, additional sidewalks and cycling lanes do not appear to be considered in the cost saving calculation.

Transportation cost savings for the public are also in question. As noted earlier, consumer preference will dictate residence location, and economic and personal factors will determine location of employment. Studies have shown UGBs have extended cross-border commutes as there is no assurance a citizen will choose to live close to where they work (Cox 2004; Myung-Jin 2004).

9 Recommendations

9.1 Engage Stakeholders

Dialogue with citizens and the business community is critical. Urban planners may see the benefit of controlled growth, but successful land design is heavily dependent on those who use it. Citizens who are fearful of declining property values and prefer to use their cars will continue to oppose smart growth initiatives. Businesses that derive more economic value by locating in similarly zoned areas will be reticent to try new models.

There are several avenues in which urban planners can encourage participation such as charettes and workshops, surveys (print and online), and focus groups (de

Sousa Briggs 2003; Preskill and Jones 2009). If internal expertise is unavailable to coordinate such initiatives, several independent organizations specialize in public–private engagement. Examples are The Allen Consulting Group, Pace Consulting, and Prairie Wild Consulting. In addition, citizen advisory committees are becoming increasingly utilized by city governments for specific issues and also hold promise in shaping growth plans. These committees are comprised of community volunteers interested in the issues, bringing with them a diversity of expertise and perspective. In their capacity on the committee, not only can they contribute a broad range of ideas, but also liaise between the government and the general public (Courter 2010).

Alliances with NGOs that support active lifestyles, alternative modes of transportation (walking, biking) and community involvement can lend credibility to smart growth initiatives and contribute to changing behaviour. Public–private development partnerships, tax incentives and streamlining permitting/approval processes will encourage the business community to invest more seriously in mixed land use projects.

By fully engaging all stakeholders in a meaningful exchange of ideas, urban planners can more effectively communicate the benefits of smart growth and also shape policy to better serve constituents.

9.2 Transition Toward Regional Planning

As mentioned, smart growth has been defined as a solution to sprawl. Sprawl was created, in part, by a lack of cohesive planning within cities. Without the implementation of regional planning, similar results may be produced when incorporating smart growth principles. Also, regional planning has the potential to eliminate the "leapfrogging" development trend that has undermined the efforts of many cities in their attempts to control growth.

9.3 Incorporate Complementary Initiatives

As mentioned, it has been argued that many jurisdictions have not taken a holistic approach to smart growth. Based on the evidence, it could also be suggested that the smart growth model has not taken a holistic approach to sustainability. Smart growth principles are part of the solution to sustainability but are not all-encompassing. Either additional principles should be added to the smart growth model or smart growth should be combined with other initiatives—such as green infrastructure and clean energy.

Decreased housing affordability continues to plague smart growth developments and can only be solved with changes to public policy. Examples such as restricting the sale (and price) of a percentage of units for low income purchasers

and/or reserving a percentage of units for social housing programs would ensure diverse housing opportunities remain available.

CaGBC's principle #8: Utilize smarter, and cheaper, infrastructure and green buildings is a step toward sustainability that is absent in most other smart growth models, however rather than attempting to establish yet another set of guidelines, smart growth models would benefit from partnering with existing initiatives. LEED, Passive House and Living Building Challenge are three programs that have been also been adopted by CaGBC. Both LEED and Passive House focus on building efficiency while Living Building Challenge includes twenty over-arching imperatives—including green infrastructure, water use and net zero energy.[1] Rather than treating each as an independent program, an interrelationship between the four should be established.

10 Concluding Remarks

While smart growth principles do align with sustainability objectives and aim to address climate change through reduced vehicle use, results have been mixed. When evaluated against CaGBC's ten principles, the data reviewed suggests there have been more failures than successes. This is a result not only of ineffective implementation, but also of the theory itself. Smart growth can be part of the answer in working toward urban sustainability but it is not the whole answer. By encouraging meaningful dialogue—among all stakeholders and across regions—the benefits of smart growth can be better communicated, affecting change in consumer behaviour. Dialogue can also provide valuable feedback from citizens and the business community which government can use to create win–win urban planning models. A transition to regional planning will allow these models to be cohesively supported throughout the region. Further, in considering complementary initiatives in conjunction with smart growth principles, government can better align urban development with sustainability goals.

References

Ali AK (2008) Greenbelts to contain urban growth in Ontario, Canada: promises and prospects. Plann Pract Res 23(4):533–548. doi:10.1080/02697450802522889

Amati M, Taylor L (2010) From green belts to green infrastructure. Plann Pract Res 25(2):143–155. doi:10.1080/02697451003740122

[1] While it is beyond the scope of this chapter to discuss these existing programs in detail, for further information, visit CaGBC's "Programs" page at http://www.cagbc.org/AM/Template.cfm?Section=Programs

Barnes T, Hutton T (2009). Situating the new economy: contingencies of regeneration and dislocation in Vancouver's inner city. Urban Stud 46(5 and 6):1249–1271. Retrieved 23 Feb 2012, from http://www.geog.ubc.ca/~tbarnes/pdf/PAPER_Situating_Vancouver's_new_economy.pdf

Behan K, Lea NS (2010) Benchmarking active transportation in Canadian cities. Clean Air Partnership, Toronto. Retrieved 24 Feb 2012, from http://tcat.ca/sites/all/files/Benchmarking_Walk21.pdf

Braid D (2006) Currie barracks delays blasted. Calgary Herald. Retrieved 22 Feb 2012, from http://www.canada.com/calgaryherald/columnists/story.html?id=4b2035ab-790f-4270-bf78-11a5d5beb11c

Boyd S (2010) Solar: wind comparison webpage. Retrieved 15 Jan 2012, from http://www.boydsolar.com/solar-wind-comparison.php

Calgary (2013) Building green: the city and LEED webpage. Retrieved 26 Feb 2012, from http://www.calgary.ca/UEP/Water/Pages/Customer-service/Water-centre/The-Citys-Building-Green.aspx

Canada Green Building Council (CaGBC) (2010) What is smart growth webpage. Retrieved 5 Feb 2012, from http://www.cagbc.org/Content/NavigationMenu/Programs/SmartGrowth/default.htm

Canada Mortgage and Housing Corporation (CMHC) (2005) Smart growth in Canada: Implementation of a planning concept. Retrieved 9 Feb 2012, from http://publications.gc.ca/collections/collection_2011/schl-cmhc/nh18-1-2/NH18-1-2-165-2005-eng.pdf

Courter J (2010) Citizen Advisory Board (June 4). Retrieved 2 Oct 2012, from http://participedia.net/methods/citizen-advisory-board

Cox W (2004) Myths about urban growth and the Toronto "greenbelt". The Fraser Institute. Retrieved 20 Feb 2012, from http://www.demographia.com/db-torgreenbelt.pdf

Cox W, Utt J (2004) The costs of sprawl reconsidered: what the data really show. The Heritage Foundation, Washington DC. Retrieved 10 Feb 2012, from http://www.heritage.org/research/reports/2004/06/the-costs-of-sprawl-reconsidered-what-the-data-really-show

Daniels TL (2010) The use of green belts to control sprawl in the United States. Plann Pract Res 25(2):255–271. doi:10.1080/02697451003740288

Davis G (2008). Toronto not taking the LEED? Retrieved 26 Feb 2012, from http://www.blogto.com/environment/2008/05/toronto_not_taking_the_leed/

de Sousa Briggs X (2003) Planning together: How (and how not) to engage stakeholders in charting a course. The Community Problem Solving Project @ MIT (June). Retrieved 2 Oct 2012, from http://web.mit.edu/cpsproject/images/artsci_planning_together_tool_web_0603.pdf

Demographia (2004) Smart growth pros and cons webpage. Retrieved 10 Feb 2012, from http://www.demographia.com/db-smgprocon.htm

Downs A (2005) Smart growth: Why we discuss it more than we do it. J Am Plann Assoc 71(4):367–380. Retrieved 1 Feb 2012, from Business Source Complete database

Flow (2008) Clean water, green jobs: a stimulus package for sustainable water infrastructure investments. Retrieved 26 Feb 2012, from http://www.blue-economy.ca/sites/default/files/reports/resource/clean_green.pdf

Get Toronto Moving Transit Committee (2012) History of the Toronto Transit Commission. Retrieved 25 Feb 2012, from http://www.gettorontomoving.ca/uploads/History_of_the_Toronto_Transit_Commission.pdf

Grant J (2002) Mixed use in theory and practice: Canadian experience with implementing a planning principle. J Am Plann Assoc 68(1):71–84. Chicago: American Planning Association. Retrieved 18 Feb 2012, from ABI/Inform database

Hubbell J, Colquhoun D (2006) Light rail transit in Calgary: the first 25 years. Retrieved 23 Feb 2012, from http://www.calgarytransit.com/pdf/Calgarys_LRT_1st_25Years_TRB_revised.pdf

Jepson EJ Jr, Edwards MM (2010) How possible is sustainable urban development? An analysis of planners' perceptions about new urbanism, smart growth and the ecological city. Plann Pract Res 25(4):417–437. doi:10.1080/02697459.2010.511016

Litman T (2011) Evaluating criticism of smart growth. Victoria Transport Policy Institute, Victoria BC. Retrieved 10 Feb 2012, from http://www.vtpi.org/sgcritics.pdf
Myung-Jin J (2004) The effects of Portland's urban growth boundary on urban development patterns and commuting. Urban Stud (Routledge) 41(7):1333–1348. doi:10.1080/0042098042000214824
O'Connell L (2009) The impact of local supporters on smart growth policy adoption. J Am Plann Assoc 75(3):281–291. doi:10.1080/01944360902885495
Ontario (2011) Greenbelt protection website. Retrieved 24 Feb 2012, from http://www.mah.gov.on.ca/Page187.aspx
O'Toole R (2001) The folly of 'smart growth'. Regulation 24(3):20. Retrieved 10 Feb 2012, from Business Source Complete database
O'Toole R (2007) Urban sprawl and smart growth. Fraser Forum, p 16–18. Retrieved 10 Feb 2012, from Business Source Complete database
Pembina Institute (2011) Options for reducing GHG emissions in Calgary: research report. Retrieved 26 Feb 2012
Portland (2010) City of Portland public involvement principles. Retrieved 26 Feb 2012, from http://www.portlandonline.com/oni/index.cfm?a=312804&c=51069
Portland (2012) Bureau of planning and sustainability website. Retrieved 24 Feb 2012, from http://www.portlandonline.com/bps/index.cfm?c=42133&
Preskill H, Jones N (2009) A practical guide for engaging stakeholders in developing evaluation questions. Robert Wood Johnson Foundation. Retrieved 2 Oct 2012, from http://www.fsg.org/Portals/0/Uploads/Documents/PDF/Engaging_Stakeholders_Guide.pdf
Schmidt CW (2004) Sprawl: the new manifest destiny? Environ Health Perspect 112(11):A620–A627. Retrieved 21 Feb 2012, from Jstor database
Song Y (2005) Smart growth and urban development pattern: a comparative study. Int Reg Sci Rev 28(2):239–265. doi:10.1177/0160017604273854
Staley SR (2006) Sustainable development in American Planning: a critical review. Town Plann Rev 77(1):99–126. Retrieved 20 Feb 2012, from the JStor database http://0-www.jstor.org.aupac.lib.athabascau.ca/stable/40112667
Statistics Canada (2011) Census profile webpage. Retrieved 2 March 2012, from http://www12.statcan.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E
Suzuki D (2003) Getting the facts: the cost of sprawl. Retrieved 6 Feb 2012, from http://www.davidsuzuki.org/publications/downloads/2003/driven_sprawlfacts.pdf
Suzuki D, Moola F (2010) David Suzuki: using smart growth to combat urban sprawl in Canada. Retrieved 6 Feb 2012, from http://www.straight.com/article-321005/vancouver/david-suzuki-using-smart-growth-combat-urban-sprawl-canada
Toronto (2007) Greenhouse gases and air pollutants in the city of Toronto. Retrieved 26 Feb 2012, from http://www.toronto.ca/teo/pdf/ghg-aq-inventory-june2007.pdf
Toronto (2008) Waterfront revitalization chronology. Retrieved 20 Feb 2012, from http://www.toronto.ca/waterfront/chronology.htm
Toronto (2010) Toronto official plan. Retrieved 25 Feb 2012, from http://www.toronto.ca/planning/official_plan/pdf_chapter1-5/chapters1_5_dec2010.pdf
Toronto (2013) Toronto's Port Lands and West Don Lands. Retrieved 20 Feb 2012, from http://www.toronto.ca/waterfront/newlife.htm
US Census Bureau (2010) 2010 Population and housing tables. Retrieved 12 March 2012, from http://www.census.gov/population/www/cen2010/cph-t/cph-t.html
US Department of Energy (2012) Database of incentives for renewables and efficiency. Retrieved 24 Feb 2012, from http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=OR16R&RE=1&EE=1
Vancouver (2007a) Information sheet: Southeast false creek. Retrieved 24 Feb 2012, from http://vancouver.ca/commsvcs/southeast/pdf/statsheet.pdf
Vancouver (2007b) Progress report on Vancouver green building strategy. Retrieved 24 Feb 2012, from http://vancouver.ca/sustainability/documents/GreenBuildingStrategyPolicyReportMay172007.pdf

Vancouver (2007c) Climate protection progress report 2007. Retrieved 26 Feb 2012, from http://vancouver.ca/sustainability/documents/Progress2007.pdf

Vancouver (2012) Greenest city 2020 action plan. Retrieved 10 Feb 2012, from http://vancouver.ca/greenestcity/PDF/GC2020ActionPlan.pdf

World Business Council for Sustainable Development (WBCSD) (2008) Energy efficiency in buildings: Business realities and opportunities. Atar Roto Presse SA, Switzerland. Retrieved 7 Jan 2012, from http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=13559&NoSearchContextKey=true

World Commission on Environment and Development (WECD) (1987) Our common future. Oxford University Press, Oxford

Author Biography

Dana Coble is a business consultant specializing in improving the efficiencies of operations in the residential construction industry. She holds numerous business and construction certifications related to land development infrastructure, building envelope systems and international code compliance. She has worked with land planners and major residential builders in the United States to design and build unsubsidized affordable housing communities.