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SMART GROWTH AND SUSTAINABLE DEVELOPMENT: CHALLENGES, SOLUTIONS AND POLICY DIRECTIONS

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Abstract In this paper, we focus on the issues related to development densities that emerged from our study of sprawl and development issues in three regions of British Columbia, Canada. We chose to focus on this aspect of the smart growth agenda because, while many of its other elements enjoy wide support across social interests, the goal of achieving a higher density urban fabric is highly controversial. We proceeded by collecting data on development densities and 13 indicators of potential benefits in 26 municipalities. The results suggest that the density of communities is associated with efficiencies in infrastructure and with reduced automobile dependence, with the ecological and economic implications which flow from that. However, it does not necessarily correlate with greater affordability of housing or more access to green space. In fact, if anything, we discovered a negative relationship between housing affordability and green space per capita and higher land use densities. In a second stage of the research, we conducted a qualitative analysis of a subset of six municipalities and identified key policy issues for moving ahead with the smart growth agenda. The paper concludes with a discussion of the policy issues that emerged from these case studies.

Introduction

The following paper is based on a study that was conducted for Smart Growth BC, an organization devoted to curbing urban sprawl and promoting more compact and livable patterns of development in the province of British Columbia. The study was the first ever to examine the extent of sprawl in that province and to look at the experience and track record of municipalities in attempting to address the problem (Alexander & Tomalty, 2001).

In this paper, we focus on the issues related to development densities that emerged from the study. We have chosen to focus on this aspect of the smart growth agenda because, while many of its other elements enjoy wide support across social interests (like improving transportation options, preserving parkland, etc.), the goal of achieving a higher density urban fabric is highly controversial (Downs, 2001a). On the one hand, it is supported by environmentalists, transit operators and user groups, open space advocates, and some farm advocacy groups. On the other hand, it is opposed by many property developers and homeowners who fear that it will introduce undesirable changes into their neighbourhoods, increase congestion, or unleash gentrification.

Achieving higher densities in newly urbanizing suburbs, infilling and redeveloping mature areas and preventing very low density estate type development on the urban-rural fringe are thought to entail a range of ecological, social and economic benefits. These include:

- more efficient use of land and less pressure to convert habitat and farmland to urban uses
- reduced car use and commuting distances (with associated reductions in greenhouse gas emissions and air pollution) by bringing origins and destinations closer together and by making public transit more economically viable
- greater clientele and employee base for many businesses, resulting in more mixed land uses, which in turn are associated with a higher quality of life, access to services,
and transit feasibility. A better mix of land uses may also mean a better balance between residents and jobs, with fewer people having to drive to work in far-flung locations.

- **reduced consumption of water and energy**, which are typically higher in low density districts due to higher heating and cooling costs for single-family homes and excess water use on lawns, gardens and cars
- **greater efficiencies in the provision and use of infrastructural systems**, which are costly and consume energy and raw materials through their manufacture and emplacement. Road infrastructure also reduces soil permeability and contributes to flooding (USEPA, 2001).
- **improved quality of life** for a wide variety of people (seniors, children, stay-at-home parents, etc.) by providing services and amenities closer to home, making neighbourhoods more pedestrian-friendly and vibrant, and by increasing neighbourhood security through 24/7 street surveillance.
- **improved variety of housing types** to better accommodate a wider range of people in various stages of their life cycles (e.g., empty nesters, divorced singles, single parents, students, infirm or handicapped people)
- **greater housing affordability** as unit sizes come down and the range of housing types broadens (Downs, 2001b).

In order to explore some of these potential benefits in the BC context, we decided to collect data on development densities in specific areas of the province and to relate that data to several indicators of the hypothesized benefits. The areas chosen for study were those regions with historically the highest rates of population growth, because, we reasoned, they would have the greatest opportunity to increase development densities. These areas were comprised of 26 municipalities in three regional districts: Greater Vancouver, Central Okanagan, and Nanaimo which, collectively, account for 57% of the population of the province (BC Statistics, 2002) [see Figure 1].

[insert Figure 1 here]

The benefits indicators were chosen largely on the basis of the availability of standardized data across the three regional districts, with the majority of the data being drawn from census records from 1996 (2001 census data was not yet available). Because of resource and data limitations, not all the putative benefits could be assessed. The indicators selected are presented in Table 1.

[insert Table 1 here]

[insert Table 2 here]

Low densities in some of the communities studied are reflected in the predominance of single-family homes and the scarcity of multi-family housing (as measured by indicators 3, 4, and 5), which has implications for infrastructure (as measured by indicators 6 and 7). Data on the degree of mix or separation of land uses, is unfortunately, not readily available. However, indicators 8 through 11 provide a rough proxy for the jobs and housing balance within these communities. Indicators 12 and 13 were used in an attempt to capture the degree of automobile dependence.

Research Results
As indicated in Table 2, we discovered the full spectrum of population and housing densities. These ranged from one person per hectare to 84.7, and from .3 units per hectare to 34. As expected, the higher density communities offered the widest range of housing choices. The percentage of single family homes varied from a high of 89.49 to a low of 21.05. The ratio of apartments constituted a low of 0% in one municipality and a high of 66.33% in another. Ground-oriented housing (consisting of row houses, semi-detached and detached homes) went from comprising 100% of all units in one municipality to 33.67% in another.

The three most land-efficient communities had 59.75% of their housing stock in apartments, with 25.51% in single family homes. The three least efficient had 1.38% in apartments and 89.0% in single family homes. Whereas the first group had 40.23% of their stock in a ground-oriented form, the second group had 98.77% in that form.

Also as expected, lower density communities tended to be characterized by more land dedicated to roads. The three municipalities with the lowest ratio of street coverage (averaging 4.07 hectares per 1000 people) had an average unit density of 6.8, compared to 3.7 for the three communities with the highest street coverage (an average of 25.56).

Likewise, lower density municipalities had the most extensive sewerage and water facilities on a per capita basis. The three municipalities (not primarily dependent on septic services) with the lowest sewer and water infrastructure per 1000 people (an average of 6.71 kilometres per 1000 people) had an average unit density of 31, as contrasted with 11.6 for the three with the highest ratio of infrastructure (18.01). These findings provide preliminary confirmation that land use and infrastructure efficiency are more efficient on a per capita basis in higher density communities.

In terms of jobs to employment force ratios, for which we had incomplete data, we found that these ranged 1.29 to .37 and that the higher ratios were related to higher densities of development. For the communities for which statistics were available, the three municipalities with the highest ratio of jobs to labour force (1.23) had an average unit density of 18.83, while the three with the lowest (.44) had an average unit density of 4.8.

We also collected data on the proportion of the employed labour force working within municipal boundaries and on average commuting distances. The three communities with the highest proportion of its employed labour force working within its boundaries (65.91%) had an average unit density of 13.93, whereas the three with the lowest (2.22%) had an average unit density of 1.17.

The three communities with the shortest average commute (3.73 kilometres) had an average unit density of 3.7, whereas those with the longest (averaging 18.9) had a density of 1.73 units. Surprisingly, some of the communities with the shortest commutes had relatively low densities. However, these were cities and towns that had no other major adjacent centres and thus constituted employment nuclei for their respective regions.

The three communities with the fewest single drivers commuting to work (60.47%) had an average unit density of 31. The three with the highest proportion (90.4%) had a unit density of 1.17. The three communities with the lowest average rate of vehicle ownership per capita (.43) had an average unit density of 13.98, whereas those with the highest rate (.76) had a unit density of 11.17. Thus, there is not a strong relationship between ownership of passenger vehicles and density. However, there is some evidence to suggest
that people living in denser communities, while owning as many vehicles, may use them
less frequently in their daily lives.

The three communities with the lowest proportion of their households spending more than
30% of their income on housing (22.1%) have an average unit density of 3.41, whereas
those with the highest (36.15%) have a density of 26.63. Clearly, affordability is inversely
related to density. However, denser inner cities also have a higher proportion of poor
people, who tend to gravitate to places where social services are most readily available.
The high cost of housing in such centres may also be partially offset by lower
transportation costs.

The communities with the greatest amount of park and playground space per 1000 people
(81.35 hectares) have a combined unit density of 2.17, while the three with the least (1.01
hectares) have a density of 12.74. However, these figures are not very instructive. One of
the low-density communities that scores extremely well is surrounded by a regional park,
thus giving it a exceptional ratio of 147 hectares of green space per person. The ones
possessing the least park and playground space are drawn from the high, low and middle
portions of the density spectrum, and have a variety of compensating features – ranging
from large lots and adjacent farmland to wilderness parks in adjacent municipalities and
oceanfront promenades. While there are compensations associated with more dense city
living not measured or captured here, the information from the last two indicators suggest
that enhanced quality of life is not an automatic outcome of greater density.

Challenges, Solutions, And Public Policy Directions

Our research, which represents merely a preliminary foray into the realities obtaining in
B.C. communities, suggests that the density of communities is associated with efficiencies
in infrastructure and with reduced automobile dependence, with the ecological and
economic implications which flow from that. However, it does not necessarily correlate with
greater affordability of housing or more access to green space. In fact, if anything, we
discovered a negative relationship between housing affordability and green space per
capita (indicators 14 and 15) and higher land use densities. This, in turn, suggests areas
requiring further attention in future policy initiatives. If compact community policies cannot
deliver greater affordability and a higher quality of life, then they are not likely to be
successful in the long run.

Another important point that emerged was that density is only one factor determining the
intensity of infrastructure, the location of jobs, and commuting behaviour/ automobile
dependence. There are also factors of regional history, geography and economics that
prevent a straightforward linear relationship from obtaining between urban density and
these other factors. This holds true as well for the lower affordability and green space
observed in more dense communities. These were also conditioned or mitigated by factors
not related to density. Unfortunately, our data is not extensive or robust enough to enable
to us to disaggregate density from other relevant variables. At best, we can state that a
relationship exists between land use efficiency and the various "goods" and "bads" that the
smart growth and sustainability movements are seeking to increase or reduce.

In a second phase of our research, we explored some of the issues that emerged from the
quantitative findings by choosing six municipalities for more in-depth treatment. These
were the City of Nanaimo and the Town of Qualicum Beach in the Regional District of
Nanaimo; the City of North Vancouver and the City of Surrey in the Greater Vancouver Regional District, and the City of Kelowna and the District of Lake Country in the Regional District of the Central Okanagan. These communities were chosen because they represent the range of densities in the study area, illustrate some of the trends and challenges involved in implementing smart growth, and also some of the positive initiatives that might be replicated in other parts of the province.

In order to gather information for this phase of our research, we reviewed official plans and other municipal documents and interviewed public officials in each of the selected jurisdictions. The six cases examined all featured quite different characteristics and challenges. However, there were a few points which emerged from a consideration of all of the cases. The recommendations that follow address some of the points of concern highlighted in the findings, and attempt to tackle policy shortcomings that are partly responsible for the poor performance of some municipalities. More broadly, they address the social and economic dimensions and issues of sustainability that were poorly represented in the data collection process, and some of the main preconditions in the B.C. context for achieving the ecological, social, and economic benefits referred to earlier in the paper.

1. Density and urban design

The first precondition for achieving more compact development – as can be shown by the statistics on housing affordability and park land – is that improved efficiencies of land use have to be justified by the ability of communities to provide a high quality of life for their residents. Many citizens of all ages are already choosing to live “downtown” because it provides them with desirable lifestyle elements that they can’t have in a more suburban setting.

However, not all densification efforts in older urban cores have been equally successful. Many people find that high rise development does not meet their basic need for a human-scale environment. Specific recommendations for improving livability include: implementing good urban design that integrates higher density housing with existing urban landscapes through an inclusive planning process. Positive design features include adequate open space, a pedestrian-friendly environment, traffic-calmed side streets, and “urban oases,” where people can get away from the hustle and bustle of the city. In integrating the built and natural environment, greenways, re-established stream corridors, and community gardens can all bring nature into the city and relieve the predominance of asphalt.

Involving local residents in the design of higher density projects is extremely important. When people are consulted and their design preferences are taken into account, initial reservations can be turned into acceptance and support for positive change in their community. This was the case with the Longwood development – a high-density apartment and condominium project in Nanaimo – where the developers met with local residents to work out an agreement on modifications to the project and neighbourhood amenities. In addition to emphasizing community consultation, we recommend that municipalities enhance the level of “social marketing” and public education they offer on urban form issues. In particular, they need to marshal more resources for this purpose and share more widely what works and does not work with other jurisdictions.
2. Affordable housing

Municipal statistics demonstrate that affordable housing is not automatically a byproduct of increased density. In fact, high housing costs may be a reflection of the desirability of denser, more diverse settings and the willingness of people to pay to live in them. But even some lower density municipalities are experiencing a shortage of affordable housing.

Some of the case study municipalities were taking aggressive steps to improve housing affordability within their jurisdiction. For instance, the City of North Vancouver has created an affordable housing reserve fund, waived development fees on affordable housing projects and offered city-owned lands at below market prices for residential development. Developers are allowed extra density in exchange for creating affordable units.

Our recommendations include applying these practices on the widest possible basis and encouraging senior governments to re-assume their historic commitment to supporting the creation of affordable housing. We need to use all the creative ways we can muster to bring affordable units, catering to the needs of a variety of households, onto the market if we are to ensure that more compact development is also equitable.

3. Mixed-use developments

Many dense municipalities score fairly well on jobs-housing balance. However, this is not universally true. In the case of one municipality, White Rock, we noted high unit densities (26 per hectare), but with a relatively low ratio of jobs to employed labour force (0.69). Moreover, only 12% of White Rock’s employed labour force works within the municipality’s boundaries. Ecological gains achieved by using land efficiently are offset if people have to get into their cars and drive long distances to get to work or services and amenities. Thus, we recommend that municipalities work at building more “complete communities,” where people can meet a majority of their needs close to home.

Some of the municipalities surveyed were making efforts to require mixed use development in certain locations. For instance, in Qualicum Beach, all new residential developments downtown must have a commercial component. However, mixed use development is often difficult to implement. In practice, mixed use projects may be opposed by local residents because they believe they will generate noise, parking difficulties or other nuisances. Municipalities are increasingly interested in performance-based zoning as a way to address this issue. Performance based zoning regulates land use based not on the proposed use, location, and dimensions of the development, but on the basis of the actual impacts it will have on the neighbouring residents and businesses. It allows any land use to locate adjacent to any other use, provided it satisfies predetermined performance standards (noise, dust, hours of operation, views, etc.).

This approach has been explored elsewhere in Canada, and is in use in countries such as the US, Australia and New Zealand where it has been an effective means of encouraging mixed use development (Tomalty, et al., 2000). Thus, we recommend studying the applicability of using performance-based zoning approaches in BC municipalities.

4. Development concentration areas
Our research revealed a surprising consistency of vision among municipalities, especially the desire to concentrate development in higher density nodal areas that would be pedestrian-friendly and well-serviced by transit. What seems to be undermining nodal development in many cases is the excessive amount of land designated for development outside the nodes, where land values are lower and fewer development restrictions apply. For example, assuming the population continues to grow at rates of between 2% and 4% per year, there exists in Nanaimo today enough residential zoned land to accommodate growth for the next 14 to 28 years. Municipalities in this position acknowledge that this land will need to “fill up” first before the market pays serious attention to opportunities in the nodes. This means that it may be several decades before nodal areas reach the critical mass they need to develop into truly urban centres.

To accelerate this process, we believe that municipalities should consider removing some lands from urban reserves in municipalities that have excessive reserve capacity. Moreover, they should institute strict planning controls on bringing any more land into the urban reserve and create strong urban growth boundaries with a high hurdle for change. Providing incentives for infill development and brownfield redevelopments will also help.

In the building out of areas already designated or zoned for lower density development, most municipalities have shown little intention of achieving a significantly different pattern of development. This is a mistake. Without such changes, greater automobile dependency, social segregation, and further environmental degradation are inevitable. In fact, these areas represent the best opportunity for implementing smart growth principles because they are being planned “from scratch” rather than being retrofitted after an unsustainable urban pattern is already in place (as in many nodal areas). Our recommendation, then, is to use comprehensive smart growth principles in planning and designing new developments, especially greenfield sites.

5. The provincial role

In moving municipalities forward on this front, the province has a major role to play because so many of the costs associated with inefficient suburban development patterns are borne by that level of government: highway development, interchanges to serve new subdivisions, new hospitals, schools, higher transit subsidies, road subsidies, and so on. The province is also the only level of government that can diffuse the competition among municipalities to attract development interest and new residents by not making new growth pay its own way.

Fortunately, BC already has in place several mechanisms to help set a more progressive context for greenfield development. First, it has issued a set of guidelines on transit supportive development that municipalities can use when reviewing development applications. At the moment, these guidelines are not taken very seriously by municipalities because they have a purely advisory status. We recommend giving provincial guidelines more formal status in the review process and linking provincial transit subsidies to their implementation. Unfortunately, it is unclear as to whether the necessary leadership will be forthcoming from the recently elected provincial government, which seems to favour minimal interference with the market.

6. Development Cost Charges
Another potential lever is the system of development cost charges through which municipalities recover some of the capital costs associated with greenfield development. At present, provincial legislation does not allow municipalities to structure these fees to encourage more sustainable growth. The fees are applied on a per unit or per square meter basis, regardless of the urban design within which the unit is embedded (cul de sacs or grid pattern, houses facing the street or with backs to the street, mixed housing types or segregated housing types, etc.). Some municipalities in the United States (e.g., Austin, Texas and Orlando, Florida) have linked development cost charges and other positive and negative incentives to the level of sustainability promised by the developer (City of Austin, 2002; City of Santa Monica, 1998; City of Orlando, 1999). Our recommendation is to reduce or waive fees for subdivision plans that incorporate access to transit, bike paths, mixed use, and a range of housing types, etc.

7. Alternative infrastructure

There is a reluctance to use green infrastructure in new developments because it is untested. In East Clayton, Surrey, city engineers are requiring that the natural drainage system be backed up by a conventional drainage system, making the project more expensive instead of less so. Given this uncertainty, the province should take the lead in research and demonstration projects that show the functionality and affordability of alternative infrastructure.

8. Employment location

The location of employment opportunities is key to realizing a more transit-oriented urban structure. The concentration of jobs in urban and suburban centres can serve as major transit destinations, justifying investment in transit infrastructure, and provide those who live in or near the centres with the option to walk or bike to work. In some of the regions surveyed, we found that too much employment growth was occurring in car-dependent industrial or office parks outside the designated nodal areas, drawing investment away from the centres. This was particularly a problem in the Greater Vancouver Regional District. Thus, regional districts and municipalities should minimize the designation of employment lands outside nodal areas and work with the provincial government to provide incentives for job growth in designated centres (e.g., discounting corporate income tax rates in these areas).

9. Implementation of plans

Most of the municipalities studied for the report could boast of progressive, smart growth policies in their official community plans and other planning documents. However, in many cases, policy goals were not being realized “on the ground”. In Nanaimo, for instance, although the Official Community Plan includes statements requiring that transportation demand management and traffic calming measures be put in place, little has been accomplished apart from a number of traffic circles and a few speed bumps. The city also has policies in place to encourage transit-friendly street patterns, but in practice it continues to develop with typical suburban patterns featuring wide roads with cul de sacs.
In addition to resistance from residents and developers, policies that promoted higher-density, transit-oriented development in new suburban subdivisions were also running up against barriers within the municipal bureaucracy itself. In some cases, planners failed to get the cooperation of engineering, transportation or public works staff, who tended to be oriented towards respecting the body of codes and standards upon which conventional suburban designs are based. Reduced road widths, natural drainage systems, and lower parking standards are examples of the type of innovations that are routinely resisted by municipal staff. To rectify this, municipalities should consider introducing a system of planning indicators and quantified targets that would apply to all relevant departments within the municipal corporation. Department heads should be required to report annually on progress towards the targets.

10. Municipal expenditures

Finally, there is the issue of municipal priorities as expressed through budgeting decisions. In most of the cases profiled, municipal commitment to auto-oriented development – in spite of the many smart growth policies contained in official community plans – is clearly signalled by the large share of the municipal budget dedicated to road improvements or maintenance. In some cases, token gestures have been made to fund other transportation options, but not enough to dislodge the car as the king of the road. For example Surrey’s 1999 Transportation Plan indicates that 91.2% of transportation expenditure to 2008 will be on the road system. Only 8.8% will be spent on improving the pedestrian environment, bike facilities, or transit facilities. Therefore, municipalities should give serious consideration to redirecting municipal expenditures towards more sustainable forms of transportation, e.g., developing bike paths, improving the pedestrian environment, multi-use trails, better transit facilities, etc. These measures are required to make further progress on smart growth and will ultimately make urban living more rewarding and sustainable.

Conclusions

In the shifting language of policy discussions, smart growth provides an opportunity to implement some of the historic concerns of urban sustainability advocates. One of the challenges is to begin to quantify sprawl and its effects so as to build a case for compact communities. As might be expected, our research data revealed that a link exists between density and the efficiencies with which land and infrastructure are used. Moreover, people living in lower density communities also tend to commute long distances to work and other destinations, and are more dependent on their cars for mobility than those living in higher density communities. These relationships buttress the arguments of smart growth advocates that smarter development is more environmentally sound and fiscally prudent.

At the same time, when data reveal that not all parameters are directly improved by compact development – as they did in our study – it behooves us to come up with proposed policy measures that can enhance the performance of new development activity. In this way, we can encourage the synergistic development of greater urban sustainability in all three dimensions: ecological, social, and economic. Our recommendations to municipal and provincial governments are made in that spirit.

References


