# *A CASE STUDY OF THE GREEN BUILDING SECTOR IN VANCOUVER*

by

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# ABSTRACT

Vancouver is striving to be one of Canada's most progressive cities in terms of sustainable development, as evidenced by its goal of becoming the world's greenest city by 2020. A core area of the City's strategy in achieving this objective is the promotion of green industries, including the green building sector. While there has been significant research on the technical aspects of green building, there has been relatively little on the policy dynamics of the sector. Given that studies of the Cascadia region reveal thriving green building sectors with active policy communities, the absence of a targeted and specific study of Vancouver's green building sector presents a knowledge gap.

The purpose of this paper is to examine the policy processes involved in promoting green building in Vancouver. The research seeks to provide insight into the intricacies of the green building sector and better understand how it responds to and shapes policy. It is hoped that the lessons drawn from the research will contribute to the discourse occurring locally and in other jurisdictions.

**Keywords:** Green building; policy processes; policy communities; sustainable development; green cities; green economies; Vancouver

# EXECUTIVE SUMMARY

The research for this project is guided by a central research question: *How has green building policy shaped the building sector in Vancouver?* The research employed a variety of methods to answer this question, including developing a (green building) sector profile, document analysis, and semi-structured interviews. Some of the key findings from the research process reveal a range of strengths, weaknesses, and recommendations for the evolution of green building policy in Vancouver.

The **strengths** of Vancouver's green building policy processes include:

- The collaboration and consultation associated with green building policy development;
- The political support for and priority given to green building policy development;
- The tendency to share lessons learned and best practices;
- The market for green building;
- The leadership in and champions for green building; and
- The City's commitment to district energy as an integral element of green building.

The **weaknesses** of Vancouver's green building policy process include:

- The reliance on the Leadership in Energy and Environmental Design [LEED] system in creating and evaluating green building policy and green building more generally;
- The tendency to rely on prescriptive as opposed to performance-based policies;
- The cost-premiums and intrinsic value of green building are not reflected in policy;
- The limited promotion of education, training, and capacity building designed to get the industry and public up to speed on green building;
- Cheap energy; and
- The lack of consideration given to GHG emissions from existing buildings.

**Recommendations** for the development of green building policy in Vancouver involve:

- The creation of a system of benchmarking and accountability;
- The creation of a widely applicable metric for energy efficiency in buildings;
- Securing sustained political leadership with respect to green building policy;
- The recognition and promotion of the interdisciplinary nature of green building;
- The creation of an advisory group to promote the implementation of policy; and
- The establishment of innovation and research & development as incentive options.

# DEDICATION

For KJ and RW.

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# GLOSSARY

**Cascadia** A region comprised of Oregon, Washington, British Columbia, and Alaska

**LEED** Leadership in Energy and Environmental Design

**USGBC** United States Green Building Council

**CaGBC** Canada Green Building Council

# 1: INTRODUCTION

## 1.1 Relevance

For the first time in human history, a majority of the world's population lives in cities, and this number is forecast to grow (UNFPA, 2007:1). This trend is also evident in Canada where, as of 2009, 80% of the population lived in an urban centre (Statistics Canada, 2009). This makes urbanization a critical challenge both in Canada and globally. The effects of urbanization are compounded by climate change, which is caused, in part, by human generated greenhouse gas (GHG) emissions (Brugmann, 2009). This reality came to the fore in 2009 when the Mayors of New York, Copenhagen, and Toronto met to discuss their respective roles in climate change mitigation. At the close of the meeting, David Miller – then Mayor of Toronto, Canada's largest and most populous city – declared, "the battle against climate change will be won or lost in cities" (Weinberg and Sulugiuc, 2009). Therefore, urbanization and climate change must be tackled at the municipal level if measureable and lasting change is to occur. This means that while economic development can occur within the city and its hinterland, it cannot happen at the expense of the city's ecological health. This creates a situation where economy and environment are often seen to be in competition, and growing economies within environmental limits is perhaps the biggest challenge that cities will face in the 21st century (Fitzgerald, 2010).

## 1.2 Focus

This paper will focus on one of the key drivers of climate change and urbanization in cities – the building sector. Current research suggests that the greening

of the building sector, through actions such as increased energy efficiency in buildings, can contribute to GHG emissions reductions, which can help lessen the impacts of both urbanization and climate change on the city environment (see Fitzgerald, 2010; IPCC, 2007; Newman et al, 2009; NRTEE, 2006, 2007; NRTEE et al, 2009; UNEP, 2007; UN-Habitat, 2011). In fact, the residential and commercial building sectors have the single largest global potential to reduce GHG emissions in a cost-effective way, especially at the city level: the costs associated with investing in reducing GHG emissions in the building sector today are marginal compared to what it will cost to reduce a similar proportion of emissions in the future (IPCC, 2007). Therefore, the green building sector provides a unique opportunity for targeted and sectoral GHG emissions reductions, which, according to the National Roundtable on the Environment and the Economy (NRTEE), is one of the most effective ways to promote successful and long-term results (2009).

Although only one piece of a much larger puzzle, green building, in combination with other activities aimed at responding to and anticipating the effects of climate change, is integral to planning for the future – locally, regionally, provincially, and nationally. Broadly, green building has been linked to environmental protection, economic development, and social equity (Fosket and Mamo, 2009; Yudelson, 2008; Cidell, 2009). In the minds of its supporters, it is a profit generating strategy as well as an ideological commitment and ethical obligation to citizens and the environment. Specifically, a green building is defined as:

> A building that provides the specified building performance requirements while minimizing disturbance to and improving the functioning of local, regional, and global ecosystems both during and after its construction and specified service life ... a green building optimizes efficiencies in resource management and operational performance and minimizes risks to human health and the environment. (American Society of Testing and Materials (ASTM) International, 2001 as cited by Burnett, 2007: 30)

According to Burnett, while this definition from the ASTM does not define targets for environmental sustainability, it "provides a goal for improved eco-efficiency, and by emphasising performance requirements and human health, it also embraces economic and social dimensions of sustainable development" (2007: 29). The aim of defining green building in this way is to help establish specific building performance standards that will minimize the consumption and load the building places on the environment over its life cycle (Burnett, 2007). This holistic approach to green building is useful because it situates buildings within their built environments, which is important for understanding the true impact of the sector on its surroundings – economically, environmentally, and socially.

## 1.3 Contribution

Although there is significant research on green building rating systems, technology, and building codes, research examining the characteristics of the green building sector in Canada is lacking. Allen and Potiowsky (2008) and Berk and Associates (2005) conducted studies of the green building sectors in Portland and Seattle, respectively. In general, the studies found that there were thriving green building sectors in both cities and that they had grown substantially in recent years. In Portland, growth in the sector was attributed to strong local demand for green building projects in the private and public sectors; a critical mass of firms that both compete and collaborate; a strong foundation of supporting institutions, including supportive policies, incentive programs, and technical assistance and networking organizations; a rich pool of talent; and the ability to attract top-notch professionals from across the country (2008: 314). In Seattle, green building sector growth was attributed to the high degree of sustainable building expertise in the design, engineering, and construction professions; a concentration of green building organizations and institutions; and the presence of

strong public policy aimed at fostering growth of the green building sector (2005: 31). In both case studies, the authors identified strong and supportive public policies as major contributing factors to thriving green building sectors. While Vancouver is also located in the Cascadia region [comprised of Alaska, British Columbia, Washington, and Oregon], a targeted study of its green building policy processes has not yet been conducted. This project seeks to fill that gap by contributing to a more robust understanding of green building policy processes in Vancouver and how they may evolve and influence the building sector into the future.

## 1.4 Purpose

This paper seeks to explore the following question: *How has green building policy shaped the building sector in Vancouver?* The purpose of the project is two-fold: 1) identify the strengths and weaknesses of Vancouver's green building policy processes and 2) offer recommendations on how to create a policy environment in which the sector can thrive. The research examines the green building sector through a policy lens: the data, findings, and recommendations focus specifically on green building policy using a sector profile, a review of green building policy documents, and semi-structured interviews with 1) policy implementers, such as practitioners; 2) policy developers, such as local government; and 3) policy and sector assessors, such as green building institutions. In order to manage project scope, this list intentionally excludes activities that fall outside of these three categories, such as producers [materials, reclamation, and manufacturing], distributors and suppliers, sellers, and consumers or clients of green building.

## 1.5 Overview

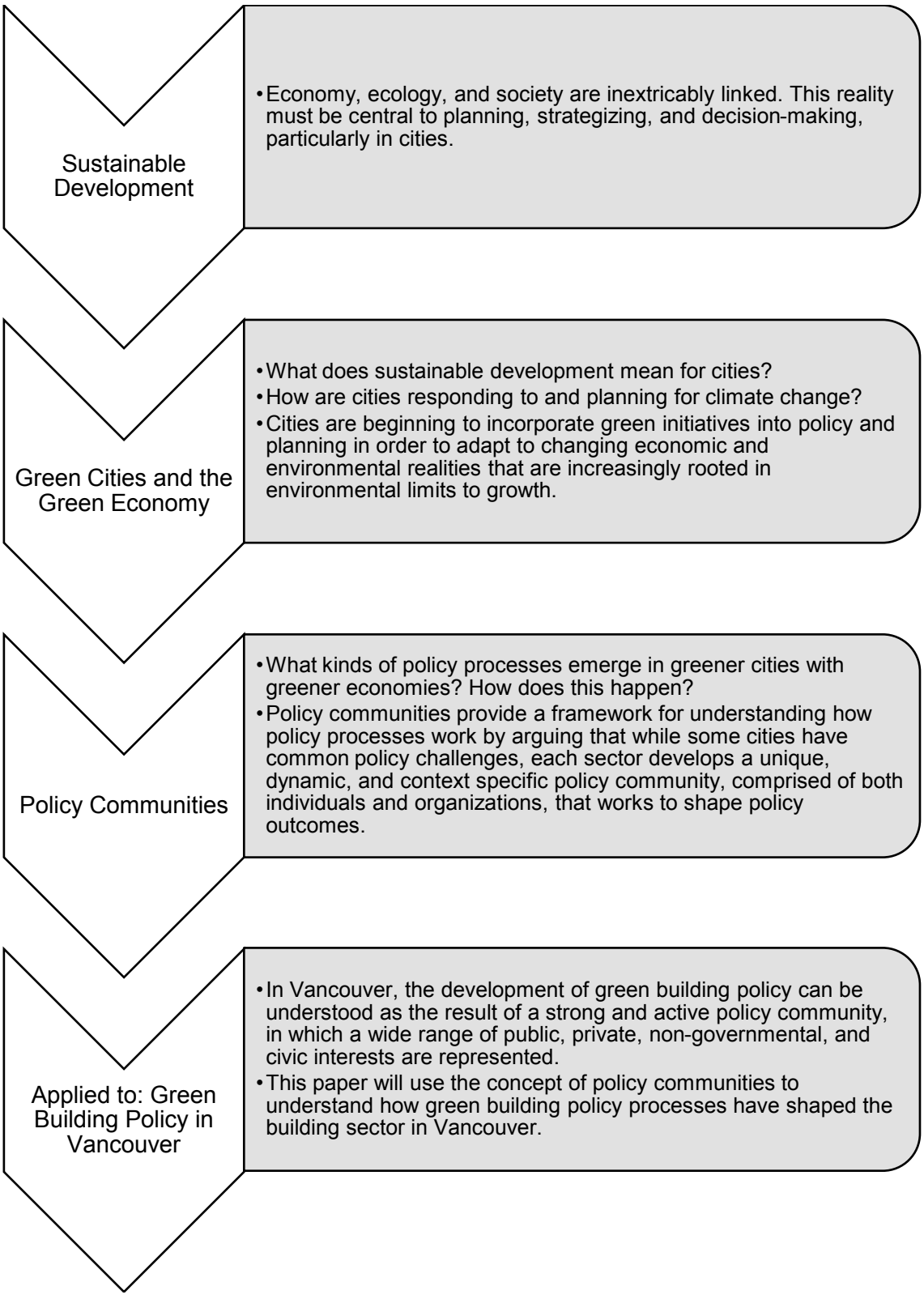
The paper is presented in the following sections: first, a conceptual framework for approaching the research question is established through a literature review. Second, the methodology is discussed, highlighting data collection and analysis techniques. Third, the Federal, Provincial, and Municipal policies on climate change, GHG emissions reductions, and green building are outlined to situate the research question within a greater policy context. Fourth, Vancouver's green building policies are discussed in detail to provide insight into the complexity and dynamism of the policy processes, how they may have impacted the sector, and how the sector has responded. Finally, the project's findings and recommendations highlight strengths and weaknesses of green building policy in Vancouver and offer recommendations for its future development.

# 2: LITERATURE REVIEW

*This section presents the literature used to create the conceptual framework for answering the research question. The Logic Model of the Literature Review [Figure 1] provides a schematic of how each literature is approached and understood.*

The research question *How has green building policy shaped the building sector in Vancouver?* will be framed using three literatures. The first literature looks at sustainable development and provides the conceptual underpinning for understanding the environmental limits to economic development and the need to incorporate this knowledge into planning for the future, above all, in cities. The second literature looks at green cities and green economies as practical examples of sustainable development 'on the ground'. More specifically, the focus of this section is on the kinds of priorities, policies, and processes that have been established in these cities and how this is shaping urban development. The third literature on policy communities provides insight into the complexities and nuances of these policy processes, particularly as they relate to green building in Vancouver. The basic premise of the policy community is that while cities do have common policy challenges, they approach and handle them differently: within a city, each sector [for instance green building in Vancouver] has a unique and context specific policy community comprised of individuals and organizations that work to shape policy outcomes. The concept of policy communities will be applied to the green building policy processes in Vancouver to refine our understanding of how these processes have shaped the sector and what this means for its future development and growth.

**Figure 1:** Logic Model of the Literature Review



## 2.1 Sustainable Development

### 2.1.1 Sustainability: the Early Years and Contemporary Applications

In 1987, the Brundtland Commission submitted its report to the U.N. General Assembly, which defined sustainable development as “development that meets the needs of current generations without compromising the ability of future generations to meet their own needs” (WCED, 1987: 43). While this definition has been criticized for being too general, the Brundtland report marked a seminal moment in the thinking around economic development because it stated that growth has to operate within environmental limits and that these limits must be considered for the economy to succeed. In other words, successful economic growth depends on finite environmental resources. This new way of thinking initiated a shift away from the traditional approach to economic development, which viewed growth as open-ended and able to provide for humanity to continue to grow indefinitely. The Commission argued that a ‘react and cure’ approach to environmental issues should only be used as a default, and that an ‘anticipate and prevent’ approach was essential to ensuring sustainable development. This involved changing the content of the economy to allow for an increase in a different type of economic activity that was driven by technological innovation and designed to provide goods and services at lower environmental costs. In the process, sustainable development became known as jobs *and* the environment as opposed to jobs *or* the environment, and environmental concerns moved from an afterthought to the centre of decision-making. This economic growth strategy was entirely different, and was designed to accommodate the higher living standards of growing populations, but with fewer and less intense ecological impacts.

Although today there is widespread recognition at international, national, provincial, and municipal levels that economic prosperity is fundamentally connected to sound environmental management, there is evidence to suggest that this knowledge is not always incorporated into policy or strategy development, and that the open-ended systems approach [that economic growth and the environment are separate entities without limits] seems to continue to dominate decision-making (Connelly, Markey, and Roseland, 2009). For example, Canada's climate change policy offers no comprehensive plan for GHG emissions reductions, but rather a series of general commitments [See Section 4.1: Federal Context]. Vancouver, on the other hand, has committed to specific GHG emissions reductions targets and has outlined an implementation plan to achieve them [see Section 5: Green Building in Vancouver]. These two approaches illustrate the varying levels of commitment to and the challenges of implementing sustainable development. Connelly supports this point: "In practice, sustainability initiatives are often evolving processes that change and shift in focus as the values, relationships, and contexts in which the initiatives are situated shift over time and place" (2010: 15). Therefore, there is no single sustainability policy or solution that can be applied universally. Rather, it is a process of continuous improvement that aims to adapt to specific contexts and changing circumstances.

### 2.1.2 The Challenges of Implementation

Implementing sustainable development can be far-reaching and difficult because "any strategy to redefine the object of regulation [such as the building sector] … is necessarily radical through its challenge to existing social order" (Gibbs, 2002: 25). Here, Gibbs highlights some of the challenges associated with the implementation of sustainable development: 1) the magnitude of the commitment is often misunderstood; and 2) sustainability often requires sacrifices to current living standards. Several

approaches and levels of commitment to sustainability have evolved in response to these challenges, particularly in terms of policy implementation and public acceptance and engagement – some are extreme, others are incremental, and some maintain the status quo. This range of approaches has been described as a continuum of weak to strong sustainability (Connelly, 2010; Holden, 2010).

Weak sustainability focuses on human needs (as opposed to environmental ones) and places the sole emphasis and responsibility of sustainability on the individual (Connelly, 2010; Holden, 2010). The approach favours incremental plans and policies designed to persuade people to consider their habits, relationships, institutional structures, and deficits as a starting point for progress and change. Its supporters argue that the economy can continue to grow and develop and that many of the challenges associated with sustainability can be solved using technological advances or manufactured substitutions for natural capital and resources. Cities are viewed as hubs for innovation and technological advances that will help drive the sustainability agenda forward.

Strong sustainability, on the other hand, focuses on finite natural resources and the limits to traditional economic growth, specifically in an urban context (Connelly, 2010; Holden, 2010). Advocates for strong sustainability place an emphasis on long-term visioning and target setting and argue for a radical change of Western values and institutions to bring lifestyles closer in line with natural limits. Local policies, programmes, and practices must be firmly rooted in sustainable development. Traditional cities are viewed as over-consumptive, unsustainable, and resource draining.

Overall, this discussion reveals that sustainability can be understood and implemented in many ways. While this openness to interpretation has been identified as a drawback, it does illustrate that, regardless of whether a weak or a strong approach is

taken, the economy, the environment, and society are interconnected, and these connections [or lack thereof] are particularly evident and tangible at the city level. Therefore, it is important to give each element – society, economy, and environment – equal weight and importance in policymaking in order to promote lasting and sustainable growth and development. The discussion also suggests that those who commit to sustainable development are tapping into a huge opportunity – for today and tomorrow. The advantages associated with sustainable development have been discussed, explored, and tested in cities around the world [a growing trend since 2000] and propose that the cities that choose to implement sustainability using targeted, informed, and context specific policies will become increasingly economically competitive into the future (Gibbs, 2002; Fitzgerald, 2010; Friedman, 2008; Newman et al, 2009; UNEP et al, 2008).

However, local policy must be situated within provincial, national, and international policy in order to affect true, valuable, and lasting change and "while [local] efforts are worthy in themselves, without a clearer understanding of sustainability and the environment as contested political issues (or set of issues), then little headway will be made with policy implementation at any scale" (Gibbs, 2002: 149). The NRTEE supports this point: more GHG emissions reductions occur when targeted regulations [as outlined by local governments] complement broadly applied strategies [as outlined by provincial and national governments] (2007: 28). As a result,

> a shift in thinking in many localities may only come when it is perceived that sustainability is a major concern of central government and that regeneration strategies must address the issues, rather than sustainability being marginal to more mainstream initiatives. (Gibbs, 2002: 138)

In summary, while the research shows that there are economic, social, and environmental benefits linked to sustainability, ultimately the difficulty lies with its implementation. The challenge is the City's ability to clearly and effectively communicate

its sustainability strategies as visions that will engage and unite citizens – regardless of where they fall on the sustainability spectrum. According to Roseland, "inherent in much of the literature is the recognition that communities must be involved in defining sustainability from a local perspective" (1997: 201). Therefore, the key to the successful implementation of sustainable development is the involvement and support of various sectors, industries, organizations, groups, etc. throughout the City as well as at regional, provincial, and national levels. The cities that are able to work with various actors and interests within this framework, and effectively employ sustainability policies and strategies, will become globally significant players and enjoy long-term economic, social, and environmental benefits that far outweigh the up-front costs associated with implementation.

## 2.2 Green Cities and the Green Economy

### 2.2.1 The Green City

While sustainability initiatives and policies are continually evolving, some cities are promoting and implementing sustainable development more actively than others. These 'green cities' are fundamentally re-orienting their economies to capitalize on the concept of environmental limits to growth (Clark, 2010). In other words, green cities recognize that, in the 21st century, economic competitiveness relies on finite natural resources. According to Fitzgerald,

> the [economic] potential for cities to build new clean technology industry clusters, improve the efficiency of production in existing manufacturing processes, and create well-paying green jobs in construction, manufacturing, and advanced technology sectors is enormous. (2010: 12)

In these cities, economic prosperity and growth are rooted in environmental conservation and are central to policy- and decision-making.

An integral element in promoting the interdependence of economy and environment is a system of governance designed to address sustainability and to have a series of policy processes that reflect this (Gibbs, 2002). There are several ways of approaching, understanding, and defining green cities, but the common thread is that economic growth, environmental degradation, and social equity must be priorities that are embedded in policy and planning for the future (Jaccard et al, 1997; Kahn, 2006; Roseland, 1997). Although identifying specific green priorities is important, the drive to become a green city must also be "located within a broader framework of purposive policy action at the local and regional scales, as elements of a broader shift towards an economy based upon sustainable development" (Gibbs, 2002: 109). Ultimately, the system of governance must consist of targeted policies, an overarching dedication to sustainable development, and a commitment to specific economic development activities [such as green building] that are rooted in sustainability.

Building on this approach to governance, Gibbs identifies three elements that must be considered when developing green cities and green economies: 1) the role of the community, such as outreach, public engagement, and education; 2) the role of business, such as the triple-bottom line approach to accounting [considering the economic, environmental, and social implications of financial decisions and return-on-investment]; and 3) the role of local government, such as increasing standards [i.e. energy efficiency] or leading by example. The idea is that these three actors – community, business, and local government – work together to establish common goals and priorities for their green city and green economy; ultimately, these goals and priorities become policy. For example, the City of Vancouver engaged several stakeholders, including public, private, not-for-profit, and academic representatives, in developing both its green building policies and in its drive to become the greenest city by

2020 (Greenest City Action Team, 2010) [see Section 5: Green Building in Vancouver]. It is also worth noting that in becoming a green city, "it is more likely to be fruitful to consider a 'portfolio' of instruments (e.g. a combination of externality pricing, differential taxation, grants, subsidies and regulation) when responding to a set of interacting and changing environmental problems" (Haughton and Hunter, 1994: 227). This comment further reinforces the advantage of taking a context specific approach to policymaking because it allows for local circumstances to be taken into account. In this way, a green city, with a thriving green economy, is more likely to emerge, develop, and grow.

### 2.2.2 The Green Economy

The purpose of this section is to introduce the concept of the green economy and discuss why local governments might implement green economy initiatives to secure economic competitiveness and prosperity. Similar to the Brundtland Commission's definition of sustainable development, the basic premise of a green economy is that the economy can only develop within ecological limits. At the city level, adopting a green economy requires a significant commitment to incorporate sustainable development into policy processes. Gibbs expands on this:

> Within a locality there is scope for basing a set of new and refocused economic development policies around sustainability. These could include targeting inward investment policies on environmental technology sectors, encouraging improved environmental standards through supply chains, offering demonstrations on waste management and pollution control to local firms, developing local exchange trading systems (LETS), creating jobs through environmental improvement schemes, and devising local indicators of sustainability. Such developments should occur as an integrated holistic strategy, rather than as a set of isolated and disjointed initiatives. (2002: 49)

While this kind of economic development can pose many challenges, the benefits often outweigh the costs. For example, the green economy offers an opening to more efficient businesses that harness cleaner technologies and who see environmental challenges, such as climate change, as opportunities for innovation (Makower and Pike,

2008: 15). Friedman (2008) builds on this point and argues that adopting a green economy strategy will make America more competitive, productive, creative, and healthier into the future – an assertion that also applies to Canada and suggests that environmental preservation is good for business. The goal is that these green ideas and initiatives are recognized and adopted as legitimate methods of promoting economic competitiveness, ultimately becoming legislated policies that are given priority in driving the economy forward.

Vancouver has committed to developing a green economy. This commitment is evident in the City's move to re-orient its economic development strategies by implementing various policy mechanisms designed to help it achieve its goal of becoming the world's greenest by 2020 – green building policies are prominent among these. In addition, the Vancouver Green Capital (VGC) initiative is promoting the development of a variety of green industries in the City, including green building. According to the VGC website, "In Vancouver, green means business and the bottom line is our future" (City of Vancouver, 2009a). This indicates that the City is aware of and strategically pursuing the benefits associated with a green economy, which is contributing to the creation of a new market opportunity for Vancouver and for export. VGC places a priority on green technologies, industries, and development in an attempt to promote sustainable economic growth and development within the City's hinterland. Green building policy is one of many methods being used by VGC to transition to a green economy.

While initiatives such as the VGC are helpful in promoting the green economy, a serious commitment from City leaders, businesses, and citizens is integral to success (Roberts, 1995; Gibbs, 2002). If measureable and lasting change is to occur [in terms of reduced GHG emissions], green economy activities need to be regulated and

incorporated into policy processes for two primary reasons. First, once regulated, baselines can be established, which allows these activities to be measured. This new, quantitative data can increase the likelihood that they are given adequate attention and resources – in both public and private spheres. Second, incorporating green economy activities into policy, allows them to be explored and tested in the public realm. This can contribute to greater public understanding and engagement, a commitment from leaders in the public and private sectors, while at the same time driving the economy forward.

The idea is that cities with greener economies will be more prosperous and competitive into the future because they have grasped [at least partially] the importance of operating their economies within environmental limits and have implemented policies and policy processes that reflect this reality. The next section explores the central role of policy communities – specifically that of the green building sector in Vancouver – in driving green economic development forward.

## 2.3 Policy Communities

### 2.3.1 Policy

Before beginning the discussion on policy communities, it is helpful to provide a definition of policy. According to Wright (1988), there are two elements to policy: function and level. Function can be understood as the activities of those who participate in the creation and/or implementation of policies, whereas level refers to the "arena in which the politics are being conducted," such as sector, firm, or corporation (Ibid, 1988: 597). Building on this:

> According to Cochran and Malone, policy formation takes up the "what questions": "What is the plan for dealing with the problem? What are the goals and priorities? What options are available to achieve those goals? What are the costs and benefits of each of the options? What externalities, positive or negative, are associated with each alternative? (Cochrane and Malone, 1999: 46 as cited by Sidney, 2006: 79)

Therefore, once function and level have been identified, policy involves establishing the authority necessary to take action to achieve the defined results or to reach objectives – for example GHG emissions reductions targets. The authority can take the form of the approval for resources [people and/or money], the enactment of laws and/or regulations, or the ability/duty to take a firm position on a particular topic – for example, climate change. In effect, policy gives government [federal, provincial, and/or municipal], private corporations, and public institutions the right and the obligation to take an action or make a decision (Sidney, 2006).

The 'policy issue' is important because it directs both the politics of the situation as well as the power and role of the participants: if it is a topical issue, it will receive increased attention and those participating in the creation and implementation of policy will enjoy greater power (Wright, 1988). For instance, in Vancouver, green building has been identified as a priority area for economic development in achieving the City's goal of becoming the greenest by 2020. As such, there has been significant movement and action around creating green building policies as a way to promote sustainable economic development, and green building has become an issue that has been discussed among various groups and at various levels – regionally, municipally, and sectorally. It is worth noting that this is a complicated, interconnected, and overlapping process that involves both serious and coordinated commitment from several actors, as highlighted by Roberts:

> To expect business to change its attitudes and operations in the absence of public inducement and regulation is naïve and unrealistic; whilst to expect governments to be able to implement change in the absence of support from business is to indulge in a degree of fantasy that has little foundation in terms of the realities of late 20th century economic control and management. (1995: 243)

A key factor in this relationship is ensuring "adequate business representation on partnership and other decision-making bodies and developing a successful dialogue

with local business on sustainability issues" (Gibbs, 2002: 125-126). These comments by Roberts and Gibbs reveal that policy processes are complex, intricate, and dynamic, and are constantly adapting to changing circumstances and realities.

### 2.3.2 Policy Communities

Policy communities provide a useful lens through which the development and influence of green building policy processes in Vancouver can be viewed and understood. Several authors discuss and define policy communities. Wright states that,

> …the membership of each community is defined by a common identity or interest – for example, product, service, technology, market, firm size, ownership, and 'size of batch.' Members share a direct or indirect, actual or potential, interest in the public policy issues and problems, which arise or may arise from their community. They possess resources of authority, money, information, capital, and organization, with the potentiality for their use at some stage in the policy process. (1988: 605-606)

Campbell et al build on this definition by focusing on the organization and membership of the policy community:

> The policy community designates those organizations and individuals in and around government who specialize in a particular policy area. The main, regular members in pluralist systems are bureaucrats and their agencies; individual politicians and their groupings; organized interest groups and their leaders and staff; and experts inside government, universities, or other institutions who research and think about policy. (1989: 86)

The regular interaction among these groups helps create community and shared understanding about priorities and challenges. Miller and Demir expand on this by exploring the interactions of policy communities in greater detail:

> Policy communities consist of extra-formal interactions (i.e. interactions taking place beyond or outside the formal processes of government) that occur in the interstices between and among government agencies, interest groups, corporations, industry associations, elected officials, and other institutions and individuals…this is a group of interrelated policy actors pursuing a matter of public policy important to them for instrumental reasons [through] a special type of interconnected social formation whose communication and influence is non-hierarchical. (2006: 137)

These comments by Wright, Campbell et al, and Miller and Demir suggest that the membership of policy communities – who is included and who is excluded – plays a pivotal role in the way the community functions. The composition of the policy community, and the degree to which it is amenable to new members, will have a direct impact on the creation of its priorities and action items as they relate to policy and implementation. Therefore, the interactions and organizational attributes of policy communities vary greatly from sector to sector, as do the nature of the policies they push forward.

The degree to which a sector has organized its interests in a coherent way has a significant impact on how efficiently and effectively its policy community functions. Coleman and Skogstad (1990) highlight this as an important tool for distinguishing between patterns and kinds of policymaking that emerge from different policy communities. When the group or sector is well organized and when its participants work together, they can have greater political influence. This organization can take various shapes, but the end result is the same: pressure in the political process. Furthermore, the more knowledgeable the group is of the policy and policy processes, the more likely they are to arrive at a firm position on political issues, and the more effective their influence will be. This leads to a situation where the policy community's 'action items' or activities are given priority, which contributes to its strength and power and affords it even greater influence, thereby bolstering its economic competitiveness.

There is also often a series of sub-groups that represent specific interests within the sector, such as the Urban Development Institute [UDI] within the green building sector in Vancouver. This contributes to a situation where,

> Policy communities are institutions in themselves that become integrated to greater or lesser degrees by developing a set of shared values, norms, and beliefs which shape the policy networks that emerge and, ultimately, the policy outcomes in a given sector. (Coleman and Skogstad, 1990: 29)

This statement suggests that policies are formed most effectively at the sector level and that this policymaking process is a delicate balance between public and private priorities and interests – it is not a linear process, but a dynamic one.

### 2.3.3 Communities vs. Networks

While policy communities tend to be closed and tight-knit, the policy network is accessible and loosely bounded (Miller and Demir, 2006). 'Policy network' is a term often used to describe the fluid ways in which policy communities interact (Klijn, 1996; Raab and Kenis, 2006). It may be helpful to imagine policy communities as a series of nodes representing various interests [for instance, green building] that exist within a greater network [such as, advancing sustainable economic development in Vancouver]. Whereas networks tend to allow communities to participate and interact in dialogue with each other [for example, a conversation between green building, transportation, and district energy systems], the communities themselves tend to be closed to outside influence and participation. For instance, it may be difficult for a transportation community to integrate with the green building community; this does not mean they cannot collaborate, just that their interests remain separate, at times in competition. However, this is a highly complex and constantly evolving relationship that, because of its very nature, can be difficult to define. As Jordan and Maloney state, "there is not a neat, one-to-one relationship between departments, sectors, and communities with well-demarcated boundaries and defined participants. The pattern may be fairly messy" (1997: 560). It appears that each policy community – and the members who participate in it – is unique and evolves based on the context in which it was created and currently exists. Coleman and Skogstad support this point: "policy communities and networks are best understood when attention is paid to first, the broader political, economic, and ideological environment within which they function, and second, the legacy of history"

(1990: 314). In Vancouver, this can be seen in the City's overarching commitment to sustainable economic development and environmental protection evident early on in the *Clouds of Change* Report (1990) and today in *Vancouver 2020*.

### 2.3.4 Policy Communities and Local Economic Development

This discussion reveals that policy communities [and their members], and the policy processes they participate in, are dynamic and highly dependent on local context, and that location-specific policies are integral not only to lasting and successful change, but also to sustainable economic development. According to Connelly, "local and community are not just terms that define geographical scales but are also strategic approaches for the implementation of specific agendas" (2010: 36). Therefore, local policies and initiatives reflect not only a geographical area, but perhaps more importantly, reflect local priorities for economic development – keeping in mind that every sector is different. It is fundamental that those participating in the policy communities understand the importance of the link between local priorities and economic development so that they can create policies that are appropriate and targeted at local concerns. The 2011 Report on Cities released by UN-Habitat [*Cities and Climate Change: Policy Directions*] addresses this assertion in light of the pressures and challenges of climate change:

> No single mitigation or adaptation policy is equally well suited to all cities. Policy approaches should recognize and be sensitive to the diversity of urban areas worldwide ... In responding to climate change, urban policy-makers should begin from an awareness of local development aspirations and preferences, local knowledge of needs and options, local realities that shape choices, and local potentials for innovation. (UN-Habitat, 2011: 47-48)

Ultimately, an in-depth understanding of context when developing policy will help grow the sector, and contribute to sustainable local economic development. Building on this, Roseland and Soots outline measures local governments can take to strengthen local

economies. These measures are one of the municipality's primary roles and responsibilities and include:

> ... local studies of indicators, assets, imports or subsidies; local training via entrepreneurship programs linked to incubators for locally owned businesses ... local investing of municipal funds; and local public policy such as smart growth zoning. (Roseland and Soots, 2007:165)[1]

The aim of these activities is to strengthen and monitor the local economic situation while at the same time communicating any major successes, failures, or changes to citizens in order to allow them to stay up to date and make informed decisions regarding economic development. Gibbs (2002) builds on this point by arguing that a key relationship to promoting sustainable local economic development (especially with an environmental focus) is strong partnerships between local government and industry. In turn, these activities contribute to the creation of strong policy communities that are rooted in sustainable economic development – this relationship can be observed in the green building sector in Vancouver, and will be discussed in greater detail in Section 5.2: Policy Climate.

Furthermore, local government has a more intimate knowledge of constituencies than provincial or federal governments and is more in tune with the needs, wants, and desires of the people they represent, which means they can work within policy communities to create policies that are more targeted than other levels of government. For instance, in Vancouver, this has meant a move towards policies that are focused on greening both the city and the economy through investments in economic activities such as green building, which has led to the creation of new 'green' markets. Examples of these policies include the Green Rezoning Policy, the Green Building Strategy, and the EcoDensity Charter [see Section 5.2: Policy Climate]. However, regional, provincial,

[1] These measures, as they relate to green building [for example green building training programmes], will be examined to understand more about green building activity in Vancouver. This is discussed in greater detail in Section 3: Methodology.

and national governments still play an important role in introducing policies aimed at reducing GHG emissions, and collaboration at all levels of government is key to achieving significant and lasting results (NRTEE, 2007).

In addition to the public sector and the demands and priorities of local citizens, the private sector plays an important role in policy communities and their contribution to local economic development; it is a dynamic and symbiotic relationship. For example, in Vancouver, this can be observed in the growth of a green economy that promotes sustainable development activities, such as green building. In addition, the increase in socially and environmentally conscious organizations has contributed to the emergence of triple bottom line accounting, which advocates that business performance should be measured not only in terms of economic gains, but also in terms of social and environmental impacts (Roseland and Soots, 2007). This represents a significant shift in corporate values and business practices and is more in line with the green economy discussed previously. "Given that most business transactions take place in cities, it is essential that sustainable economic development within urban centres include the commitment of businesses to adopt practices that consider people and the planet as well as profit" (Ibid: 166). Green building in Vancouver is an example of a situation where the public and private sectors are working together to achieve sustainable economic development.

While local priorities, citizen demand, and public/private sector involvement are important, the political motivations of those in power also play a critical role (Dewar, 1998). In fact, this political environment fundamentally shapes policy priorities [and consequently the role, power, and membership of various policy communities] since the framework within which they are implemented is highly political and depends on the party in power as well as the people it is representing. For example, Mayor Gregor

Robertson's Vision government has been steadfast on 'going green' and many of the policies implemented during his time in office reflect this priority (City of Vancouver, 2010c). This situation is also reflective of public opinion surrounding environmental degradation and economic growth.

In summary, policy, policy processes, and policy communities are continually interacting in new and dynamic ways, and it is difficult to define or contain these interactions within a static or linear framework. It is important to note that policy communities are simply a way of approaching and understanding policy development and policy processes and do not necessarily produce the most beneficial policies or result in lasting economic growth and development. In fact, policy communities can sometimes promote or advocate for policies and policy processes that may not be the most appropriate. However, this is the nature of the process: it is highly dependent on context and the actors involved. This reality can be observed in Vancouver's green building policy development: although a majority of the policies were developed within the policy community, and were therefore collaborative and representative of a variety of interests, the research outlined below reveals both strengths and weaknesses of green building policy processes identified by interview participants [see Section 6: Findings and Recommendations]. This is the nature of policy development and continuous learning, and these strengths and weaknesses will change and vary depending on the knowledge and skill of the sector.

# 3: METHODOLOGY

*This section describes the project's methodology, detailing how and why a case study approach was selected. Data was collected through document analysis, a sector profile, and semi-structured interviews, and analysed using coding.*

The case study method was chosen for this project based on the work of Yin (2009). Yin outlines three conditions [see Table 1] that should be considered when selecting the methodology. The conditions evaluate both the type of research [exploratory, descriptive, or explanatory] and the kind of research question [who, what, where, when, why, how, how many, and/or how much]. Using this approach, the case study method was selected as the most appropriate methodology for answering the research question [to be discussed in greater detail].

**Table 1:** Relevant Situations for Different Research Methods

| Method | Condition 1: **Form of research question** | Condition 2: **Requires control of behavioural events?** | Condition 3: **Focuses on contemporary events?** |
|---|---|---|---|
| **Experiment** | How, Why? | Yes | Yes |
| **Survey** | Who, What, Where, How many, How much? | No | Yes |
| **Archival Analysis** | Who, What, Where, How many, How much? | No | Yes/No |
| **History** | How, Why? | No | No |
| **Case Study** | How, Why? | No | Yes |

**Source:** Yin, 2009: 8.

The research question [*How has green building policy shaped the building sector in Vancouver?*] explores the causal relationship between green building policy processes and the building sector's evolution and characteristics. This project uses an explanatory

case study approach because a “how” question is being asked about a contemporary set of events over which I have little or no control (Yin, 2009). Neither an historical nor an experimental approach is appropriate to answering the research question. History is used “when no relevant persons are alive to report, even retrospectively, what occurred and when an investigator must rely on primary documents, secondary documents, and cultural and physical artefacts as the main source of evidence” (Ibid, 2009: 11). This paper uses semi-structured interviews as a method of data collection, which makes the historical approach unsuitable. An experiment is used “when an investigator can manipulate behaviour directly, precisely, and systematically” (Ibid, 2009: 11). Since I was asking interview participants for their expert opinions, my ability to “manipulate” their behaviour or responses – beyond the interview questions being asked – was minimal.

A single case study approach is used because the goal of this project is to conduct an in-depth and targeted analysis that will apply specifically to Vancouver, but may then also be applied more generally to other green building policy communities and sectors. Furthermore, the single case study method was selected because the context in which green building policy processes developed in Vancouver, and their impact on the evolution of the building sector, are unique. According to Yin, this situation merits targeted case study research: “you would use a single case study method because you wanted to understand a real-life phenomenon in-depth, but such an understanding encompassed important contextual conditions” (2009: 18). In this project, this real-life phenomenon is the evolution of green building policies and the important contextual conditions are the city [Vancouver] and the culture within which they developed. As a result, the single, explanatory case study was selected as the most appropriate way to approach the research question.

The research design involves three primary data collection methods: document analysis, a sector profile, and semi-structured interviews. These methods are among those listed by Yin as appropriate for the case study approach. In fact, "the case study's unique strength is its ability to deal with a full variety of evidence – documents, artefacts, interviews, and observations – beyond what may be available in a conventional historical [or experimental] study" (Ibid, 2009: 11). These methods were selected because while they each contribute a different kind of data, they can also converge, which is useful when formulating findings and drawing conclusions.

## 3.1 Data Collection

### 3.1.1 Part 1: Document Analysis and Sector Profile

***Document Analysis***

The document analysis consists of a review of the City of Vancouver's building policies, which are available to the public [see Appendix 1 for a list of policy documents]. The focus is on large sites [mixed-use residential, commercial, and institutional buildings] to limit project scope and because the City's green building policies are divided into green homes and large sites. The policy focus ranges from 1990 – 2020 because the policy documents relative to answering the research question fall within this time period [see Section 5.3 Policy Climate]. The goal of the document analysis is to become familiar with the policy surrounding green building, to determine common themes, and to ask interviewees informed and probing questions that contribute to research findings and conclusions. In addition, because this project is using the concept of the policy community [outlined in the literature review] to understand how green building policy processes have evolved in Vancouver, a review of policy is an integral element to analyzing the intricacies of this evolution and to understanding how it has shaped the development of the building sector.

***Sector Profile***

At the same time, a sector profile [see Section 5.2: Sector Profile] complements the policy review and provides a more robust image and level of comprehension surrounding the realities of the green building policy community and sector in Vancouver. The sector profile was created based on research on:

- both new and established programmes at academic institutions in Vancouver [such as Simon Fraser University and the B.C. Institute of Technology] that focus on elements of urban sustainability, the built environment, and green building;
- training sessions directed at increasing the knowledge around green building, for example Leadership in Energy and Environmental Design [LEED] or green building technologies;
- conferences or trade shows addressing green building topics, products, or technologies;
- public information sessions on green building; and
- institutions offering green building tips and information.

Looking at these activities enabled me to select a representative sample of individuals to interview about the policy processes associated with green building in Vancouver.

### 3.1.2 Part 2: Semi-Structured Interviews

I conducted semi-structured interviews with a variety of actors in the green building sector. The list of professionals was generated using purposive sampling from publicly available data and based on the sector profile. The semi-structured approach was selected to encourage a natural flow of conversation during the interviews, while maintaining focus and relevance to answering the research question. Semi-structured interviews are an appropriate method given their ability to generate information linked with pre-determined questions [i.e. research question directed] and provide flexibility to probe tangents presented by interviewees (Berg, 1989 as cited by Markey, 2003).

I conducted fifteen interviews[2]. I contacted the individuals directly via email, and so did not obtain permission from their organization or agency prior to conducting the study. Once ready to interview participants, I sent them, via email, three sample questions to give them an idea of the material I was hoping to cover. Interviews lasted from twenty minutes to an hour, which was a sufficient amount of time to generate results that contributed to research findings.

Interview participants were broken into three groups, but were interviewed in no particular order. The first group consisted of green building policy implementers, such as architects, developers, and consultants, because they are equally, and profoundly, impacted by the City of Vancouver's policy decisions. The second group was comprised of policy developers, such as local government representatives because they can provide valuable insight into the origins, directions, and ambitions of green building policy. The third group included policy and sector assessors, such as individuals specializing in green building policy at professional institutions. This group provides a perspective that is one step removed from direct green building operations and can provide more strategic viewpoints on policy and the formation of the green building sector. It is worth noting that this sample does not include a group that represents the social dimension of the green building policy community. This is relevant because, as discussed in the literature review, those who participate in the policy community play a fundamental role in shaping the policy processes and, ultimately, the policy outcomes. The exclusion of this 'social group' suggests that the policy community, and consequently the policy process, may not adequately reflect this segment of the green building sector in Vancouver.

[2] Interview participants included 2 architects, 2 developers, 3 green building consultants, 2 planners, 4 policy analysts, 2 representatives from green building institutions.

Interview questions were divided into three categories [see Appendix 2 for interview questions]. The first category looked at the role of green building policy to explore which policies have helped and which have hindered green building in Vancouver. The second category discussed characteristics of Vancouver's building sector to understand the degree to which the sector has changed or stayed the same as a result of green building policy. The third category asked about the future of green building policy to ascertain how the interviewees foresee its development or evolution in Vancouver. The goal of the interview questions was, first, to understand green building policy processes and, second, how these have shaped the building sector. The overall aim was to gain an even deeper understanding of green building policy in Vancouver: what is working well, what is not working, and what needs to change.

The interviews were audio recorded and the parts relevant to answering my research question were transcribed. I took notes during the interview in order to highlight points that I found significant or to make note of personal thoughts or anecdotes. Immediately after the interviews, I elaborated on my notes and transcribed the recorded portions of the interview that were relevant to my research findings. The identity of the research participants and any other data collected were kept confidential and downloaded to a memory stick and kept in a locked drawer.

## 3.2 Data Analysis

I conducted data analysis through coding. My coding approach involved the following steps:

1. I created individual word documents for each interviewee as an early method of organizing information. Each file was divided into two categories: overall thoughts and relevant comments from the audio recording. These categories were then organized by question.
2. I took notes and audio recorded each interview.

3. Immediately after the interview was complete, I made additional notes, listened to the audio recording, and transcribed any relevant information. I kept the audio recordings on file so that I could refer back to them later, should the need arise.

4. Once I had completed all of my interviews [15 in total] I revisited each file and identified common themes and key terms used by the interview participants.

5. I then compiled the common themes and key terms to search for patterns.

6. As patterns began to emerge, I was able to create codes that fell into three main categories: Strengths, Weaknesses, and Needs to Change.

7. Once I had identified the codes, I revisited the original individual interview files – both the word documents and the audio recordings – to be sure that I had not missed any key terms or common themes.

Using this information, I was able to identify influential green building policies, outline the strengths and weaknesses of green building policy processes, offer insight on how this has impacted the green building sector, and provide recommendations on how green policy in Vancouver may evolve into the future.

*The next section outlines Federal, Provincial, and Municipal approaches to climate change, GHG emissions reductions, and green building to provide an in-depth context for the research question.*

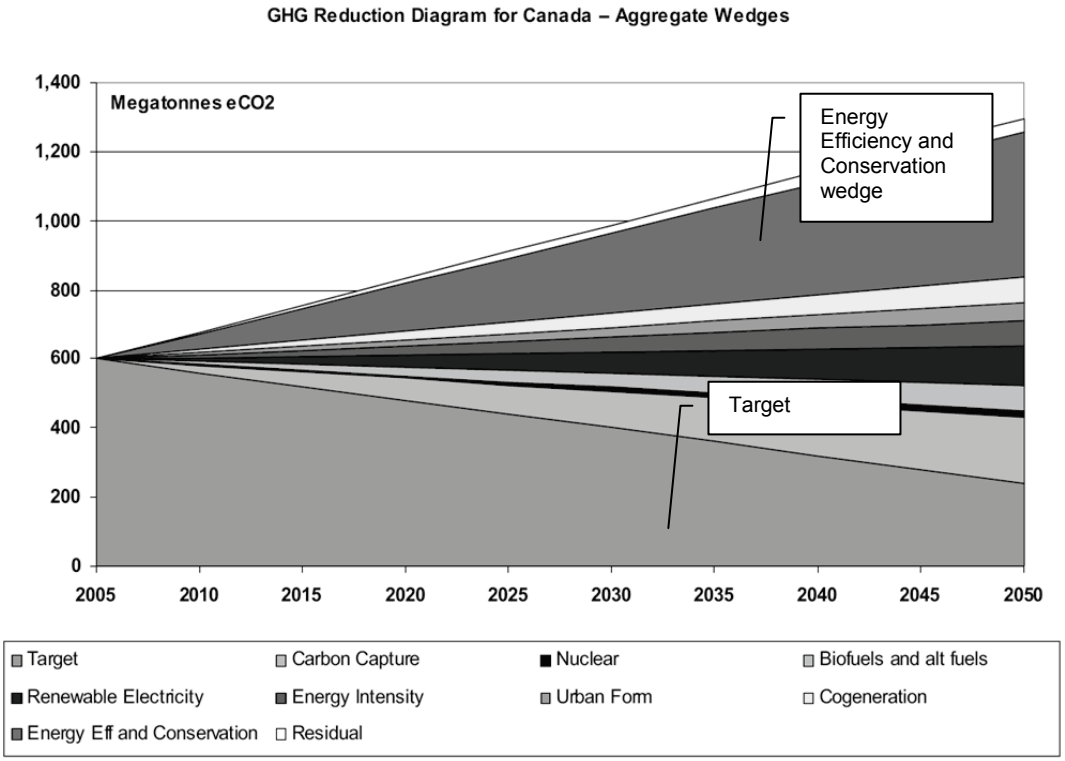
# 4: FEDERAL, PROVINCIAL, AND MUNICIPAL CONTEXT

*In this section, Federal, Provincial, and Municipal policies and strategies on climate change, GHG emissions reductions, and green building are discussed. The purpose is to provide several layers of context and outline the varying approaches taken by different levels of government.*

## 4.1 Federal

GHG emissions from the building sector in Canada merit attention because they are linked to the country's ability to meet its climate change targets [the most immediate being GHG emissions reductions of 17% below 2005 levels by 2020 (Environment Canada, 2010)]; this also has implications at provincial and municipal levels [see Sections 4.2, 4.3, and 5]. The connection between the Canadian building sector and national GHG emissions was substantiated in 2006 when the NRTEE released a report called *Advice on a Long-term Strategy on Energy and Climate Change* that analysed the feasibility of the federal government's commitment to reduce GHG emissions by 60% below 2006 levels by 2050. In the report, the government's GHG emissions target was represented in relation to a diagram of wedges depicting significant carbon emitting sectors. The Energy Efficiency and Conservation wedge [noted in Figure 2 on the next page] was identified as a key area for achieving reduction targets.

**Figure 2:** NRTEE GHG Reduction Wedge Diagram




**Source:** NRTEE, *Advice on a Long-term Strategy on Energy and Climate Change*, 2006

The potential emissions reductions in the Energy Efficiency and Conservation wedge were broken down into three categories, all relating to the building sector: 22% potential reductions from existing building retrofits and energy management; 20% potential reductions from integrated building systems for energy efficiency in new buildings; and 16% potential reductions from electrical efficiency in lighting and equipment (NRTEE, 2006: 5). The report stated that the commercial building sector poses a significant challenge, but also offers an opportunity to reduce GHG emissions. In 2009, this continued to be true: "Canada's commercial building sector accounts for 14% of end-use energy consumption and 13% of the country's carbon emissions" (NRTEE et al, 2009: x). The concept of wedges illustrates that GHG emissions are the result of the actions of several sectors locally, provincially, nationally, and internationally, and that it is useful to think about GHG emissions from a sectoral perspective, such as commercial building,

to contribute to the reduction of GHG emissions and mitigate climate change (NRTEE et al, 2009: x).

At the federal level, there is no comprehensive plan for GHG emissions reductions that details how, when, and at what cost the government intends to tackle the issue of climate change (The Pembina Institute, 2010). Rather, there is a series of general commitments – the latest was submitted to the United Nations Climate Change Secretariat on January 30, 2010, and indicated that Canada will reduce emissions by 17% below 2005 levels by 2020; this is conditional upon complementary action from the U.S. (Environment Canada, 2010). In the 2010 Speech from the Throne, although the statement "nowhere is a commitment to principled policy, backed by action, needed more than in addressing climate change" is made, there is no description of the policy or the action beyond advocating for an agreement that includes the world's major GHG emitters, a commitment to helping developing nations reduce GHG emissions, support for the Copenhagen Accord, and a commitment to the Canada-U.S. Clean Energy Dialogue launched in 2009 (Jean, 2010: 21-22). Although these commitments have merit and importance, they are general and do not hold the Canadian government accountable for its GHG emissions or outline any concrete plans for climate change mitigation (The Pembina Institute, 2010). Furthermore, due to the economic recession, the government has taken "the opportunity to fine-tune [its] approach to tackling climate change" (Government of Canada, 2010), which means that climate change projects have been put on hold. This is a questionable decision given that climate change and GHG emissions continue to occur, regardless of the economic situation.

Even though the federal climate change plan is limited, it is worth mentioning that there has been action on advancing energy efficiency in the residential and commercial building sector from the Department of Natural Resources Canada [NRCan]. In 2009,

NRCan submitted a report to Parliament entitled *Improving Energy Performance in Canada* that outlined key policy instruments aimed at improving energy efficiency in the building sector; interestingly, there is no link made between the sector and GHG emissions or climate change. The report also discusses the ecoENERGY Efficiency Initiative, which includes a variety of policies, programmes, and incentives designed to encourage people to implement energy efficiency practices in their homes and/or residential or commercial buildings [in the form of retrofits or new green building practices], personal vehicles, fleets, biofuels, and equipment (NRCan, 2009: 29). As of March 31, 2010 the ecoENERGY Retrofit Homes Programme was "no longer accepting bookings for pre-retrofit evaluations" (Government of Canada, 2010). This decision was then reversed in the 2011 Federal Budget with the commitment of

> $400 million in 2011–12 for the ecoENERGY Retrofit Homes Programme to help homeowners make their homes more energy efficient and reduce the burden of high energy costs. (Government of Canada, 2011: 105)

However, no details regarding supporting policy mechanisms or implementation plans are provided. If the government hopes to continue to support energy efficiency in the building sector and reduce Canada's GHG emissions, it must become reliable and predictable with regard to climate change, which is not the case in this scenario.

## 4.2 Provincial

On the other hand, British Columbia's Climate Action Plan is more comprehensive and performance-based than the Federal one. As a precursor to the plan, which was enacted in 2008, the Greenhouse Gas Reduction Targets Act entrenched the following commitments into law (Government of British Columbia, 2007):

- By 2020, B.C. will reduce its greenhouse gas emissions by 33%, compared to 2007 levels. In addition, legally binding targets will be set for 2012 and 2016.
- By 2050, GHG emissions in the Province will be reduced by at least 80% below 2007 levels.

- By 2010, the B.C. public sector will be carbon neutral.

The Province is also using a gradually increasing tax on carbon emissions as its main policy instrument (Government of British Columbia, 2008: 13). B.C.'s plan has a suite of complementary programmes that include a commitment to invest "$35 million over three years for LiveSmart BC programmes, which provide financial support to households for energy audits and energy efficiency building retrofits" (Point, 2010: 12). There is a direct link made between reducing GHG emissions, supporting economic growth, and the LiveSmart BC Programme. There is also a commitment to invest in residential smart meters and a smart grid, among other initiatives, to help reduce energy costs (Ibid, 2010: 12). Within the LiveSmart BC Programme there is an Energy Efficient Buildings Strategy that is intended to encourage behavioural change, which includes "$60 million of the Provincial budget ... to help B.C. families reduce their carbon footprint through energy efficiency upgrades to homes and businesses" (Government of British Columbia and the Ministry of Energy, Mines and Petroleum Resources, 2008: 4). In addition, according to the Vancouver Economic Development Commission, there are provincial tax incentives and reductions for energy efficiency upgrades to buildings (2009). Therefore, the B.C. government is committed to energy efficiency and is making direct links between green building, GHG emissions reductions, and economic development[3].

## 4.3 Vancouver

Vancouver has a history of being progressive when it comes to city planning and commitment to sustainable practices (Punter, 2003). In 1990, the *Clouds of Change* report was released, which encouraged a more sustainable and cohesive way of living in Vancouver; this thought-process, approach, and commitment continue today. Currently,

[3] These commitments have been maintained with the change in Premier from Gordon Campbell to Christy Clark (Government of British Columbia, 2011).

Vancouver has committed to reduce GHG emissions to 6% below 1990 levels by 2012, to 33% below 2007 levels by 2020, and to 80% below 1990 levels by 2050; and to require that all new construction be carbon neutral by 2030 (City of Vancouver, 2010a). These commitments are in line with provincial ones, which demonstrates that the province and the City are working together to reduce GHG emissions. A more detailed and in-depth discussion of Vancouver's policies and strategies on climate change and GHG emissions reductions as they relate to green building is provided in the next section.

# 5: GREEN BUILDING IN VANCOUVER

*This section will review and analyse Vancouver's green building policy processes. The discussion of overall challenges to and opportunities for green building provides background information on how green building works 'on the ground'. The sector profile presents a snapshot of the intricacies and dynamics of the green building sector and policy community in Vancouver. The in-depth examination and evaluation of the green building policy climate outlines three significant periods of policy development and gives greater insight into how and why green building policy processes evolved the way they did.*

## 5.1 Overall Challenges and Opportunities

Discussing the challenges to and opportunities for moving the green building agenda forward are important for relating to bigger issues of urban sustainability, and to understanding green building logistics and implementation techniques, particularly in Vancouver. Earlier studies have highlighted several challenges associated with green building. These include (Buzzelli, 2009; CEC, 2008; UNEP-FI, 2010):

- The premium placed on green building and the challenges this presents to affordability;
- Labour retraining can be costly or programmes associated with green building technologies may simply not be available;
- The risk and liability of taking on green building projects;
- Split incentives (those who invest in green building often do not reap the benefits);
- Consumer acceptance of green building and the choice to invest extra money in green building projects;

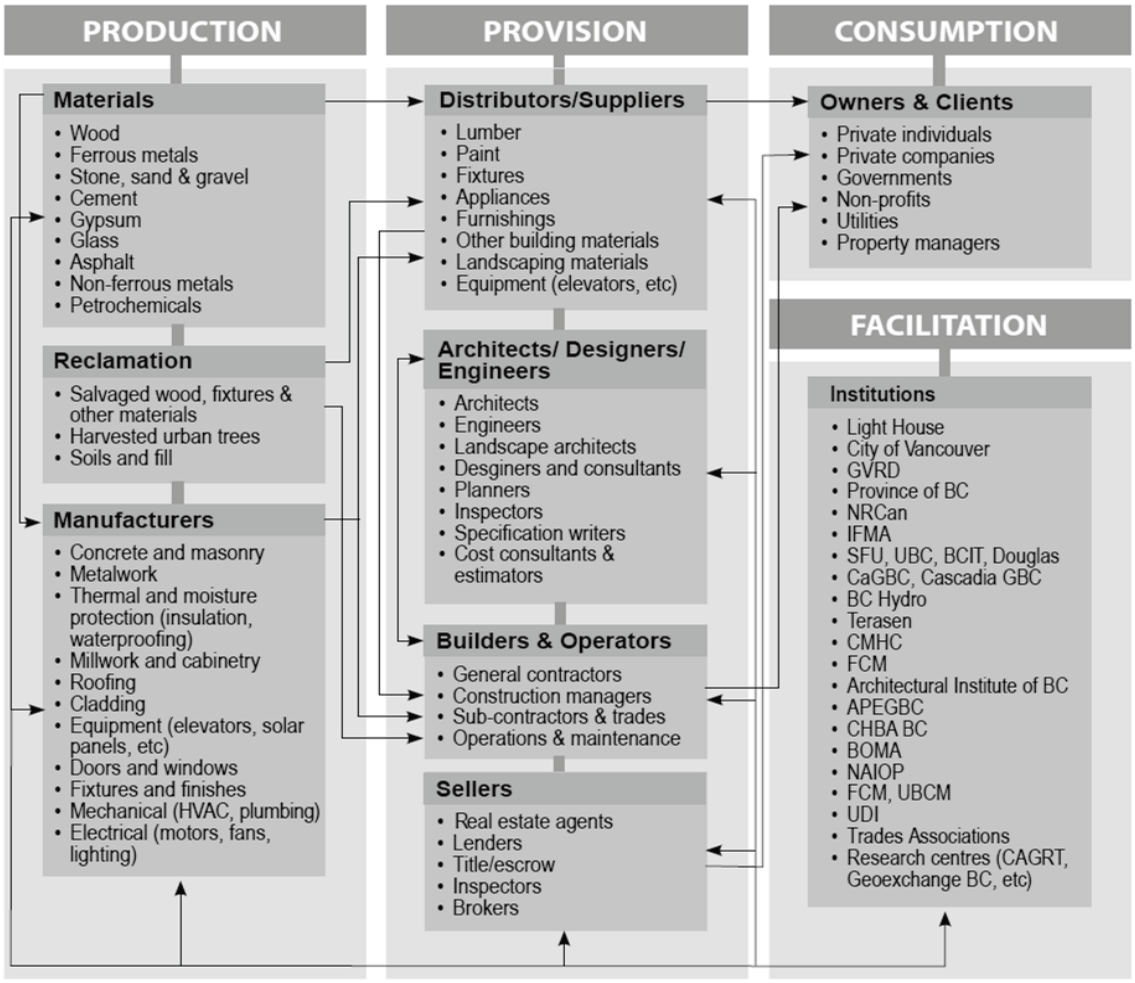
- Lack of data and information on the value for high-performance certified green buildings hinders financial sector involvement; and
- The fundamental misalignment between those payback periods deemed acceptable to financial markets, and the timescale associated with the main drivers behind energy efficient buildings (i.e. climate change and diminishing global energy supplies).

Although this list is not comprehensive, it illustrates the varied issues that confront green building policymakers and practitioners. In order to move the green building agenda forward, a commitment from decision makers and thought leaders at all levels will be necessary in order to establish a green building vision (Buzzelli, 2009; CEC, 2008; UNEP, 2007; Cidell, 2009). This vision will lead to collaborative governance structures, the enhancement of existing regulations, and target setting, which will help create solid benchmarks and move the green building agenda forward. The literature indicates that these activities must then be paired with public and private incentives in order to increase awareness about green building and spur local uptake and commitment to green building policies, programmes, and practices. The hope is that green building will become increasingly relevant to all members of the value chain. These concepts will be revisited in Section 6: Findings and Recommendations.

## 5.2 Sector Profile

A sector profile is helpful in providing a snapshot of the complex and varied interactions that are involved in green building in Vancouver. Figure 3 illustrates these relationships and provides a detailed visual representation of Vancouver's green building policy community.

**Figure 3:** Vancouver's Green Building Sector




**Source:** 2006/2007 Light House State of the Industry Report as quoted by the Vancouver Economic Development Commission, 2009

Figure 3 shows that there are many actors involved in Vancouver's green building sector, suggesting that there is considerable complexity associated with establishing a coordinated policy process. It is here that the role and strength of the policy community comes into play, and where policies must be carefully crafted in order to ensure sufficient regulation of the sector, while at the same time promoting innovation and economic development. The challenge presented to the policy community is to implement green building policies that both control growth and stimulate creativity in the sector. In the next section, the green building policy climate in Vancouver is discussed,

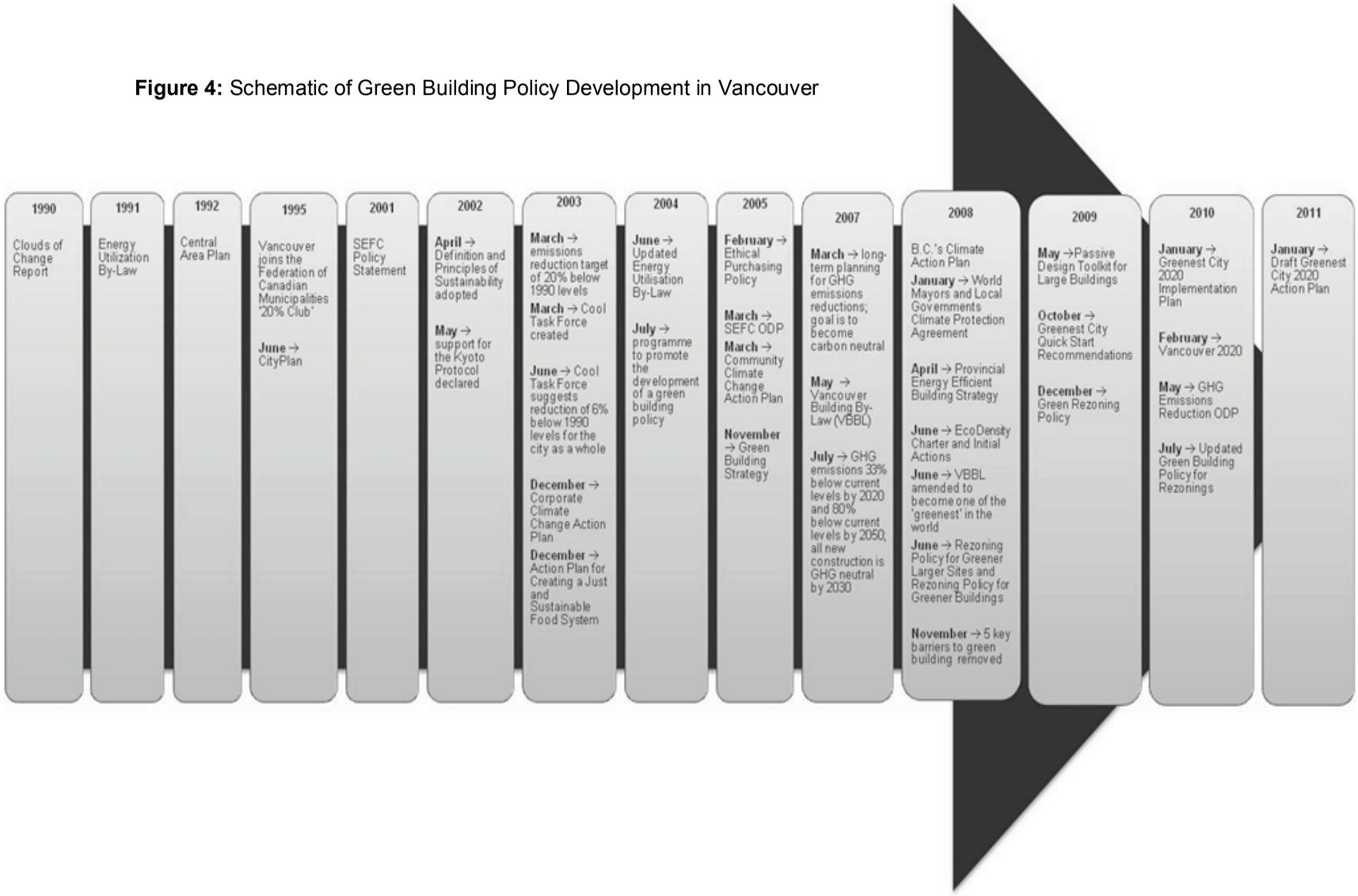
revealing multifaceted and constantly evolving policy processes aimed at both regulating and encouraging the development of a relatively new and burgeoning industry, as well as the learning and continuous improvement associated with green building.

## 5.3 Policy Climate

This section will cover the evolution of two kinds of policy: 1) legislated – those that must be followed by architects, builders, developers, engineers, etc. [there are two kinds of legislated policies – coercive policies, informally referred to as sticks, and incentive policies, informally referred to as carrots]; and 2) directional – those that provide recommendations and/or guidelines, but are not binding [informally referred to as sermons]. This is an important distinction because legislated and directional policies play different roles and have different impacts on green building policy processes. For example, a rezoning policy [legislated] is legally binding and dictates how the city will develop; if people do not adhere to this policy, they will not receive building permits or can be fined. On the other hand, a directional policy indicates where the city wants to go. For example, *Vancouver 2020* is a directional policy that outlines approaches to becoming the world's greenest city by 2020. This indicates that the city has placed a priority on adopting initiatives that will help them achieve this goal. Although each policy has a different purpose, they need to be complementary and mutually reinforcing to be effective and efficient. In the case of Vancouver, the policy environment indicates that the City is placing a priority on policies that support the creation of a green city with a green economy. This has resulted in the emergence of several 'green' policy communities. This section examines the policies that have contributed to the evolution, continuity, and membership of the green building policy community in Vancouver.

The graphic on the next page provides a schematic of green building policy development in Vancouver, highlighting years when policies were developed more intensely than others.

**Figure 4:** Schematic of Green Building Policy Development in Vancouver



### 5.3.1 In the Beginning: 1990 – 2000

The commitment to green building in Vancouver began with an initial focus on GHG emissions reductions in the 1990s, but the drive to green the building sector took off in earnest in the early 2000s. The *Clouds of Change* report was approved by Council in 1990 and had as its primary recommendation the reduction of $CO_2$ emissions by 20%. A suite of policies and by-laws were passed over the next five years with the goal of reducing the City's impact on the environment by improving energy efficiency in all newly constructed buildings (Energy Utilization By-Law, 1991), introducing high density residential buildings (Central Area Plan, 1992), and joining the Federation of Canadian Municipalities' (FCM) 20% Club[4] (1995). Vancouver's commitment to climate change mitigation and emissions reductions was further solidified in 1998 when the City became a partner in the FCM's Climate Protection Programme.

At the same time, a plan for the development of Southeast False Creek (SEFC) was underway. This was initiated in 1991 when City Council issued a challenge: "on the south shore of false creek, develop a neighbourhood that is the model of sustainability, incorporating: forward-thinking infrastructure; strategic energy reduction; high-performance buildings; and high transit access" (City of Vancouver, 2009b). In 2001, the SEFC Policy Statement was adopted by Council. This was significant because it was the first time that green building practices and technologies were formally incorporated into a policy statement that would ultimately become a development plan; this policy became known as the SEFC Green Building Strategy. SEFC was to be a model 'green' development that encouraged proximity to amenities, use of public transit,

[4] Members of the FCM 20% Club committed to reducing their City's GHG emissions by 20%.

affordable housing, etc. – all elements of a sustainable lifestyle that are promoted through green building practices[5].

### 5.3.2 The Millennium Shift: 2000 – 2008

In the early 2000s, there was a shift to more detailed, targeted, and sectoral approaches to achieving the emissions reductions targets established in the early 1990s. In 2002, Council adopted the 'Definition and Principles of Sustainability' to guide operations at City Hall, and approved FCM's motion to support the Kyoto Protocol. These two moves began to shape decision-making and in 2003 Council approved an emissions reduction target of 20% below 1990 levels. In order to reach this goal, the Cool Task Force, comprised of educators, builders, environmentalists, corporate leaders, and government representatives and staff, was created – it can be argued that the Task Force was one of the initial policy communities that formed around the goal of reducing GHG emissions and climate change mitigation. Later, it would splinter into a series of more targeted policy communities, one of which was focused on green building. The Task Force was charged with formulating two GHG Reduction Action Plans: the Corporate Climate Change Plan and the Community Climate Change Plan.

The Corporate Climate Change Plan, approved by Council in 2003, detailed how the City of Vancouver would reduce emissions from its own civic operations and facilities and outlined five key areas where emissions reductions of 20% below 1990 levels could be achieved. Overall, there was a significant focus on greater energy efficiency in operations and building performance and management. Of particular interest was the

[5] Although SEFC has been criticised for its limited commitment to social sustainability, it has been lauded for its innovative green building design and approach. It was accredited with a LEED Neighbourhood Development (ND) Platinum Certified *Plan* on March 2, 2010 by the U.S. Green Building Council (the Canadian Green Building Council has not yet released a LEED ND system for Canada). SEFC is currently attempting to become a LEED ND Platinum Certified Project (U.S. Green Building Council, 2010). It is one of the first LEED ND certified projects in Canada.

Civic Buildings and Facilities Action Item, which included both buildings that the City owned and occupied and buildings the City owned, but did not occupy. Civic Buildings and Facilities were deemed a priority area because, at the time, over 50% of the City's corporate emissions came from energy used in the operation of its facilities. Within the Action Item was a commitment to green design for new and replacement civic buildings of LEED[6] Silver or higher. This LEED requirement laid the groundwork for green building policy at the City of Vancouver.

The Community Climate Change Plan was approved by Council in 2005 and established a

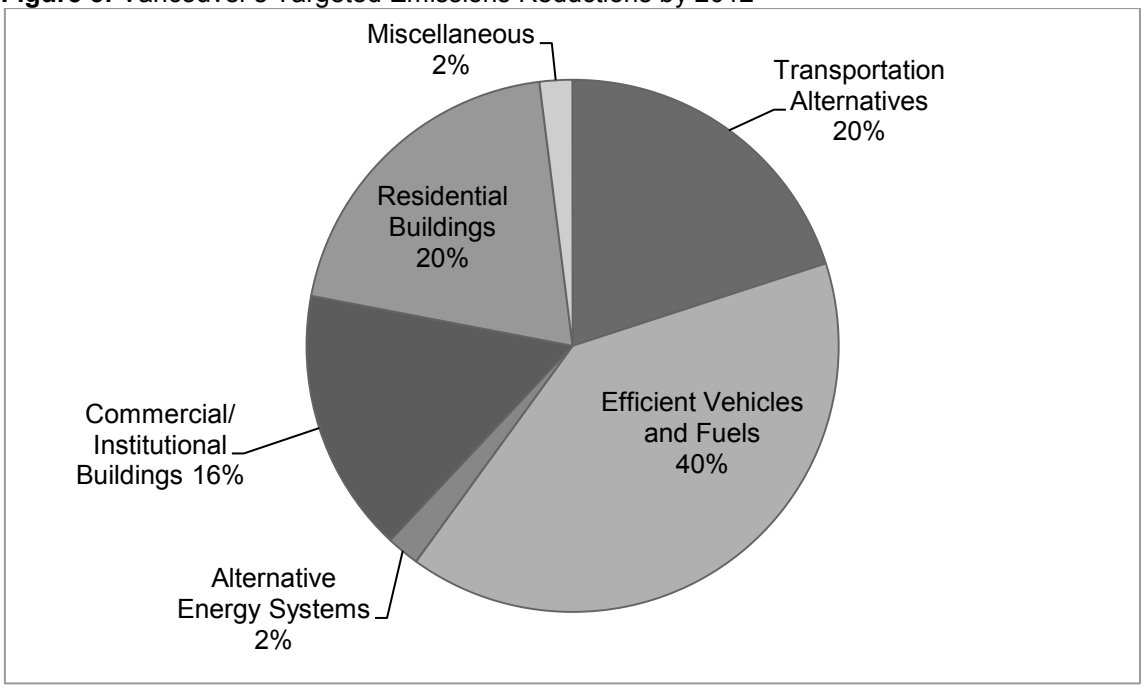
> ... multifaceted program with key strategies and initial implementation actions for how Vancouver as a community can reduce its GHG emissions. It focuses on enabling and motivating individuals, businesses, and institutions to reduce their building and transportation related energy use as these are responsible for over 80% of the GHG emissions in Vancouver. (Cool Vancouver Task Force, 2005: 6)

Thus, the Community Plan also established building as a key area where targeted GHG emissions reductions could be achieved. The overall goal set by the Plan was an emissions reduction of 6% below 1990 levels – less stringent than the Corporate Plan because the Community Plan was attempting reductions across the whole City, a much more complex process. The Community Plan refined goals and targets even further and, for the first time, commercial/institutional and residential buildings were considered in separate categories. This demonstrated that the City was gaining a deeper understanding of the intricacies of the green building sector and was aware of the need to address commercial/institutional and residential buildings separately in order to

[6] According to the Canada Green Building Council (nd), LEED is a third-party certification program and international benchmark for the design, construction, and operation of high performance green buildings. It provides building owners and operators with the tools they need to have an immediate and measurable impact on their buildings' performance. It promotes a whole-building approach to sustainability by recognizing performance in five key areas: sustainable site development, water efficiency, energy efficiency, materials selection, and indoor environmental quality. Certification is based on the total point score achieved following an independent review. There are four possible levels of certification (certified, silver, gold, and platinum).

achieve better results in terms of emissions reductions. Below, Figure 5 [compiled using data from the Community Plan] outlines the City's emission reductions goals for 2012 in 2005.

**Figure 5:** Vancouver's Targeted Emissions Reductions by 2012




**Source:** Cool Vancouver Task Force, Community Climate Action Plan, 2005

In order to achieve these targets in the commercial and institutional building sector, a goal was established: reduce annual GHG emissions resulting from energy use from commercial and institutional buildings by 8% (or 70,000 tonnes) by 2012 (Cool Vancouver Task Force, 2005). This required that

- 25% of medium and large commercial buildings improve energy efficiency by 20% through a combination of retrofits, equipment replacement, and operator training (17,000t)
- 20% of small commercial buildings improve energy performance by 15% through a combination of small retrofits and equipment replacement (9,000t)
- 85% of institutional buildings improve energy efficiency by 15% through a combination of retrofits, equipment replacement, and operator training (28,000t)
- 25% improvement in efficiency for new construction compared to 2000 by 2012 (5,000t)

These targeted, measureable, and specific actions demonstrated the City was seriously committed to moving the green building and energy efficiency agendas forward. In effect, both the Corporate and the Community Climate Action Plans helped to set the stage for the development and implementation of green building policies and initiatives in Vancouver.

At the same time that the Climate Action Plans were being developed, Council approved a series of plans, policies, and by-laws designed to improve the existing energy efficiency standards for large buildings as well as reduce their impact on the environment. This included rooftop gardens on residential developments, commercial, and industrial buildings (Action Plan for Creating a Just and Sustainable Food System for the City of Vancouver, 2003) and improved energy performance in new, large commercial and residential buildings by approximately 13% (Energy Utilisation By-Law, 2004). Perhaps one of the most significant changes was in July 2004 when Council approved a programme to promote the development of a green building policy in the City – this included LEED Gold certification for civic buildings greater than 500 $m^2$. The approval of this programme coincided with the developmental stage of the Community Climate Action Plan [which was released in 2005] and it is likely that this commitment to LEED Gold informed some of the Plan's goals and targets.

After the Community Climate Action Plan was approved by Council in March 2005, two significant things happened with respect to green building policy in Vancouver: 1) Council approved the SEFC Official Development Plan with LEED Silver for all buildings and LEED Gold for the Athletes Village (March 2005) and 2) Council approved the Green Building Strategy (November 2005). These two actions further reinforced LEED standards as the basis for green building policy action and development in Vancouver. Building on this, in May 2007, Council adopted the

Vancouver Building By-Law (VBBL). While the VBBL is based on B.C.'s building code, it builds on LEED requirements, and the City has implemented several Environmental Protection Objectives designed to facilitate the future development of the City's Green Building Strategy. According to the VBBL,

> Vancouver's ability to adopt its own By-law regulating the construction of buildings is unique in the province and also unusual in Canada. It is an important authority which allows Council the opportunity to be responsive to local issues impacting on building safety. (City of Vancouver, 2007: xiv)

The VBBL also coincided with Council's move to adopt new GHG emissions reduction targets: 33% below 2007 levels by 2020; 80% below 2007 levels by 2050; and all new construction be GHG neutral by 2030.

While these green building and climate change activities were happening at a municipal level, the Province was also making changes. In 2008, the Province amended the Local Government Act and the Vancouver Charter to require that all municipalities include targets for the reduction of GHG emissions, and that these targets be incorporated into each city's Official Development Plan by May 31, 2010. This was noteworthy because it established a province-wide timeline for action on reducing GHG emissions, which meant that many municipalities were working towards the same goals. The Provincial government also announced new building code requirements to increase energy and water efficiency. At the same time, Council adopted VBBL amendments making the VBBL one of the greenest building codes for one and two family dwellings in the world. Thus, the Province and the City were using similar policy instruments, especially with respect to increasing energy efficiency and green building, to reach climate change targets.

### 5.3.3 Securing Progress: 2008 – 2020

In June 2008, Council approved the EcoDensity Charter and Initial Actions, which identified steps to mitigate the effects of and prepare for climate change in Vancouver. The Charter and Initial Actions were especially focused on energy efficiency in the building sector, and proposed the creation of two policies that applied to residential, commercial, and industrial buildings that would fundamentally shape the development of green building in Vancouver:

1. The **Rezoning Policy for Greener Larger Sites** (adopted June 10, 2008) stated that all rezonings will require:

- A business case analysis to explore the viability of campus or district energy systems - if it makes business sense, the systems will be mandatory
- Passive design techniques will be used where appropriate
- A sustainable rainwater management plan is required
- A solid waste diversion strategy is required to divert organics and recyclables from the waste stream
- Development of non-market housing where possible

2. The **Rezoning Policy for Greener Buildings** (adopted June 10, 2008) stated that all rezonings for buildings must achieve a minimum of LEED Silver or equivalent. In this policy, the stated objective was to place the emphasis first on green design practices that reduce energy [i.e. passive design – to be discussed in greater detail below] and second on green energy technologies.

For each policy a deadline of January 1, 2010 was set for staff to provide recommendations [based on discussions with the green building industry] on how to increase baseline standards for green building [i.e. move from LEED silver to gold]. The weaknesses of using these green building rating systems were recognized, but it was

decided that they represented an immediate start and a significant increase in energy efficiency requirements above the status quo. The intent of both policies was to eventually move to a performance-based approach that looked at the building as a whole, as opposed to a checklist-based approach that focused on categories and point-counting [i.e. LEED]. There was also a recognition that green building is continually evolving and there was an attempt to incorporate this reality into the policies: "...the intent of this policy is to ensure that learning continues to build. Larger sites provide the opportunity for greater green performance requirements than smaller sites or individual buildings" (City of Vancouver, 2008a: 2). Therefore, the City was attempting to include a process of learning and continuous improvement into green building policy development, which was reflective of the dynamic nature of both the industry and the policy community. This process was put to use in October 2008 when Council passed a motion to remove five key regulatory barriers – such as relaxing building height regulations to allow for the installation of roof-mounted energy technologies [i.e. solar panels] – to green building in Vancouver (City of Vancouver, 2008c).

In December 2009, both Green Rezoning Policies were revisited. The end result was higher standards for green building in Vancouver. Now projects needed to attain a LEED Gold or equivalent *certification* as well as register with the Canada Green Building Council [CaGBC]. It was no longer sufficient to consult the LEED Checklist, LEED Gold Certification obtained from the CaGBC was now mandatory. However, after significant pushback from building industry representatives, the policies were amended in 2010: it had to be proven that LEED Gold Certification had been applied for, but it was no longer mandatory that the Certification be obtained in order to receive the rezoning permit. In effect, this amendment lessened the restrictions for obtaining rezoning and building permits in Vancouver.

In May 2009, in an attempt to promote a performance-based approach to building, Council approved the City of Vancouver Passive Design Programme and endorsed Passive Design Toolkits as City of Vancouver publications. The Passive Design Approach advocates using certain design elements, such as natural shading and building positioning, to optimize building performance. It also highlights some of the challenges associated with current green building performance systems and codes, such as LEED. One of the primary issues is the lack of an "established benchmark of energy performance in easily comparable energy units. With no clear target to aim for, it becomes difficult for the proposed design to achieve its low-energy goals" (City of Vancouver, 2009c) – see Section 6: Findings and Recommendations. This statement suggests that a move towards more general building performance measures, as opposed to point-counting, is more effective in terms of increasing energy efficiency.

In February 2010, Council adopted the long-term goals recommended by the Greenest City Action Team (GCAT). The GCAT is comprised of a group of professionals charged with authoring *Vancouver 2020: A Bright Green Future* – an action plan for becoming the world's greenest city by 2020. At present *Vancouver 2020* is driving much of the policy work being done by the city of Vancouver. *Vancouver 2020* outlines several initiatives and policy mechanisms designed to help Vancouver reach its goal of being the greenest, and among these are two green building goals. Both of these are under the Green Economy, Green Jobs umbrella, which indicates that the City considers green building to be a green economic development strategy. The short-term goals are that all new construction is carbon neutral and that the efficiency of existing buildings is improved by 20%. The long-term goal is to lead the world in green building design and construction. The most recent policy report on green building in Vancouver is the Draft Greenest City Action Plan, released on January 5, 2011. The report states

that the plan is to finalise the Greenest City 2020 Action Plan by late April/early May 2011[7]. In addition, the short-term goals for green building have been refined: all new construction from 2020 onwards must be carbon neutral and GHG emissions from buildings reduced by 20% from 2007 levels by 2020. The rationale for these changes is that the new targets are more specific and so will generate better results. However, these proposed changes will not be revealed until Spring 2011.

This discussion on the evolution of green building policy in Vancouver reveals that it is a complex, dynamic, and constantly changing industry. While it appears as though the City is doing its best to promote green building practices through various policy instruments, there seems to be a disconnect between what the City advocates are the best measures and what is implemented. For example, while the need to increase whole building performance standards [i.e. passive design] and move away from checklists [i.e. LEED] is mentioned as a priority, in 2009 and 2010 'checklist' standards were reinforced in several policies. In fact, it seems as though a majority of green building policy has centered on attaining LEED Gold [or equivalent] Certification and that relatively little has been done to promote alternate approaches to green building that do not rely on this method of point-counting. Also, it is interesting that SEFC continues to be portrayed as a model sustainable development. While buildings on the site have received impressive accolades for environmental innovation, the project has been criticized for the lack of market uptake and significant reductions to social sustainability components, such as affordable housing. As a result, many of these green buildings stand vacant. Is this the future of green building the City of Vancouver is planning for? Are these the types of policies that the green building policy community is promoting?

[7] At the time of writing this information had not been released.

# 6: FINDINGS AND RECOMMENDATIONS

*Using the concept of the policy community discussed in the literature review, this section presents the project's findings and recommendations for future green building policy development. Three green building policies are identified as having been particularly influential in the evolution of Vancouver's building sector. Strengths and weaknesses of the policy processes, and their impact on the sector, are outlined as a framework for understanding the opportunities for and barriers to green building in Vancouver. Lastly, the chapter lists a series of recommendations for advancing the green building sector in Vancouver.*

## 6.1 The Emergence of Green Building in Vancouver

Overall, Vancouver's green building policy community is complex, interdisciplinary, and constantly evolving: several actors, with both competing and similar interests, work together to create a green building policy environment in which a majority of stakeholders are represented. Initially the drive to build green came from the private sector, particularly architects who were committed to reducing the impact of buildings on the environment (Interviewee 5, March 16, 2011). In the early years, these private individuals were pushing the City to adopt and legislate greener building practices (Ibid). Today, the City, in conjunction with other forward-thinking actors in the green building sector, has taken on part of this leadership role. By reaching out to experts in the field, including architects, developers, planners, consultants, think tanks, academia, green building institutions, and non-government organizations, a collaborative and consultative green building policy process has emerged. It should be

noted, however, that the inclusion of social sustainability components seemed to be lacking from the discussion around green building, and this represents a gap within the policy community. While the policy process does have its weaknesses, it has also contributed to the development of the green building sector in Vancouver and is helping drive the industry forward. However, as discussed by the literature on policy communities, and as revealed by this project, attaining and maintaining this kind of collaboration and consultation is difficult and involves a delicate balance – aptly described by Interviewee 8 as, "a dance between radicalism and leadership" (February 28, 2011) – this comment also reflects the dynamism of the policy process. Interviewee 6 builds on this point:

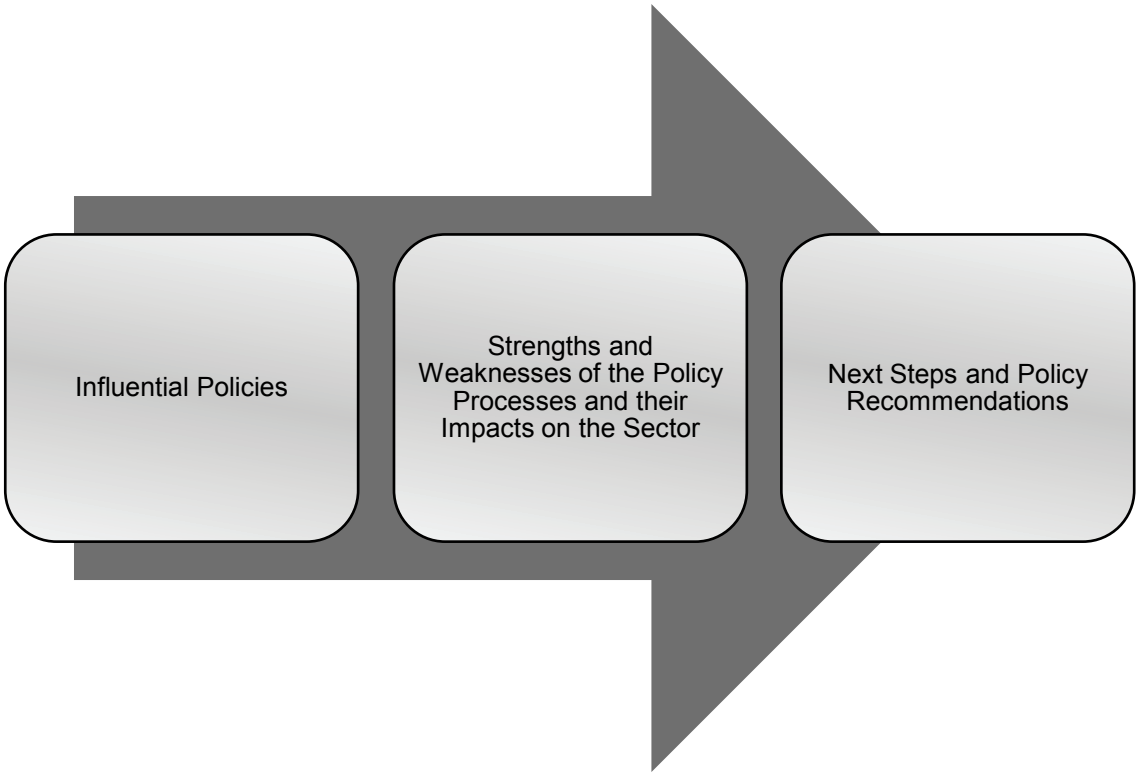
> Much of [the policy development] could have been done better and in a way that enabled the emergence of much more pro-active, leadership-driven green development and green building community than we now have in Vancouver. Compared to Seattle and Portland, and even Victoria, Vancouver has missed many opportunities to nurture truly progressive mainstream development. I also think much more needs to be done to reach out to other groups, such as trade unions, that have some great ideas about how to actually achieve better performance in buildings. (February 17, 2011)

Therefore, according to this interview participant, Vancouver's green building policy environment could be improved by learning from the successes and failures of other cities in the region. While Vancouver's green building policy community will continue to evolve and change, its growth, and consequently the growth of the sector, will be dependent on the degree to which the community can work together, address the issues raised in the comment above, and be embraced as a norm by the broader public. Ultimately, it is a relationship that requires compromise, patience, forward-thinking, and good marketing.

The sections below reflect findings generated from a green building sector profile, a review of green building policies in Vancouver, and a series of interviews conducted with green building experts. First, the policies that were deemed influential

by interview participants are presented. Second, the strengths and weaknesses of the green building policy processes in Vancouver are outlined and the impacts these have had on the green building sector are discussed. This section provides a framework for understanding opportunities for and barriers to green building. Third, recommendations for the next stage of green building policy development are offered [see Figure 6].

**Figure 6:** Logic Model of Findings and Recommendations




## 6.2 Influential Policies

According to the experts interviewed, in relation to the rest of Canada, the City of Vancouver was an early-adopter of green building policies and policy processes, and the legislation of these policies has been integral to the development and growth of the sector Vancouver. An interview participant supports this assertion:

> I would say policy is essential for the green building sector to grow [in Vancouver]. It creates an even playing field and raises the bar of performance. Many developers would not do green if it wasn't for policy that makes them. This drives business. (Interviewee 3, February 24, 2011)

The general consensus is that the most influential policies have been 'sticks' and that, while these regulatory policies are important in setting baselines, they must be paired with formalized incentives in order to promote creativity and innovation.

Three green building policies were consistently identified as having an impact on how Vancouver's building sector has developed and, consequently, how it will evolve into the future: 1) the SEFC Green Building Strategy (GBS); 2) the Vancouver Building By-Law (VBBL); and 3) LEED Gold Requirements for Rezonings. Essentially, these policies helped establish a regulatory framework and minimum standards for green building in Vancouver.

### 6.2.1 SEFC Green Building Strategy

The SEFC GBS [approved by Council in 2001] was identified as one of the first policies to really put green building on the radar. Its significance was in its commitment to incorporate green building techniques and practices into the SEFC Official Development Plan – for the first time in Vancouver, B.C., and Canada, which set the stage for all future large-scale developments. The SEFC GBS led the way for green building in Vancouver and helped establish LEED B.C., which eventually became LEED Canada (Interviewee 8, February 10, 2011). This helped formalize the green building movement in Vancouver and mainstreamed the green building movement in Canada (Ibid). Ultimately, the SEFC GBS acted as a pilot project for green building practices, eliminated some of the risk associated with building green, and created a space where green building techniques and practices could be observed and discussed.

### 6.2.2 Vancouver Building By-Law (VBBL)

In early 2002, the City looked at all aspects of LEED and incorporated this information into the VBBL, which meant that all buildings in Vancouver, according to the

by-law, had to meet LEED Silver requirements (Interviewee 8, February 10, 2011). In effect, the VBBL [approved by Council in 2007] built upon the work done in the SEFC GBS and legislated greener building practices. With the implementation of the VBBL, two things happened. First, it provided greater flexibility to the City in promoting and implementing green building policies (Interviewee 8, February 10, 2011; Interviewee 12, February 18, 2011). Second, any building or development in Vancouver had to adhere to the VBBL's stricter environmental regulations. The result was the creation of policies that were designed to adapt to changing circumstances and a building sector that was more environmentally conscious. Some saw this as an opportunity to develop expertise in a new and burgeoning market; others saw it as a roadblock to building and development. However, regardless of how the VBBL was interpreted, it created minimum standards for building that were among some of the greenest in North America.

### 6.2.3 LEED Gold Requirements for Rezonings

According to all interview participants, the most influential policy was the introduction of LEED Gold as the rating system for green building [this process began in 2008 and will continue to be the measure used in 2011]. Although LEED provides a framework for approaching and understanding green building, it is important to remember that it is a voluntary rating system [not a standard] that is *targeted* at the design, construction, and operation of the building, but *does not ensure* energy efficiency. This is significant because energy efficiency contributes to reductions in the building's GHG emissions and is one of the primary reasons for green building: to reduce the building's impact on the environment. Therefore, the fact that LEED does not guarantee energy efficiency was identified by interviewees as problematic for the

continued and successful development green building in Vancouver. According to an interview participant:

> There are some LEED Gold buildings out there, and I look at their performance, and I look at their energy systems, and I don't know how they got to where they are. It doesn't necessarily make sense. (Interviewee 14, February 9, 2011)

This ineffectiveness at ensuring GHG emissions reductions was labelled as a major drawback to using LEED as a method of building green. In addition, LEED is not context, area, or site specific and this lack of flexibility to adapt to local climate was deemed a challenge. For instance, LEED does not account for the use of local trades or materials.

However, given these weaknesses, many experts agreed that:

> As a generator of change, LEED has immense value. It does have limitations, and within the green building sector, lots of people identify those. But, at the end of the day, it has been the biggest factor in the way that the mainstream has adopted green buildings because it provides a means of assessment. (Interviewee 14, February 9, 2011)

Interviewee 11 built on this point: "LEED Gold is the most widely recognized and the best we've got at the moment. While there are drawbacks, it's the most marketable system out there" (February 15, 2011). Therefore, while LEED is not perfect, it is the most identifiable green building rating system that currently exists, and it has been reasonably effective in marketing and communicating the definition and implications of green building to the general public.

## 6.3 What's Working: Strengths

Interview participants identified six strengths associated with green building policy processes in Vancouver:

### 1. Collaboration and Consultation

The collaboration and consultation that have characterised green building policy development in Vancouver have contributed to the overall acceptance of policies both within the green building policy community and among Vancouver's citizens. This dialogue has been taking place between several actors in green building, such as the City, developers, architects, and consultants, and was identified as a strength by interview participants. According to Interviewee 15,

> I've seen real movement from the City in the time I've been engaged with this [green building policy dialogue]. I see real openness, in particular on how do we address the heat energy options, how do we get to greater efficiency? I think the Deputy City Manager has shown real leadership in terms of trying to understand what the detractors are saying and really trying to find solutions that are going to be a win-win. Certainly, the City Council is devoted – I have seen councillors devote a lot of personal time to hearing the criticism and understanding it. I haven't seen this level of openness and collaboration before. (March 3, 2011)

Because of this, "nobody is blindsided, everyone is on board, and this moves policy forward" (Interviewee 3, February 24, 2011). People feel as though their voices are being heard and that their ideas, opinions, and suggestions are adequately reflected in the policy environment.

In addition, the public and private sectors are working together at various levels to promote green building policy development. For example, the Sustainability Group at City Hall [that works extensively on the green building file] collaborates on a regular basis with B.C. Hydro and Terasen Gas to generate ideas and ways of approaching energy efficiency in Vancouver, with a specific focus on buildings (Interviewee 12, February 18, 2011). In fact, B.C. Hydro and Terasen Gas fund work and research being done by the Sustainability Group, and an important element of this is the dissemination of information and sharing best practices both within the city and among other municipalities (Ibid). Therefore, when it comes to green building policy, public and private industry tend to be on the same page, are aware of challenges and opportunities

with respect to advancing green building, and are working towards similar goals. In discussing some of the City's more general policy directions, Interviewee 12 (February 18, 2011) noted that, "while there is competitiveness to be the Greenest City, this is not overshadowed by the commitment to reduce GHGs and mitigate climate change," which indicates that although the Greenest City Initiatives may be driving the policy agenda [for instance, the focus on green building], the overarching goal remains sustainable development.

**2. Political Support**

The current City administration has been integral in driving policy development in green building. Put simply: "We have great support from council. Because of this support, the green building agenda moves forward" (Interviewee 8, February 10, 2011). According to several experts, if green building had not been a priority on the policy agenda, the sector would not have developed so robustly and the policy community would not have been as strong. The political support can be observed in the City's legacy of commitment to sustainable development, climate change, and GHG emissions reductions [discussed in Section 5.3: Policy Climate], which helped open the market and generate general public awareness around green building.

Vancouver's commitment to green capital [discussed previously] has also been a contributing factor. According to an interview participant, the use of environmental innovation as a response to the financial crisis put a renewed focus on green economic development, specifically green building (Interviewee 7, March 4, 2011). Thus, the various policy mechanisms implemented by Council have contributed to the implementation and uptake of green building practices in Vancouver. It is a dynamic process that should be monitored closely so that changes and fluctuations can be identified and appropriately addressed.

### 3. The Market for Green

It is important to note that the political support discussed in the previous section involves a fine balance between political will to build green paired with market demand. These two bodies must be working together in order to achieve an equilibrium around green building supply and demand. This is described by Interviewee 11:

> It's a cultural thing: there is a public demand, and because of the public demand, there's the private sector push, and then the private sector push is supported by the public policies. It's a very dynamic process. (February 15, 2011)

Interviewee 7 supports this: "there is a market for green building, so it's easy for the politicos to support it. This helps drive the market forward even more" (March 4, 2011). It can therefore be argued that part of the growth of the green building sector has been market driven. As a result,

> There has been a paradigm shift within the development community in response to the marketplace. This shift happened because people were demanding it. (Interviewee 1, February 24, 2011)

This interviewee went on to say,

> I strongly believe that it's the cultural paradigm shift of the general population [in Vancouver] wishing things to be different – as well as developers – and knowing that things have to be done differently. (Interviewee 1, February 24, 2011)

Because Vancouverites tend to be more environmentally conscious when making market decisions, the cultural acceptance of and expectation for green building in Vancouver has played a major role in the development and growth of the sector. Thus, while green building policies help support and regulate the market, part of the impetus for green building policies and development is driven by public demand. Interviewee 3 supports this point:

> We've got lots of green building business and clients, which indicates that there is an appetite for this type of development in Vancouver. This is a positive in the sense that this is a growing and dynamic industry that makes up a part of Vancouver's economy. (February 24, 2011)

Several experts stated that public demand was especially strong in Vancouver in relation to other cities they have worked in, and that green building is being viewed as a competitive advantage that can be exported to other areas of the world. Interviewee 7 elaborates on this point:

> People support [green building] because there is a competitive advantage [in Vancouver]. It's not just "Oh, let's save the planet". Actually, we have a lot of expertise here and we are exporting our expertise ... We have a lot of institutions that do green building and are committed to it – there is a lot of research here. It makes good business sense. (March 4, 2011)

Therefore, the increased overall awareness around green building in Vancouver is helping drive market demand. This is working in the industry's favour because the more people know, the more interested they are, and the more likely they are to invest in it.

**4. Learning and Information Sharing**

The tendency to share best practices, lessons learned, and other relevant information with both competitors and collaborators was identified as an asset of the green building sector in Vancouver and the Cascadia region. An interview participant described this succinctly:

> The best thing that is coming out of [green building policy] is the heightened awareness by everyone that is involved in building, whether it's the developers, designers, or consumers. That, if nothing else, everybody is talking about green building design, green building features, and the advantages of making a project green. It's really that educational component that seems to be working a lot better today and more people are aware of the issues. To me, that is the most important outcome from all of this. (Interviewee 11, February 15, 2011)

Therefore, the ability to network and talk about what is and is not working has augmented the skill and knowledge of the sector, which, in turn, increases competitiveness. However, according to Interviewee 4,

> Information sharing in Cascadia (especially with Portland and Seattle) has yet to reap any significant advancements or benefits. The green building industries in Portland and Seattle seem to be moving forward quite quickly, and Vancouver, even though it is part of the Cascadia Green Building Council and has been privy to several high-level policy meetings on green building, seems to be very slow to

> implement green building policies (in comparison to Portland and Seattle). (February 14, 2011)

Although this comment may at first seem like a drawback, it demonstrates that an information sharing process does, in fact, exist and is a component of high-level meetings. While Vancouver has yet to fully capitalize on the situation, it does provide the city with an opportunity to learn from other cities that are leading in green building policy development. It also contributes to the creation of some inter-city competition within the Cascadia region, which, in turn, has the potential to drive Vancouver's green building sector to become more innovative.

### 5. Leadership and Champions

The leadership role played by green building champions was identified as an integral element to the development of green building in Vancouver. In the early days, progressive architects, thought leaders, and early adopters of green building, played this role; today, it is played by the city in conjunction with architects, developers, and other industry leaders. An interview participant explained this dynamic:

> You combine: great individual leadership, intellectual thought leadership, academics that are pursuing this research, and young minds. You do this while living in one of the best cities in the world that lends itself to this kind of activity. You couple this with clean and inexpensive hydro. You put this all together in a city that really wants to capitalise on [green building] and it's a pretty good recipe for success. (Interviewee 15, March 3, 2011)

These leaders and champions fundamentally shaped the way green building developed in Vancouver by moving beyond the status quo. Now, this tendency to 'push the envelope' characterises green building policy processes in Vancouver.

### 6. Commitment to District Energy

The commitment to the implementation of district energy systems was identified as a progressive and forward-thinking move by the City. The plan is to increase the requirements and standards of the heating by-law, which means that district energy

systems – or the potential to hook up to a district energy system – will become mandatory in all new buildings. The idea is that this will be the most cost-effective in the long run because equipping buildings with district energy systems comes at a relatively low capital cost to the developer. This decision links up to the City's sustainability initiatives and visions aimed at reducing GHG emissions, and is the "future of green building in Vancouver" because it marks a move towards the adoption of higher energy efficiency standards in buildings (Interviewee 5, March 16, 2011). Interviewee 11 explained the implications for the building sector:

> District energy means that any heating systems that you put in must be water based as opposed to electrical (i.e. baseboard heaters). If this wasn't a policy, this would not have been something we would have invested in. This is an example where policy is leading the industry. The initiative of the city is driving these higher standards on the energy front. (February 15, 2011)

However, several interview participants stated there is still room for improvement. For instance, there is still some confusion around how district energy is defined [i.e. what kinds of energy systems qualify as district energy], how it will be provided [who, what, where, and when], and how it will be measured [by whom, using what metric]. Interviewee 15 suggests the implementation of several pilot projects to address these issues and to mitigate some of the risk associated with new technologies. Interviewee 15 then went on to conclude:

> A strength in Vancouver is that while these conversations [about district energy] may happen in other cities, they are happening at a very theoretical level. When they happen in Vancouver, they are happening at a much more practical level, because the city has done a pilot project in SEFC. Because of this, it's a very different conversation when we sit around the table because the practical knowledge is there and the lessons that were learned can be shared. There is a lot of experience at the table. (March 3, 2011)

Therefore, while the change and shift towards district energy is "not near where we need to be, we're moving in the right direction" (Interviewee 9, February 28, 2011), and the knowledge and the skill set is there.

## 6.4 What's Not Working: Weaknesses

Interview participants identified six weaknesses associated with green building policy processes in Vancouver:

### 1. LEED: Time to Move Beyond

Several interview participants stated that the LEED rating system is no longer the most appropriate policy mechanism for promoting green building, and, in some instances, is holding the sector back. While LEED was the right system initially, experts believe the green building sector in Vancouver has reached a level of expertise that allows it to move beyond LEED 'point-counting'; essentially, the approach to green building needs to be rethought. The checklist approach associated with LEED was consistently mentioned as a significant challenge because a situation has developed where the focus is placed on getting points to secure certification and building permits, as opposed to the bigger picture of reducing GHG emissions and promoting more sustainable forms of development. Interviewee 4 supports this point:

> LEED is not a very specific tool. It does not ensure energy efficiency. Developers can choose to get their LEED points in other areas. This is a drawback of the system. (February 14, 2011)

Interviewee 11 describes this situation in more detail:

> Right now, I suppose, [LEED] is probably the best we've got, but we find that one of the problems with LEED is that you often find yourself going crazy chasing points. I wonder if we lose the bigger purpose through the actual process of running after points to get on our scorecard. Are there other things we could be doing that might not necessarily be embodied in the LEED checklist but might be good policies to use from an environmental point of view? (February 15, 2011)

Therefore, the overarching reasons for using the LEED system [i.e. developing within environmental limits] become subservient to point counting.

In addition, LEED is a third party certification system. This poses challenges in terms of policy because

> ...it takes control away from the regulatory body in setting the standards – now the standards are being set by some third party, as opposed to the municipality, province, or federal government. (Interviewee 4, February 14, 2011)

Interviewee 7 builds on this:

> If you ... bring in the Canadian Green Building Council or the U.S. Green Building Council into the policy decisions of the City, there is potential to create a lot of friction and I don't think there is any other section of policy where you would do that because you would want to review things yourself to make sure that it meets your building code and your standards ... I don't think bringing in a third party is the best way to go. (March 4, 2011)

The third-party approach is identified as a drawback because it limits the effectiveness of the system and makes policy- and decision-makers beholden to a third party who is not necessarily familiar with the City, its priorities, or its citizens' best interests. While it is important to include input and collaboration from all stakeholders, the use of LEED as a policy instrument seems to give a disproportionate amount of regulatory control to a removed and disconnected party.

The reliance on a third-party also contributes to the lag time and red tape associated with getting building certification and permitting in Vancouver. According to Interviewee 9, at the moment,

> All of the LEED points and categories are currently reviewed by local government representatives to ensure that they are meeting requirements adequately. However, once they have been reviewed by local government, the applications are then sent to LEED's central agency to be certified. (February 28, 2011)

This procedure can take up to a year, which, in turn, delays projects. This then becomes a disincentive to be creative or innovative within the LEED system because these procedures not only become cumbersome, but also the cost of getting LEED certification becomes prohibitive. The end result is people who are putting a great deal of effort, money, and resources into understanding the intricacies of the system, who

ultimately become frustrated or disenchanted, and either give up or just do the bare minimum.

### 2. Prescriptive versus Performance-Based Policies

The tendency to focus on prescriptive policies [sticks] as opposed to outcome or performance-based policies [carrots] was mentioned by several experts as a drawback of green building policy processes in Vancouver. Target setting and incentives were the two elements consistently identified as requiring further attention.

#### *Target Setting*

The City needs to consider a performance-based model as opposed to a prescriptive model. Interviewee 11 explains the situation:

> We need to emphasise actual building performance. Rather than just saying, here's the list and we've done this and this and this, and there's our scorecard. What happens a year from now? Five years from now? I've heard stories of projects that have been built with certain technical features that were in there for sustainable reasons and they just shut them off because they involve more maintenance, higher cost, etc. That means, of course, that the building may have been approved as a Gold building, but it's not operating as a Gold building. So then the question is: is there a way of checking this as time goes by? (February 15, 2011)

Target setting, with a specific focus on energy efficiency, was identified as a potential solution to the some of these issues. Several interview participants stated that some sort of energy metric must become mandatory. This can be approached in several ways, but the basic premise is that a standard for energy efficiency is created based on building type [large, small, home, commercial, etc.]. The methods used to meet these standards are irrelevant, as long as the standards are met. The idea is that this creates an environment that promotes both innovation and rivalry, which will ultimately lead to a more intelligent and competitive green building sector. This is explored in greater detail in *Metrics* under Section 6.6: Recommendations.

***Incentives***

According to a majority of interview participants, at present, the incentives for green building in Vancouver could be augmented, and if the City really wants to encourage the uptake of green building practices, a suite of incentives to build green need to be developed and implemented. While some architects, developers, and designers are committed to building green, GHG emissions reductions, and climate change mitigation, and although Vancouver does have a reputation as a green city, if there are no incentives to build green, then it will not happen at a significant rate or on a wider scale. Interviewee 10 describes this reality:

> You can't rely on the developer or the development community to do the right thing because they care about the environment or climate change. This is a totally unrealistic expectation and won't happen. (March 9, 2011)

Thus, for the 'slow-movers' to get on board, it must be profitable and easy for them. According to Interviewee 10, there should always be as many 'sticks' as 'carrots', and, at the moment, the tendency has been to focus on 'sticks' and there is room for improvement here. There are several mechanisms that can be used to promote and incentivize green building, such as a discount on fees, density bonuses, and financial incentives for owners and developers.

However, it is worth mentioning that financial subsidies can create dependence on public monies and reduce incentives for innovation. Perhaps an alternative solution is the implementation of policy incentives that focus on setting performance targets as opposed to remunerations. This will be explored in greater detail in *Innovation and Research & Development* under Section 6.6: Recommendations.

**3. Affordability, Valuation, and Cost**

More can be done around issues of affordability, valuation, and cost in terms of green building. There continues to be a debate around how much it costs to build

green. According to Interviewee 7, there is an assumption that green building costs more, and there are two significant implications for Vancouver: development flight and affordability (March 4, 2011). The basic premise of development flight is that Vancouver's higher standard of green building [which costs more] may drive developers to build and develop in other jurisdictions. On the other hand, with development flight, "you might lose the people you don't want to be producing or working in your jurisdiction anyway" (Ibid, March 4, 2011). For green building in Vancouver, this would be the 'late adopters': the firms who are not seeking to incorporate green building techniques into their building practices.

The question of affordability is especially relevant in Vancouver due to the high cost of housing relative to the rest of Canada. The question then becomes, if you do green building do you add to the 'unaffordability' of living in Vancouver? Interviewee 15 addresses this issue:

> This city has become so, so expensive. To add to the cost of building anything, increases the lack of affordability. We are missing some way to mitigate the escalating land costs. This makes it really hard for a developer to buy a piece of land, build a multi-use residential green building, and then be able to sell it at a price point that Vancouverites can afford. (March 3, 2011)

Interviewee 1 agrees:

> Vancouver is a very expensive city to live in. Green building adds cost premiums. There is no mechanism or tool designed to deal with or address this issue. This is major challenge to green building. (February 24, 2011)

These comments indicate that green building does cost more, which is a challenge in Vancouver. Interviewee 15 introduced the idea of creating a tool that promotes the overall added value associated with green building stating that "at the moment, there is no mechanism that is designed to reflect the added value of green" (March 3, 2011). The question remains: has the market really understood the concept of higher upfront costs for long-term savings and is this reflected in purchasing decisions? This is a

perennial argument that will need to be addressed in order for the sector to continue to evolve and grow in a way that is competitive.

### 4. Education, Training, and Capacity Building

Another element requiring increased attention is the active promotion of education, training, and capacity building focused on getting the industry, policymakers, and the public up to speed on general green building topics, rating systems, technologies, and operations. Interviewee 1 addresses this issue:

> There needs to be a little bit of catch up in education at the city. What exactly does green building mean? Our job is to ensure the economic viability of the project. But from them – they need to be more in step with developers and consultants and really understand the green building process and how it works. If there are superior methods that are more site appropriate, these need to be considered as viable options as opposed to focusing solely on the prescriptive methods that fit inside a box. (February 24, 2011)

The idea is the more people know, the less risky it is to build green. This has two impacts: 1) green building becomes cheaper [because it becomes more widely adopted and so more work, research, and development are being done, which helps reduce costs], and 2) the decisions [at all levels and from various stakeholders] become more informed. This contributes to increased efficiency and competitiveness. However, when this capacity is missing, there are setbacks. Interviewee 15 gives an example:

> The reality is the developer can do a multi-unit residential building development, but if that strata council doesn't understand the geothermal or the kind of green facilities that the developer has put in, then they don't maintain it and they don't value it. And then it doesn't matter what the developer did, it's gone. That capacity is missing. (March 3, 2011)

In this instance, the efforts of all those involved in the conceptualisation, design, and construction of the building become irrelevant because those responsible for the operation and maintenance of the building are not aware of or adequately trained on how the systems work, and are therefore not using them properly. This represents a

fundamental disconnect in the way green building works in Vancouver and is hindering the City's ability to reduce GHG emissions effectively.

### 5. Cheap Energy

Cheap energy was an issue raised by all interview participants as holding the sector back. It is a relatively simple argument: the low price of energy does not accurately reflect the amount of carbon it produces. As such, people tend to be unaware of how much energy they use and the impact that this has on the environment and "because energy is so cheap, there is no incentive to build in an energy efficient way" (Interviewee 4, February 14, 2011). This interview participant explains the situation further:

> In a jurisdiction out East, where it's cold in the wintertime, they will build buildings that are more energy efficient because it saves them money and it is also nice that this will get them some LEED credits. On the other hand, in Vancouver, because energy is so cheap, it's not worth it to spend resources on energy efficient building techniques, such as double paned windows or advanced HVAC systems, because the developers won't see returns on that. It is better for them, financially, to invest in other [LEED] credits. (Interviewee 4, February 14, 2011)

Therefore, in colder temperatures, the primary motivations are energy efficiency and cost-savings, whereas in milder climates – like Vancouver – the same motivations do not exist. Whether it is an increase in energy prices to convey the true economic, social, environmental impacts of the GHG emissions associated with energy use, a move from a certification-based model to a performance-based model, and/or a widespread informational campaign, there needs to be some sort of mechanism to communicate and visually display this message to Vancouver's citizens.

### 6. Existing Buildings

There is room for improvement in the policy work that has been done on the GHG emissions associated with existing buildings in Vancouver. Several interview participants identified the lack of focus on existing buildings as the biggest gap in terms

of GHG emissions reductions in the building sector. Existing buildings pose one of the toughest challenges because they are some of the biggest emitters in the City, and will be the most expensive to retrofit to meet increased energy efficiency targets. Nonetheless, very little attention has been paid to creating policies [either sticks or carrots] that promote energy efficiency retrofits for large buildings. It is important to highlight that the City does have the capacity to implement these kinds of policies, and it is an ongoing discussion both within the City and between the City and industry representatives. According to an interview participant, the City has identified existing buildings as an area requiring further focus and improvement, and plans to apply the same policies to existing buildings that currently only apply to new buildings; the eventual goal is to reduce GHG emissions from existing buildings by 20% (Interviewee 8, February 10, 2011). Therefore, the City has recognised that existing buildings represent a gap in green building policy and are making moves to change this. Ultimately,

> The eventual goal is to allow policy to be flexible enough that it will change the industry on a more holistic or broader base, and existing buildings are certainly one of the targets there. (Interviewee 11, February 15, 2011)

## 6.5 In Summary

The strengths and weaknesses noted above demonstrate that while the green building policy community has been actively involved in the creation and implementation of green building policy processes, it has now reached a level of skill that requires a change in the way green building is approached in Vancouver. The findings indicate that there has been considerable uptake – among several and varied actors involved in the building sector in Vancouver – with respect to green building practices and technologies. As a result, the industry has been building its expertise and has invested considerable resources into understanding how green building works, both in theory and

in practice. This has contributed to an industry with a relatively robust knowledge of green building systems with the capacity to identify areas where Vancouver enjoys an advantage and areas where improvements can be made.

Therefore, green building policy needs to be updated to reflect these advances in understanding and innovation around green building. For instance, while systems like LEED were helpful at first in providing a green building checklist and getting people on board, today the industry is ready to move beyond this, and this is evident in the weaknesses that were identified by interview participants. Green building professionals are now aware of what is missing and these gaps need to be addressed with respect to policy. Essentially, while the policy community and the sector are complying with existing standards, they are now prepared and equipped to exceed the existing regulatory parameters. However, mechanisms like LEED are now serving as impediments to further progress. The next section on Recommendations provides some suggestions on how to move forward.

## 6.6 Recommendations

The strengths and weaknesses identified in the previous sections have contributed to the emergence of a strong green building policy community, which, in turn, has played a fundamental role in shaping green building in Vancouver. In order to for this development to continue in a way that pushes beyond the status quo, the following six policy items should be considered:

**1. Benchmarking and Accountability**

A benchmark would contribute to the creation of green building standards and monitor green building performance and progress into the future. Interview participants identified a lack of accountability for building performance, operations, and

management, particularly in terms of energy efficiency, as a challenge. Interviewee 13 asked,

> Does [a benchmark] exist? If so, the consultants are not aware of it. Who monitors whether or not the building, once completely constructed, has actually attained its LEED status? Cost cutting measures often see more expensive 'green' elements eliminated, and there is no one who checks up on this. This needs to change. (February 10, 2011)

A system of energy performance measurement would help identify the degree to which green building in Vancouver is actually contributing to GHG emissions reductions and curbing climate change. Currently, there is an assumption that green building is having a positive impact, but there is no unified system of energy measurements or benchmarks that can be used to justify these assumptions – there are several different approaches.

Papaioannou et al. (2006) provide a useful way of approaching policies designed to create benchmarks that can be applied to green building policy in Vancouver. They suggest that benchmarking policies should be based on seven key principles: focus, measurement, differentiation, learning, comparability, integration, and applicability. *Focus* involves defining what is being benchmarked very tightly. In Vancouver, this would mean a specific definition of energy standards as they relate to green building. For Papaioannou et al. *measurement* is,

> where the main benefits of benchmarking are likely to arise. While it is unlikely that sufficiently accurate performance measurements can be devised to allow for an accurate comparison, the broad-brush measures can help show where there are differences and this can aid learning and the flow of new ideas about how to enhance performance through adoption of new or improved practices. (2006: 96)

Therefore, while it may be difficult to create exact performance measurements, the goal is to establish a starting point and move forward from there; in Vancouver, the measurement would be the selection of an energy efficiency metric [discussed in greater detail in *2. Metrics*]. *Differentiation* is based on distinguishing between good and bad

practice and incorporating this learning into policy development. In Vancouver, this would involve a review of current green building policy by stakeholders from various backgrounds, such as from public, private, non-profit, and academic institutions, and a subsequent dialogue about strengths, weaknesses, and recommendations for policy development. Structured frameworks are then used to promote interactive *learning* within the policymaking environment. In Vancouver, these frameworks could take the shape of a structured dialogue that would occur on a regular basis with various members of the green building policy community where the same series of questions are asked and participants discuss their experiences and lessons learned – see *5. Advisory Group*. *Comparability* ensures that policies can be compared over time and that progress or changes can be monitored. *Integration* involves incorporating the benchmarks into greater policy objectives. In Vancouver, this would mean linking green building energy efficiency benchmarks to overall sustainability visions, such as the reduction of GHG emissions from the building sector. Lastly, *applicability* is designed to make sure the benchmark is being applied to things that can actually be compared – for instance, comparing green building benchmarks to overall building sector benchmarks. Ultimately, establishing green building benchmarks will provide a baseline for performance measurement, which will enhance accountability in the green building sector. While this process will involve continuous monitoring and reflection, it will contribute not only to increased energy efficiency, but also to the overall effectiveness of the green building policy community, thereby making the sector more competitive.

**2. Metrics**

Metrics build on the concept of benchmarking and accountability. The creation of an energy metric [with corresponding standards] will require the development of a new policy that ensures buildings have systems that can measure their performance

from the outset. As a result, this technology and energy metric need to be incorporated into initial building designs and need to make it to the final stage of construction. They cannot be eliminated for cost-saving reasons, which has been the case with other 'green' buildings in Vancouver. In addition to this, there is the potential to measure the waste, energy, and water usage during construction. According to Interviewee 7, currently, this does not happen, but represents a significant part of the building's emissions and is an important part of the building's lifecycle (March 4, 2011).

Once it has been decided that a metric will be created, two things need to happen. First, the industry needs to decide **what** is being measured and **how** [i.e. what kind of metric will be used] and then what will be done with this information. Second, measurements cannot happen just once at the completion of construction; they must be repeated on a regular basis. The measurements should be based on building type and occur every six months to a year in order to monitor progress or regress. Several interviewees suggested the imposition of a financial penalty if the building's performance falls below the level at which it was certified. For example, a building receives LEED Gold certification at its first [and currently only] inspection. The introduction of an energy metric and monitoring system would result in subsequent measurements at the 6-month or 1-year point. If the building's performance falls below its initial certification of LEED Gold, the owners will be fined and/or have their certification demoted. Using this approach, it becomes more cost-effective to do it right the first time as opposed to paying the penalty or receiving the negative marketing (Interviewee 8, February 10, 2011). This will then provide considerable incentive for people to stick to commitments (Interviewee 11, February 15, 2011). While this would mean a lot of retooling in terms of policy, and there would be pushback from the green building industry, the capacity to implement this system exists (Interviewee 7, March 4, 2011).

This approach will also help address the issue of accountability for building performance, operations, and management in terms of monitoring energy consumption and ensuring energy targets are met, which was raised by several interview participants as something that was hindering sector development. Thus, this system of energy auditing could provide information on overall building performance that can then be used for benchmarking against other buildings. This not only creates a sense of healthy competition [for the greenest building or most cutting-edge technology], but also allows for building performance to be monitored, which means policies can be adjusted to reflect industry developments and learning.

**3. Sustained Political Leadership**

In making green building policy a priority item, the current City administration has promoted the development of both the sector and its policy community. This commitment to green building must be sustained into the future in order for measureable and lasting change and progress to occur. Interviewee participants consistently identified leaders and champions for green building as a strength of the policy process, and these leadership roles must continue to be filled if green building is to remain a political priority. A prize or recognition of achievement may inspire or encourage individuals to take on the responsibility of these roles.

Another element of sustained political leadership is the training of local government staff in green building practices and technologies. This can serve a dual purpose. First, it can help employees take ownership in terms of educating themselves about green building. Second, it can eliminate the need for third party certification with LEED, which in turn gives staff more responsibility, thereby increasing ownership and accountability. An interview participant addresses this same issue:

> As opposed to sending the applications to the central agency at LEED, why not train the local government representatives as LEED certified green building inspectors and professionals? (Interviewee 9, February 28, 2011)

This approach would cut red tape, decrease the lag time between application and certification, and make the system more efficient. According to Interviewee 9, "this approach has the potential to have a big impact on Canada and could be used as model that is tailored to individual cities" (February 28, 2011). This could be a marketing opportunity for a new approach to a green building rating system that was first tested in Vancouver. This could then contribute both to ownership of the system as well as sustained political leadership [given the approach is successful].

**4. Interdisciplinary Green Building**

The interdependent nature of green building must be reflected in Vancouver's green building policy processes. Focusing on just one element is ineffective. The approach to green building policy is multi-faceted and needs to address several things at once. Therefore, green building must be viewed as a piece of a larger movement towards sustainable urban living through a greater focus on transit oriented development, densification, and district energy systems. According to an interview participant, green building policy should be approached in the following way:

> First, we need to talk about new green buildings, which is relatively easy to do. Second, we need to talk about existing buildings, which gets a bit trickier. Third, we need to talk about transit oriented development and density. The only way we can really become a sustainable region is to talk about these things, especially in terms of land use. (Interviewee 7, March 4, 2011)

Thus, while green building is an important part of developing the economy within environmental limits, it is only one part of a much larger movement towards more sustainable forms of development. Interviewee 15 supports this point:

> You can't take the building out of the issues related to land use planning, out of the issues related to density, out of the issues related to district energy, etc ... These are all linked to getting you to green building. (March 3, 2011)

This reality must be reflected not only in green building policy, but also in the City's overall sustainability visions, in order for Vancouver, and the region, to reap the benefits of a return on investment.

At the same time, there needs to be civic engagement and outreach on what green building means. The UN-Habitat supports this assertion:

> To achieve more effective policies, local governments need to expand the scope, accountability and effectiveness of participation and engagement with non-governmental organizations (NGOs), such as community and grassroots groups, the academic sector, the private sector, and opinion leaders. (UN-Habitat, 2011: 3)

The idea is that this engagement will become a source of scientific innovation, locally relevant knowledge, and provide broad-based support and understanding surrounding decisions (Ibid, 2011). Partnering with the private sector and NGOs could lead to increased access to resources, such as financial, social, human, and physical capital, that could be used to invest in green building projects. In addition, establishing well-defined concepts regarding green building will be integral to having productive and meaningful conversations with concrete results. This will "allow participants to understand and mediate the diverse perspectives and interests at play" (Ibid, 2011: 3) – there needs to be an assurance that everyone is on the same page and understands the implications of their decisions.

**5. Advisory Group**

An advisory group, comprised of several actors from the green building sector, should be created to facilitate the implementation of policy.

> Broad-based oversight organizations, such as advisory boards, representing the interests of all actors, should be created to help avoid the danger that private or sectarian interests may distort local action (for instance, by investing in technologies, infrastructures and housing that only benefit a minority, or by hijacking the benefits of grassroots funding). (UN-Habitat, 2011: 3)

Vancouver's green building advisory group would both build on the existing green building policy community, and seek to more adequately represent the social dimensions of green building. The fact that social sustainability components tended to be lacking from the conversation around green building suggests there is a gap not only in terms of policymaking, but also in terms of the knowledge and value added that social considerations bring to the discussion. The group's primary task would be promoting the shift from 'talking' to 'doing'. Oftentimes policy can be stalled in the planning stage and implementation strategies become subservient to dialogue. In other words, there is a lot of talking, but not much doing. The key challenge here is that, while dialogue is important, the observable changes tend to come about with implementation. Therefore, if the green building sector is going to grow and develop, an advisory group could play an integral role in driving the implementation of green building policy forward. Some may argue that this group would simply be another arm of the policy community, but their united vision and goal for policy implementation would allow them to play a unique role – they are not advocating for the interests of one particular group, but represent the desire to 'get things done'. This could be helpful in stimulating some serious conversations around green building policy and how the policy community would like to see it move forward in terms of measurable steps and concrete actions.

**6. Innovation and Research & Development (R&D)**

Innovation and R&D policies designed to promote green building should be considered as incentive options. Instead of throwing money at development, this approach would provide systematic incentives to encourage stakeholders to 'think outside the box' in terms of trying new technologies or practices. This would also build on the concepts of target setting, benchmarking, and metrics. An example of an innovation and/or R&D policy could be the introduction of a tax neutral model for green

building. According to Interviewee 3, there are several tax-neutral models that could be followed and directly implemented in Vancouver – meaning that no significant changes would need to be made in order for the model to be used (February 24, 2011). The basic premise is that people who build inefficiently are charged more than those who are efficient. Followers make up the difference [in terms of fees/taxes] for those who are leaders. For instance, the followers would pay 100$ and the leaders would pay nothing, as opposed to each of them paying 50$. This would create incentive to be a leader, push the envelope, and be innovative. While this model does rely on financial incentives, these incentives are granted based on an organization's ability to innovate, and so could encourage greater investment in R&D. However, this policy would need to be revisited and adjusted on a regular basis to reflect the industry's skill and knowledge development.

These policies could then feed into an 'opportunity agenda' – a formalized process designed to identify opportunities for green building innovation, research, and development. This would involve a regular monitoring of various elements of green building [such as new technologies and innovative policies] with the goal of collaborating with others in the region, province, country, or world. The idea would be to share lessons learned regarding successes and challenges in green building and then incorporate this into green building policy processes in Vancouver, with the potential to export this knowledge and expertise elsewhere.

# 7: CONCLUSION

The green building sector is vibrant, innovative, and constantly evolving. Rationales for advancing the issue of green building include environmental protection, the reduction of GHG emissions, climate change mitigation, and advancing economic competitiveness, and many cities use green building policies to promote broader strategies associated with sustainable development. Vancouver contains an active green building sector that is motivated by each of these drivers and its policy processes reflect this dynamism.

Since the early 1990s the City has incorporated sustainability policies into its urban development strategies, and in recent years this commitment has become manifest in several specific policy areas, including the development of green building policies and a strong policy community. Based on a green building sector profile, policy review, and interviews with green building experts, this project's findings suggest that the green building sector in Vancouver has targeted green building policy areas that are working well and areas that are requiring improvement. In summary, the areas of strength with respect to green building policy processes are: collaboration and consultation, political support, information sharing, market acceptance and uptake, leadership, and commitment to district energy. Areas of weakness are: the reliance on LEED, prescriptive as opposed to performance-based policies, cost, lack of education and training, cheap energy, and GHG emissions from existing buildings. Overall, the social dimension of green building tended to be missing from the conversation.

These findings reflect the reality of policy processes and policy communities as outlined in the literature. They are often complex and intricate entities that evolve and

learn based on context and experience, can be difficult to place within a static framework, and whose participants and members play a fundamental role in shaping policy outcomes. This is an important lesson both generally and specifically in terms of green building in Vancouver: no policy process is perfect, nor can it be. Policy actors must strive for a process of continuous learning and dialogue that will ultimately inform the green building policy community, thereby allowing it to continually innovate and make informed decisions about the future of green building in Vancouver.

The findings also highlight potential for future research. In identifying gaps in the green building policy environment, the recommendations in this paper outline areas – both specific to Vancouver and more generally – that merit greater attention for moving green building forward. These include:

- Research on how to create a system of benchmarking and accountability to measure a building's performance, operations, and management in terms of GHG emissions and energy efficiency.
- Research on how to create an energy metric that is widely applicable, easy to use, and can be implemented in a variety of buildings [i.e. commercial, residential, large, small].
- Research on how to effectively incorporate green building into the larger movement of sustainable urban living. This will include work on understanding how green building links up to activities such as transit oriented development, densification, and district energy systems, and how these interactions can be accurately reflected in the policy environment.
- Research on how to create an advisory group that builds on the existing green building policy community in Vancouver and that works towards policy implementation. While this research topic is particular to Vancouver, if successful, the model used to create the advisory group could be replicated in other cities and/or in other policy areas.
- Research on how to establish innovation and research & development as incentive options. Specifically, this research could focus on the feasibility of a tax neutral model for green building in Vancouver and provide further recommendations on how this, or other incentive alternatives, may [or may not] be implemented.

A research agenda that covers any of these recommendations would build on the project's findings, contribute to a more robust understanding of how green building policy processes function, and explore how these policies can be improved and augmented in the future.

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# APPENDICES

## Appendix 1: List of Policy Documents Reviewed

1. Clouds of Change Report (1990)
2. Energy Utilization By-Law (1991)
3. Central Area Plan (1992)
4. Southeast False Creek Policy Statement (2001)
5. Definitions and Principles of Sustainability (2002)
6. Policy Report: The Corporate Climate Change Action Plan for the City of Vancouver (November 18, 2003)
7. A Corporate Climate Change Action Plan (2003)
8. Action Plan for Creating a Just and Sustainable Food System for the City of Vancouver (2003)
9. Energy Utilisation By-Law (2004)
10. Policy Report: Community Climate Change Action Plan for the City of Vancouver (March 15, 2005)
11. Southeast False Creek Official Development Plan (March 2005)
12. Vancouver Green Building Strategy (November, 2005)
13. A Community Climate Change Action Plan (2005)
14. Progress Report on Vancouver Green Building Strategy (April 20, 2007)
15. Climate Protection Progress Report (August 31, 2007)
16. City of Vancouver's Building By-Law (VBBL) (9419) (2007), Amendments to the VBBL (2008)
17. Rezoning Policy for Greener Larger Sites (June 10, 2008), Amendments to the Rezoning Policy for Greener Larger Sites (2009)
18. Rezoning Policy for Greener Buildings (June 10, 2008), Amendments to the Rezoning Policy for Greener Buildings (2009)
19. Eco Density Charter (June 10, 2008)
20. EcoDensity - Initial Actions (June 10, 2008)
21. Eco Density Revised Action C-10 (October 14, 2008)
22. B.C.'s Climate Action Plan (2008)
23. Energy Efficient Building Strategy (2008)
24. Amendments to the Provincial Local Government Act (2008)
25. Amendments to the Vancouver Charter (2008)
26. The Passive Design Programme for Large Buildings (July 2009)
27. Passive Design Toolkit for Large Buildings (July 2009)
28. Green Rezoning Policy (December 3, 2009)

29. Greenest City – Quick Start Recommendations (2009)
30. Greenest City 2020 Implementation Plan (January 26, 2010)
31. Vancouver 2020 (February, 2010)
32. Proposed Greenhouse Gas Emissions Reduction Development Plan (April 9, 2010)
33. GHG Emissions Reduction – ODP (May 18, 2010)
34. Green Building Policy for Rezonings Updated (July 7, 2010)
35. Green Buildings Policy for Rezonings (July 22, 2010)
36. Draft Greenest City 2020 Action Plan (January 5, 2011)

## Appendix 2: Interview Questions

Below is a list of the questions I intend to ask interview participants. The interviews will last approximately 30 minutes.

Role of Green Building Policy

1. In your opinion, has Vancouver's building policy played a role in the formation of the green building sector? If so, what have been the 3 most influential policies in the formation of the green building sector? Which policies have acted as a hindrance to sector development?
2. What kinds of changes have you seen since green building policies have been implemented?
3. What kinds of City building policies would you like to see brought to the table?
4. What are your biggest challenges in working within the green building policy framework?

Characteristics of Vancouver's Green Building Sector

As a result of green building policies, has Vancouver's green building sector …

5. Developed differently than others? If so, how?
6. Attracted capital, highly educated and/or creative people?
7. Developed a dynamic of cooperation and/or competition?
8. Developed a strong and concentrated labour pool?
9. Developed as a leader in green building?

10. Does your organization share its green building knowledge with others? Sectors? Regions?
11. How do you learn about new technologies, new design approaches, and new operating procedures? How do you apply this knowledge to your projects?
12. As a result of your experience in the City of Vancouver, have you been selected to work on projects elsewhere in Canada or outside of Canada? If so, where?

Future

13. How do you think the green building sector will develop or evolve in Vancouver? What needs to change? What should stay the same? Are there opportunities to export Vancouver's expertise elsewhere?