Organizing for Success:

Best Practices for Growing Clusters in Toronto's Green Industries

TORONTO

About the Sector Development Office & Clusters

The City of Toronto is committed to advancing the competiveness of key sectors of Toronto's economy in collaboration with sector partners. The City uses the principles of cluster development to create, support and sustain robust networks of companies and partner organizations.   The City of Toronto's Sector Development Office is unique in Canada and provides many services to help companies in the city's key sectors grow and prosper.

> *"Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. They include suppliers of specialized inputs such as components, machinery, and services and providers of specialized infrastructure. Clusters also extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs. Finally many clusters include governmental and other institutions – such as universities, standards setting agencies, think tanks, vocational training providers, and trade association."*
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> *Michael Porter, 1998. "Clusters and the New Economics of Competition"*

This report was produced under contract to the Canadian Green Building Council – GTA Chapter - https://www.cagbctoronto.org/

The Canada Green Building Council - Greater Toronto Chapter is Southern Ontario's leading authority on green building best practices.

With an ever-growing member network of over 3,500 building industry professionals, the Canada Green Building Council - Greater Toronto Chapter is dedicated to creating a cleaner, healthier, high-performance built environment through education, collaboration and innovation. We work with both government and private enterprise to accelerate the adoption of green building principles, policies, standards and tools. We are the primary organization responsible for the facilitation and delivery of LEED workshops in Southern Ontario and provides a wide range of educational and networking events for our members and the green building community at large. https://www.cagbctoronto.org/

Overview

As the world transitions to a low-carbon economy, Canadian cleantech and green firms are positioning themselves to meet rapidly increasing demand for innovative solutions. The global cleantech market is expected to grow to US$2.5 trillion by 2022[1] with the solar market increasing by more than 10% annually[2] and electric vehicles sales doubling every two years.[3]

Canada already ranks fourth on the Global Cleantech Innovation Index and scores first when it comes to funding available for start-ups, innovation and investments.[4] This low-carbon shift is also evident in Toronto where the green sector is growing twice as fast as the local economy (4.2% versus 2.1%).[5]

> *"Toronto's green sector is growing twice as fast as the local economy."*

Even with all this potential, our green sector faces challenges to remain competitive while fostering growth. Canada's market share in the global clean tech industry has fallen 12 per cent in the last decade[6] and with only a few cleantech cluster development organizations scattered across the country. These organizations, which are important drivers for growth, are scarce in any sector of the economy in both Canada and the United States compared to Europe, South America and Asia. This gap represents both financial and environmental risks. The green sector in Toronto may be missing out on economic opportunities, which could slow the adoption of green solutions.

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[1] Export Development Canada - https://edc.trade/canada-cleantech-export-potential/
[2] Zion Market Research - https://globenewswire.com/news-release/2018/11/06/1646187/0/en/Global-Market-Size-of-Solar-Panel-Industry-Will-Reach-USD-57-5-Billion-by-2022-At-10-9-CAGR-Zion-Market-Research.html
[3] International Energy Agency - https://www.iea.org/newsroom/news/2018/may/strong-policy-and-falling-battery-costs-drive-another-record-year-for-electric-ca.html
[4] Cleantech Group - https://i3connect.com/gcii
[5] City of Toronto, Economic Development and Culture, Sector Development Office
[6] Smart Prosperity Institute - https://institute.smartprosperity.ca/library/publications/canada-s-next-edge-why-clean-innovation-critical-canada-s-economy-and-how-we

Recognizing the need for organizational structures designed to maximize growth in all sectors of the economy globally, experts on cluster development from over 35 countries gathered in Toronto last October for the **21st TCI Networks' Global Cluster Conference**. TCI is the international practitioners' network for competiveness, clusters and innovation.

Prior to the conference, a separate forum was organized by the **Sector Development Office** for key local stakeholders in Toronto's green sector. Entitled *Best Practices for Growing Toronto's Green Industries* if featured cluster development specialists from Europe who shared first-hand on how to organize an effective clean tech sector to maximize growth. The event featured Nicolai Rottboll, the first manager of the **Copenhagen Clean Cluster** (now known as **CLEAN**), one of the leading cleantech clusters in the world, Bernhard Grieb from Germany's **ClusterAgentur Baden-Württemberg**, and Kasper Nielsen from **Cluster Excellence Denmark**.

The TCI conference also featured a Low-Carbon Buildings tour which included a charrette which focused on identifying the best practices in creating green cluster organizations. In the charrette, participants from around the world discussed how and why local clusters organize and how to identify their value for industry, government and other stakeholders.

This report summarizes key takeaways from the pre-conference event and the charrette. The City of Toronto's **Sector Development Office** also released a discussion paper earlier in 2018 - *Stimulating the Growth of Toronto's Green Clusters*. These materials highlight the importance of facilitating multi-stakeholder discussions and building collaboration to advance cluster development. The steps involved to do this successfully are explained in this report and it provides some important suggestions to facilitate collaboration and cooperation between green sector companies and stakeholders.

What is a Cluster?

Clusters are formed organically when stakeholders from the public and private sectors, research institutions, and academia work together for mutual benefit in a technical or business field. Rather than operating individually in silos, these partnerships support collaboration to create higher value for all while advancing regional economic development.

Benefits of Clusters

Clusters facilitate collaboration and the exchange of knowledge and innovation. They support economic growth by attracting investment and international trade. They can even generate solutions to key societal challenges. The Danish Agency for Science, Technology and Innovation has published a report documenting the benefits from cluster organizations.[7]

What is a Cluster Management Organization?

The purpose of a cluster management organization is to support the cluster and add value for all members. The organization acts as an intermediary between stakeholders to accelerate relationship building and add strategic thinking to the cluster. It facilitates partnerships between enterprises, research institutions, public organizations and other actors to foster innovation while also providing enterprises access to new knowledge, competencies and markets. There may be many initiatives going on within a cluster so a cluster organization provides a platform for members to meet, coordinate, or call in for to collaborate or consult with one another.

Nicolai Rottboll, a founder of CLEAN, highlighted some of the most valuable benefits cluster management organizations offer during his presentations. They include more

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[7] **The Impact of Enterprises' Participation in Clusters and Innovation Networks;** It can be accessed online atathttp://www.clusterexcellencedenmark.dk/da-DK/UK/Publications.aaspx

rapid company growth, increased job creation, new research and innovation partnerships, business ventures, public-private partnerships, collaboration with international clusters, the ability to attract foreign companies and nurturing local and regional entrepreneurs.

A cluster organization can identify existing frameworks or regulations not supportive of business growth or nurturing innovation. While individual businesses or research institutions may find it challenging to effectively advocate for systemic change, a cluster organization can lead discussions with public authorities to influence positive decisions on behalf of the cluster.

In addition to serving as a development platform for the exchange of ideas between businesses to stimulate innovation, cluster management organizations promote the sector to external stakeholders. If, for example, foreign investors want to learn about the local market, sector, or cluster and where to invest, they can easily access this information via the cluster organization.

Do All Clusters Have a Cluster Organization?

An existing cluster may have a structured cluster organization in place to help facilitate its growth or growth may happen without a formal structure. One of the most famous IT clusters in the world, Silicon Valley, was formed without a cluster organization behind it. There was a strong existing academic presence that filled many of the roles of a cluster organization – primarily supporting innovation and start-ups. While a cluster organization is not needed for a cluster to be highly successful, someone needs to take on the role of facilitating collaboration between stakeholders. Timing is important too as attempting to create a large structured organization before a cluster has started to self-organize has proven ineffective.

"There is no single template that cluster organizations follow."

There is no single template that cluster organizations follow. CLEAN currently employs over 60 staff to service member needs. However other successful clusters operate with only a small part-time staff.

What Cluster Organizations Focus On

The missions and goals of a cluster organization depend on the needs of cluster stakeholders and what they wish to achieve. It's therefore crucial to first assess the unique needs of often-diverse stakeholders when starting a cluster organization. Stakeholders can include large companies, small and medium size companies (SMEs), start-ups, local, regional, and national government agencies, non-governmental organizations (NGOS), public interest groups, academia and other research institutions. Once the needs of all stakeholders are mapped out, the cluster organization can decide what its value proposition should be and identify missions, activities and services.

The Importance of Neutrality

A cluster organization is not a special interest group and most company leaders are independent thinkers that have little desire to "follow" a special interest. Providing a neutral platform allows members of a cluster to perceive the cluster organization as welcoming and open.

The public sector can help create a politically neutral platform to benefit all stakeholders and has the added ability to provide funding to launch the organization. Many successful cluster organizations were started with the involvement and financial assistance of local government.

Creating a Cluster Management Organization

Setting up a cluster organization to effectively serve members of the cluster takes more time if there isn't much pre-existing knowledge about the cluster. Depending on the available resources, it can take over a year to analyze, organize and develop an

action plan. If more information about the cluster already exists, that timeline may be shortened to as little as three to four months.

> *"Creating a cluster management structure is about strategic local economic development."*

One of the greatest challenges in the creation of a cluster organization is who does all the work before the organization is actually in place. A working group or secretariat can help with this.

European organizations have found that municipal economic development offices are key partners that play an important role funding early work, bringing cluster leaders together and providing secretariat services. As the cluster evolves, an embryo cluster secretariat can take on more of these responsibilities but government involvement is still critical at the beginning of this process.

Creating a cluster management structure is about strategic local economic development. It is crucial to take a long-term view and consider the following:
- **Starting Point Analysis:** What are member goals, drivers and needs? Determine member interests, readiness, barriers, capabilities and perceptions via stakeholder mapping. Are there any existing policy frameworks?
- **Opportunities Analysis:** Assess local, regional and global market conditions for members, pull factors, gaps, mutual interests, existing cluster organizations, other initiatives
- **Value Proposition:** What value can a cluster management organization bring to members?
- **Financial Structure:** Ratio of member fees, municipal / regional / national funds?
- **Action Plan**: What? For whom? How? When? (Time horizons) Where? (Priority areas) How can each company contribute?
- **Organizational Structure:** Internal & external roles
- **Marketing and Branding**: Internal & external
- **Continuous Performance Measurement & Evaluation**

Many of the above flow into the eight steps outlined below however planning for all steps should be done together at the start rather than sequentially.

An 8 Step Approach to Cluster Development

The following key steps to successful set up and continued operation of a cluster management organization are based on the experiences of CLEAN

Step 1: Cluster Mapping: Knowing Your Cluster

It is critical to learn enough about each cluster member to understand how a cluster management organization can best serve them. Cluster mapping involves identifying all relevant companies, research institutions, public institutions in the cluster and related supply chains. Detailed information should be collected about their service offerings and how they link in with one another.

Once the cluster had been mapped it is important to identify leaders or potential leaders in the cluster who can be influential in building cohesion. These leaders must have a vision that extends beyond the interests of their own organization. This small group of key cluster stakeholders can provide the secretariat with direction on the first few steps of creating the cluster organization.

> *"CLEAN's founding members included the City of Copenhagen and Denmark's largest universities."*

In the Copenhagen example, founding members included Denmark's four largest research institutions, the City of Copenhagen and a few anchor firms, public and private institutions. It is important not to start with too many stakeholders to facilitate an easier consensus building process. Once these influential players are on board, they can promote the organization and recruit other members.

Step 2: Scoping Out Potential Service Offerings - Manage Your Stakeholders

Once there is a good understanding of the current state of the cluster, the next step is to understand the interests, needs, barriers, and other challenges of stakeholders. What do members of the cluster need to maximize their growth? This scoping process requires asking more questions than offering solutions. It is equally important to understand what stakeholders can contribute to foster cluster company growth.

Leveraging Member Strengths: A cluster organization doesn't have to be a centralized service provider. If time is invested to understand stakeholders and the services they provide, the cluster organization can guide stakeholders to work together and foster leadership to develop self-supported initiatives over time.

Building Collaboration: When creating the value proposition for firms to join the organization, the cluster organization may need to address certain points of resistance. One is to differentiate itself from other cluster organizations, industry groups or other business associations members may already be part of. As a cluster manager, it is also important to understand each member will have different needs and hence will require different services. The service offerings need to be tailored for the needs of the cluster as a whole but also fit in to the needs of the individual stakeholders.

Building collaboration early on is important but this can be difficult when firms view each other as competitors. Trust among stakeholders is built over time as working relationships are established. Just don't expect stakeholders to be keen on high levels of collaboration requiring them to share confidential information when they first meet.

Open Membership: In the case of CLEAN, the cluster organization was open to both clean tech companies and companies that wanted to green their operations or service offering. Primarily it was clean tech companies who signed up as members but CLEAN was open to all stakeholders.

Step 3: Vision, Mission and Goals

Cluster organizations will have different missions and goals, however themes that are consistent across most organizations include:

- Increased growth for existing companies
- Helping new companies develop and expand
- Attracting foreign companies and investment to the cluster
- Overcoming business challenges such as workforce development and integrating technology innovation into the operations of the cluster's businesses

A cluster strategy and focus will depend highly on the cluster needs areas. There are generally 6 areas of focus for cluster development as shown in the below figure.

Figure 1: Primary areas of Focus for Cluster Organizations
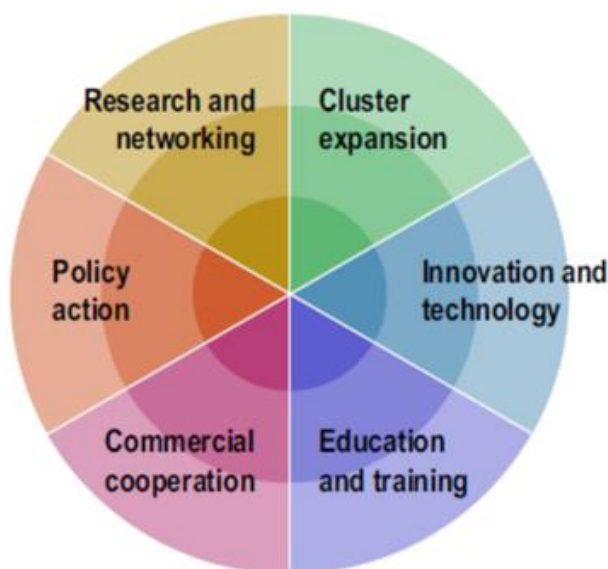
In the beginning CLEAN mainly focused on commercial cooperation and cluster expansion, as attracting foreign investors to expand the cluster and increase its size was a primary interest of its members.

Other cluster organizations, especially in the United States, are more focused on policy action as they have identified this as an area no organization is tackling. Many clusters, particularly in Eastern Europe, focus on education and training staff in a wide range of

business-oriented disciplines such as marketing, business administration and accounting.

Step 4: Defining Organization Activities

The next step is establishing the organization's service offerings to cluster members. This includes identifying time horizons, how it organization activities fit into cluster priority areas and how companies can contribute.
CLEAN launched with five areas of service:

1. **Matchmaking / Networking Platforms**: CLEAN created a platform for arranging events and workshops and the organization created a database for members to find one other. Offering an internal cluster connection platform proved to be crucial.
2. **Innovation Entrepreneurship:** CLEAN focused on supporting start-ups with gap funding and helping them partner with bigger companies to grow inter-regionally and internationally.
3. **Test and Demonstration:** Focusing on innovation and new product development, CLEAN realized the cluster needed a coordinated approach to test and demonstrate products being developed by members. There was little awareness of existing testing and demonstration platforms so CLEAN created an overview of the various programs and was instrumental in promoting them.
4. **International Outreach**: When CLEAN was formed in 2010, only 10% of green clusters in the European Union had an international strategy. CLEAN identified this as a key opportunity for growth and created a number of initiatives to link in with other green clusters globally. This helped attract leading firms to Copenhagen and expand global markets for Danish cleantech firms.
5. **Communication, Connection and Facilitation**: CLEAN started with a small secretariat of four people responsible for communication, coordination and networking facilitation.

Many of these services were performed by CLEAN partners. This ability to leverage internal strengths to provide services for members contributed to the cluster's success.

Strategic Decisions for a Cluster Organization

Below are some of the decisions a cluster organization must make early on. Over the years, strategic decisions can evolve as priorities change.

Services vs. Development: Does the organization focus more on providing services or on facilitation and mediation through matchmaking events?

Politically Active vs. Neutral: Is the organization a lobby group or is it politically neutral?

Outside-In vs. Inside-Out: Is the organization focused on export promotion or mainly on trying to attract foreign direct investment from into the cluster? Both are possible at the same time.

Branding vs. Networking: A lot of cluster organizations focus on branding to create visibility while others focus more on internal activities within the cluster.

Business vs. Technology: Is the focus on immediate profitability and business management issues or on longer term innovation and technology adoption?

Focus vs. Diversity: Will the cluster organization focus on companies in a specific supply chain such as the green building sector or adopt a broader scope such all the clean technologies involved with green buildings (e.g., solar energy, waste management)?

Step 5: Organizing the Cluster

How a cluster organization is structured can impact long term success. A strong, centralized organization with a strong leader can be beneficial in the short term. However too much dependence on a few individuals can discourage other members from taking on leadership roles. Developing multiple leaders and encouraging members to take ownership of cluster issues can help promote long term success.

Step 6: Financing the Cluster Organization

How a cluster organization is financed is an important issues cluster leaders face. Most cluster organizations in Europe start with significant support from local governments

and then attract funding from other organizations later. A cluster that relies solely on capital from the private sector may end up operating more like a business association than a cluster organization. The engagement and support of government and academia is critical to the success of a cluster organization.

CLEAN launched with a large amount of funding from the European Union that allowed CLEAN to roll out many activities and events at the start. This was critical to the success in attracting paying members. CLEAN knew this funding was short term and focused on building a long-term business model to make the cluster organization self-sustaining.

> *"Having respected industry leaders at the table incentivized other companies to join the cluster as members."*

In its first year, CLEAN established a board of directors that included several large, reputable companies and the CEO of Siemens as Chair. Having respected industry leaders at the table incentivized other companies to join the cluster as members. The board was also charged with ensuring CLEAN became a self-sustaining by the end of their fourth year of operation.

In its second year of operation, CLEAN introduced a membership-based business model. The organization let all members know early on that a membership fee would be introduced but it was important to spend time creating value for members first. Membership fees varied depending on member profile. Large for-profit companies, municipalities and universities were designated founding members and asked to pay CDN$50,000 per year. The cluster organization promoted these founding members at annual conferences with marketing materials that displayed their logos. Founding members were also regularly mentioned and quoted in publications distributed by CLEAN. Smaller companies paid $2,000 CND per year for their membership while start-ups could join for free.

Step 7: Marketing the Cluster

Branding and marketing creates market development opportunities for firms in the cluster, generating intrinsic value for all members. Marketing the cluster locally, regionally, nationally and globally builds name recognition for multiple benefits.

Step 8: Evaluating the Cluster

Many cluster organizations define their success with metrics based on the activities of the organization. For example, the number of workshops they run per year or the number of people who attend their networking events. CLEAN focused on hard economic statistics as their key performance indicators (KPIs) These KPIs included: new jobs created, foreign companies attracted to the cluster, the establishment of new research and innovation collaborations, new business collaborations, new public-private partnerships, collaborations with international clusters, the nurturing of new entrepreneurs, creating a self-sustaining member-based organization and Denmark's position and recognition as a world leader in clean tech.

Summary

The steps required for Toronto's green firms to organize for maximum growth are not complex, as shown in this report. The City of Toronto's Sector Development Office is working with stakeholders throughout 2019 to identify a shared vision of what is needed to maximize cluster benefits while deploying solutions to Toronto's environmental challenges.

Appendices

A: Case Study: CLEAN (Formerly Copenhagen Clean Cluster)

Green stakeholder groups in Denmark felt a mixture of excitement and anxiety after it was announced that Copenhagen would host the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 15) in 2009. The conference was an opportunity to showcase Denmark's impressive leadership in global clean technologies but there was very little organized coordination between local stakeholders. Even though there were many initiatives going on in the country, there was no central platform for stakeholders to connect, coordinate and create action plans. Various actors from the public sector, private industry and research institutions recognized this gap and the need to create a neutral organization to showcase Danish green industries and solutions to the world.

The group shifted its key environmental message to an economic one in order to attract more support for the formation of the organization. The theme and language evolved to demonstrate how clean tech was driving the economy in Denmark. This new focus became something politicians could support more readily.

## What a Successful Organization Can Achieve

CLEAN achieved the following in its first five years:
- 1,000+ new jobs created
- 12 foreign companies attracted
- 64 new research and innovation collaborations established
- 38 new business collaborations
- 6 new public-private partnerships
- Collaboration with 15 international clusters
- 126 entrepreneurs nurtured
- Denmark positioned and recognized as world's leading clean tech country
- Becoming a self-sustaining member-based cluster organization.

B: Local Cluster Insights

The pre-conference CLEAN Best Practices event attracted 25 participants with representation from all the major stakeholder groups that comprise a cluster.

Figure 2: Types of Organizations Who Attended the Best Practices Event
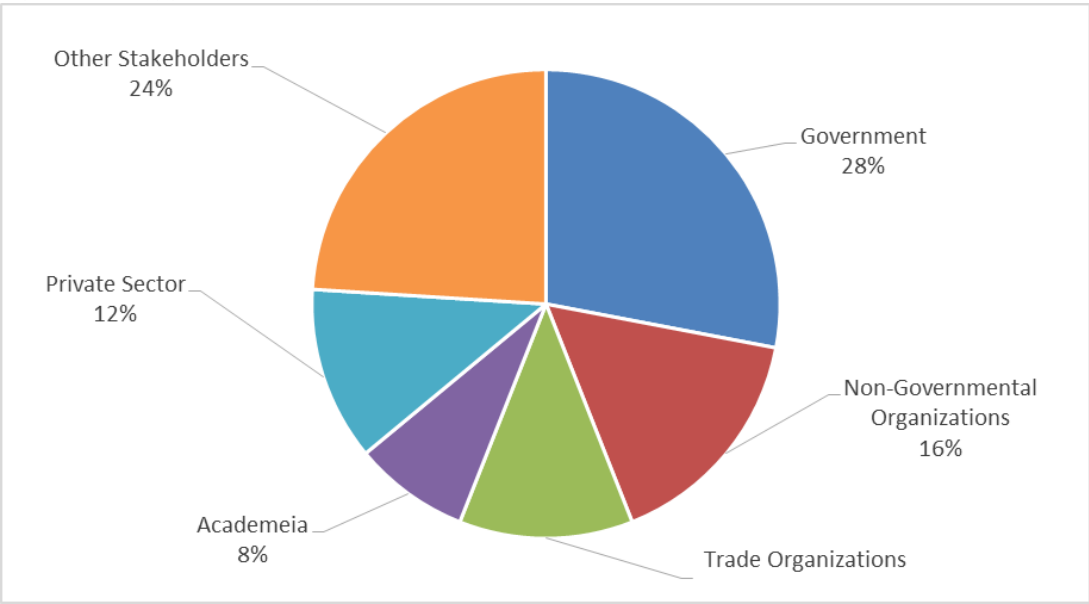
A survey sent out ahead of the event identified what participants consider to be the Toronto green sector's greatest challenges and opportunities.

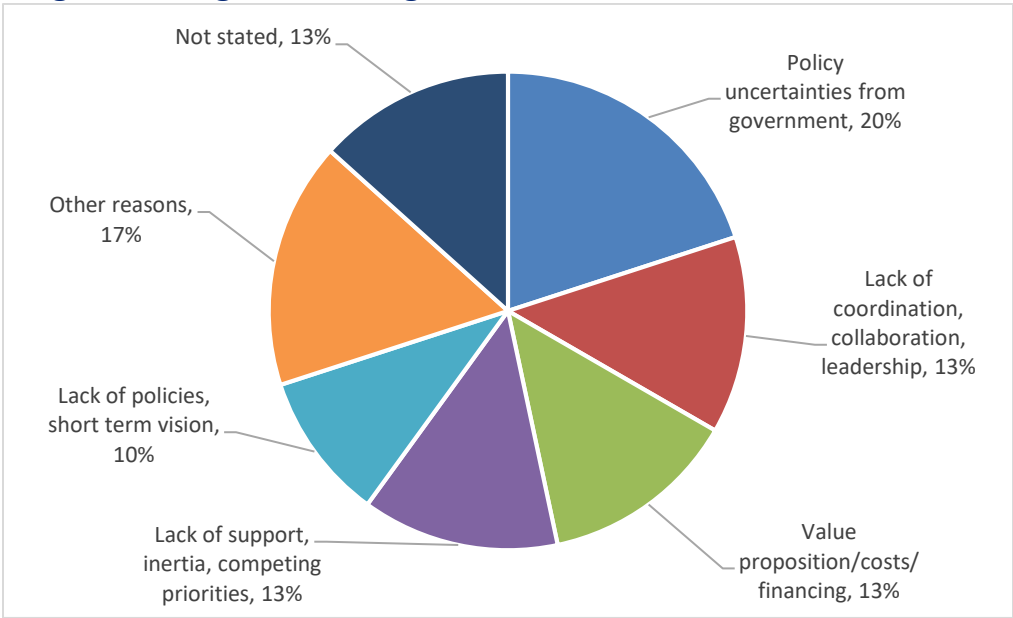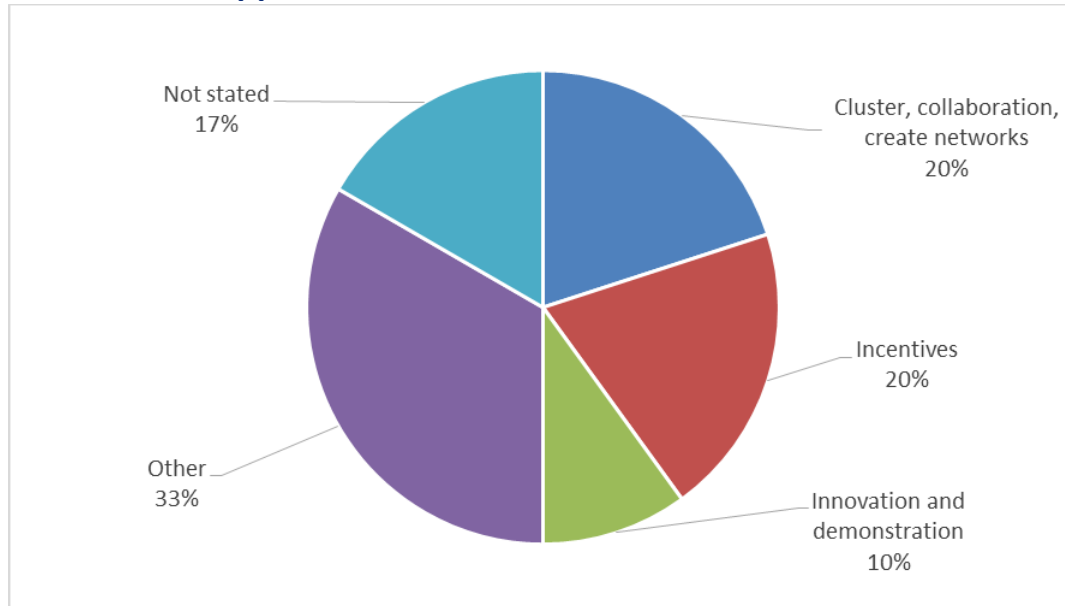**Figure 3: Largest Challenges That Toronto's Green Sector Faces**

Figure 4: Greatest Opportunities to Stimulate Growth in Toronto's Green Sector

Not stated
17%

Cluster, collaboration,
create networks
20%

Incentives
20%

Innovation and
demonstration
10%

Other
33%

C: Comments

Prior to the forum the **Sector Development Office** asked for participants to complete a short survey. This is what we heard.

Q. What is the biggest challenge that the green sector in Toronto is facing?
Non supportive/non-existent provincial policy framework and not enough awareness about existing solutions/ benefits
Lack of coordination
Lack of collaboration, leadership.
Lack of clarity in value proposition
Lack of recognition and support as a priority
Lack of supportive policies - culture shift
Inertia - lack of movement in the private sector even through the environmental and economic motivations are there
Political, policy, regulatory and program uncertainty
Uncertainty in our current political climate
Greater support needed to transition towards a low-carbon transportation future
Changes in environmental policy priorities at the provincial government have resulted in market signals that are unfavorable for many different markets across the green sector (i.e. renewable energy production changes under the green economy act.)
Offering cost-competitive green alternatives
Demonstrating the business case for upfront investment with long-term goals in mind coupled with political drivers that delay progress and signal for investments elsewhere.
Lack of collaboration
Lack of coordination between industry and the supporting stakeholders
Uncertainty about new technologies and hesitancy to implement new solutions
Corporate advocacy
Moving towards a carbon-free electric grid.
Changing political focus
Willingness to take on the risk for a green business case (aka changing the 'business as usual approach')
Financing cleantech and outdated regulations
Policy indecision and political interference
Background market volatility with different levels of government

Competition from other cities hoping to establish their own green tech hubs
Fragmentation and too short term views on sustainability and green growth
Competing priorities between the public and private sectors. Specifically, implications to the cut of cap and trade, and the strategic direction of the new Ontario government.

What is the greatest opportunity to stimulate growth in Toronto's green sector?
Municipal policies, clusters
Collaboration
Many existing players in the whole value chain of green sector
Simplification
Incentivizing quantified GHG reductions in all sectors and at all levels
Funding - culture shift - education
Energy efficiency/ retrofits
The economic opportunity, locally, within Canada and globally, is immense. Promising commercialized SMEs need scaling support.
Innovation in supply chain management
Electrification of transportation
One of the greatest opportunities to stimulate growth in Toronto's green sector is energy efficiency retrofits, and creative financing programs to support the retrofit economy. The employment growth impacts will significantly grow the green sector.
Research innovation to create new Made-in-Toronto green alternatives
Showcasing the human benefits of green that have an impact now, make the consequences of "green" decisions more tangible to those making to decision makers
Understanding the collective needs of businesses in this sector
Strong networks of stakeholders are already in place
Increase number of pilot projects to validate new technologies
Help corporations realize the impact of green initiatives
There is a great opportunity in Toronto to stimulate renewable energy resources to avoid carbon emissions.
Targeted incentives and program funding
A coordinated sector that appreciates the opportunities for local management of resources and flows
Showing that there is a genuine business case for the green sector
Innovative business model
Carbon pricing
Incentive-heavy policy

Engagement with the design community and other strong and unique sectors
Engaging the private sector to be the driver of green growth

D: Sources Consulted

The speakers at the Best Practices forum came from the following organizations and their websites are a valuable source of information on how to organize a cluster and the value of the cluster organization.

Cluster Excellence Denmark – **http://clusterexcellencedenmark.dk/da-DK/UK.aspx**

ClusterAgentur Baden- Württemberg - **www.clusterportal-bw.de/en/clusteragentur/**

Quercus Group - **www.quercus-group.com/**

CLEAN - **http://old.cleancluster.dk/en/**