The Power of Procurement

How governments can drive clean growth, cut carbon and create jobs

April 2017

CLEAN ENERGY CANADA

The Government of Canada has made tackling climate change a policy priority, most prominently through its Pan-Canadian Framework on Clean Growth and Climate Change. Under that framework, the Government of Canada—together with provincial and territorial governments—has committed to "modernize procurement practices, adopt clean energy and technologies, and prioritize opportunities to help Canadian businesses grow, demonstrate new technologies and create jobs."[1] While seemingly a tall order, it's also an important step toward Canada's goal of building a resilient economy based on clean growth.

The good news is we've started on the right path by pricing carbon. Canada's carbon pricing leaders—B.C., Alberta, Ontario and Quebec—laid a strong foundation, and the Government of Canada has reinforced that commitment through a national policy that will require a price on carbon in all provinces in 2018. Carbon pricing is vital because, as the costs of fossil fuels increase, so too does the demand for low- and zero-carbon technologies to heat our homes, power our businesses and fuel our cars, trucks and trains.

But now we need to focus on the necessary second step: unlocking Canada's potential to play a more competitive role in the global technology marketplace. As governments choose clean energy and adopt technologies that reduce emissions and use energy more efficiently, they can spur growth in small and medium businesses. Such companies are the heart of any healthy economy. By taking a strategic approach to public procurement, the government can support Canadian clean energy companies with new opportunities and create jobs—all while reducing greenhouse gas emissions.

This policy primer will unpack the important role public procurement can play in building Canada's clean growth economy.

Why clean technology?

Tackling climate change requires smarter, cleaner, less wasteful technologies throughout the economy. Clean technology, or cleantech,[2] is commonly understood to encompass "new technology and related business models offering competitive returns for investors and customers while providing solutions to global challenges."[3] Climate change is one of those global challenges that has inspired and motivated a boom in cleantech, with the development of clean energy solutions ranging from solar panels to smart grids to electric vehicles.

Canada has many strengths in the clean technology arena. According to Analytica Advisors, an Ottawa-based consultancy, Canada's cleantech industry included more than 775 technology companies employing 55,600 people (as of 2014).[4] Those companies' combined revenue was estimated at C$11.6 billion in the same year. Impressive numbers, but perhaps less so when you consider the global clean technology market is valued at more than C$1 trillion, and Canada's market share has declined over the past decade. Among the top 25 exporters, our global ranking fell in 2014 to 19th place from 14th. Meanwhile, the top-ranked countries—including China, South Korea, Mexico and the U.S.—are off to the races. Considering close to 30% of Canada's GDP is derived from exports,[5] there is much to gain from making up for lost time.

Why procurement?

Governments are major actors in the economy—not just because of the policy decisions they make, but because of the huge number of goods and services they buy. Among OECD nations, public procurement expenditures represent 13% of their combined GDP.[6] The Government of Canada is no exception; according to the OECD, the procurement of goods and services accounts for close to 33% of federal government expenditures, or slightly over 13% of Canada's GDP.[7]

Because of their economic heft, governments can use procurement to stimulate or lead markets where government demand is significant (such as in transportation and construction). Like other demand-side innovation tools—often referred to as "pull policies"—procurement can spur innovation of new technologies and services.

According to the OECD, environmental criteria have been introduced to procurement practices by at least 56 national governments and many more local governments.[8]

Typically, Canada and its provincial and municipal governments have relied on grant programs and tax credits to support innovative sectors, such as pharmaceuticals, communications and cleantech. These financial incentives help entrepreneurs enter the market with new or improved goods and services to meet latent or unmet demand.

Yet, this approach has inherent challenges. Entrepreneurs may struggle to sustain innovation when available funding levels fluctuate because of budgeting or a change in government priorities. Programs generally take a scattershot approach, with money being spread among many priority areas in small amounts that are often insufficient to give promising companies the boost they need to succeed in commercialization. Programs that concentrate funding to one priority, but aren't linked to the needs of the marketplace, also encounter similar challenges with not enough demand to support the increased supply.

In recent years, OECD countries including Finland and Australia, alongside emerging economies such as China and Brazil, have adopted more targeted policies—like public procurement—to support innovation.[9] This shift is part of a growing awareness about the importance of linking government support for innovation to the needs of the market. Government procurement can provide a stable source of demand—a key attractor for private investment. This is especially important in Canada's energy and electricity sectors as they transition to clean energy,[10] and for clean energy technology solutions,[11] since Canada's electricity sector combines public and private participation in the market.[12]

What's happening in Canada?

Like other OECD countries, Canada has a Green Procurement policy.[13] In place since 2006,[14] the policy requires environmental performance to be considered as part of the government's procurement decision-making within the context of achieving "value for money." But the existing policy has not been able to nurture a culture of green procurement within all federal departments.

The stage is now set for change. The 2016 Fall Economic Statement included details on the federal government's commitment to cut carbon emissions from government operations 40% below 2005 levels by 2030. Ottawa also outlined its plans to establish a Green Infrastructure Fund[15] and a Canada Infrastructure Bank to help fund major projects across the country.[16]

A report from the Working Group on Clean Technology, Innovation and Jobs recognized the role public procurement can play in increasing the market opportunity for Canadian clean technologies: "Collectively, public-sector procurement has enormous potential to drive clean technology growth in Canada, while also supporting environmental goals. However, current government procurement programs do not sufficiently target clean technologies and there is room for expansion of governments' roles as first adopters."[17]

First adoption—the opportunity to demonstrate a technology in a real-world setting for the first time—is a vital step in the commercialization of a new product or service. As the adage goes, most customers want to be the first to be second. Government policies and programs designed to support 'being first' help reduce demonstration risk while building confidence in new technologies. Secondary adopters such as utilities, building owners, corporations and foreign governments like to see a reliable track record before investing. Government procurement offers cleantech companies the chance to establish this track record and attract secondary adopters.

That was the conclusion of a report from the Federal Minister of Finances' Advisory Council on Economic Growth, led by McKinsey Global managing partner Dominic Barton, which states:

"The Council believes that strategic procurement could be used in Canada to support innovation and help small companies scale up and gain the credibility to become integrated in global supply chains. With government acting as a first customer, companies can test and validate products and services before introducing them into commercial markets. This is particularly beneficial to mid-sized and smaller companies, which may have more challenges accessing new customers and linking into global supply chains."[18]

With the Government of Canada playing the role of first customer through public procurement, Canada's small and medium clean technology businesses would get first-time access to electricity grids, commercial building systems, federal vehicle fleets, and other environments that are difficult for smaller companies to access. This would open doors for the clean technology sector, increasing demand and expanding the potential customer base both at home and abroad—simulating economic activity, job creation and growth in the sector.

In addition to procurement for its own physical infrastructure and operational needs, the federal government plays a role in provincial and territorial procurement when it provides a share of the funding required for transportation, energy, social services, education and other projects via its infrastructure programs. As these infrastructure programs ramp up in the years ahead, the Government of Canada should consider deepening its impact by partnering with provinces and territories to include a goal to reduce emissions and support clean technology solutions in these programs.

In terms of its own procurement, Canada has heeded the advice provided. The 2017 federal budget committed the government to taking a more strategic approach to public procurement, "to test and validate Canadian technologies in areas of strategic importance to our economy, and to help Canadian businesses to scale up, create new jobs, and find new customers around the world."[19]

Further, the government allocated $50 million, starting in 2017 to 2018, "to launch a new procurement program, Innovative Solutions Canada, modelled on the very successful U.S. Small Business Innovation Research program."

The U.S. Small Business Innovation Research program has been beneficial in supporting innovative technologies because it avoids the most frequent challenge with traditional granting programs, where the amount of available funding fluctuates or is eliminated based on political or budget cycles. Instead, support becomes entrenched as part of a ministry's or department's normal allocation.

In addition, the program supports the essential technology demonstration phase in a real-world setting. Cleantech companies need to show investors and potential customers that the technologies they have developed meet or exceed expectations. The demonstration phase gives companies an invaluable opportunity to learn and fine-tune their products and services prior to commercial launch. The U.S. program inspired similar efforts in other jurisdictions, including the U.K., the Netherlands and Japan. The launch of Innovative Solutions Canada positions Canada to catch up to its peers.

The federal government still has work ahead to design and implement its new procurement policies. Those details will be important, but the Government of Canada's approach holds promise.

A model approach to innovation

Here's how the U.S. **Small Business Innovation Research** program works.[1] Federal agencies with annual research and development (R&D) budgets of at least US$100 million set aside 2.8% of that money for the program, which is structured in three phases:

Phase I: Small businesses accepted into the program can get up to $150,000 to determine the technical merit, feasibility and commercial potential of a proposed R&D effort. If Phase I results meet certain objectives, companies graduate into the next phase.

Phase II: Small businesses can access up to $1 million over two years to cover R&D costs.

Phase III: The small business pursues commercialization of what it has developed, but it no longer has access to funding under the program. What it does have is an established relationship and track record with a government department, which often becomes a "first backer" by deciding to purchase the product for its own use.

Since it was enacted in 1982, the program has helped thousands of small U.S. businesses compete for federal R&D awards. In one analysis, 78% of awardees surveyed said the support they received in Phase I and II proved key to securing additional investment outside the program, and two-thirds said they would never have been able to begin product development without the support.[2]

What best practices should Canada adopt?

Procurement can be done in a way that is economically beneficial while reducing emissions. Here are five best practices worth considering:

1. FOCUS ON THE SOLUTIONS YOU WANT

Outcomes-based procurement awards contracts based on a proponents' ability to meet or exceed a defined program result—in effect, the "solution" to the problem you're tackling—in a meaningful and measurable way. The opposite approach would be awarding a contract for a proponent to accomplish tasks on a project list. By not pre-determining the pathway to the desired result, governments create opportunity for innovators to respond to tenders, allowing new technologies and services to be deployed. The role of government, as the customer, is to clearly define the problem and set the parameters that need to be followed, such as the cost, or keeping emissions as low as possible.

In Canada, we've seen this method most frequently employed in the healthcare sector—a priority sector where cost is also a factor. Domestic and international case studies from this sector offer insights and precedents that can be applied to other sectors. For example, the Conference Board of Canada has created a Council for Innovation Procurement in Health Care[20] and a report, *Value-Based Procurement: The New Imperative for Canada's Health Care*,[21] to generate discussion on the issue. The MaRS Discovery District in Toronto, meanwhile, has launched a "Procurement by Co-Design" program that enables healthcare providers (and in the future, other public organizations) to procure innovative service and technology solutions using design-challenge principles.[22]

Procurement that prioritizes low-carbon results will help deliver on those important commitments. Globally, the valuing of carbon as a social benefit is referred to as low-carbon procurement. An increasingly popular tool to reduce greenhouse gas emissions, low-carbon procurement drives desirable environmental outcomes with an emphasis on climate-friendly innovation.[23]

The world's first electric ferry: a case study in low-carbon procurement outcomes

When Norway's Ministry of Transport determined a new car ferry was needed to link two villages in Sognefjord, it moved forward with a specific goal in mind. Any new ferry, it said, would have to be at least 15% more energy-efficient than existing diesel-fuelled ferries operating in the country. Four groups ended up submitting bids for the 10-year concession contract, but it was a consortium led by Norwegian ferry operator Norled that won the business. Norled, along with Siemens and shipyard partner Fjellstrand, proposed an electric car-ferry named *Ampere* that promised to reduce per-passenger energy use by 37% and eliminate smog-causing nitrogen oxides. Because of the electricity mix in Scandinavia, overall greenhouse gas emissions would fall by 89%. Currently in operation, *Ampere* has set a new standard for ferry travel in Norway. The country's goal-driven procurement and the resulting real-world demonstration has helped launch a market for low-carbon ferries. More importantly, this was done by setting a clear outcome—not by stipulating the technology required.[1]

2. CONSIDER THE VALUE OF REDUCING EMISSIONS

Taking an approach to procurement that will help Canada reduce emissions while supporting the economy doesn't have to increase costs. The OECD agrees:

"The main objective for public organizations in procuring innovations is to ensure better value for money. Procurement should draw on the innovativeness of suppliers. End users, suppliers and procurement units should all benefit from the innovation. In developing criteria for evaluating tenders, more attention should be paid to lifecycle costs and user experience, rather than focusing on cost alone."[24]

Lifecycle costing is the sum of all recurring and one-time costs over the full lifespan (or a specified period) of a good, service, structure or system. It includes the purchase price, installation cost, operating costs, maintenance and upgrade costs, and the remaining value at the end of ownership or usefulness. It considers the complete value of a procurement contract, including the long-term cost implications of externalities (including emissions) that will rise or otherwise play a role over the life of the project.

This is different from Canada's usual approach. Most infrastructure projects don't consider full lifecycle costs. In fact, the consideration of lifecycle costs in procurement appears to be limited to current Green Procurement approaches.[25] Consider this: One of the largest government infrastructure costs is roads and highways, yet most projects do not factor in normal maintenance costs (how often the road will have to be "shaved and paved" over its life) or how traffic patterns, climatic stresses or other factors might contribute to the cost of a given project.

Finland is a good example of a jurisdiction that recognized the value of looking at costs over the entire life of a project. The country launched a program that helps fund the procurement of innovative products and services, emphasizing the lifecycle value of the project, not just the initial cost. Central and local governments can apply, and the funding it provides helps them reduce barriers that would otherwise prevent them from taking a lifecycle-cost approach. Those barriers can include the lack of long-term planning, a risk-adverse culture and insufficient resources.[26]

3. SET SPECIFIC, OUTCOME-ORIENTED TARGETS

Voluntary targets have a poor record in achieving environmental goals. Definitive goals or targets are essential to measure the effectiveness of the policy objective—or trigger a course correction if necessary.

Targets have been set to track Canada's progress toward reducing greenhouse gas emissions in line with its international commitment to achieve a 30% reduction from the 2005 level by 2030. In 2016, the federal government set a related goal to reduce emissions from its operations 40% by 2030. To meet this objective, the government must understand where those reductions could be achieved and set targets that put Ottawa on track to make those reductions over time.

In the same way, as Canada looks to foster clean economic growth, it can establish targets within its procurement processes for a variety of objectives, such as SME participation, technology adoption and emissions reductions.

4. INCLUDE A ROLE FOR SMALL AND MEDIUM ENTERPRISES

Supporting the role of small and medium enterprises (SMEs) in public procurement is critical for creating jobs and boosting economic activity. According to the Business Development Bank of Canada, small business is big in Canada: 98% of all businesses have fewer than 100 employees. When you add in medium businesses (100 to 499 employees), the percentage rises to 99.8%.[27]

Likewise, Canada's cleantech sector is dominated by SMEs. The Canadian clean technology industry has more than 775 technology companies, many of which are SMEs, operating in every region of Canada.[28]

Due to their size, SMEs tend to be better situated in local markets rather than global ones, so including them in procurement allows governments to support domestic jobs, investment and innovation. The clean technology sector is an exception; although most of the sector is made up of SMEs, more than 87% of companies self-identify as export-focused. However, regardless of market orientation, SMEs often struggle to participate successfully in public procurement. Public procurement procedures are generally more accessible to large incumbent companies with well-established market presences that have the resources— both human and financial—to take a risk and put in a bid, regardless of whether a win is guaranteed. In contrast, SMEs may think they do not have the legal and administrative capacity to engage in procurement contracts.[30]

One approach to broadening SME participation in public procurement is to create set-asides, which reserves a portion of the procurement budget specifically for SMEs. Creating set-asides is a well-established practice that complies with international trade law.[31] In practice, set-asides can be targeted to specific parts of a procurement process. A large energy efficiency procurement effort, for example, could stipulate that the energy measurement and verification software be supplied by SMEs.

The U.S. is an international leader in SME procurement. The U.S. federal government allocates 23% of all federal contracts to SMEs, and many state governments have procurement policies for local SMEs. The U.S. Small Business Innovation Research program is also an important support for the participation of SMEs in procurement and innovation.

One-third of OECD member countries have put in place specific legislative provisions or set-asides to encourage participation from SMEs in procurement, including the U.K., Australia, France, South Korea and the U.S.[32] Set-aside policies also exist outside of the OECD, including in India and Brazil.

Critics of this approach most often cite the potential for cost increases and market distortions, but these concerns can be mitigated by targeting set-asides in areas where SMEs would have the greatest opportunity to participate (a decision arrived at after undergoing market analysis), and by creating "price-matching" provisions where an SME could match the price of a larger company if it is within range.[33]

Many countries also help educate and train SMEs on the tender process. Within the OECD, 85% of countries have introduced measures directly aimed at SMEs. These include training and workshops (introduced by 58% of OECD countries); posting helpful documentation focused on SMEs online (51%); and simplified administrative procedures (30%).[34]

5. SUPPORT COMMERCIALIZATION

Like all innovations, cleantech develops on a trajectory: it starts with R&D and then transitions into the pilot or testing phase. As witnessed in the design of the U.S. Small Business Innovation Research program, governments make use of grants in the early stages of R&D to seed development. When it's time to scale up, procurement can play a meaningful role. But ultimately, the product or service needs to be competitive to succeed—it needs to do the best job at the most affordable price point if it's going to be purchased in the global market.

With more than 87% of Canadian clean technology companies self-identifying as export-focused[35], competitiveness is the name of the game. Therefore, in designing its procurement policies, Canada should keep a keen eye on supporting companies in their quest to expand to international markets.

Consider the evolution of support for renewable energy technology: In the early days of developing wind and solar energy, governments made a big push to pump money into innovations to launch renewable power generation. One of the most common ways of doing this was through feed-in tariffs, which were adopted in many jurisdictions including Germany, Ontario, Spain and the U.K.[36] The rationale for the additional financial support was that, when renewables were launched, they were not directly competitive with fossil fuels (which often receive a variety of government subsidies of their own). Feed-in tariff programs helped level the playing field, bringing renewable energy technology to market and spurring investment and technological innovation.

But renewables aren't extracted fuel sources. They are technologies. And just like digital cameras and TVs, as they scale up through commercialization, their price declines. In the solar market, this reality is now reflected in solar auctions, which have taken the place of feed-in tariffs. The competition model takes advantage of declining costs—a significant factor in pushing power-purchase agreement prices down and, consequently, making solar competitive with coal in some jurisdictions.[37]

An example is India, one of the biggest export opportunities for Canada's clean technology.[38] In its quest to deploy 100 gigawatts of solar power by 2022, the country, which relies almost exclusively on auctions, has seen its power-purchase agreement prices for solar plummet, dropping 25% since 2015.[39]

India isn't alone in this pursuit. Central and South America are also emerging markets to watch for, with the World Bank predicting that electricity consumption in Latin America will more than double between 2010 and 2030, and that $430 billion in investment will be needed to meet that demand.[40] Additionally, South America is expected to become a key smart grid investment location over the next decade with cumulative infrastructure investments, reaching $38.1 billion by 2025.[41]

That is a big opportunity for clean energy technology—encompassing everything from solar, to storage, to energy management systems, to micro grids—but only if Canada can compete on price. To support clean growth and jobs through procurement, government can design its approach in a way that delivers the products and services it needs while sparking innovation and helping Canadian companies evolve and compete in an expanding global market.

Conclusion

Federal procurement policies that support low-carbon outcomes and encourage the participation of Canada's SMEs offer a long list of benefits: Job creation, both in the cleantech sector and in the industries and services those companies use (such as mining, agriculture and finance). Increased export potential, as other counties can witness our technology applied in a real-world setting. Support for Canadian innovation by pulling new technologies into the marketplace. And spurring the commercialization of clean technologies, as their demand increases outside of government.

To date, the Government of Canada has made significant progress in committing to change its approach to procurement, in an effort to foster clean economic growth and unlock Canada's clean technology potential. Clean Energy Canada looks forward to contributing further ideas to the design of specific procurement policies and programs as they take shape.

Endnotes

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2. The term “cleantech” was first coined by the founders of the Cleantech Group, including Canadian Nicholas Parker.
3. As referenced in: http://www.cleantech.org/what-is-cleantech/
4. Analytica Advisors. Synopsis: Canadian Clean Technology Industry Report. Analytica Advisors, 2016
5. As derived from open source data from the World Bank national accounts data, and OECD national accounts data files
6. Organisation for Economic Co-operation and Development. The Role of Public Procurement in Low-carbon Innovation. OECD, 2016
7. Data extracted from: Figure 9.1. General government procurement as percentage of GDP and as share of total government expenditures, 2013, as found in: Organisation for Economic Co-operation and Development: Government at a Glance 2015. OECD, 2015
8. United Nations Environment Programme. Sustainable Public Procurement: A Global Review. UNEP, 2013
9. Commonly referred to as “Demand-side Policies”
10. We define clean energy policies, technologies or services as those that accelerate the shift to a renewable-based energy economy by increasing renewable energy supply, reducing consumer and industrial energy demand, improving the infrastructure and systems that transmit, store and use energy, and enabling market penetration of clean-energy solutions.
11. Clean energy technology includes technology and services including clean power (renewable energy supply and energy storage), building efficiency and energy management, advanced transportation (including electric vehicles and alternative fuels), and clean fuels (including electricity and advanced biofuels).
12. Electrical utilities in Canada can be either publicly or privately owned, or in combination, depending on the province.
13. The use of the word “green” or “sustainable” in procurement can have different meanings depending on the interpretation preferred by the jurisdiction. In Canada, green procurement is associated with environmental considerations that are outlined based on products or services. For more information, please see: https://www.tpsgc-pwgsc.gc.ca/app-acq/ae-gp/paer-cgpp-eng.html
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32. Organisation for Economic Co-operation and Development. Government at a Glance: Fair Competition in Public Procurement and SME's. OECD, 2013

33. This approach is favoured by India, with a percentage set at 15%

34. Organisation for Economic Co-operation and Development. Government at a Glance: Fair Competition in Public Procurement and SME's. OECD, 2013

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