

# Economics and Environmental Policy Research Network

## Research Symposium

March 1<sup>st</sup> – 2<sup>nd</sup>, 2018

### Session Notes for Plenary I: Current Landscape/Clean Innovation Policy Developments in Canada

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#### 1. Context of Discussion

The presentations in this session covered three main focus areas:

- 1. Drawing in private finance and consumer demand into cleantech.** This was a key feature across most of the talks. While there was an overwhelming consensus that government support is essential to meeting Canada's clean innovation ambitions, all of the session participants recognized that more needs to be done to ensure that cleantech sectors can scale and grow, and become less reliant on government support. There are two components to this challenge, namely: (i) creating end-markets for clean innovation and (ii) crowding in private capital for clean innovation. Greening government procurement (and to a lesser extent, environmental pricing and regulations) were identified as key drivers of demand for cleantech. On the other hand, there was less consensus on which policies (in addition to pricing and regulations) would best attract private investment for cleantech.
- 2. Broader elements of the policy package for promoting clean innovation.** In addition to the well-recognized **push** (grants, tax credits) and **pull** (procurements, regulations) policies for promoting clean innovation, presenters also identified outstanding issues to **strengthen** and **grow** Canada's innovation ecosystem. For example, more research and analysis is needed on regulatory barriers to promoting clean innovation (e.g. through technology standards, or well-intentioned but potentially counterproductive health and safety regulations). Access to appropriate skills and training was also identified as a barrier to cleantech development in some cases. In particular, many cleantech firms are small and medium-sized enterprises which are less knowledgeable and experienced in business development or in accessing export markets.
- 3. Ensuring that clean innovation promotes inclusive outcomes.** A third feature mentioned in some of the presentations was the need to ensure that clean innovation and the transition to a clean economy generates economic and social benefits for all Canadians. In other words, the process by which Canada transitions to a clean economy is just as important as the destination. These concerns are especially timely in light of Budget 2018's focus on encouraging the participation of women and other historically disadvantaged groups (such as people of color and Indigenous peoples) in Science, Technology, Engineering and Mathematics (STEM) and entrepreneurship.

The subsequent discussion explored:

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- **Creating a market for clean innovation products.** One respondent commented that too much emphasis is being placed on the supply side for clean innovation, and that there needs to be a greater focus on the demand side. They suggested that pricing GHG emissions above the levels currently implemented and considered in Canada would help provide the incentive to purchase clean technology products. Others suggested that stringent (but also flexible? - Ed.) regulatory policies, such as the clean fuel standard, can also be a significant driver of clean technology adoption.
- Other opportunities for increasing the clean innovation market included identifying opportunities in jurisdictions where such markets already exist (to some extent), such as the market for energy efficiency technologies. These generate energy savings which can help cleantech adoption 'pay for itself', even if pollution and GHG emissions remain unpriced. A similar story can be told for clean technologies related to water quantity and quality, which can generate significant savings, and which often have a steady customer base from municipal, provincial and federal governments.
- Further cleantech market opportunities can potentially be found abroad. For instance, energy efficiency technologies can gain a greater toe-hold in markets facing higher energy prices. And many emerging economies are looking to green their economies and their infrastructure networks.
- **Ensuring that the benefits from emerging companies and their cleantech solutions are captured by Canada** was another theme. Concerns were raised that emerging Canadian cleantech firms might get 'bought out' by foreign firms, in which case the intellectual property associated with clean technology – often financed (in part or in whole) by governments – essentially leaves the country.
- This led to a discussion of current and potential measures to ensure that cleantech firms and their benefits stay within Canada. One government representative noted that their funding programs include covenants which effectively tie firms to remaining in Canada. (Note that a program cannot require a company to remain in Canada per se, but it can tie its funding to activity in Canada, and seek repayment of that support if this does not occur.) Several discussants also noted that many companies would actually like to remain in Canada, and will continue to do so provided that the necessary support measures (including access to both private and public sector capital) are in place. Indeed, once companies reach a certain size, it becomes more difficult for them to leave Canada, so the challenge lies in getting companies to that size and scale. Policymakers and business leader need to identify the right conditions for keeping cleantech firm within Canada.
- Another government representative noted that their program does not specify any ownership requirements for funding, but they do include provisions for knowledge and technology transfer in the competitive granting process. This has led to significant technology spillovers in the sectors that they are targeting.
- **A third discussion theme revolved around the extent to which clean technology support should be agnostic in their choice of technologies or sectors, versus playing to Canada's traditional areas of strength or investing in (seemingly) promising technologies.** Several of the respondents noted their clean technology policies or strategies have somewhat of a mixed profile. That is to say, while they generally attempt for these policies or strategies to be technology-neutral, these policies also interact with broader political priorities and constraints. For instance, in some provinces the lion's share of public funding for clean technology development is derived from carbon pricing proceeds. In such cases, policymakers may have made legal or political commitments to funding low-carbon technologies through these proceeds.

- Other broader considerations which inform existing clean technology policies and programs include the desire to build on traditional areas of strength, to pursue economic diversification, or a departmental mandate to help transform 'traditional' economic sectors. Indeed, even in cases where 'playing to strengths' is not identified as an explicit funding criteria, the fact remains that incumbent sectors often receive funding due to their extensive know-how, networks, environmental impact, and/or economic importance.

## 2. Research Questions Identified

The following specific research questions/ideas emerged from the discussion:

- **What are the different pathways through which finance can support the dissemination and adoption of clean technologies?** The need to 'crowd in' private capital is well recognized, although the discussion offered few concrete suggestions (beyond the usual demand-side measures) on how to increase its share. Others suggested that **the interactions between digital financial technologies and clean technologies might be another promising area for further research.**
- Demand-side strategies for promoting clean innovation: two key areas for research emerge here. First, **which policies – carbon/pollution pricing, flexible regulations, subsidies and clean procurement – should receive the greatest emphasis for stimulating demand for clean innovations?** This is especially pertinent in light of the serious political constraints facing carbon pricing schemes in Canada and abroad. Second, **given the fact that Canada is a relatively small market, what sorts of measures might be needed to access other markets (which may or may not have stringent environmental policy in place)?** There is a role for additional market research and advisory strategies (e.g. on export development) to inform how Canada can tap into global markets. For instance, offering solutions to address local economic and environmental challenges in emerging economies – such as congestion, air pollution energy poverty/affordability, etc. – could help Canadian cleantech increase its global market share.
- **The role of regulatory modernization and harmonization in promoting clean innovation.** The need for additional research on regulatory modernization was mentioned several times throughout the session, in order to ensure that potentially outdated or prescriptive regulations do not stifle the development and deployment of clean innovation technologies. Some participants also discussed the importance of regulatory harmonization in the context of demand-side 'pull' policies (such as carbon pricing and regulation). While these policies and important for ensuring effective environmental outcomes, more work needs to be done on regulatory harmonization (e.g. reducing redundancy and overlap), in order to ensure that Canadian firms are not over-burdened by the costs of regulatory compliance.
- **How to promote a clean innovation skills agenda?** This has at least two facets, namely the content and inclusivity of the skills development agenda. As mentioned previously, there was a strong consensus that policy has an important role to play in promoting 'soft' entrepreneurial skills amongst cleantech firms, since this is a significant factor inhibiting their growth and scale-up. Second, ensuring that access to training is equitable and inclusive for disadvantaged groups – such as women, people

of color, and Indigenous peoples – is necessary to ensure that the economic benefits of clean innovation accrue to all.

Other major research themes mentioned in presentations (but which were not necessarily discussed at length during the conference session) include:

- **What is the relationship between environmental regulation and economic growth and competitiveness?** Work from the OECD suggests that environmental regulation is correlated with economic growth, but further econometric and modelling work (incorporating counterfactuals) may assist with better specifying causal relationships.
- **How do we compare the stringency of environmental regulations and competitiveness impacts across sectors?** Estimating the policy costs of diverse regulations (beyond carbon/pollution pricing measures) might be helpful for the analysis of policy stringency. And incorporating non-emissions intensive and trade-exposed sectors could possibly enrich the discussion of competitiveness.
- Measuring government commitment to environmental policies and correlating them with policy structure. **Are governments with stronger commitments to environmental protection more likely to implement certain kinds of policies?**
- **What is the importance of institutions and governance structures** in securing effective environmental and economic outcomes, as well as broader public support?
- **What is the role of elites (e.g. public intellectuals, industry, and NGOs) in the policy process? What forms does their engagement in the policy process take – e.g. public commentary, or lobbying – and how do they influence policy outcomes?**
- **How path-dependent are environmental policy packages? How did existing policy framework and institutions shape outcomes?**
- **What are the best predictors of policy durability for carbon pricing and environmental policies?** For instance, which policy packages or decisions on proceeds recycling create broad constituencies for environmental policies, while also ensuring support from the general public?
- **What are the data needs for assessing clean innovation outcomes?** Several presenters noted that this is particularly important given the current government's stated commitment to evidence-based policy-making and its emphasis on results. First and foremost, more granular and conceptually consistent statistical data are needed to measure clean Canada's cleantech sector and associated indicators (such as GDP, employment, GDP and export revenues), recent progress notwithstanding. Second, as some of the popular discussion around the Federal superclusters initiative has made clear, plausible counterfactuals are needed to understand the extent to which clean innovation policy – and environmental regulations more generally – are impacting clean technology outcomes.

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