

Economics and Environmental Policy Research Network

Research Symposium

March 1st – 2nd, 2018

Session Notes for Plenary VI: Public Institutions & Governance Models for a Low Carbon Economy

1. Context of Discussion

The presentations in this session covered a host of issues related to public institutions and governance models for clean innovation.

1. Challenges in Planning for Disruption

The rate of change has never been as fast as it is today, and will never be this slow again. Innovation is non-linear and its exponential acceleration poses a significant challenge to designing institutions and governance models. Without knowing what the future will look like, it is hard to design the structures to govern it, and existing institutions and policies are failing to keep up with the current rate of change.

In order to address this challenge, utilizing unexpected disciplines to help explore potential technological futures and identify policy and governance challenges is an interesting opportunity. For example, science fiction writers have been exploring the potential pitfalls of artificial intelligence for decades, a technology that is just making it to the mainstream now. While often these scenarios are far-fetched for dramatic flair, they can provide insight into some of the potential implications and needs for governance in emerging technological paradigms.

Innovation itself is not directional. It is hard to determine future innovation pathways and disruptive technologies can shift the landscape dramatically. In a world characterized by pressing environmental challenges, it is important to encourage innovation along a more sustainable pathway but directionalizing innovation towards cleaner outcomes remains a significant challenge. One potential solution offered is to utilize innovation prizes to incent innovation toward the major challenges of our time. Following the popularity of the X Prize for space flight, innovation prizes have made a resurgence. For example, the Canadian Oil Sands Innovation Alliance (COSIA) and US-based NRG have set a prize of US\$20 million for breakthrough technologies that convert CO₂ into one or more products with a high net value. Other Canadian jurisdictions such as Alberta and Yukon have also developed innovation prizes around sustainability.

2. Designing Intuitions and Governance for Innovation

Clean innovation will require innovation within organizations as well as effective organizations and governance structures to support other types of innovation (i.e. product, process, marketing, and social innovation). Designing institutions to meet the diversity of needs must be responsive and tailored to the

particular circumstances of their jurisdiction and role. However there is some evidence for the key design principles, for example Haley (2016)¹ set out 10 institutional design principles:

1. Comprehensiveness
2. Flexibility
3. Autonomy from short-term political pressure
4. Mission-orientation
5. Embeddedness within policy networks
6. Autonomy from private interests
7. Competence
8. Credibility
9. Stability
10. Accountability

It was noted that innovation is increasingly done in networks, and it is therefore important to incorporate the diversity of actors involved in the governance process. This may require innovative structures and governance models to transcend traditional disciplinary or technological silos. For example, the convergence of diverse innovations in mobility is leading toward a transportation fleet that is automated, electrified, connected, and shared. Future governance of mobility will have to incorporate the many trends concurrently shaping transportation.

2. Research Questions Identified

The following directions for future research emerged from the discussion:

- **How do existing governance systems in Canada need to change to drive the low-carbon transition?**
- **What are the best practices for designing institutions and governance structures to directionalize innovation for low-carbon outcomes?**
- **How to ensure independence of choices when directionalizing toward clean innovation?**
- **How can innovation prizes be best used to drive clean innovation?** How effective are prizes at driving innovation? What are best practices for designing innovation prize competitions?
- **How can existing models of best practices for institutional design and governance be adapted to the Canadian context?** Recent announcements of new innovation institutions in Canada, modelled on international examples (i.e. ARPA-e, SBIR), will require adaptation to Canada's unique circumstances.
- Social impacts: **How can we ensure that we achieve/maintain equity through widespread and disruptive changes and transitions?**

¹ For more information, see: Haley, B. (2016) [Getting the Institutions Right: Designing the Public Sector to Promote Clean Innovation](#), *Canadian Public Policy*, 42(S1):554-566.

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