# Innovation for Global Benefit

How Innovation Can Increase
Prosperity in Canada and Abroad

September 2018

If Canada wants to be a force for positive change in the world, it needs to think more about how its innovation policies and activities affect developing countries and whether it has a responsibility to do things differently.

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# Executive Summary

Canada spends billions of dollars annually to support innovation and innovation-related activities, including subsidies and research and development (R&D) credits for firms, and investment in skills, education and talent development. The Canadian government makes these investments to improve and expand the country's innovation ecosystems, support the growth and competitiveness of Canadian firms, and contribute to employment, prosperity and well-being for Canadians.

More recently, the Canadian government has started to think about innovation in the context of inclusive growth strategies—in which policies are designed not simply to support firms' activities, but to ensure that all Canadians have opportunities to participate in and benefit from economic activity. Innovation, and how its benefits and effects are distributed, is both of economic and ethical concern.

Public discourse in Canada currently examines the importance of innovation policies on firms and people within Canada—including differential impacts on provinces and regions, rural versus urban communities, women and men, and Indigenous peoples—but has yet to explore the potential global effects of innovation policies, programs and activities.

A concern for global justice and well-being is evident in other policy areas, such as climate change, migration and refugee policy, human rights, and Canada's commitment to the Sustainable Development Goals (SDGs), but concerns about global justice do not seem to arise in innovation policy. Should Canada's innovation agenda take a global approach?

If Canada wants to be a force for positive change in the world, it needs to think more about how its innovation policies and activities affect developing countries and whether it has a responsibility to do things differently. This report is intended to begin that discussion.

# Approach

This report examines the case for including a global impact lens in Canada's innovation policy and programming. It begins with a framework for thinking about the benefits and harms of innovation and a discussion of principles of global justice which could generate obligations to people and communities in developing countries. Next, it looks at Canada's international development policies to identify principles of global justice to which Canada might already have committed itself, explicitly or implicitly. It then examines Canada's Inclusive Innovation Agenda (IIA)—including, policies, programs and rhetoric—to understand whether and how the agenda incorporates a concern for the global impact of Canada's innovation policy and practice. Finally, it identifies gaps between Canada's innovation policy and its obligations to developing countries and discuss what these imply for incorporating a global impact lens into innovation policy and practice.

The aim of this report is to spark a more informed and structured conversation about Canada's global responsibilities in designing and deploying innovation policies, programs, and practices. The report does not settle the question of what specific obligations Canada might have. Instead, it articulates a range of possibilities and indicates areas where Canada might already have some commitment given existing policies in international development and innovation.

# 1. Innovation and Global Justice

Should we care about global justice in innovation? What kinds of obligations do we have to people and communities around the world?

**Innovation involves creating new or significantly improved goods, services or methods that create value for consumers, firms, markets or society at large. Innovation enhances productivity and economic growth, and may contribute to improvements in standards of living and employment. In general, innovation is about the interaction of five dimensions: novelty, an agent, purposiveness, value creation and adoption (Pue and Breznitz 2017).**

As such, fostering innovation in Canada has been a policy objective of successive governments, both federally and provincially. Yet, innovation is not an unqualified good, nor are its benefits and risks equitably distributed (Mulgan 2016). We can think about the positive and negative effects of innovation through three lenses:

### Access To Innovations

Access to the benefits of innovations are unequal. While pharmaceutical companies develop life-saving drugs, whether people are able to acquire those drugs depends on the resources they have—including income and wealth, health insurance, and access to health professionals, prescriptions, and the locations where drugs are distributed. The unequal distribution of resources can reinforce unequal distribution of beneficial innovations.

### Externalities From Innovation

In some cases, an innovation which is beneficial to some people might generate harmful effects on others or the environment. For example, private vehicles and transportation infrastructure can shorten commutes for some people, but generate harms in the form of congestion, dangerous streets, and environmental degradation for others.

### Rents From Innovation

The rents or financial benefits derived from the production and sale of innovations accrue more to some people than others, thereby contributing to income and wealth inequality. How we deal with the distributive consequences of innovation—and the innovation policies that mitigate or exacerbate these effects—is a central political question (Breznitz and Zehavi 2017; Papaioannou 2011).

In many cases, innovation will have mixed effects. For example, digital innovations in information communication technologies have provided positive gains for some—such as access to online education—but can also reinforce skills differentials and wealth disparities (OECD CSTP 2017). Moreover, once certain actors and regions gain a competitive advantage, further innovation and investments

can reinforce inequalities. Precisely because of their success, some regions attract more capital, skilled labour, and networks which helps them extract higher rents from innovation. Less successful regions are less able to attract these things and fall behind (Chataway, Hanlin and Kaplinsky 2014; Papaioannou 2011).

Canadian policy is starting to focus on the ethical and distributional dimensions of innovation at the domestic level. We are seeing some attention to who benefits and who is harmed by innovation in Canada. It is less clear that Canadian policy-makers and citizens are thinking about the effects of innovation and innovation policy at the global level—i.e., the effects on people and communities outside our borders, especially in developing countries. Should we care about global justice in innovation? What kinds of obligations do we have to people and communities around the world? What do those obligations imply for innovation policy?

# Justice: Domestic and Global

**Many Canadians recognize that there are responsibilities to fellow citizens but some disagree about the exact nature of those obligations. Some believe that we must ensure that all citizens achieve equal outcomes in terms of health, wealth and well-being. Others assert that ensuring equality of opportunity is enough and that inequalities which arise from different choices and efforts are ethically permissible. Still others maintain that we have no duties to ensure equality of outcome or opportunity, but merely a duty to ensure that our activities do not harm others and their interests (unless harm to some is necessary to prevent harm to others).[1] Yet it is fair to say that most citizens recognize that fellow citizens must be treated "fairly" and that this involves some combination of respecting liberty and ensuring equality.**

In recent times, questions have been raised about whether we have obligations to those who live beyond our borders. If and when we share resources, assist and/or think about how our activities affect those living elsewhere, especially in the developing world, are we acting from some kind of responsibility or are we simply being magnanimous? Aside from rules and norms about war, and the articulation of shared notions of human rights, global justice and obligations have received little attention in public policy.

At the same time, Canada's international commitments such as including the Universal Declaration of Human Rights with the SDGs, exemplify our global responsibilities. Consider four possible ways of thinking about obligations to those beyond our borders:[2]

## Duty To Do No Harm

At a minimum, all people have a duty to ensure that their activities do not harm people in other states—including local and global environments - and if such harm takes place, to adequately compensate affected parties. Arguably, any activity that makes people in low-income countries absolutely or relatively worse off than people in high-income countries constitutes a failure to meet this obligation.

### Duty Of Assistance

This refers to a duty to provide peoples and citizens of others states with sufficient resources and opportunities to allow them to overcome natural disasters, conflict, fragility and extreme poverty. As these states become more functional, they improve global peace and prosperity.

### Global Equality Of Opportunity

We have obligations to share resources, opportunities and efforts in ways that would, ideally, lead to all people having equal chances to succeed. The randomness of where one is born should not affect life chances—and therefore aims for equal starting points but allows that individual choices are legitimate sources of differences in outcomes.

### Global Equality Of Outcome

Everyone has an obligation to share resources, opportunities and effort in ways that would lead to all people in the world achieving equality in basic outcomes in terms of health, wealth and well-being. All people as having equal worth as human beings, and therefore deserving of the same basic outcomes in life.

The next section examines some of Canada's existing international development activities and global commitments that incorporate these principles of global justice.

[1]For overviews of these various positions see Kymlicka 2002, Sen 2009, and Wolff 2006. [2]These four ways of thinking draw from, but are not precisely aligned with, concepts and principles of global justice articulated by Beitz 1999, Held 1995, Milanovic 2016, Rawls 1999, and Sen 1999.

# 2. Canada's International Development Agenda and Global Commitments

Canada's long standing peacekeeping and humanitarian aid activities show a commitment to assisting others and reducing harm. Canada's Feminist International Assistant Policy and commitments to the SDGs and Paris Climate Change Agreement reveal that global equality of opportunity and outcomes are also important concerns.

# Canada's Feminist International Assistance Policy[3]

**As part of its strategy of renewing and strengthening Canada's role within the international community, as well as advancing development innovation, the Government of Canada has refocused its international development agenda on advancing gender equality around the world. Released in August 2017, after public and private consultations with more than 15,000 people across 65 countries, the Feminist International Assistance Policy (FIAP) represents the government's new approach to international development and poverty reduction globally in support of the SDGs (Government of Canada, 2017a).**

Although it shares a few substantive similarities to the previous Conservative government's focus on maternal, newborn and child health in developing countries via the Muskoka Initiative, as well as its leveraging of private financing for development, the FIAP is being promoted as a categorical shift in Canada's approach to and delivery of international assistance. The introduction of gender-based approach and the emphasis on development innovation marks a change in funding and targeting priority. At the same time, Canada's long track record of development assistance to parts of the developing world implies a continuity of commitment, albeit met through different strategies and programs.

The primary objective of the FIAP is to contribute to the eradication of poverty around the world. Achieving this key objective is based on the theory that promoting gender equality and the empowerment of girls and women is the most effective way to tackle the root causes of poverty and to build more inclusive, peaceful, and prosperous societies because girls and women are amongst the poorest and most marginalized in developing countries. In many ways, this is consistent with the duty of assistance principle in global justice. The FIAP is explicitly committed to a feminist, rights-based approach that is strategic and focused, transformative and activist, and evidence-based and accountable in achieving gender equality.

**The primary objective of the FIAP is to contribute to the eradication of poverty around the world**

With gender equality and the empowerment of girls and women integrated into all aspects of its policy and programming, the government seeks to address development issues organized around the five action areas of 'human dignity', 'growth that works for everyone', 'environment and climate action', 'inclusive governance', and 'peace and security' (Government of Canada, 2017a).[4] These areas are intended to align with Canada's multilateral commitments to the SDGs, which aim to eradicate poverty by 2030, and the Paris Agreement, which seeks to protect the environment, reduce greenhouse gas emissions, and halt further climate change.

[3]Canada is not the only country with a feminist-oriented international assistance policy. Australia, Finland, and Sweden also have explicitly feminist or gender-focussed programming in their international development portfolios. [4]Human dignity covers the fields of education, health and nutrition, and humanitarian action. Growth that works for everyone refers to the creation of inclusive growth and economic opportunities that require the full and equal participation of women in the economy. Environment and climate action includes helping communities adapt to the harmful effects of climate change, mitigate its impacts on society, and facilitate the transition to a post-carbon economy. Inclusive governance refers to promoting peaceful pluralism and democracy by investing in women's rights promotion and participation in politics, law, and civil society. Peace and security refers to the inclusion of women in peace and justice processes, as well as conflict-prevention and post-conflict reconstruction efforts.

> **These programs serve as a prominent example of the government's commitment to development innovation**

## International Assistance Innovation

To further support innovation in international development and attract private sector financing, the government announced two innovation programs funded by existing unallocated International Assistance Envelope (IAE) resources in Budget 2018. With combined funding of C$1.5 billion over five years, the International Assistance Innovation Program and the Sovereign Loans Program provide the Government with "greater flexibility for financing arrangements" and "diversify the tools Canada has to engage partner countries and international development organizations" (Government of Canada, 2018a).

These programs serve as a prominent example of the government's commitment to development innovation (Government of Canada, 2018b)—which is not to say that the government is examining Canadian innovation policy led by Innovation, Science and Economic Development Canada (ISED) in light of global commitments, but that it recognizes, on some level, the need for innovation in delivering

development assistance. The government believes that it can best achieve its international development objectives by investing in and promoting "new business models, policy practices, technologies, behavioral insights or ways of delivering products and services that benefit and empower the poor in developing countries" (Government of Canada, 2018b).

To support a development innovation approach, the government has established several external partnerships, including with the International Development Innovation Alliance (IDIA) which is a forum of public, private, and civil actors working to advance development innovation (IDIA, 2017). The partnership has led the government to support a consensus of six principles outlined by the IDIA to guide development programming: invest in locally-driven solutions; take intelligent risks; use evidence to drive decision-making; fail fast and iterate; facilitate cooperation and co-creation across sectors; and identify scalable solutions. (Government of Canada, 2018b).

## 2030 Agenda for Sustainable Development

In 2015, along with 192 other United Nations member states, Canada adopted the 2030 Agenda for Sustainable Development—an ambitious 15-year global framework focused on 17 goals that aim to eliminate global poverty and hunger, achieve decent work and economic growth for all, reach gender equality, end environmental degradation, and enhance education, health and well-being for all people (Government of Canada, 2018c).

The main principles of the SDGs, as discerned from this following excerpt from the UN Declaration "Transforming our world: The 2030 Agenda for Sustainable Development" are:

### People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

### Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

### Peace

We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.

### Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

### Partnership

We are determined to mobilize the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

As a universal agenda, for Canada, this means ensuring that no one who lives in Canada is left behind, with particular attention to Indigenous peoples, women and girls, immigrants and refugees, people with disabilities, and individuals who identify as LGBTQ2. It also means contributing to global efforts to achieve the SDGs for all people (Government of Canada, 2018c). With 17 goals, 169 targets and hundreds of indicators, the SDGs outline very specific outcomes for people across the world, particularly on eliminating poverty and hunger, and achieving decent work and economic growth.

## Paris Agreement and Climate Change Policy

Another source of Canada's global obligations is the Paris Agreement, which Canada signed in 2015 with 194 other countries. It is considered "an ambitious and balanced agreement to fight climate change" and calls for efforts to limit global average temperature rise to below 2°C (Government of Canada, 2016). Actions to achieve this include making efforts to shift Canada to a low-carbon economy, funding climate education in schools, encouraging public participation and sharing information on carbon emissions to raise awareness on and change behaviour toward a green economy (Government of Canada, 2016).

Although the agreement, and the actions that Canada is pursuing to meet its goals, will generate benefits for Canada, the greatest beneficiaries of reduced climate impact will be people and communities beyond our borders. As such, these commitments are another source of Canada's obligations for global justice.

To what extent does Canada's innovation agenda take these concerns and commitments to global justice seriously? To what extent should it do so? The next sections address these questions by taking a close look at the IIA and its associated policies and programs.

# 3. Canada's Inclusive Innovation Agenda

**In 2016, the Government of Canada launched the IIA to harness and build on the national innovation system to improve growth and prosperity for the benefit of all Canadians (ISED 2016).**

It aims to make Canada's innovation system more "adaptable and resilient" and enable Canadian firms, communities and people to "spot the opportunities to create jobs, drive growth across all industries, improve lives, foster a thriving middle class, and open the country to new economic, social, and environmental possibilities" (ISED 2016). The agenda and its underlying objectives indicate that the government is interested in advancing an inclusive approach to innovation, but what exactly that means requires unpacking, and how the agenda is realized in programs and initiatives is an unfolding story.

In pursuing this agenda, the government has announced a number of more precise initiatives, including:

- The Innovation Superclusters Initiative which aims to replicate some of the conditions and activities that gave rise to Silicon Valley's success, including collaborative partnerships between small and medium enterprises, academia, and non-profits (ISED 2018). An investment of $950 million over five years and across five regional initiatives has been made, with an expectation of matching funding from private sector partners. The initiative seeks to generate bold ideas and new technologies, transform regional innovation ecosystems, create 50,000 jobs, and facilitate the emergence and growth of global firms in Canada (ISED 2018).

- Funding for new research programs for universities, a renewed Venture Capital Action Plan created by the previous government, a smart cities initiative, and the Innovative Solutions Canada research procurement program.

- Substantial new funding for research in Canada which the government views as part of its broader science and innovation agenda (CBOC 2018).

In each of these cases, policy requirements and announcements have emphasized the importance of "inclusion" as part of the innovation agenda. What exactly is meant by "inclusive" innovation? What implications does this requirement have for incorporating a global impact lens into Canadian innovation policy and practice?

# Principles of Inclusive Innovation

The starting point for the IIA is an acknowledgement that Canada's economic, social, and innovation ecosystems have produced too little in the way of innovation and economic growth, and have not achieved an equitable distribution of opportunities to participate in and benefit from Canada's innovation sector (ISED 2016). As such, the agenda has two broad goals:

- promote innovation, entrepreneurship, and business development; and

- ensure that all Canadians share in the economic opportunity and gains from economic growth (Murray 2016).

Reviewing the IIA shows that policy-makers agree with the observation common to much of the broader inclusive innovation literature: business-as-usual in innovation practices is problematic and requires adjustments. Inclusive innovation aims to restructure the normative architecture of mainstream innovation by redefining the scope and aims of innovation systems.



**Raising inequality in an age of technological progress and global prosperity poses questions of fairness**

## What is Inclusive Innovation?

Until recently, innovation policies and studies largely ignored questions of justice and fairness. A greater focus was placed on identifying the causes of economic growth, and policies and activities that would position firms and economies for more growth, than on the distribution of opportunities to participate in and benefit from innovation. Over the past two decades, however, there has been greater recognition that the distribution of innovation's risks and benefits matters—in terms of achieving fairness, and to establish a foundation for better innovation performance and long-term economic growth (Moffatt, Rasmussen and Watters 2017; OECD 2017; World Economic Forum 2017).

Innovation is inclusive when there are opportunities for all people to participate and a fair distribution of the benefits produced. A recent paper on inclusive growth suggests that innovation is inclusive when it is both "autonomy enhancing" and "economically inclusive"—when it provides more opportunities for individuals, families and communities to pursue their goals, strengthens the link between choices and outcomes, and improves access to goods, services, employment opportunities and wages, particularly for the middle-class and the poor (Moffatt, Rasmussen, and Watters 2017).

## Why Make Innovation Inclusive?

Rising inequality in an age of technological progress and global prosperity poses questions of fairness. It also prompts concerns about the sustainability of public support for science and innovation funding and activities (Taylor, 2016). When certain people and communities are excluded from participating in and benefitting from innovation, we see lesser support for funding research in science.

Providing opportunities for all to participate can assist with a better distribution of benefits, improve success at the firm and market levels, and enhance the basic and applied research that provide a foundation for innovation. Evidence shows that:

- Gender and ethnic diversity in the workforce can improve firms' performance by ensuring that there is better mix of ideas, perspectives and networks on which organizations can draw (UK DBIS 2013; Dizikes 2014; Hunt, Layton and Prince 2015; Christiansen et al. 2016).

- Racially and gender diverse teams can improve the quality of both science and innovation by facilitating more open-mindedness, more deliberate consideration of possible outcomes, and more effective problem-solving (Sekuler 2017; Phillips 2014; Clearfield and Tilcsik 2018).

- Equality may be "an important ingredient in promoting and sustaining growth" rather than a hindrance to efficiency and growth as conventional wisdom has held (Berg and Ostry 2011).

CASE STUDY

# Grand Challenges Canada

Founded in 2010 and funded largely by the Government of Canada, Grand Challenges Canada aims to support innovations that address one or more global health or humanitarian challenges. Grand Challenges Canada selects and funds innovators based in low- and middle-income countries, as well as in Canada, whose applications show promise in deploying an "integrated innovation" approach to solving global challenges. The "integrated innovation" approach seeks to combine science and technology expertise and activities with social and business innovation to develop innovative products and services that save lives, improve health, and have the potential to scale up to achieve even more good. Since its inception, Grand Challenges Canada has supported over 1,000 innovations across more than 80 countries with the potential to save up to 1.6 million lives and improve over 28 million lives by 2030 in mainly developing countries (Grand Challenges Canada 2018).

What's interesting about Grand Challenges Canada in the current context is that a global impact lens is embedded not only in the criteria to assess applications for funding, but also built right into the "integrated innovation" model for innovating and achieving benefits. Grand Challenges Canada argues that science and

technological innovation have a better chance of scaling and achieving global health impacts if informed by business innovation principles. Indeed, Grand Challenges Canada focuses on three guiding principles:

1. Solutions should be made "meaningfully accessible to relevant target beneficiaries in low- and middle-income countries, meaning broadly and quickly available at costs that are reasonable in each context."

2. "Knowledge gained through funded research should be broadly and quickly disseminated between related projects and to the global scientific community."

3. "Commercialization of funded solutions is encouraged, as long as the first two principles are respected" (Grand Challenges Canada 2016).
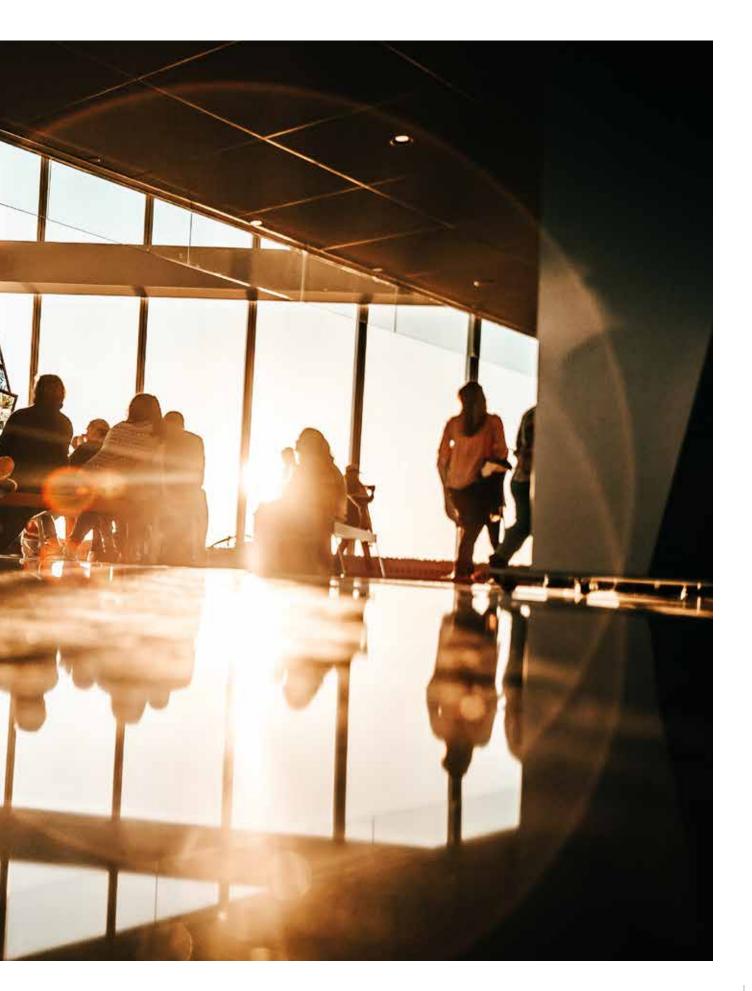
The Canadian government can learn from the Grand Challenges Canada approach to combining innovation and business success with the pursuit of global justice aims.

Grand Challenges Canada has supported over 1,000 innovations across more than 80 countries with the potential to save up to 1.6 million lives

## Ethical Principles and Distribution of Effects

Inclusive innovation is concerned with the distribution of harms and benefits, including participation and outcomes (Mulgan 2016; Buchanan, Cole and Keohane 2011). It reflects a concern for equality of opportunity and, in many respects, equality of outcome. In both dimensions, inclusive innovation seeks to encourage justice-enhancing innovations by ensuring the "conformity of both the distribution of the fruits of the process of innovation, and the character of the innovation process itself" to equality, fairness, transparency, democratic deliberation and participation (Buchanan, Cole and Keohane 2011). In other words, inclusive innovation aims to broaden participation in the process, and the distributional outcomes of innovative activity (Grobbelaar, Schiller and de Wet 2017).

There are a variety of ethical goals of innovation. For example, embodied (material) and disembodied (organizational) process innovations can affect the skilled activities that underlie employment opportunities (Cozzens and Kaplinsky 2011). Thus, inclusive innovation must account for the employment-related effects of process innovations—that is, continuing to provide good jobs and incomes to people who might be displaced by labour-changing technological innovation (Grobbelaar, Schiller and de Wet 2017; Glennie and Gabriel 2017).

## Inclusion in intention more than action?

Canada's Inclusive Innovation Agenda is largely an economy-focused agenda, with some references towards inclusion in terms of participation and outcomes. It focuses on harnessing Canada's innovation ecosystem to unlock new sources of economic growth and prosperity in the future. The distance from admitting the prevalence of inequalities and marginalization in Canada, to delivering an agenda aimed at ameliorating these targets remains large. In many ways, the IIA is silent on the normative issues at the core of the inclusive innovation literature.

A key and recurring message in the IIA is the idea of a global "innovation race" (ISED 2016). Inclusive innovation research shows that the competitive forces in innovation systems around the world have contributed to large inequalities within and between societies. The Canadian agenda repeats the standard logic and vocabulary of markets, firms, business development, trade, and productivity—which, from the perspective of improving innovation and growth in the economic sense, is understandable (ISED 2016). Despite references to inclusion, the normative core of the IIA appears to be utilitarian—that is, the main concern is to improve aggregate economic performance, with the distribution of opportunities and benefits as secondary concern. Our analysis suggests that the agenda is less concerned than inclusive innovation proponents might hope with respect to:

### Equitable Participation

The inclusive innovation literature identifies inequalities in participation in innovation processes as a primary concern (Murray 2016; Papaioannou 2011; Buchanan, Cole and Keohane 2011), but the agenda makes few concrete commitments to improving capabilities necessary to become participants in innovation systems. To be sure, initiatives like CanCode and efforts to increase participation in STEM education and careers are recurring themes. But is not clear how these investments and efforts will translate into better digital literacy, higher STEM participation and economic benefits from both, especially since Canada does fairly well in OECD rankings. The transformation of Canadians from passive consumers to active participants in innovation systems is not clearly spelled out.

### Marginalized Groups

The IIA and associated programs are largely silent about marginalized or excluded population segments, with the exception of women, Indigenous peoples, and rural populations. No references are made to specific ethno-cultural or racialized communities, and few references are made to specific socio-economic classes, with the exception of a vaguely defined "middle class and those aspiring to join it." Inclusive innovation entails opening up innovation activities specifically for socially, economically and geographically marginalized and excluded people (Vadakkepat, et al. 2015).

## Superclusters And Regional Disparities

Current systems of innovation have been identified as drivers of regional economic inequalities within states (OECD 2017). For instance, technological innovations in the Silicon Valley in the U.S. have generated fabulous wealth for innovators in the ecosystem; however, large swathes of middle-class America are deprived of this prosperity. Canada's investment in regional superclusters could contribute to better innovation and prosperity within those regions, but leave certain segments of those regions' populations and other regions even further behind (Murray 2016). Supercluster investments might be a good investment, but the absence of a plan to address regional disparities is concerning.[5]

## Benefits And Risks Of Specific Innovations

Finally, Canada's IIA does not examine whether or not specific kinds of innovations are likely to produce net benefits for people, communities and the environment, or how benefits and risks of specific innovations might be unevenly distributed. For example, Canada's substantial investments in artificial intelligence (AI) research, skills and commercialization could support new economic opportunities, but little mention has been made in policies and programs about how those technologies could negatively affect workers and consumers. There have been investments in AI ethics research programs and studies commissioned to consider the potential effects, but it is not

clear how these will inform policy-making, especially as the investments to develop them have already been made.

Despite its weaknesses, some analysts maintain that the agenda marks a step forward in at least three ways (Murray 2016):

- The framework acknowledges that inclusion and growth are the end goals of innovation policy;

- It articulates some of the complementarities between inclusivity (justice) and innovation (growth), and how those might be operationalized; and,

- It acknowledges the possibility of public choice trade-offs and the need to mitigate the effects of certain choices.

Despite the lack of specificity in terms of inclusion criteria, strategies and measurement regimes, the Inclusive Innovation Agenda and its associated programs demonstrate a concept of justice that includes a duty to do no harm, equality of opportunity and equality of outcome. The authors' main concern is not that the principles are not implicit in the agenda, but that there is little in the way of concrete plans and strategies to realize these principles. Although the agenda embraces a robust concept of justice for those who live and work in Canada, there is no attention given to global obligations, which is in stark contrast to Canada's normative commitments in its international development policies and activities.

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[5] The superclusters initiative indicated that candidates for, and winners of, funding would have to have "diversity plans," but the government's criteria for these are not very clear, nor is it indicated how such diversity would be measured and enforced.

## Global Justice in Canada's Inclusive Innovation Agenda

Much of the initial academic thinking on inclusive innovation was developed in the context of intellectual property rights and health in the global arena (Papaioannou 2011; Buchanan, Cole and Keohane 2011; Cozzens 2007). This literature notes that innovative firms and transnational corporations, while enmeshed in global value chains, nevertheless tend to ignore a potentially lucrative market: the global poor (Heeks, Foster and Nugroho 2014; Vadakkepat, et al. 2015). Innovative firms in developed economies could tap into these markets, but doing so requires a reorientation away from the nature and structure of high-income markets and towards the specific needs and behaviour of those living in poverty around the globe (Chataway, Hanlin and Kaplinsky 2014). It also requires greater attention to the distribution of benefits and risks of innovation.

Canada's innovation policies and programs do not seem to sufficiently incentivize or encourage firms to take seriously global opportunities and responsibilities. In its current iteration, the IIA aims to support Canadian firms to become globally competitive, capture a greater share of global markets, and attain a higher level of embeddedness in global value-chains (ISED 2016), but largely continues with business as usual (i.e. pursuing growth within current economic structures, and through justice-reducing/inequality-enhancing market channels, incentives, and mechanisms). Although organizations like Export Development Canada provide Canadian

firms with assistance in entering global markets, Canada's innovation policies and programs do not link funding to assessment of the benefits and harms that Canadian innovation might cause in developing countries and communities.

For the most part, Canada's innovation policies are designed to improve domestic firm performance and, where concerns about inclusive participation and distribution come into play, they focus on the health, wealth and well-being of Canadians exclusively. Two exceptions might be policies and programs that support the development of clean energy technologies—which, if successful, would reduce Canada's global environmental impact—and some policies which support the development of medicines and health technologies that could contribute to better global health. Especially in the latter case, however, the question of how those in developing countries could access and benefit from these health innovations has not been a prominent concern.

# 4. A Global Impact Lens for Canada's Innovation Policy

Canada has an opportunity to be a global leader in using innovation policy to achieve better health, wealth and well-being around the world.

**The absence of a concern for the global impact of Canadian innovation policy and activities is understandable, given that innovation has historically been viewed through the lens of domestic economics - but this is changing. Increasingly, inclusive innovation frameworks and advocates are encouraging policy-makers and innovators to think about the social and distributional effects of policies and innovations. By funding and encouraging activities that may produce economic, social or environmental harms in developing countries, and by neglecting to think about innovation in the context of a duty of assistance, Canada's innovation policy and practice fails to meet standards of global justice.**

Innovation policy is increasingly burdened with new expectations and requirements. Efforts to ensure that innovation is inclusive at the domestic level—for example, requiring superclusters to have and pursue diversity plans—adds administrative cost and effort, and adding a concern for the global impact of Canadian innovation policy and activities could add more. But if the Canadian government is sincere about wanting to become or continue to be a positive force for change in the world—and if it is sincere about its global responsibilities—these extra steps will be necessary.

## An Opportunity for Global Innovation Leadership

Canada's international development policies and activities are motivated by a concern for global justice, but that same global impact lens has not been incorporated into innovation policy. Canada's current innovation discourse and policy emphasize the importance of a fair distribution of opportunities to participate and benefits to those living and working in Canada, but not to people and communities beyond our borders.

There are at least three key opportunities to leverage Canadian investments in innovation to meet development objectives:

### Expanding Access To Innovations

Providing researchers, businesses and entrepreneurs in the least developed countries concessional or free access to advanced technologies would allow them to 'leapfrog' and move up the value chain. In some cases, technologies made available to the public at large can have ecosystem effects, for example providing life-saving drugs, or access to mobile technology and the internet.

## Addressing Innovation Externalities

Canadian-supported innovations and innovation policies should be viewed through a global impact lens, account for both positive and negative global effects. For example, carbon emissions and climate impacts should be included in assessment criteria for public innovation funding.

## Shared Benefits From Innovation

If shared widely, the financial benefits derived from the production and sale of innovations could contribute to reducing income and wealth inequalities. Considering the large public investment that goes into fostering innovation, there is an argument to be made that its benefits should also be shared by the public - within and beyond our borders.

Canada's international obligations demand that a more global lens be applied to the innovation agenda. Canada has an opportunity to be a global leader in using innovation policy to achieve better health, wealth and well-being around the world. The question is whether Canada's government has the political will to be that leader and force for positive change.

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## About Engineers Without Borders Canada

Engineers Without Borders Canada (EWB) brings people and ideas together to tackle the most crucial causes of poverty and inequality.

The organization provides systems change leadership training and opportunities for 1,800+ active members through a network of 40 chapters in Canada; seed funding, talent and mentorship to social entrepreneurs in sub-Saharan Africa, enabling them to scale their success and transform the lives of people in their communities; and evidence-based policy recommendations on Canada's international development assistance and financing activities by working collaboratively with researchers, civil society and parliamentarians across the country.

EWB is a registered Canadian charity. For more information on its work and global impact, visit **www.ewb.ca** or email **info@ewb.ca.**

## About the Innovation Policy Lab

The Innovation Policy Lab (IPL) is the exciting new hub within the Munk School of Global Affairs whose mission is to study, teach, and apply novel methods and disciplines to the study of innovation and its impact on growth and society.

Bringing together teams of researchers from multiple schools and departments at the University of Toronto, as well as from other institutions in countries across the globe, the IPL focuses on core questions in a number of areas including innovation and growth, innovation and inequality, globalization and innovation, social innovation, new technologies and their impact on society, innovation in traditional industries, and arts and innovation. Since our aim is not only to advance basic research but also to effect change, we pay particular attention to the role of public policy in nurturing innovation, while at the same time enhancing its positive impacts on society and limiting its negative consequences.

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