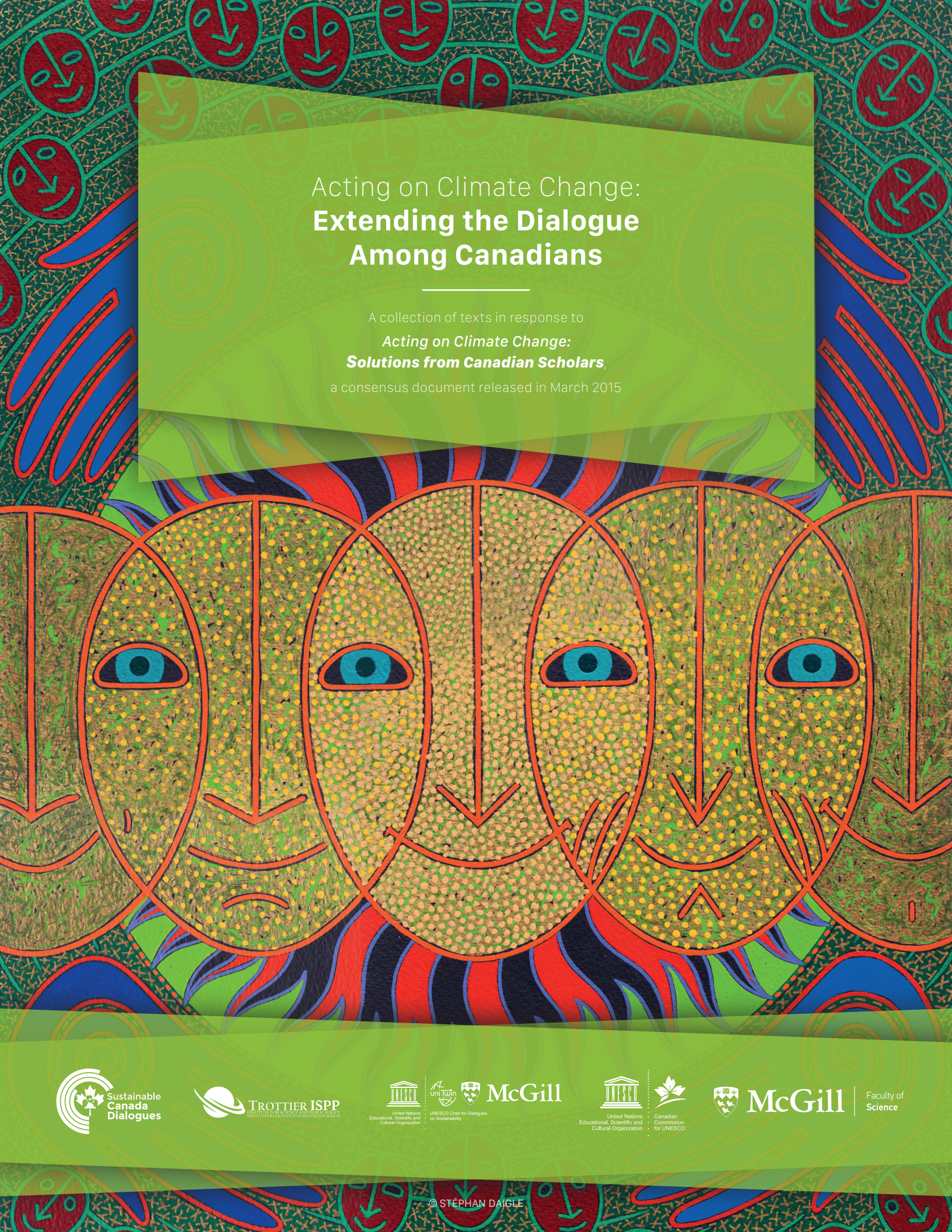

Acting on Climate Change:
Extending the Dialogue Among Canadians

A collection of texts in response to

Acting on Climate Change:
Solutions from Canadian Scholars,

a consensus document released in March 2015

Sustainable Canada Dialogues

TROTTIER ISPP
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CIRODD
Centre interdisciplinaire de recherche
en opérationnalisation du développement durable

ABOUT THE ORGANIZATION

CIRODD

The CIRODD (Centre interdisciplinaire de recherche en opérationnalisation du développement durable) is a strategic cluster funded by the Fonds de recherche du Québec – Nature et technologies and the Fonds de recherche du Québec – Société et culture. Over 90 researchers and staff members from 11 universities, three CEGEPs and two college centres for technology transfer in Quebec contribute to the projects and activities led by the CIRODD network. The network's mission is to conduct, coordinate, integrate and transfer research into sustainable development operationalization, to ultimately facilitate the emergence of a green economy. The CIRODD is focused on implementing sustainable development in major industrial sectors in Quebec, including: aerospace, forestry, mining, energy, information technology and telecommunications, buildings, transport and mobility, agriculture and food processing.

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cirodd.org

THE ARRANGEMENT OF THIS PHOTO ILLUSTRATES ACTIONS PERTAINING TO POLICY DEVELOPMENT, SUSTAINABLE FORESTRY, BUILDING AND LAND MANAGEMENT, AS WELL AS COMPREHENSIVE APPROACHES SUCH AS ECOSYSTEM THINKING IN HEALTH AND LIFE CYCLE ANALYSIS.

Contributed by

CIRODD

Operationalizing the Key Policy Orientations

of *Acting on Climate Change: Solutions from Canadian Scholars*

Original text in French available at *www.sustainablecanadadialogues.ca/fr/vert/versundialogue*

1. CIRODD

This contribution was jointly written by CIRODD[1] members and employees and seeks to further consider certain key policy orientations outlined in the consensus paper *Acting on Climate Change: Solutions from Canadian Scholars* released by Sustainable Canada Dialogues. This contribution proposes actions pertaining to policy development, sustainable forestry, building and land management, as well as comprehensive approaches such as ecosystem thinking in health and life cycle analysis.

2. Designing policies differently

By Mohamed Benhaddadi, Jean-Francois Desgroseilliers and Erick Lachapelle

In Canada and around the world, electricity production is experiencing very rapid growth and recent technological progress supports a transition focused on energy efficiency. The sector therefore has the potential to contribute significantly to reducing the share of fossil fuels in the energy mix[2].

To achieve this, Canada must develop bold energy policies that include energy efficiency and low-carbon electricity production (hydro, wind and solar) targets. Certain provinces have already established carbon-pricing systems but it is essential for that price to reflect both direct and indirect costs of carbon and energy. A national approach would give rise to controversy (in terms of establishing hard caps for specific economic sectors, and issues of allocation mechanisms and revenue use), so it seems politically opportune to establish mechanisms to coordinate and strengthen these provincial systems.

As noted in *Acting on Climate Change: Solutions from Canadian Scholars*, distribution of income from carbon pricing is

1 http://www.cirodd.org

2 World Energy Council (2013). Time to get the real – The agenda for change. World Energy Council Report, http://www.mmc.com/content/dam/mmc-web/Files/GRC_2013-Time-to-Get-Real.pdf.

crucial to the measure's political legitimacy. Currently, politically acceptable carbon prices are still too low to create a substantial change in behaviour. A good way to strengthen public support for increased carbon pricing would be to earmark most of the revenue to greenhouse gas (GHG) reduction policies and incentives[3].

3. Developing sustainably

Policies and incentives to reduce GHG emissions communicate government plans, giving impetus to the next steps to operationalize sustainable development actions in different economic sectors such as forestry, buildings and urban development.

3.1 An integrated approach to forest management

By Jean-François Boucher and Claude Villeneuve

The Canadian forestry sector holds a wealth of opportunities for climate change mitigation and adaptation. These opportunities were listed by the Intergovernmental Panel on Climate Change (IPCC) as among the most efficient in terms of environmental and economic impacts, with multiple interfacing opportunities with the mining, agriculture, building and energy sectors[4].

Afforestation and reforestation opportunities (specifically, afforestation of boreal open woodlands, agroforestry, reforestation of fallow or unproductive lands and reforestation of degraded lands including mining sites) are available on different types of land and relate to other sectors. Urban reforestation also provides good mitigation opportunities that are in tandem with ecosystem thinking for health.

Acting on Climate Change: Solutions from Canadian Scholars only touches upon the topic of sustainable forest management activities, which also have significant mitigation potential to ensure better carbon stock and flux management on managed land. These activities include measures against natural disturbances and those that aim to increase bioenergy and long-lived wood product supply[5]. In this regard, the links with the energy (including negative emissions technologies) and buildings sectors are evident, especially when considering substitution of high-emission products.

The forestry sector and its interfaces with other sectors is promising in the fight against climate change because it provides real opportunities to operationalize sustainable development by increasing ecological (biodiversity), social and economic co-benefits.

3.2 Transition building

By Pierre Blanchet, Natalie Noël, André Potvin and Robert Beauregard

The construction industry is a dominant economic sector in Canada and accounts for 12.5% of GDP ($45 billion in building permits alone). When taking into account the entire life cycle of buildings, the sector is responsible for 33% of Canada's energy consumption and 35% of its GHG emissions. Buildings constitute both a key component of a low-carbon future and a global sustainable development integration challenge[6].

As discussed in *Acting on Climate Change: Solutions from Canadian Scholars* (policy orientation #7), the building sector has the most cost-efficient CO_2 mitigation potential

3 Ambdur, D., Rabe G. R. and Borick C.P. (2014). Public views on a carbon tax depend on the proposed use of revenue. Issues in Energy and Environmental Policy, 13: 1-9.

4 http://mitigation2014.org/report/publication

5 Smyth, C. E., Stinson, G., Neilson, E., Lemprière, T. C., Hafer, M., Rampley, G. J. and Kurz, W. A. (2014). Quantifying the biophysical climate change mitigation potential of Canada's forest sector. Biogeosciences, 11(13): 3515-3529.

6 http://mitigation2014.org/report/publication

across all sectors, including agriculture, forestry, energy production and industry[7]. The energy efficiency of buildings' mechanical and electrical systems has improved, and the sector is now responsible for just 35% of the total energy consumption to operate and 65% for the intrinsic energy of building materials.

It is important to continue to reinforce the most stringent standards to increase the energy efficiency of buildings and, more importantly, foster the selection of low-impact materials. When renovating and building, developers, designers, builders and legislators must support sustainable design options. These choices are especially significant since building materials and construction methods do not constrain occupant behaviour. Canada must view the building sector as a key tool in the transition to a green, low-carbon economy.

3.3 New urban planning to reduce car dependency

By Paul Lewis and Juan Torres

The spatial organization of our communities has made the car a very important — even essential — tool. The growing trend in car use fosters sprawl: low-density land use and the dispersal of activity spaces (housing, places of employment, businesses, services, and so on). In the late 20th century, this trend shaped urban development, increasing our dependency on cars[8] and hindering the use of other modes of travel, such as walking, cycling and public transit.

In keeping with policy orientation #6 of *Acting on Climate Change: Solutions from Canadian Scholars*, land use planning can reduce car dependency by fostering other modes of transportation and even their combined use in intermodal itineraries. More sustainable urban planning is dictated by several principles (such as functional and social diversity and density), that all converge in an effort to create compact and attractive urban structures connected by efficient public transit networks[9]. The aim is to contribute to a city's competitiveness at the metropolitan scale without compromising quality of life at the neighbourhood scale.

Yet densification constitutes a challenge, if only for the public resistance to which it may give rise. Urban design must therefore be well-thought-out and driven by access points to public transit networks to ensure the attractiveness of denser areas. Still, the densification trend has taken hold in city centres and suburbs. We must capitalize on this movement and use it as a vector for innovation.

4. Evaluating our actions from the global perspective

Sustainable development and climate change impacts must be understood as part of an approach to complexity that requires knowledge from several sectors. There are numerous means to evaluate this complexity, including ecosystem thinking and life cycle analysis.

4.1 Fostering ecosystem thinking for our health[10]

By Johanne Saint-Charles and Cathy Vaillancourt

Ecosystem approaches to health have helped put forward practices that support development of locally applicable and globally

7 Ibid.

8 Dupuy, G. (2006). La Dépendance à l'égard de l'automobile, Paris, Predit, La Documentation française, collection Le point sur, pp. 93.

9 Vivre en ville (2013). Retisser la ville. Réarticuler urbanisation, densification et transport en commun. Vivre en ville, Québec.

10 http://ecohealth-live.net/ecohealth-action/

relevant solutions[11]. Ecosystem approaches to health address key issues outlined in several studies and initiatives.

For example, vulnerability to climate change varies significantly according to context (i.e. geographic, socioeconomic, ethnic, etc.), and proposed solutions must account for these differences. Community transformation must take place by adopting a perspective that considers differences so as to avoid widening existing gaps. Civic participation, which sometimes equates to the participation of *leaders* and *public information*, can be analyzed from this angle. Similarly, sex and gender issues should be considered since they are an important variable in analyzing climate change causes and impacts.

Reflection on the close and complex connections between climate change and human, wildlife and ecosystem health will contribute to development of integrated and sustainable solutions. Linking climate change and local disturbances also provides another path to establish integrated solutions[12].

4.2 Supporting the life cycle assessment approach for our future

By Annie Levasseur and Valérie Patreau

Life cycle assessment (LCA) is a recognized multi-criteria method that is increasingly used to assess, quantify and communicate the environmental footprints of products and services[13,14]. The LCA approach makes it possible to anticipate the shift or creation of impacts in other life cycle stages. It provides a sound scientific rationale to support policies and strategic decisions related to climate change. The recent development of prospective and consequential LCA approaches makes it possible to consider indirect impacts of large-scale implementation of new technologies, development of new sectors following implementation of incentive policies, or any other climate change mitigation scenario, to avoid unintended negative effects[15].

For example, mass introduction of electric vehicles would impact the continental electricity market and the environmental footprint of this technological choice. In another sector, parameters must be established for forest development to produce energy and materials that emit less GHGs and ensure sustainability of carbon stocks and vitality of forest ecosystems. It is important to study the consequences of current climate change mitigation strategies to maximize the effectiveness of our actions and minimize other types of environmental impacts.

Finally, a decision-making approach driven by LCA requires continuous development of life cycle inventory databases with collaboration among different industrial sectors and levels of government.

5. Conclusion

The ideas outlined here by the CIRODD call for action on the following: I) send clear messages to businesses by setting out a consistent carbon pricing mechanism that fosters the decarbonisation of the economy; II) give impetus to change through informed policy choices in areas with high potential to

11 Saint-Charles, J., Webb, J., Sanchez, A. van Wendel de Joode, B., Nguyen-Viet, H. and Mallee, H. (2014). Ecohealth as a Field – Looking Forward. EcoHealth, 11(3): 300-307.

12 Parkes, M. (2011). Diversity, Emergence, Resilience: Guides for A New Generation of Ecohealth Research and Practice. EcoHealth, 8: 137-139.

13 ISO (2006a). ISO 14040: Management environnemental — Analyse du cycle de vie — Principes et cadre, Organisation internationale de normalisation, pp. 24.

14 ISO (2006b). ISO 14044: Management environnemental — Analyse du cycle de vie — Exigences et lignes directrices, Organisation internationale de normalisation, pp. 56.

15 NRTEE (2012). Canada's opportunity: adopting life cycle approaches for sustainable development National Round Table on the Environment and the Economy, http://publications.gc.ca/site/eng/9.696147/publication.html

reduce GHGs (buildings, forestry and urban development); III) foster the application of ecosystem approaches and life cycle assessment methods to account for the complexity of causes and impacts.

This contribution by the CIRODD is a non-exhaustive sampling of hundreds of potential actions that our members and employees wish to undertake with user groups. The CIRODD possesses extensive expertise to address sustainable development and climate change challenges. Governments, organizations and the private sector can count on the CIRODD's collaboration and knowledge of sustainable development operationalization as a catalyst to set our society on the path to prosperity, equity and sustainability.

ABOUT THE INITIATIVE

SUSTAINABLE CANADA DIALOGUES

This contribution is part of a collection of texts, *Acting on Climate Change: Extending the Dialogue Among Canadians*, stemming from interactions between Sustainable Canada Dialogues, an initiative of the UNESCO-McGill Chair for Dialogues on Sustainability, and business associations, First Nations, non-governmental organizations, labour groups, institutions, organizations and private citizens.

Sustainable Canada Dialogues is a voluntary initiative that mobilizes over 60 researchers from every province in Canada, representing disciplines across engineering, sciences and social sciences. We are motivated by a shared view that putting options on the table will stimulate action and is long overdue in Canada.

Together, the contributions enrich the scope of possible solutions and show that Canada is brimming with ideas, possibilities and the will to act. The views expressed in *Acting on Climate Change: Extending the Dialogue Among Canadians* are those of the contributors, and are not necessarily endorsed by Sustainable Canada Dialogues.

We thank all contributors for engaging in this dialogue with us to help reach a collective vision of desired pathways to our futures.

FOR MORE INFORMATION, VISIT OUR WEBSITE

sustainablecanadadialogues.ca/en/scd/acting-on-climate-change