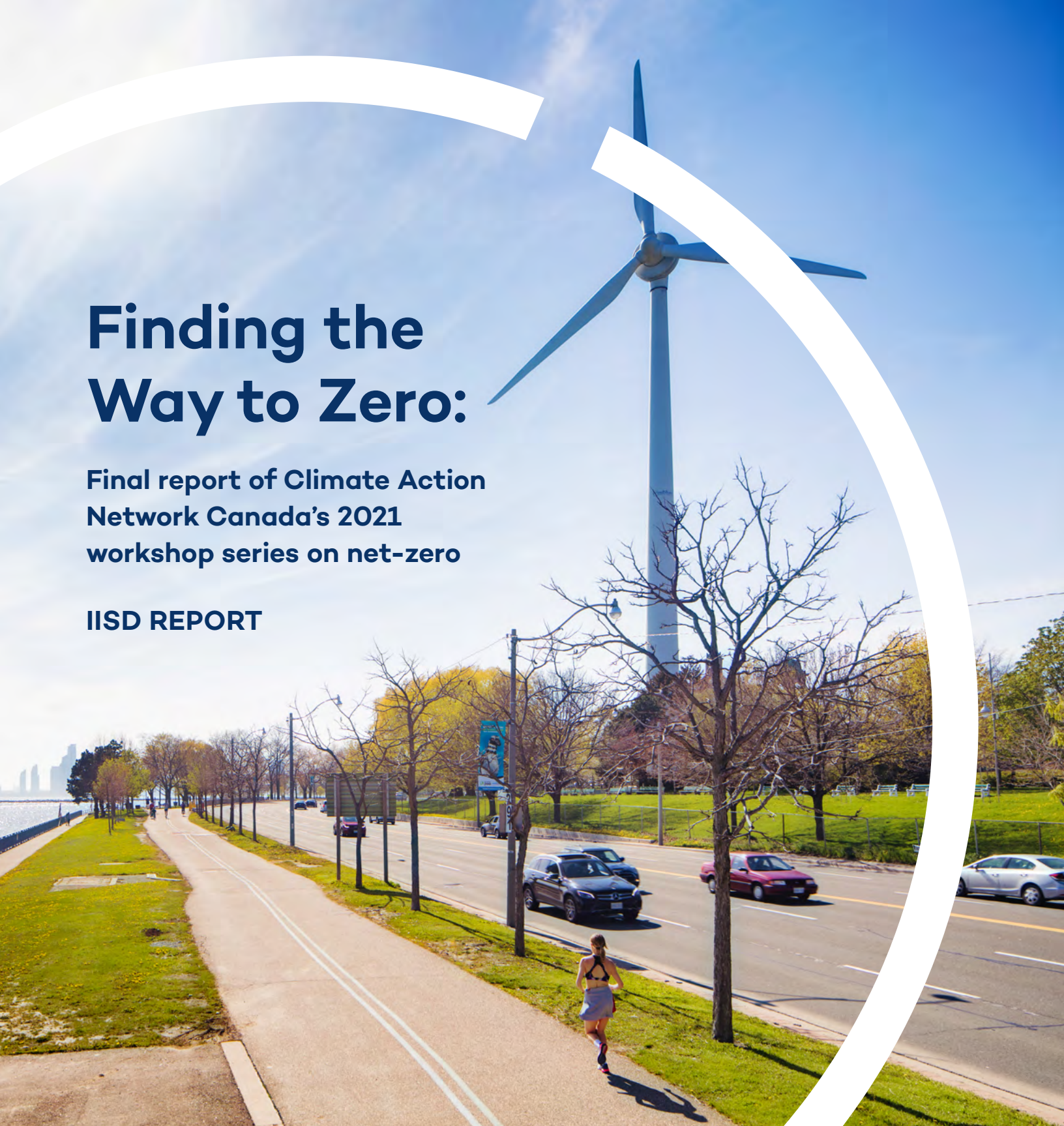


Finding the Way to Zero:

Final report of Climate Action Network Canada's 2021 workshop series on net-zero

IISD REPORT



Vanessa Corkal



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A national body of Climate Action Network International, Climate Action Network Canada (CAN-Rac) is a national coalition of more than 130 organizations across the country. It is the only network in the country that brings labour, development, faith-based, and Indigenous groups together with the key national, provincial, and territorial environmental organizations working on climate change. The network plays a critical role in helping Canadian organizations understand and respond to climate change impacts and policies, across Canada and around the world, to coordinate efforts for the greatest impact.

Finding the Way to Zero: Final report of Climate Action Network Canada's 2021 workshop series on net-zero

January 2022

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A Note on the Report

This report is a summary of views expressed during workshops held by CAN-Rac in summer 2021. IISD was invited to report on the outcomes of the workshops on behalf of CAN-Rac. As this is a summary report, not all perspectives cited represent the views of any one organization, including IISD.



Executive Summary

This summary report captures the outcomes of a series of virtual workshops on the implications of net-zero in Canada. The workshops were held in spring and summer 2021 by Climate Action Network – Réseau action climat (CAN-Rac) Canada and included approximately 30 civil society groups (CAN-Rac members and allies). Themes covered included net-zero scenarios and pathways, carbon removal (including engineered solutions and so-called natural climate solutions), energy transition and the role of different energy sources, and carbon offsets.

A primary objective of these workshops was to identify areas of clear agreement to inform top-line messages around net-zero that CAN-Rac (and its members and allies) can uphold and advocate for in the coming months and years. Overall, **five major discussion topics emerged** from the conversations:

1. Energy transition, energy mix, and fossil fuel phase-out
2. Establishing boundaries for the “net” in “net-zero”
3. Decision making for pathway choices and priorities
4. Climate and environmental justice
5. Incremental change versus systems change.

Among participants, there appeared to be a high level of agreement on **several potential principles and policy positions**, including:

- Adhering to robust definitions of net-zero that include all greenhouse gases and limit the role of carbon removals.
- Increasing the ambition of short- and long-term emissions reduction targets with carbon budgets.
- Establishing a phase-out date for fossil fuels and stopping the approval of proposed fossil fuel projects.
- Ending subsidies and public finance for fossil fuels (including carbon capture and storage) and nuclear energy, and ensuring industrial emissions are properly priced.
- Adhering to and advocating for stringent parameters and accounting for the use of offsets and internationally traded mitigation outcomes.
- Prioritizing proven solutions, such as clean electricity and energy efficiency, to achieve early, deep, and sustained reductions, alongside hard limits on the use of carbon capture and storage, fossil-based hydrogen, and nuclear energy.
- Focusing on equity, including through international climate finance, just transition implementation, and the decolonizing of policy.
- Adopting well-being indicators and alternative approaches to economic growth and development.



The discussions also raised potential **future research and activities** that are needed to support policy proposals and mobilize support, such as:

- Qualitative and quantitative analysis for pathways, including energy demand–supply scenario development.
- Establishing robust social, economic, and environmental criteria against which to measure subsidies and policy proposals.
- Building constituencies and shared values through public engagement and awareness-building, including through regional and local conversations.
- Engaging with and elevating the voices and policy asks of diverse communities and organizations (BIPOC, 2SLGBTQIA+, people with disabilities, etc.).

By capturing these workshop discussions and outlining potential shared principles and future actions, this report aims to help set the groundwork for future net-zero conversations among CAN-Rac members and allies in Canada in the months and years ahead.



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Abbreviations and Acronyms

CAN-Rac	Climate Action Network – Réseau action climat Canada
CCS	carbon capture and storage
CDR	carbon dioxide removal
CER	Canada Energy Regulator
CICC	Canadian Institute for Climate Choices
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
ITMO	internationally traded mitigation outcome
LNG	liquefied natural gas
NbS	nature-based solutions



Glossary

Blue hydrogen	Hydrogen derived from natural gas using carbon capture and storage for a portion of the resulting emissions.
Carbon dioxide removal (CDR)	Actions that remove carbon dioxide either at the source of emissions or from the atmosphere. CDR includes both natural climate solutions and engineered solutions. (The term “negative-emissions technologies” is also commonly used.)
Circular economy	An economy based on keeping materials and products in use and reducing or eliminating pollution and waste to focus on the regeneration of natural systems (Ellen McArthur Foundation, n.d.).
Engineered solutions	Human-engineered technologies to capture greenhouse gases (GHGs).
Green hydrogen	Hydrogen made by electrolysis (using renewable sources of energy).
Liquefied natural gas (LNG)	A form of gas (primarily methane) that has been cooled to a liquid form for storage and transport.
Nature-based solutions (NbS)	Actions to protect and sustainably manage natural ecosystems to manage climate and biodiversity crises.
Natural climate solutions	A subcategory of NbS with a focus on mitigating climate change by avoiding and capturing GHGs.
Natural infrastructure	An area or system that is either naturally occurring or naturalized and that benefits ecosystems and humans, including increasing resilience to climate change.
Safe bets	A term introduced by the Canadian Institute for Climate Choices (CICC) (2021) that refers to “no regrets” solutions based on existing technologies that could play a significant role in emissions reductions.
Wild cards	A term introduced by CICC that refers to high-risk, high-reward technologies that could contribute to longer-term net-zero goals but that have significant uncertainty around their viability.



1.0 Introduction

“To think we can get to net-zero easily is to dream.”

WORKSHOP PARTICIPANT

This summary report aims to capture the discussions and outcomes of a series of virtual workshops held in spring and summer 2021 by Climate Action Network – Réseau action climat (CAN-Rac) Canada. The purpose of these workshops was to open dialogues and spark conversations among civil society groups (CAN-Rac members and allies) on the implications of net-zero in Canada.

As described by CAN-Rac staff, these workshops were deliberately designed to dive into difficult topics, making space for conversations about some of the trickier aspects of net-zero definitions and pathways. CAN-Rac members have diverse positions as individual organizations but are united by shared goals and a set of principles (the CAN-Rac Charter and Domestic Policy Statement, last updated in 2015¹). By exploring some of the more difficult net-zero topics, these workshops aimed to accomplish two objectives: (i) filter out and identify conversations where members may not have common positions and (ii) identify areas of clear agreement to inform top-line messages that CAN-Rac (and its members and allies) can uphold and advocate for in the coming months and years. A list of potential collectively held principles and “guardrails” for net-zero is summarized at the end of this paper.

The presentations and discussions from these workshops illustrate the breadth of subjects and policy areas that CAN-Rac members and allies wish to influence and, in many cases, are already working on. Feedback underscored that achieving net-zero in Canada is not only a technical challenge but also a moral and ethical one. In some cases, there are uncertainties about the best strategies to further policy goals, or there is a need to develop further evidence and analysis.

In this final report, we start by providing the broad context in which these workshops were held: what is the current net-zero policy landscape in Canada and where are the clear gaps? Second, we delve into the workshops to pull out key learnings and identify common discussion topics and perspectives that could inform future advocacy and strategy. Third, we summarize key questions and areas of uncertainty raised through the discussions that may require future workshopping or research and analysis. These findings inform the fourth and final section of the report: a summary of principles that emerged and potential next steps for policy advocacy, civil society-led research, and public mobilization.

¹ See the CAN-Rac *Charter and Domestic Policy Statement* here: <https://climateactionnetwork.ca/wp-content/uploads/2015/04/Climate-Action-Network-Charter-PolicyStatement-2015-Final.pdf>



2.0 Context: Where do we stand in 2021?

The past couple of years have seen increased momentum in net-zero pledges worldwide, with Canada adopting a pledge to reach net-zero emissions in 2019. Federally, the 2050 target (which covers all GHGs) is now entrenched in law under climate change accountability legislation that was passed in mid-2021 (Government Bill C-12, 2020). Canada's revised nationally determined contribution under the Paris Agreement introduced a 2030 emissions reduction target of 40%–45% compared to 2005 levels (Environment and Climate Change Canada, 2021). Both the 2050 and 2030 targets are considered insufficient compared to what has been calculated as Canada's fair share. CAN-Rac (2019) proposes 140% reductions by 2030 compared to 2005 levels, 60% of which would be domestic reductions and the remainder achieved through the mobilization of at least CAD 4.75 billion in international climate finance per year.

Subnationally, climate ambition and policy frameworks are far below what is needed, and there are few accountability measures in place. Targets are severely lacking: over half of Canada's emissions are not covered by a provincial or territorial 2030 target, and nearly three quarters are not covered by a provincial or territorial 2050 target (Dusyk & Turcotte, 2021). Disturbingly, Dusyk and Turcotte (2021) found that “no jurisdiction has developed pathways to describe how net-zero can be achieved” (p. 4).

Political and cultural challenges in Canada are some of the most significant barriers to net-zero. The federal and some provincial governments continue to view fossil fuel production and exports as fundamental to the Canadian economy. Elected officials have also pointed to fossil fuel production as funding the energy transition itself (Government of Canada, 2020; O'Regan, 2021). Canada Energy Regulator (CER) scenarios show increased future production (CER, 2020). CER has not yet published an energy scenario compatible with 1.5°C of warming or net-zero emissions. British Columbia, Alberta, Saskatchewan, and Newfoundland are all planning to expand fossil fuel production according to current policy statements and energy scenarios (Alberta Energy Regulator, 2021; Government of British Columbia, 2018; Government of Newfoundland and Labrador, 2018; Government of Saskatchewan, 2020). This direction is in stark contrast to jurisdictions such as Denmark, Spain, France, and California, who have set dates for ending fossil fuel production (Buttler, 2020; Gerretsen, 2021; Office of Governor Gavin Newsom, 2021; Reuters, 2017), and countries that have ended exploration licensing (Denmark, New Zealand [offshore], France, Spain, Costa Rica, Portugal, and Ireland) (Muttitt et al., 2021). Quebec, too, has announced it will end extraction of fossil fuels in the province and has joined the Beyond Oil and Gas Alliance spearheaded by Denmark and Costa Rica (Canadian Press, 2021).

Ongoing and increased fossil fuel production are incompatible with global climate targets. Domestic oil and gas emissions are rising (Environment and Climate Change Canada, 2020) and could undermine Canada's ability to reach net-zero. Existing projects in the oil and gas industry will already push the world over the 1.5°C warming target (Trout, 2021); research shows that meeting this target is not possible unless countries make concerted efforts to reduce



fossil fuel production (Stockholm Environment Institute et al., 2020, 2021). Analysis from the World Energy Outlook outlines the scale of the clean energy transition that is already underway, confirming that no new oil and gas fields are needed and that a delay in transitioning from fossil fuels creates significant economic and social risk (International Energy Agency, 2021a). A recent paper published in *Nature* stated that 83% of Canadian oil and gas resources would have to remain in the ground for the carbon budget for 1.5°C to be respected (Welsby et al., 2021). Ongoing support for fossil fuels also detracts from government spending on positive climate solutions, such as renewable energy (Sanchez et al., 2021).

Government targets and pathways to net-zero are fundamental to bringing the private sector and the general public to net-zero. Although corporate net-zero pledges are gaining in popularity worldwide, the Canadian private sector is generally behind its peers on climate ambition, particularly when compared to European companies (Woynillowicz et al., 2021). At the corporate level, only seven Canadian companies are considered to have climate ambition aligned with 1.5°C by the Science Based Targets Initiative (2021). There are significant concerns about many current corporate pledges, including those from oil and gas companies, that do not include all emissions scopes (Scope 1, 2, and 3) or rely heavily on carbon offsets, carbon capture and storage (CCS), and other unproven technologies or removals (Harrison et al., 2021). Oil Change International and Environmental Defence (2021) have assessed Canadian oil and gas companies' climate change pledges against 10 criteria to assess the quality of these plans' ambition, integrity, and transition planning. They found that existing pledges are vastly insufficient and that companies continue to plan for increased production, a trajectory that is fundamentally incompatible with limiting warming to 1.5°C.



Box 1. Defining net-zero

Net-zero targets and plans lack substance without robust definitions of what net-zero means. The Intergovernmental Panel on Climate Change (IPCC, 2018) defines net-zero emissions as “anthropogenic emissions of GHGs into the atmosphere are balanced by anthropogenic removals of GHG from the atmosphere over a specified period.” Yet, translating this goal effectively into robust policy frameworks continues to be a challenge. Researchers have studied points of convergence and divergence of elements in current approaches to net-zero, illustrating this dilemma (University of Oxford, 2020). Principles for robust net-zero targets and plans have also been developed for governments and the private sector to adhere to (Dusyk & Turcotte, 2021; Levin et al., 2020, Rogelj et al., 2020, Science Based Targets Initiative, 2020). These principles have yet to be reflected in many net-zero pledges. Some of the key concerns around net-zero targets include (but are not limited to):

- Inclusion of all GHGs
- Linking targets to time frames that reflect climate science, equity, historical responsibility, and capacity
- Setting robust limits on what portion of the target can be met through nature-based solutions (NbS), offsets, negative-emissions technologies, and internationally traded mitigation outcomes (ITMOs)
- Adherence to carbon budgets
- Robust carbon accounting
- Concentration on early, deep emissions reductions across sectors to reach peak emissions as soon as possible.



3.0 Workshop Analysis

In this section, we examine the main discussion topics that emerged across all workshops, identifying areas of agreement and common thinking expressed by participants. Each workshop explored a major topic related to Canada’s net-zero challenge and typically included presentations from subject matter experts, interventions from respondents to the presentations, and a broader discussion among workshop attendees. Approximately 30 organizations participated in three 3–4 hour workshops between April and June 2021, covering three themes: *Scenarios and Pathways* for net-zero, *Removals* (including engineered solutions and natural climate solutions), and *Energy Transition* (covering different energy sources). A fourth, shorter workshop was held to discuss ITMOs and offsets.

A full description of topics discussed, as well as speakers and respondents who presented, can be found in Appendix A. A high-level overview of the information presented by subject matter experts at the workshops can be seen in Appendix B. Full workshop summaries for the first three workshops are available from CAN-Rac.

Overall, **five major discussion topics** emerged:

1. Energy transition, energy mix, and fossil fuel phase-out
2. Establishing boundaries for the “net” in “net-zero”
3. Decision making for pathway choices and priorities
4. Climate and environmental justice
5. Incremental change versus systems change.

3.1 Energy Transition, Energy Mix, and Fossil Fuel Phase-Out

Discussions about the energy mix needed by 2050 came up in all workshops. Participants expressed a clear need to accelerate the pace of emissions reductions through available solutions (“safe bets”). At the same time, they stressed that **the energy transition is not only about emissions reductions**. There was significant discussion around the need for a complete phase-out of fossil fuel production and consumption and a just transition. In addition to establishing a phase-out date, participants expressed their desire for Canadian governments to end fossil fuel subsidies and public finance, stop approval of new fossil fuel projects, and improve carbon pricing on industrial emissions.

“Every climate policy conversation fundamentally changes as soon as there’s an acknowledgement that we will be getting rid of fossil fuels.”



Concerns were raised with the government's approach to short- and long-term reduction strategies, with varying perspectives. On the one hand, participants felt it was not clear that short-term federal actions were necessarily in line with or setting Canada up for effective longer-term pathways. As one participant stated, “government has to stop patting itself on the back for **incremental short-term reductions** that do not lead [to] a pathway to net-zero.” On the other hand, one participant expressed that Canada's policy apparatus appears to be heavily oriented toward longer-term time frames. While, in theory, this should be a positive thing (preventing poor decision making), there are also substantial pitfalls related to short-term political mandates tied to election cycles, as well as **risks of delayed action** or delayed implementation of available “safe bet” solutions now that *would* contribute to long-term reductions.

Participants see a need to develop tools and model pathways that are consistent with a 1.5°C future, including qualitative analysis and an energy demand–supply scenario. Improved evidence and analysis are required to send signals to the private sector, subnational governments, and the general public; for example, a group of scientists recently wrote to the Prime Minister to mandate the CER to model 2050 net-zero scenarios in Canada (Antweiler et al., 2021).

3.2 Establishing Boundaries for the “Net”

Participants perceive a low level of ambition in current Canadian climate targets compared to other jurisdictions, as well as what is required to reach the 1.5°C warming target. They also cited the lack of a framework for how much of the target should be achieved through absolute reductions compared to removals. Generally, **participants want Canada to reach net-zero earlier**, based on IPCC (2018) scenarios, including for equity reasons and future availability of carbon sinks. Participants felt that carbon dioxide removal (CDR), including offsets and engineered solutions, distract from “real zero” and force “a trade-off between nature and fossil fuels.” They wish to see more policy emphasizing absolute reductions. Other research characterizes CDR and offsets as “measures of last resort” (Woynillowicz et al., 2021).

Carbon accounting was discussed as a foundational element of ITMOs and offsets. For example, one participant stressed that without robust accounting, problematic incentives could be set up for companies and governments, which could drive negative outcomes (such as weaker absolute emissions reduction targets) and missed opportunities (such as delays in short-term action or technological development). Some participants noted they did not want to see offsets counted for avoided emissions at all. Several stated that more stringent rules are needed to guide the counting of emissions reductions from NbS toward targets. There were also concerns raised around transparency and protocol issues in the federal offset and Output-Based Pricing System, as well as initiatives such as the Western Climate Initiative. Some participants advocated for no offsets at all, while others wondered whether certain desirable activities would happen without them (pointing to the need to prioritize regulations and conservation funding more generally to support desired activities).



Participants felt that Canada generally negotiated constructively on Article 6 of the Paris Agreement (the article that governs cooperative and market approaches for ITMOs). However, oil and gas companies and provinces such as Saskatchewan and Alberta have appeared keen to take advantage of Article 6 in a way that would detract from absolute reductions and economic diversification (Aronoff, 2018; Government of Saskatchewan, 2017). The need for **carbon budgets** was frequently raised, not only within sectors but also to establish a “maximum” for carbon markets both domestically and internationally. As one participant noted, “You can’t have a market without having a fixed amount of what you are actually trading.”

Box 2. Net-Zero Advisory Body’s initial observations on net-zero pathways

Canada’s Net-Zero Advisory Body was established in 2021 to provide independent evidence and advice to the federal government on how net-zero can be achieved. Their first publication was released in June 2021 and covered 10 principles.

First, the Net-Zero Advisory Body identified five foundational values:

1. Seize the upsides of net-zero: for example, health, social, and economic benefits
2. Put people first: leaving no one behind and prioritizing human rights
3. Motivate and empower Canadians: including to facilitate buy-in and behavioural change
4. Collaborate every step of the way: through multidisciplinary approaches
5. Recognize and respect regional differences and circumstances: such as economic reliance on fossil fuels.

Second, five design principles for net-zero pathways were stated:

1. Act early and urgently: rather than delaying climate action to later years
2. Be bold and proactive: including through substantial investments
3. Acknowledge there is more certainty than uncertainty: prioritizing available solutions
4. Don’t get caught in the “net:” with a focus on absolute emissions reductions
5. Beware of dead ends: including being prudent about ‘bridge’ strategies.

Many of these observations align with points raised by participants in CAN-Rac’s net-zero workshop series.

Source: Net-Zero Advisory Body, 2021



3.3 Decision Making for Pathway Choices and Priorities

The CICC (2021) report makes it clear that there will be a role for certain “wild card”² solutions the closer we get to 2050. By definition, it is not easy to identify appropriate “wild cards” due to their inherent uncertainty. However, there *are* certain “wild cards” that participants identified as undesirable, including nuclear, blue hydrogen, direct air capture, CCS, and carbon capture, utilization, and storage. Biofuels were only briefly discussed.³ Overall, participants cited the need to **challenge mainstream assumptions about the role of uncertain technologies in net-zero pathways**. They were skeptical of government providing lifelines and subsidies to incumbent sectors rather than investing in proven solutions such as renewable energy deployment and energy efficiency—a practice that could ultimately increase transition costs in the long run.

Developing robust social, economic, and environmental criteria could help governments make responsible decisions on pathway choices and priorities and choose those that result in the most benefits. Certain natural infrastructure can deliver emissions reductions alongside well-being, biodiversity, and adaptation co-benefits. For example, green roofs in cities such as Toronto can counter the urban heat island effect while providing savings by reducing flood damages (CICC & Smart Prosperity Institute, 2021a). A positive example of a more holistic approach to pathway development is the David Suzuki Foundation’s Clean Electricity Pathways project, which incorporates stakeholder engagement to support modelling to ensure that proposed solutions for the energy transition do not extend the damages of the existing energy system.

Two topics of particular importance in the Canadian context are nuclear and hydrogen energy. CICC (2021) characterizes nuclear as a “wild card solution.”⁴ Regarding small modular nuclear reactors, participants were opposed and had serious concerns about nuclear waste, ineffective use of public dollars, and delayed adoption of more economically feasible and environmentally friendly options. Despite the opposition to new nuclear development, there was an acknowledgement that existing nuclear assets may serve as a bridge while renewable energy capacity is increased in specific regions in Canada.

“The promise of negative emissions does not justify a wait-and-see approach. In fact, that waiting will only increase costs.”

Participants agreed that there is an important role for hydrogen in hard-to-decarbonize sectors. However, they expressed concern about the type of hydrogen being used or promoted in Canada since hydrogen fuel can be produced from fossil fuels (commonly known as “blue” and “grey”

² Wild card solutions are “solutions that may come to play a significant and important role on the path to net zero, but whose ultimate prospects remain uncertain” (CICC, 2021).

³ Participants generally disagreed with using bioenergy with CCS and biofuels for export, but the conversation did not fully address second-generation biofuels.

⁴ Large-scale nuclear is well understood but comes with significant barriers for adoption, including long timelines and a lack of public acceptance. Small modular nuclear reactors are still in very early stages with uncertain costs, and research shows that nuclear may detract from safer, more viable, and affordable solutions (Muellner et al., 2021).



hydrogen) and nuclear energy. Many participants felt that *only* green hydrogen (produced using renewable energy) should be used. They were also wary of hydrogen being used for specific sectors and end uses where other feasible options might be more readily available, cost-effective, and cleaner. Some participants articulated that there is likely a time-limited near-term role for blue hydrogen for specific end uses on the pathway to broader green hydrogen deployment. However, unlike other jurisdictions, such as Germany (Government of Germany, 2020), one participant noted that Canada “hasn’t done the work” to identify these appropriate uses, so a cautious and skeptical approach may be warranted.

For both nuclear and hydrogen, participants felt that more research was needed and, overall, civil society groups needed to be clear about these technologies’ limitations in their communications and advocacy.

Participants were also firmly against the expansion of liquefied natural gas (LNG) for various reasons, including its high pollution and environmental damage, effects on displacing renewables (Muttitt et al., 2021), and risks of stranded assets. That said, some felt that additional research (including on export markets) was needed to more effectively make the economic case of why LNG is a poor strategy in Canada.

3.4 Climate and Environmental Justice

“2050 is about a journey and our choices on that journey. It needs to put people first, including integrating people who have been economically excluded, and transitioning high-carbon workers.”

WORKSHOP PARTICIPANT

Participants brought forward ideas and observations about climate and environmental justice in all workshops. Central to this was a **just transition for workers and communities** in Canada and the need to expand regional and local conversations on climate justice. **Solidarity with the Global South** was a strong theme, including facilitating access to low-cost emissions reductions for Global South countries, ensuring Canada increases its international climate finance, and adherence to Common But Differentiated Responsibilities. **Intergenerational justice** also came up, particularly regarding the urgency of enacting deep reductions in the short term to avoid forcing hard or impossible decisions on future generations. As one participant noted, “We need a transformational pathway that allows future generations the most choice.”

Participants saw clear opportunities to rethink our social systems through the actions and pathways we choose to reach net-zero. These actions include **explicitly linking decarbonization to decolonization and Indigenous reconciliation**. Participants expressed that climate policy presents an opportunity to rethink land jurisdiction and nation-to-nation relationships and that



there is a critical need to uphold Indigenous rights in climate, nature, and energy policy (including through the full implementation of the United Nations Declaration on the Rights of Indigenous Peoples). Beyond developing new policies, old ones need to be revised or removed: one participant-cited example of colonial legislation is the Natural Resources Transfer Acts, which give power over natural resources to provincial governments.

Participants also broadly recognized the need to improve their own organizations' ways of working with diverse communities and organizations and ensure policy development processes are done in partnership with Indigenous rights-holders and in collaboration with affected groups.

“[We need] to frame conversations about energy transitions in moral and ethical terms.”

3.5 Incremental Change Versus Systems Change

There was strong agreement among participants that climate change cannot be looked at in a vacuum: **solutions should also address other social and environmental crises.**⁵ A net-zero transition presents an opportunity to rethink social, environmental, and economic systems. Participants expressed that to achieve the systems change desired, climate solutions must go beyond technology to include regulations, market creation and development, communications, finance, public awareness, and more. “Systems”-oriented approaches and other qualitative analyses (see e.g., Transition Accelerator & Smart Prosperity Institute, 2021) could help identify these solutions. Politically, participants want to **challenge the “polluter elite”** (including major polluting industries and extremely wealthy individuals) and entrenched industrial approaches.

Broadly, participants were interested in approaches such as “doughnut economics,”⁶ the “circular economy,” and alternative approaches to wealth and economics that foreground social and environmental concerns.⁷ They raised the option of **moving Canada’s fundamental economic structure away from extractivism toward new forms of economic activity and new definitions of wealth.** One participant noted the need to critically assess and challenge mainstream definitions of “growth” and “clean growth,” moving toward what Nuu-chah-nulth scholar and Indigenous economic development expert Eli Enns describes as “economies of abundance and generosity” (IISAAK OLAM Foundation, 2020).⁸ Indigenous-led conservation is an example of a more integrated approach.

⁵ For example, biodiversity; toxins; the collapse of healthy soils; the growth of extreme inequality, racism, and sexism; material and resource overconsumption, etc.

⁶ Doughnut economics, developed by Kate Raworth, focuses on economic perspectives that are grounded in both a social foundation and an ecological “ceiling” based on the concept of planetary boundaries (Doughnut Economics Action Lab, n.d.).

⁷ For example, ecological economist Peter Victor’s alternative perspectives of growth: <https://www.policynote.ca/rosenbluth-lecture-2021/>

⁸ Enns also states the need to “repatriate the true meaning of the word economy, which means ‘the wise and prudent management of the house’” (IISAAK OLAM Foundation, 2020).



Challenges around climate communication came up in every workshop, including a need to frame climate action in moral and ethical terms. Participants wish to “change hearts and minds” to create an inclusive story that brings the public to better value nature and biocentric values, shift and expand worldviews beyond traditional Western approaches, and increase understanding and enthusiasm about climate change action. They were keenly aware that “when we tell people we need to phase out their industry because of a threat that they don’t personally feel, we can’t push past it.” Participants admitted that they “can’t always lead with policy” and that **they must build constituencies and engage citizens** by working with artists, communications specialists, local communities, municipalities, regional networks, and more.

The following framing was proposed (and could be further built upon) as a series of questions that groups could use to develop their positions on whether proposed pathways to net-zero help or hinder systems change:

1. Is the solution being proposed primarily as a lifeline to the incumbent industry?
2. Is it aligned with planetary boundaries?
3. Is it normalizing values such as community, stronger relationships with each other and the natural world, and alternative wealth?
4. Is it improving quality of life and well-being?
5. Is it entrenching colonial systems, or is it furthering decolonization?

“What are we holding up? Bravery to choose a transformational path.”



4.0 Questions and Uncertainties

In this section, we examine some of the key questions raised in the workshops that likely require further workshopping or research and analysis. For some of the topics below, participating organizations feel differently about how to set policy asks and boundaries, as well as what stances are politically desirable or feasible.

Over what time frame should the phase-out of fossil fuels occur?

Participants agreed that the phase-out of fossil fuel production and consumption was desirable and that better signals are needed from government on production pathways (such as a phase-out date). It was noted in the discussion that Canada has already used its “fair share” of the carbon budget when historical emissions are taken into consideration. Participants agreed on the urgency of fossil fuel phase-out, but there were questions about the differential pace of action required across different sectors or regions in Canada. In particular, there were questions about implications for other sectors if Canadian governments do not adequately confront oil and gas sector emissions, including the need for production decline to align with Paris Agreement targets (Stockholm Environment Institute et al., 2021). Fully answering these questions requires assessing impacts to and dynamics in local and regional economies, as well as understanding the technical and social feasibility of how to effect transitions in particular sectors and regions. This is one reason why robust modelling pathways for a 1.5°C future are needed (for example, having CER publish a 1.5°C scenario), using assumptions that align with other principles outlined in this paper (e.g., caution regarding negative-emissions technologies).

Groups have advocated to the federal government for sectoral carbon budgets, a commitment to end the expansion of oil and gas, and improved just transition policy and social dialogue (CAN-Rac, 2021). In the discussion, they also expressed a need for green industrial policy to support economic planning and diversification. The recent report from the Civil Society Equity Coalition (2021) on an equitable global phase-out of fossil fuels could inform future discussions on time frames, which is timely because of the Liberals’ 2021 campaign promise to cap and decrease oil and gas emissions (Liberal Party of Canada, 2021).

What are the specific roles of blue hydrogen or existing nuclear as potential bridge fuels?

Participants discussed whether the Canadian climate movement should develop consensus positions on more controversial forms of energy, such as nuclear and blue hydrogen, but clarity was not fully achieved in the discussion. Some groups are already actively campaigning against blue hydrogen in Canada, as illustrated by a recent letter sent to the Minister of Natural Resources by 28 organizations (Environmental Defence, 2021). Other participants and presenters



expressed that there may be a time-limited role for blue hydrogen *on the path* to green hydrogen as the end goal (for example, to help develop green hydrogen markets).⁹

How should groups address sectors where certain emissions cannot be abated?

Groups were opposed to the use of offsets; carbon capture, utilization, and storage; and other CDR mechanisms without clear guidelines, and some were opposed to their use altogether. Climate Action Network International (2021), of which CAN-Rac is a regional node, has a position statement that outlines concerns about CCS and states that “CAN does not consider currently envisioned CCS applications as proven sustainable climate solutions” (p. 2). The organization does not recognize bioenergy with carbon capture and storage (BECCS) as a proven solution for large-scale mitigation or the potential for direct air capture with CCS to contribute to significant emissions reductions.

Many of the concerns listed in the Climate Action Network International position statement were also raised in the workshops, and participants opposed government subsidies and fiscal support for CCS and unproven technologies. Still, there was recognition among workshop participants that some “wild cards” will need to be carefully developed, and solutions are needed for so-called “hard-to-abate” sectors, particularly amid lobbying for CDR (including CCS) from incumbent industry. There is an opportunity to better communicate boundaries around both CCS and offsets, and increase awareness about the viability of proven solutions. Equally, there is an opportunity to be clear about *all* barriers to decarbonization for these sectors that must be addressed beyond just technology, including market, regulatory, and coordination (Löfgren & Rootzén, 2021).

What is the role of public money to help heavy industry decarbonize?

Generally, there was skepticism about governments spending large amounts of public dollars to assist the private sector in decarbonizing, particularly high-carbon sectors. Participants tended to oppose new fossil fuel subsidies, even those that are intended for emissions reductions, because of current trends of companies planning for increased fossil fuel production regardless (see research from Oil Change International and Environmental Defence [2021]). One area of general agreement for nuclear and blue hydrogen was the danger of public subsidies to these industries, as financial support risks creating market distortion, disadvantaging cleaner forms of energy.

Funding programs such as the CAD 8 billion Net-Zero Accelerator and CAD 1.5 billion Clean Fuels Fund appear to have the potential to achieve significant emissions reductions or even job creation. However, this type of funding may have significant pitfalls, including creating a precedent for ongoing subsidies, creating market distortions that favour “wild cards” over “safe bets,” and the fact that this funding on its own may be insufficient, as more and strategic

⁹ For example, see Clean Energy Canada. (2020). *A new hope*. <https://cleanenergycanada.org/report/a-new-hope/>



government intervention will be needed to lead the necessary industrial transformations. Many groups are supportive of attaching “green strings” (social, environmental, and financial conditions for government spending) (Corkal et al., 2020), but in practice, government has been slow to implement them. There may be a need to establish more robust criteria against which these types of spending programs, subsidies, and fiscal incentives for the private sector can be evaluated from a transitions perspective.

Regulation is key but often slow to be implemented. How can we navigate this dilemma?

Regulations were often cited as preferable to incentive programs or direct subsidies to incent private sector emissions reductions. For example, several participants expressed that many of the activities proposed as protocols under the federal offset system could be better met through regulatory approaches. At the same time, the slow pace at which key climate-related regulations are being rolled out poses a substantial barrier to early, deep emissions reductions (examples include the Clean Fuel Standard and net-zero building codes). The federal methane regulations for upstream oil and gas were only finalized in 2018, and certain provisions will not kick in until 2023 (Environment and Climate Change Canada, 2018). There is also a risk that industry could push for delays in regulations or adoption dates. Ultimately, balancing the “carrot” versus “stick” policy proposals will continue to be a challenge. As one participant noted, “It’s one thing to show [regulatory processes] in models, and another to get it done in practice ... How do we stop on hesitation and start on acceleration?”



5.0 Next Steps

By capturing these workshop discussions and outlining potentially shared principles and future actions, this report aims to help lay the groundwork for future net-zero conversations among CAN-Rac members and allies in Canada in the months and years ahead. Part of this process is identifying new shared principles that respond to rapidly evolving conversations on net-zero domestically and internationally.

Table 1 summarizes, at a high level, the main discussion topics and sub-topics that emerged across all workshops (columns 1 and 2). The third column identifies potential principles and policy asks. These are the potential “guardrails” for net-zero that could be adopted by CAN-Rac and its members and allies. We specify high, medium, and uncertain levels of consensus that appeared to emerge in the discussion regarding these potential principles. It should be noted that the policy asks in this list are *not* a comprehensive list and simply represent a distillation of what was raised during discussions.

The last column lists potential future activities and research that were raised in discussions, including technical quantitative research, qualitative analysis, communications, and improved engagement.

In the second workshop, one participant asked, “What system of values do we want to be upholding as we engage in these conversations and try to influence policy?” These workshops are only one part of a much longer conversation and process, but they have brought participants a little closer to identifying these shared values. And in the face of the climate crisis, the work is cut out for us. So onwards and upwards.



Table 1. Summary of workshop discussion topics, principles, and future actions

Sub-topics discussed	Related principles or policy asks (with an indication of high, medium, and uncertain levels of agreement among participants)*	Potential future research and activities
Theme 1: Energy transition, energy mix, and fossil fuel phase-out		
<ul style="list-style-type: none"> • Accelerating the pace of GHG reductions while anchoring targets in climate science • Differentiating emissions reductions versus a complete phase-out of fossil fuel production and consumption • Ending fossil fuel extraction (including LNG) 	<ul style="list-style-type: none"> • Establishing a phase-out date for fossil fuels (high) • Stopping approval of proposed fossil fuel projects (high) • Increasing ambition of short- and long-term emissions reduction targets (high) • Ending subsidies and public finance for fossil fuels (high) • Revising the Output-Based Pricing System to better price industrial emissions (high) 	<ul style="list-style-type: none"> • Modelling pathways for a 1.5°C future • Energy demand–supply scenario development • Framing conversations and policy discussions about energy in moral and ethical terms
Theme 2: Establishing boundaries for the “net” in “net-zero”		
<ul style="list-style-type: none"> • Prioritizing absolute emissions reductions • Ensuring proper carbon accounting • Factoring in Scope 3 emissions • Avoiding “nature for fossil fuels” tradeoffs 	<ul style="list-style-type: none"> • Clearer definition of net-zero (inclusion of all GHGs, a cap for the role of carbon removals in net-zero pledges, etc.) (high) • Stringent rules for counting offsets or NbS as emissions reductions (high) • Ban on use of offsets (uncertain) • Robust offset regulations that do not include “avoided emissions” projects (medium) • Favour regulatory approaches over offset systems (high) • Distinguish nature conservation efforts from offsets or removals for industry or climate targets (high) 	<ul style="list-style-type: none"> • Understanding and communicating the true potential of carbon removals • Cost–benefit analysis and qualitative analyses for NbS • Identifying a carbon budget “cap” for offsets and emissions trading



Sub-topics discussed	Related principles or policy asks (with an indication of high, medium, and uncertain levels of agreement among participants)*	Potential future research and activities
Theme 3: Decision making for pathway choices and priorities		
<ul style="list-style-type: none"> • Defining roles and limits for carbon removal, CCS, hydrogen, and nuclear • Avoiding dead-end pathways (unfeasible “wild card” solutions) • Avoiding over-reliance on technology • Focusing on “safe bet” solutions 	<ul style="list-style-type: none"> • Funding and policy support for “safe bets” to achieve early, deep, and sustained reductions (high) • Establishing carbon budgets (including sectoral budgets and to guide carbon markets) (high) • Hard limits in the use of CCS, fossil-based hydrogen, and nuclear to achieve climate targets (high) • Stopping CCS, fossil-based hydrogen, and nuclear (uncertain) • Prioritizing clean electricity (high) • No subsidies for CCS or nuclear (high) • No “lifelines” (e.g., bailouts) to incumbent industries (medium) • Green industrial policy planning to support new economic activities and assist affected regions to diversify (high) 	<ul style="list-style-type: none"> • Qualitative analysis to determine appropriate pathways (e.g., stakeholder engagement) • Research to demonstrate the case against CCS, hydrogen, LNG, and nuclear based on robust social, economic, and environmental criteria • Establishing robust criteria against which to measure subsidies intended to incent transition • Being explicit about the role of “bridge fuels” in communications



Sub-topics discussed	Related principles or policy asks (with an indication of high, medium, and uncertain levels of agreement among participants)*	Potential future research and activities
Theme 4: Climate and environmental justice		
<ul style="list-style-type: none"> • Equitably curbing fossil fuel extraction in line with Canada’s (expired) carbon budget • Adhering to principles of social justice, equity, and inclusion • Linking decarbonization to decolonization and Indigenous reconciliation • Putting people first • Ensuring a just transition for workers and communities • Ensuring solidarity with the Global South 	<ul style="list-style-type: none"> • Adhering to Common But Differentiated Responsibilities and Canada’s “fair share” (high) • Ensuring Global South countries can access low-cost emissions reductions (including through ITMOs) (high) • Revising or eliminating colonial policies and practices (e.g., National Resources Transfer Acts) (high) • Increased international climate finance (with associated emissions reductions not counted toward Canada’s domestic target) (high) • Just transition implementation (high) 	<ul style="list-style-type: none"> • Regional and local conversations to develop shared values around climate justice • Building constituencies through public engagement (e.g., with artists) • Building public awareness about the urgency of climate action through effective communication • Engaging with and elevating the voices and policy asks of diverse communities and organizations (BIPOC, 2SLGBTQIA+, people with disabilities, etc.)
Theme 5: Incremental change versus systems change		
<ul style="list-style-type: none"> • Assessing our relationship with the natural world • Challenging the polluter elite • Challenging entrenched industrial and economic approaches • Reducing energy/resource consumption • Integrating climate solutions with other crises (biodiversity, racism, social justice, etc.) • Respecting planetary boundaries 	<ul style="list-style-type: none"> • Meaningful consultations and policy development processes (high) • Reducing overall energy use by prioritizing energy efficiency (high) • Adopting well-being indicators and alternative approaches to growth (high) • Shifting away from extractive or natural resource-based economic activities (high) 	<ul style="list-style-type: none"> • Identifying a system of values for influencing climate policies • Continuing to make the case for well-being and alternative economic approaches • Tackling the communications challenge around terms like “degrowth”

*Level of consensus was determined based on feedback provided during the online workshop. As such, it is a qualitative assessment, given that not all CAN-Rac members were present at each workshop and that feedback was not collected in a quantitative form for this report (e.g., by survey).



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Appendix A. List of Presenters and Respondents

Workshop 1 (April 15, 2021): Scenarios & Pathways

PRESENTERS & TOPICS

- Christian Holz (Climate Equity Reference Project) – *IPCC’s Special Report on Global Warming of 1.5 °C*
- Normand Mousseau (Trottier Energy Institute) – *Canadian Energy Outlook Horizon 2050*
- Jason Dion (Canadian Institute for Climate Choices [CICC]) – *Canada’s Net Zero Future*
- James Meadowcroft (Transition Accelerator) – *Pathways to Net Zero: A Decision Support Tool*

RESPONDENTS

- Tom Green (David Suzuki Foundation)
- Isabelle Turcotte (Pembina Institute)
- Marc Lee (Canadian Centre for Policy Alternatives)

Workshop 2 (May 13, 2021): Removals

PRESENTERS & TOPICS

- Jason Dion (CICC) – *The Role of Carbon Removals in Net-Zero in Canada*
- Silvie Harder (West Coast Environmental Law) – *Carbon Dioxide Removal Technologies*
- Ronnie Drever (Nature United) – *Natural Climate Solutions for Canada*
- Graham Saul (Nature Canada) – *Benefits of Nature-Based Solutions*
- Rachel Samson (CICC) – *Natural Infrastructure Case Studies in Canada*

RESPONDENTS

- Jennifer Skene (Natural Resources Defence Council)
- Darrin Qualman (National Farmers Union)
- Graeme Reed (Assembly of First Nations)



Workshop 3 (June 10, 2021): Energy Transition

PRESENTERS & TOPICS

- Manfred Fishedick (Wuppertal Institute) – *Hydrogen in the EU and Germany*
- Marc Lee (Canadian Centre for Policy Alternatives) – *LNG in British Columbia*
- Kelly Trout (Oil Change International) – *Fossil Fuel Production Pathways*
- Tom Green and Stephen Thomas (David Suzuki Foundation) – *100% Renewable Energy Pathways*
- Angela Bischoff (Ontario Clean Air Alliance) – *Nuclear Production and SMRs*

RESPONDENTS

- Sarah Petrean (Clean Energy Canada)
- Tracey Saxby (My Sea to Sky)
- Louise Comeau (Conservation Council of New Brunswick)
- Dale Marshall (Environmental Defence)
- Ugo Lapointe (MiningWatch Canada)

Workshop 4 (July 19, 2021): ITMOs and Offsets

PRESENTERS & TOPICS

- Eddy Pérez (CAN-Rac) – *ITMOs and Article 6 of the Paris Agreement*
- Dale Marshall (Environmental Defence) – *Carbon Offsets*



Appendix B. Select Information Presented at Workshops

The following table is not intended to be comprehensive but rather to provide a high-level overview of the topics and information presented at each workshop.

Workshop Topic	Key learnings
Scenarios & Pathways	<ul style="list-style-type: none"> • Net-zero carbon dioxide can help to stop further warming, but net-zero for all greenhouse gases (GHGs) is needed for temperature decline (Rogelj et al., 2021). • Many pathways for net-zero by 2050 (e.g., those in Intergovernmental Panel on Climate Change [IPCC], 2018) do not take equity (including intergenerational equity) or tipping points into consideration for appropriate pathways. • Transition is occurring in multiple systems, sectors, and regions. Beyond climate, certain economic sectors (e.g., oil and gas) are facing other disruptions and dynamics, and policies need to take these into consideration (Transition Accelerator & Smart Prosperity Institute, 2021). • Safe bet solutions drive at least two thirds of Canada's emission reductions to 2030 (CICC, 2021). • Wild card solutions are high risk, uncertain, and may not always be able to compete with alternatives (Canadian Institute for Climate Choices [CICC], 2021). • Many pathways to 2030 objectives are “dead-end” pathways when we consider where we need to be by 2050 (e.g., natural gas).



Workshop Topic	Key learnings
Removals	<ul style="list-style-type: none"> • Direct air capture, engineered carbon removal solutions, and natural climate solutions are considered “wild cards” due to cost variability, public opposition, concerns regarding permanence and additionality, and social factors (CICC, 2021). • The IPCC (2018) was explicit about the risks of carbon dioxide removal (CDR) (including bioenergy with carbon capture and storage [CCS]; carbon capture, utilization, and storage; and direct air capture), shifting attention and effort away from necessary short-term emissions reductions. CDR was only included in models in the IPCC’s <i>Special Report on Global Warming of 1.5°C</i> (2018) when limiting warming to 1.5°C could not be achieved by incremental emissions reductions alone. • Natural climate solutions in Canada can deliver reductions of 78 MtCO₂e annually by 2030 (Nature United, 2021). Principles that Nature United has put forward for natural climate solutions include additionality; ability to quantify in the near term; inclusion of safeguards; cost effectiveness; permanence; social and biodiversity impacts; and ability to provide co-benefits. • 79% of Canadians support conserving forest and land as a climate solution (Flynn et al., 2021). • Natural infrastructure provides an opportunity to achieve multiple co-benefits, including for social equity, health, and adaptation, as illustrated by case studies from CICC and Smart Prosperity Institute (2021a, b, c).



Workshop Topic	Key learnings
Energy Transition	<ul style="list-style-type: none"> • Globally, existing developed fossil fuel reserves will have doubled the amount of emissions compared to what is needed to limit global warming to 1.5°C (Trout, 2021). • The recent International Energy Agency net-zero report confirms that under a 1.5°C pathway, no new oil and gas fields should be developed and that many of the already-planned LNG projects worldwide will likely become stranded assets (International Energy Agency, 2021b). • Both the European Union Hydrogen Strategy and the German National Hydrogen Strategy encourage the use of blue hydrogen solely as a bridging strategy to green hydrogen (European Commission, 2020; Government of Germany, 2020). • Small modular nuclear reactors are of considerable interest to Canadian governments, yet in the European Union, the Transition Fund specifies that funding cannot be spent on nuclear power (Reuters, 2020). • Attention given to small modular nuclear reactors detracts from more viable, affordable, and safer renewable energy solutions (Muellner et al., 2021). • The Clean Power Pathways project focuses on scenarios for 100% clean electricity by 2035 that integrate social considerations such as Indigenous rights and just transition principles (David Suzuki Foundation, 2021).
Internationally traded mitigation outcomes (ITMOs) and Offsets	<ul style="list-style-type: none"> • ITMO governance is a key challenge: Article 6 of the Paris Agreement could be centralized or decentralized in a way that allows countries to come up with their own systems (Gao et al., 2019). The latter carries significant risks. • The International Emissions Trading Association (2019) modelled carbon credits under Article 6.4 of the Paris Agreement and found potential for additional GHG reductions of up to 15%, assuming robust adoption of broader climate change policies. • Typically, carbon markets allow wealthier nations to meet climate targets at lower costs by purchasing reductions outside their territory, but Global South countries now need these low-cost reductions to meet their own targets. • Under the current Output-Based Pricing System in Canada, the majority of heavy industries covered by the system are not paying for their emissions (Environmental Defence & Conservation Council of New Brunswick, 2021). • The proposed federal offset regulations acknowledge the potential for delays in technological developments as companies could opt to pay for offsets instead of investing in low-emissions technology (Government of Canada, 2021).

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