



May 8, 2022

Standing Committee on Environment and Sustainable Development  
House of Commons Canada  
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Ottawa, ON K1A 0A6  
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**Re: Study of the government’s commitments to accelerate Canada’s G20 commitment to eliminate fossil fuel subsidies from 2025 to 2023 and to develop a plan to phase out public financing of the fossil fuel sector**

The Center for International Environmental Law (CIEL) respectfully submits this brief regarding the Standing Committee’s study of Canada’s commitment to develop a plan to phase out public financing of the fossil fuel sector, and how Canada can ensure its commitments meet its obligations under the Paris Agreement. Since 1989, CIEL, a nonprofit non-governmental organization, has used the power of law to protect the environment, promote human rights, and ensure a just and sustainable society. As part of that mission, CIEL has undertaken legal and policy research on the causes, consequences, and responses to the climate crisis for more than three decades. This work includes active and ongoing research into the role of fossil fuels in driving the climate crisis, the history of carbon capture technologies, the potential role of such technologies in addressing the drivers of the climate crisis, and the corresponding risks to communities and the environment.

The Standing Committee’s study comes at a critical time. For years, the scientific community has documented the accelerating climate emergency. The most recent reports from the Intergovernmental Panel on Climate Change (IPCC), the world’s preeminent body on climate science, confirm that: climate change is already causing severe and permanent loss and damage to human and natural systems; the scale and severity of those impacts increase with each increment of warming; exceeding 1.5°C warming—even temporarily—would result in further irreversible harm; and quickly ending reliance on the fossil fuels that are the primary driver of the climate crisis is necessary to avert climate catastrophe. The time to act is now.

The Canadian government has committed to “taking bold climate action,”<sup>1</sup> and “supporting a just transition.”<sup>2</sup> Among G20 countries, Canada provides one of the highest amounts of public

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<sup>1</sup> Press Release, Prime Minister of Canada, Justin Trudeau, [Prime Minister Trudeau announces increased climate ambition](#) (April, 22, 2021).

<sup>2</sup> Press Release, Environment and Climate Change Canada, [Canada’s Enhanced Nationally Determined Contribution](#) (Apr. 23, 2021).

financing for fossil fuels on a per-capita basis.<sup>3</sup> Phasing out public financing of the fossil fuel sector is thus a necessary part of the bold climate action that Canada must take. Yet, Canada’s support for carbon capture and storage (CCS) or carbon capture, utilization and storage (CCUS) (herein collectively referred to as “CCUS”), jeopardizes its ability to take bold climate action.

No amount of investment in CCUS can accelerate the needed transition to a fossil-free future. Instead, CCUS prolongs reliance on fossil fuels, perpetuating business-as-usual extraction and pollution. The quickest, most effective way to ensure warming does not exceed 1.5°C is through proven, reliable, and available solutions including immediately phasing out the production and use of all fossil fuels, scaling up renewable energy, and decreasing energy demand. CCUS is not a climate solution. It has not been proven at scale, has repeatedly overpromised and underdelivered on emissions reduction targets, and introduces new environmental, health, and safety risks associated with the capture, transport, use, and storage of carbon dioxide. Building a climate plan reliant on a speculative technology like CCUS goes against the science and is contrary to Canada’s commitments under the United Nations Framework Convention on Climate Change (“UNFCCC”) and Paris Agreement.

The UNFCCC and the Paris Agreement obligate Canada to take ambitious action—in line with the best available science and Canada’s human rights obligations—to keep warming below 1.5°C.<sup>4</sup> As part of that duty, the Paris Agreement directs Parties to “mak[e] finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.”<sup>5</sup> and acknowledges that “when taking actions to address climate change,” States should “respect, promote and consider their respective obligations on human rights.”<sup>6</sup> Canada’s human rights obligations—as signatory to seven core international human rights treaties<sup>7</sup> —require it to refrain from conduct that foreseeably causes or contributes to harm to human rights and take all appropriate measures to address and prevent reasonably foreseeable

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<sup>3</sup> [Crown Corporation EDC is Undermining Canada’s Climate commitments. Will Ottawa step in and take action?](#) Above Ground (Jan. 13, 2021); [Letter](#) from Above Ground *et al.*, to Honourable Mary Ng, MP, Minister of Small Business, Export Promotion and International Trade *et al.*, (Dec. 21, 2020); Friends of the Earth United States & Oil Change International, [Past Last Call: G20 Public Institutions are Still Bankrolling Fossil Fuels](#), (Oct. 2021).

<sup>4</sup> *Paris Agreement to the United Nations Framework Convention on Climate Change*, pmbi., arts. 2(1)(a), 3, 4, Dec. 12, 2015, T.I.A.S. No. 16-1104 [Paris Agreement]; United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107, art. 2 [UNFCCC].

<sup>5</sup> Paris Agreement, at art. 2(c).

<sup>6</sup> Paris Agreement, at preamble.

<sup>7</sup> U.N. Office of the High Commissioner for Human Rights, [Ratification Status for Canada](#) (last visited May 6, 2022). The seven treaties are: International Covenant of Civil and Political Rights, International Covenant on Economic, Social and Cultural Rights, Convention against Torture and Other Cruel Inhuman or Degrading Treatment or Punishment, Convention on the Elimination of All Forms of Discrimination against Women, International Convention on All Forms of Racial Discrimination, the Convention on the Rights of the Child, and the Convention on the Rights of Persons with Disabilities.

threats to human rights.<sup>8</sup> Climate change, which adversely impacts the full range of human rights,<sup>9</sup> is such a foreseeable threat. Canada must ensure its conduct does not cause or contribute to further climate change and must take all appropriate measures within its power and control to mitigate the effects of climate change on human rights. As elaborated further below, these commitments and obligations require Canada to take urgent and near-term action to phase out its public financing of fossil fuels, without an exception for CCUS, and instead support investments in proven, real climate solutions.

#### **A. Meeting Canada’s Commitments under the Paris Agreements Requires an Urgent Phaseout of Fossil Fuels**

**The science leaves no doubt that climate change is accelerating, fossil fuels are the overwhelming cause, and avoiding an overshoot of 1.5°C warming is imperative to prevent further irreversible harm.**<sup>10</sup> The IPCC’s latest reports, part of the Sixth Assessment Report (AR6), affirm that climate change is an urgent and dangerous reality. Current levels of warming are already causing permanent loss and damage to human and natural systems, and every additional fraction of a degree increases risks and erodes resilience.<sup>11</sup> At present rates of emissions, warming is likely to surpass 1.5°C around 2035.<sup>12</sup> “The IPCC warns that exceeding

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<sup>8</sup> See Human Rights Comm. [HRC], General Comment No. 31, UN Doc. CCPR/C/21/Rev.1/Add/13, paras. 6, 8 (May 26, 2004) [HRC, General Comment No. 31]; HRC, General Comment No. 36, paras. 3, 6, 7, 18, 21-22, 26, 62-63, U.N. Doc. CCPR/C/GC/36 (Sept. 3, 2019) [HRC, General Comment No. 36]; Comm. Rights of the Child [CRC], General Comment No. 16, UN Doc. CRC/C/GC/16, paras. 26-28 (Apr. 17, 2013); Comm. on Econ., Soc. & Cultural Rights (CESCR), Climate Change and the International Covenant on Economic, Social and Cultural Rights, U.N. Doc. E/C.12/2018/1 para. 6 (Oct. 8, 2018); Joint Statement by the Committee on the Elimination of Discrimination Against Women, the CESCR, the Committee on the Protection of the Rights of All Migrant Workers and Members of Their Families, the CRC and the Committee on the Rights of Persons with Disabilities, Statement on Human Rights and Climate Change, U.N. Doc. HRI/2019/1, paras. 10-12 (May 14, 2020) [hereinafter, Joint Statement on Human Rights and Climate Change].

<sup>9</sup> HRC, General Comment No. 36, para. 62; Joint Statement on Human Rights and Climate Change, para. 3.

<sup>10</sup> See generally IPCC, [Working Group I Contribution to the IPCC’s Sixth Assessment Report on The Physical Science Basis, Summary for Policymakers \[SPM\]](#) (2021)[hereinafter, IPCC, WGI AR6 SPM]; IPCC, [Working Group II Contribution to the IPCC Sixth Assessment Report on Climate Change Impacts, Adaptation and Vulnerability](#) (2022) (all chapters aside from the Summary for Policymakers are final draft versions) [hereinafter, IPCC, WGII AR6]; IPCC, [Global Warming of 1.5°C: An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty](#) (2018) [IPCC, SR 1.5].

<sup>11</sup> See IPCC, WGI AR6 SPM, A.3 at p.8.

<sup>12</sup> IPCC, WGII AR6, TS Box TS.2 at TS-8.

1.5°C in warming will result in severe and irreversible adverse impacts, limiting the capacity for adaptation and severely threatening human rights.<sup>13</sup> Even if temperatures could be returned to below 1.5°C after overshoot, *and there is no certainty that they can*, some impacts and losses will be permanent.<sup>14</sup>

**Avoiding irreversible impacts associated with overshoot thus requires urgent and substantial emissions cuts.** “Deep cuts in emissions will be necessary to minimise irreversible loss and damage (high confidence).”<sup>15</sup> The modeled pathways that provide the greatest chance of staying below 1.5°C without overshoot require that global GHG emissions peak by no later than 2025 and decline by a median of 43% from 2019 levels by 2030; 69% by 2040; and 84% by 2050, reaching net zero emissions by 2050-2055.<sup>16</sup> These steep reductions cannot be achieved without rapidly phasing out fossil fuels — the greatest source of emissions — through mitigation approaches that are proven, available, and deployable now.

**Investments in fossil fuels must be halted to avoid climate catastrophe. Staying below 1.5°C requires an urgent, near-term phaseout of fossil fuels.** The scientific community has concluded for decades that fossil fuels are the main driver of anthropogenic climate change.<sup>17</sup> The IPCC has consistently found that keeping global warming below dangerous levels, consistent with the ultimate objective of the UNFCCC,<sup>18</sup> requires an urgent and rapid shift away from fossil fuels.<sup>19</sup> The IPCC’s recent Working Group III report explicitly acknowledges: “Meeting the ambitions of the Paris Agreement will require phasing out fossil fuels from energy systems.”<sup>20</sup> The IPCC notes that ambitious pathways limiting temperature rise to 1.5°C could require a 100% decline in the use of coal, and 90% declines in the use of oil and gas, by 2050.<sup>21</sup> To meet its obligation to take

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<sup>13</sup> IPCC, WGII AR6, SPM.B.6, B.6.1 at SPM-20; *see also* IPCC, WGII AR6, Technical Summary [TS] C.13.2 at TS-43; IPCC, WGI AR6 SPM, C.3.2 at SPM-27.

<sup>14</sup> IPCC, WGII AR6, SPM B.6, B.6.1 at SPM-20, TS.C.2.5 at TS-26, TS.C.12.1 at TS-42, TS C.13 & C.13.1 at TS-42.

<sup>15</sup> IPCC, WGII AR6, TS.E.4.5 at TS-85; *see also* TS.C.1 at TS-23.

<sup>16</sup> IPCC, WGIII AR 6, Table SPM.1 at SPM-24.

<sup>17</sup> IPCC, [Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policy Makers](#), 5 (2014) [IPCC AR5] (stating “Emissions of CO<sub>2</sub> from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010 (high confidence)”); Heede, R., *Tracing Anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers*, 122 *Climatic Change* 229 (2014).

<sup>18</sup> *United Nations Framework Convention on Climate Change*, art. 2, May 9, 1992, 1771 U.N.T.S. 107 [UNFCCC].

<sup>19</sup> *See* IPCC, SR 1.5, fig. SPM.3b at SPM-14, C.2 at SPM-15; IPCC, WGIII AR6, SPM-36, TS-47, TS-53, TS-54; Ch. 6. at 6-117, 6-126.

<sup>20</sup> IPCC, WGIII AR 6, Ch. 17, at 17-64.

<sup>21</sup> IPCC, WGIII AR 6, SPM C.3.2 at SPM-32.

ambitious action to keep warming below 1.5°C, Canada must implement near-term emissions cuts, which necessitate a rapid phaseout of fossil fuels.

**Fossil fuel phaseout requires both halting new fossil fuel investment *and* retiring existing fossil fuel infrastructure.** The IPCC warns that “[c]ommitted’ emissions from the existing fossil fuel-based infrastructure may consume all the remaining carbon budget in the 1.5°C scenario.”<sup>22</sup> As the IPCC makes clear, “Without early retirements, or reductions in utilization, the current fossil infrastructure will emit more GHGs than is compatible with limiting warming to 1.5°C.”<sup>23</sup> Further investment in fossil fuels and associated infrastructure ensures higher levels of warming and irreversible impacts from overshoot: “If investments in coal and other fossil infrastructure continue, energy systems will be locked-in to higher emissions, making it harder to limit warming to 2°C or 1.5°C (high confidence).”<sup>24</sup> Accordingly, the IPCC notes, “[l]imiting warming requires shifting energy investments away from fossil-fuels and towards low carbon technologies (high confidence).”<sup>25</sup>

**Phase out should be done through mitigation approaches that are proven, available, and deployable now.** The IPCC notes, “the achievement of long-term temperature goals in line with the Paris Agreement requires the rapid penetration of renewable energy and a timely phasing out of fossil fuels.”<sup>26</sup> Going all-in on renewable energy is both desirable and feasible. Emissions reduction pathways exist for getting to 100% renewable energy globally. “Scenarios have been published with 100% renewable energy systems even at a global scale, partly reflecting the rapid progress made for these technologies in the last decade (Breyer and Jefferson 2020; Creutzig et al. 2017; Jacobson et al. 2018).”<sup>27</sup> As set out further below, if irreversible losses are to be avoided, relying on the future deployment of unproven and potentially dangerous approaches like CCUS is not an option. Instead of propping up the fossil fuel sector, public financing like Export Development Canada (EDC) should scale up support for renewables.

## **B. Financing CCUS is incompatible with phasing out fossil fuels**

**A phase out of public financing for the fossil fuel sector requires exactly that—eliminating public funding for oil, gas, and coal—without exception for CCUS.**<sup>28</sup> An exception for fossil fuel

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<sup>22</sup> IPCC, WGIII AR 6, Ch. 17, at 17-65.

<sup>23</sup> IPCC, WGIII AR6, Box TS.8, at TS-54; see also *id.* SPM B.7.1, SPM-1.

<sup>24</sup> IPCC, WGIII AR 6, TS-53.

<sup>25</sup> IPCC, WGIII AR6, Ch. 3, 3-7.

<sup>26</sup> IPCC, WGIII AR 6, Ch. 17, 17-23.

<sup>27</sup> IPCC, WGIII AR 6, Ch. 3, 3.3.2.4, at 3-46.

<sup>28</sup> EDC’s Thermal Coal Position includes exceptions for CCUS. The position prohibits funding for new coal-fired plants unless “equipped with carbon capture and storage or equivalent emissions reduction technology satisfactory to EDC.” It also prohibits funding for existing coal-fired plants “unless the financing will be used to equip that facility with carbon capture and storage or equivalent emissions reduction technology satisfactory to EDC.” EDC, [Climate Change Policy V2.2](#), at Appendix A (Effective date Jan. 30, 2022).

projects with CCUS is not consistent with Canada’s commitment under the Paris Agreement to do its fair share to limit global warming to 1.5 degrees Celsius, in accordance with best available science and in line with its human rights obligations.<sup>29</sup> CCUS is not a climate solution: The recent IPCC reports show that the quickest, most effective and cheapest pathways to reducing greenhouse gas emissions and limiting warming to 1.5 degrees rely on rapidly phasing out fossil fuels, scaling up renewables, and pursuing energy efficiency and energy demand reduction – not on CCUS and large-scale carbon dioxide removal, which are costly, unproven at scale, unavailable in the near term, of uncertain benefit for the climate, and risky to humans and nature. Because CCUS prolongs the use of fossil fuels, it delays the needed energy transition and threatens to exacerbate the climate crisis, rather than ameliorate it. CCUS also presents new and unique risks to communities and the environment.

**CCUS does not accelerate the needed transition away from fossil fuels, it delays it.** By design, carbon capture technologies extend the fossil fuel era, prolonging the life of fossil fuel-burning facilities to which they are applied and entrenching reliance on oil, gas, and coal. The IPCC Working Group III explicitly states that “CCS can allow fossil fuels to be used longer”<sup>30</sup> and that “CCS deployment will increase the shares of fossil fuels” in policy scenarios<sup>31</sup>— outcomes fundamentally at odds with the objective of eliminating the primary driver of global warming.<sup>32</sup> Mitigation pathways that emphasize renewable energy deployment and energy demand reduction *without* reliance on CCS and carbon dioxide removal (CDR) show the use of fossil fuels declining much more quickly.<sup>33</sup> Given incontrovertible evidence that fossil fuels are the primary source of GHG emissions, a technology that prolongs or increases their use cannot be considered a mitigation measure. And mitigation measures that rely on future deployment of speculative technologies like CCUS, rather than maximizing available near-term reductions from proven technologies like renewables, risk pushing the world past 1.5°C and unleashing further irreversible harm.

**CCUS is costly and unproven at scale.** The latest report from the IPCC ranks carbon capture as one of the highest cost, lowest mitigation potential options for reducing greenhouse gas

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<sup>29</sup> Paris Agreement, art. 2.1(a).

<sup>30</sup> IPCC, WGIII AR6, TS 5.1, at TS-53; SPM C.4.4, at SPM-36.

<sup>31</sup> IPCC, WGIII AR6, Ch. 6, 6.7.4, at 6-118.

<sup>32</sup> See also Dana Drugmand & Carroll Muffett, [Confronting the myth of carbon-free fossil fuels: Why carbon capture is not a climate solution](#), Environmental Working Group, Apr. 22, 2021; Carroll Muffett & Steven Feit, [Fuel to the Fire: How Geoengineering Threatens to Entrench Fossil Fuels and Accelerate the Climate Crisis](#), Center for International Environmental Law (2019).

<sup>33</sup> IPCC, WGIII AR6, Ch. 3 Figures 3.7 and 3.8, at 3-23 (depicting the rapid decline in residual fossil fuel emissions under the IMP-Ren and IMP-LD pathways, with no reliance on Fossil CCS or Direct Air Capture (DAC) and minimal or no reliance on BECCS, and the steep decline in fossil energy systems); SPM C.3.2 at SPM-32 (noting that in some of the modeled pathways that limit warming to 1.5°C with no or limited overshoot, the use of coal, oil, and gas is reduced by as much as 100%, 90%, and 90%, respectively, in 2050).

emissions this decade.<sup>34</sup> Noting that carbon capture “always adds cost,”<sup>35</sup> the IPCC acknowledges that “the economic feasibility of [CCUS] deployment is not yet clear.”<sup>36</sup> The IPCC found that “CO2 capture costs present a key challenge. ... The capital cost of a coal or gas electricity generation facility with CCUS is almost double one without CCUS. Additionally, the energy penalty increases the fuel requirement for electricity generation by 13–44%, leading to further cost increases.”<sup>37</sup> Moreover, a study by the U.S. Government Accountability Office of nine CCUS projects funded by the U.S. Department of Energy since 2009 (of which only three ever became operational) identified significant cost overruns and poor economic prospects as key obstacles to CCUS deployment.<sup>38</sup>

**CCUS diverts resources from renewable energy, which is more affordable, available, and effective.** According to the IPCC, wind and solar not only have the capacity to deliver far greater emissions reductions by 2030 than carbon capture, those reductions may be as much as \$50-\$200 cheaper per ton of CO2 equivalent than the cost of emissions reductions through CCUS,<sup>39</sup> making scaling up of wind and solar energy the quickest, most effective, and cheapest route to reducing greenhouse emissions in the near-term.<sup>40</sup> Research has shown that the cost reductions seen in recent years for clean renewable energy will further erode the value of CCUS in decarbonization efforts.<sup>41</sup> The necessity of CCUS is even more suspect because investment in carbon capture directly competes with renewable energy generation, diverting financial resources away from proven, available, fossil-free solutions to technology that has consistently demonstrated itself to be infeasible from both an economic<sup>42</sup> and technical standpoint.<sup>43</sup>

**CCUS has consistently failed to achieve promised emissions reductions.** Carbon capture has a dismal track record. CCUS projects to date have repeatedly failed to deliver on promised rates

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<sup>34</sup> IPCC, WGIII AR6, Figure SPM.7, SPM-50. See also Table 3.4, FN.4 at 3-53; Table SPM.1 at SPM-22-24 (C1a and C1b pathways).

<sup>35</sup> IPCC, WGIII AR6, Ch. 6, at 6-39.

<sup>36</sup> IPCC, WGIII AR6, Ch. 4, at 4-44.

<sup>37</sup> IPCC, WGIII AR6, Ch. 6, at 6-38.

<sup>38</sup> See U.S. Government Accountability Office, [Carbon Capture and Storage: Actions Needed to Improve DOE Management of Demonstration Projects](#) (2021).

<sup>39</sup> IPCC, WGIII AR6, Figure SPM.7, at SPM-50.

<sup>40</sup> IPCC, WGIII AR6, Figure SPM.7, SPM-50; CIEL & Heinrich Boll Stiftung, [IPCC Unsummarized: Unmasking Clear Warnings on Overshoot, Techno-Fixes, and the Urgency of Climate Justice](#), pp. 9-11 (Apr. 21, 2022).

<sup>41</sup> Neil Grant et al., [Cost reductions in renewable can substantially erode the value of carbon capture and storage in mitigation pathways](#), 4 One Earth 1588 (2021).

<sup>42</sup> Clark Butler, IEEFA, [Carbon Capture and Storage Is About Reputation, Not Economics](#) 4 (2020); Mai Bui et al., [Carbon capture and storage \(CCUS\): The way forward](#), 11 Energy & Env'tl Science 1062 at 1062, 1132, 1138, 1193 (2018).

<sup>43</sup> Food & Water Watch, [The Case Against Carbon Capture: False Claims and New Pollution](#) (2020); Global Witness, [Hydrogen's Hidden Emissions](#) (Jan. 20, 2022).

of carbon dioxide capture,<sup>44</sup> and the technology has not scaled or achieved cost reductions despite existing for decades. High-profile projects such as Petra Nova,<sup>45</sup> Boundary Dam,<sup>46</sup> and Archer Daniels Midland's Illinois Industrial Carbon Capture and Storage Project<sup>47</sup> have all failed to meet capture or performance targets. These failures apply to pre-combustion capture as well. The Gorgon gas separation plant in Australia is the country's only commercial-scale CCUS project and one of the largest in the world. In July 2021, Chevron, operator of the project, admitted that the project failed to meet its five-year capture target of 80% CO<sub>2</sub>, and is now seeking a deal with regulators on how to make up for millions of tons of CO<sub>2</sub> emitted.<sup>48</sup> Scientific models depicting CCUS assume a 90-95% capture rate,<sup>49</sup> but proponents of CCUS have all but admitted that projects cannot achieve a 75% minimum capture rate. Last year, proponents of CCUS in the United States opposed a legislative proposal that would have required electricity-generating facilities to capture 75% of their carbon emissions to qualify for CCUS-related tax credits, arguing that it would be difficult to guarantee that level of capture.<sup>50</sup>

**CCUS is not carbon negative, or even carbon neutral.** Even if CCUS functioned in practice as it does in theory, it could only *prevent some* emissions from being released, not eliminate those already in the atmosphere. Point-source carbon capture may actually increase lifecycle greenhouse gas emissions and criteria pollutants due to the increased energy needed to operate the energy-intensive capture equipment, as well as chemicals used in the capture process. Energy penalties associated with carbon capture can increase the energy used by the underlying facility by 20-30% or more,<sup>51</sup> requiring additional combustion of fossil fuels which in

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<sup>44</sup> See e.g., Andy Rowell and Lorne Stockman, "[Carbon Capture: Five Decades of False Hope, Hype, and Hot Air](#)," Oil Change International, June 17, 2021; see also Press Release, Global Witness, "[Hydrogen project lauded by Shell to boost green credentials emits more carbon than a million cars](#)," (Jan. 20, 2022).

<sup>45</sup> See Nichola Groom, "[Problems plagued U.S. CO<sub>2</sub> capture project before shutdown: document](#)," Reuters (Aug. 6, 2020).

<sup>46</sup> See Carlos Anchondo, "[CCUS 'red flag?' World's sole coal project hits snag](#)," E&E News (Jan. 10, 2022).

<sup>47</sup> See Jonathan Hettinger, "[Despite hundreds of millions in tax dollars, ADM's carbon capture program still hasn't met promised goals](#)," Midwest Center for Investigative Reporting (Nov. 19, 2020).

<sup>48</sup> See Graham Readfearn, "[Australia's only working carbon capture and storage project fails to meet target](#)," The Guardian (Nov. 11, 2021).

<sup>49</sup> IPCC, WGIII AR6 at n. 37, SPM-20, & n. 55, SPM-36.

<sup>50</sup> See Benjamin Storrow, Big payout, more CO<sub>2</sub>: Greens split over Dems' CCUS plan, E&E News (Dec. 16, 2021), <https://www.eenews.net/articles/big-payout-more-co2-greens-split-over-dems-ccs-plan/>.

<sup>51</sup> See IPCC, WGIII Report 2022, Ch. 6, at 6-38 (noting that the energy penalty from CCUS "increases the fuel requirement for electricity generation by 13– 44%"); Budinis, S., Krevor, S., MacDowell, N., Brandon, N., Hawkes, A., [An assessment of CCUS costs, barriers and potential](#), *Energy Strategy Reviews*, Vol. 22, November 2018, 61-81, at 67-68 (discussing energy and efficiency penalty estimates for coal and gas).



turns produces significant additional emissions of other pollutants.<sup>52</sup> The additional energy required by CCUS also increases upstream emissions from the additional oil and gas production or coal mining required to fuel the process. For all of these reasons, even if CCUS worked as well as proponents claimed, its mitigation potential is extremely limited.

**CCUS further undermines climate action when captured carbon is used for oil and gas production.** The overwhelming majority of captured carbon has to date been used for enhanced oil recovery (EOR), a process whereby companies inject carbon dioxide underground to pump out more oil from already-tapped wells. Globally, more than 80% of all CCUS capacity is designed for EOR, including Canada’s flagship coal-with-CCUS project at the Boundary Dam Power Station.<sup>53</sup> Using captured carbon to produce more oil and gas, which will emit more carbon dioxide when burned—is fundamentally incompatible with responding to the climate emergency.

**CCUS presents new threats to communities and ecosystems.**<sup>54</sup> Environmental, health, and safety risks arise at the capture, transportation and storage phases. The carbon capture process itself increases local pollution because of the chemicals used and the significant energy consumption.<sup>55</sup> Once captured, carbon dioxide must be transported at extremely high pressures and is a powerful asphyxiant at high concentrations.<sup>56</sup> Depending on the source of capture, compressed CO<sub>2</sub> may be mixed with other contaminants such as hydrogen sulfide, increasing the risks of pipeline corrosion, leaks, and rupture, and compounding the resultant health risks from exposure. The vast network of pipelines that would be required for significant CCUS deployment would therefore present significant dangers to the populations past which they would run.<sup>57</sup> Finally, carbon dioxide storage presents additional risks of induced seismicity

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<sup>52</sup> See also Clark Butler, IEEFA, [Carbon Capture and Storage Is About Reputation, Not Economics](#) 4 (2020).

<sup>53</sup> See Global CCUS Institute, [Global Status of CCUS 2021](#) 62-63 (2021).

<sup>54</sup> See U.S. House Committee on Natural Resources Subcommittee on Energy and Mineral Resources, Hearing on The Opportunities and Risks of Offshore Carbon Storage in the Gulf of Mexico, [Testimony of Carroll Muffett](#), President and CEO, Center for International Environmental Law, 4-7 (Apr. 28, 2022).

<sup>55</sup> [Carbon capture and storage could also impact air pollution](#), European Environment Agency (last modified Nov. 23, 2020); Council on Environmental Quality, [Report to Congress on Carbon Capture, Utilization, and Sequestration](#), 40 (2021).

<sup>56</sup> See U.S. EPA, [Appendix B: Overview of acute health effects associated with carbon dioxide](#) (2015). The Department of Transportation (DOT) lists and classifies the gaseous, liquid and solid forms of Carbon Dioxide as hazardous materials for purposes of transportation. See 49 CFR 172; See National Petroleum Council, [Meeting the Dual Challenge](#), 6-8, 6-11 (2021).

<sup>57</sup> IPCC, [Special Report on Carbon Dioxide Capture and Storage](#), ch. 4 at 188 (2005) (noting that CCUS “will require a large network of pipelines”). The rupture of a CO<sub>2</sub> pipeline in Mississippi in 2020 illustrates the risks. See [Pipeline Ruptures in Yazoo County, Dozens Rushed to the Hospital](#), Miss. Emergency Mgmt. Agency (Feb. 23, 2020); Sarah Fowler, [‘Foaming at the mouth’: First](#)

(just as with fracking), produced water from underground injection, leakage into groundwater, and more.<sup>58</sup>

### **Recommendations**

For Canada’s plan to phase out public financing from the fossil fuel sector to be compliant with its obligations under the Paris Agreement and other international human rights treaties, the Standing Committee should recommend that Canada:

- a. End public financing for all fossil fuels—oil, gas, and coal—beginning immediately;
- b. Not provide public financing for CCUS; and
- c. Increase public financing for real climate solutions, including support for renewables and energy demand reduction.

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[\*responders describe scene after pipeline rupture, gas leak, Clarion Ledger\*](#), Feb. 27, 2020; Dan Zegart, [\*The Gassing of Satartia\*](#), Huffington Post (Aug. 26, 2021).

<sup>58</sup> Steven T. Anderson and Hossein Jahediesfanjani, Estimating the net costs of brine production and disposal to expand pressure-limited dynamic capacity for basin-scale CO<sub>2</sub> storage in a saline formation, *International Journal of Greenhouse Gas Control* 102 (2020) 103161, at 1 of PDF; Thomas A. Buscheck et al, [Pre-Injection Brine Production for Managing Pressure in Compartmentalized CO<sub>2</sub> Storage Reservoirs](#), 63 *Energy Procedia* 5333, 5333 (2014); *see also* Ernesto Santibanez-Borda et al., [Maximising the Dynamic CO<sub>2</sub> storage Capacity through the Optimisation of CO<sub>2</sub> Injection and Brine Production Rates](#), *Int’l J. of Greenhouse Gas Control* 80 (2019), 76-95, at 76.