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Professor Karney,

On September 25th, Graham Henry and Milan Ilnyckyj met with Dr. Tony Gray to discuss the progress being made by the *ad hoc* committee. In the course of the meeting, Dr. Gray asked us to provide answers to three specific questions:

1. What standard of fiduciary duty do we consider relevant in the context of fossil fuel divestment?
2. Can the social injury associated from climate change be attributed to fossil fuel extraction, or only to use?
3. What consequences would arise from setting a precedent of fossil fuel divestment?

This letter will address each in turn.

All three of these questions are answered to some extent in the fossil fuel divestment brief. Rather than quote directly from the brief, this letter will simply indicate which sections should be consulted. In evaluating our responses to these three questions, we ask that the members of the *ad hoc* committee consider those sections of the brief in addition to the material included here.

1 Fiduciary duty

The question of fiduciary duty in this context is discussed in several portions of the brief. Please refer to "3.6 Divestment is compatible with the university's fiduciary duties"[1] and "3.7 Fossil fuel divestment is financially responsible".[2]

According to the *Policy on Social and Political Issues With Respect to University Divestment*, U of T has a "fiduciary duty to manage investments responsibly to maximize return on its investments within a policy risk tolerance as approved by the Business Board from time to time".[3] It is our view that the proposed fossil fuel divestment is consistent with the university's fiduciary duty: taking either a narrow view of exclusively maximizing returns or a broader and more appropriate view that is consistent with the divestment policy and the governing documents of the university. The aim of this answer is to provide an interpretation of fiduciary duty on which strong, principled decisions on divestment can be made now and into the future.

The Association of Governing Boards of Universities and Colleges, of which the University of Toronto is a member, recently released their *Board of Directors' Statement on the Fiduciary Duties of Governing Board Members*. In this document, they describe a fiduciary as:

> [S]omeone who has special responsibilities in connection with the administration, investment, monitoring, and distribution of property — in this case, the charitable or public assets of the institution. These assets include not just the buildings and grounds and endowment, but also intangibles, such as the reputation of the institution and its role in the community.[4]

As such, the President, Governing Council members, and the board of UTAM all have a fiduciary duty to the university. The fiduciary duty these people owe is split into three subsections and described in the same document as:

> [T]he fiduciary duties of care, loyalty, and obedience. Taken together, they require board members to make careful, good-faith decisions in the best interest of the institution consistent with its public or charitable mission, independent of undue influence

[1] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 77 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=83.
[2] Ibid., p. 77 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=83.
[3] University of Toronto, *Policy on Social and Political Issues with Respect to University Divestment*.
[4] The Association of Governing Boards of Universities and Colleges Board of Directors, *Statement on the Fiduciary Duty of Governing Board Members*.

from any party or from financial interests.

In particular, the President should consider the "resolute commitment to the principles of equal opportunity, equity and justice" included in U of T's *Statement of Institutional Purpose*.[5]

Divesting from fossil fuels is consistent with a fiduciary duty to maximize profits

Divesting from fossil fuels will uphold the directors' fiduciary duty on purely financial grounds before even looking, as we must, to the social injury caused by U of T's investments.

Governments, scientists, and even a growing number of fossil fuel companies have begun to acknowledge that preventing dangerous climate change will require leaving a substantial portion of the world's remaining fossil fuels unburned. This is the basis for the idea of a "carbon bubble", in which the market values of fossil fuel companies are unsustainably inflated because of the absence of effective regulation of greenhouse gas (GHG) pollution. Such regulation, which governments become more likely to put in place as the effects of climate change worsen, threatens to substantially reduce the profitability and value of these firms in the medium- and long-term.[6] This topic is covered extensively in the brief, particularly in "3.7.3 Stated policy objectives are incompatible with the current valuation of fossil fuel reserves".[7] Even since the latest brief update, former Bank of Canada Governor, and current Bank of England Governor, Mark Carney has emphasized this point and spoken at length to the risk the carbon bubble poses:

> Take, for example, the IPCC's estimate of a carbon budget that would likely limit global temperature rises to 2 degrees above pre-industrial levels. That budget amounts to between 1/5th and 1/3rd world's proven reserves of oil, gas and coal. If that estimate is even approximately correct it would render the vast majority of reserves "stranded" — oil, gas and coal that will be literally unburnable without expensive carbon capture technology, which itself alters fossil fuel economics.[8]

[5] University of Toronto Governing Council, *Statement of Institutional Purpose*.

[6] One important factor that distinguishes universities from some other investors is how their expectation of indefinite existence encourages a long-term focus in investment planning. This makes longer-term risks especially important for investors of this type.

[7] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 83 See: `http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=89`.

[8] Carney, *Breaking the tragedy of the horizon — climate change and financial stability*.

The growing collection of universities which have committed to divest in whole or part from fossil fuel companies is also relevant to the question of fiduciary duty. The University of Glasgow has committed to full divestment, in part because of an adapted version of the Toronto350.org brief. Other universities which have divested at least in part include the Australian National University, Georgetown University, Oxford University, Stanford University, The New School, the University of California, the University of Edinburgh, and the University of Washington. The decision to divest made by U of T's peer schools — all of whom will also have considered fiduciary duty — means that a decision to divest here would not be a one-off aberration, but part of a growing pattern where responsible university administrations have examined the social harm caused by the fossil fuel industry, as well as historical and projected financial returns of fossil fuel corporations, and concluded that these stocks should not be part of their portfolios.

Deciding to divest from fossil fuels is consistent with even the most narrow definition of fiduciary duty. World experts, governments, and other universities have all acknowledged that fossil fuel companies face increasing financial risks, raising questions about their suitability as investments. The financials are simply not strong enough to say that leaving these investments behind would be a breach of fiduciary duty and may even suggest that failing to divest would constitute such a breach. What's more, this is all before we even consider the social injury of these investments. The university's own policies require this consideration and that is where we will now turn.

In cases where social injury is present, fiduciary duty must include more than simply financial returns

> [F]irst and foremost, maximizing economic return consistent with the University's stated risk tolerance should be the criterion for purchase and sale of stock in all normal circumstances. *In specific instances where the University's social responsibility as an investor is questioned, however, credible and effective procedures for responding should exist.*[9]

When a call for divestment is made, the *Policy on Social and Political Issues with Respect to University Divestment* says that "responses should be based on the following principles": prudent investment, the Yale concept of social injury, and actions taken by national and international bodies on the issue. While considering these principles, none should be seen as a trump card. There could be

[9]University of Toronto, *Policy on Social and Political Issues with Respect to University Divestment*, Emphasis ours.

cases where the social injury is so immense (i.e. genocide, declaring war on Canada, etc) that a hit to financial returns should not be accepted as a reason for avoiding divestment. Alternatively, there could be cases where the slight social injury which has been demonstrated does not outweigh the massive negative impact divestment would have on the portfolio. The challenge is finding the balance between these three factors.

The interpretation of fiduciary duty that should be adopted must acknowledge the financial elements of the divestment policy while still being compatible with the consideration of social injury required by the policy. Fiduciary duty in this context should not be perfectly equated with maximizing financial returns. Doing so would effectively be stating that any action to reduce the social injury of U of T's investments must also be maximally profitable. This would force the absurdity where divestment campaigns could only succeed if UTAM should already have been divested from the targeted holdings for purely financial reasons. This would effectively neutralize the social injury component of the divestment policy and, as such, be entirely inconsistent with the stated purpose of the policy itself, as well as the mission and purpose of the university, and U of T's other governing documents.

To interpret fiduciary duty as requiring maximizing profits exclusively would make this the ultimate and only basis for considering divestment campaigns. This ignores and contradicts the very purpose of the policy. Fossil fuel companies and the climate crisis are a situation where the social responsibility of the university is in question. Prudent financial management in line with fiduciary duties should of course be one of the principles considered. However, a narrow reading that restricts this definition to financial return alone would be inconsistent with both the divestment policy and the fiduciary duty to the university's larger interests. As such, a broader interpretation of fiduciary duty must be adopted that allows prudent investment to include relevant considerations of social injury addressed in the divestment policy as well as the pertinent governing documents of the university.

The *ad hoc* committee may choose to adopt a principled interpretation of fiduciary duty within this policy. Under this interpretation, a fiduciary duty to maximize overall return on investments within the policy risk tolerance is bound, in demonstrated cases, by the social injury caused by these investments. In order to determine the prudent course of action, social injury (taking into consideration concerns raised by domestic and international bodies) must be weighed alongside any potential harm to financial returns.

In this balancing exercise, the president will be duty bound to make this decision not only in line with the entirety of this policy, but also the university's governing documents and the university's best interest including the furtherance of its academic mission and purpose. This means looking at more than simply financial returns. In fact, restricting analysis to the financials could be considered a breach of fiduciary duty. Looking at U of T's mission and purpose, for example, shows that divesting from fossil fuels gives U of T an opportunity to exercise its "right to raise deeply disturbing questions and provocative challenges to the cherished beliefs of society at large and of the university itself".[10] In doing so it might be able to live up to its "commitment to the principles of equal opportunity, equity and justice" by helping to remedy one of the most pressing and enormous risks facing today's world.

The strong financial case, coupled with the implications of the social injury caused by climate change, show that the President, Governing Council, and Board of UTAM can uphold (and perhaps only uphold) their fiduciary duty by supporting fossil fuel divestment. We urge the committee to consider the words of World Bank Group President Jim Yong Kim when he says:

> Be the first mover. Use smart due diligence. Rethink what fiduciary responsibility means in this changing world. It's simple self-interest. Every company, investor and bank that screens new and existing investments for climate risk is simply being pragmatic.[11]

2 Social injury from extraction

The brief includes "6.20 There is no point in restricting fossil fuel supply. Shouldn't we address demand instead?"[12] and "6.7 In what cases have courts found that fossil fuel companies caused injury?".[13] It also addresses "3.2.13 Social injury beyond climate change".[14]

Two important points must be made in response to this question: first, fossil fuel extraction contributes directly and meaningfully to social injury in the form of climate change, and second, other forms of social injury arise from fossil fuel production. Every form of fossil fuel extraction

[10] University of Toronto Governing Council, *Statement of Institutional Purpose*.
[11] Kim, *World Bank Group President Jim Yong Kim Remarks at Davos Press Conference*.
[12] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 156 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=162.
[13] Ibid., p. 146 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=152.
[14] Ibid., p. 60 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=66.

causes social injury although some practices — such as coal mining and the exploitation of bitumen sands — cause disproportionate amounts of harm.

Climate change

The routine operation of fossil fuel extraction corporations causes social injury through climate change, from the warming impact of 'fugitive' methane accidentally released from fossil fuel infrastructure to the massive climatic impact of all the coal being burned around the world. There are at least three major reasons why those undertaking fossil fuel extraction specifically can be deemed responsible for the social injury from climate change: they are operating with the knowledge and intention that the fuels they produce will be burned, the long-term investment decisions made by the industry help create long-term demand, and the industry has been highly active politically and in terms of public relations.

The most authoritative source on the impacts of climate change is the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.[15] In the chapter entitled "Human Health: Impacts, Adaptation, and Co-Benefits" the IPCC concludes that "[i]n recent decades, climate change has contributed to levels of ill health" and that "[r]ising temperatures have increased the risk of heat-related death and illness".[16] In the Summary for Policymakers in the Synthesis Report, the IPCC states that "[i]t is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations".[17] Looking forward, they explain:

> Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.[18]

Looking at total anthropogenic greenhouse gas emissions from 1970 to 2010, they identify fossil fuel combustion and industrial processes as the source of 59% of all emissions.[19] The IPCC also

[15] Intergovernmental Panel on Climate Change, *Fifth Assessment Report*.
[16] Intergovernmental Panel on Climate Change, *Human Health: Impacts, Adaptation, and Co-Benefits*, p. 713.
[17] Intergovernmental Panel on Climate Change, *Climate Change 2014 Synthesis Report Summary for Policymakers Chapter*, p. 5.
[18] Ibid., p. 8.
[19] Ibid., p. 5.

notes the regulatory risk faced by the fossil fuel industry, stating that "[m]itigation policy could devalue fossil fuel assets and reduce revenues for fossil fuel exporters" and that "[m]ost mitigation scenarios are associated with reduced revenues from coal and oil trade for major exporters".[20] In the Technical Summary, they note that reduced fossil fuel extraction would reduce ecosystem impacts.[21]

Just this week, research in *Nature Climate Change* concluded that climate change is "likely to severely impact human habitability" in the Persian Gulf area between 2071 and 2100. They project that inhabited areas in the region will become likely to experience lethally hot wet bulb temperatures of over 35 ˚C, under which people will not be able to control body heat by sweating, resulting in hyperthermia. Notably, these conditions are expected to impact the Hajj pilgrimage to Jeddah and Mecca. The authors note that: "[t]his necessary outdoor Muslim ritual is likely to become hazardous to human health, especially for the many elderly pilgrims".[22][23][24]

While many of these impacts arise from fossil fuel combustion rather than from extraction and processing, there are good reasons to hold fossil fuel producers responsible for the social injury which results.

The first major reason why fossil fuel extraction can be held responsible for the social injury arising from climate change is because fossil fuel corporations intend and expect for the fuels they produce to be burned. The chemical reactions whereby burning coal, oil, and gas produces carbon dioxide (CO_2) have been well understood for centuries. Furthermore, the fossil fuel industry devotes massive amounts of money and energy to converting raw materials into fuels which can be readily burned. This includes removing toxic components from natural gas, refining crude oil, and washing and crushing coal for electricity generation and metallurgical use. Fossil fuel corporations are active in seeking out and developing new markets for their products, as well as in lobbying governments to permit major new transportation and export corridors such as oil pipelines, liquified natural gas terminals, and tanker ports. Such lobbying takes place directly, as well as through the operation of industry-funded groups like the Canadian Association of Petroleum Producers.

Major investments in fossil fuel infrastructure are expected to last for decades. These include

[20] Intergovernmental Panel on Climate Change, *Climate Change 2014 Synthesis Report Summary for Policymakers Chapter*, p. 25.
[21] Intergovernmental Panel on Climate Change, *Human Health: Impacts, Adaptation, and Co-Benefits*, p. 104.
[22] Pal and Eltahir, "Future temperature in southwest Asia projected to exceed a threshold for human adaptability".
[23] See also: Warrick, *Climate change could soon push Persian Gulf temperatures to lethal extremes, report warns*.
[24] Chandler, *Study: Persian Gulf could experience deadly heat*.

offshore oil platforms, coal mines, oil and gas refineries, and pipelines. As discussed in the brief, the International Energy Agency expects $37 trillion to be spent on energy supply infrastructure between 2012 and 2035.[25] For these investments to be justified, this infrastructure will need to continue to operate for many decades, necessarily pushing the world past the 2 ˚C limit at which climate change is expected to become "dangerous". Either these companies will suffer financial injury from the premature shutdown of fossil fuel infrastructure or they will guarantee that the objective of controlling climate change will not be achieved.

Once fossil fuel infrastructure has been built, closing it down prematurely involves imposing substantial losses on firms and investors, as well as significant job losses. This in turn creates a formidable political obstacle, threatening the ability of governments to achieve their stated climate change objectives. The continued construction of long-lived fossil fuel infrastructure puts the fossil fuel industry in a position where it must continue to use its economic, legal, and political resources to fight the effective regulation of greenhouse gas pollution or, alternatively, to accept substantial losses.

Fossil fuel infrastructure also functions as a network, in which each piece supports and justifies the operation of others. Having a global vehicle stock dependent on gasoline, diesel, and kerosene supports the operation of oil wells and platforms; the transport of crude oil and refined products by ship, pipeline, and rail; and the operation of oil refineries. Individual energy consumers cannot substantially alter the structure of the global energy system but, by virtue of their expertise and the enormous size of their investments, major fossil fuel producers are in a position to do so. Heavy investment in fossil fuel infrastructure reduces the capital available for developing climate-safe forms of energy and investing in energy efficiency. In countries which do not attach a price to greenhouse gas pollution, the costs of all of these activities are artificially low, since they do not include the social injury imposed on third parties. Preventing the establishment of effective carbon pricing systems has been a major policy objective of the fossil fuel industry in recent years.[26] These network effects and artificially low prices combine to perpetuate fossil fuel dependence.

Naomi Oreskes and others have extensively documented the deliberate efforts of the fossil fuel industry to mislead legislators and the general public about the existence of climate change, as well

[25] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 4 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=10.

[26] Canadian companies and industry-funded organizations have also fought to oppose the establishment of new clean fuel standards in the European Union.

as its causes and consequences.[27][28][29] This is discussed in the executive summary of the brief (p. 17) as well as in the discussion of how the fossil fuel and tobacco industries are similar (p. 74). In July 1977, James F. Black, a senior Exxon scientist, told the company's management committee that:

> [T]here is general scientific agreement that the most likely manner in which mankind is influencing the global climate is through carbon dioxide release from the burning of fossil fuels.[30]

The company carried out extensive research into climate change, including sampling CO_2 levels and modelling likely impacts. A 1982 internal publication included a chart depicting the effect of CO_2 emissions on global temperatures:

[27] See: Oreskes, "Beyond the Ivory Tower: The Scientific Consensus on Climate Change".
[28] Oreskes and Conway, *Merchants Of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*.
[29] Hoggan and Littlemore, *Climate Cover-Up: The Crusade to Deny Global Warming*.
[30] Banerjee, Song, and Hasemyer, *Exxon's Own Research Confirmed Fossil Fuels' Role in Global Warming Decades Ago*.

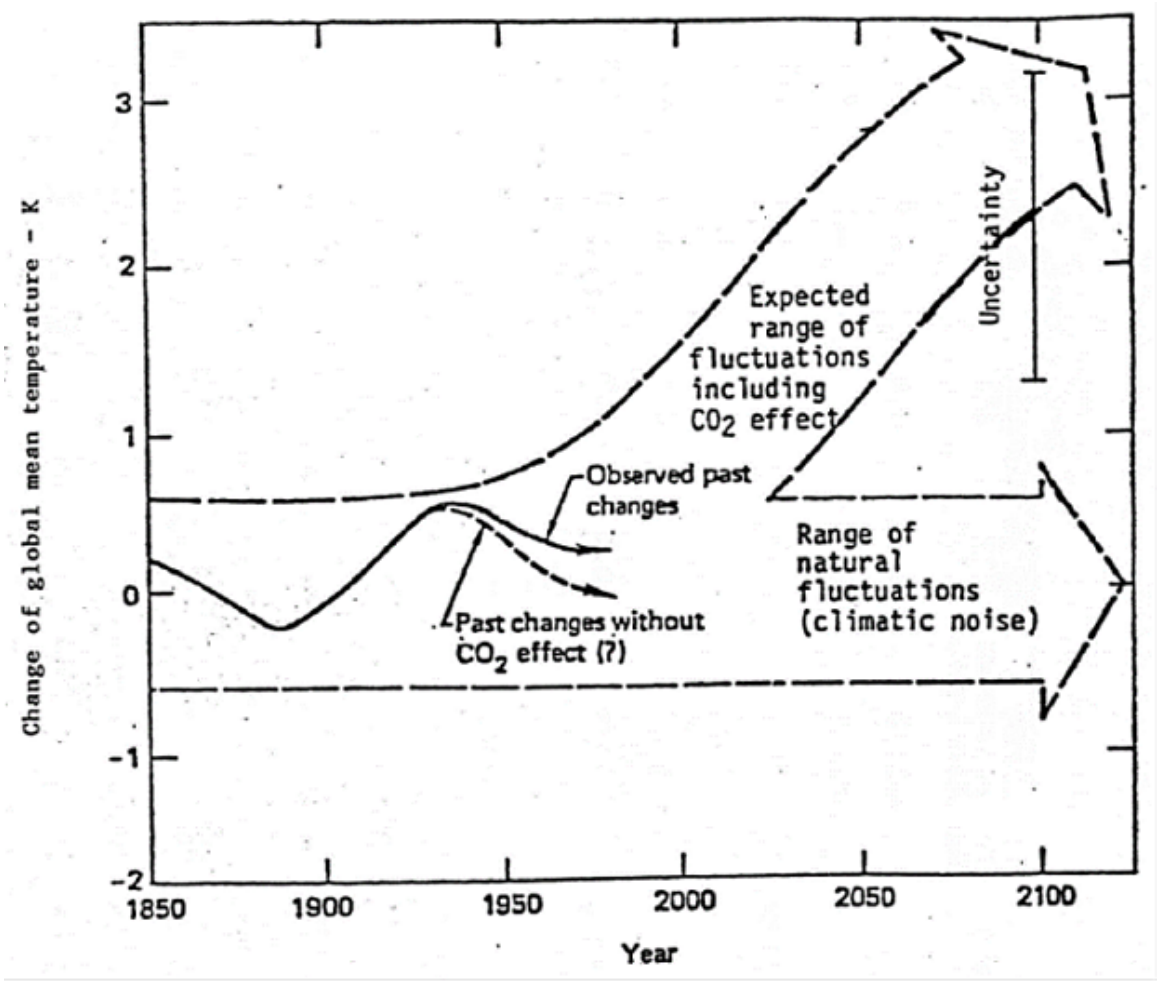

Figure 1: Exxon has been acutely aware of the climate impacts of fossil fuel use for decades[31]

Despite their awareness, Exxon has joined other fossil fuel companies in putting out advertising which questions or misrepresents the causes of climate change, and have lobbied aggressively in many countries to prevent restrictions on the emission of greenhouse gasses. They donated $2.3 million to members of the U.S. Congress and a corporate lobbying group that deny climate change. Despite pledging in 2008 to stop providing funding to climate change denier groups, Exxon has given $30 million to researchers and activist groups which deny the causes of climate change.[32][33]

U.S. Senator Sheldon Whitehouse, supported by a group of scientists, have called upon the U.S. Department of Justice and President Barack Obama to prosecute corporations and other organizations that have denied climate change using the Racketeer Influenced and Corrupt Organizations

[32]Goldenberg, *ExxonMobil gave millions to climate-denying lawmakers despite pledge*.
[33]See also: Hall, *Exxon Knew about Climate Change Almost 40 Years Ago*.

(RICO) Act, intended for use against organized crime.[34][35] They cite a Department of Justice RICO investigation of the tobacco industry which ran from 1996 and 2006, which they claim "played an important role in stopping the tobacco industry from continuing to deceive the American people about the dangers of smoking".[36]

In summary, fossil fuel corporations are far from neutral suppliers of commodities demanded by others who should in turn bear responsibility for social injury arising from their use. Fossil fuel corporations extract and process their products with the full knowledge that they will be burned, and with long-standing awareness of the social injury that will produce. Both by lobbying governments and by making long-term infrastructure investments, they also perpetuate fossil fuel demand and thus the social injury from climate change.

Some institutions which have decided to divest from fossil fuel corporations have chosen to exclude only coal stocks from their portfolios. This approach is inconsistent with the objective of avoiding "dangerous" climate change of beyond 2 ˚C. In a 2015 *Nature* article, the authors considered the total allowable global carbon budget consistent with the 2 ˚C target. They concluded that extraction and use of all fossil fuels must be restricted, with 80% of coal, 50% of gas, and 30% of oil being unusable. Divestment from coal alone would also represent an inconsistent application of U of T's divestment policy, since oil and gas extraction cause similar social injury; these industries share coal's lacklustre historical financial performance; and a comparable case can be made for divesting from those industries to reduce exposure to regulatory risk and the carbon bubble.

Social injury beyond climate change

To take a single notable example, the blowout of the Macondo Well in the Gulf of Mexico in 2010 killed 11 people immediately and has been found by U.S. courts to have caused over US$25 billion in damage.[37] The well spilled 134 million gallons of crude oil before the blowout could be contained. What the Deepwater Horizon disaster demonstrated in a single massive event is also the routine consequence of fossil fuel extraction around the world. Mountaintop removal coal mining destroys biologically diverse land and contaminates waterways. Fracking for oil and gas contaminates fresh water. Burning gasoline, kerosene, and diesel in vehicles creates toxic air pollution.

[34] Laden, *Letter To President Obama: Investigate Deniers Under RICO*.
[35] See also: Nuccitelli, *Is the fossil fuel industry, like the tobacco industry, guilty of racketeering?*
[36] Laden, *Letter To President Obama: Investigate Deniers Under RICO*.
[37] Tucker, *U.S., states finalize settlement with BP over gulf oil spill*.

Burning coal causes lung disease and cancer. While it would be infeasible to comprehensively describe the many forms of social injury associated with fossil fuel extraction and use (as well as redundant, given the chapter in the brief on the topic), this letter will briefly explain why fossil fuel extraction itself constitutes a major source of social injury.

In their submission to the *ad hoc* committee, members of the Dalla Lana School of Public Health argue that "fossil fuel extraction can harm the health of communities living around extraction sites. Often, these are Aboriginal communities that have traditionally relied on the land on which fossil fuel extraction activities take place".[38] They also argue that, because the fossil fuels produced by these corporations will ultimately be burned, "extraction itself constitutes social injury".[39] The letter documents many forms of social injury arising from fossil fuel extraction, including through the spread of climate-sensitive infectious diseases; degradation of land, air, and water; chemical pollution; and the aggravation of health inequalities.

To appreciate the social injury beyond climate change caused by all forms of fossil fuel extraction, please consider some examples from gas, oil, and coal production.

Hydraulic fracturing

Hydraulic fracturing has massively altered the global fossil fuel industry by turning the United States into the world's largest producer of oil. These techniques make previously unrecoverable oil and gas reserves available for use, thereby increasing the total extent of climate change experienced around the world.

According to a 2011 article in Canadian Geographic:

> Fracking has been linked to contaminated water in Alberta and Pennsylvania and to hundreds of small earthquakes in Arkansas. Documentaries such as Academy Award nominated Gasland and CBC's Burning Water show kitchen tap water bursting into flames. These dangers have led Quebec, Nova Scotia and France to impose moratoriums until further scientific study is completed.[40]

The disruption of water table levels, water quality, and geologic positioning are all issues associated with hydraulic fracturing which can easily have large negative repercussions on nearby human

[38] Cole, Donald C. et al. *Submission to the Presidential Advisory Committee on Divestment from Fossil Fuels*, p. 2.
[39] Ibid., p. 4.
[40] Goodine, *Fracking controversy: Rethinking the low-carbon label for natural gas*.

populations.[41] A 2014 study of air samples taken near hydraulic fracturing sites concluded that "[a]ir concentrations of potentially dangerous compounds and chemical mixtures are frequently present near oil and gas production sites", with benzene, formaldehyde, and hydrogen sulfide most commonly found to exceed health-based risk levels.[42]

The fracking industry has often created contamination which fell to taxpayers to remedy. In 2009 alone, 8,600 wells in Pennsylvania were abandoned and taxpayers paid to cap 259 because of leaking oil, gas, and acid mine drainage.[43] Other observed impacts include damage to underground water supplies and soil contamination. Chemicals routinely used for fracking are known to have human health impacts. One study of 41 chemicals used in fracking found that "73% of the products had between 6 and 14 different adverse health effects including skin, eye, and sensory organ damage; respiratory distress including asthma; gastrointestinal and liver disease; brain and nervous system harms; cancers; and negative reproductive effects".[44]

The consequences of fracking have prompted moratoriums in Scotland, New York State, Newfoundland, and Quebec. The possibility that such restrictions will spread is one of many forms of regulatory risk faced by the fossil fuel industry.[45]

Bitumen sands extraction

All forms of bitumen sands production contribute to climate change and other forms of social injury. In addition to being a vast source of greenhouse gas emissions, bitumen sands production requires the removal of the boreal forest ecosystem; pollutes land, air, and water with toxins; requires the use of vast toxic tailings ponds; contaminates enormous quantities of fresh water from the Athabasca River and freshwater aquifers; fragments remaining forest habitats; and contributes to acid rain. These impacts cause social injury to people both individually and cumulatively.[46]

Whether produced by mining or *in situ* extraction, bitumen sands production requires the burning of large quantities of fossil fuels. This includes oil used to power vehicles, including the massive dump trucks which are an iconic feature of the industry. The industry also requires vast quantities

[41] Palliser, "Fracking fury", p. 20–4.
[42] Macey et al., "Air concentrations of volatile compounds near oil and gas production: a community-based exploratory study".
[43] Finkel and Law, "The rush to drill for natural gas: a public health cautionary tale", p. 784.
[44] Ibid., p. 785.
[45] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 85–6 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=91.
[46] See: Woynillowicz, Severson-Baker, and Raynolds, *Oil Sands Fever: The Environmental Implications of Canada's Oil Sands Rush*, p. 27.

of natural gas, much of it burned to produce steam. On average, each barrel of bitumen extracted via surface mining requires 250 cubic feet of natural gas and 2–5 barrels of fresh water.[47]

The bitumen also requires large amounts of energy for conversion into synthetic crude and eventual refinement into products like gasoline. This process involves heating to 500 ˚C to 'hydrocrack' bitumen into smaller molecules (producing toxic coke as a solid by-product), hydrotreating at high pressure and 300–400 ˚C to remove nitrogen and sulphur, and then upgrading to light, sweet synthetic crude.[48] Upgrading one barrel of bitumen requires 500 cubic feet of natural gas.[49]

In 2010, Alberta's bitumen sands produced 48 million tonnes of greenhouse gas emissions — up from 31 million tonnes in 2010. This represented 7% of Canada's total greenhouse gas emissions.[50] The bitumen sands are also Canada's most rapidly-growing source of climate pollution, with the potential to undermine reductions made in other sectors. Emissions from bitumen sands upgrading and processing in Canada nearly tripled between 1990 and 2010, and government projections show emissions are likely to double again between 2010 and 2020.[51] The Pembina Institute calls them "a significant barrier to meeting Canada's 2020 climate commitment".[52]

In the language of the oil industry, the boreal forest which is stripped away to allow open-pit bitumen mining is termed "overburden". Even once this is removed, only 10–12% of what is mined is actually bitumen; the rest must be separated as part of the extraction process.[53] As well as being greenhouse gas intensive, this process necessarily destroys habitat. Despite industry advertisements which misleadingly suggest that the land damaged by bitumen extraction will be restored to a natural state, peatlands, which comprise the primary form of wetland habitat in the region, "cannot feasibly be replaced using current reclamation techniques".[54] In the case of boreal forest, Alberta regulations require the "reclamation" of lands used in bitumen mining, not the restoration of the original forest.[55] There is a strong possibility that much of the cost of cleaning up after bitumen sands mining will end up being borne by taxpayers rather than the companies involved, constituting yet another source of social injury.[56]

[47] Woynillowicz, Severson-Baker, and Raynolds, *Oil Sands Fever: The Environmental Implications of Canada's Oil Sands Rush*, p. 12.
[48] Ibid., p. 14.
[49] Ibid., p. 15.
[50] The Pembina Institute, *Climate Impacts*.
[51] Dyer et al., *Beneath the Surface: A review of key facts in the Oilsands debate*, p. 7.
[52] Ibid., p. 10.
[53] Woynillowicz, Severson-Baker, and Raynolds, *Oil Sands Fever: The Environmental Implications of Canada's Oil Sands Rush*, p. 11.
[54] Dyer et al., *Beneath the Surface: A review of key facts in the Oilsands debate*, p. 40.
[55] Ibid., p. 42.
[56] Ibid., p. 52.

93% of the bitumen sands reserves of Alberta can only be affordably extracted through *in situ* methods, which are even more energy-intensive than surface mining.[57] Producing a barrel of bitumen via *in situ* methods requires 1,000 cubic feet of natural gas.[58] The direct impacts of *in situ* mining for oil are extensive. Even using the latest steam-assisted gravity drainage (SAGD) systems as an alternative to open-pit mining, the sheer amount of water usage and contaminated water output have created many repercussions for Canadians.[59] The Alberta Energy board states it takes two barrels of water to produce one barrel of oil.[60]

The Keepers of the Water, a non-profit associated with the Keepers of the Athabasca, consists of many First Nations who are directly affected by oil extraction in Alberta and who have reiterated many times their unresolved grievances with the industry. First of all, the frontline indigenous communities have seen ever-decreasing local water table levels, driving local wildlife farther and farther away from First Nations areas.[61] Oil sands companies are not required to stop withdrawing water from the Athabasca River even if river flows are so low that fisheries and habitat are at risk.[62] This is a huge issue for the indigenous communities because not only is hunting and fishing part of their traditional lifestyle, but also a part of their faith base. Second, the tailings ponds created from the extraction fluid waste have caused large public health issues by leaking toxins into the Athabasca watershed. These ponds contain over 830 billion litres of tailings and cover 176 square kilometres.[63] These ponds house compounds known to be acutely toxic to aquatic organisms, including "metals, polycyclic aromatic hydrocarbons (PAHs), naphthenic acids and solvents that are added to the bitumen during the separation process".[64] A study by the Alberta government found elevated levels of cervical cancer, bile duct cancer, and lung cancer among women in Fort Chipewyan.[65][66]

In addition, Toronto350.org member Joanna Dowdell recently had the opportunity to visit the Athabasca bitumen sands herself and see direct extraction contamination. As you can see from the photo below, taken at a large open oil pump near Grand Prairie, Alberta, immediately following

[57] Woynillowicz, Severson-Baker, and Raynolds, *Oil Sands Fever: The Environmental Implications of Canada's Oil Sands Rush*, p. 11, 15.
[58] Ibid., p. 13.
[59] Lightbown, *New SAGD technologies show promise in reducing environmental impact of oil sand production*.
[60] Government of Alberta, *Talk about SAGD*.
[61] Transcribed and edited by Joanna Dowdell, *Interview with Sam Gargon, Keepers of the Water IX*.
[62] Dyer et al., *Beneath the Surface: A review of key facts in the Oilsands debate*, p. 29.
[63] Ibid., p. 32.
[64] Ibid., p. 34.
[65] Alberta Health Services, *Appendix I: Fort Chipewyan Update*.
[66] See also: Young, *Alberta report finds Fort Chipewyan has higher rates of three kinds of cancer*.

extraction there is bitumen- and BTEX toxin-filled fluids which come to the surface of oil pumps:

Figure 2: Leaks which cause human harm and environmental damage are a routine part of fossil fuel extraction

These liquids sit in oil pump areas completely exposed to curious wildlife, but also easily spreading into ground contamination, affecting human water sources downstream.[67]

The cumulative impacts of bitumen sands development are socio-economic as well as environmental.[68] Rapid development has contributed to a lack of affordable housing and insufficient infrastructure. In particular, these are affecting the First Nations and Metis populations of the Regional Municipality of Wood Buffalo, the hub of bitumen sands development.

Coal mining

The coal industry is also responsible for a vast amount of toxic air and water pollution, habitat destruction, and damage to human health. The use of coal contributes to respiratory, cardiovascu-

[67] Tenenbaum, "Oil Sands Development: A Health Risk Worth Taking?"

[68] Woynillowicz, Severson-Baker, and Raynolds, *Oil Sands Fever: The Environmental Implications of Canada's Oil Sands Rush*, p. 27.

lar, and nervous disease.[69] When the Irish government banned the marketing, sale, and distribution of bituminous coal in 1990, black smoke concentrations declined by 70%, respiratory deaths fell by 15.5%, and cardiovascular deaths fell by 10.3%. This prevented approximately 450 deaths and hundreds of acute illnesses.[70] All aspects of the coal industry contribute to social injury; "[m]ining, transporting, burning, and disposing of the products of the combustion of coal…all have major impacts on our health".[71] Coal contributes to four of the five leading causes of death in the U.S.: heart disease, cancer, stroke, and chronic lower respiratory diseases.[72]

Coal production results directly in social injury, including through health impacts on miners:

> Coal mining leads U.S. industries in fatal injuries and is associated with chronic health problems among miners, such as black lung disease, which causes permanent scarring of the lung tissues. In addition to the miners themselves, communities near coal mines may be adversely affected by mining operations due to the effects of blasting, the collapse of abandoned mines, and the dispersal of dust from coal trucks. Surface mining also destroys forests and groundcover, leading to flood-related injury and mortality, as well as soil erosion and the contamination of water supplies. Mountaintop removal mining involves blasting down to the level of the coal seam — often hundreds of feet below the surface — and depositing the resulting rubble in adjoining valleys. This surface mining technique, used widely across southern Appalachia, damages freshwater aquatic ecosystems and the surrounding environment by burying streams and headwaters.[73]

After production, abandoned coal mines contaminate drinking water with iron, aluminium, cadmium, and copper.[74] Slurry ponds from coal washing leak and fail, contaminating local water supplies. In the United States, railroads hauling coal release over 600,000 tons of nitrogen oxide and 50,000 tons of particulate matter into the air each year.[75]

[69] Lockwood, *The Silent Epidemic: Coal and the Hidden Threat to Health*.
[70] Ibid., p. 3.
[71] Ibid., p. 3.
[72] Physicians for Social Responsibility, *Coal's Assault on Human Health*, p. v.
[73] Ibid., p. vi.
[74] Ibid., p. vi.
[75] Ibid., p. vi.

3 The fossil fuel divestment precedent

The brief discusses "7.2 What message would divestment send?".[76]

Throughout this campaign, we have endeavoured to show how fossil fuel divestment is justified based on the University of Toronto's existing policies and procedures. A decision to divest would essentially be an example of U of T choosing to follow the rules which it has set for itself. Nonetheless, some consideration can be given to the ways in which this precedent would influence the interpretation of those policies, the relevance divestment from direct stock holdings in the world's 200 largest fossil fuel corporations would have on U of T's response to climate change generally, and some consideration of what impact this precedent could have on other calls to divest.

In the course of writing the brief, our presentations to the *ad hoc* committee, and this response we have had cause to closely consider many of the terms in U of T's divestment policies and procedures.[77][78][79] In considering what matters are "properly the subject of ongoing academic inquiry and debate" we concluded that:

> The emergence of a strong academic consensus about the key features of a problem does not mean that all academic work on the subject ceases. Scholarly work is still done on South African apartheid, despite the system having been dismantled. When the university decided to divest from South Africa, it determined that a convincing body of evidence supporting that choice had been assembled. A comparable body of evidence now exists about the causes and consequences of climate change.[80]

Another important task in interpreting U of T's divestment policy was identifying the appropriate interpretation of prudent investment and the relevance of fiduciary duty, as done in the brief and above. Finally, we had to consider the "Yale University concept of social injury", which is further defined as "the injurious impact which the activities of a company are found to have on consumers, employees, or other persons, particularly including activities which violate, or frustrate the enforcement of, rules of domestic or international law intended to protect individuals against deprivation of health, safety, or basic freedoms". The brief addresses each part of this definition, demonstrat-

[76] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 161 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=167.

[77] Ibid.

[78] Donato-Woodger et al., *Why U of T should divest from fossil fuels*.

[79] University of Toronto, *Issues With Respect to University Divestment*.

[80] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 18 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=24.

ing with extensive documentation that social injury as defined in this way is being inflicted by the fossil fuel industry.

The precedent of divesting from direct holdings in the 200 companies with the largest fossil fuel reserves is likely to lead to calls for further changes in U of T's investment practices. As "7.1.2 Alternatives for divested funds" discusses, there are several investment choices which U of T could make in response to the social injury from fossil fuel extraction which go beyond divestment as called for in the brief.[81] Many pooled investments include stock holdings in fossil fuel companies as subsidiary components and the precedent of divestment from direct holdings could be used to support a call for more comprehensive divestment in the future.[82] U of T could also be proactive in encouraging the emergence of new investment vehicles which are attractive in their risk-weighted returns and which will help the world to effectively combat climate change, such as low-fee index tracking funds which exclude the fossil fuel sector.

There are many other ways in which U of T can help respond to the challenge of climate change. All three campuses could make investments in reducing their fossil fuel dependence: improving the insulation of buildings, installing efficient ground- and air-source heat pumps for heating and cooling, making use of electric vehicles, and developing on-campus renewable energy systems. A tri-campus refit — in which a comprehensive economic and engineering assessment of potential energy efficiency improvements is made, with the projects with the best financial returns being prioritized — would position the Office of the President to play a positive and visionary role in reducing fossil fuel dependence and strengthening the U of T community's contribution to solving climate change. It would also give the engineering and economics faculties of U of T an important role to play in guiding the most cost-effective shift away from fossil fuel dependence. The divestment precedent would establish U of T as a leader in the area of climate change and show the seriousness of the Office of the President and the university administration broadly in addressing this vital issue.

It is important to note that no feature of this campaign should be interpreted as a bar to divestment in other cases where the terms of U of T's policies and procedures have been satisfied.

[81] Toronto350.org, *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 158 See: http://www.uoftfacultydivest.com/files/fossil-fuel-divest-new.pdf#page=164.

[82] As discussed in the brief, the argument that Canada's stock market includes a large proportion of fossil fuel stocks is not an argument against divestment. If the Canadian stock market and U of T's portfolio are already unusually exposed to the regulatory risk faced by the fossil fuel industry, the principle of diversification would support a shift away from additional direct holdings in the industry.

The appropriate standards of evidence and scrutiny applicable in other cases may be somewhat different, and there may be cases in which divestment is justified even though it is likely to involve some degree of reduced return on investment.

In assessing whether fossil fuel divestment is justified, some people have raised the question of whether divestment from specific other industries which may be considered to be sources of social injury is justified as well, particularly the fast food industry and the arms industry. A strong scientific literature exists which demonstrates the health damage which can arise from excessive consumption of fast food, and there are clearly damaging effects which arise from the use of the products of the arms industry.

Ultimately, if a convincing case which meets the requirements of U of T's policies and procedures is presented for either the fast food or arms industry, divestment from it would be justified as well. That being said, the high standards of proof required by the existing divestment policy makes the danger that fossil fuel divestment would lead to distracting or inappropriate divestment campaigns unlikely to be realized.

The fossil fuel divestment campaign meets the requirements set out by the university's divestment policy, and in many ways exceeds those requirements. The scientific consensus on this issue is broad and deep, and has resulted from strong international collaboration. At the same time, the financial case for questioning the long-term value of these stocks is multi-layered and convincing. Finally, there is a strong argument that by taking action by divesting U of T will have a material positive impact: encouraging other universities and major investors to follow suit in driving a massive redirection of investment from fossil fuels to climate-safe forms of energy, thus helping to mitigate one of the most serious challenges facing humanity today. Setting such an example could be especially valuable right now, with a recently-elected government in Ottawa which has not laid out its climate policies in detail and with a major meeting of the parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in November and December.

We would be happy to respond to any further questions from the *ad hoc* committee. The committee may also wish to consider announcing its recommendation to correspond with the UNFCCC's Conference of the Parties in Paris between November 30th and December 1st. By acting quickly to help control climate change, U of T would send an important message to the world's investors and energy industry. We need to begin turning away from fossil fuels, and redirecting our investment in energy production is an essential component of that project.

Thank you,

Graham Henry, Joanna Dowdell, and Milan Ilnyckyj on behalf of Toronto350.org

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