

Due Diligence on Renewable Demands by David Suzuki Foundation

The tax-payer subsidized charity David Suzuki Foundation is asking Canadians to participate in a “Power Up Renewable Energy” promotion campaign based on partisan demands that are not supported by evidence. Due diligence reveals these claims and demands to be false and misleading to the public, and if implemented, would be a wasteful use of public funds and detrimental for the nation at large. Meeting the Paris COP-21 GHG reduction targets would reduce the Canadian economy to that of Chad. Canada’s GDP per capita ranking by the IMF, in 2015, is 21st at \$45,602 while Chad ranks 155th with \$2,640 per citizen.

April 25, 2017



“Energy cannot be ‘renewed’ as this would be a violation of the Second Law of Thermodynamics.”

DUE DILIGENCE ON RENEWABLE DEMANDS BY DAVID SUZUKI FOUNDATION

Page | 2

To:

The Right Honourable Justin Trudeau
The Honourable Catherine McKenna
The Honourable Bill Morneau
The Honourable Jim Carr
The Honourable Marc Garneau
The Honourable Amarjeet Sohi

pm@pm.gc.ca
catherine.mckenna@canada.ca
bill.morneau@canada.ca
Minister.Ministre@NRCan-RNCan.gc.ca
mintc@tc.gc.ca
infrc.minister-ministre.infrc@canada.ca

**Subject: Due Diligence on Demands by David Suzuki Foundation's
"Power Up Renewables" email campaign**

The David Suzuki Foundation, a taxpayer subsidized charity, is presently running a point-and-click email advocacy campaign addressed to several federal ministers entitled: **"Power Up Canada with Renewable Energy"**¹ that claims the authors 'believe' many things about renewable energy for powering the economy, jobs and addressing climate change. However, 'beliefs' are not evidence. Their demands that you, the government, put more taxpayer's money into renewable energy are not supported by any evidence or cost-benefit analysis.

Therefore, we offer this document as due diligence on their demands so that the public and policy-makers can make informed choices about where scant public funds are applied.

Fundamentally, the International Energy Agency reports that 81% of the world's energy supply is from fossil fuels. Renewables account for only 1.4% (which are all made from fossil fuels and must be backed up 24/7 by 100% operational conventional power - typically a combination of coal-fired and natural gas power plants, or by hydro/nuclear).

Please allow us to address the David Suzuki Foundation demands point by point:

¹ action2.davidsuzuki.org/power-up-canada-with-renewable-energy

SUZUKI FUND DEMAND #1:

Invest \$1 billion annually in renewable energy demonstration projects.

Page | 3

Due Diligence: Renewables are expensive and provide poor energy return on energy invested and poor return (before subsidies) on capital invested. They do not substantially reduce carbon dioxide emissions, the said purpose, because they require 24/7 conventional back-up, typically by natural gas.

A new peer-reviewed study, “Burden of Proof”² demonstrates that large scale “100% renewable” project claims are **not technically feasible** and those partially in place (i.e. wind/solar on the grid in Germany) are costing billions of dollars for very little power output and with no reliability and essentially no reduction in carbon dioxide emissions, the said purpose of such policies and infrastructure. After over a decade of implementing wind and solar to the Ontario power grid, the Ontario Society of Professional Engineers issued a shocking report that prices have escalated far beyond the promised ‘free’ wind and solar, and not only that, **carbon dioxide emissions have not been reduced and will rise** with the addition of any more wind and solar infrastructure.

Ontario's Electricity Dilemma –
Achieving Low Emissions at Reasonable Electricity Rates


14

Why Are Electricity Rates Rising So Fast in Ontario ?

- ✧ Exports in 2014 averaged less than 4 cents/kWh.
- ✧ OEB estimated 2014 energy price for electricity inside Ontario was 8.9 cents/kWh.
- ✧ According to OEB estimates, the cost of electricity production was :

<u>Nov – Apr 2013</u>	<u>May – Nov 2014</u>	<u>May – Nov 2015</u>	<u>Generation Type</u>
4.8	5.1	5.6	Hydroelectric
6.0	5.9	6.6	Nuclear
12.0	12.3	12.5	Wind
12.6	12.9	21.1	Bio-energy
13.5	14.2	12.7	Natural Gas
48.9	47.6	47.3	Solar
7.2 / 10.9 / 12.9	7.5 / 11.2 / 13.5	8.0 / 12.2 / 16.1	TOU Rates

Note: Exporting is economically attractive if the market price is above the variable (fuel) cost of that energy and the plants are already built (sunk cost). However, we should not build new plants for the purpose of exporting energy if the market price is below the total cost of production.



ONTARIO
SOCIETY
OF PROFESSIONAL
ENGINEERS

² www.sciencedirect.com/science/article/pii/S1364032117304495

**Ontario's Electricity Dilemma –
Achieving Low Emissions at Reasonable Electricity Rates**

15

Why Will Emissions Double as We Add Wind and Solar Plants ?

- ✧ Wind and Solar require flexible backup generation.
- ✧ Nuclear is too inflexible to backup renewables without expensive engineering changes to the reactors.
- ✧ Flexible electric storage is too expensive at the moment.
- ✧ Consequently natural gas provides the backup for wind and solar in North America.
- ➡ ✧ When you add wind and solar you are actually forced to reduce nuclear generation to make room for more natural gas generation to provide flexible backup.
- ➡ ✧ Ontario currently produces electricity at less than 40 grams of CO₂ emissions/kWh.
- ✧ Wind and solar with natural gas backup produces electricity at about 200 grams of CO₂ emissions/kWh. Therefore adding wind and solar to Ontario's grid drives CO₂ emissions higher. From 2016 to 2032 as Ontario phases out nuclear capacity to make room for wind and solar, CO₂ emissions will double (2013 LTEP data).
- ➡ ✧ In Ontario, with limited economic hydro and expensive storage, it is mathematically impossible to achieve low CO₂ emissions at reasonable electricity prices without nuclear generation.



Page | 4

Globally in 2016 “The amount of money committed to renewables excluding large hydro-electric projects rose 5% to \$285.9 billion, exceeding the previous record of \$278.5 billion achieved in 2011” according to the joint UNEP/Bloomberg report. ³ Google engineers, working with unlimited funds for several years found that ‘renewable is not doable’ – a breakthrough technology is required. ⁴

Therefore, there are ample ‘renewable demonstration projects’ world-wide and Canada is already a global leader in this area. (see chart below) Another billion dollars from Canadian taxpayers’ pockets will not make a difference to global ‘demonstration’ but will divert essential funds from taxpayer needs like health and road infrastructure.

Except for the much-sought “Holy Grail” of ‘breakthrough’ technologies that would be potential game changers (such as Thorium nuclear reactors) it has been demonstrated:

³ Global Trends in Renewable Energy Investment 2016 http://fs-unep-centre.org/sites/default/files/publications/globaltrendsrenewableenergyinvestment2016lowres_0.pdf

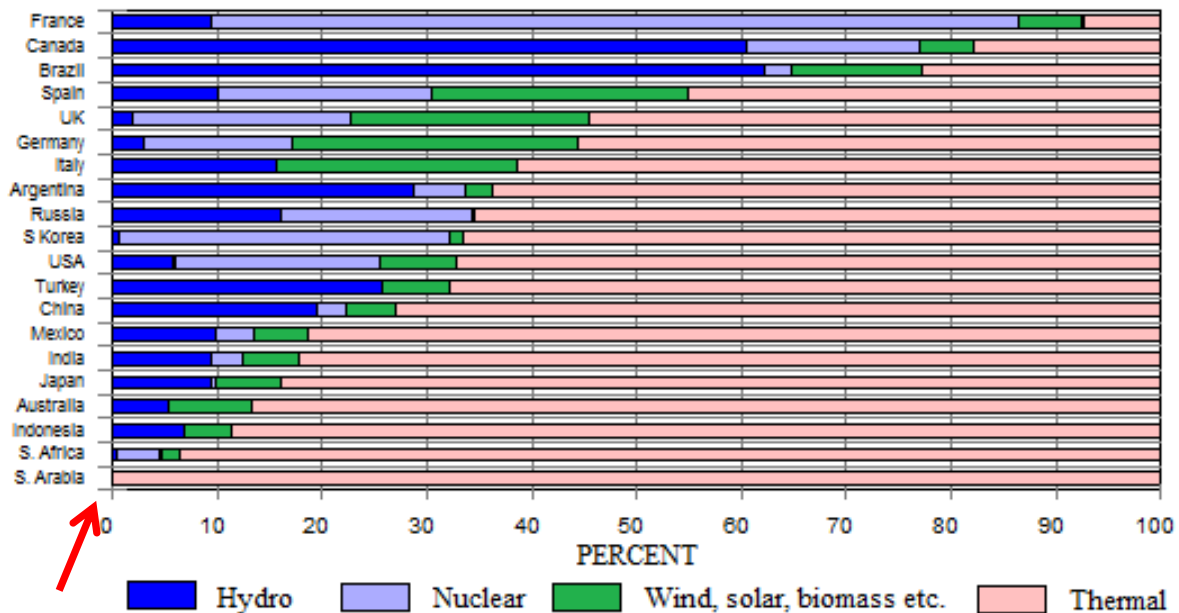
⁴

https://www.theregister.co.uk/2014/11/21/renewable_energy_simply_wont_work_google_renewables_engineers/

- that wind and solar are unable to support human society;⁵
- that geothermal potential is largely restricted by geography and costs, though ideal in places like Iceland and some parts of Italy and the USA. Potentially ideal geothermal sites may be far from demand and would require expensive infrastructure.

A demand to invest a billion dollars in an undefined 'demonstration' is a waste of taxpayer's money.

Further, Canada is already a world leader in renewable energy for power generation.⁶ Why is David Suzuki not asking Saudi Arabia, one of our main oil and gas competitors, to catch up before Canada is expected to do anymore?



Source: "Energy Matters" - Electricity generation by source as percent of total electricity generation. G20 countries, 2015 "Thermal" energy refers to coal, natural gas, diesel generators, oil burners. Coal is the choice world-wide for affordable, reliable power. Both hydro and nuclear are dependent on local geography; nuclear requires access to large water bodies for cooling facilities; hydro requires suitable geography and sufficient water flows (as in Quebec and British Columbia). Even hydro can be problematic in dry years as was recently the case in Venezuela and Tasmania with catastrophic and expensive results.

Further, regarding the oft-cited IPCC statement on 'decarbonization' that implies wide-scale wind-solar are recommended, often referred to from the Summary for Policy Makers (4.2.2) as "RE (Renewable Energy) technologies have achieved a level of maturity to

⁵ <https://www.cambridge.org/core/journals/mrs-energy-and-sustainability/article/lessons-from-technology-development-for-energy-and-sustainability/2D40F35844FEFEC37FDC62499DD8D4DC/core-reader>

⁶ euanmearns.com/electricity-and-energy-in-the-g20/

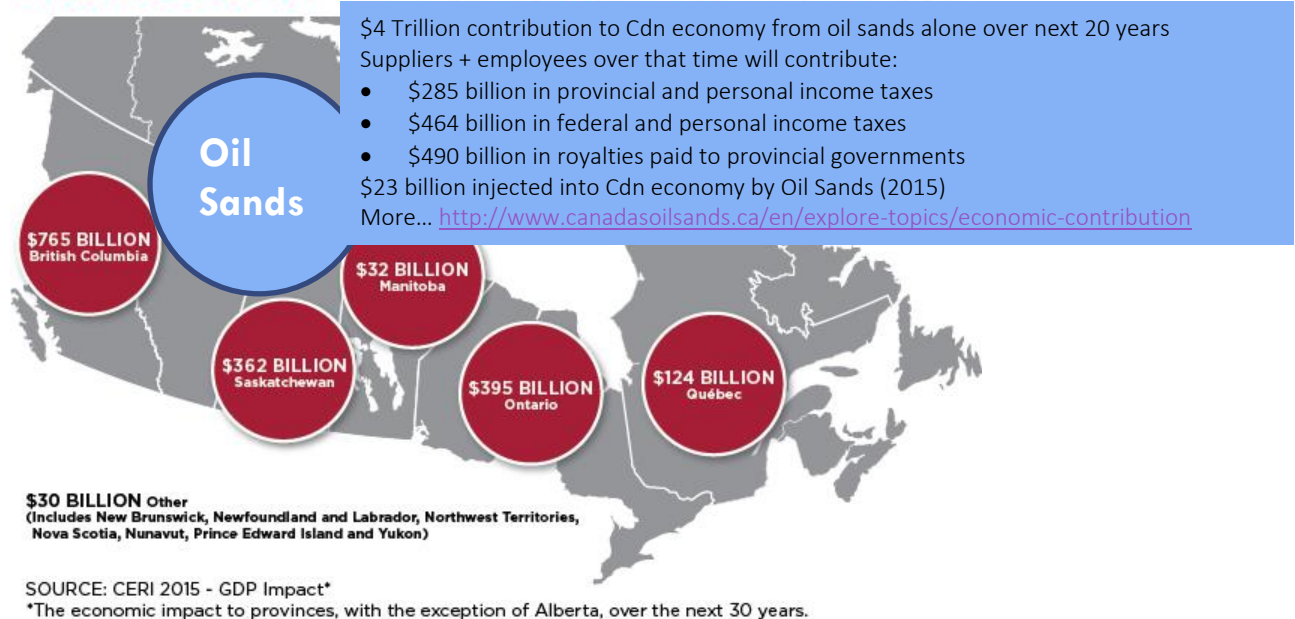
enable deployment at significant scale (robust evidence, high agreement).” Surprisingly the IPCC has informed us that: **“IPCC does not make recommendations on any topic and you will not find any recommendations in any of our reports.”** They go on to further confirm that the IPCC has no peer-reviewed evidence to support its references to RE (wind and solar) as a ‘cost-effective’ or suitable replacement for conventional power.⁷

SUZUKI FUND DEMAND #2: Eliminate fossil fuel subsidies by 2020.

Due Diligence: Fossil fuel industries constitute Canada’s most economically important supercluster.

Fossil fuel industries are subsidizing Canada as demonstrated in our report “Keep Canada in the Black.”⁸ Canada’s oil, gas, oil sands and coal industries underwrite the entire economy of Canada with billions of dollars every year in taxes, land lease and bonus payments, royalties, social contributions to the arts, health centers, and communities. There is a cascade of essential products, services and jobs stemming from oil/gas/coal.

ECONOMIC IMPACT OF THE OIL AND NATURAL GAS INDUSTRY TO THE CANADIAN ECONOMY



⁷ <https://friendsofsciencecalgary.wordpress.com/2015/11/05/a-matter-of-public-interest-on-the-ipcc-does-it-recommend-or-not-recommend-that-is-the-question/>

⁸ <https://friendsofsciencecalgary.wordpress.com/2016/03/15/keep-canada-in-the-black/>

As the Canadian Association of Petroleum Producers reports: ⁹

Alberta is Canada's largest oil and natural gas producer and is home to vast deposits of oil sands.

Page | 7

Quick facts

- \$2.9 billion - in payments industry made for the use of Alberta's oil and gas resources in fiscal 2015/16, seven per cent of total government revenue
- \$8.3 billion - average industry payment to the province over the last five years
- \$93 billion - in payments to the provincial government over the last 10 years
- \$16.9 billion - in industry spending on exploration and development in conventional areas in 2015
- \$23 billion - in capital spending in the oil sands in 2015
- 10.2 billion - cubic feet per day of marketable natural gas produced in 2015
- 530,000 - barrels per day of conventional oil produced in 2015, a decrease of 59,000 barrels per day from 2014
- 2.37 million - barrels per day produced from the oil sands in 2015, an increase of 210,000 barrels per day from 2014
- 4 refineries – with capacity to produce 460,000 barrels per day of oil or 23% of Canada's total refining capacity
- 4 upgraders – with capacity to upgrade 1.28 million barrels per day of oil

The **supercluster** of Alberta and Saskatchewan's **oil and gas industries** is one of the largest in the world and **certainly the most technologically advanced**.

Complementary industries like coal, a strong performer in Alberta, Saskatchewan and British Columbia, provides affordable, reliable power for industry, new clean tech operations in Carbon Capture and Sequestration technology (CCS – in Saskatchewan at Boundary Dam and Alberta's Quest project) and coal exports, supporting pillars of economic development in Canada.¹⁰ Affordable power is the key to a competitive economy.

The following excerpts from Alberta Industry website ¹¹ will help readers appreciate the vast scope of this industry in Alberta alone. Saskatchewan also has well-developed oil/gas/coal sectors. Both provinces drive multi-million-dollar manufacturing and equipment supply from provinces across Canada, in turn driving multi-million-dollar transportation industries in aviation, trucking and rail transport.

⁹ <http://www.capp.ca/canadian-oil-and-natural-gas/industry-across-canada/alberta>

¹⁰ friendsofsciencecalgary.wordpress.com/2016/03/15/keep-canada-in-the-black/

¹¹ <http://www.albertacanada.com/business/industries/oil-about-the-industry.aspx>

Some >70,000 Professional Geoscientists (geologists, geophysicists, geochemists, geotechnologists) and Professional Engineers are members of Alberta's Association of Professional Engineers and Geoscientists of Alberta (APEGA), many of them reside in Alberta, most of them graduates of the highest levels of study at Canadian universities. Shall their decades of study and expertise be dismissed in favor of unfounded climate catastrophe dogmatic hype by activists and celebrities?

In oil sands projects, team leads are typically holders of PhDs with at least 10 years' experience in the oil sands. These are high income earners who have earned it, as every oil sands job creates multiples of direct and indirect jobs which also support Canada's tax-base. These professionals are typically community philanthropists and most major oil/gas companies have armies of volunteers drawn from their ranks for big events like "Run for the Cure," arts fund-raisers, Calgary Stampede/Edmonton Exhibition (attracting a huge subset of world visitors annually to support the tourism industry), and in 1988, senior executives and managers were loaned at full pay to the successful Calgary Olympics.

Likewise, advanced high-tech industries like geomatics have developed out of oil and gas exploration and generous funding to universities.

The following employment figures do not include the number of small contractors and small/medium-sized business services that supply industry in special niche markets.

Oil and gas services and technologies fast facts

Revenues for oil and gas technology and services totaled about \$33 billion in 2013. The industry nearly tripled in size between 2003 and 2013.

There were over 8,600 equipment and service firms employing 110,000 Albertans in 2014.

In 2014, exports in the sector totaled \$3 billion, representing an increase of close to 7% from 2013.

Alberta is home to the third largest crude oil resource in the world. The majority of the resource is found in Alberta's oil sands with proven reserves of over 170 billion barrels of bitumen that can be economically extracted using current technologies. As new technologies are developed, the ultimate potential for bitumen reserves could increase significantly to over 300 billion barrels of bitumen supply.

Alberta produces 2.5 million barrels per day (bpd) of crude oil of which about 78% is raw bitumen from oil sands. A large portion of the bitumen produced is upgraded to a lighter, more valuable synthetic crude oil (sco) that is provided to domestic and international refineries for further processing.

Alberta has extensive natural gas resources that include conventional natural gas plus unconventional coalbed methane and shale gas supplies. Reserves of conventional natural gas currently stand at 33 trillion cubic feet (tcf) and 2.4 tcf from coalbed methane. The province estimates the remaining ultimate potential of marketable conventional natural gas to be 74 trillion cubic feet. Given the early stage of development of shale gas in Alberta, the reserve potential has not yet been assessed.

Current production of natural gas in Alberta is approximately 4 tcf/yr that is transported to both Canadian and US markets.

Alberta has a massive energy resource in coal. The current estimate for reserves of all types of coal in the province is about 33.3 billion tonnes (36.7 billion tons). This source of energy meets the need of Albertans supplying fuel for about 59% of the province's electricity generation.

Areas of expertise

The oil and gas technology and services industry provides a large value-added component to Alberta's economy and is instrumental in the development of Alberta's unconventional oil and gas reservoirs. Capital investment in oil sands, heavy oil and unconventional gas projects will provide a continuous source of demand for businesses in this sector.

Products and services: Oil and gas technology and services is focused on upstream-related oil and gas equipment and services. Upstream-related products and services include seismic and geological services, drilling and completions, and advanced production techniques. This important industry sector focuses on such areas as: multilateral drilling technologies, non-invasive drilling fluids, swell packer stimulation technologies, coiled tubing expertise and benefits, innovative pumping technologies, non-traditional well configurations, and geosteering of horizontal wells in real time.

Oil and Gas Equipment (Predominant/Proactive Sector): Alberta has the world's third largest proven crude oil reserves after Saudi Arabia and Venezuela. Canada is the world's third largest supplier of natural gas, with Alberta accounting for 80% of Canadian production. Alberta's oil and gas industry is constantly growing along with its need for technology and services. The Alberta Government is committed to improving extraction technologies for conventional oil production; i.e. advanced seismic and horizontal drilling.

Research and Development: Equally important is continued research and development efforts pertaining to unconventional gas development. Specifically, industry leaders feel that R&D efforts are required regarding:

Deep coal

Coal fines mitigation

Sheared coal reserves

Co-mingling coals with variable reservoir properties

Reservoir characterization from drill cuttings

Fracture design and fluid selection

Fracture and produced fluid recovery

Drilling and fracture stimulation of under-pressured and water sensitive reservoirs

Stratified reservoirs

Frac sand supply and use

Use of non-potable water for drilling and fracturing operations

Research infrastructure

The energy technology and services industry supports client companies in a variety of research institutions that enable this diverse industry to support the oil and gas industry in the province.

[Alberta Innovates - Energy and Environment Solutions](#) : Formerly the Alberta Energy Research Institute, this Government of Alberta-led organization collaborates with industry to help develop innovative and integrated ways to convert Alberta's natural resources into market-ready, ecologically responsible energy.

[Alberta Innovates - Technology Futures](#) : This provincially funded organization builds on the work of the former Alberta Research Council by helping technical industries develop products and move technologies to market.

[Alberta Sulphur Research Ltd.](#) (ASRL) : ASRL fosters research in the areas of the chemistry and technology of sulphur and its compounds with particular emphasis on recovery of sour natural gas, Claus plant operations, handling and transportation of elemental sulphur, and environmental aspects of the gas and sulphur industries.

[Canadian Centre of Mineral and Energy Technologies](#) (CANMET) : The CANMET Energy Technology Centre performs and sponsors energy research, technology development and demonstration within Natural Resources Canada. CETC/CANMET works in a variety of partnership arrangements on the research, development, demonstration, export and outreach of innovative energy-efficient and climate-change mitigating technologies associated with alternative, renewable and conventional energy.

[Canadian Gas Association](#) (CGA) : CGA develops energy industry policy positions, and makes submissions to organizations such as parliamentary committees and the Council of Energy Ministers. CGA also produces educational and environmental information for consumers and organizes training schools, workshops, seminars and conferences.

[C-FER Technologies](#) : C-FER Technologies' structural, mechanical, petroleum and reliability engineers conduct applied research and development, perform full-scale testing and provide engineering consulting to the upstream oil and gas, and pipeline transmission industries, as well as other industries with structural problems. C-FER was acquired by the Alberta Research Council in 1999.

[Petroleum Technology Alliance Canada](#) (PTAC) : PTAC is a not-for-profit association that facilitates collaborative research and technology development to improve the financial, environmental and safety performance of the Canadian upstream conventional oil and gas industry.

It is curious and misleading to the public that the David Suzuki Foundation appear to be unaware that all so-called 'renewables' require vast quantities of oil, natural gas and coal for the wind/solar devices, or hydro dams and nuclear power plants to be built. Blocking the development of the fossil fuel industries in Canada means that oil from other parts of the world will be used to make those 'renewables' – rather than Canadian fossil fuels

which are extracted under stringent environmental regulation and with legal requirements for reclamation.



Image shows base of wind turbine under construction with vast array of iron rebar, prior to pouring of cement. This single wind turbine base has huge carbon dioxide (CO₂) intensive requirements, using **45 tons of rebar** and **481m³ of concrete**.¹²

¹² <https://stopthesethings.com/2014/08/16/how-much-co2-gets-emitted-to-build-a-wind-turbine/>

SUZUKI FUND DEMAND #3:

Strengthen and build connections between Canada's provincial electricity grids to expand access to renewable energy, as per existing commitments.

Page | 12

Due Diligence: expanding connections requires \$100's of billions in infrastructure for transmission lines and additional integration systems. On the surface, it seems a simple thing to tie Quebec/Ontario/BC hydro to accommodate intermittent, unreliable wind/solar farms; in reality, such plans put the nation at risk of significantly increased debt for a less reliable grid. Some proposals like a national wind-hydro grid are technically infeasible and would lead to national blackouts.

There are numerous proponents of a national wind-hydro grid (i.e. Acting On Climate of McGill - Trottier;¹³ Leap Manifesto;¹⁴ CUPE) however an expert review shows that such a proposal is **technically infeasible**, and it would **cost hundreds of BILLIONS of dollars** in infrastructure and would **put Canada at risk of national blackouts**.¹⁵ ¹⁶ Our full rebuttal to "Acting on Climate" is entitled "Reality vs Climate Change Uncertainties."¹⁷

The power grid is extremely complex. The unintended consequences of a 'rush-to-renewables' can be seen in Australia's recent catastrophic series of power grid collapses and devastating blackouts. These caused major industrial damage to equipment, processes and products, put lives at risk and damaged the economy long-term. This is primarily due to having installed too much wind power on the grid and not providing enough stable, reliable coal-fired power as backup when the wind does not blow.¹⁸

Coal is the cheapest and most affordable source of power in Western Canada's Alberta and Saskatchewan. Hydro, now with its existing **multi-billion-dollar built infrastructure**, is the cheapest power generation source in Eastern Canada. We do not need any more so-called 'renewable' wind/solar power as it is not clean, free or green.

¹³ http://biology.mcgill.ca/unesco/EN_Fullreport.pdf

¹⁴ <https://leapmanifesto.org/en/the-leap-manifesto/>

¹⁵ Eng: friendsofsciencecalgary.wordpress.com/2015/09/29/power-generation-information-on-difficulties-of-instituting-the-proposed-wind-hydro-national-grid-network-in-acting-on-climate-change/

¹⁶ Fr: friendsofsciencecalgary.wordpress.com/2016/01/23/un-reseau-national-hybride-denergie-hydroelectrique-et-eolienne-le-plan-est-techniquement-irrealisable/

¹⁷ <https://friendsofsciencecalgary.wordpress.com/2015/04/07/reality-vs-climate-change-uncertainties-challenging-the-claims-of-acting-on-climate-change/>

¹⁸ www.theaustralian.com.au/business/mining-energy/miners-industry-face-150-million-hit-from-sa-blackout/news-story/52e269ef26ba018ad085968b0336b7b7

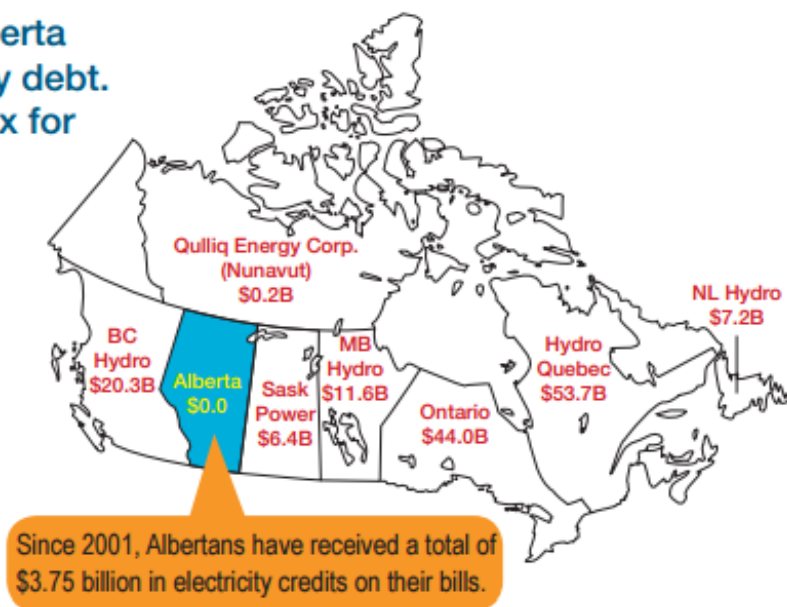


Until the recent policy changes by the Alberta NDP government, **Alberta was the only province in Canada with no public electric utility power debt.** Now as of 2016, Alberta has gone from debt free to billions and rising, due largely to misinformed advocacy by groups like the David Suzuki Foundation.

The Government of Alberta carries no electric utility debt. This means no utility tax for Albertans.

Canadian Electric Utilities Debt

(Figures are in Canadian billions of dollars)



Source: London Economics, 2014

SUZUKI FUND DEMAND #4:

Stop approving new fossil fuel infrastructure, including pipelines, that commits us to decades of increased fossil fuel dependency.

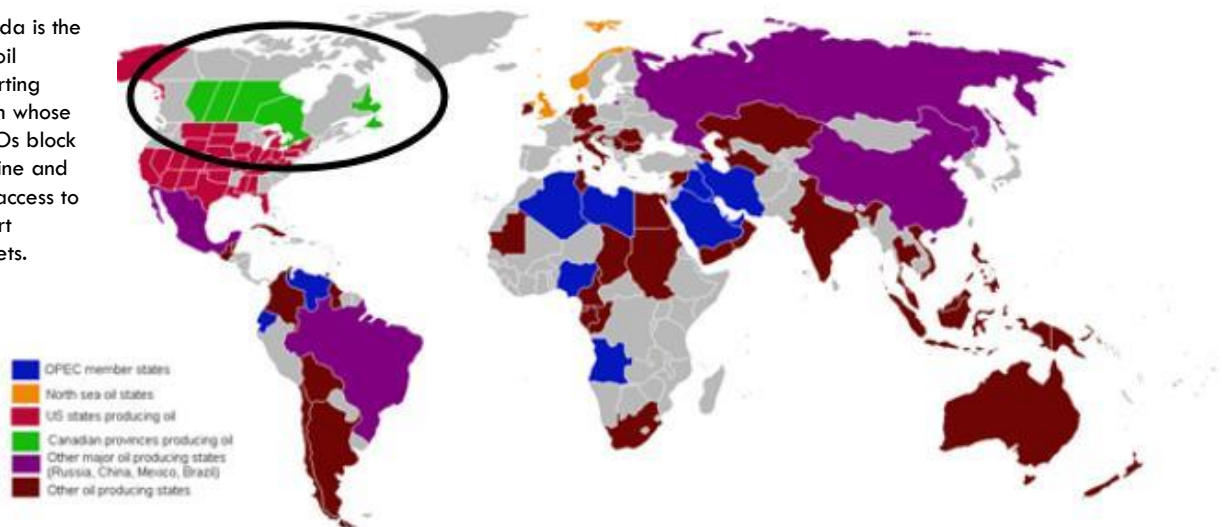
Due Diligence: How will society operate without fuel?

We must approve and build pipelines. Canada is a resource nation and the third largest reserves of in-demand fossil fuels in the world. Based on the IEA numbers, it is obvious that fossil fuels will be the main drivers of global economies for decades to come – especially in Canada – a cold, vast, wintry country with short days and the need to clear tons of snow from roads for safe transport, currently, there is no replacement for fossil fuels.

To claim otherwise is to put the people of Canada at risk of personal injury or death due to the extreme conditions we experience, especially in winter. Robert Lyman, former public servant, reports on “Why Renewables Cannot Replace Fossil Fuels by 2050.”¹⁹

Canada continues to lose \$50 million a day due to pipeline blockades by tax-subsidized charities like the David Suzuki Foundation, who are taking partisan and non-factual positions. This appears to be in breach of the Canada Revenue Agency policy guidelines Section 3 on ‘public benefit’ status of charities.²⁰

Canada is the only oil exporting nation whose ENGOs block pipeline and port access to export markets.



¹⁹ friendsofsciencecalgary.wordpress.com/2016/05/31/why-renewable-energy-cannot-replace-fossil-fuels-by-2050/

²⁰ <http://www.cra-arc.gc.ca/chrts-gvng/chrts/plcy/cps/cps-024-eng.html#N102AF>

It is time to question these numerous 'green alliance' charities, who appear to be acting as proxies for either renewable industry developers or off-shore competitors in an apparent green-cloaked trade war. The 2014 drop in oil prices led to a rash of suicides due to so many layoffs, but as of 2016 **jobless people were still committing suicide in Alberta** ^{21 22} – **many families are facing the loss of everything while these 'environmental' charities revel in blocking development.** This is an unforgivable state of affairs that tax-subsidized 'charities' exacerbate negative economic conditions that impoverish Canadians and drive them to despair.

Further - millions and millions of 'ordinary' jobs are directly reliant on oil and gas. The demands to phase out pipelines and oil and gas development means these millions of workers would become unemployed and the thousands of necessary, useful products and by-products would vanish.

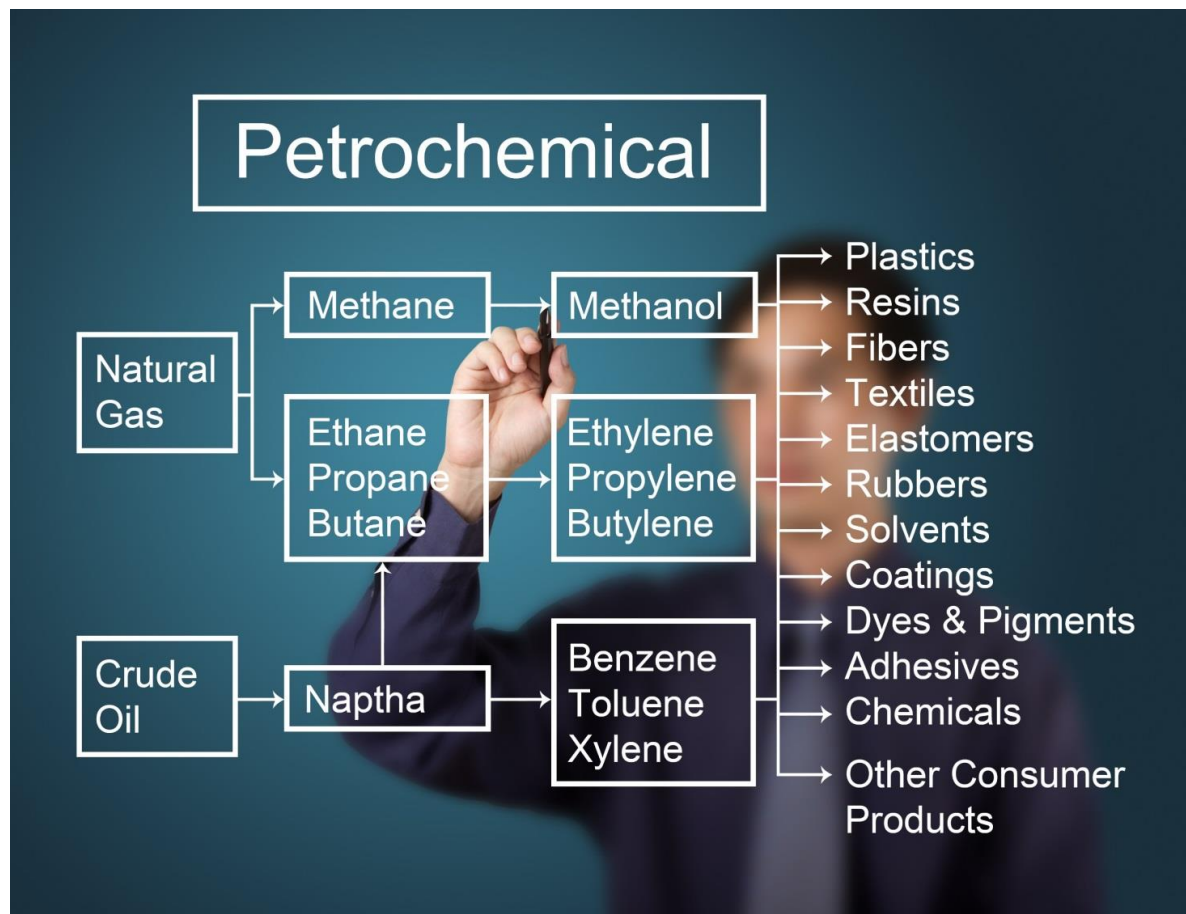


Image licensed from Shutterstock

²¹ <https://www.theguardian.com/world/2015/dec/14/canada-oil-production-crisis-suicide-alberta>

²² <http://www.cbc.ca/news/canada/calgary/suicide-rates-alberta-2016-1.3895556>

These include crucial medical supplies including pharmaceutical drugs, diagnostic equipment and sterile, single-use surgical devices as well as sterile/safe food packaging.



From all modern electronics, all health and sterile products, shampoos and health/beauty products, recreational devices, food safety and even yoga pants, fossil fuel energy and by products are required for the manufacture, distribution and sale of these goods. **Millions of jobs rely on the cascade of products from fossil fuels.**

Medical images licensed from Shutterstock.



SUZUKI FUND DEMAND #5:

Strengthen Canada's international emissions reductions targets to achieve net-zero emissions by 2050.

Due Diligence: Increasing Canada's international emissions reductions targets would further accelerate turning our economy to ashes.

Canada agreeing to the IPCC's (Intergovernmental Panel on Climate Change) reduction goals in Paris, June 2015, has set us on the road to ruin. The IPCC convinced G7 countries to a greenhouse gas reduction of 70% below 2010 levels by 2050. Canada's Total 2010 emissions were 706 MtCO₂e²³. These are the levels your government has agreed to:

Emissions Reductions and Levels Required by Target (MtCO₂e)

Target	Year	Goal
17% from 2005	2020	620
30% from 2005	2030	523
70% from 2010	2050	212

How do these reductions translate to daily life? This table shows the emissions Canadians have historically generated²⁴ and what we will be limited to in 2050:

Canadian GHG Emissions by Economic Sector (MtCO₂e)

Year	1990	2005	2010	2014	2050
Transportation	129	171	173	171	52
Electricity	95	118	95	78	29
Buildings	73	85	81	87	24
Agriculture	57	70	68	73	20
Oil and gas	107	159	162	192	49
EITE ²⁵	96	88	75	77	22
Waste and others	56	56	54	54	16
Totals	613	748	706	733	212

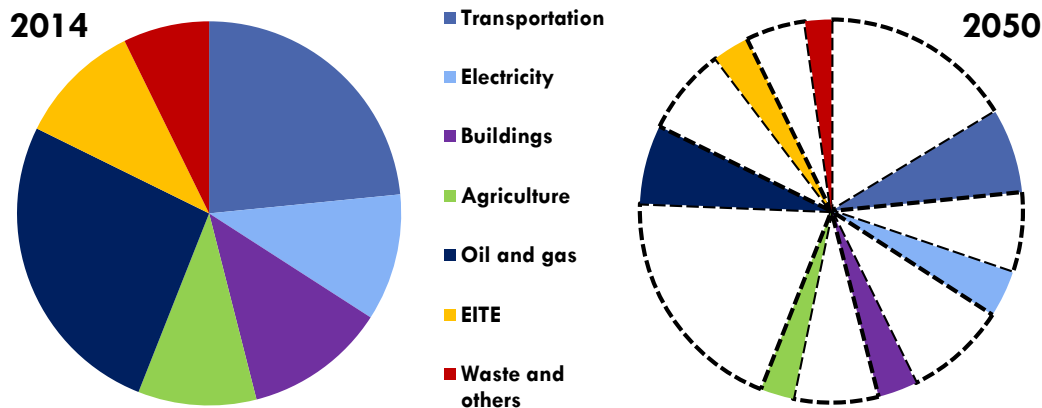
²³ MtCO₂e = million metric tons of carbon dioxide equivalent

²⁴ www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=F60DB708-1

²⁵ The Emissions Intensive Trade Exposed Industry (EITE) sector represents emissions from mining activities, smelting and refining, and the production and processing of industrial goods such as chemicals, fertilizers, paper or cement.

Numbers are just that, numbers. Let us put some colour on these numbers.

This graphic represents the proportional CO₂ emitted by Canadians based on the 2014 data presented above and the coloured slivers on the right are what we will be allowed to emit in 2050. All the dashed white pie slices in 2050 combine to 520 MtCO₂e which is 71% of the 2014 total of 733 MtCO₂e.



These emission amounts are for 2014 and basically assume that any population growth will meet these amounts. So, as Canada's population grows, more Canadians, means less energy per man, woman and child. This is the true definition of energy poverty.

Demanding more stringent international emissions reduction targets for Canada would further accelerate turning our economy to ashes. If Canada were to meet the 2°C GHG reduction target set by previous governments, Canada's economy would be reduced to that of Chad, an impoverished, developing nation.

Canadians cannot survive in our extreme climate without the prime power of fossil fuels to heat homes, drive industry and power transportation of goods and services; our industries would be decimated.

Let us now address "achieving net-zero emissions". This slogan makes it sound easy. Having a "net zero carbon footprint" or "carbon neutrality" refers to balancing the measured amounts of released carbon dioxide from daily or industrial activity with an amount that was sequestered **or buying enough carbon credits to make up the difference.**

As presented above reducing carbon emissions is a difficult painful task. This leaves us with carbon sequestration and offset carbon credits.

Carbon sequestration technology is in its infancy and very expensive. The Alberta Government is spending \$1.24²⁶ billion over 15 years to reduce CO₂ emissions by 2.76 Mt per year. To put this in perspective, Canada would need to spend over \$233 billion to just sequester the excess 520 MtCO₂e for 2014, again disregarding what future population growth will require for staying warm and being able to afford to buy groceries. This 'energy poverty' or 'heat-or-eat' poverty is common across Europe now, following their 'rush-to-renewables,' implementation of stringent GHG reduction targets, carbon taxes, and large incentives/subsidies to utilities pushing wind/solar and biofuel developments.

An option to reduction, is to pay for carbon credits. These are purchased from Carbon Trading Markets to offset CO₂ emissions. The most recent price is US\$14.13 or CAD\$18.95.

**Futures Daily Market Report for Physical Environmental
07-Apr-2017**

COMMODITY NAME	CONTRACT MONTH	DAILY PRICE RANGE				SETTLE	
		OPEN#	HIGH	LOW	CLOSE#	PRICE	CHANGE
CA7 -California Carbon Allowance Vintage Specific Daily Future - 2017							
CA7	Apr17					14.13	0.54

Should we want to offset the 520 MtCO₂e for 2014, **we could purchase enough credits by sending California CAD\$9.9 billion per year.** Of course, these carbon offset rates increase annually so the final annual amount will be much greater. Furthermore, these markets are fraught with fraud²⁷ due to the possibility for market manipulation as there is no actual delivery of any physical product. These credits are basically contracts that allow emitters to continue emitting. They do nothing to help reduce noxious pollutants or 'stop climate change.' This type of nonsensical environmental extortion was the reason Canada pulled out of the Kyoto Accord – at the time we were slated to pay \$14 billion in penalties to countries that have poor environmental track records and which are competitors to our own resource industries.

Canada's gross domestic product (GDP) of \$1,742.7 billion is presently ranked 17 by the IMF's 2017 estimates despite our small population and vast geographic challenges. As discussed above Canada's industries will be decimated if we pursue these demands. What will Canada's GDP be in 2050? Robert Lyman in 2015 stated

²⁶ www.energy.alberta.ca/OurBusiness/3815.asp

²⁷ <http://www.france24.com/en/20160503-france-trial-multi-billion-carbon-emissions-trading-fraud-opens-paris>

that reducing Canada's carbon footprint to these 2050 levels would put Canada at par with "poverty-stricken countries like Haiti, Afghanistan, North Korea and Chad"²⁸.

Canada's gross domestic product (GDP) of \$1,742.7 billion is presently ranked 17 by the IMF's 2017 estimates despite our small population and vast geographic challenges. Chad is ranked at 128 by the IMF with a GDP of \$31.8 billion.²⁹

Page | 20

Canada's GDP per capita ranking by the IMF, in 2015, is 21st at \$45,602 while Chad ranks 155th with \$2,640 per citizen.^{30 31}

It is a sorry state of affairs that a tax-subsidized 'charity' like the David Suzuki Foundation is advocating policies that will make taxpaying Canadians poor and will put taxpaying Canadian entrepreneurs, small and medium sized industries, farmers, truck drivers and the real estate sector out of business. Hospitals will not be able to provide reasonable care, as all their operations require vast amounts of carbon dioxide emitting fossil fuels.

Obviously, there is no 'net public benefit' in these demands of the David Suzuki Foundation as per the policy guidelines of the Canada Revenue Agency for Charities. As shown, the public harm from these policies would be destructive to Canadian society. The following excerpt from the Canada Revenue Agency's on-line policy guidelines for charities regarding the 'net benefit' test states: ³²

In such cases, applicants must establish the following: ²⁶

- the benefit must be generally shown to be tangible. If it is intangible, it must be demonstrated that the benefit is regarded as valuable by "the common understanding of enlightened opinion" ²⁷
- the benefit must be generally shown to be direct, although in some circumstances, examiners may consider an indirect benefit
- when benefit is proven, it must be weighed against any harm that may arise from the proposed activity and a net benefit must result

SUZUKI FUND DEMAND #6:

Commit to increasing the price on carbon pollution beyond 2022 as incentive to build a strong, sustainable economy and help industry make reliable long-term plans to reduce emissions.

²⁸ friendsofscience.org/assets/documents/climate_change_implications_Lyman.pdf

²⁹ [en.wikipedia.org/wiki/List_of_countries_by_GDP_\(PPP\)](http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP))

³⁰ [en.wikipedia.org/wiki/List_of_countries_by_GDP_\(PPP\)_per_capita](http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)_per_capita)

³¹ www.ifitweremyhome.com/compare/CA/TD

³² <http://www.cra-arc.gc.ca/chrts-gvng/chrts/plcy/cps/cps-024-eng.html#N102AF>

Due Diligence: Increasing carbon prices will only further disadvantage Canada against global competitors and will have no effective benefit to reducing GHG emissions.

It may force Canada into carbon trading, an industry that Interpol describes as being fraught with fraud due to the invisible nature of the 'product' – described by journalist Mark Schapiro as *"the lack of delivery of an invisible substance to no one."*

Page | 21

The potential penalties in such international arrangements as Kyoto, would have led to a demand payout of some \$14 billion to polluting nations which have none of the environmental controls, emissions management and reclamation initiatives of Canada. This is absurd. Canada is already deemed to be carbon neutral by its very geographic nature with the vast boreal forest and agriculture uptaking carbon dioxide much of the year.

Compare our largest carbon sink – the boreal forest, with that of Saudi Arabia's, one of our main competitors for oil and gas markets. Why is no ENGO like David Suzuki Foundation pursuing that high emitting nation which has the greatest solar resources of anywhere – but does not put them to use?



Saudi Arabia is a large emitter that relies on thermal (oil & gas) for power, heating and cooling, despite vast solar resources.

Canada's boreal forest is a carbon dioxide 'sink' making us a carbon neutral country.



Bjorn Lomborg has assessed the Intended Nationally Determined Contributions (INDC) of all nations combined, "if every nation fulfills every promise by 2030, and continues to fulfill these promises faithfully until the end of the century, and there is no 'CO₂

leakage' to non-committed nations, the entirety of the Paris promises will **reduce temperature rises by just 0.17°C (0.306°F)** by 2100."³³

This is immeasurable and will not address the alleged climate change goals – but it will destroy world economies.

How much is 0.17 degrees C.?

Page | 22

It is roughly the same as the difference in temperature from the top of an eight-story building to the ground because of the rise in altitude.³⁴ In other words, it is immeasurable and insignificant.

SUZUKI FUND DEMAND #7:

Adopt a national zero-emission vehicle standard in line with Quebec, California and nine other U.S. states.

Due Diligence: Zero emissions vehicles do not work well in winter weather.

"Be careful what you wish for, you might get it" is a cautionary French proverb. While advances have been made in electric vehicles, and hybrids are well received, there is a long way to go before electric vehicles have any suitable application for the majority of Canadians. The reasons are simple.

Canada is sparsely populated, distances are vast for most non-urban dwellers. Industrialized applications like shipping and transport of goods or heavy equipment for industry, snow cleaning and construction rely exclusively on the exceptional power and heavy cartage ability that can only come from diesel engines at this point in time.

Further, during winter operation, a gas-powered vehicle draws passenger cabin heat from the waste heat of the engine; an EV generates heat by using some of the same battery that powers the EV car. The battery efficiency, like all batteries, is greatly reduced in wintry weather and further reduced by this additional demand to heat the passenger cabin. At present, electric car charging, even for fast car chargers, is about ½ an hour. Imagine how frustrating the annual summer vacation lineup at the electric charging station stretching for miles as each family awaits their half-hour charge, rather than the 5-minute fill-up at the gas pump of today. Or how dangerous a ½ hour recharge in -25°C will be; how would you stay warm? Or, running out of

³³ www.lomborg.com/press-release-research-reveals-negligible-impact-of-paris-climate-promises

³⁴ friendsofsciencecalgary.wordpress.com/2016/03/13/reality-bites-the-likely-effect-of-ghg-emissions-reduction-is-next-to-nothing/

battery power on an isolated strip of road? How could your car be recharged? These are critical matters of safety and survival in Canada's harsh weather conditions.

Electric vehicles have some applications for local urban driving, but to impose a national standard is to invite disaster, put people in danger and to cause severe damage to the economy.

Further, the addition of more than a handful of electric vehicles to a neighbourhood then requires extensive upgrading of distribution lines and infrastructure to accommodate demand, costing billions of dollars and driving up power prices for consumers and industry for normal, daily needs.

A Tale Told by the Numbers, by Ottawa energy policy consultant and former public servant, Robert Lyman, helps put things in perspective.³⁵

- *Of 907 million personal vehicles on the road worldwide in 2014, 405,000 were EV's. EVs constituted 0.04 % of the PVs on the road globally.*
- *Sales of all-electric trucks and buses are negligible.*
- *Of 88 million new vehicle sales in the world in 2014, 307,000 were EVs. That is, the EV share of new vehicle sales was 0.35%. In 2015, that probably rose to one half of one percent.*
- *To reach 60% of present PV sales by 2040, EV sales would have to increase to 120 times today's level.*
- *The potential growth in total vehicle sales globally is immense, especially in Asia, the Middle East and Africa. The likelihood that EV sales will constitute 60% of the much-increased sales of all vehicles by 2040 approaches zero.*
- *Internal combustion engines, powered by petroleum fuels, will be the dominant source of motive power for a very long time.*

Further – to enforce electrification of vehicles runs a serious risk of completely crippling Canada's transportation system in the event of a catastrophic Solar Coronal Mass Ejection (CME) like that which struck Quebec in 1989, crippling massive transformers and plunging much of Quebec and the North-eastern US into blackout for days.

A Solar Coronal Mass Ejection as described by NOAA's Space Weather division: "Coronal mass ejections (CMEs) are huge explosions of magnetic field and plasma from the Sun's corona. ... CMEs travel outward from the Sun typically at speeds of about 300 kilometers per second, but can be as slow as 100 kilometers per second or faster than 3000



³⁵ friendsofsciencecalgary.wordpress.com/2016/12/11/a-tale-told-by-numbers-world-vehicle-trends/

kilometers per second. The fastest CMEs erupt from large sunspot active regions, powered by the strongest magnetic field concentrations on the Sun. These fast CMEs can reach Earth in as little as 14--17 hours. Slower CMEs, typically the quiet region filament eruptions, take several days to traverse the distance from the sun to Earth. Because CMEs have an embedded magnetic field that is stronger than the background field of the solar wind, they will expand in size as they propagate outward from the Sun. By the time they reach the Earth, they can be so large they will fill half the volume of space between the Sun and the Earth. Because of their immense size, slower CMEs can take as long as 24 to 36 hours to pass over the Earth, once the leading edge has arrived.” (Photo credit: Wikipedia: NASA

We know the power grid everywhere in the world is generally at risk of such potential events, more so in Quebec than elsewhere in Canada due to the geological qualities of the Canadian Shield and the vast hydro tower transmission/distribution lines.

Zero emissions vehicle targets are unlikely to be achieved due to the extremely small numbers of EVs on the market and limited interest in them due to the performance issues mentioned above. Most are beyond the financial reach of consumers and those that enjoy EVs are often wealthy citizens who, ironically and unfairly, benefit from substantial financial incentives paid by the middle class and poor. Ontario³⁶ and Tesla³⁷ are examples. Energy and environment commentator Blair King – “A Chemist in Langley” has provided some useful insights on the faulty assessments of travel needs by EV enthusiasts and many of the complications of EVs on a wide scale, such as the cost and need to completely upgrade distribution lines.^{38 39}

SUZUKI FUND DEMAND #8

Provide \$2.3 billion per year for public transit, in line with your commitment to invest \$25.3 billion over 11 years.

Due Diligence: Site specific cost-benefit analysis must be done to ensure taxpayers are not burdened with huge debt or interest payments. These energy intense projects do not reduce carbon dioxide emissions and have no constructive effect on climate change, but may benefit air quality in certain locations through the reduction in commuter traffic.

In major centers with high density, some public transit infrastructure such as Light Rail Transit makes good sense to reduce road congestion, improve land use and real estate potential (i.e. building offices and residential facilities instead of paving

³⁶ www.huffingtonpost.ca/2016/02/10/electric-car-subsidy-ontario_n_9203502.html

³⁷ www.nationalreview.com/article/397162/tesla-and-its-subsidies-phil-kerpen

³⁸ Part 1: achemistinlangley.wordpress.com/2016/12/16/electrifying-bcs-transportation-system-debunking-the-myths-part-i-that-bc-hydro-load-estimate/

³⁹ Part 2: achemistinlangley.wordpress.com/2016/12/16/electrifying-bcs-transportation-system-debunking-the-myths-part-ii-night-charging-of-vehicles/

parking lots everywhere) and to reduce urban transportation emissions. However, these projects should be based on thorough cost-benefit analysis and the public should understand there would be no potential 'climate change' benefit, nor are costs likely to ever be recovered. The projects will typically require a life-long subsidy, so the ridership must justify the case.

"Portland's North Interstate Rail light rail line is estimated to save about 23 billion BTU per year, while its construction is estimated to have consumed 3.9 TRILLION BTU... it would take 172 years to offset the extra energy needed for construction. Not only would this exceed the lifespan of the line but long before 172 years automobiles are likely to be so energy efficient that light rail will offer no savings at all"⁴⁰

SUZUKI FUND DEMAND #9

Create training programs for oil and gas sector workers to help them put their skills to work in the renewable energy sector.

Due Diligence: Canada's largest "supercluster" already exists in Alberta and Saskatchewan in oil and gas expertise, related emissions management, air and water monitoring, and site reclamation to responsive self-sustaining ecosystem.

The Suzuki Fund demand to create job training for oil gas workers to transition to renewable energy sector is contrary to all evidence presented herein – an economically regressive idea when the world demand for oil and gas is projected to rise dramatically. Finance Minister Morneau presented a budget filled with 'supercluster' potential plans – in fact Canada and Alberta/Saskatchewan have one of the largest **existing and operational superclusters** of oil and gas expertise, in every aspect of the field, in the world.

Most highly industrialized nations must import fossil fuels – South Korea is the 13th largest economy and the 8th largest trading nation, but has virtually no fossil fuels, importing some \$184.8 Billion in 2012; Europe imports some \$600 billion in fossil fuels to maintain its industrial base. In turn, these nations are exporters of value-added goods, none of which could exist without fossil fuels.

During the annual Global Petroleum Show in Calgary, people come from around the world to learn from Canadians.

Canadian experts, including Friends of Science Society's past president (the late) Len Maier, address global petroleum matters in need of urgent solutions. In Mr. Maier's case, he was a team lead on the dousing of hundreds of blown-outs wells after the first Persian Gulf War. Initially, it was thought it would take six years to put out the

⁴⁰ From a study by Randall O'Toole of the Cato Institute: "Does Rail Transit Save Energy or Reduce Green House Gas Emissions?" April 14, 2008.

flames; the various international teams accomplished the task in nine months, partly due to the innovative thinking of people like Mr. Maier, a Professional Engineer who had dealt with similar challenges all his life. This dangerous, life-threatening accomplishment, in conditions of extreme duress and without access to best available technologies due to the remote location and urgent need, was achieved without a single loss of life.⁴¹

Renewable energy jobs are short lived and low skilled overall. Most manufacturing of wind and solar devices are done in countries like China where there is the cheapest labour and least environmental regulations.

By contrast, oil and gas/oil sands today is a high-tech industry that, while still somewhat reliant on the physical labours of 'rig floor workers' (as would be the case for geothermal) – in principle the industry is highly automated and uses advanced technologies for more successful siting of wells and minimal environmental impacts.

Advanced technologies stemming from oil and gas exploration and field work have also developed a highly successful Canadian niche industry sector in Geomatics engineering which has numerous non-oil and gas applications.⁴²

Likewise, Alberta's focus on reclamation of land, restoring the natural ecosystems to independent, self-sustaining development have created world class niche markets and consulting services that could be helping resolve environmental impact issues around the world – particularly in China where the impact of mining of rare earth minerals for wind turbines and the processing of silica for solar panels has created vast environmental devastation that is damaging to local populations' health, and over the long-term, damaging to the world.



Every mine and industrial venue in the world should have quality reclamation as is required by the Alberta Energy Regulator and Alberta's oil sands experts have clearly demonstrated they can accomplish.

⁴¹ www.bechtel.com/projects/kuwait-reconstruction/

⁴² schulich.ualgary.ca/departments/geomatics-engineering



Restored wetlands, former oil sands mine.

In Summary:

David Suzuki Foundation partisan “Power Up Renewables” email campaign is based on incorrect and misleading information as shown herein. We do not see a net benefit to this charity’s demands – we have shown there would be great harm to the public and the Canadian economy.

There is no cost-benefit analysis or evidence to support the claims of the David Suzuki Foundation in their point-and-click renewables promotional campaign. The policies demanded will be detrimental to the Canadian economy; thousands of Canadians are already suffering due to pipeline blockades by ‘green’ groups who present equally misinformed arguments.

As outlined by the Competition Bureau in their Jan. 23, 2017 directive to the business community,⁴³ it is our view that tax-subsidized environmental charities should also have to meet these minimal standards of due diligence and evidence-based communications:

Before making environmental claims, businesses must make sure that the claims:

- **Aren’t misleading or likely to result in misinterpretation**
- **Are accurate and specific:** claims that broadly imply that a product is environmentally beneficial or benign must be accompanied by a statement that provides support.
- **Are substantiated and verifiable:** claims must be tested and all tests must be scientifically sound, conducted in good faith and documented.

⁴³ <http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04183.html>

Based on the foregoing, appropriate action should be taken to stop the David Suzuki Foundation and other similar tax-subsidized environmental charities from these unsubstantiated demands and claims, and their economically destructive, regressive activities, unwillingly subsidized by taxpayers and taxpaying industry, against the nation's interests.

Page | 28

As Canada celebrates 150 years, we should also celebrate the pioneers who took this nation from being “*quelques arpents de neige... a few acres of snow*” to a leader in human rights, global economic development, the third largest contributor to charities world-wide, a remitter of some \$24 billion in foreign worker pay, sent home to directly help the impoverished, third largest oil reserves of the world, and the fourth largest aviation and space export industry in the world. Our generosity is only possible when we have a strong economy. A strong economy relies on providing the products and resources most in demand in the world. Canada is rich in resources, with tens of thousands of highly trained experts in resource development and reclamation. Due diligence demonstrates that these will be in demand for decades. All Canadians should benefit from the blessings of these natural riches and our human capital, made possible thanks to the pioneering work of those who came before us, laboring under the harshest conditions, without the modern benefit of hydrocarbon energy.

Celebrate them.

Support this heritage of arduous work and rich rewards.

Celebrate Canadian resource industries and employees, coast-to-coast-to-coast.

A decorative graphic consisting of several overlapping triangles in various colors including red, blue, green, orange, and purple, arranged in a cluster on the right side of the page.

**CELEBRATE
CANADA 150**



Appendix A – Text of Email Campaign

Letter from David Suzuki Foundation to Canadian government

Subject

Page | 29

Propel us to a renewable energy economy

I believe renewable energy can power our country, boost our economy, generate well-paid jobs and fight climate change. Although your government has developed a plan to shift to renewables, I have yet to see sufficient action behind the commitment. To help advance renewable energy in Canada, I'm asking that you:

- Invest \$1 billion annually in renewable energy demonstration projects.
- Eliminate fossil fuel subsidies by 2020.
- Strengthen and build connections between Canada's provincial electricity grids to expand access to renewable energy, as per existing commitments.
- Stop approving new fossil fuel infrastructure, including pipelines, that commits us to decades of increased fossil fuel dependency.
- Strengthen Canada's international emissions reductions targets to achieve net-zero emissions by 2050.
- Commit to increasing the price on carbon pollution beyond 2022 as incentive to build a strong, sustainable economy and help industry make reliable long-term plans to reduce emissions.
- Adopt a national zero-emission vehicle standard in line with Quebec, California and nine other U.S. states.
- Provide \$2.3 billion per year for public transit, in line with your commitment to invest \$25.3 billion over 11 years.
- Create training programs for oil and gas sector workers to help them put their skills to work in the renewable energy sector.

I look forward to seeing Canada's focus switch to renewable energy.



About

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, professional engineers, professional geoscientists, economists and citizens who are celebrating its 15th year of offering climate science insights to the public and policy-makers.

After thorough review of a broad spectrum of literature on climate change, Friends of Science Society has concluded that the sun is the main driver of climate change, not carbon dioxide (CO₂).

Friends of Science Society
P.O. Box 23167, Mission P.O.
Calgary, Alberta
Canada T2S 3B1

Toll-free Telephone: 1-888-789-9597

Web: friendsofscience.org
climatechange101.ca

Email: [contact \(at\) friendsofscience \(dot\) org](mailto:contact@friendsofscience.org)