From Ice Age to Nice Age

Why?

The Okotoks Big Rock was once under two miles of ice that melted 10,000 years ago.

Climate Change Policy Information for Albertans

A “Plain Language” Document

PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

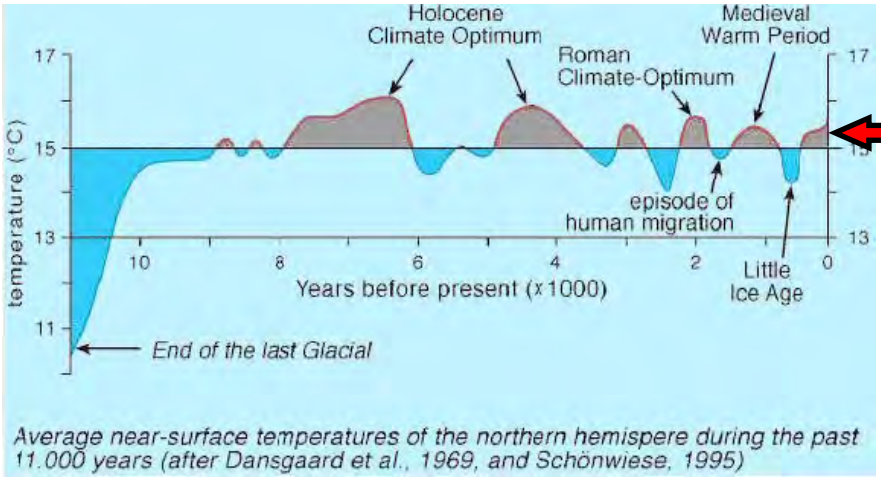
FRIENDS OF SCIENCE
Providing Insight into Climate Science

September 2015

Climate Changes. Why?

Warmer

Cooler



Average near-surface temperatures of the northern hemispere during the past 11.000 years (after Dansgaard et al., 1969, and Schönwiese, 1995)

We are here

Anyone familiar with history knows that climate changes throughout time. Hannibal crossed the Alps on elephants in Roman Times. People suffered disastrous famines in the era of the revolution in the Little Ice Age, popularized in the musical "Les Miz.'. Those are just two examples.

Over the past 100 years it has become evident that human beings, with their industrial manufacturing, and their powerful equipment used to build dams or cities, farm or drain wetlands, are affecting the earth and land use. The related industrial emissions of greenhouse gases were deemed to be affecting earth's climate.

Global climate model simulations forecast that Anthropogenic (human-caused) Global Warming (AGW) may cause 'catastrophic' global warming. Most world governments ratified the United Nation's Kyoto Accord of 1997, hoping to reduce global warming by reducing greenhouse gas emissions

However, the projected catastrophic temperatures that the UN's climate panel—the Intergovernmental Panel on Climate Change (IPCC) predicted have not happened. In fact, **there was a natural slow-down and global warming went into hiatus before the Kyoto Accord was ever ratified, despite a rise in CO2 concentration.** (now 18 years and 8 months of barely perceptible change)

The world has spent $US 2.2 Trillion on renewable energy from 2004 through 2014 trying to reduce emissions, but carbon dioxide concentration has risen. Temperatures have not. That means the hypothesis is unproven and climate models are flawed. They should not be used for setting climate change policy.

Friends of Science Society includes earth, atmospheric, solar scientists and engineers who have been volunteering time to critically review climate science for over 13 years. Our science review shows that the sun is the main direct and indirect driver of climate change.

We are concerned that a new Little Ice Age is coming and we are unprepared for cooling. The sunspot activity is very low. Climate change "warming" fears have scared taxpayers and voters in the UK and EU into accepting very expensive renewable energy plans and carbon taxes/trades, that have pushed hard-working people into heat-or-eat poverty. Jobs have been lost. Power prices have gone up 37% (2005-2013). The environment was not helped one bit. We must learn from their experience. Please review our findings with an open mind.

From Ice Age to Nice Age

Climate Change Policy Information for Albertans

Paris Climate Change Talks in December

Five Alberta Government Climate Policy Principles

Experts Respond with Evidence

Red Flags on Going "Green"

Climate Changes—Naturally
Be Prepared.
Warming? *Or* Cooling.

Evidence -

A Few Realities

"Our government intends to take real action, but we will not do so until we have the right **evidence-based framework** for doing so and not until we have heard from Albertans ."

We present the Evidence over Ideology.

Disclaimer: Images of various researchers, scientists, guest speakers and references to their work in this document does not imply their agreement with all aspects of Friends of Science Society's position on these matters.

Paris Climate Talks December 2015

Canada withdrew from the Kyoto Accord in 2011 in order to avoid being forced to pay some ~$14 billion in penalties.

This year in Paris, attempts will be made to make a legally-binding arrangement that will punish the modern Western world, while allowing developing nations to expand their use of fossil fuels at will, with no pollution controls. Is that fair or sensible? If the environment is the concern, shouldn't modern emissions and pollution management be the goal for all nations?

Canada's sacrifice to meet climate targets will be useless in the grand scale of things.

According to Canadian energy economist Robert Lyman, the stated climate targets of the G-7 will require the entire closure of oil and gas development in Canada—this will lead to massive job loss and a cascading collapse of our economy. On a personal level, if you enjoy flying to exotic places to escape the cold, you would not be allowed to do that anymore. "Snowbirds would be nobirds." Power generation would become extremely costly.

"But wouldn't we be helping to save the planet?"

No. Canada's and Alberta's contribution to greenhouse gases is miniscule; if we shut down our energy and resources industries, our tremendous sacrifice would be swept away by the growth in fossil fuel use in developing nations.

Canada pulled out of Kyoto in 2011

Friends of Science Society scientific advisors were part of a debate on Kyoto in 2002 with members of the Pembina Institute.

Our advisors, Dr. Tim Patterson and Dr. Sallie Baliunas, were featured in our documentary "Climate Catastrophe Cancelled."

They argued a view we shared in the 2002 APEGA debate. That Kyoto was not based on good science, the AGW theory was flawed, natural influences like the sun drive climate more than CO2, and that Kyoto would damage Canada's economy. Every one of our points has proven accurate.

In 2011, Canada pulled out of Kyoto to avoid having to pay **$14 billion in crushing penalties.**

Debate: http://www.friendsofscience.org/assets/documents/KyotoAPEGA2002REV1.pdf

Video review by Friends of Science Communications Manager: https://youtu.be/DdlOWwYtTXk

Michelle Stirling

A 2015 Video review of the 2002 Debate

Paris Climate Talks December 2015

“What about global warming?”

Global warming has stagnated for over 18 years now—pausing *naturally* before Kyoto was ever ratified! Friends of Science Society’s scientific team and advisers have reviewed hundreds of peer-reviewed papers showing that climate changes are driven directly and indirectly by changes in solar activity.

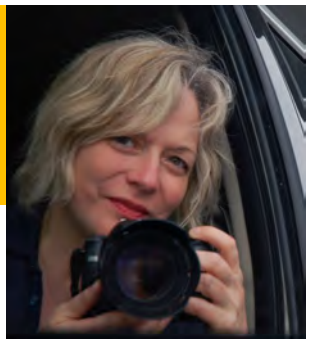
“But isn’t there a consensus on global warming?”

The only “consensus” is that humans have *some* impact on climate, but the scope and causes are subject to vigorous debate by scientists. The evidence shows that the hypothesis of global warming due to greenhouse gases has been wildly overstated. It is reported that the “climate change industry” is worth $1.5 TRILLION dollars worldwide; That’s $1,500,000,000 - said as *one million, five hundred thousand million dollars* - a big business of vested interests.

So far there has been **no benefit to the environment and no reduction in greenhouse gases overall.**

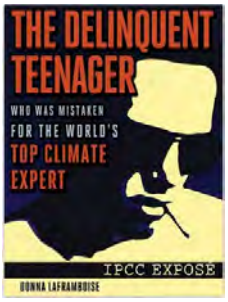
Canada and Alberta should not sacrifice its sovereignty and economy in Paris. We should ask the hard questions - why isn’t anything being done about the real problem - pollution?

The UN's Climate Change Panel: Activist and Untrustworthy



Donna Laframboise

Investigative journalist and author



Canadian investigative journalist Donna Laframboise wrote a devastating expose on the corrupt practices of the IPCC entitled: “The Delinquent Teenager…” showing that green activists are deeply embedded at the IPCC. Her book has been described as: *"…(it) shines a hard light on the rotten heart of the IPCC"* by Richard Tol. Tol is a Professor of the Economics of Climate Change and a convening lead author of the IPCC. He has been very critical of IPCC “apocalyptic” hype.

Donna was guest speaker for Friends of Science in 2012; her presentation and power point are here:

http://www.friendsofscience.org/index.php?id=603

What is "Climate Change?"

In the days of the development of the Kyoto Accord, "climate change" was called "global warming" and defined as being human-caused.

Since 2007, the Intergovernmental Panel on Climate Change (IPCC) has defined it *as:*

Climate change in IPCC usage refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. ***It refers to any change in climate over time, whether due to natural variability or as a result of human activity.*** *[emphasis added]*

This usage differs from that in the United Nations Framework Convention on Climate Change (UNFCCC), where climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods

Climate Change 2007: Synthesis Report
http://www.ipcc.ch/publications_and_data/ar4/syr/en/mains1.html

"Policymakers should wait 2 to 4 years "

Dr. Ross McKitrick

Economist,
U of Guelph
IPCC expert reviewer
Co-Author:
"Taken by Storm"

Dr. Ross McKitrick spoke in Calgary in 2013 on the exaggerated "Social Costs of Carbon" (the basis for carbon taxes). Read "McKitrick on Climate Change: The Pause In Global Warming -The Flaws in Climate Models." Carbon taxes are based on temperature predictions that are several times higher than actual observed temperatures, meaning the Social Costs of Carbon are skewed far too high.http://www.friendsofscience.org/assets/documents/

Watch "McKitrick on Climate Change" video clips to see how policy makers are misled by precise-sounding numbers that are not based on reality.

https://youtu.be/g30JfQIK6GA?list=PLZcRTdbkGEnHfU8-dkQfGnO67K6p1m8rh

Natural and Human Factors Change Climate

Natural Variability—Any of these may exhibit rogue, unpredictable events, small or cataclysmic	**Human Activities**
Solar cycles and variability in Total Solar Irradiance, UV output, X-rays, variations in the solar wind, Coronal Mass Ejections (that affect the ionosphere), orbital variations of the sun and major planets	**Land disturbance**—agriculture, building of cities, building of dams
Ocean current changes; seasonal and orbital tidal changes (i.e. King tides, storm surges); changes to thermohaline conveyor (deep ocean warm-to-cold cyclical current)	**Deforestation**—especially in developing nations where the method is to use uncontrolled fires to strip the land of forests, often resulting in peat fires that burn for years; human-caused wildfires and those going 'pyro-Cb—pyrocumulonimbus or fire cloud.
Atmospheric oscillations move in cycles over periods of decades (ENSO, PDO, AMO, ITCV, NAO)	**Black carbon (soot)** - deposits of black carbon on arctic areas increase light absorption (heating) and reduce "albedo" (reflectance from otherwise white snow—cooling), leading to regional warming
Volcanic eruptions and volumes/types of gas/ash	**Urban Heat Island effect**— large cities generate and retain their own 'heat bubble' which affects local and regional temperatures and atmospheric conditions
Geomagnetic changes/tectonic plate movements	**Greenhouse gas emissions**
Naturally occurring wildfires, especially those that are Pyrocumulonimbus	**Water system diversions**—draining wetlands, diverting water systems, dam reservoirs

"…the sun, not variations in carbon dioxide…"

Dr. Timothy Patterson, professor of geology at Carleton University said in his 2011 Senate Testimony:

"...the sun, not variations in carbon dioxide, the gas most targeted by Canada's national climate change campaigns, appears to be the most important driver of climate change."

Friends of Science Society agree with this position.

"Solar scientists predict that, by later in this decade, the sun will be starting into its weakest solar cycle of the past two centuries, likely leading to unusually cool conditions on Earth, which may persist for decades. Beginning to plan for adaptation to such a cool period should be a priority for governments. It is global cooling, not warming, that is the major climate threat to the world, especially in high latitude countries such as Canada."

Climate Change—
Greatest Challenge or the Nature of Things?

Climate change is often said to be one of the greatest challenges to ever face our planet, our society and our economy.

Historically, climate changes have been far more dramatic and deadly, especially during global cooling periods like the Little Ice Age (1350-1850). We have always been challenged by climate, and have adapted. Human adaptations to climate change that we take for granted include insulated houses, central heating, air conditioning, paved roads, cars, reliable, affordable power generation and mass food production.

Despite claims that individual weather events, like the Calgary flood, are evidence of 'climate change' the only trends seen world-wide are more frequent, deeper cold-snaps in Europe, and snow or cold events in otherwise tropical places or seasonal warm periods. These are more consistent with global cooling than warming. In fact, eight of Calgary's worst floods were prior to 1933, with two early floods in the late 1800's two to three times greater than the 2013 flood. None-the-less, people still continued to build on flood plains.

"Weather" is what happens today; "Climate" is defined by weather patterns over decades.

Extreme weather:
an integral part of the Earth's climate

Dr. Madhav Khandekar, former research scientist of Environment Canada, studied the evidence to see if there is any trend to extreme "global warming" weather.

"The reality of climate change is that there have been increasing cold weather extremes in recent years, which have been totally ignored by the IPCC and its adherents. Chapter 2 of the IPCC WGI (AR5) entitled: 'Observations: atmosphere and surface', makes no mention of cold weather extremes of recent years. There have, however, been news reports of hundreds of deaths due to extreme cold weather in central and eastern Europe, northern India and parts of South America in the last six years".

http://www.thegwpf.org/content/uploads/2013/11/Khandekar-Extreme-Weather.pdf

GHGs and CO2

Will stopping Alberta's greenhouse gas (GHGs) emissions help stop climate change?

Canada's contribution to global emissions is nominal (1.8%) especially since we are a northern country with extremes of cold, a modern industrialized nation and the second largest in the world, meaning we have vast transportation needs. Further, our energy, resources and forestry products serve the world; most are used offshore by other nations.

Canada has reduced carbon (soot) pollution 44% since 1985 and most other emissions as well. (see YourEnvironment.ca) We should expect other nations to follow our lead.

Furthermore, scientists like Hans von Storch of Germany and Judith Curry of the USA are stating that **carbon dioxide's assumed impact on warming has been overstated.** Some say by as much as three times.

These experts see that climate is more influenced by natural forces like the sun's many variable factors, ocean currents and cosmic and orbital factors. Many qualified dissenting scientists like Roy Spencer, Judith Curry, Henrik Svensmark, Willie Soon, Ivanka Charvatova show numerous factors affect climate, not just CO2. Even Svante Arrhenius, the "grandfather" of the "hothouse" changed his mind in a little-known 1906 paper, and decided carbon dioxide warming would be nominal, pleasant and beneficial.

There are no indications that CO_2 can cause significant temperature rise

Professor Emeritus Dick Thoenes of Eindhoven University in The Netherlands:

"My conclusion is that it is *impossible* that a significant climate change can take place due to rising CO_2-emissions. This means then that all measures to reduce CO_2-emissions are useless. This would have enormous financial consequences for society."

The Hague, 4th June 2015

Read the report: http://www.friendsofscience.org/assets/documents/Thoenes_Views_CO2_Climate.pdf

Oil sands or other sources?

Alberta is a major contributor to the Canadian economy, consequently in economic growth areas, we see a rise in emissions. Alberta has steadily reduced **pollutants** (a more important factor) and emissions while increasing economic benefits. No other developing nation will have to meet the emissions reductions standards expected of Canada at the Paris talks—that is nonsensical.

People point to coal-fired power plants without realizing that 75% of power generation in Alberta is used by industry; industry creates jobs and is attracted to places where there is high quality (no dips/ surges), reliable, affordable power supply. Affordable power comes from coal and Alberta has lots of high-quality coal that can be surface-mined. Reclaimed coal mines become beautiful, award-winning parks and recreation areas.

Alberta's air quality standards are some of the highest in the world—and Alberta industry has reduced *pollution* which should be the more important factor discussed in Paris.

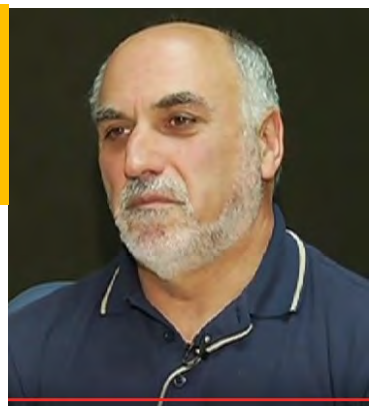
See for yourself at: YourEnvironment.ca

Phase-out coal is not supported by the evidence.

Hospitals and health services require affordable power—as does industry and citizens. Alberta has lots of high quality, coal, excellent air quality standards and reliable power. Moving off coal would double prices, cost >$11 billion to replace coal with natural gas, and push people into heat-or-eat poverty, as is the case in Europe and the UK.

Read "Burning Questions"

See the video:
https://youtu.be/u0_63pdeVI0



Norm Kalmanovitch, P. Geoph.
Project Lead on "Burning Questions"

https://youtu.be/v_yPPCMFBHo

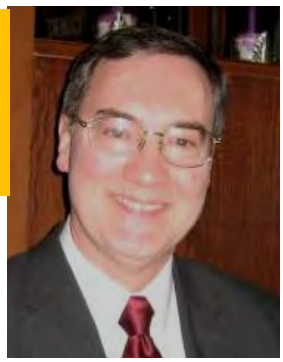
Climate Target Implications—For You

Many people think that climate change policies will affect big emitters like oil sands, coal-fired power plants and industry, but not themselves or their own lifestyle.

You will be directly affected. Every human activity is associated with emissions and pollution—whether here or elsewhere that products are produced. However, for the most part, replacing your fridge with a new 'energy-saver' is wasteful and never recovers the energy used in making the new product.

This is not about putting on a sweater or turning down the thermostat at home. The Paris climate talks have the potential of destroying Canada's economy, ***in a legally binding agreement that gives up Canada's national powers to choose how to develop our resources, to*** an unaccountable UN bureaucracy charged with implementing any agreement .

Snowbirds would be No birds.
"...possibly destructive to Canada's economy.."



Robert Lyman

Energy Economist

37 years experience

Canada represents a small share of global anthropogenic emissions. Even if Canada and other OECD countries were to meet the extraordinarily stringent emission reduction targets, global emissions would still grow above 2010 levels. While meeting the targets would prove very costly, indeed possibly destructive to Canada's economy, the IPCC goal would not come even close to being met. Canada's sacrifice, in effect, would be largely a symbolic gesture. Canadians should judge carefully how great a cost they wish to bear for symbolism.

http://friendsofscience.org/assets/documents/climate_change_implications_Lyman.pdf

Doing this would shrink Canada's 'carbon footprint', relative to its economy and population, to levels today seen only in poverty -stricken countries like Haiti, Afghanistan, North Korea and Chad.

Carbon Trading or Cap-n-Trade?

Some people say different options like carbon trading or cap-and-trade will reduce emissions.

There is no evidence to support this claim. If anything, the opposite is true. After spending $1.9 trillion (from 1997 to 2012) on climate change reduction initiatives world-wide there has been no reduction in carbon dioxide emissions or greenhouse gases, despite the European Trading System and the UN Clean Device Mechanism. In 2013, INTERPOL assessed carbon trading world-wide as a $176 Billion market, in 2015 climate change consulting was assessed as a $1.5 Trillion a year business. Neither have had actual beneficial effect reducing emissions or pollution. The only wide-spread effect has been the creation of millions of people in heat-or-eat poverty, skyrocketing power prices, and job loss due to industry moving offshore.

Albertans want to avoid these devastating consequences.

Global warming has stagnated naturally for the past 18 years and 8 months (to Sept. 2015), despite a very significant rise in carbon dioxide from human sources. The hypothesis of Anthropogenic Global Warming has been overstated or is wrong. Natural forces appear to be more influential.

"To Heat or Eat: Europe's Climate Policy Fiasco"

In May of 2013, Dr. Benny Peiser spoke to an audience in Calgary, explaining that extreme EU Climate Targets had driven millions into 'heat-or-eat' poverty, as power prices rose so high, lower and middle class families were driven to choosing between heating their homes or buying food. These policies included carbon trading or cap-n-trade—intended to make the 'polluter pay' - but in fact, the **'consumer pays more'** - every time.

Dr. Peiser's power point and video presentation:

http://www.friendsofscience.org/index.php?id=653

Dr. Benny Peiser

Executive Director

Global Warming Policy Foundation

UN is Founded on Equal Sovereignty

Why then, should we accept unequal treatment?

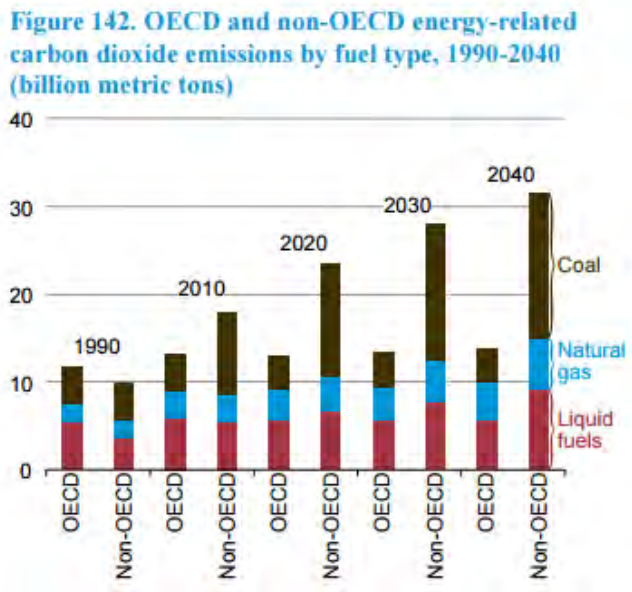
The US Energy Information Authority graphs below show that western industrialized nations (OECD) have capped the growth of fossil fuel use. Western nations continue to improve pollution and emissions reduction management.

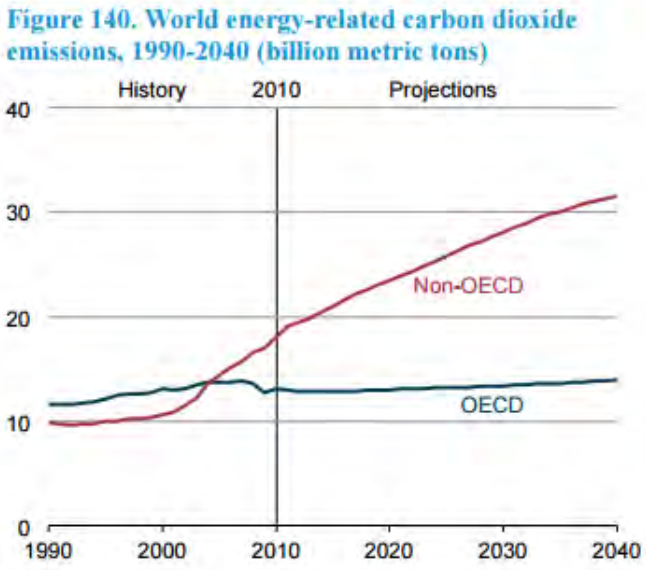
However, the pending Paris Climate talks will allow developing nations, like Indian and China, to expand their use of fossil fuels without restriction, and with no pollution management requirements.

Furthermore, developing nations want countries like Canada to fund a US$100 Billion a year "Green Climate Fund" that they can spend anyway they want, with no restriction, though it is supposed to be for climate change mitigation. Developing nations will emit far more than we do, and we will pay a penalty, though we emit less.

A legally-binding agreement in Paris would effectively hold us ransom to unaccountable demands. This would seem to contradict the fundamental principles of fairness and equitable sovereignty of the UN itself.

Robert Lyman, energy economist, discusses the Green Climate Fund in "Who Cuts? Who Pays?"





Red Flags on Going "Green"

Alberta Wind Farm Transmission Lines Cost You ~$2 Billion For ~4% Power

Alberta taxpayers are paying for the ~$2 billion dollar tab for transmission lines to southern wind farms. To put that in cost-benefit perspective, the new Shepard natural gas plant cost investors $1.4 Billion and can produce up to 800 MW of power, 24/7 365 days a year on demand.

In addition, for wind power to work on the existing power gird, it costs taxpayers about $1 million per Megawatt to integrate wind on the grid. Alberta has 1,113 Mw installed wind capacity on the grid.

For this we get ~4% power...but only when the wind blows, just right.

Alberta Education invested $6 million into wind farms in the 2013-2014 budget. Why? Unclear.

Original proposal pg 10: http://www.holyspirit.ab.ca/_cabinet/2/59/61/December_21,_2011_Agenda_Package.pdf

In 2014 Alberta Education's purpose-built wind farm went into construction, financed by ~21 of the 40 school boards using taxpayer's education dollars to become market competitors. The power purchasing contracts are for 20 years. The claims was to keep prices down—at a time when power prices are at an all time low.

Except for solar, wind is the most expensive form of power generation and the least reliable.

No. It's not 'free' power for you.

But carbon traders can make billions from the Renewable Energy Certificates that wind and solar generate - money that ultimately comes out of taxpayer's pockets.

Alberta Biomass Costs You

Some proponents of alternative energy assume biomass from cattle dung will be a cheap alternative. Here's how the costs break down in one Alberta example: $3.5 million dollar CCEMC grant. The 315KW plant cost over $7 million or over ***$20 million per MegaWatt*** (compared to about one or two million per MW for a gas plant, financed by investors, offering 800 MW of on-demand power.)

There were $500,000 in direct grants.

Extrapolate that over 50,000 farms in Alberta. If 20,000 are large farms and also wanted this kind of deal, it would cost Albertans $150 BILLION. Not to mention, if a biomass producer feeds into the grid, they presently get paid a 6 cent/KWh FIT (Feed-in Tariff).

Field of Expensive Dreams—They built it. No one came.

And no one hears about this.

A ~$30 Million dollar taxpayer funded biofuels business goes under in Alberta; 52 local news articles on the start-up, not one story on the bankruptcy.

The Calgary LRT Does Not Ride the Wind

Wind Supplies only ~4% power in Alberta

A complex wind purchasing deal was instituted for the City of Calgary (1% of all power) and for the C-Train (called "Ride the Wind") - where the public were told they were riding a train powered by wind, and therefore not emitting greenhouse gases. In fact it is simply a carbon offset scheme.

Today wind power only supplies ~4% of Alberta's power in total. The LRT /C-Train runs around the clock. *"Ride the Wind!* ***may result in higher costs over 10 years compared to using electricity from conventional sources."*** Adding more wind to the grid drove up consumer distribution costs for power in Alberta, due to more transmission lines (~$2 Billion) and the need to add more natural gas peaking plants that can quickly add power to the grid, to deal with wind's sudden surges and drops. Natural gas costs are double the input price of coal.

Renewable Energy “simply won’t work”

Google Engineers on Renewable Energy

:…horrifyingly expensive …”

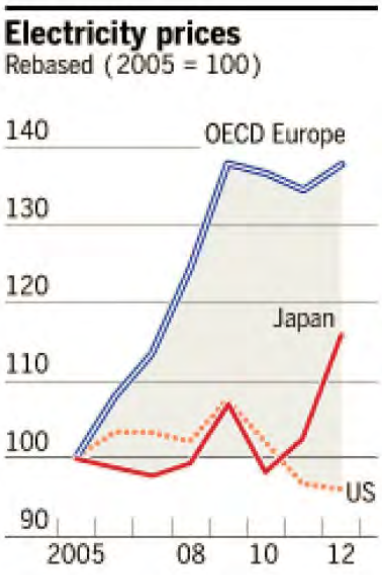
No benefit to the environment, wasteful use of resources for limited energy return

EXCERPT: “Whenever somebody with a decent grasp of maths and physics looks into the idea of a fully renewables-powered civilised future for the human race with a reasonably open mind, they normally come to the conclusion that it simply isn't feasible. Merely generating the relatively small proportion of our energy that we consume today in the form of electricity is already an insuperably difficult task for renewables: generating huge amounts more on top to carry out the tasks we do today using fossil-fuelled heat isn't even vaguely plausible.

Even if one were to electrify all of transport, industry, heating and so on, so much renewable generation and balancing/storage equipment would be needed to power it that astronomical new requirements for steel, concrete, copper, glass, carbon fibre, neodymium, shipping and haulage etc etc would appear. All these things are made using mammoth amounts of energy: far from achieving massive energy savings, which most plans for a renewables future rely on implicitly, we would wind up needing far *more* energy, which would mean even *more* vast renewables farms - and even more materials and energy to make and maintain them and so on. The scale of the building would be like nothing ever attempted by the human race.

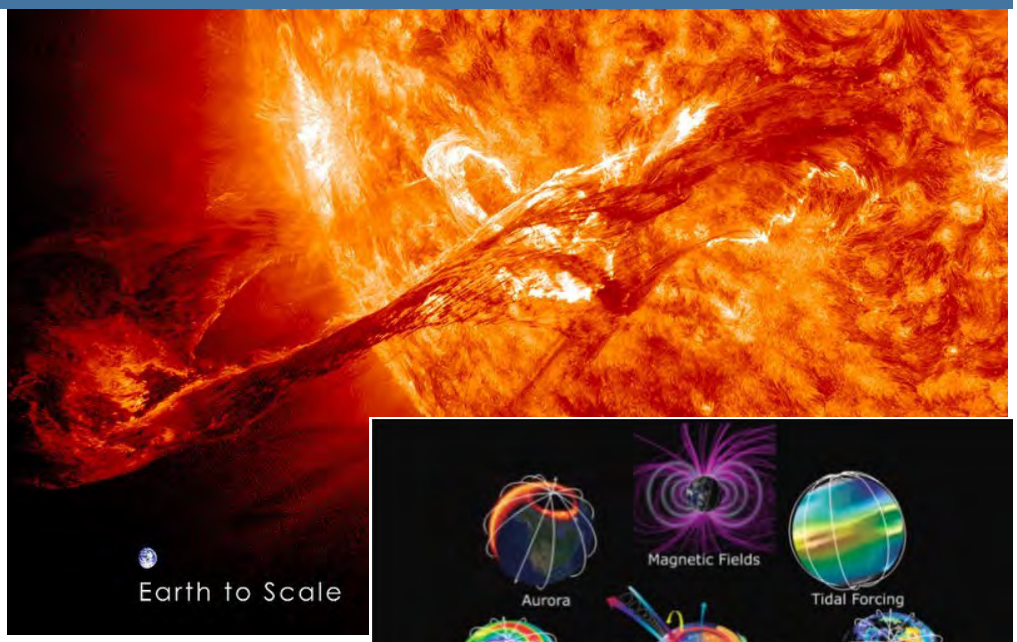
In reality, well before any such stage was reached, energy would become horrifyingly expensive - which means that *everything* would become horrifyingly expensive (even the present well-under-one-per-cent renewables level in the UK has pushed up utility bills very considerably). This in turn means that everyone would become miserably poor and economic growth would cease (the more honest hardline greens admit this openly). That, however, means that such expensive luxuries as welfare states and pensioners, proper healthcare (watch out for that pandemic), reasonable public services, affordable manufactured goods and transport, decent personal hygiene, space programmes (watch out for the meteor!) etc etc would all have to go - none of those things are sustainable without economic growth.”

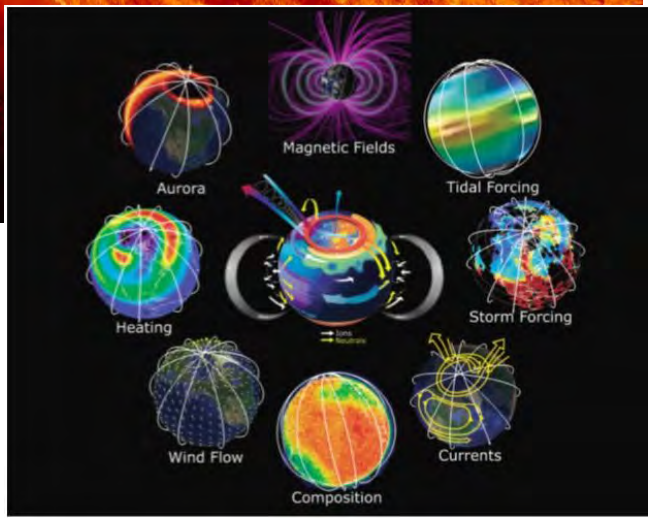
http://www.theregister.co.uk/2014/11/21/renewable_energy_simply_wont_work_google_renewables_engineers/



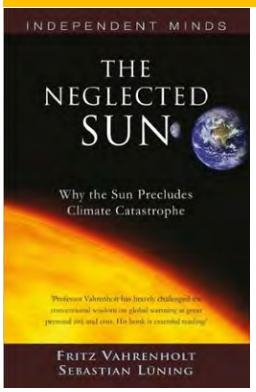
Blue line shows how power prices spiked 37% over par with the US in 2008 in the EU and UK after introducing stringent climate targets and renewable energy wind and solar farms.

The Sun drives climate change.





It's the Sun.



The IPCC does a limited review of the direct and indirect solar influences on climate; the IPCC's mandate is to study human-causes of climate change, not all causes. The Sun creates a 'bubble' of a magnetic field (heliosphere) that protects our solar system from incoming cosmic rays, but this heliosphere varies as the sun's magnetic field 'flips' in ~11 year cycles, allowing more or less cosmic rays to enter earth's atmosphere. This affects cloud formation which affects climate as do other cyclical factors. Many solar physicists, like astrophysicist Dr. Nir Shaviv of Hebrew University in Jerusalem, see solar cycles as more influential in climate change than human industrial emissions. Dr. Shaviv's work is highlighted in a chapter of "The Neglected Sun." This is one of many solar and natural cycles affecting climate.

Layman's overview of solar effects on climate by Dr. Shaviv:

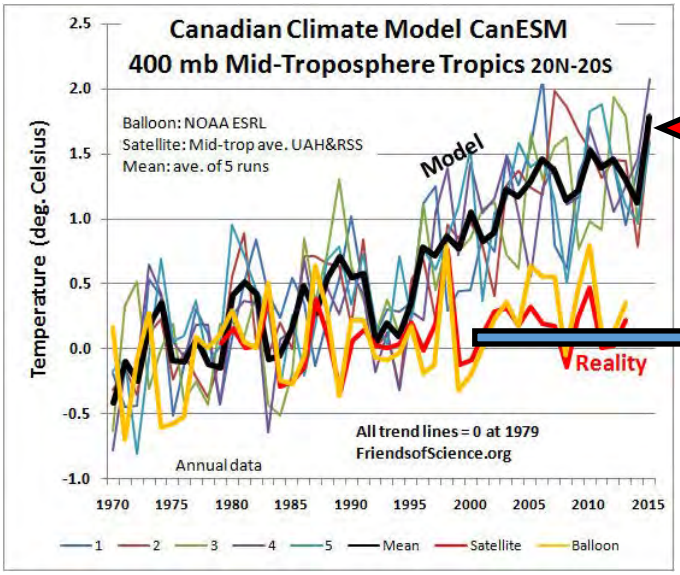
https://youtu.be/Vlp0PAVRV-k

Dr. Shaviv's full scientific presentation of June 2, 2015 at Calgary's Red and White Club: https://youtu.be/YtCEW2shDSU

Climate Models and Uncertainty

Trying to model a cloud is about as easy
as trying to hold one in your hands.

- David Orrell, Apollo's Arrow



Prediction

Actual Temperatures

Climate scientists use complex mathematical formulas run on high capacity computers to 'model' (simulate) forecasts of what future temperatures might be, based on various data and assumptions.

Climate is a dynamic environment with many forces that are not well-understood. Read our Climate Science Essay. Less technical information is also available on our website, categorized by subject and technical difficulty.

Model predictions have been much higher than actual temperatures as shown in the graph above.

Climate Policies are not based on Evidence or Reality

Governments around the world have set their climate policies based on these exaggerated models,. *"Social Costs of Carbon"* - the basis of carbon taxes—are based on the models, not real temperatures. As well, the Social Benefits of Carbon are not calculated in the Social Costs of Carbon. ***Climate change is the only area of modern life where there is no realistic cost-benefit analysis***.

Read the article about the above graph. Some margins of error in the modelled predictions of climate trends are in the 600% range.

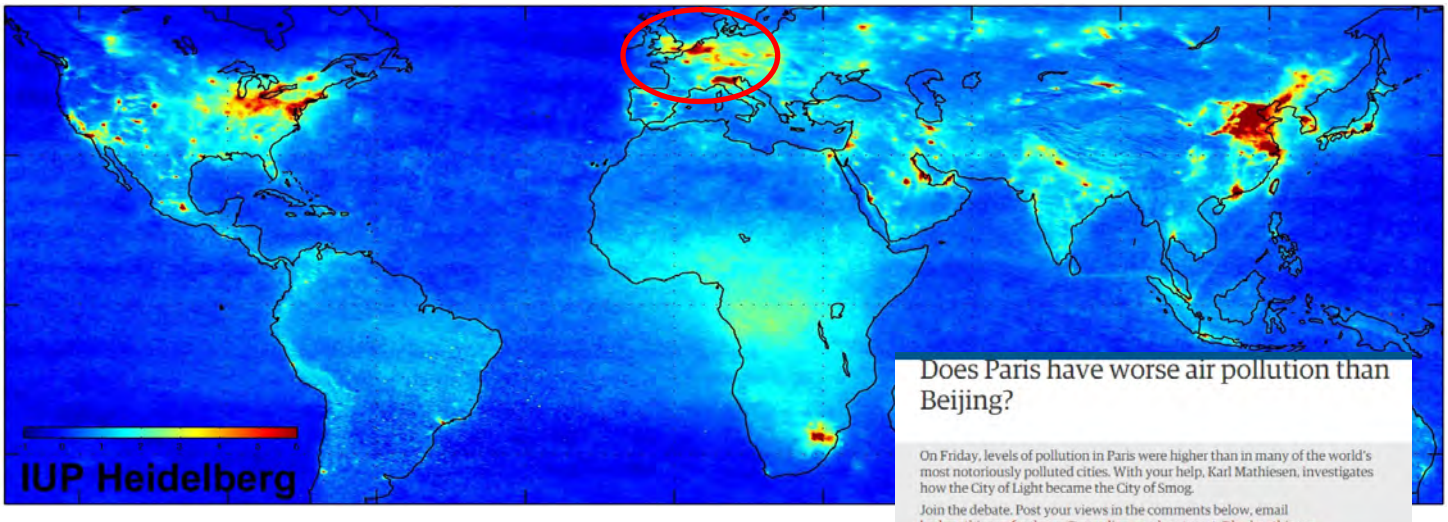
Paris Climate Change Talks
Do *Nothing* about Pollution

As indicated by the bright red hot spot below, the Paris Climate Change talks in December 2015 will take place in Europe, one of the more polluted areas of the world.

To get to this meeting, ~50,000 people intent on saving the planet will fly, drive or take the boat/train to Paris—emitting mega tonnes of carbon dioxide and real pollution.

In the context of the world, Alberta's contribution to GHG emissions is small and our success in reducing real pollution is world class. Why shouldn't that expertise and technology be our contribution to the world's climate *and* pollution issue? Accepting crushing carbon penalties on Canada—a country founded on energy and resources which are exported and used by the rest of the world – is hypocritical.

Likewise, except for Russia, we are the only modern industrialized country uniquely challenged by such vast distances and extremes of temperature.



World air pollution as seen by the European Space Agency 2004.

Does Paris have worse air pollution than Beijing?

On Friday, levels of pollution in Paris were higher than in many of the world's most notoriously polluted cities. With your help, Karl Mathiesen, investigates how the City of Light became the City of Smog.

Join the debate. Post your views in the comments below, email karl.mathiesen.freelance@guardian.co.uk or tweet @karlmathiesen

Paris lies beneath a blanket of chemicals last week. For the first time since 1997, the French government has issued an alternating driving ban to deal with emergency levels of pollution. Photograph: Patrick Kovarik/AFP/Getty Images

"Does Paris have worse air pollution than Beijing?" Eiffel Tower obscured by smog. BBC reported Mar. 18, 2014 that: "On Friday, pollution levels hit 180 micrograms of PM10 particulates per cubic metre, more than double the safe limit of 80."

Paris Climate Change Talks
Make a lot of Emissions-Do they Care?

The preceding COP-20 conference in Lima, Peru had the largest carbon footprint ever.

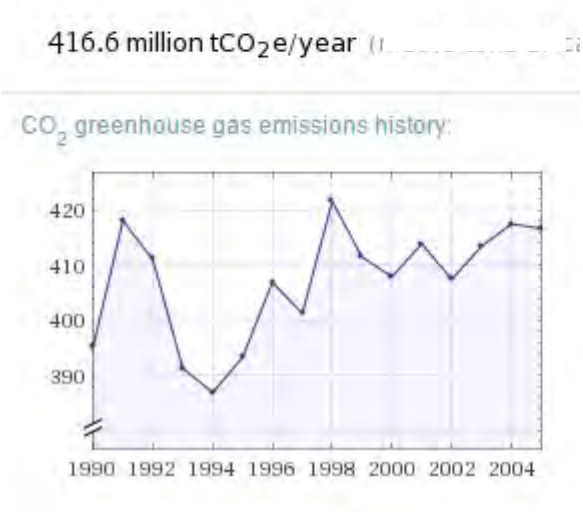
“At more than 50,000 metric tons of carbon dioxide, the negotiations' burden on global warming will be about 1 1/2 times the norm,” said Jorge Alvarez, project coordinator for the U.N. Development Program, according to The Associated Press.

Paris, France (metro) would fit into Alberta 38 times. It has a population of some 2.2 million, about half that of Alberta. Yet according to Wolfram it puts out 416.6 million tCO2e per year (metric tons of carbon dioxide equivalent) while Alberta, population ~4 million, producing oil, gas, oil sands, forestry products, coal, mineral resources, and diverse agricultural products used by countries around the world, puts out just ~300 million tCO2e. International merchandise exports rose 91% between 2004-2014.

Despite our massive output of resources, energy and manufactured products, Calgary was deemed to have the best air quality in the world. Edmonton was deemed to be the 3rd best city to live in Canada, while Canada as a country has the 3rd best air quality in the world.

Total SA, a French oil and gas major, is an investor in the Alberta oil sands.

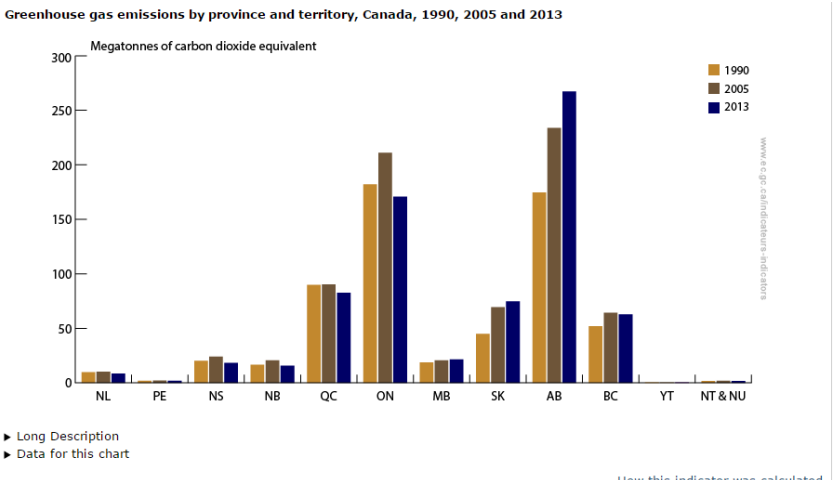
Clearly other countries benefit from Alberta’s emissions. Yet we will be penalized for them. We have the cleanest air—yet we are condemned as a ‘dirty polluter.’



Paris tCO2e emissions

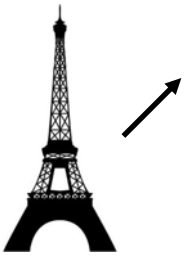
Source: Wolfram

Canadian GHG Emissions by Province



https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=18F3BB9C-1

Evidence—A few Realities



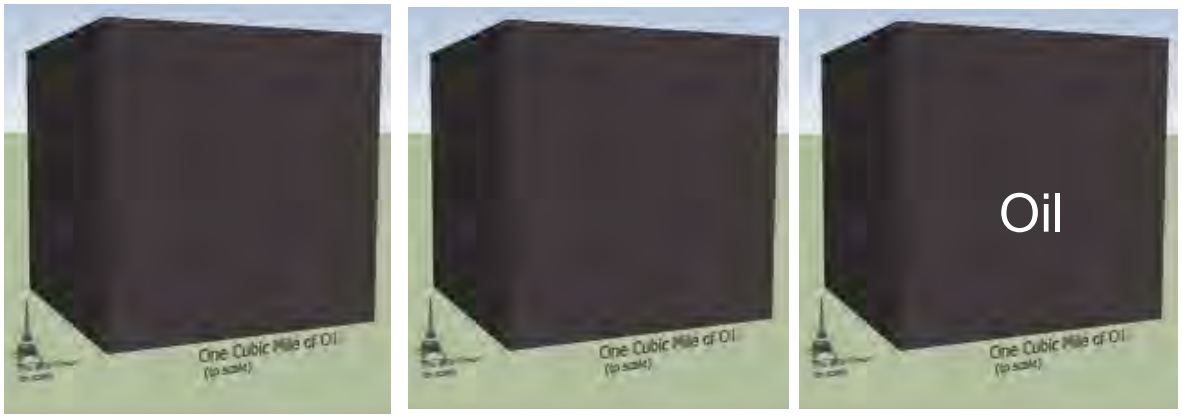


Image source: http://transitionlancaster.pbworks.com/w/page/22427006/350%20Presentation

The world uses about 3 cubic miles of oil-equivalent energy every year—one of those cubic miles ***is*** oil alone.

To suggest that we can go "100% renewables" is naïve and dangerous. Due to Canada's weather extremes and our short days and dark winter nights, our vast distances and resource industries, a stable, reliable, affordable source of power is essential.

The US Energy Information Administration (EIA) graph below shows that conventional fuels drive most of the economy (liquid fuels are mostly petroleum based). However, the "Renewables" category in the chart below is misleading, clumping together massive hydro resources with wind and solar—which, as shown in the sidebar of US consumption, contribute very little.

Figure 2. World energy consumption by fuel type, 1990-2040

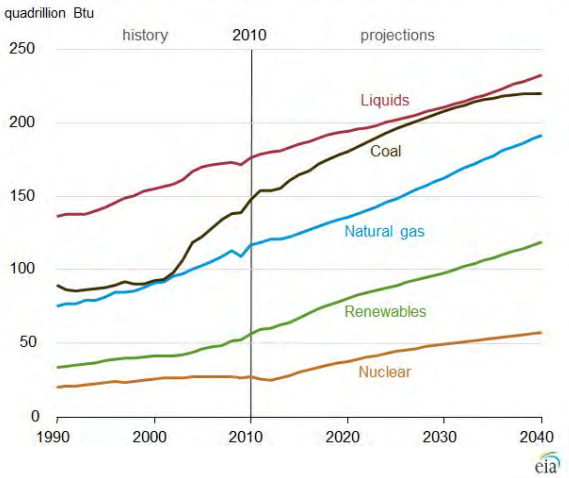


Fig. 2 : http://www.eia.gov/forecasts/archive/ieo13/more_highlights.cfm

US Consumption: http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3

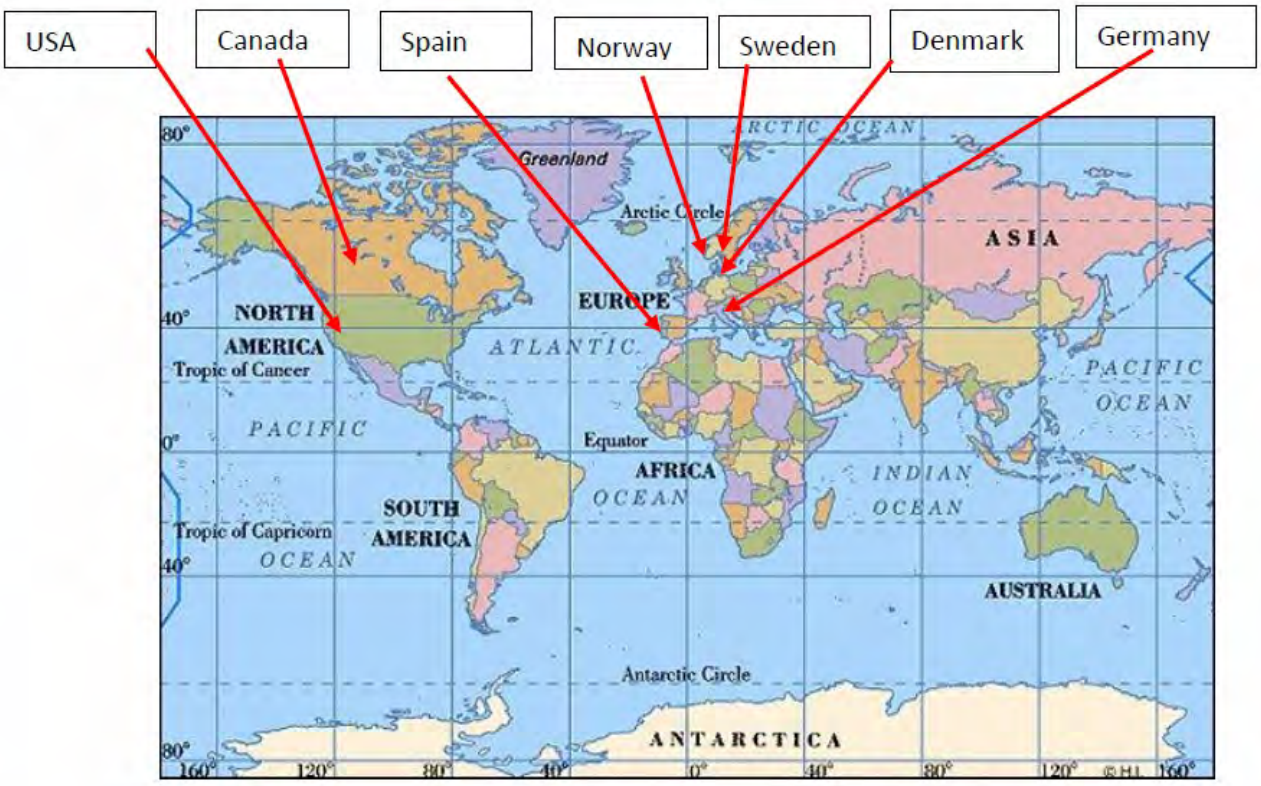
Major energy sources and percent share of total U.S. electricity generation in 2014:

- Coal = 39%
- Natural gas = 27%
- Nuclear = 19%
- Hydropower = 6%
- Other renewables = 7%
- Biomass = 1.7%
- Geothermal = 0.4%
- **Solar = 0.4%**
- **Wind = 4.4%**
- Petroleum = 1%
- Other gases < 1%

[1] Preliminary data.

Source: US EIA March 2015

Canada faces unique challenges in size, population density, geographic scope and climate extremes



Country	Population	Population Density	Avg Winter Temps	Geographic Size	Fits into Canada
Denmark	5,614,000	132/km²	-2° to 4 °C	43,094 km²	231.6
Norway	5,080,000	14/km²	-10° to 16 °C	385,178 km²	25.9
Germany	80,602,000	231/km²	-5° to 2 °C	357,168 km²	27.9
Spain	47,207,000	94/km²	2° to 9 °C	504,645 km²	19.78
Sweden	9,644,864	24/km²	-4° to -5 °C	449,964 km²	22.18
USA	318,900,000	35/km²	-16° to -8 °C	9,857,306 km²	1.01
Canada	**35,160,000**	**4/km²**	**-32° to -6 °C**	**9,984,670 km²**	**N/A**
India	1,252,000,000	421/km²	20° to 8 °C	3,287,540 km²	3.03
China	1,350,000,000	145/km²	-1° to -9 °C	9,596,961 km²	1.04

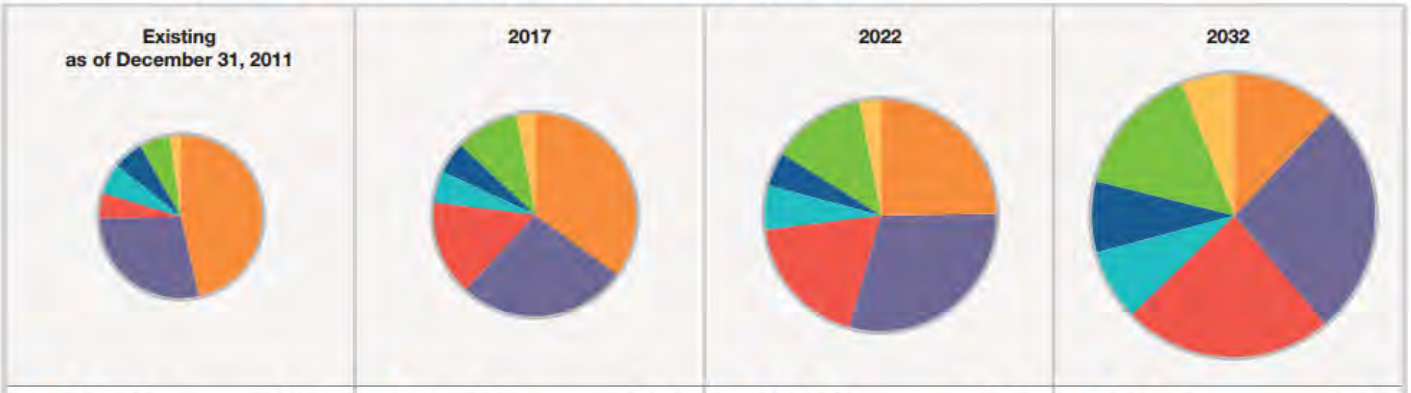
Should Alberta be “Green” like Denmark?

Denmark is not so green. It gets **one third of its power from coal**, one third from wind and imports the rest from offshore nuclear.

"In 2013, Denmark generated 34.6 billion kWh of electricity gross, 14.3 billion kWh of this from coal, 3.5 billion kWh from gas, 4.8 billion kWh from biofuels/waste and 11.1 billion kWh from wind. These figures however are misleading since Denmark is neither unified electrically nor isolated – East Denmark (Zeeland) and West Denmark (Jutland & Funen) are connected only by a 500 MWe link and each is part of a major grid system. In 2013, about 10.4 billion kWh was exported and 11.5 billion kWh imported. In 2012 those figures were 10.7 and 15.9 respectively, with about 7 billion kWh (net) exported to Germany, and net imports from Norway and Sweden were about 4.8 billion kWh and 7.5 billion kWh, respectively. (Norway’s power is 95% from hydro.) Generating capacity is 13 GWe, including 8.9 GWe fossil fuel and 4.2 GWe wind."

By comparison, Alberta’s power market looks comparable or better. We are completely self-sufficient and do not have to rely on nuclear-powered neighbours to support our industry or economy (though we do have interties to BC and Saskatchewan). Certainly our power prices are much better. The Alberta Electric System Operator generation outlook for installed capacity in megawatts is shown below.

Figure 5.3.5–1: Generation Outlook – Installed Capacity (MW)



Existing as of December 31, 2011			2017			2022			2032		
46%	Coal	6,242	35%	Coal	5,900	25%	Coal	4,832	12%	Coal	2,876
28%	Cogeneration	3,782	27%	Cogeneration	4,619	30%	Cogeneration	5,770	27%	Cogeneration	6,365
5%	Combined Cycle	750	15%	Combined Cycle	2,518	19%	Combined Cycle	3,668	24%	Combined Cycle	5,568
6%	Simple Cycle	827	5%	Simple Cycle	901	6%	Simple Cycle	1,176	8%	Simple Cycle	1,826
6%	Hydro	879	5%	Hydro	879	5%	Hydro	979	8%	Hydro	1,979
6%	Wind	865	10%	Wind	1,694	13%	Wind	2,544	15%	Wind	3,578
2%	Other	314	3%	Other	445	3%	Other	585	6%	Other	1,385
	Total	13,659		Total	16,956		Total	19,554		Total	23,577

Source: AESO

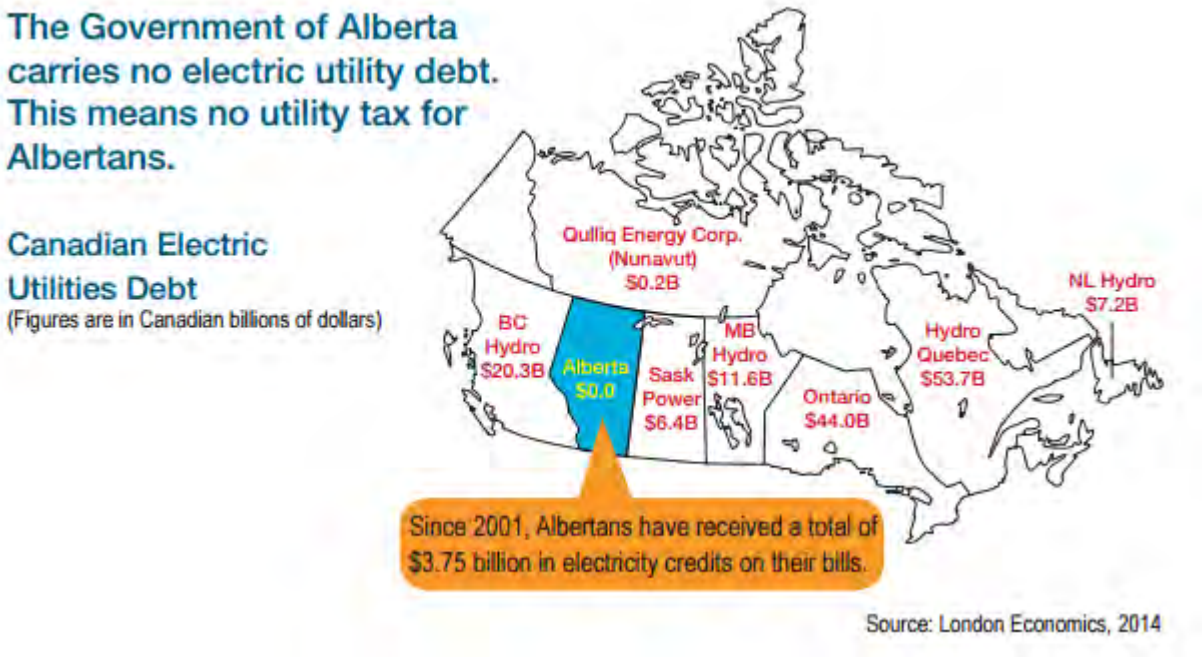
http://www.aeso.ca/downloads/AESO_2013_Long-termTransmissionPlan_Web.pdf

Should Alberta Phase-out Coal ?

The cost to phase-out coal to natural gas >$11 Billion.

Plus taxpayers would pay billions more in compensation to the coal industry because it already has scheduled phase-out legislation with the federal government .

Presently Alberta has no electrical utility debt.



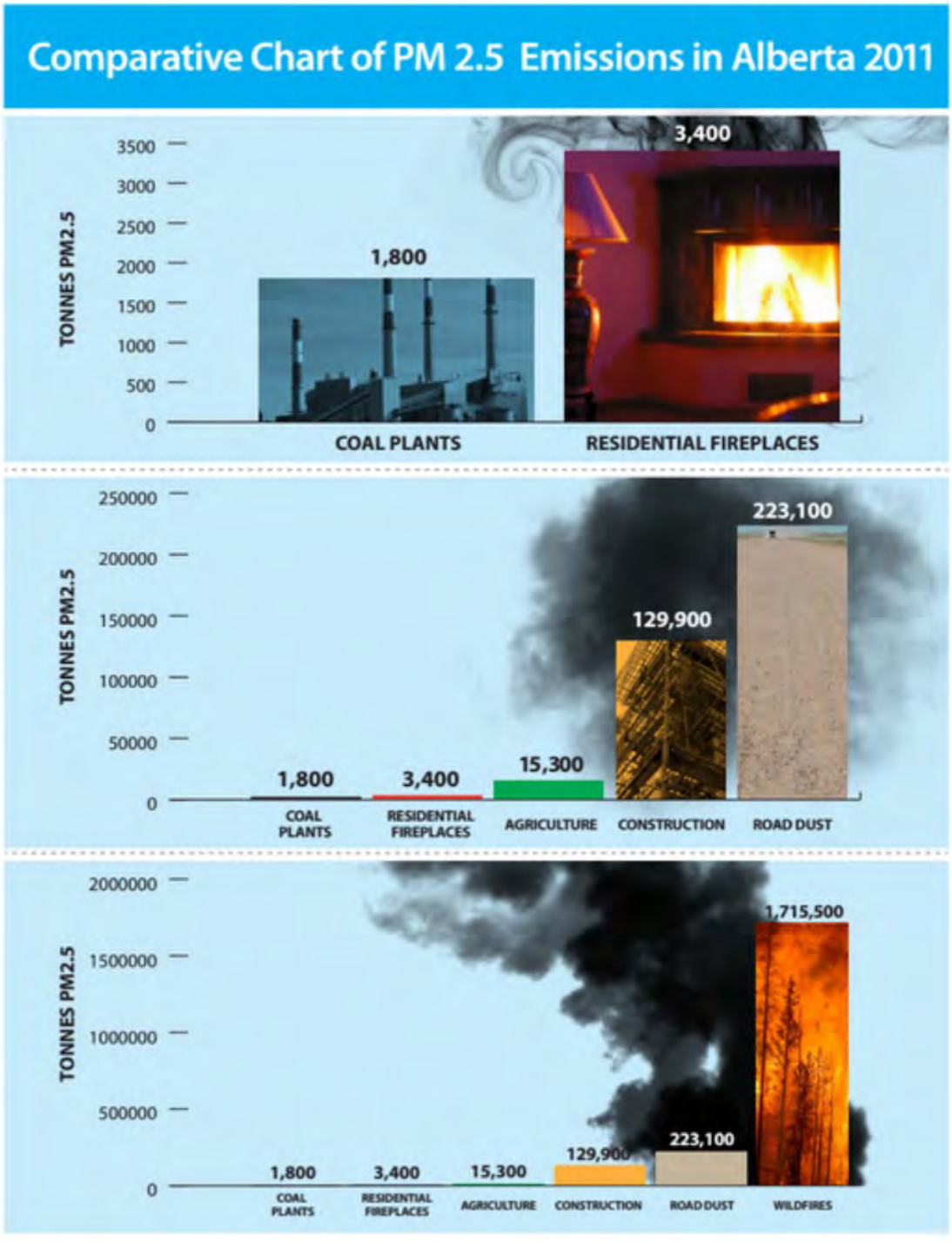
The rationale for demanding an early phase-out of coal-fired power plants is that it would improve health and save $300 million in health costs. These claims seem to be a front for pushing wind and solar.

In addition to >$11 billion transition cost to build natural gas plants, plus billions in compensation to industry, the input costs for power would double because natural gas is about double the cost of coal.

Industry uses 75% of Alberta's electrical power; as in Ontario, it would may mean the end of many businesses and jobs If power prices rise.

Another claim is that 'renewables' like wind and solar would be 'cleaner' sources of power—'for health.' Studies show not only are these the most expensive forms of power generation, they cause the same or more CO2 emissions because natural gas plants must ramp up and down to meet the sudden wind/solar power variations, causing more emissions—almost the same as coal.

Putting Coal-fired Power Plant Fine Particulate Matter Emissions in Perspective



"Burning Questions" video comparing impact of wildfires versus coal-fired power plants.

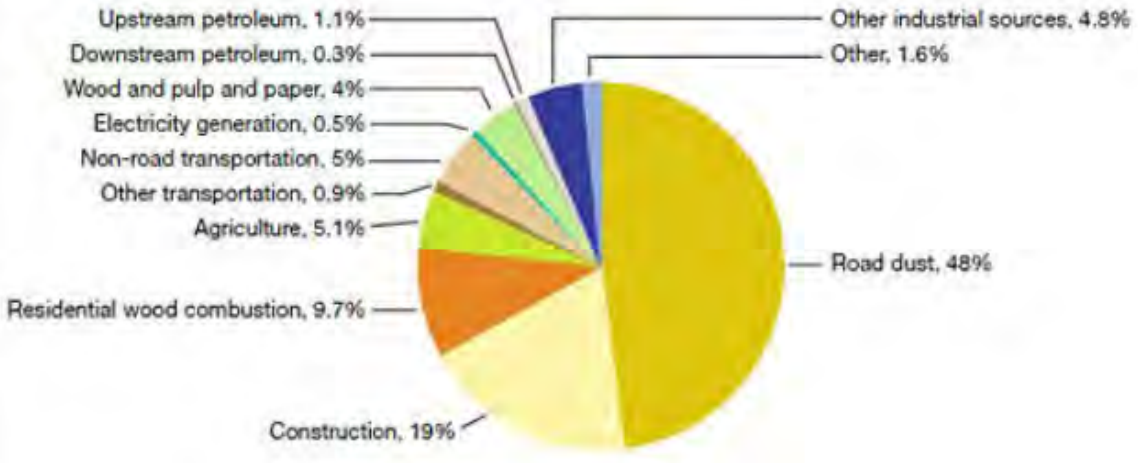
https://youtu.be/u0_63pdeVI0

Sources of PM2.5 Emissions in Canada

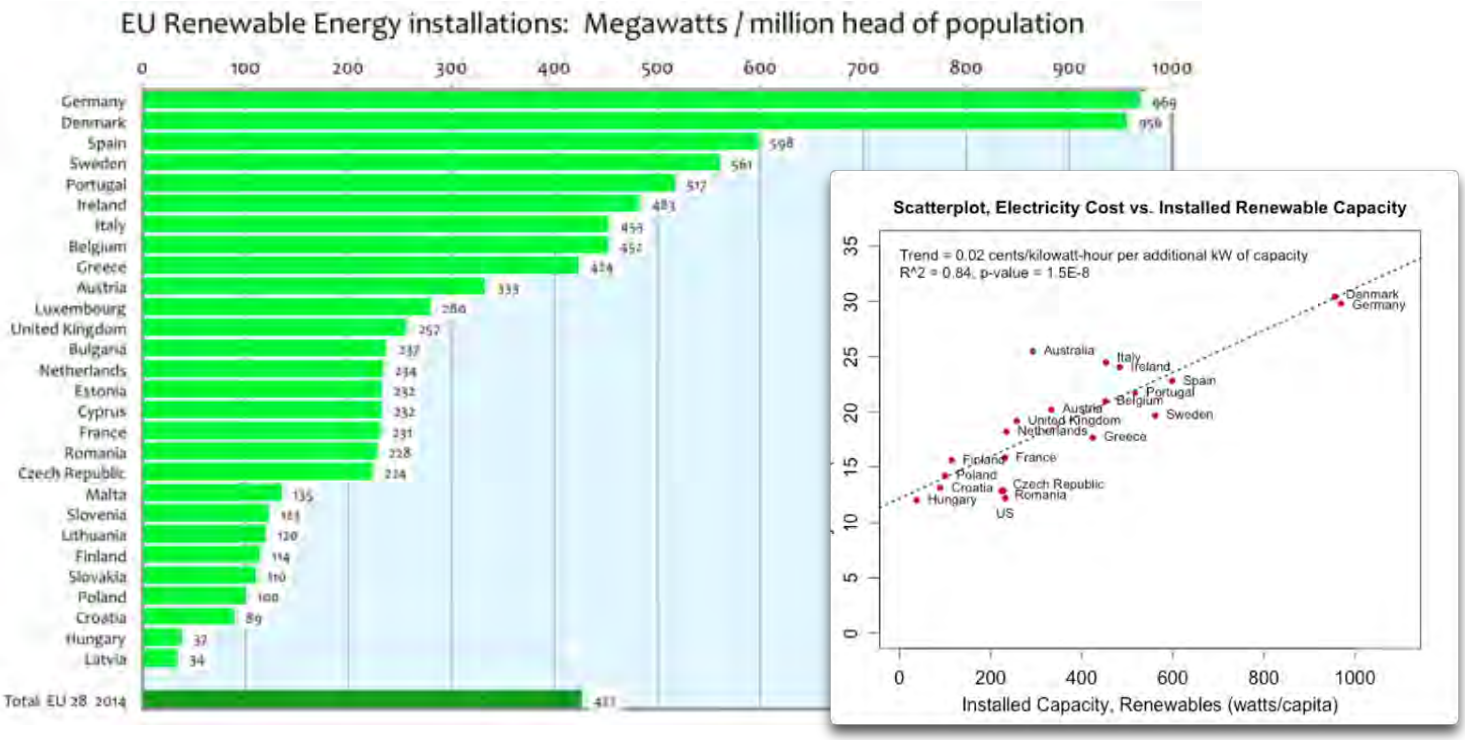
APPENDIX B – Environment Canada does not see coal plants as a major source of PM2.5

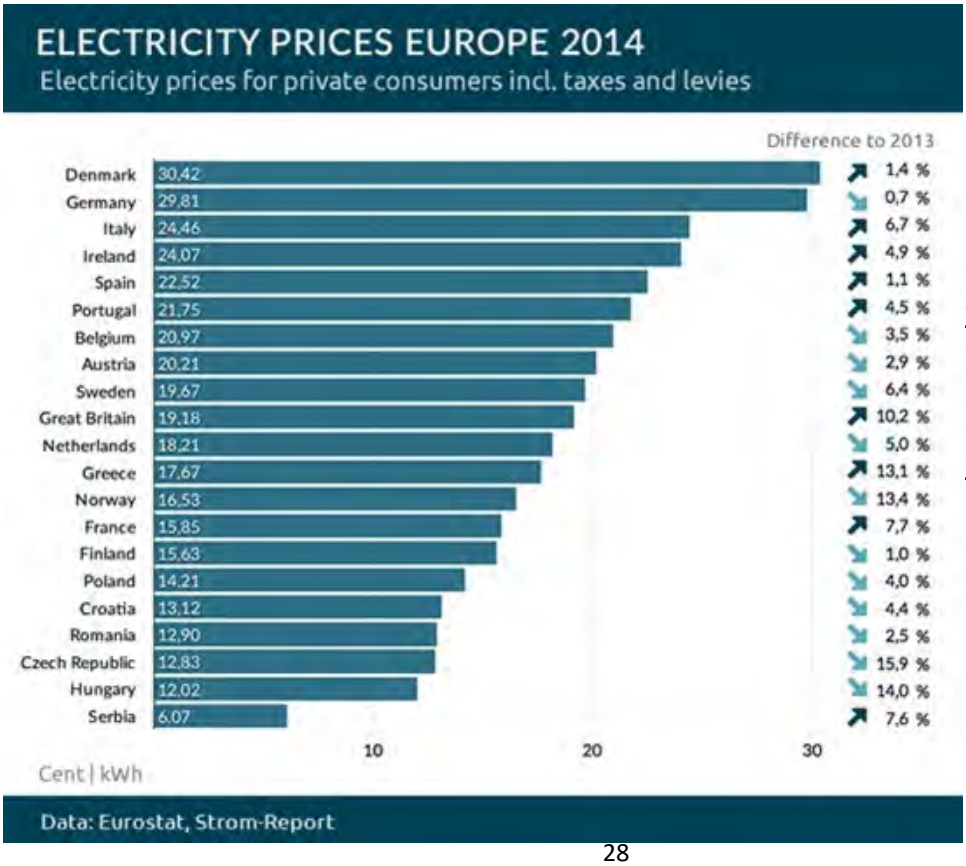
Primary Particulate Matter (PM)

The largest sources of primary (directly emitted) fine particulate matter (PM2.5) are road dust and construction/demolition activity, both characterized as open sources, amounting to approximately 67% of the national total. Other important anthropogenic sources are residential wood combustion, transportation and some industrial activities such as wood processing and pulp and paper plants (Figure 10). One area of high PM2.5 emissions density is the Windsor–Quebec City corridor resulting mainly from industrial activities and from the transportation, and residential wood combustion sectors (Figure 11). Major urban centres in western Canada and along the Edmonton–Calgary corridor are also shown as areas of high PM2.5 emissions density, again likely the result of emissions from the transportation sector. Figure 11 includes the emissions from open anthropogenic sources, illustrating the impact of these sectors such as in the interior of British Columbia. In this area, primary PM2.5 is a major issue of concern associated with residential woodstoves, agricultural and controlled burning, and road dust.



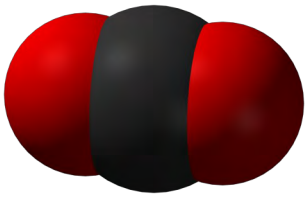
The Cost of "Green" Wind & Solar by European State and Ratio of Watts per Person





Germany and Denmark have the most installed wind and solar—often said to be 'free' energy—and the highest power prices in the EU—almost triple that of the USA.

Big Carbon - Vested Interests of Pension Fund Investors Need Carbon Trading to Save Them



A CO2 molecule

On March 25, 2013, the Wall Street Journal reported on commentary by Joseph Dear, who was then the financial officer of the sixth largest pension fund in the world, Calpers.

Dear was quoted as saying that Calpers had invested since 2007 in clean energy and technology and had "*an annualized return of minus 9.7% to date on $460 million."* He called clean-tech "*a noble way to lose money"* and that clean-tech had an "L" for "loser" investment curve, meaning there was never a profitable return.

Dear also indicated that the only way to fix this was if there was a large increase in the price of carbon, saying "... **somebody has to step in and either raise the price of carbon** or lower the cost of the alternatives."

Most institutional investors (i.e. union pension funds) have put a lot of money in "clean" energy/renewables because the UN Principles for Responsible Investing require them to invest according to environmental, social and governance goals (ESG) and to 'comply or explain.' Most have complied by investing in clean tech. Combined, institutional investors (pension funds) hold more than US$95 trillion in investment capital.

Imagine how much investment capital might be at stake on "L for loser" clean-tech, that will only bear a profit if you taxpayers pick up the tab through higher carbon prices (which always flow down to the consumer and taxpayer).

Likewise, Big Bank, Big Oil, Big Investment Firm, Big Accounting all have a stake in "Big Carbon" now. Big Oil wants a price, just so it can go on with business as opposed to uncertainty. Big Accounting makes money advising emissions-heavy clients on trading credits. Big Banks have investments on both sides and in Green Bonds.

But what about you, the taxpayer?

What to Take to Paris?

1. **Policy makers should wait 2 to 4 years** before implementing any new climate policies. New information and new adjustments to climate models will give better information. Also, if cooling trends continue, a "Little Ice Age" might be on the horizon. Public policies should be ready for either warming or cooling. Cooling periods have generally been the most deadly for humankind and the most difficult for governments. A full documentary on how life was in the Little Ice Age is frightening and instructive. https://youtu.be/uPNgX_T1wKI
2. **Climate change is less important than pollution emissions management and reclamation.** We cannot claim any 'green' moral high ground for putting up a wind farm if it means the people of Baotou, China are dying due to toxic waste from the rare earth minerals used in making turbine magnets. We, as a world, cannot ask the Western OECD nations to reduce emissions from well-managed industry—while allowing and encouraging developing non-OECD nations to pollute at will.
3. **Instead of cutting emissions in Canada, let our emissions management knowledge and industrial manufacturing be our contribution to reducing global pollution.**
4. **Regarding the "Green Climate Fund"** - developing nations should be aware that forcing Canada to shut down industry, will mean we won't have an economy, so Canada will stop being the third most generous country in the world, next to the US and Myanmar. We won't be able to send our Canadian Armed Forces Disaster Relief team anywhere (DART), the ~$24 Billion in remittances from our Temporary Foreign Workers would stop; our annual Canada Food Grains Bank contributions would be needed at home; our billions of dollars in foreign aid would grind to a halt; our tourism industry would be shut down—there would be no *snowbirds* and no flow of tourist dollars overseas in those warm countries.

What to Take to Paris? Cont..

5. **A Canada without a vibrant economy would be forever unable to continue its generous foreign aid and disaster relief programs.** It would seem that the present voluntary contributions are far more beneficial to developing nations and crisis situations than the "Green Climate Fund" would ever be. Much of the money voluntarily donated by Canadians goes directly to those who need it most—money into a legally mandated national "Green Climate Fund," with no set objectives or accountability might disappear into unknown pockets and never reach those who need it most.

6. **Carbon taxes and carbon trading have not reduced any volume of carbon dioxide or polluting emissions.** These programs should be phased out and taxpayers relieved of this hidden burden.

7. **Climate warms and cools.** We should be prepared for both—as a nation and as a world. Cold kills. We are not prepared for imminent cooling, predicted by the lowest sunspot activity in 100 years.

8. **Exit clause -** Interpol's "Guide to Carbon Trading Crime" shows that corruption and the infiltration of organized crime is rife in climate matters. This could be exacerbated, especially since senior people associated with the UNFCCC are said to have links to carbon trading.

9. **End clause** - The entire exercise of the Conference of the Parties-21 (COP-21) is premised on the hypothesis that humans are causing global warming to a potentially catastrophic degree through fossil fuel use. Current evidence indicates that the hypothesis is flawed - perhaps wrong. One has to wonder, if the environment is at stake, why will COP21 *" be one of the largest international conferences ever held in the country (France). The conference is expected to* ***attract close to 50,000 participants including 25,000 official delegates*** *from government, intergovernmental organisations, UN agencies, NGOs and civil society."* Are they serious? Seems like these people are willing to travel anywhere in order to "save the planet." What's their carbon footprint? If the evidence of the coming years does not support the hypothesis, there should be a provision to eliminate this aspect of international climate change legislation according to new evidence.

10. **Maintenance of Canadian Sovereignty over all.** The existential threats that environmental groups have presented about climate change have terrified people into a willingness to do anything to save the planet for their children. In the process, as witnessed in the UK, millions of pensioners have been reduced to abject poverty and premature deaths due to skyrocketing energy prices. Across the EU a generation of youth face joblessness. Meanwhile nothing beneficial has been done for the environment and nations have foregone important sovereign protections for their own people. This must not happen to Canada. We are blessed with rich resources, innovative scientists and technicians who have improved air quality greatly since the 1970's. To be environmentally responsible, you need a healthy economy. We are the third most generous country in the world; we can only continue to be so if we have a vibrant economy.

About

Friends of Science Society is a non-profit society made up of volunteers from a broad spectrum of the sciences, who examine the evidence vis a vis climate change ideology. Friends of Science has spent a decade reviewing a broad spectrum of literature on climate change and have concluded the sun is the main driver of climate change, not carbon dioxide (CO_2). Friends of Science welcomes earth, atmospheric and solar scientists, engineers and citizens who challenge the alleged consensus on climate change.

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
E-mail: contact(at)friendsofscience(dot)org

Cover ice image: Rick Jones (via tumblr—original source unknown)

Big Rock Wikipedia : Coaxial at en.wikipedia [GFDL (http://www.gnu.org/copyleft/fdl.html) or CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], from Wikimedia Commons

Solar and Space Physics: A Science for a Technological Society: An Overview (2014)

http://www.nap.edu/openbook.php?record_id=18974&page=25 Illustration of direct/indirect solar influence pg. 18