

THE GOOD THE BAD AND SOME UGLY

FIRST UNITARIAN FELLOWSHIP OF NANAIMO

APRIL 23 2023



FACT CHECK

The following information has been reported in credible sources. If you want to know more about any of them, note the slide number and contact ejc@ufon.ca



HEAT PUMPS

FOR THE FIRST TIME EVER, HEAT PUMP SALES WERE
GREATER THAN GAS FURNACE SALES IN NORTH
AMERICA



3



EV CAR PRODUCTION

Mainstream car manufactures are getting on board with electric vehicles.

Hyundai 500,000 Evs per year by 2025

Volkswagen 1,000,000 per year by 2023

GM 100% electric by 2035



TAR SAND EMISSIONS

The reported emissions of methane from the tar sands are bad enough. Recent independent studies have shown the actual emissions are 4 times higher



5



OIL AND GAS LOBBY

Despite tremendous efforts, the oil and gas lobby still makes almost twice as many visits to federal politicians.



6



ENERGY PRODUCTION

Clean Energy Canada reports that wind, solar and battery storage combined provides cheaper energy than natural gas generation in Alberta and Ontario



7



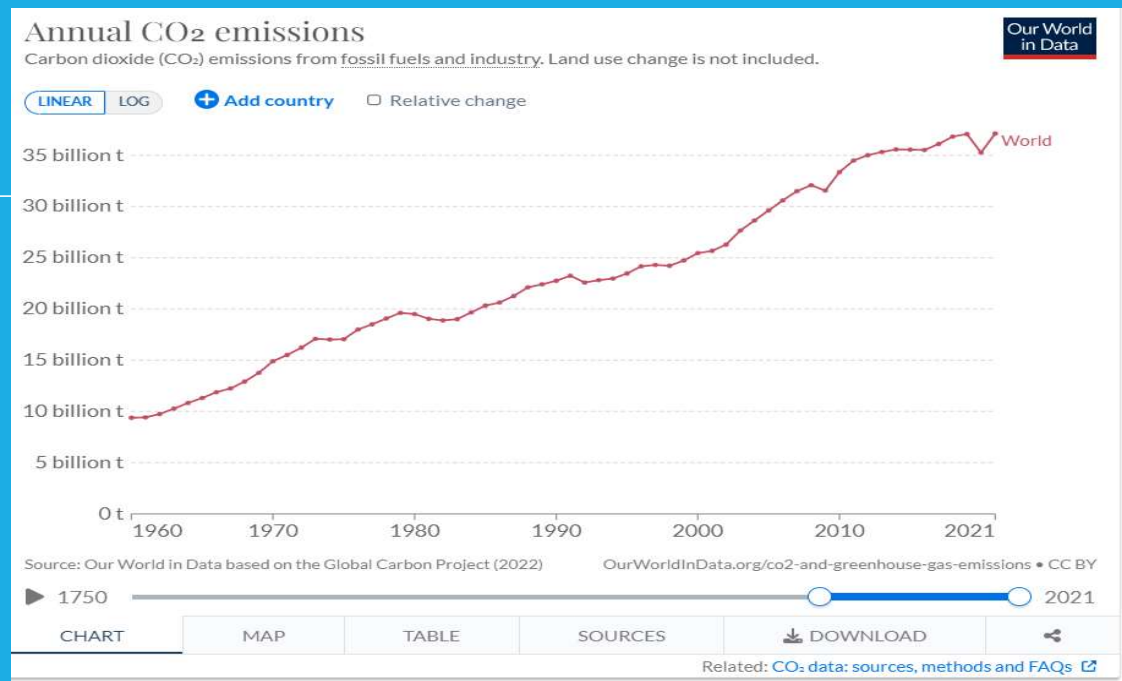
CARBON OFFSET STANDARDS

The ICVCM council has developed standards for carbon offsets to ensure that any carbon offset projects are true reducers of CO₂ from the atmosphere



GLOBAL EMISSIONS

Except for a brief pause during COVID, annual emissions are again on the rise



9



INDUSTRY LEADER

Nutrien, a Canadian fertilizer company, plans to build new clean ammonia fertilizer plant in Louisiana that would produce “clean” ammonia, a form of nitrogen fertilizer. Clean ammonia releases 90% fewer greenhouse gases than regular fertilizer.



10



IKEA PROGRESS

IKEA is installing solar panels at a tremendous rate. That is one and a half Site C equivalents, from just one progressive company



11



REFUGEE CRISIS

Many of the 50,000 refugees who recently crossed into Canada through Roxham road are climate refugees from Central America, which is experiencing a major draught.



12



PIPELINE PROGRESS

The Cenovus CEO indicates that it is unlikely that any more new liquid-filled pipelines will be required in Canada



13



CRUISE SHIP EMISSIONS

The BC government will provide \$8 mil towards electrifying the Cruise ship terminal in Victoria, greatly reducing dockside emissions.

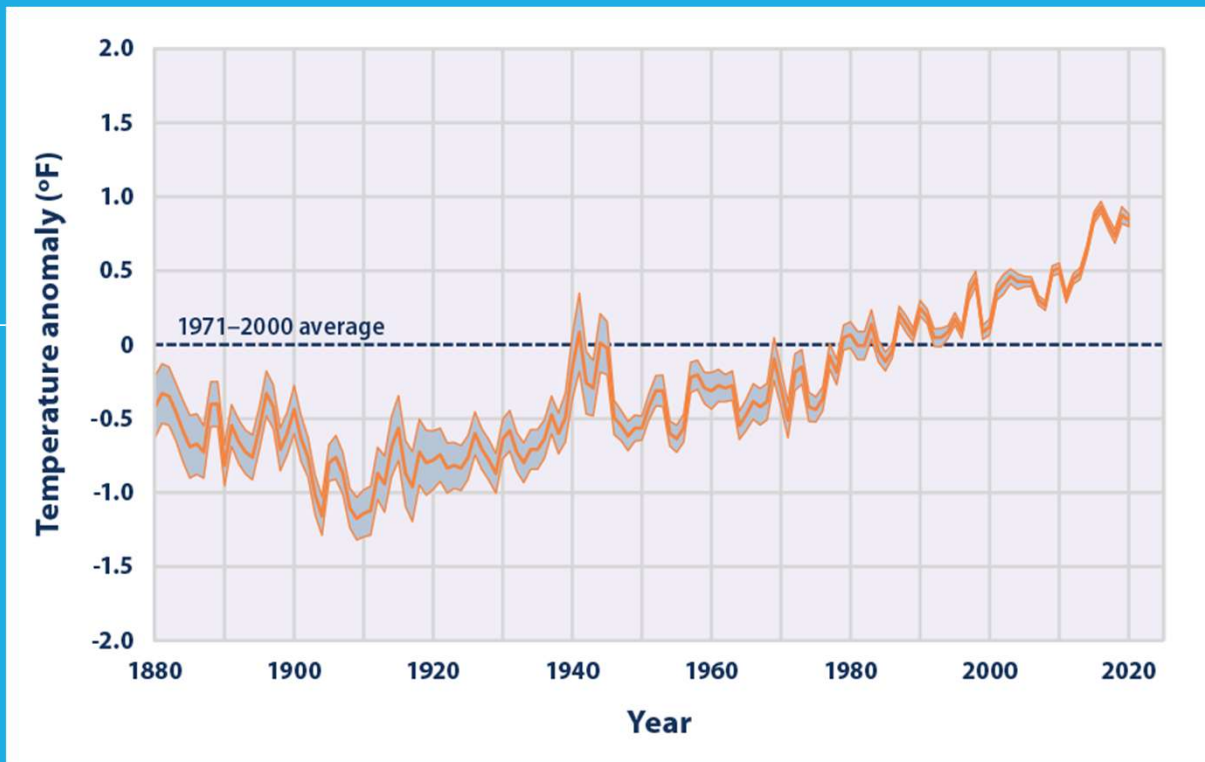


THIS IS REALLY BIG!

The 2023 Federal budget provides \$21 Billion to kickstart a green economy. This fund is mostly for loans that will perpetuate the funding for some time to come



GLOBAL OCEAN TEMPERATURE RISE



16



BATTERY TECHNOLOGY

The storage capacity of batteries has grown 10- fold in the last 30 years



US GREEN ENERGY FUNDING

The USA Inflation Reduction Act provides funding of \$750 Billion for Green Energy Projects



18



FRACKING AND OUR EARTH

Fracking caused the largest earthquake every recorded in Alberta at a level of 5.6.



19



SOLAR POWER COSTS

In 1975, one watt of solar power costs \$1.60. Today, you can get that same watt for 20 cents. Photovoltaic Solar panels are now the cheapest form of electrical energy EVER.



20



HEAT PUMP PROLIFERATION

Last year, for the first time, more heat pumps were installed in homes than gas furnaces.



EV CHARGERS FOR CONDOS

The BC government has made it easier for strata councils to install electric vehicle chargers



TIDAL POWER RESEARCH

UVIC is working with the Blind Channel Wilderness
Resort to provide tidal power to replace its
\$100,000 fuel bill



MONTENAY FRACKING

This gas field, near the Blueberry First Nations reserve (NE BC) is one of the 6th largest carbon bombs in the world

The first nations won a court approval to get involved in the approval of frack wells, a very big win for them

Sadly, while the case was in court (2016-2021), the BC government quickly approved 100s of applications in the area

Indeed the BC oil and gas commission has only turned down one application in 20 years



24



GLOBAL EMISSIONS FIX

Approximately 1/3 of global CO₂ emissions are from power generation. Green energy solutions can readily fix this easily. We just need the will.



PROTECTED BIODIVERSITY

A huge 140,000 square km area has been designated a Marine Protected Area. This is almost five times the size of Vancouver Island



AIR TRAVEL

The first commercial electric powered plane is right here in our back yard with Harbour Air Seaplanes

Successful test flights of hydrogen powered planes have occurred



CEDAR LNG PROJECT

Just before the regulations were slightly tightened, the Cedar LNG project, near Kitimat has been approved.



28



EV HEALTH BENEFITS

In California districts where there are 20 Electric Vehicles per 1000 residents, hospital visits for asthma attacks have fallen significantly due to better air quality



PROFESSIONAL SUPPORT

The Engineers and Geoscientists of BC (typically conservative thinkers) have developed progressive advisories on how to decarbonize and meet our climate goals in BC



30



BATTERY COSTS

The price of lithium Ion batteries has dropped 97%



CANADIAN EMISSIONS

Canada's National Emissions are down from their peak

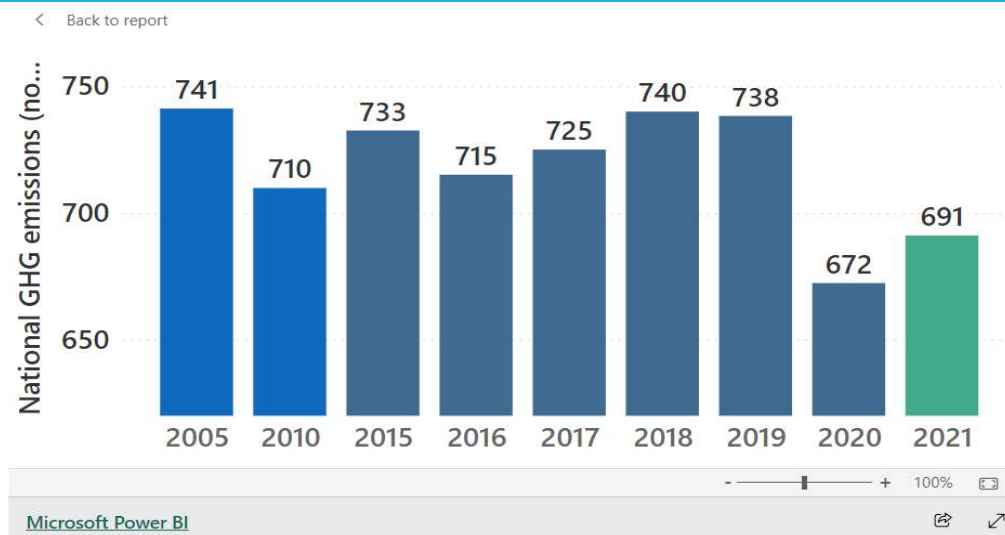


Figure 2: Trends in GDP, GHG emissions and emission intensity



NEW LNG PROJECTS IN BC

BC has a number of pipeline projects under construction, approved or pending

Coastal Gas link

Kitimat LNG

Prince Rupert Gas Transmission



LNG Canada

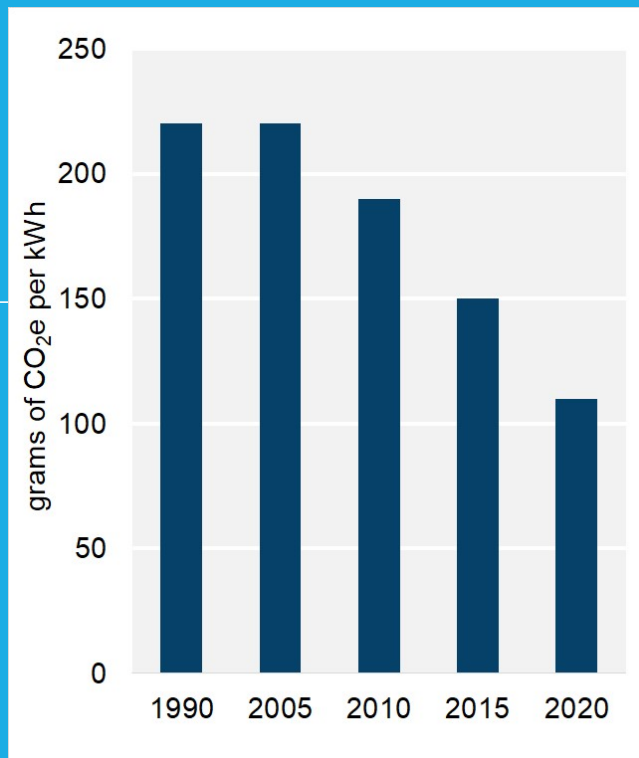
Woodfibre LNG

Pacific trails

Tilbury Marine



CANADIAN ENERGY PRODUCTION



Emissions from electricity production are falling rapidly. 55% drop in 30 years

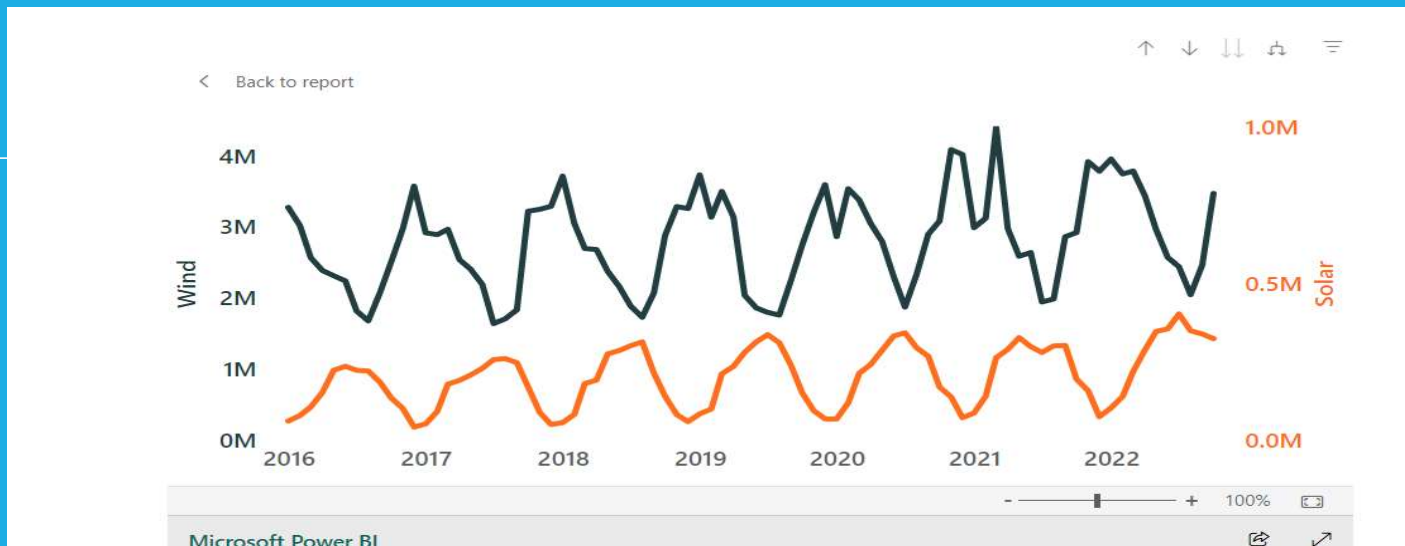


34



CANADIAN GREEN ENERGY

In Canada, solar and wind really compliment each other seasonally,
reducing the need for storage



35



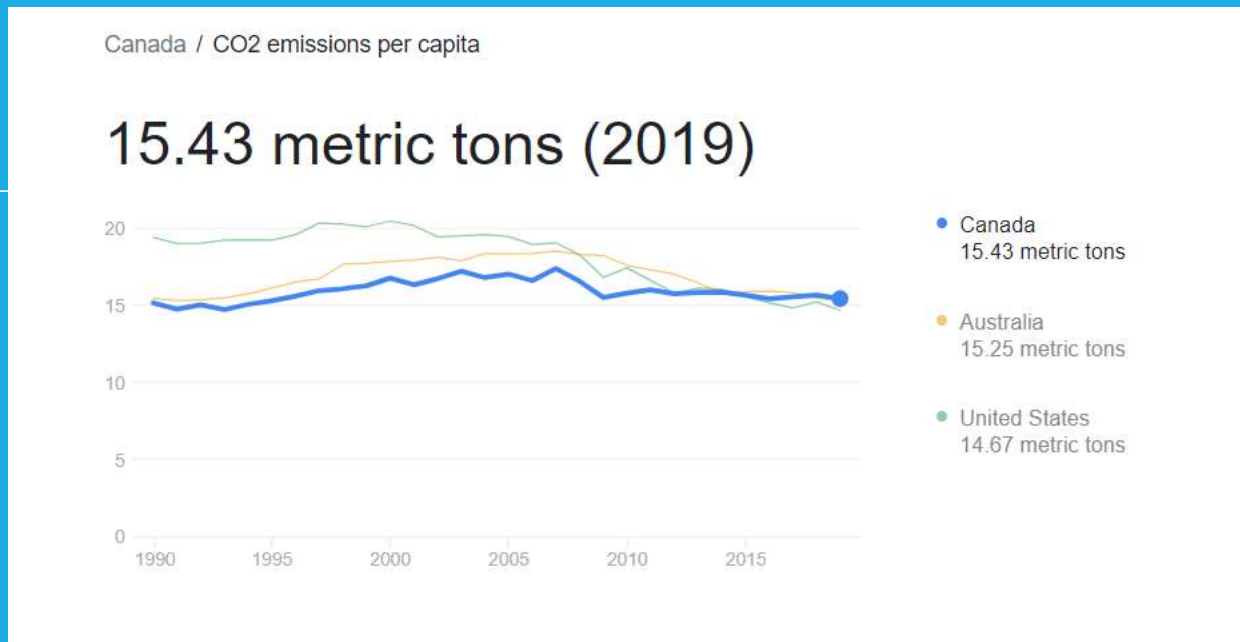
EUROPEAN UNION PLAN

The EU has earmarked some half trillion euros from the pandemic recovery fund for climate facing initiatives



CANADA PER CAPITA EMISSIONS

Despite 30 years (or more) of warnings and education, emissions per person in Canada are still pretty much the same.



37



BC ZONING REVIEW

In Vancouver (for instance) , 81% of residential lots are zoned for single family homes. BC now allows for up to 4 homes on that site. Urban density is one of the great steps forward we can take.



FLEET PROGRESS

- Courier DHL has converted 20% of its fleet to electric
 - Fedex has pledged to convert 100% of its “last mile” fleet to electric
 - Amazon, UPS and Fedex have all made major purchases of EVs
-



CANADA'S EMISSION TARGETS

Canada could meet more than 30% of its Paris emission targets simply by implementing all the measures contained in the Provincial and Federal efficiency commitments already on the books



40



USA DROUGHT IMPACT

A suburb in Arizona had its water source dry up and are tanking in water. It is just the first in what is expected to a severe water shortage in the area, affecting homes, crops and industry



41



BC TARGET FOR EVS

BC just improved its target for EV sales in the province. All new car sales in BC must be zero emission by 2035 instead of 2040.



42



SOLAR POWER PROGRESS

Solar power generation increased a whopping 22% in 2021 and now exceeds 1000 gigawatts. That's roughly equivalent to 1000 Site C dams

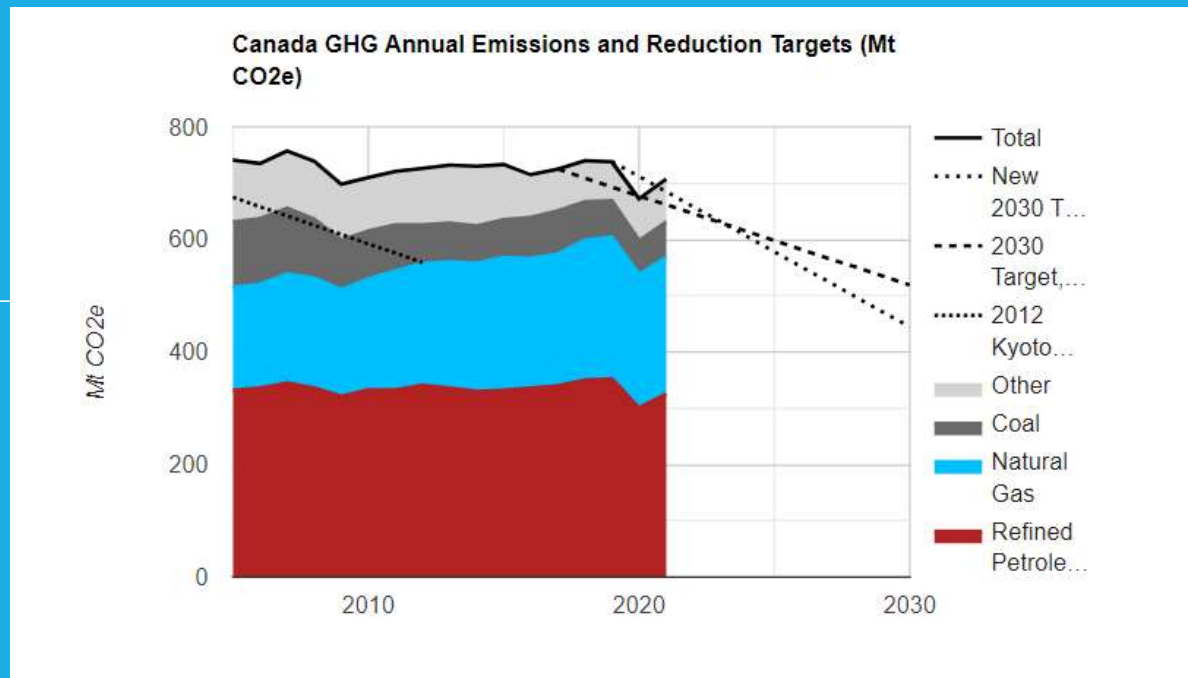
China has 93 Site C equivalents of solar power

The US has 32 Site C equivalents

Africa has 6.4 gW of solar (~6 Site C)



CANADA'S RECORD AND BROKEN PROMISES



44



UBIQUITOUS FORD PICKUP

Ford unveiled its new electric pickup truck in 2021 and is mass producing in 2022

The truck is able to power construction equipment or provide power to a house for 3 days in an emergency

It is far more likely that the average truck owner will switch to an electric truck than to public transit



45



STEEL PRODUCTION

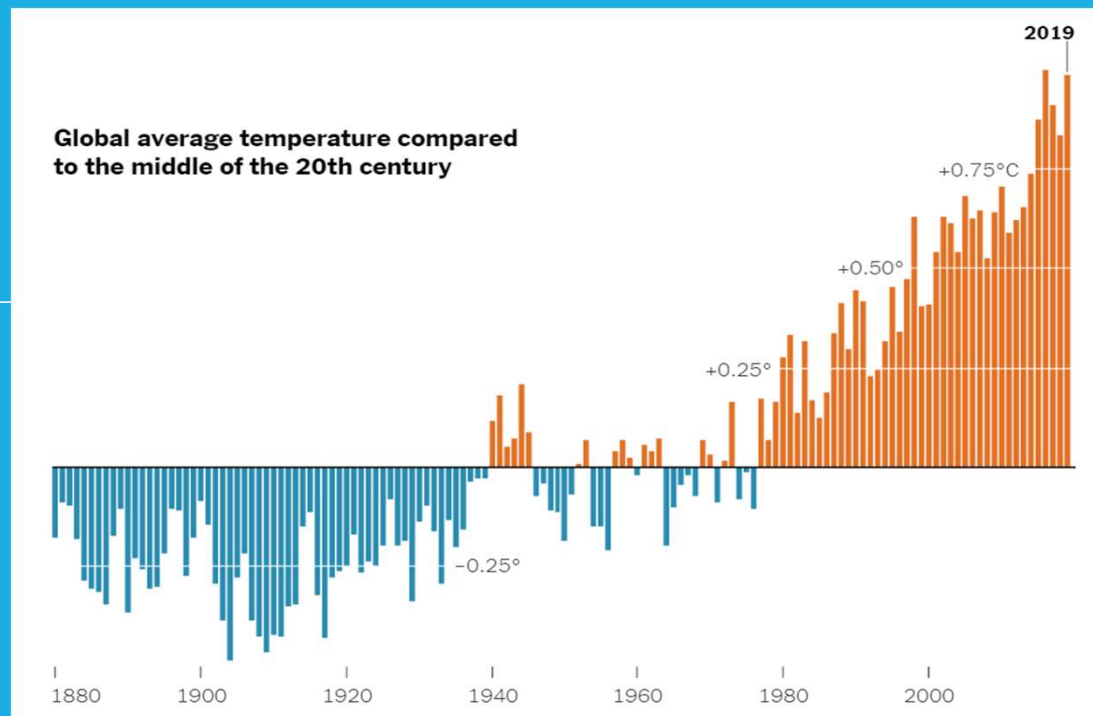
The world three largest steel-makers have all made pledges to zero emissions



46



GLOBAL EARTH TEMPERATURE RISE



47



WALMART (YES, EVEN THEM!)

- Has already doubled the efficiency of its trucking fleet
- ensured the protection of a million acres of wildlife habitat

- Overall emissions peaked in 2012 and are now declining
- pledged to draw all of its power from renewable sources by 2035



48



CHINA MOVES AHEAD

- The city of Shenzhen converted its fleet of 16,000 buses to electric in only 5 years.
 - largest manufacturer and installer of solar panels and wind farms
-
- In 2020, China added 50 gigawatts of solar panels (that's 45 Site C equivalents)
 - largest manufacturer of EVs and batteries



GAS STOVES

Recent studies by physicians have found that indoor gas stoves increase the chance of householders getting asthma. Yet, Fortis is still promoting them on their advertising media



50



MASS TRANSIT

Global mass transit ridership expanded roughly sixfold
from 2012 to 2017

In North America, 10 new LRT opened in 2019 with 28
more under construction



51



KAUAI HAWAII

They committed to 50% renewables by 2023. By 2019, they exceeded that goal. They currently have the largest solar plus storage facility with 28 mW solar and 100 mW battery bank



52



COAL ADVANTAGE

Coal still has 6.5 times more energy density than batteries, despite huge advances in battery technology



53



WIND POWER

Siemens has built the largest off-shore wind power generator dubbed 14-222. It produces 14 mW power from a wing span of 222 m. It is taller than the Eiffel tower



54



SOME COMPANIES COMMITTED TO NET ZERO

BP

Royal Dutch Shell

Apple

Coca Cola

Google

Amazon

Microsoft

General Motors

China Petroleum

Nippon Steel



55



SOME COUNTRIES LEGALLY COMMITTED TO NET ZERO

Canada

USA

United Kingdom

Germany

EU

New Zealand

Spain

Italy



Japan

South Korea

56



HOUSING RE-ENVISIONED

Freiburg Germany has developed designs for 6 unit townhouses that actually generate power over the course of a year.

Okotoks Alberta has eliminated natural gas use by building a solar powered district heating system for the entire community

Many municipalities in BC (including Nanaimo) are working towards not having natural gas hook ups in new buildings



SMART GRIDS

Bornholm Denmark is experimenting with smart grids where EVs can be used as batteries to supply peak power demands.

Homes and offices have temperature ranges to provide flexibility in heating

So do their refrigerators!

Soon to be home to one of the largest offshore windfarms



58



WIND POWER PROGRESS

Europe installed 3.6 gigawatts of offshore wind power in 2019. That is three and a third Site C equivalents in just one year

Next generation wind farms are being built off the coasts of Norway, Portugal, France and the United Kingdom

Texas recently has wind power overtaking coal power and now generates some 22 gW of wind (20 Site C)



INDUSTRY FORAYS

Unilever, the world largest producer of consumer goods, built a 6 story office tower (back in 2009) that exceeds the local requirements for efficiency by 70%. It was designed with the workers in mind and their has been a significant drop in sick days. Energy use is also minimal.



60



THE GOOD THE BAD AND SOME UGLY

FIRST UNITARIAN FELLOWSHIP OF NANAIMO

APRIL 23 2023

EJC@UFON.CA

