

The Facts About the Near-Term Energy Future

Trends in the Global Economy

Contents

The Trends in the Global Economy	2
Oil	4
IEA	4
EIA	4
Natural Gas	5
IEA	5
EIA	5
Coal	6
IEA	6
EIA	6
Electricity.....	6
IEA	6
EIA	7
Renewables.....	7
IEA	7
EIA	8
Observations	8
ABOUT THE AUTHOR	11
About Friends of Science Society.....	11

Cover image licensed from Shutterstock

The Facts About the Near-Term Energy Future

In the ongoing controversy between those who believe that humans are causing catastrophic climate change and those who are skeptical about this, one of the most hotly-debated topics concerns the trends in global energy supply, demand and emissions. Skeptics focus mostly on the historical record showing that fossil fuels (coal, oil and natural gas) supply 84% of the world's current energy needs and renewables (wind, solar and biomass) supply only 5%. The advocates of alarm focus heavily upon the potential of technologies and government policies (i.e., taxes, regulations, and subsidies) to alter future supply and demand for energy, and especially to increase the use of renewable energy. The debate over what may happen in future is necessarily full of speculation and conjecture, which makes the debate largely unresolvable.

There is a small but important middle ground that receives far too little attention. It concerns the projections by expert organizations of how energy market condition may change in the near future, the next one to two years during which most of the governing conditions are well-known. Even here there is room for error, and the factors are numerous. Notably, they include global economic trends, the effects of unusual conditions such as the current Coronavirus pandemic, and the various factors that influence the supply, demand and pricing of different energy supplies and services. This note will summarize some of the best information available in an effort to get closer to the facts.

The Trends in the Global Economy

The World Bank is one of the most widely respected public sources of projections concerning near-term economic trends. In its most recent Global Economic Prospects report, it focused on the recent and expected economic effects of the pandemic.

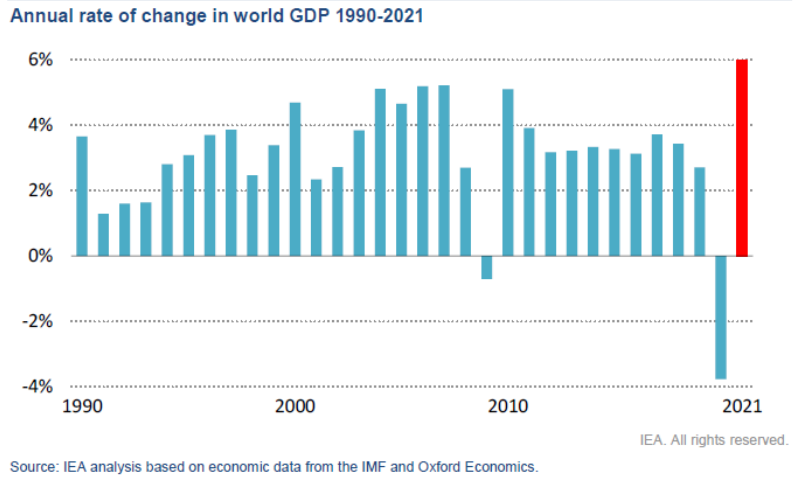
The World Bank Report can be found here:

<https://www.worldbank.org/en/publication/global-economic-prospects>

The various government measures to slow down the effects of the COVID-19 virus have had a near-catastrophic effect on global economic activity and wealth creation, reducing GDP by more than US \$15 trillion, and causing historically high levels of public debt. The debt accumulation makes the global economy particularly vulnerable to financial market stress, and has sharply increased the risks of inflation and extended recession.

The widespread vaccination of the public in many countries is beginning to allow the return of more normal economic activity, especially in the United States. The World Bank expects global economic output to expand by 4% in 2021, but still remain more than 5% below pre-pandemic projections. However, it projects global growth to moderate to 3.8%

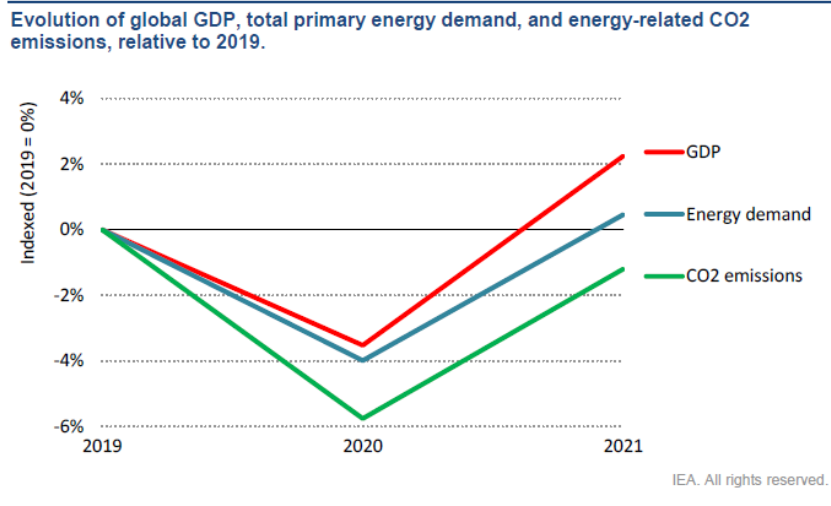
in 2022, weighed down by the pandemic’s lasting damage to economic growth. Many countries, especially in the developing world, are expected to lose a decade or more of per capita income growth.



<https://iea.blob.core.windows.net/assets/d0031107-401d-4a2f-a48b-9eed19457335/GlobalEnergyReview2021.pdf>

The effects of this on energy markets may be felt primarily in terms of depressed energy demand, but there is no doubt that the reduction of revenues to energy producers will reduce their ability (and incentive) to re-invest in new supply development, except of course where that is heavily under-written by governments. It remains to be seen how governments, deeply in debt and facing reduced tax revenues, will be able to finance investments in renewable energy sources when there so many competing demands for the use of scarce public funds.

In the following sections, I will compare the near-term projections of two well-known and highly regarded sources - the International Energy Agency (IEA) and the United States Energy Information Administration (EIA).



Oil

IEA

The following data and projections are from the IEA May 2021 Oil Market Report:

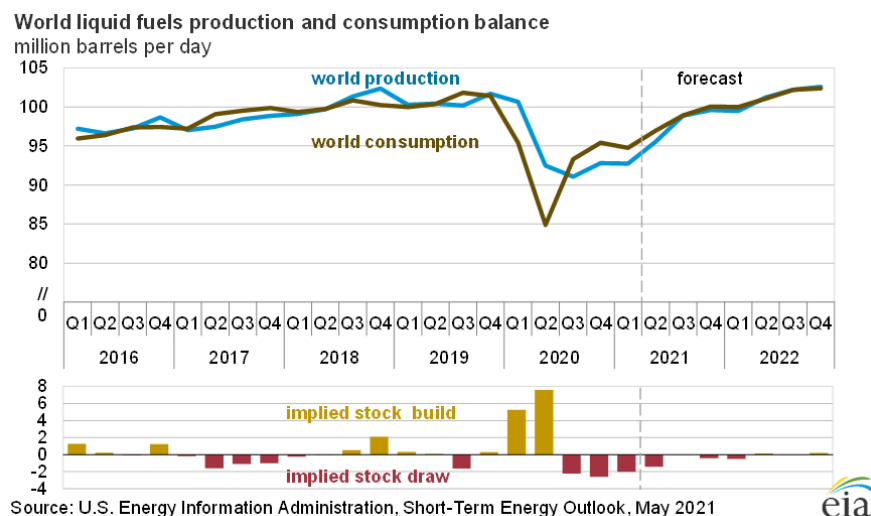
Page | 4

- **Global oil consumption is forecast to rise by 5.4 million barrels per day (mb/d) in 2021.**
- World oil supply is projected to grow by 1.4 mb/d in 2010. It was 94.4 mb/d in April, 2021.
- Crude oil prices on May 10, 2021 were \$68.81 per barrel for ICE Brent and \$65.31 per barrel for MYMEX WTI.
- Under the current OPEC+ production scenario, crude oil supplies will not rise fast enough to keep pace with the expected demand recovery. **Global oil demand will “soar” from 93.1 mb/d in the first quarter of 2021 to 99.6 mb/d by year end.**

EIA

The following is from the Energy Information Administration Short-Term Energy Outlook of May 11, 2021.

- EIA projects that Brent prices will average \$65 per barrel in the second quarter of 2021, \$61 per barrel in the second half of 2021, and \$61 per barrel in 2022.
- It estimates that the world consumed 96.2 mb/d in April, an increase of 15.8 mb/d from April 2020 but 4.0 mb/d less than April 2019 levels.
- **Consumption of liquid fuels will average 97.7 mb/d for all of 2021, a 5.4 mb/d increase from 2020. It will increase by 3.7 mb/d in 2022 to 101.4 mb/d.**



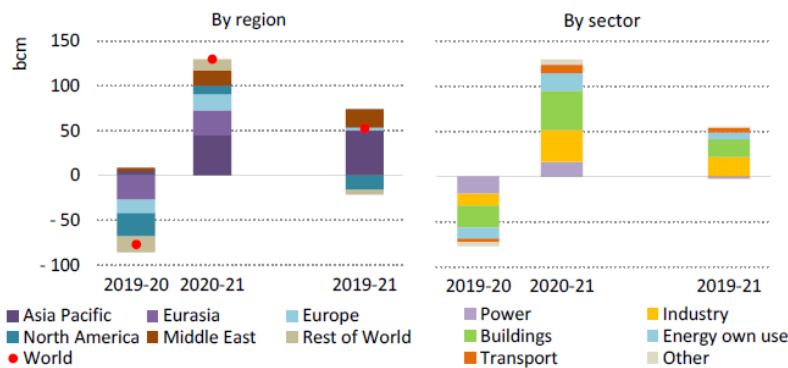
Natural Gas

IEA

- Global natural gas consumption declined by 76 billion cubic metres (bcm) in 2020.
- **It is expected to recover 3.2% in 2021, erasing the losses of 2020, and pushing demand 1.3% above 2019 levels.**
- The rising demand is due largely to increased export sales of liquefied natural gas, and by increased demand in the industry and buildings sectors.

Page | 5

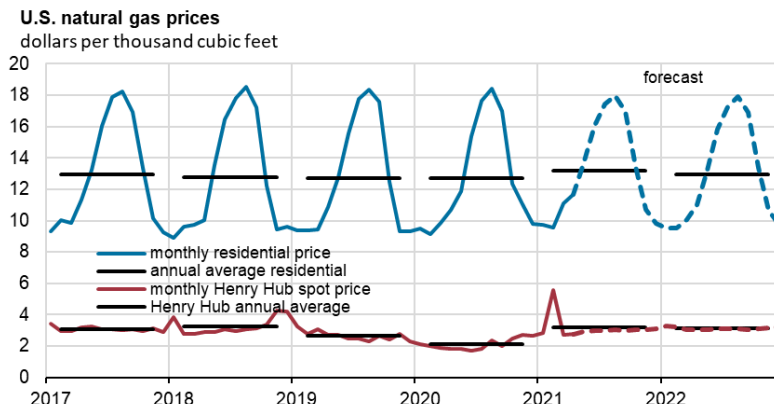
Natural gas demand growth by region and sector, 2019-2021



IEA. All rights reserved.

EIA

- In April, the Henry Hub price of natural gas averaged US \$2.66 per million Btu. It will probably rise to an average of US \$2.78 per million Btu in the second quarter of 2021 and an average of US \$3.05 per million Btu for all of 2021 (an increase from a 2020 average of US 2.03 per million Btu).
- U.S. consumption of natural gas is projected to average 82.6 billion cubic feet per day (Bcf/d) in 2021, down 0.7% from 2020.



Sources: U.S. Energy Information Administration, Short-Term Energy Outlook, May 2021, and Refinitiv

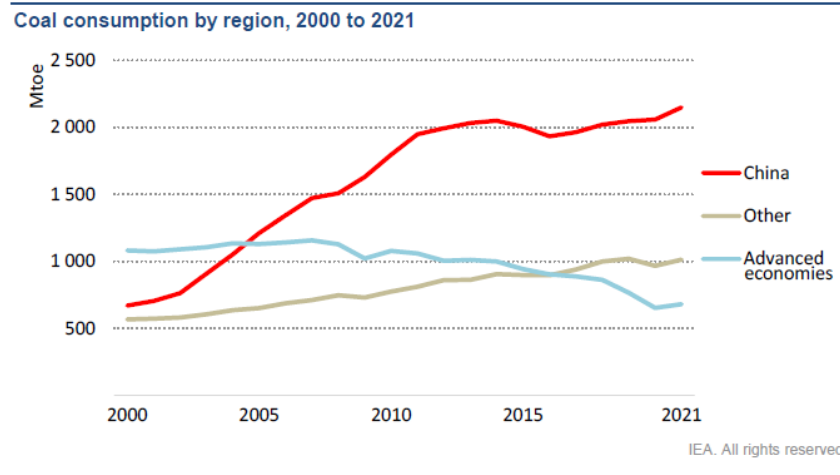


Coal

IEA

- Global coal demand declined 4% in 2020.
- Demand is rebounding strongly in 2021, driven by the power sector.
- **In 2021, demand is projected to rise 4.5%, pushing coal demand above 2019 levels.**

Page | 6



EIA

- **Within the United States, the forecast share of coal for power generation will rise from 20% in 2020 to 24% in 2021 and 23% in 2022.**

Electricity

IEA

- Global electricity demand fell by 1% in 2020.
- Advanced economies recovered in the second half of 2020 but remained for the most part below 2019 levels. China and India recorded more than 8% and 6% year-on-year growth, respectively, in the last quarter of 2020.
- Well over half the increase in coal-fired electricity generation in 2021 is anticipated in China. **Around half of the 8% increase in electricity supply in China in 2021 will be provided by fossil fuels, pushing generation from coal in China up by 330 TWh (or 7%) over 2019 levels.**
- **In India 70% of the additional electricity demand in 2021 will be provided by thermal generation, almost all from coal.**

EIA

- Electricity consumption in the United States is projected to increase by 2.2% in 2021 after falling by 3.9% in 2020.
- Electricity consumption in 2022 is forecast to grow by another 1.0%.

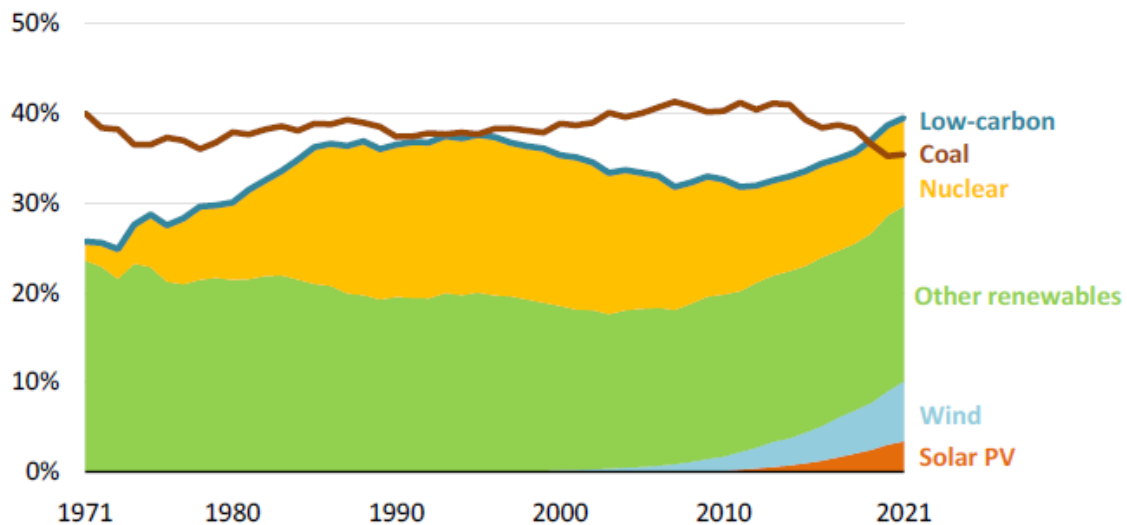
Renewables

It should be noted that the International Energy Agency includes hydroelectricity in its definition of “renewable energy”.

IEA

- Renewable energy use increased by 3% in 2020, reaching 29% of electricity generation.
- Renewable electricity generation in 2021 is expected to expand by more than 8% to reach 8,300 TWh.
- If, as appears likely, hydroelectricity accounts for about 17% of power generation, it seems probable that biomass accounts for 8% and wind and solar 4%.

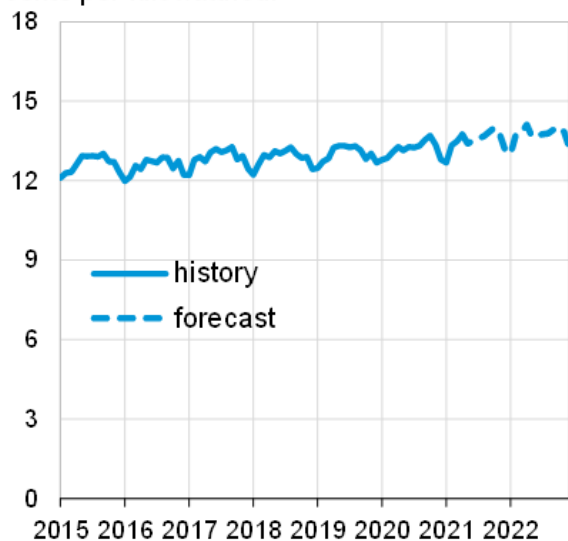
Share of low-carbon sources and coal in world electricity generation, 1971-2021



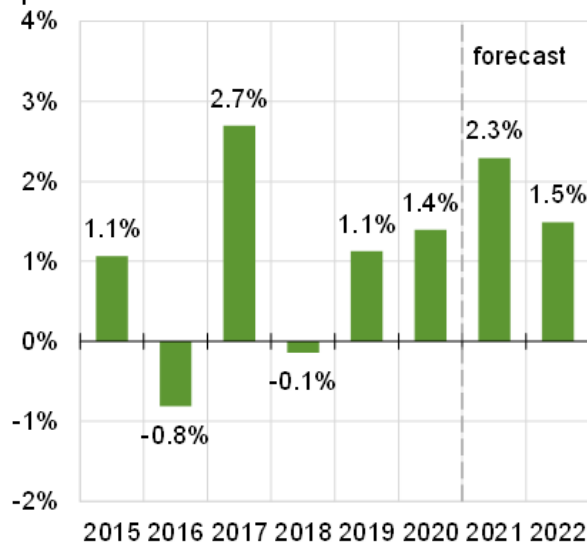
IEA. All rights reserved.

- It is estimated that the U.S. electric power sector added 14.8 gigawatts (GW) of new wind capacity in 2020.
- It is projected that 15.9 GW of new wind capacity will come online in 2021 and 5.2 GW in 2022.
- Utility-scale solar capacity rose by an estimated 10.5 GW in 2020.
- It is projected that utility-scale solar capacity will be increased by 15.7 in 2021 and 15.9 GW in 2022.
- About 5 GW of small-scale solar systems (less than 1 megawatt) will come online each year in 2021 and 2022.

U.S. monthly residential electricity price
cents per kilowatthour



Annual growth in residential electricity prices
percent



Source: U.S. Energy Information Administration, Short-Term Energy Outlook, May 2021



Observations

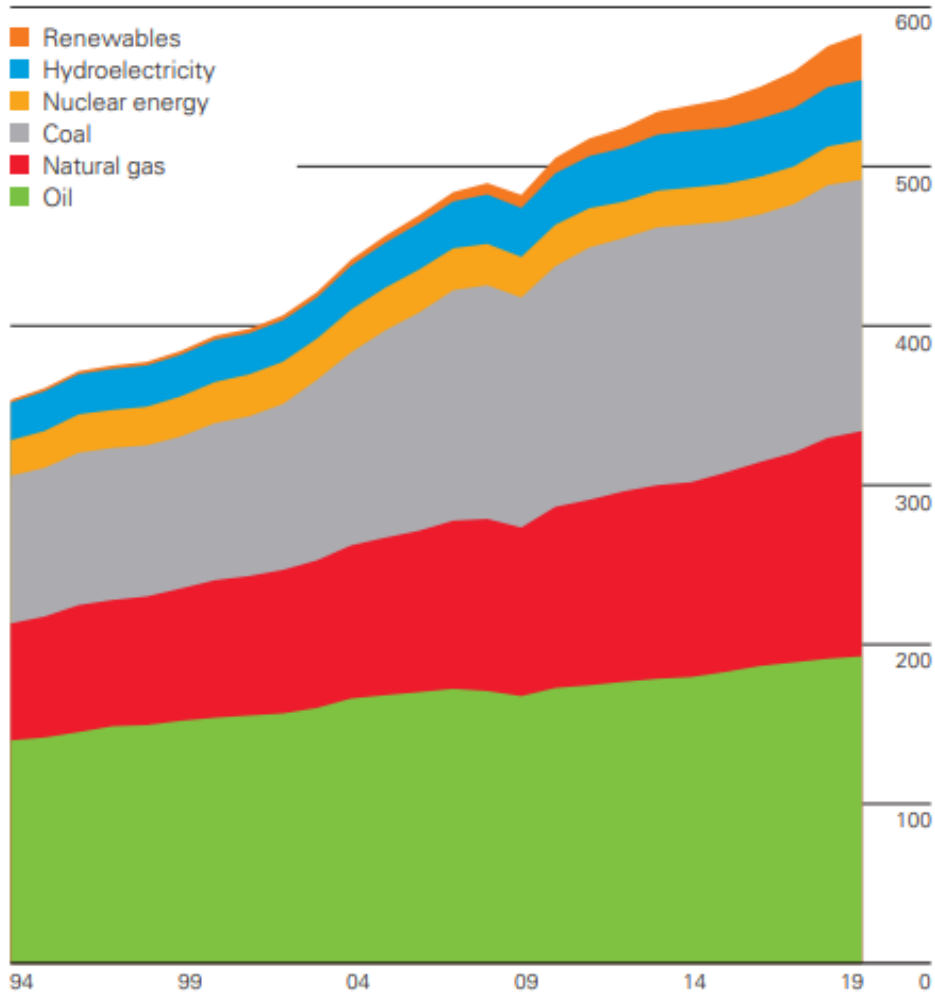
The single most important influence on energy markets over the 2021-2022 period will be the pace of global recovery from the government lockdowns and increase in indebtedness in response to the coronavirus. This injects a very high level of uncertainty.

The adverse economic effects of the pandemic and the governmental responses have significantly reduced GHG emissions.

Government policies continue to strongly support the increased production and use of wind, solar and biomass energy sources. These have come to represent as much as 12% of electricity generation globally, or 7% of primary energy demand.

World consumption

Exajoules



Primary energy consumption rose by 1.3% last year, less than half its rate in 2018 (2.8%). Growth was driven by renewables (3.2 EJ) and natural gas (2.8 EJ), which together contributed three quarters of the increase. All fuels grew at a slower rate than their 10-year averages, apart from nuclear, with coal consumption falling for the fourth time in six years (-0.9 EJ). By region, consumption fell in North America, Europe and CIS and growth was below average in South & Central America. In the other regions, growth was roughly in line with historical averages. China was the biggest individual driver of primary energy growth, accounting for more than three quarters of net global growth.

2017 Pre-pandemic consumption levels. Source: BP

Both the IEA and EIA project, however, that a significant recovery in demand for oil, natural gas and coal is already underway and seems likely to raise total demand back to levels that meet or exceed 2019 levels by the end of 2022.

Neither the trends in fossil fuel production and use or those in renewable energy production and use are consistent with the declared policy objectives of many

governments to achieve “decarbonization” within 20 to 30 years. **In fact, there is, as yet, no evidence that the world is on a track to extensive decarbonization.**

A faster economic recovery, if led by consumers and producers’ free choices, would place those targets even further beyond reach.



Image licensed from Shutterstock.

ABOUT THE AUTHOR

ROBERT LYMAN is an economist with 27 years' experience as an analyst, policy advisor and manager in the Canadian federal government, primarily in the areas of energy, transportation, and environmental policy. He was also a diplomat for 10 years. Subsequently he has worked as a private consultant conducting policy research and analysis on energy and transportation issues as a principal for Entrans Policy Research Group. He is a frequent contributor of articles and reports for Friends of Science, a Calgary-based independent organization concerned about climate change-related issues. He resides in Ottawa, Canada. [Full bio.](#)

About Friends of Science Society

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, engineers, and citizens that is celebrating its 19th year of offering climate science insights. After a 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

E-mail: contact@friendsofscience.org

Web: climatechange101.ca

