



# When the Facts Collide with Climate Alarm

Energy Market Facts vs Contrived Reporting on Renewables 'Transition'

## CONTENTS

EXECUTIVE SUMMARY .....	2
Comments .....	4
Energy Market Facts vs Contrived Reporting on Renewables ‘Transition’ .....	5
Do look up! The Data .....	<b>Error! Bookmark not defined.</b>
Claim: Renewable Energy Sources are Steadily Replacing Fossil Fuels in the World’s Primary Energy Mix .....	5
Claim: The World is on the Path to Radical Decarbonization .....	6
Claim: Financial Institution Constraints on Investment are Impairing the Growth in World Fossil Fuel Production ....	8
Claim: The measures to promote the use of electric vehicles, vehicle fuel efficiency and increased transit use, as well as onerous taxation of motor fuels, are reducing consumption of oil and especially gasoline in the transport sector. ....	8
Claim: Natural gas consumption is being reduced through regulatory measures. ....	9
Claim: Climate policies are driving coal out of the global energy mix. ....	9
Claim: Electricity Generation is growing Fast Enough to Soon Meet Most Energy Needs .....	10
Comments .....	11
About the Author.....	12
About Friends of Science Society.....	12

# WHEN THE FACTS COLLIDE WITH CLIMATE ALARM

## EXECUTIVE SUMMARY

Page | 2

This year, the 2023 version of the *Statistical Review of World Energy 2023* was produced by the Energy Institute with partners KPMG and Kearney. It contains full energy data for 2022 and for the preceding years going back to 2012.

In this article, I compare the facts concerning world energy trends as reported in the review with the claims of climate campaigners:

### ***Claim: Renewable Energy Sources are Steadily Replacing Fossil Fuels in the World's Primary Energy Mix***

Of 2022's total primary energy consumption of 604 exajoules, fossil fuels (oil, natural gas and coal) accounted for 494 exajoules, or 82%. Nuclear energy and hydroelectricity provided 10.7%. Renewables supplied 7.5%, and most of that were biofuels. The fossil fuel share is holding roughly constant.

### ***Claim: The World is on the Path to Radical Decarbonization***

Since 2012, total CO<sub>2</sub>-equivalent emissions have increased from 36.6 billion tonnes per year to 39.3 billion tonnes per year. The increase in emissions from 2021 to 2022 was only 0.8%, as the world was still largely in recession.

In 2022, the non-OECD countries produced 68% of global emissions, up from 66% in 2021. China alone produced 30% of the world's GHG emissions. The United States produced 13.5% of global emissions, Canada 1.5% and Europe 10.0%. The world is not decarbonizing.

### ***Claim: Financial Institution Constraints on Investment are Impairing the Growth in World Fossil Fuel Production***

World production of crude oil and condensate liquids increased from 77.4 million barrels per day in 2012 to 81.2 million barrels per day in 2022, an increase of 5%. World production of natural gas increased from 3,326 billion cubic metres in 2012 to 4,043 billion cubic metres in 2022, an increase of 717 billion cubic metres, or 22%. World

production of coal increased from 8,188 million tonnes in 2012 to 8,803 million tonnes in 2022, a rise of 615 million tonnes, or 8%.

In short, production of all fossil fuels is increasing despite the efforts of climate campaigners to restrict producers' access to funds.

***Claim: The measures to promote the use of electric vehicles, vehicle fuel efficiency and increased transit use, as well as onerous taxation of motor fuels, are reducing consumption of oil and especially gasoline in the transport sector.***

World liquids (i.e., crude oil and natural gas liquids) consumption increased from 90.6 million barrels per day in 2012 to 100.3 million barrels per day in 2022, an increase of 9.7 million barrels per day, or 11%. World consumption of gasoline increased from 21.5 million barrels per day in 2012 to 23.9 million barrels per day in 2022, a rise of 2.4 million barrels per day, or 11%.

In other words, passenger transport-related oil demand continues to rise across the world, in spite of governments' policies.

***Claim: Natural gas consumption is being reduced through regulatory measures.***

World consumption of natural gas increased from 3,320 billion cubic metres in 2012 to 3,941 billion cubic metres in 2022, a rise of 621 billion cubic metres, or 19%. Overall, natural gas continues to be one of the fastest growing sources of global energy demand and a key source of clean, reliable energy supply.

***Claim: Climate policies are driving coal out of the global energy mix.***

World coal consumption rose and fell on a yearly basis within a relatively narrow band over the period 2012 to 2022. Global consumption in 2022 was 161 exajoules, compared to 158 exajoules in 2012, and the highest level since 2014. Coal consumption still shows no signs of significant decline.

***Claim: Electricity Generation is growing Fast Enough to Soon Meet Most Energy Needs***

Global electricity generation increased from 22,833 terawatt-hours in 2012 to 29,165 terawatt-hours in 2022, a rise of 6,332 terawatt-hours, 28% in eleven years. According to Enerdata, in 2021, the share of electricity in global final energy consumption was only 20.4%.

Global electricity generation increased by 2.3% in 2022, with renewables (including hydro) meeting 84% of net electricity demand growth. Even with unprecedented levels of subsidization and regulatory mandating, the massive investments in wind and solar energy were not even sufficient to keep up with demand growth, let alone displace any existing fossil fuel-based electricity generation.

## COMMENTS

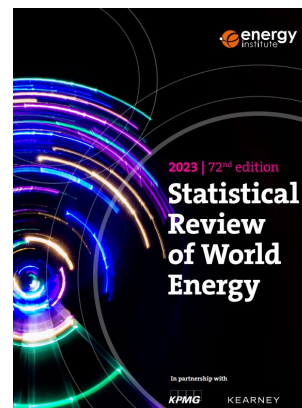
The data illustrates that almost all the key assertions of climate campaigners about present trends in global energy supply, demand and emissions are flawed. Most importantly, the “world” is not decarbonizing and is not undergoing either a rapid “transition” towards full electrification or replacement of fossil fuels by renewable energy.

# WHEN THE FACTS COLLIDE WITH CLIMATE ALARM

## ENERGY MARKET FACTS VS CONTRIVED REPORTING ON RENEWABLES 'TRANSITION'

Those who closely follow climate policy issues cannot fail to notice and be concerned by a pronounced politicization of energy market analysis and projections. Organizations like the International Energy Agency, once prized for their objective collection of data and analysis of market trends, have become avid promoters of “decarbonization”. Their reports further the thesis that all the countries of the world have embarked on an “energy transition” from hydrocarbons to renewable energy and the complete electrification of the global economy. This “storyline” is endlessly repeated and broadly accepted by the mainstream media in the OECD countries, and consequently accepted as beyond question by most members of the public.

For over seventy years, British Petroleum, the renowned UK-based petroleum company, produced annual statistical reviews of world energy markets that met admirable standards of rigour and objectivity. This year, the 2023 version of the *Statistical Review of World Energy 2023* was produced by the Energy Institute with partners KPMG and Kearney. It contains full energy data for 2022 and for the preceding years going back to 2012. I urge anyone interested in the trends in global energy markets to peruse the Review, which can be found here:



<https://www.energyinst.org/statistical-review>

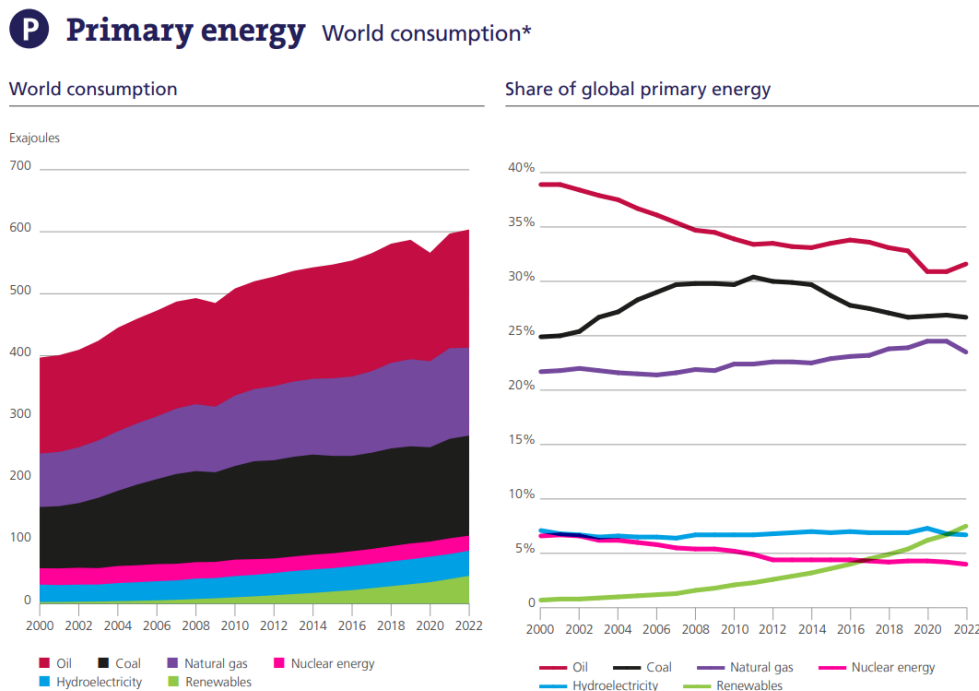
In this article, I will compare the facts concerning world energy trends as reported in the review with the claims of climate campaigners:

## CLAIM: RENEWABLE ENERGY SOURCES ARE STEADILY REPLACING FOSSIL FUELS IN THE WORLD'S PRIMARY ENERGY MIX

According to the International Renewable Energy Agency (IRENA) *Global Landscape of Renewable Energy Finance report* for 2023, global energy investment in renewable energy, energy efficiency and “transition-related technologies” over the period 2015 to 2022 totalled over US \$6 trillion, and investment in renewable energy alone totalled almost US \$2.9 trillion. As most of these expenditures were either directed by or heavily subsidized by

governments, it is perhaps understandable that the advocates would assume that this would lead to a substantial increase in the share of primary energy consumption met by renewables and a corresponding decline in the share held by fossil fuels.

In fact, of 2022’s total primary energy consumption of 604 exajoules, fossil fuels (oil, natural gas and coal) accounted for 494 exajoules, or 82%. Nuclear energy and hydroelectricity provided 10.7%. Renewables supplied 7.5%, and most of that were biofuels. **In short, despite the trillions of dollars spent on subsidizing renewables in recent years, fossil fuels still dominate. The world is not “transitioning” to renewables.**

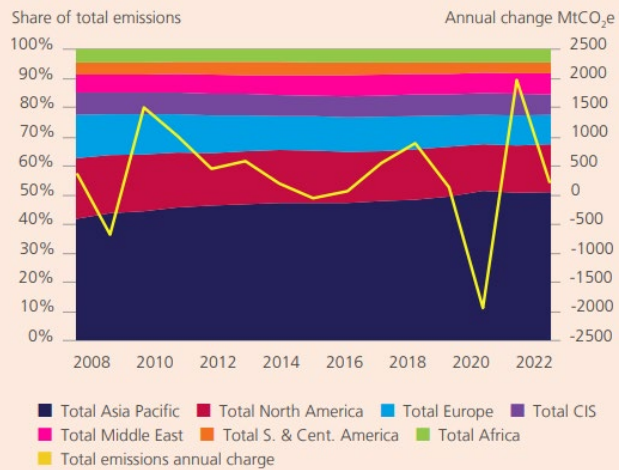


**CLAIM: THE WORLD IS ON THE PATH TO RADICAL DECARBONIZATION**

Given fossil fuels’ continuing dominance in serving primary energy needs, the trends in carbon dioxide emissions offer little or no support to climate campaigners’ claim that radical decarbonization is occurring. For the first time, the Statistical Review includes data not just on carbon dioxide emissions from energy combustion but also those from process emissions, methane and flaring; that is, emissions from all sources except those associated with land use, land-use change and forestry (LULUCF).

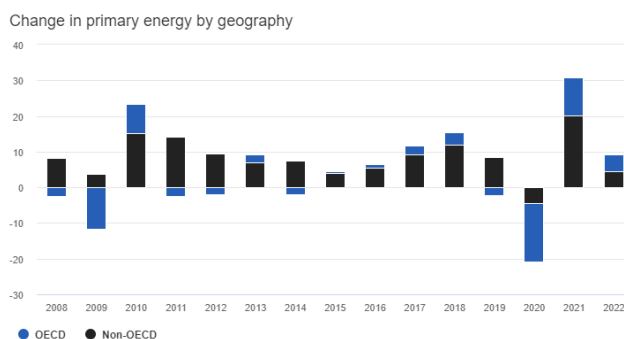
### Carbon emissions reached a record high in 2022

Asia Pacific region continues to increase its share of total global emissions



Since 2012, total CO<sub>2</sub>-equivalent emissions have increased from 36.6 billion tonnes per year to 39.3 billion tonnes per year, notwithstanding a 1.8 billion tonnes per year decline in 2020 due to the pandemic. The increase in emissions from 2021 to 2022 was only 0.8%, as the world was still largely in recession.

The data reported by the Statistical Review offers strong evidence to support the observation that countries are on two different tracks, with the OECD countries sacrificing their economic growth to reduce GHG emissions while the non-OECD countries increase energy use and the resulting emissions to meet the aspirations of their people. **In 2022, the non-OECD countries produced 68% of global emissions, up from 66% in 2021.** China alone produced 30% of the world's GHG emissions. The United States produced 13.5% of global emissions, Canada 1.5% and Europe 10.0%.



"Primary energy use in 2022 was 2.8% above 2019 levels."

**From 2012 to 2022, the OECD countries reduced their emissions by 965 million tonnes, while the non-OECD countries increased their emissions by 3.66 billion tonnes, almost four times as much.**



## CLAIM: FINANCIAL INSTITUTION CONSTRAINTS ON INVESTMENT ARE IMPAIRING THE GROWTH IN WORLD FOSSIL FUEL PRODUCTION

According to the Statistical Review, world production of crude oil and condensate liquids increased from 77.4 million barrels per day in 2012 to 81.2 million barrels per day in 2022, an increase of 5%. The peak in liquids production was actually reached in 2018 when it reached 83.5 million barrels per day, but it declined in 2020 and is now recovering, driven by demand.

Page | 8

World production of natural gas increased from 3,326 billion cubic metres in 2012 to 4,043 billion cubic metres in 2022, an increase of 717 billion cubic metres, or 22%.

World production of coal increased from 8,188 million tonnes in 2012 to 8,803 million tonnes in 2022, a rise of 615 million tonnes, or 8%. The majority of coal production (82%) is in the non-OECD countries that are less vulnerable to pressures from climate campaigners. Indeed, three-quarters of global coal production occurs in three Asian countries – China (50.6%), India (10%) and Indonesia (7.5%).

**In short, production of all fossil fuels is increasing despite the efforts of climate campaigners to restrict producers' access to funds.**

## CLAIM: THE MEASURES TO PROMOTE THE USE OF ELECTRIC VEHICLES, VEHICLE FUEL EFFICIENCY AND INCREASED TRANSIT USE, AS WELL AS ONEROUS TAXATION OF MOTOR FUELS, ARE REDUCING CONSUMPTION OF OIL AND ESPECIALLY GASOLINE IN THE TRANSPORT SECTOR.

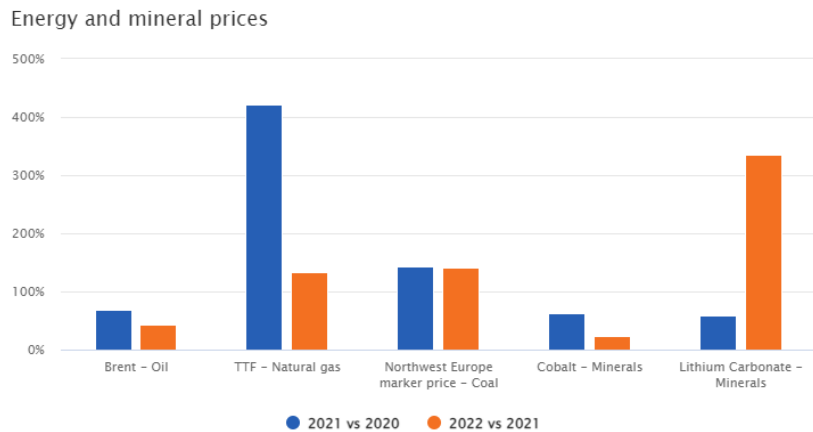
World liquids (i.e., crude oil and natural gas liquids) consumption increased from 90.6 million barrels per day in 2012 to 100.3 million barrels per day in 2022, an increase of 9.7 million barrels per day, or 11%. Consumption even increased in the OECD countries, from 46.3 million barrels per day to 46.9 million barrels per day, in spite of the pandemic. Consumption of liquids in the non-OECD countries increased from 44.3 million barrels per day in 2012 to 53.4 million barrels per day in 2022, an increase of 21%.

World consumption of gasoline increased from 21.5 million barrels per day in 2012 to 23.9 million barrels per day in 2022, a rise of 2.4 million barrels per day, or 11%. The rises are especially notable in some Asian countries, with gasoline consumption up over the period by 60% in China and 112% in India.

**In other words, passenger transport-related oil demand continues to rise across the world, in spite of governments' policies.**

**CLAIM: NATURAL GAS CONSUMPTION IS BEING REDUCED THROUGH REGULATORY MEASURES.**

World consumption of natural gas increased from 3,320 billion cubic metres in 2012 to 3,941 billion cubic metres in 2022, a rise of 621 billion cubic metres, or 19%. Because of the side effects of Russia's invasion of Ukraine and the subsequent sanctions, demand fell from 4,067 billion cubic metres in 2021 to 3,941 billion cubic metres in 2022, a decline of 3% that year.



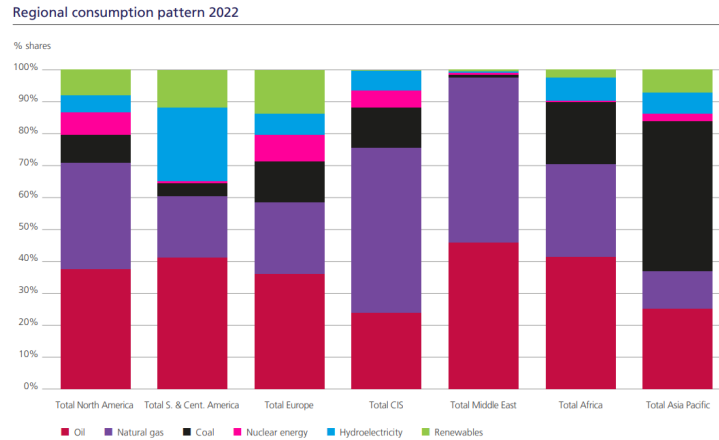
Sources:  
Brent: S&P Global Platts, ©2023, S&P Global Inc.  
TTF: ICIS Heren Energy Ltd  
Northwest Europe marker price: S&P Global Platts, ©2023, S&P Global Inc.  
Cobalt: London Metal Exchange  
Lithium carbonate: Benchmark Mineral Intelligence  
Percentage changes use the latest data available as of June 2023

**Overall, natural gas continues to be one of the fastest growing sources of global energy demand and a key source of clean, reliable energy supply.**

**CLAIM: CLIMATE POLICIES ARE DRIVING COAL OUT OF THE GLOBAL ENERGY MIX.**

World coal consumption rose and fell on a yearly basis within a relatively narrow band over the period 2012 to 2022. Global consumption in 2022 was 161 exajoules, compared to 158 exajoules in 2012, and the highest level since 2014. World coal resources are immense and are spread over several countries that value coal for its relatively low cost and security of supply.

**Regardless of what the forecasters say, coal consumption still shows no signs of significant decline.**



**CLAIM: ELECTRICITY GENERATION IS GROWING FAST ENOUGH TO SOON MEET MOST ENERGY NEEDS**

Global electricity generation increased from 22,833 terawatt-hours in 2012 to 29,165 terawatt-hours in 2022, a rise of 6,332 terawatt-hours, 28% in eleven years. That represents an annual average increase of 576 terawatt-hours, or 2.5%. According to Enerdata, in 2021, the share of electricity in global final energy consumption was only 20.4%. Over the period 2000 to 2021, according to Our World in Data, global energy consumption rose by about 45,000 terawatt-hours.

As to the role of renewable energy in meeting the world’s electricity generation requirements, global electricity generation increased by 2.3% in 2022, with renewables (including hydro) meeting 84% of net electricity demand growth. That is the point noted by the International Energy Agency. The other take on this situation is that, even with unprecedented levels of subsidization and regulatory mandating, the massive investments in wind and solar energy were not even sufficient to keep up with demand growth, let alone displace any existing fossil fuel-based electricity generation.

If global energy consumption (i.e., all energy sources) were to continue increasing at its present rate, by 2050 it would be about 265,000 terawatt-hours, an increase of 236,000 terawatt hours from today’s level of consumption. Electricity consumption, now just 20.4 % of all energy, would therefore have to grow 14 times faster than it has over the last two decades for electricity to be able to meet all 2050 energy needs. This increase would have to occur in all countries.

**This is an implausible scenario.**

Without reliable data, debates over climate change and climate policy easily deteriorate into arguments over political philosophy, or worse, into name-calling. “Facts” ideally provide the bedrock upon which constructive discussions of problems and solutions should rest.

The data published by the *Statistical Review of World Energy* is not selected or published in such a way as to support or undermine any particular view on climate or energy trends. To use an increasingly popular expression, “It is what it is.”

The data illustrates, however, that almost all the key assertions of climate campaigners about present trends in global energy supply, demand and emissions are flawed. Most importantly, the “world” is not decarbonizing and is not undergoing either a rapid “transition” towards full electrification or replacement of fossil fuels by renewable energy. **What is clearly happening is the expenditure of trillions of dollars, mainly in the OECD countries, which is raising energy costs there but not at all changing the global trends.** Further, the non-OECD countries, which now drive the global trends, each year constitute a larger share of the global totals.

If the policy discussions in OECD countries are to properly balance the costs and benefits of climate policies, governments and the public must acknowledge what the statistical data shows.



---

#### 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 21<sup>st</sup> 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 (CO<sub>2</sub>).

New Address: Friends of Science Society

PO Box 61172 RPO Kensington

Calgary AB T2N 4S6

Canada

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

Web: [friendsofscience.org](http://friendsofscience.org)

E-mail: [contact\(at\)friendsofscience\(dot\)org](mailto:contact(at)friendsofscience(dot)org)

Web: [climatechange101.ca](http://climatechange101.ca)

