



The Unstoppable Growth of Global GHG Emissions

Greening the Planet; Conning the Public

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THE UNSTOPPABLE GROWTH OF GLOBAL GHG EMISSIONS

EXECUTIVE SUMMARY

Advocates of the thesis that human greenhouse gas emissions are causing catastrophic climate change claim that United Nations-led international conferences will succeed in causing the countries of the world collectively to radically reduce fossil fuel use by 2050.

The “climate change” issue is a global one. It concerns the global effects of global emissions and the possibility that collective action by all the countries of the world (or, at least, the vast majority of major emitters) can so reduce emissions and concentrations as to eventually change global impacts. Since 1992, there has been a series of international conferences, mostly under the auspices of the United Nations, seeking agreement on how, by how much, and when to reduce emissions. In spite of these conferences and the series of agreements and lofty political statements they have produced, emissions actually rose by 60 per cent from 1990 to 2020. By 2021, China alone accounted for 30 per cent of world emissions, and was the fastest-growing source of emissions, followed by India.

According to the British Petroleum Statistical Review of World Energy 2022, the growth in emissions in the non-OECD countries over the last decade is more than double the reduction of emissions in the OECD countries. The increase in China’s emissions over the last decade exceeded the reduction in emissions by the entire OECD group over the same period.

The trends in global energy demand over the past year have provided even further proof of the continued dominance of hydrocarbon energy in the world economy. According to Our World in Data, in 2021 the global use of oil, natural gas and coal as measured in exajoules (EJ) grew by 10.5, 7.7 and 8.7 EJ respectively, resulting in a one-year increase in hydrocarbon consumption of 26.9 EJ. In 2021, wind and solar consumption grew by 3.4

and 2.1 EJ respectively, for a total of 5.5 EJ. Thus, in 2021, global hydrocarbon consumption grew nearly five times faster than the growth in wind and solar combined.

The U.S. Energy Information Administration, one of the most authoritative sources, projects that global emissions will increase from about 35 billion tonnes in 2021 to about 43 billion tonnes by 2050.

Contrary to the general public perception, there are no international legal obligations to reduce GHG emissions and no legally-binding penalties for failing to do so. The governments of the non-OECD countries have made no secret of the fact that they place increasing economic development and achieving rising living standards for their people as priorities above reducing GHG emissions. Under the 2015 Paris Agreement and other treaties based on the UN Framework Convention on Climate Change, any emission reduction commitments made by developing nations are contingent on developed countries giving them enough technology and, more importantly, sufficient funds. India and other developing countries banded together before the 2021 Glasgow conference to jointly demand about \$1.3 trillion in “climate financing” every year from 2026 to 2030, over and above the \$100 billion per year that rich countries have already promised (but never paid).

Faced by other demands from their own citizens, the wealthier countries must refuse this enormous sum. Under these circumstances, it is virtually certain that economic development-driven expenditures in the poorer countries will cause global GHG emissions to continue rising indefinitely. This is precisely the opposite of what the IPCC claims must happen if its emissions reduction goals are to be met.

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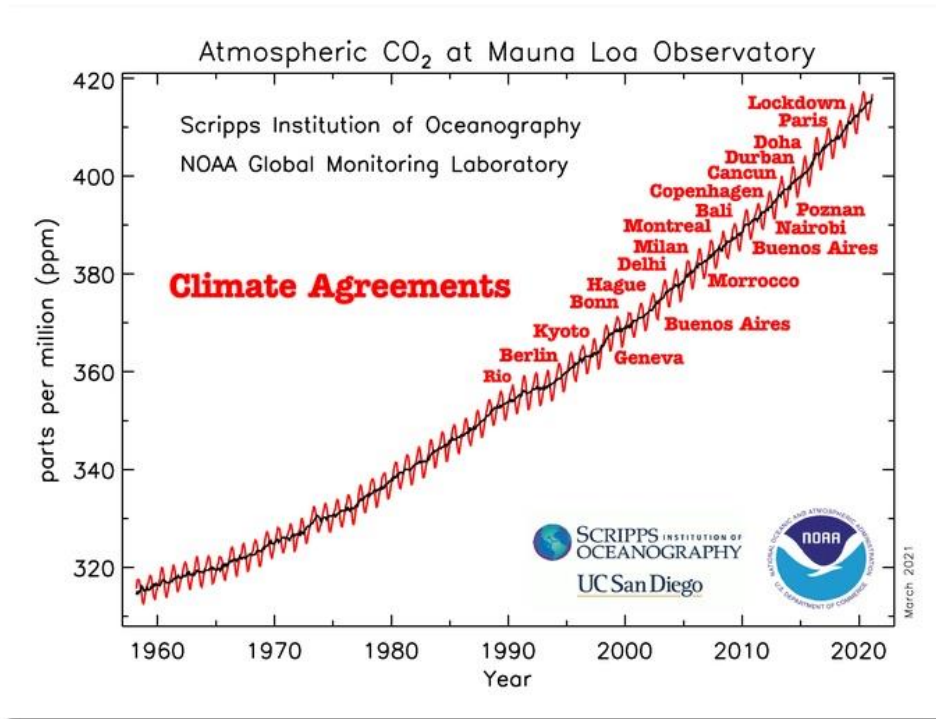
Advocates of the thesis that human greenhouse gas emissions are causing catastrophic climate change claim that United Nations-led international conferences will succeed in causing the countries of the world collectively to radically reduce fossil fuel use by 2050.



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Would the actual experience of the world up to now support these claims? Do the most recent trends in global emissions show that the vast expenditures by the OECD countries like Canada are driving global emissions lower? Is there a legal obligation on the countries of the world to lower emissions? Is there a financial incentive for the non-OECD developing countries, where all of the growth in emissions is occurring, sharply to reduce their emissions? Given the answers to these questions, is there are reason to believe that emissions reductions by Canada will have any effect on global emissions, temperatures and climate? In this article, I will try to demonstrate that the clear answer to these questions is “No!”.

It should be absolutely evident that the “climate change” issue is a global one. It concerns the global effects of global emissions and the possibility that collective action by all the countries of the world (or, at least, the vast majority of major emitters) can so reduce emissions and concentrations as to eventually change global impacts. Since 1992, there has been a series of international conferences, mostly under the auspices of the United Nations, seeking agreement on how, by how much, and when to reduce emissions. In spite of these conferences and the series of agreements and lofty political statements they have produced, **emissions actually rose by 60 per cent from 1990 to 2020.**



During this period, the sources of those emissions have changed. The countries of the Organization for Economic Cooperation and Development (OECD) in 1990 produced almost 60 per cent of the emissions. By 2021, the OECD countries¹ had spent over \$3 trillion to reduce their emissions; yet, the non-OECD countries, led by Asia, accounted for

¹ There are 38 countries in the OECD including Australia, Austria, Belgium, Canada, Chile, Czech republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

over two thirds of the global total. By 2021, China alone accounted for 30 per cent of world emissions, and was the fastest-growing source of emissions, followed by India.²

RECENT TRENDS

While China and India are the leaders in emissions growth, they are far from alone. Table 1 indicates the ten largest sources of emissions growth, in terms of million tonnes of carbon dioxide equivalent (MtCO₂e) from energy, by country over the last decade.

Table 1
Growth in Emissions over Period 2011-2021 (MtCO₂e)

<i><u>Country</u></i>	<i><u>2011</u></i> <i><u>Emissions</u></i>	<i><u>2021</u></i> <i><u>Emissions</u></i>	<i><u>Change</u></i>	
			<i><u>Absolute</u></i>	<i><u>Percentage</u></i>
<i>China</i>	8,794	10,523	1,729	20
<i>India</i>	1,728	2,553	825	48
<i>Iran</i>	517	661	144	28
<i>Vietnam</i>	132	273	141	107
<i>Indonesia</i>	471	573	102	22
<i>Pakistan</i>	145	226	94	65
<i>Iraq</i>	94	141	47	50
<i>Bangladesh</i>	57	101	44	77
<i>Qatar</i>	74	115	41	55
<i>UAE</i>	221	260	39	18

Source: British Petroleum Statistical Review of World Energy 2022

² <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf>

As table 1 indicates, all the fastest growing sources of emissions are in Asia.

Table 2 shows the same information by world region.

Table 2
Growth in Emissions over Period 2011 to 2021 (MtCO₂e)

<u>Country</u>	<u>2011</u> <u>Emissions</u>	<u>2021</u> <u>Emissions</u>	<u>Change</u>	
			<u>Absolute</u>	<u>Percentage</u>
<i>OECD</i>	12,842	11,293	-1,549	-12
<i>Non-OECD</i>	19,062	22,592	3,530	19
<i>World</i>	31,905	33,884	1979	6

Source: British Petroleum Statistical Review of World Energy 2021

The data in Table 2 indicate that the growth in emissions in the non-OECD countries over the last decade is more than double the reduction of emissions in the OECD countries. Note that the increase in China's emissions over the last decade exceeded the reduction in emissions by the entire OECD group over the same period. The United States' reduction in emissions totaled 635 MTCO₂e, just over one third of China's increased emissions.



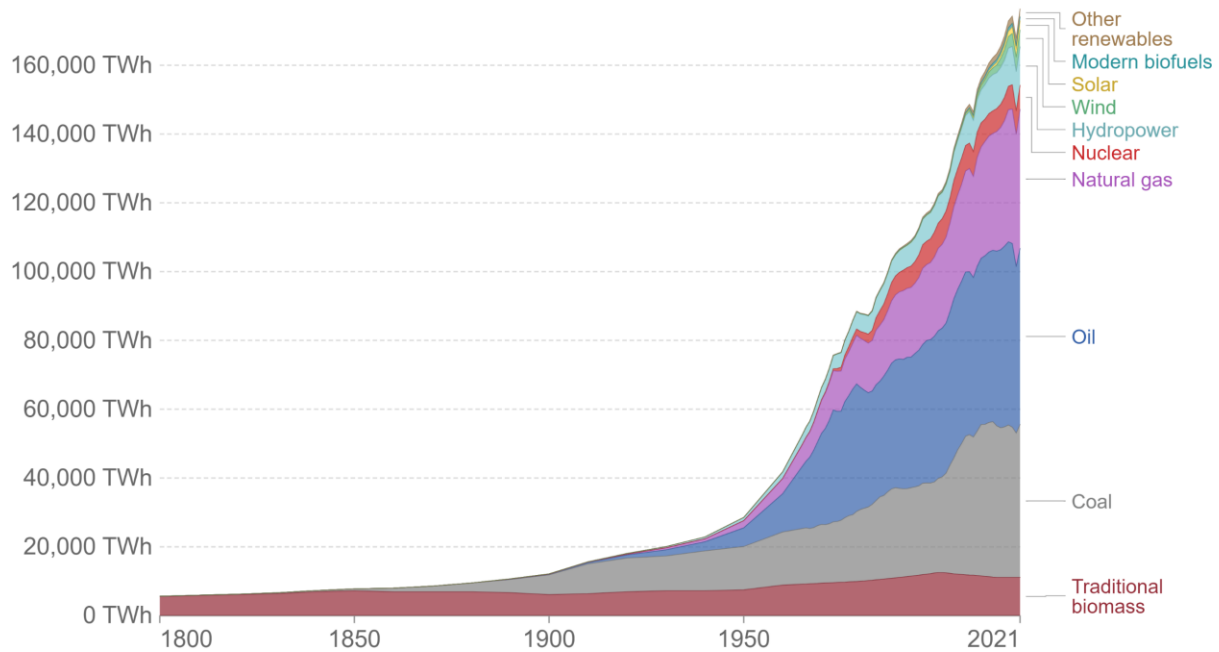
Aerial view of Shanghai, China, at sunset. Population 23.4 million.

The trends in global energy demand over the past year have provided even further proof of the continued dominance of hydrocarbon energy in the world economy. When comparing the use of different energy sources, statisticians use a common standard of exajoules (EJ). An exajoule is roughly equivalent to one quadrillion British thermal units, or the energy contained in one trillion cubic feet of natural gas. According to Our World in Data, in 2021 the global use of oil, natural gas and coal grew by 10.5, 7.7 and 8.7 EJ respectively, resulting in a one-year increase in hydrocarbon consumption of 26.9 EJ. In 2021, wind and solar consumption grew by 3.4 and 2.1 EJ respectively, for a total of 5.5 EJ. **Thus, in 2021, global hydrocarbon consumption grew nearly five times faster than the growth in wind and solar combined.**

Global primary energy consumption by source



Primary energy is calculated based on the 'substitution method' which takes account of the inefficiencies in fossil fuel production by converting non-fossil energy into the energy inputs required if they had the same conversion losses as fossil fuels.



Source: Our World in Data based on Vaclav Smil (2017) and BP Statistical Review of World Energy

OurWorldInData.org/energy • CC BY

FUTURE TRENDS

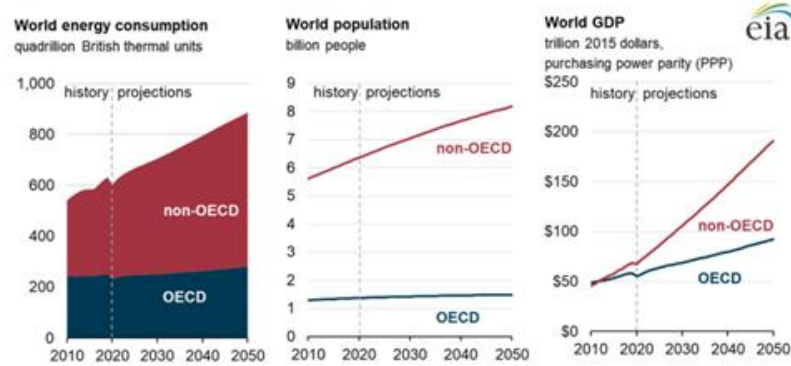
The non-OECD countries constituted 67% of global emissions in 2021. All major sources of analysis concerning future global energy supply, demand and emissions project that, regardless of what happens in the OECD countries, **the non-OECD countries will produce**

most or all of the emissions growth over the period to 2100. The U.S. Energy Information Administration, one of the most authoritative sources, projects that global emissions will increase from about 35 billion tonnes in 2021 to about 43 billion tonnes by 2050.

By 2050, global energy use in the Reference case increases nearly 50% compared with 2020—mostly a result of non-OECD economic growth and population, particularly in Asia

Non-OECD GDP is double OECD GDP by 2050, primarily as a result of fast-growing populations; however, large differences in standards of living remain

Figure 10.



Source: U.S. Energy Information Administration, International Energy Outlook 2021 (IEO2021) Reference case

LEGAL OBLIGATIONS

Andrew Roman, a retired Canadian lawyer and frequent commentator on climate issues, has published his analysis of the legal issues surrounding efforts to reduce GHG emissions.³ To quote him:

“The Western media has generally misrepresented the Paris Agreement and it is widely misunderstood by Canadians. It has repeatedly—and incorrectly—been described as creating binding national commitments to reduce emissions so as to limit the global average temperature increase by 2100 to 2°C or lower. In fact, the Agreement doesn’t do that. It permits each country to set its own “nationally determined contribution” (NDC). A country’s

³ <https://www.fraserinstitute.org/sites/default/files/is-canadas-net-zero-emissions-accountability-act-a-parliamentary-placebo.pdf>

NDC can be to increase emissions, which many nations, including China and India, have announced they will.”

In other words, there are no international legal obligations to reduce GHG emissions and no legally-binding penalties for failing to do so.

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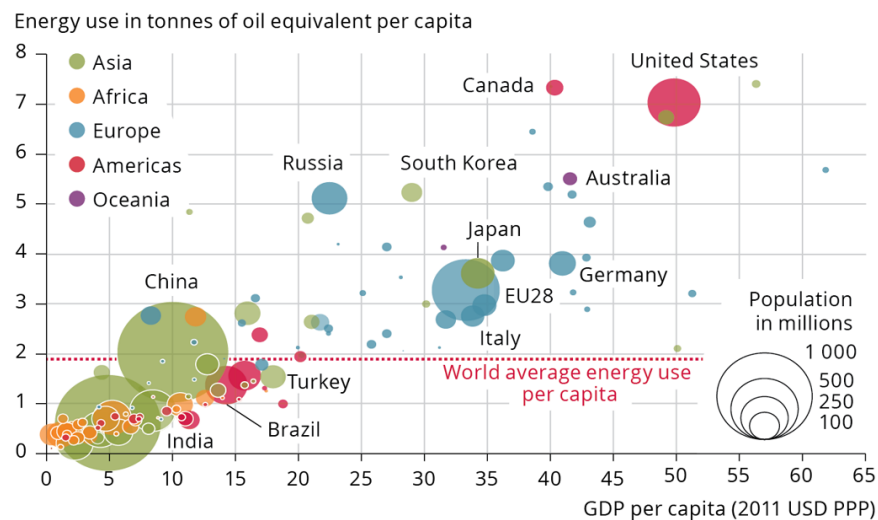
ECONOMIC AND FINANCIAL INCENTIVES FOR DEVELOPING COUNTRIES

More than three billion people on earth live in energy poverty, and over one billion live without access to modern energy services. The latter must obtain the energy they need for lighting, cooking and heating from burning wood charcoal or dried animal dung. The people who live in these areas naturally desire the advantages offered by oil, natural and coal – including high energy density, ease of storage, and benefits for transportation and reliable electricity generation. Above all, they want higher incomes, better living conditions, and more opportunities.



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Economic growth in the modern world is fueled by energy. Although the total size of the economy tends to grow faster than total energy consumption, the two nonetheless trend together over the long run. Economists for some time have debated the question of whether there is a causal relationship between the two or simply a correlation. Using modern statistical techniques, Professor Ross McKittrick has assessed the energy-GDP question.⁴ The picture that has emerged is that economic growth and energy either jointly influence each other, or that the influence is one-way from energy to GDP, but in either case the evidence now supports the view that energy use cannot be restricted (or, equivalently, prices artificially increased) without constraining future growth.



The graph shows per capita energy consumption (kg oil equivalent) vs. per capita GDP, PPP (current international \$). The size of the bubbles denotes total population per country. All values refer to the year 2011.

Source: <https://www.eea.europa.eu/data-and-maps/figures/correlation-of-per-capita-energy>

Whatever the outcome of the theoretical debate, the governments of the non-OECD countries have made no secret of the fact that they place increasing economic development and achieving rising living standards for their people as priorities above reducing GHG emissions. **Under the 2015 Paris Agreement, China and other developing nations need not ever cut back emissions.** On page one of the Agreement, it states:

“The Parties to this Agreement, Being Parties to the United Nations Framework Convention on Climate Change [i.e., the UNFCCC], hereinafter referred to as ‘the Convention.’ ...In pursuit of the objective of the Convention, and being guided by its principles...”

⁴ <https://www.fraserinstitute.org/sites/default/files/energy-abundance-and-economic-growth.pdf>

The Convention is referenced no less than 51 times in the Paris Agreement. So, Paris is clearly based on the UNFCCC, and Article 4 in the Convention states:

“The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.”

Expressed in plain English, under Paris and other treaties based on the UNFCCC, any emission reduction commitments made by developing nations are contingent on developed countries giving them enough technology and, more importantly, sufficient funds.



What are “sufficient funds”? India has concluded that a rapid decarbonization policy would be so costly that, to even make a start on the process, New Delhi would need the West (i.e., the OECD countries) to pay \$1 trillion. **India and other developing countries have also banded together before the 2021 Glasgow conference to jointly demand about \$1.3 trillion in “climate financing” every year from 2026 to 2030, over and above the \$100 billion per year that rich countries have already promised (but never paid).**

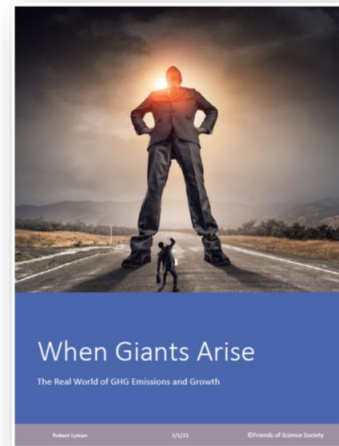
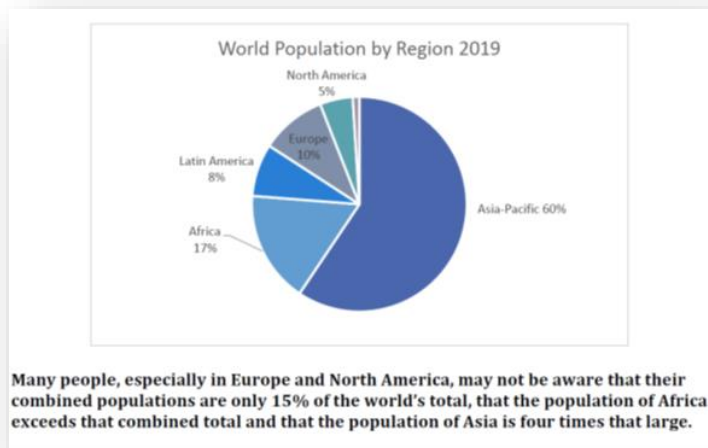
\$1.3 trillion per year is an enormous amount of money, especially when added to the costs that the OECD countries must incur to offset the effects of inflation, recession and energy shortfalls. The UN has never been able to reach agreement on how to apportion the costs among the countries that would pay or the benefits among the countries that would receive the payments. The debates about how such a funding system should be



designed, administered, and properly accounted for (if at all) would take years, if not decades, to resolve.

The forthcoming UN climate conference in Egypt in November 2022 will be the scene of a confrontation over whether the rich countries will pay. But even if developed countries give developing countries everything they have committed to, the UNFCCC indicates that developing countries may still ignore their emission reduction commitments if they interfere with their *“first and overriding priorities” [of] “economic and social development and poverty eradication.”*

Under these circumstances, **it is virtually certain that economic development-driven expenditures in the poorer countries will cause global GHG emissions to continue rising indefinitely.** This is precisely the opposite of what the IPCC claims must happen if its emissions reduction goals are to be met.



<https://blog.friendsofscience.org/2021/03/01/when-giants-arise-the-real-world-of-ghg-emissions-and-growth/>

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 20th 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).

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

E-mail: contact@friendsofscience.org

Web: climatechange101.ca

