Exposing Climate Myths

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Responsible for the report:	Austrian Energy Agency
Authors*	Leonardo Barreto-Gomez, Austrian Energy Agency
	Gabriele Brandl, Austrian Energy Agency
	Eva Janechová, Austrian Energy Agency
	Thea Löw, Austrian Energy Agency
	Bao An Phan Quoc, Austrian Energy Agency



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INTRODUCTION

Climate myths are false beliefs and common misconceptions regarding the on-going climate crisis. When dealing with the climate crisis, examining human decision-making processes is key in expediting measures towards achieving a climate-neutral state. Therefore, it is crucial to debunk widespread climate myths through climate literacy.

These myths impede the progress of actions taken against the climate crisis. A fundamental shift in human mind-set and societal structure is necessary to initiate constructive measures cooperatively. This relies on a comprehensive understanding of the climate crisis, achieved by raising public awareness of the issue while simultaneously counteracting false accusations.

Sources:

Thomas Brudermann Workshop, 12.10.2023 United Nations: https://www.un.org/en/climatechange/science/mythbusters



I. MYTH: "THE CLIMATE HAS ALWAYS CHANGED – IT IS A NATURAL PHENOMENON AND IS NOT CAUSED BY HUMANS"

Fact is:

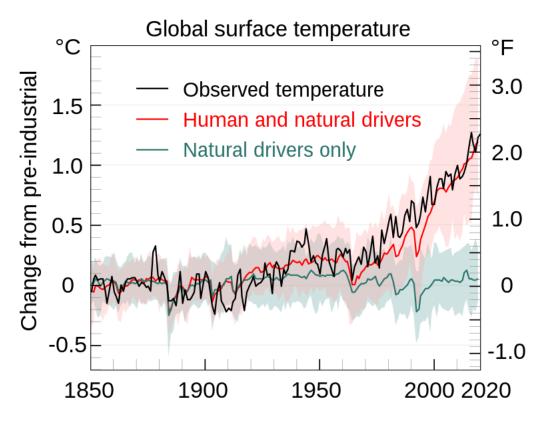
Today, it's humans that are adding more and more greenhouse gases to the atmosphere. Independent evidence of temperature changes in different layers of the atmosphere has shown that the warming of the last 50 years is primarily due to human-caused increases in greenhouse gases.

Since the 18th century, human drivers have increased CO2 levels in the atmosphere by 50%, and CO2 levels are currently 150% higher than they were in 1750. It is obvious that the human-induced increase is much greater than the natural increase observed at the end of the last ice age.

Human activity releases 100 times more CO2 into the atmosphere than vulcanism, and even all possible natural drivers together would account for only a tiny part of the global temperature changes.

The earth's surface continuously radiates heat, and greenhouse gases such as CO2, nitrous oxide, methane, etc. absorbs and slowly releases it over time. This means that the greenhouse effect itself is a natural phenomenon that is useful and necessary to keep the earth's surface warm and support life. The current CO2 imbalance is trapping too much heat and therefore causing an increase in global temperatures.

1 Ex. te



Source: IPCC (2021)

The table shows that the global Earth's surface temperature would have remained almost unchanged - near zero from 1950 until 2020 only if natural drivers (green line) had been present, whereas human and natural drivers (red line) have caused the temperature inscrease of almost 2 degrees in the last 70 years.

Sources:

IPCC (2021). Masson-Delmotte, V.; Zhai, P.; Pirani, A.; Connors, S. L.; et al. (eds.). <u>Climate Change 2021: The</u> <u>Physical Science Basis</u> (PDF). Contribution of Working Group I to the <u>Sixth Assessment Report</u> of the Intergovernmental Panel on Climate Change. Cambridge, United Kingdom and New York, NY, US: <u>Cambridge</u> <u>University Press</u> (In Press).

- URL 1: https://climate.nasa.gov/vital-signs/carbon-dioxide/
- URL 2: https://justenergy.com/blog/8-climate-change-facts-and-myths/
- URL 3: https://climateprimer.mit.edu/dispelling-myths/



II. MYTH: "CLIMATE ACTION HARMS ECONOMIC DEVELOPMENT AND PROSPERITY"

Fact is:

The extent of the damage caused by climate change and the resulting costs will continue to rise unless climate protection measures are implemented. Without effective climate action, current growth rates will have irreversible consequences.

Rising temperatures, sea level increases, and extreme weather events can lead to damage to property and critical infrastructure, which would affect productivity, particularly in sectors such as agriculture, forestry, fishing and tourism. The damage would also have a global impact.

Climate change could lead to market failures that reduce efficiency and affect investment, innovation, and growth, causing inequality and unemployment.

Gross domestic product (GDP) is the central measure of prosperity in most countries. Yet, it is not an accurate measure tool because it does not include crucial non-monetary indicators of quality of life, such as sustainability, health, education, etc.

Compared with fossil fuel generation, renewables create on average three times as many jobs. Increasing the labour force could enhance production and stimulate economic growth.

Climate change is one of the most important drivers of poverty. Therefore, investing in climate resilience is not only cost-effective but also essential to prevent an upsurge in poverty. Analyses reveal that poor countries (mostly dependent on agriculture) suffer above-average economic losses due to climate change.

Green industry and agriculture, especially in developing countries, have great potential for economic growth and job creation.

Sources:

URL 1: https://www.germanwatch.org/en/87410

Π

- URL 2: https://news.climate.columbia.edu/2019/06/20/climate-change-economy-impacts/
- URL 3: https://academic.oup.com/icc/article/32/2/277/7043810



III. MYTH: "100% RENEWABLE ENERGY (WIND, SOLAR, GEOTHERMAL, HYDROPOWER, OCEAN AND BIOENERGY) IS NOT RELIABLE"

Fact is:

It is true that wind, solar and hydropower depend on weather conditions, but energy systems incorporating storage and a variety of energy sources that can complement each other can compensate this variability. Considering the numerous and rapid global changes, renewable energies are more reliable than fossil fuels in achieving energy security.

energies are more reliable than fossil fuels in achieving energy security. A higher share of renewable energy reinforces the diversification of energy supply, which leads to more energy security and less dependence.

Building an energy system based on local renewable energy sources poses fewer risks than relying on imports of fossil fuels.

Thermal power plants (nuclear or coal-fired) can be affected by a shortage of water, which they need for cooling purposes, entailing a risk of power outages.

Renewable energy prices remain more stable and are more resilient to water shortages. Because their energy supply does not require transportation of fuel, supply chain disruptions do not affect prices as easily as seen with fossil fuels.

Renewable energies are capable of supplying constant and sufficient energy for everyone. National, regional, and municipal policies are needed to promote renewable energy production and technology development.

Source:

URL: https://www.germanwatch.org/en/87482



IV. MYTH: "RENEWABLE ENERGY (WIND, SOLAR, GEOTHERMAL, HYDROPOWER, OCEAN AND BIOENERGY) IS EXPENSIVE"

Fact is:

In energy prices, important variables such as external environmental impacts, fluctuating fuel prices, and high subsidies are not taken into account and as a result, conventional energy is considered a cheaper energy source. However, if these factors were included in the pricing, conventional energy would be more expensive than renewable energy.

Renewable energy sources with good resource availability are the most cost-effective alternative. Off-grid renewables are also the best option for electrifying remote areas.

In the last ten years, the cost of photovoltaics has decreased by 94%, lithium batteries by 85%, and onshore wind turbines by 37%. Today, these renewable energy sources are more cost-effective than conventional energy sources in most countries.

Technological advances and efficiency improvements are expected to strengthen the cost competitiveness of all renewable energies. Projections suggest that electricity generation costs from wind and solar may be reduced by 35% to 50% by 2050.

Local renewable sources are less vulnerable to energy price fluctuations. As their energy supply does not require transportation, interruptions in the supply chain have less impact on prices. Renewable energy prices therefore remain more stable and are more resilient.

Sources:

URL 1: https://wwfint.awsassets.panda.org/downloads/myth_buster_brochure.pdf/

URL 2: <u>https://www.activesustainability.com/renewable-energy/debunking-myths-renewable-energy/?</u> <u>adin=02021864894</u>



V. MYTH : "ELECTRIC CARS ARE WORSE FOR THE CLIMATE THAN GASOLINE CARS BECAUSE OF THEIR BATTERY PRODUCTION"

Fact is:

Although CO2 emissions from the production of batteries for electric cars are relatively high, the overall greenhouse gas emissions over the entire lifetime of an electric vehicle are significantly lower than the total greenhouse gas emissions from a gasoline vehicle (see graph below)

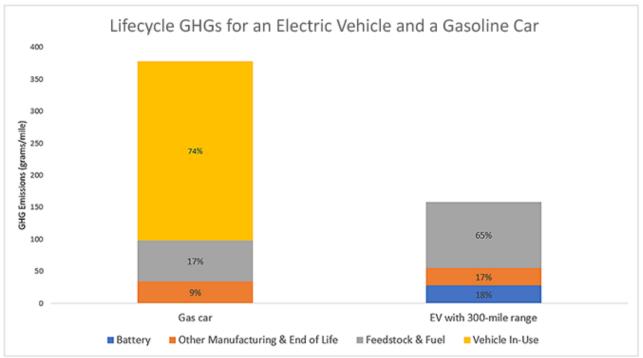
By using green electricity, electric vehicles can reduce total life cycle emissions by 73% to 89% compared to their gasoline counterparts.

Between 74% and 84% of the energy contained in gasoline is lost, whereas the energy loss in electric cars is only 31% to 35%, which makes them much more energy-efficient.

Recycling electric car batteries can decrease the emissions associated with electric car production due to the reduction in the use of new materials.

There are already more sustainable and cheaper alternatives, such as aqueous metal oxide batteries, sodium-ion batteries, iron-air batteries, etc., to lithium batteries. These alternatives are less dependent on critical minerals and other limited resources.





Source: GREET 2 (2021)

The graph below illustrates the average CO2 emissions of electric and conventional gasoline vehicles. The blue bar represents the emissions associated with battery production, while the orange bars show the emissions from vehicle production and disposal. The grey bars indicate the emissions linked to the production of gasoline and/or electricity, and the yellow bar depicts use-related emissions. The overall greenhouse gas emissions over the entire lifetime of an electric vehicle are significantly lower than the total greenhouse gas emissions from a gasoline vehicle.

Sources:

URL 1: https://www.epa.gov/greenvehicles/electric-vehicle-myths#Myth2

URL 2: https://www.sciencedirect.com/science/article/pii/S1364032122000867

URL 3: https://www.alsym.com/blog/what-are-the-alternatives-to-lithium-ion-batteries/