A Practical Guide to Climate Disinformation

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CEDMO
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Introduction

Social media platforms are used for conversations with loved ones and the exchange of opinions. We also spend time there for entertainment. However, alongside the content we are interested in, disinformation also finds its way in. We often do not realise how easy it is to fall victim to cleverly designed manipulation. That is why, both in the digital world and the real one, the ability to recognise manipulative techniques is highly valuable. In this guide, we will aim to present ways and methods of dealing with climate disinformation and online manipulation.

How can we protect ourselves against manipulative techniques?

In this chapter we present the manipulation techniques used by disinformation actors, together with brief definitions. Understanding basic concepts, developing critical thinking, and the ability to verify information are the foundations that help us become more resilient to information chaos.

Definitions

Disinformation

The deliberate dissemination of false or manipulated information intended to mislead, influence behaviour, or cause harm. Disinformation may include, for example, creating articles that refer to non-existent experts.

Misinformation

Unintentional sharing of false content without the intention to cause harm.

Malinformation

True information used in a harmful or malicious way. They are intended to cause harm and to mislead the recipient. Malinformation may include, for instance, materials showing a difficult-to-extinguish electric car fire, which may create the false impression that electric vehicles catch fire more often than combustion engine cars.

Conspiracy theory*

A belief or set of beliefs suggesting that certain events, phenomena, or situations are the result of secret actions by groups of people with harmful intentions. People who promote these theories rely on unproven or false information.

Deepfake

Technology based on artificial intelligence that enables the creation of realistic but fake images, videos, or audio recordings in which a person appears to say or do something they did not actually do.

Information bubble

A phenomenon in which a social media user predominantly sees content that confirms their worldview, with limited exposure to other opinions. Information bubbles are created as a result of recommendation algorithms on social media, which tailor displayed content to users' preferences.

Types of manipulation and how to protect yourself from them

Manipulation of context

A technique that involves presenting information in a way that alters its original meaning or the intention of the original sender. This technique is usually applied by cutting parts of quotes, selectively choosing facts, or illustrating texts with images that are unrelated to the topic being discussed.

Recognising manipulation of context requires attentiveness and critical thinking. It is worth checking whether the data presented is always complete.

Manipulation using data

A technique that involves presenting statistical information in a misleading way or in a way that distorts reality. This may involve altered charts, bar graphs, tables, or infographics. This kind of manipulation can be particularly dangerous, as data are often perceived as an objective and reliable point of reference, making recipients more likely to believe the claims presented.

To identify manipulation using data, it is worth paying attention to a few key elements. Charts and infographics should be analysed carefully – check whether they are properly labelled and whether they include all the necessary information, such as units of measurement or data sources. Special attention should be paid to the scale of the charts. Manipulation may involve deliberately distorting the scale – for example, by using disproportionately high or low bars to amplify the desired impression.

Emotional framing, presenting opinions as facts, and creating false symmetry

Techniques that involve using language and expressions designed to evoke strong emotions in recipients, such as fear, anger, compassion, or contempt.

To build resistance to this kind of manipulation, it is useful to pay attention to words with strong emotional connotations. Emotional manipulation of recipients is often used in article headlines or social media posts. Its aim is to capture attention and provoke an immediate reaction. It is worth

checking whether the information presented is based on reliable sources or rather on emotionally charged subjective opinions.

Impersonation or creating non-existent experts

Another technique used to manipulate audiences is creating fake experts or stealing identities. Deepfake technology enables the creation of material featuring scientists' statements that were never actually made. Another method involves creating fake accounts for non-existent individuals who present themselves online as experts or scientists. In both cases, personal or scientific authority is exploited to manipulate the audience.

It is worth checking the credibility of individuals speaking online – is this person truly an expert? Do they publish only online? Are their scientific publications or interviews with other people available online?

Distraction and questioning every opinion

A common manipulation technique involves diverting attention from the core issue, focusing on isolated cases, or questioning every opinion in order to draw others into lengthy and fruitless discussions. Authors often focus on a detail of their choice to divert attention from the essence of the issue.

Tools for verifying information online

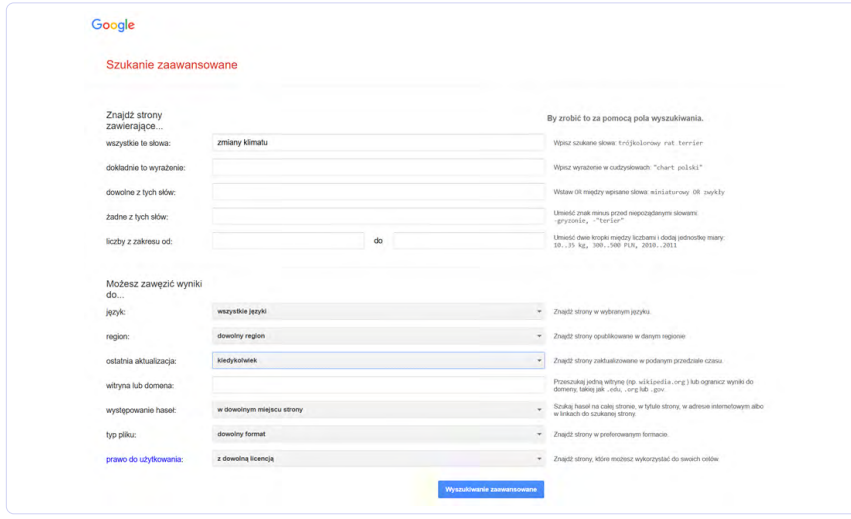
Usually, verifying information online is neither difficult nor complicated, and in most cases disinformation can be quickly checked. A key element of resilience to information chaos and disinformation is developing a healthy scepticism towards the content we encounter and a readiness to verify it. In this chapter, we will introduce several tools that will help verify information more efficiently and effectively.

Searching and search engines

Most of us use online search engines regularly, although the term „search engine" is often used synonymously with Google. It is worth remembering that it is not the only tool of its kind. It is useful to include DuckDuckGo and Qwant in our toolkit – unlike Google, they do not tailor displayed results to prior interests.

It is worth knowing that some search results may be available in one search engine but not in another, and that the set of indexed pages differs between search engines.

Advanced search functions available in Google and other search engines are also useful. In the case of Google, simply select the "Tools" option, followed by "Advanced search."



Advanced search in Google

Advanced search features make it possible to narrow results to a chosen date range (for example, the past year), search within a specific website, or filter results by particular file types.

The advanced search panel is not the only way to filter search results. We can also use, directly from the basic search bar, parameters such as *after:*, *before:*, *filetype:,* and *site:*, as described on the help pages of Google and DuckDuckGO.

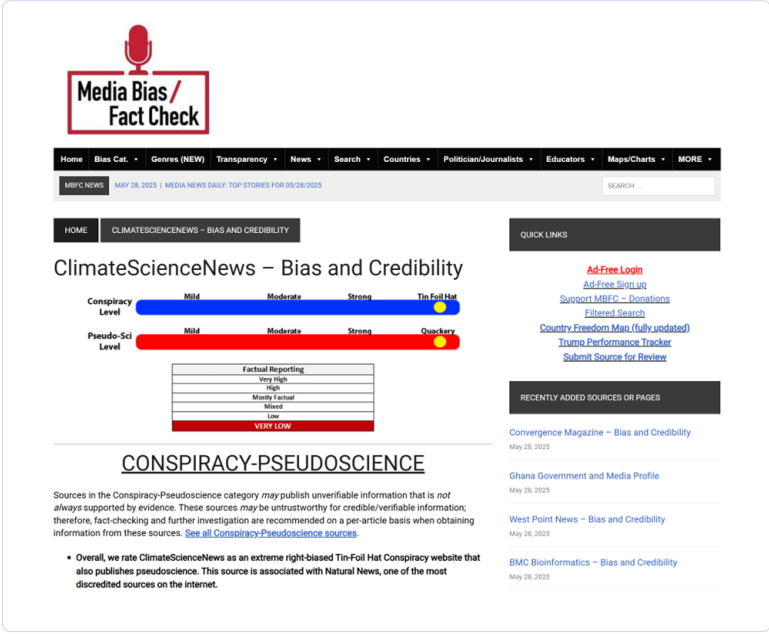
Verifying sources

In the fight against disinformation, verifying the sources of information is essential. Reliable verification of sources is the foundation that allows us to distinguish evidence-based information from material that may have been manipulated.

We can divide information sources into two types – primary and secondary. Primary sources include research, analyses, and statistical data published directly by the authors. This is the most valuable type of source, as it allows you to access the full analysis, eliminating the risk of context manipulation.

Secondary sources include reports, press materials, or social media posts that reference information from primary sources. Secondary sources, although often summaries or interpretations, can also be useful. However, attention should be paid to who authored them.

An extremely useful tool for assessing the credibility of published content is the English-language website Media Bias/Fact Check. It is a service that systematically analyses websites, blogs, and television channels in terms of content bias and ideology, as well as factual accuracy. Thanks to this site, you can quickly find out how a publication or portal handles fact-checking and what political or ideological affiliations it may have. This tool is particularly useful for verifying foreign sources, as websites spreading conspiracy theories often look and are named almost identically to well-known newspapers.



Screenshot from the website https://mediabiasfactcheck.com/

Verifying climate disinformation narratives

Searching for information

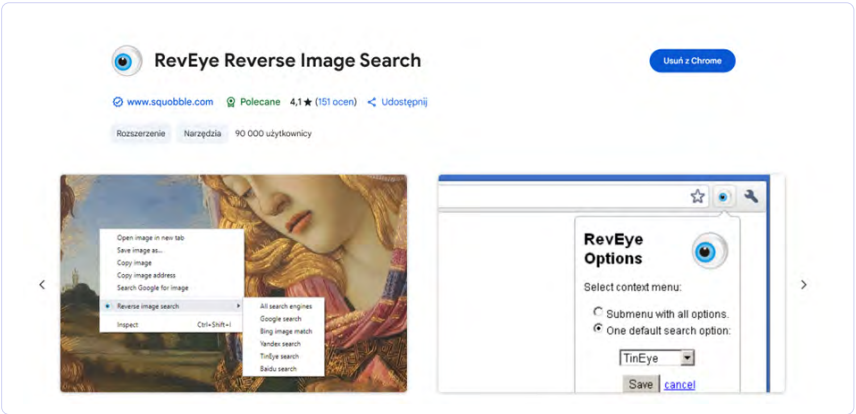
To verify climate-related information, in addition to using “regular” search engines, it is worth visiting websites that specialise in this topic.

Reverse image search

Another way we can protect ourselves against climate disinformation is by using reverse image search. Before sharing, it is worth checking whether a shocking image – such as one showing a flood – is not in fact edited or an archival photograph. There are several ways to use reverse image search.

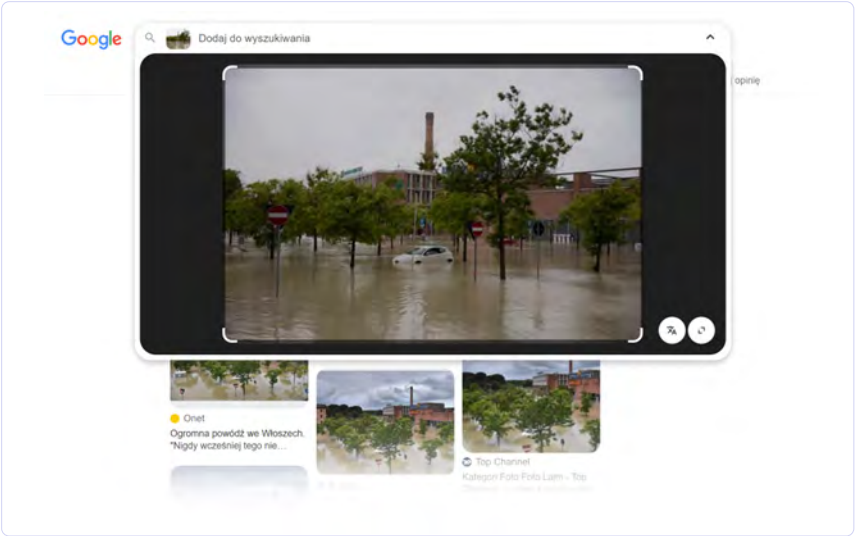
Google Images search

A very intuitive tool is the website images.google.com, which offers the “Search by image” option, found under the camera icon. It allows you to paste the address of the image you are interested in. This enables the search engine to display the same or very similar images that have appeared on other websites. This makes it possible to check the date it originated and identify any potential manipulation.



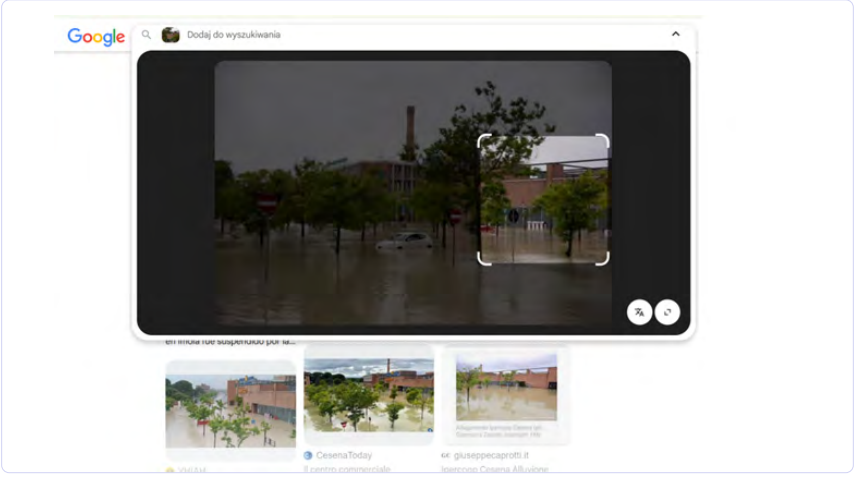
RevEye plugin website

An even more convenient option is using the RevEye plugin, available for popular browsers such as Chrome, Firefox, and Microsoft Edge. This plugin enables you to perform reverse image searches in Google, Bing, Yandex, and TinEye simultaneously with just three clicks. These are different services that produce different results. All you need to do is right-click on the image you are interested in, select the “Reverse image search” option, and then choose “all search engines.”



Reverse image search results. The material we were looking for can be found on many websites confirming that it depicts the flood in Italy in 2023.

Sometimes cropping an image and searching for a smaller fragment can provide more information than searching the entire photo. It is not always possible to find the source of an image, but a fragment containing, for example, a distinctive building can at least confirm the location where the photo was taken.



Cropping the photo to only the fragment of interest makes it possible to find other shots of the same location during the flood.

Main climate disinformation narratives

Below, in the form of case studies, we present examples of disinformation content and narratives concerning climate change and energy. Analysing these narratives makes it possible to understand in practice the mechanisms and manipulation techniques described in the previous chapters of the guide. The examples of harmful disinformation provided illustrate how narratives can influence and shape public opinion on climate and environmental issues.

Cattle farming does not contribute to the increase in greenhouse gas emissions

This narrative is promoted, among others, by European Livestock Voice, a group representing livestock farmers and meat producers in the European Union[1]. They run the "Meat The Facts" campaign, aimed at promoting meat consumption and building a positive image of the livestock sector. As part of the campaign, posts are published on social media platforms and on the project's website that question the claim that a plant-based diet reduces greenhouse gas emissions. The content is published, among others, in English[2], Czech[3], Spanish[4], and Polish[5], using manipulative references to the findings of a study from February 2025[6].

Article on the meatthefacts.eu website

1 https://archive.is/JIVx5, https://archive.is/Wah6E

2 https://archive.is/NLMSW

3 https://archive.is/Cgqub

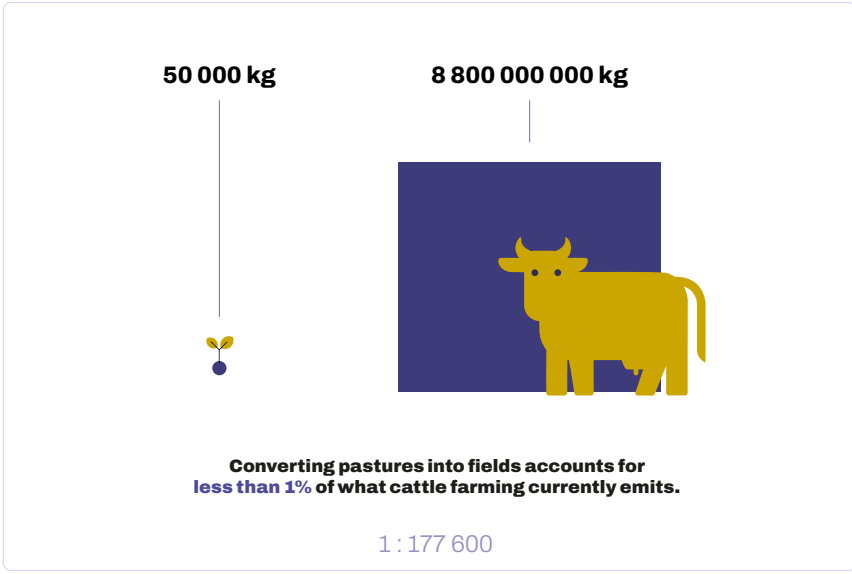
4 https://archive.is/ns9AE

5 https://archive.is/0SdDb

6 https://publications.jrc.ec.europa.eu/repository/handle/JRC138411

Facts

In reality, the study cited by European Livestock Voice did not concern the impact of a plant-based diet on overall greenhouse gas emissions. It only examined greenhouse gas emissions from soil in Denmark, assuming that Danes would switch to a planetary diet. The planetary diet is not an entirely plant-based diet; it only assumes a reduction in meat consumption. In this scenario, the scientists assumed the elimination of a significant number of pastures, which would be converted into arable fields. They examined the impact of the need to fertilise such fields on greenhouse gas emissions. Cattle farming in Denmark accounts for approximately 8,880,000,000 kg of carbon dioxide equivalent[7] (hereafter referred to as CO_2e); however, according to the scientists, converting pastures into cropland would potentially increase emissions from soil fertilisers by 50,000 kg CO_2e[8]. This is less than 1% of what cattle farming currently emits. This means that reducing cattle farming, adopting a plant-based diet, and replacing pastures with the cultivation of vegetables and fruits lowers overall greenhouse gas emissions.



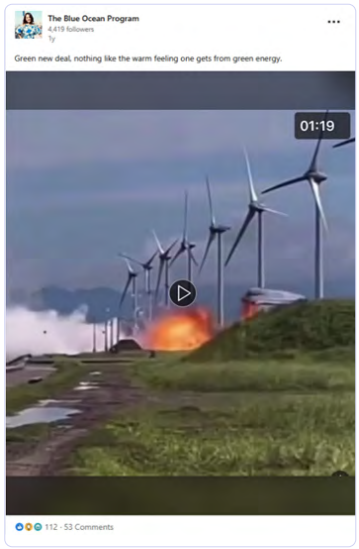
Soil emission level and cattle farming emission level

7 https://concito.dk/files/media/document/Danmarks%20globale%20forbrugsudledninger.pdf and https://publications.jrc.ec.europa.eu/repository/handle/JRC138411 (emissions from agriculture account for 20% of Denmark's total emissions, of which 60% comes from cattle farming)

8 https://publications.jrc.ec.europa.eu/repository/handle/JRC138411

Wind turbines are dangerous and harmful to the environment

In this narrative, photos, graphics, and video materials are often used to give it a more sensational and emotional impact. In many cases, footage of actual wind turbine failures is presented; however, it is equally common to see content generated using AI tools, 3D graphics[9], or material that manipulates the context. One example is a video from Japan, where a rocket engine explosion was attributed to wind turbines and climate policy, even though it had nothing to do with renewable energy[10]. Relying on emotions, climate disinformation also portrays renewable energy as a threat to birds. Compassion for animals is used to generate aversion to wind turbines.



A post on LinkedIn on the profile of The Blue Ocean Program

A computer-generated video on YouTube on the profile @*mcparke*

Facts

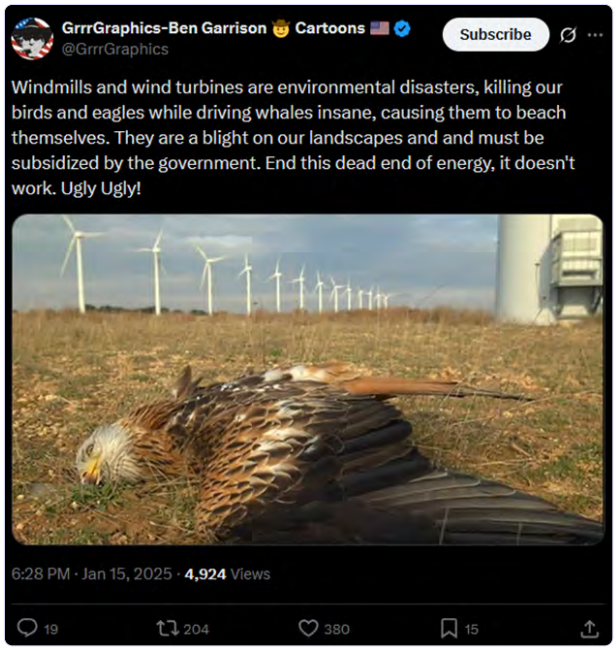
The most harmful disinformation is based on manipulating facts – it is true that wind turbines are not neutral for the environment and can pose a threat

9 https://www.youtube.com/shorts/wKQmh65VLsI

10 https://www.theguardian.com/world/video/2023/jul/14/japan-space-agency-rocket-engine-explodes-during-test-video

to birds. According to a 2013 report by the U.S. Fish & Wildlife Service, 234,000 birds die each year in the U.S. due to collisions with wind turbines. In this context, it is worth noting, however, that in the U.S., ten thousand times more – 2.4 billion birds – fall victim to cats[11]. Despite the emotional imagery, scientists estimate that for every collision with a wind turbine, 2,118 birds are killed as a result of fossil fuel power plant operations[12].

At the same time, it is worth remembering that some wind turbines are equipped with special systems and solutions that mitigate their harmful impact. This can include deterrence using special sounds or shutting down the turbine when a soaring bird is detected[13].



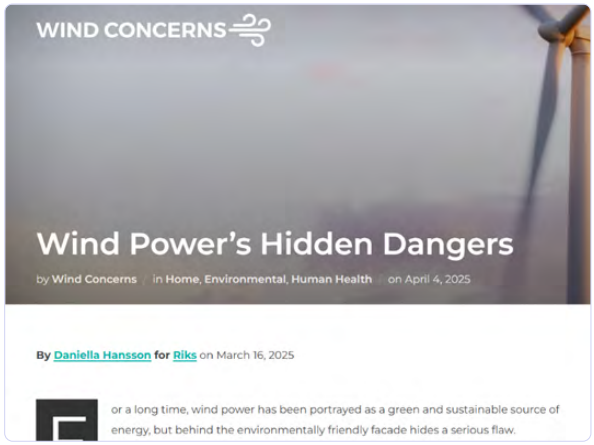
A post on X on the profile @*GrrrGraphics*

11 https://archive.ph/dwsxT

12 https://archive.is/bbJ35 https://archive.ph/kIsjl

13 https://archive.ph/kIsjl

Wind turbines emit noise in the form of infrasound, which is claimed to be harmful to humans



An article on WindConcerns.com about the alleged harmful effects of infrasound

According to another narrative about wind turbines, the infrasound they generate is harmful to humans. Infrasound refers to sound waves with very low frequencies that are inaudible to humans. Wind turbines do emit infrasound, just like air conditioners or diesel engines.

Authors of disinformation often use the words of Prof. Ken Mattsson, presenting them as research findings from Uppsala University. Professor Mattsson stated in a Swedish podcast that people living near wind turbines may suffer from migraines. He was directly referring to his own experiences while measuring infrasound. However, these are not scientific arguments or evidence, and the author himself emphasised that he cannot prove his claims[14]. Creators of disinformation about wind turbines carefully omit this aspect.

Facts

Professor Ken Mattsson conducts research on infrasound. He is a physicist and studies the wide propagation of these waves, which disinformation authors treat as evidence of their harmfulness. However, Professor Mattsson does not study the effects of infrasound on human health.

14 https://www.youtube.com/watch?v=YbRX1UvSXEo

Authors of posts claiming wind turbines are harmful deliberately omit, for example, a 2020 study commissioned by the Finnish government, which included five research groups with samples of varying sizes. The study aimed to examine the harmfulness of infrasound from wind turbines. It was conducted by doctors and included ECG examinations, measurements of galvanic skin response and eye movement, as well as an exercise test[15]. No correlation was found between respondents' subjective reports of well-being and the objective measurements and the presence of infrasound[16].

A study conducted by neuroscientists and acousticians from Adam Mickiewicz University in March 2025 also confirms that there is no evidence of a causal effect of sounds generated by wind turbines on the human psyche (the so-called "wind turbine syndrome")[17].

Carbon dioxide does not affect the climate and has a positive impact on the environment.

A popular narrative repeated on websites and social media is the claim that human carbon dioxide emissions do not affect the climate, and that higher CO_2 emissions are beneficial for the planet and the environment. Authors of disinformation often refer to a conversation between the well-known television presenter Tucker Carlson and astrophysicist Dr. Willie Soon. Dr. Soon is the chief advisor of the Science and Public Policy Institute, which is funded by entities such as the oil company Exxon Mobil[18]. His work has been funded, among others, by the energy company Southern Company, with connections to energy partners often concealed[19].

In the conversation and in clips edited from it, Dr. Soon suggests that carbon dioxide is not the cause of global warming, and that the real reason for climate change is the Sun[20]. According to Dr. Soon, the impact of

15 https://archive.is/P3TXk

16 https://julkaisut.valtioneuvosto.fi/handle/10024/162329

17 https://www.nature.com/articles/s41599-025-04645-x

18 https://archive.is/FKS6n

19 https://archive.is/vyhvJ

20 https://www.youtube.com/watch?v=E7IdLzxzINw

carbon dioxide on global warming is negligible, and organisations such as the UN and IPCC manipulate people. One of the arguments cited by Dr. Soon is Saturn's moon Titan, which has a high concentration of methane in its atmosphere. According to this claim, methane cannot contribute to climate warming because the surface temperature on Titan is –179 degrees Celsius.

Facts

One of the main causes of global warming is greenhouse gases, such as carbon dioxide. The increase in their concentration in the atmosphere is linked to human activity and the burning of fossil fuels. This is supported by numerous scientific studies examining the impact of carbon dioxide on climate change[21]. Saturn's moon is indeed colder than Earth; however, this does not prove that greenhouse gases have no effect on climate and temperature. In fact, the opposite of what Dr. William Soon suggests is true – despite the great distance between Titan and the Sun, the moon's temperature is significantly higher than it would be if there were no greenhouse effect. The greenhouse effect occurs both on Saturn's moon and on Earth[22].

The interview of Tucker Carlson with Dr. Willie Soon

21 https://archive.is/4fIxE

22 https://archive.is/OEYLA

Recommended sources of knowledge

Below is a list of trusted sources worth consulting when seeking information about the climate. These are resources from which it is worth starting to deepen your knowledge about climate change and the human impact on it. The sources listed below will also be helpful in verifying information that may be difficult to assess without specialist knowledge.

https://www.ipcc.ch/
The website of the Intergovernmental Panel on Climate Change, publishing reports on climate change and its impacts.

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https://www.nature.com/nclimate/
The climate change section of the British scientific journal “Nature”.

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https://unfccc.int
The website of the annual UN climate change conference, which aims to assess progress in tackling climate change.

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https://climate.esa.int/en/
The climate page of the European Space Agency.

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https://science.nasa.gov/climate-change/
The climate page of NASA.

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https://www.un.org/en/climatechange/
The climate page of the United Nations.

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https://climate.copernicus.eu/
A knowledge base on climate change and adaptation. The service is created by the European Commission of the European Union in cooperation with member states and European agencies.

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