CIGS Symposium

"Climate Realism and European climate policy"

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“Climate Realism: Understanding Agreement & Disagreement in Climate Science”

(Summary of speech)

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Benny Peiser, Director, Global Warming Policy Foundation: The basic science of climate change is fairly settled but many key issues are not. In science the better the data, the better the reliability of our knowledge. Climate realism distinguishes between what we know and what we know less, and which claims are more reliable or speculative.

When thinking about climate in historical terms, there are three different perspectives: climate change today, climate change in the past, and climate change in the future. Very often, these three different perspectives are intermixed, and claims are made as strongly regardless of whether it is the past, present or future.

Knowledge about modern climate change is better because the observational data we have is more reliable. Our knowledge is less reliable for previous periods or for predictions of the future. This is where many of the controversies in climate change originate. Climate realism acknowledges significant difference between verifiable knowledge and hypothetical knowledge based on indirect evidence.

Still there are some major agreements. First, we live in a period of global warming. Global mean temperature has risen by ~1°C since 1850. We know because of fairly reliable temperature measurements since the beginning of the modern warm period. CO2 has increased in the atmosphere from approximately 0.030% to 0.040% (or 400 parts per million, ppm) over the past 50 years.

There is also general agreement that carbon dioxide is a greenhouse gas, that the level of atmospheric CO2 has risen over the last 150 years, that greenhouse gases have a warming effect, and that this trend over the last 30 years has been much lower and slower than the Intergovernmental Panel on Climate Change (IPCC) predicted in 1990.

Since 1990 global temperatures have risen between 0.13 °C and 0.19 °C per decade, depending on which of the official data sets is used. This warming trend is a third to two-thirds of the rate predicted by the IPCC in 1990 (0.3°C per decade) and slower than most climate models forecast.

The next issue is how much of the warming is due to CO2 and human causes and how much due to natural causes. This is a major controversy. It is very difficult to quantify each of these factors without understanding natural contributions. The consensus among

the IPCC is that more than half of the increase since World War II was caused by an anthropogenic increase in greenhouse concentrations and other greenhouse gases.

This brings us to the first disagreement in the science. How do we quantify how much of the warming is man-made and how much is natural? The problem is that we still do not fully understand the natural factors. Scientists have yet to detect any compelling evidence that natural factors such as the sun, ocean cycles, and so on, play a significant role in climate change.

There is also the debate about the medieval warm period. In Europe, there is some written historical evidence that the early parts of the Middle Ages were quite warm compared to the cooler period afterwards. Some scientists think that was similar to the modern warm period, while others think that it was not the case and definitely not a global phenomenon.

How do we find out which view is correct? We do not have measurements. All we have are proxies such as paleo-climate data. The problem is that they all come from very specific regions or locations. A typical example is tree rings. If a tree ring is narrow, it is supposed to be a cold year. They are simply not as reliable as thermometers.

The second disagreement is about feedbacks. Greenhouse gases in themselves do not cause a lot of warming. The doubling of CO2 in the atmosphere will increase global temperature by only 1 degree C. Rather, the warming CO2 emissions cause will warm the ocean and cause it to release more water vapor, which accelerates the warming. This is called positive feedback. The water vapor also leads to clouds and there is debate on whether the clouds amplify or dampen the warming. Still, most climate scientists assume that the positive feedbacks will overwhelm the negative feedbacks, accelerating the warming.

The third disagreement is on climate sensitivity. There are two ways to examine this: modeling or observations. Recent research suggests that the climate sensitivity is at the lower rather than the higher end of what the IPCC originally thought 20, 30 years ago. There is this constant conflict between people who rely more on the theoretical modeling and people who rely more on observations.

The fourth disagreement is on how warm the medieval warm period was. This is important for understanding if our warm period is ordinary or something completely

different. However, our data is simply not good enough to properly answer that question. We know that it was warm because of a lot of written records such as agricultural practice. But it is a patchy picture. It is not comprehensive and we cannot rely on it.

In the past the IPCC used the famous hockey stick graph where the modern warm period spikes up after 1,000 years of a stillstand in global climate. Interestingly, the most recent IPCC report no longer included hockey stick graph and instead points out that there are fundamental limitations for deriving past temperature variability at a global or hemispherical scale. The proxy data such as tree rings, the ice cores, and the sediments in lakes are limited in reliability. Paleo-climate reconstructions therefore remain an open question.

Additionally, it is often said that global temperature during the modern warm period rose much faster than during previous warm period ever. This is also difficult to measure as we do not know how fast previous warming evolved.

To conclude, I do not think we know with any certainty what previous warm periods were like. Climate realism accepts the basic workings of the greenhouse effect on the global climate, that greenhouse gases in the atmosphere contribute to warming, and that we live in a period of global warming. However, it is difficult to predict whether the current trends will remain low or whether it will accelerate at some point in the future. Much of the science is not yet fully understood. Our predictions remain uncertain, which the IPCC acknowledges by giving a wide range of possible scenarios, from low to high warming.