



Global Energy Solutions e.V.

For Prosperity and Climate Neutrality

Interview Gerd Ganteför

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Bert Beyers: You are a professor emeritus at the University of Konstanz and an active YouTuber on climate issues. Why are you actually doing this?

Gerd Ganteför: I learnt that you have to defend freedom. I'm a bit allergic because I was born in the GDR. My parents then fled to West Germany. After that, I was still in the GDR from time to time on entry visas and forced exchanges and felt the country was a big prison, a totalitarian system. There was surveillance, there was no freedom of speech and things like that. I don't want to compare today's Germany with the GDR. But I recognise approaches in the current climate debate and especially in the ideological exaggeration in Germany that I don't like. Other opinions are no longer allowed and citizens are vilified by ideologues. However, I would like to emphasise that I worked through the reports from the Intergovernmental Panel on Climate Change with the students in my major energy and climate lecture on the Master's programme in physics and that I believe the findings of climate scientists are generally correct.

What does that mean?

The reports are many hundreds of pages long and this is all serious science. But today, under the banner of natural science - I am an experimental physicist - a certain amount of abuse is

being committed. Neutral science, which fights for prudence and reason, is being used to scare people. I have spoken to climate activists and climate researchers who are of the opinion that it is legitimate to exaggerate the possible consequences of global warming. You have to educate the citizens. I see a certain parallel with the GDR, where it was also thought that people had to be educated through coercive measures and incessant propaganda. But science is responsible for truth, not education.

Please explain that again.

I see a blurring of ideology and science here. Not at the IPCC itself, but in its implementation, especially in Germany and in the German media. I am friends with a psychotherapist. She can no longer save herself from patients who fall into depression. Partly because of the coronavirus pandemic, but also because of the climate forecasts. The climate is a serious problem, but the social changes that we are now facing should not be enforced with fear scenarios. This will ultimately jeopardise our freedom, our democracy and also our prosperity. We must continue to work together internationally and not constantly go down expensive special paths in Germany that nobody outside will follow anyway. I am fighting fear. We can get to grips with the climate problem with common sense, education, science, technology and international cooperation.

Some of them have also been publicly attacked and pushed into the corner of climate deniers.

That was Professor Volker Quaschnig, for example. He published an anti-Ganteför video. I wasn't aware of such shitstorms back then and the video horrified me. I now realise that there are always people on social media who want to denigrate others, even when they make quite trivial statements. I didn't know that from my many years in real science. We don't attack each other below the belt. In the climate debate, however, this already happens when someone merely calls for moderation. A few years ago, I discovered that my opponents

had created a Wikipedia entry about me. Imagine you suddenly find a Wikipedia entry with your name and photo. It contains serious accusations. You are defenceless against it, because there is no way of defending yourself. And it can happen to anyone. After Volker Quaschnig's attack, the Wikipedia entry on "Gerd Ganteför" started to flicker. I was told that there were some very unpleasant things about me in it. I can't read it myself. It's too horrible. But all this shows me that the climate debate is no longer dominated by science, but by ideology. Keeping going despite the personal attacks is mental work. But if someone like me falls silent, then the ideologues have won. But I won't fall silent. Because I think: Freedom doesn't come for free.

The bathtub model with its inlets and outlets from CO₂ has become one of your trademarks. Could you explain that again?

Firstly, the bathtub model is not mine. I just called it that. We now also call it the "sink model". You can find the basic information on this in Chapter 5 of the latest Assessment Report No. 6 of the Intergovernmental Panel on Climate Change. The figures for 2022 can be calculated fairly accurately. Humans emitted around 40 billion tonnes of CO₂ into the atmosphere in 2022, energy-related. Added to this are CO₂ emissions from other sources, such as agriculture. Of these more than 40 billion tonnes, only 20 billion tonnes have reached the atmosphere. This can be measured. The atmosphere is like a large gas container. If you fill it with gas, the pressure rises. This is the partial pressure, the partial pressure of CO₂. If CO₂ is added, this partial pressure increases. The increase in pressure corresponds to an increase in volume of around 20 billion tonnes. Okay. But where are the other 20 billion tonnes that we know very well have been emitted?

How do you know all this?

You can determine worldwide how much coal, how much oil and how much natural gas has been burnt. This is the annual production. It is measured very precisely by various agencies. So where did the missing 20 billion tonnes go? Many researchers have thought about this. One possibility is the photosynthesis of land plants. The Earth's forests are out of balance because it has become warmer and we have more CO₂ in the atmosphere. They are currently absorbing more CO₂ than normal and converting it into biomass. CO₂ is therefore bound in wood, leaves and root mass. This currently amounts to 10 billion tonnes per year, i.e. a quarter of our emissions. The situation is similar in the oceans: if the partial pressure above a water surface is increased, the same thing happens as with the production of sparkling water from drinking water in your own kitchen. CO₂ from a carbon dioxide cartridge dissolves in the water under pressure. It is virtually pressed into the water.

And the same thing happens in the ocean?

Yes, we have increased the partial pressure and now there is a net influx of CO₂ into the oceans. That's around 10 billion tonnes per year. That's why we also have acidification and other side effects. If we were to reduce human emissions globally by half, i.e. to 20 billion tonnes of emissions instead of the 40 billion tonnes, then these two large sinks, the land plants and the oceans, would still absorb these 20 billion tonnes. The performance of the two major natural sinks depends directly or indirectly on the partial pressure in the atmosphere and not on our annual emissions. This means that the performance of the two major sinks will continue for the time being. If we were to reduce human emissions by half, the CO₂ concentration would remain constant and not increase any further.

How do we deal with residual emissions?

Firstly, I believe that it is unrealistic to demand an absolute net zero from the global community, i.e. to avoid all CO₂ emissions. That is unrealistic, both globally and in Germany. Germany is

still a very heavy CO₂ emitter. But a reduction by half, because nature is helping us, is somewhat more realistic. But it is still a very ambitious demand to reduce emissions by 50 per cent in China, India, Africa, the USA or South America, for example.

How can we emit half as much, namely 20 billion tonnes less CO₂ ?

Firstly, we must continue along the path we have already taken. In other words, we should switch to renewables as far as possible. Germany absolutely must phase out lignite. Lignite is by far the dirtiest way to generate electricity. We need to get out of coal altogether and, of course, we need to expand solar energy as far as possible, as well as wind energy. The same applies to electromobility and building insulation. But not according to the principle of "whatever the cost". Because that leads to social conflict. I was at a CDU business conference in Berlin this year. The news came from Saarland that the population there was "afraid" of the Building Energy Act. People in Saarland are probably relatively poor. Many may fear that they will no longer be able to stay in their homes if they cannot afford the cost of a new heating system and the required building insulation. Radical measures jeopardise social peace and ultimately democracy.

And what do the wealthy do?

They are already following this path. Many people in my neighbourhood now have a ground source or air source heat pump and more and more people are driving an electric car. However, this means considerable investment that not everyone can afford. If we only have to reduce CO₂ emissions by half, we have a bit more time to make the whole thing socially acceptable. The second point of my bathtub model is that we can strengthen the sinks. So we get a second range of measures. In addition to mitigation, i.e. the reduction of CO₂ emissions, CO₂ can be extracted from the atmosphere through soft measures. For example, more trees can be planted. The same applies to the ocean.

What is your opinion on carbon capture?

Carbon capture is a generic term that needs to be defined more precisely.

Let's start with point sources. For example, if we were to approach the exhaust gas flow from power plants or steel or cement works - and inject the captured CO₂

So you mean technical methods, for example by bringing CO₂ into the depths of the ocean and thus strengthening the ocean sink. The ocean has stored 50 or 40 times the amount of CO₂ anyway.

None of this is new. In oil and gas production, CO₂ has long been returned to the reservoirs. Or take Denmark and Norway, who want to make a business out of injecting the Europeans' CO₂ into former oil and gas fields. Do you think that makes sense?

I dealt with this in my lecture. There is a drilling platform in the North Sea that produces oil and natural gas CO₂. This is separated and pumped back down again. The CO₂ could also be removed from the exhaust gas stream from coal-fired power stations and pumped into suitable underground layers. I think that's a sensible measure. For individual countries like Germany, it is a sensible addition to the range of measures. However, I doubt whether these approaches are on the right scale for the billions of tonnes that are involved globally. One billion tonnes is 1000 million tonnes. I think it's questionable whether we can squeeze that much into the ground every year to really get to grips with the global problem. And we're talking about 40 billion tonnes, not just one billion.

Do you see other possibilities?

For example, there is the idea of pumping the CO₂ into the depths of the oceans, where it liquefies under cold and high pressure. However, I don't know enough about whether the CO₂ is stable in the long term under these conditions. It also has to be injected and that costs energy. The same applies to the active extraction of CO₂ from the atmosphere. It is highly diluted with a concentration of less than 0.5 per mille. We are then working against entropy and a lot of energy has to be expended. I therefore consider extraction from the atmosphere to be impractical. But I do think that capturing it at point sources such as coal-fired power stations and transporting it underground is an interesting method. But that can only be one contribution. It's not the big spoon that we have to use.

What is the big spoon for you?

Perhaps many small spoons could be used to replace one large spoon. But there is a long way to go to get from the millions of tonnes of small measures to the 40 billion tonnes per year needed. First of all, we have to reduce emissions and Germany has made some progress in this respect. There are cost calculations that show that the first 50 per cent of the reduction in CO₂ emissions can be achieved relatively cheaply. Poor-quality lignite-fired power plants can be replaced by modern gas-fired power plants and this reduces emissions by more than half. But then going further to zero will be expensive. This is where the sink model comes into play. The fact that nature is helping us to such an extent gives us the opportunity to reduce emissions by perhaps two thirds or three quarters in many countries that can just about afford it. However, reducing even further is not affordable in most countries. We can't take granny's house away from her because she can't afford underfloor heating with a heat pump. We can solve the problem first with gas heating, because certain CO₂ emissions are still permitted. In other words, with the help of nature, we can make climate policy socially acceptable and citizen-friendly. That is my approach.

What is your opinion on the German energy transition? The targets are ambitious. By 2030, 80 per cent of electricity is to come from renewables. And Germany should be climate-neutral by 2045. Do you think such targets make sense at all?

I would immediately be in favour of building a society without CO₂ emissions if the people in it can still find a job and pay for their lives. But if we have extremely high rents because zero-energy houses are expensive, if electricity costs one euro per kilowatt hour, if hardly anyone can afford to live a normal life or if we get to the point where people can no longer go on holiday but can only cycle around, then life is no longer worth living. I think we need to achieve a balance between climate protection measures on the one hand and people's desire for a life worth living in freedom on the other. And that also applies to the economy. The economy must remain successful and competitive, otherwise we will not be able to finance the expensive climate protection measures. After all, where does all the money for the energy transition and for the state's other tasks such as the pension system, the education system or the healthcare system come from? It comes from a running economy. In other words, you can't saw off the branch you're sitting on.

How would you describe your goals?

I don't think we can save the climate alone, neither in Germany nor in Switzerland, where I live. We have to do climate protection globally together with the other nations. As far as the ocean sinks are concerned, we could improve their performance by growing kelp forests, for example. Such measures can bind a lot of CO₂. However, we cannot do this in Germany, but rather in the southern hemisphere. Mangrove forests are also very good CO₂ sinks. Many countries in the global South have shallow coastal zones. The mangrove forests there can be expanded in a targeted manner together with the people who live there. The mostly poor people in these regions can be paid for this work by the international community. So there are new climate jobs. We can achieve a

great deal globally in this way. But if we limit ourselves to our own country, i.e. Switzerland, Austria or Germany, then climate protection will remain a hobby for rich countries.

What does this mean for national climate policy?

I'm sorry that people think that you can only save the German climate with the enormous possibilities of Germany as an industrialised country. The radical version of local measures is very expensive and I think many people have now realised that. With a similar amount of money and intellectual effort, a lot more CO₂ could be saved if we worked together with the people outside. I hope that people will come to their senses and take a global view. The small town of Constance on Lake Constance has declared a "climate emergency". That may be well-intentioned, but it doesn't work that way! We need a global approach. For example, as long as a third of CO₂ emissions come from China, we need to see that we somehow work together with China and not see China as an enemy.

What else do you personally want to achieve?

I spent many years training young people at university because I thought that this free democratic society that has created such prosperity should be preserved. And of course this also includes solving the climate problem. This life's work should not be destroyed by developing an increasingly narrow ideological view. With the technical and intellectual possibilities that a country as highly developed as Germany has, a much greater lever for climate protection can be developed out in the world than if we only save our own climate at home. We need to look outwards. I fear that the ideology of "we are only saving our own climate" will leave the actual global climate problem unsolved. Germany is doing its best to save its own climate, but the global climate is getting warmer and warmer unchecked. Because the thinking in this small Germany is too limited.