



EMPATHY IS KEY

We talk to the pioneering climate-change researcher **Prof. Hans Joachim Schellnhuber** about the role of decency in fighting climate change, and why excellent climate science requires freedom and trust.

ACADEMIA: What is your biggest hope when it comes to climate change?

JOHN SCHELLNHUBER: My biggest hope is that humankind, including politicians and businesspeo-

ple, will become aware of the crisis we are facing. It is a monumental challenge. I have worked in this field for 25 years now, and I have never been so worried. Scientists are constantly warning, "It is 5 min-

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utes to 12!” “And now it is only 3 minutes to 12!” and all this is actually true. We need immediate action. I simply hope that people will finally wake up to the scientific evidence.

What would be needed to facilitate that waking up?

It would require a combination of things, which I call the “3 D Theory.” The first D unfortunately stands for “disaster.” People often say that climate action is too expensive, but that is not true. In Germany and Poland, we have just experienced enormous droughts and heat waves. Across Europe, we had crop failures. These disastrous climate impacts are harming the economy. Other 2018 examples include the deadly forest fires in California. The State Insurance Commissioner just reported that it caused more than 9 billion dollars in insured losses. Sadly, it seems to take a catastrophe, a disaster, to awaken people to the severity of the threat of climate change.

The second D stands for “discovery” and tells a more hopeful narrative. In this country, you still have some 100,000 people working in the coal sector. To avoid more climate disasters, this industry needs to close down soon, but millions of new jobs will emerge with cleantech and with digitalization. People have to be trained so they can become fit for the next industrial revolution that will usher in a new era of modernity. Discoveries, inventions and innovations are what we need to master this transformation towards sustainability. Science will change our world dramatically in the decades to come. We should not be afraid of innovations, but we should explore and embrace them. Renewable energy, for example, could replace coal in Poland. It would not only reduce the reliance on imported Russian coal, but also lower air-pollution-related diseases and premature deaths in Poland. And it would create new jobs. By taking advantage of discoveries, we can do much better.

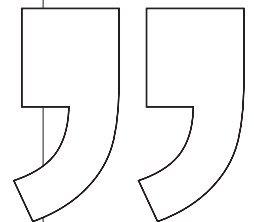
The third and final D stands for “decency.” We need to be empathic, empathic with our fellow human beings. One historic example can teach us a lot: the abolition of slavery. In the 18th century, it was argued that abolition would mean the end of the economy, in England, in the Caribbean, anywhere. The shipbuilders of Liverpool, the world center of the slave economy at that time, told people in London that so many jobs would be lost that it would actually be socially unjust to end slavery. However, this skewed economic rationale was overruled by public sentiment. Tens of thousands of ordinary British people argued that black people ought not to be enslaved, because they are our fellow human beings, created our equals by God. This overpowering movement swamped Parliament, which finally passed laws that abolished slavery.

Another historic example of how human decency can bring about positive change is the fall of the

apartheid regime in South Africa. When I was at UC Berkeley in California in 1990, I listened to Nelson Mandela’s speech about the importance of the global “boycott” movement. Millions in the developed world refused to purchase products from South Africa and pushed for economic sanctions against the apartheid regime. It was actually Berkeley students that triggered the avalanche of divestment that finally brought the system down. Mandela thanked his young “blood brothers and sisters.” In the end, it was a moral issue. Of course, there are many intricacies to these complex historic turning points, but human decency and morals often play a crucial role.

I believe that climate action works in a very similar way. While we keep on doing business as usual, slowly but surely, people from low-lying islands and other vulnerable regions will be killed or displaced. We will also bring about heat stress in the tropics that is so se-

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vere that people without air conditioning will perish. In many already disadvantaged regions of our planet, climate impacts will worsen the situation through extreme weather events, like floods and cyclones. If the world continues to burn fossil fuels and refuses to support societies in vulnerable regions, people from Central America to sub-Saharan Africa will have to migrate to escape from hunger and thirst.

Of course, a combination of factors causes these crises. Economists simply say it is a matter of costs and benefits. You have the gigantic costs of the impacts of climate change across the planet. And you have the moderate costs of reducing greenhouse-gas emissions to create the huge benefit of avoiding catastrophe. The choice is self-evident...

So, disasters are the writing on the wall; they are becoming more frequent and more intense. Discoveries show us that we can do something about it, and in the end, we all need to be decent people with empathy for our brothers, sisters, and descendants. Not stopping climate change is a civilizational cul-de-sac. Unbridled

global warming would eventually bring the human enterprise to an end. I would not have said this some 20 years ago. When I set up the Potsdam Institute for Climate Impact Research back in 1991, the impacts of climate change were just an interesting academic topic, but today I tell you: if we cannot quickly abandon the business-as-usual trajectory, modernity will crash into a wall of fire.

So you envision that there's a chance climate change will be stopped, because of human decency. It is great to hear that you have such faith in humanity.

I do, but it is not just faith. Historical comparison helps us to remain hopeful. When you look back in human history, you have these types of movements, against slavery, against apartheid, or, of course, Solidarność in Poland. The victory of Solidarność was enabled by a combination of things: John Paul II

played a role in the Vatican, Wałęsa played his role in Gdańsk, thousands of ordinary workers and citizens played their roles across the country. Amazingly, it was this very movement, which eventually sparked the fall of communist regimes all over Europe. It was just a small protest at the beginning and became so big by the end. That is why I have faith in human decency.

We are talking about compassion for other human beings. There is also a growing trend in Europe for showing compassion towards animals and stopping meat consumption. More and more people are turning vegetarian and vegan.

It is good that you raise this point. The whole problem of industrial agriculture is another important issue related to climate change. Even without considering the climate impacts of mass animal farming and the like, there are such cruel ways of treating other creatures involved: from practices in industrial slaughterhouses and the castration of little pigs without anesthesia, to the excessive use of antibiotics. Such a sin... We cram chickens, cattle, and fish into minute spaces and feed them lots of drugs to keep them "healthy." This creates resistant bacteria, resulting in antibiotics not working for humans anymore. A whole series of completely wrong and unethical steps.

In addition, this type of agriculture is harming the climate, because it takes so much energy to produce animal products like beef. It is cruel, it is nonsensical and it will kill the planet in the end, so it is nonsense in every conceivable way.

I grew up on a small farm in rural Bavaria. There are many farms like it in Poland. At most, we had a little piece of meat on Sundays, and yet I enjoyed everything I cared for. There is so much overconsumption nowadays. Being a little more modest would help our personal and planetary health. Some necessary changes require government policies, like switching from coal to renewable energy. But, just overnight, we could all change our behavior and it would have an immediate effect on the climate. Some say it is impossible, but we can do this. Within Europe, we could construct and take rapid trains instead of airplanes. Inaction is often just an excuse, because people want to keep sitting in their easy-chairs. Slowly, the first D of my theory – disaster – is making those chairs quite uncomfortable.

One part of the Earth system that is crucial to such extreme weather events is the Gulf Stream. I cannot miss this opportunity to ask: what is the real future of the Gulf Stream ocean currents?

There are two recent scientific studies on the Gulf Stream, one by our group at PIK and another by an international team. Both confirm that the Gulf Stream has weakened by about 15% since the 1950s,

A group of protesters in front of the building where the COP24 symposium took place (also p. 44).



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even though this is just the beginning of global change. There is a significant risk that, if we follow a business-as-usual pathway, the North Atlantic deep water formation will shut down completely by the end of this century. If we warm the planet by more than 2°C, the Greenland ice sheet will start to melt irreversibly. When so much fresh water enters the Labrador Sea and other parts of the Arctic Ocean, it dilutes the salty water and hinders it to sink down. We know that this has happened in history, so we know it can happen again. To ensure that the Gulf Stream does not collapse, we definitely need to confine global warming to below 2°C.

And a collapse would spell tragedy for ocean ecosystems?

Precisely, and more. Atlantic ecosystems would be heavily damaged. Generally, above 2°C warming, Europe would experience more severe storms, and even droughts in the Sahel region would increase. We have also identified tipping points for other systems, such as the rainforests or the West African monsoon. Of all those entities, tropical coral reefs are the most vulnerable to climatic change.

The Potsdam Institute for Climate Impact Research (PIK), which you founded, has an impressive interdisciplinary approach to studying climate change. It studies climate change through oceanography, ecosystem sciences, economics and countless other disciplines. It is amazing that you have managed to bring all these people of very different backgrounds together in one place. Do scientists at PIK cooperate between the disciplines?

Absolutely, that was the plan from the very beginning. In 1991, I wrote down the concept of the institute on three pages and I emphasized: it has to be multidisciplinary, because climate change is a multifaceted, complex problem. This was almost revolutionary, since at that time doing interdisciplinary science was

considered something only mediocre scholars do. Fortunately, I had already proven myself as a first-rate physicist, so I was freer to change course. Initially, I tried to build the institute like a miniature university with departments of biology, sociology, and so on. We soon realized that if we wanted to answer important questions, like how to make agriculture climate-proof, we had to be truly interdisciplinary. In 2006, I simplified the institute's make-up. We now have four departments, which are dedicated to very broad subjects. The first department deals with the complex Earth system as a whole, the second department looks at regional climate impacts and vulnerabilities, and the third looks into specific sustainable solutions to climate change. The fourth department is called "Transdisciplinary Concepts & Methods" and focusses on complex networks and dynamics. They can actually do almost whatever they like.

That sounds like a dream job...

Indeed. Beyond interdisciplinarity, freedom of research and trust are key. When I recently stepped down as director of PIK, we had an internal celebration where every second word mentioned by my colleagues was "freedom." People seemed grateful that I let them do their own thing. Many capable researchers apply to our institute, and if you employ them, you have to trust them. When you put good people together and allow them to cooperate freely, brilliant ideas emerge. For example, we recently found a new way to substantially improve the Indian monsoon forecasting. Knowing about the monsoon onset as early as possible allows people to prepare for the rains and saves hundreds of lives every year. In the end, our recipe for excellent climate science at PIK was freedom, trust and the belief in passionate young people. For the best of science, for the best of our climate, and hence for the best of people across the world.

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