Allianz Knowledge

Climate Change : Global Warming Basics

"We are facing a third industrial revolution"

Hans Joachim Schellnhuber is head of the Potsdam Institute for Climate Impact Research and adviser to the German chancellor Angela Merkel. He explains why climate protection and economic growth are interlinked and where business-as-usual will take us.

Hans Joachim Schellnhuber believes that if we do not stop business-as-usual, we will not recognize our planet in 50 years. That is why he calls for nothing less than an energy revolution. (Photo: Helmut Biess, PIK)

The gale windstorm Kyrill, the mild winter – are these mere coincidences or do we already face the consequences of climate change?

Weather is closely linked to coincidence. Climate, on the other hand, is weather averaged over a period of some 30 to 40 years. And there we see, for example, that the last six months were clearly above average temperature. Is that the ultimate proof for climate change? Surely not, but it perfectly fits the bigger picture.

You will be talking about "Europe's roadmap to global economic leadership" with EU Commissioner Günther Verheugen and Nobe Prize Economist Joseph E. Stiglitz. Can you really link the fight against climate change and economic leadership?

Sure you can. Climate change is just the agent of change that catalyzes the massive energy reform mankind has to face anyway. We have to overcome the dependency on fossil fuel, which brought about the first and second industrial revolution. Now we are facing the third industrial revolution: How do we switch to truly sustainable energy sources?

Without climate change we could keep on saying that in some 50 or 80 years, market forces will make sure that prices for fossil fuels skyrocket and that new energy sources are being tapped – but by then it will be too late to prevent a rapid degradation of environmental conditions.

Basically, climate change requires us to move up the reform to this century. And the ones to react first will be best suited to lead the markets.

You have recently been named Scientific Advisor to the German Government on Climate Issues. What is your advice to Ms. Merkel regarding climate change and enery resources?

That the climate issue doesn't allow for adjournment! We have to cut greenhouse gases by 50 percent by the middle of this century. And with countries like China or India increasing their carbon dioxide output in

the near future, it is the industrialized world that has to decrease emissions some 60 to 80 percent by 2050. That's why we need a roadmap: Where do we want to stand in 2020, where in 2030?

The key is innovation in the energy sector. I advise Ms. Merkel, "Let Germany, let Europe lead this third industrial revolution." If we prove now that our society can remain prosperous, productive, and creative without carbon dioxide, then we can convince the newly industrializing countries that this is the way to go.

Current assessments on climate change talk about an average increase in global temperatures of some 1.5 to 6 degrees Celsius. Why is there such leeway?

There are still a number of uncertainties like the question whether clouds have a cooling or a warming influence. Even more important are aerosols, which probably exert a cooling influence. That means that industrial atmospheric pollution – mostly sulfur particles - may have created a veil of pollution that is concealing global warming. But the extent of this effect is yet unknown.

And there is a big question mark pending over the issue of positive feedbacks in the carbon dioxide cycle. If we keep on emitting greenhouse gases into the atmosphere and if oceans and soils suffer further warming then we might face self-energizing processes and a runaway greenhouse effect. The North Atlantic could turn into a carbon dioxide source, soils in Siberia could release more methane, and collapsing ecosystems might emit surplus greenhouse gases.

You are describing climate change as a global phenomenon with local effects. Where, in your opinion, will we see the five most significant climate hotspots?

First of all, there is the Amazon rainforest, the world's largest ecosystem. Most climate models suggest that the system will collapse by the end of the century. There won't be enough precipitation left – and a rainforest just doesn't work without rain. Secondly, the Indian monsoon will most likely level off due to atmospheric pollution, but is bound to increase in the long run due to global warming. That, in turn, will probably trigger tremendous floodings in the Ganges delta and the Punjab region.

Thirdly, the Sahel region on the southern fringes of the Sahara will probably witness another period of drought similar to the one during the 70s. Fourthly, the Iberian Peninsula will probably turn into some kind of a semi-desert. Tourism and agriculture as it is being practiced today will probably be no longer possible.

Finally, the Great Barrier Reef in Australia might not survive the next 50 years due to the acidification of ocean waters and their steady warming.Given such scenarios, your demand to reduce carbon dioxide emissions seems unavoidable.

Schellnhuber and others identified twelve tipping points that could lead to drastic and irreversible changes in our global environment. One scenario implies that, given we stick to business-as-usual, huge parts of the Iberian Peninsula will turn into arid plains and semi-deserts.

Which are the most important obstacles to this end?

We will be making huge steps ahead in the energy and the manufacturing sector, at least in Germany and North America; simply because it pays off to save power. We are very concerned about the transport sector, be it for transporting people or freight. Especially the air traffic sector has witnessed something of a paradigm shift. An average citizen nowadays expects to fly to Mallorca for 20 euros. Growth in carbon dioxide emissions in the transport sector pretty much devours all the efficiency gained in manufacturing.

Finally, there is the massive challenge posed by urbanization. 80 percent of emissions worldwide stem from urban areas. And it is not just developing countries that are to blame. Look at a city like Las Vegas, which has to be fed and watered artificially and only allows for a certain quality of life because it is cooled non-stop. Our modern society has not yet understood what is happening.

Is there anything the financial sector and companies like Allianz can do?

Two things: "Avoid the unmanageable and manage the unavoidable." We have to try to keep global warming within two degrees. Warming below that level will probably be manageable. To get there, we need a massive information campaign. Civil society has to know what is happening. And Allianz should unflinchingly support this awareness-building exercise.

However, and this is the second point, even if we limit it to a two degree increase, we will face massive changes in our environment and a significantly negative impact on nature and our society. It is here that insurance companies have to respond with tools and mechanisms which can absorb the worst consequences.

Unfortunately, it is where these consequences will be most severe - Africa, Latin America and Southeast Asia - that people have no access to adequate insurance coverage. What is it that insurers worldwide can do to mitigate the risks? This is a question I'm asking Allianz.

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