

Prof. Dr. Mojib Latif „Climate Change Risks“

The key messages of the fifth IPCC-Assessment Report clearly express that climate change needs to be dealt with, before severe crises will emerge.

1. The increase of atmospheric carbon dioxide (CO₂) is unprecedented in human history, and the burning of fossil fuels for producing energy is the main cause (~90%).
2. The impact of the CO₂-increase on Earth's surface temperature is detectable:
 - Globally averaged surface temperature has risen by almost 1°C since 1900, where the largest share stems from the increase of atmospheric greenhouse gases.
 - Spatial differences in the warming patterns, however, are evident, and some were to be expected (i. e. the stronger warming of the land masses compared to the sea surface or the particularly excessive warming of the Arctic).
3. The impact of the surface temperature rise on the cryosphere:
 - The Arctic sea ice melts rapidly. Since the beginning of the satellite measurements in 1979 a 30 percent decline in the sea ice extent has been registered.
 - Greenland's ice sheet shrinks. The complete meltdown of the Greenland ice sheet would result in a sea level rise of 7 meter globally. The Antarctic ice sheet also is losing mass already.
4. The impact of the surface temperature rise on the oceans:
 - Since 1900 the globally averaged sea level has risen by about 20 cm, but with strong regional variation. One reason for the regional variations is changing ocean currents.
 - Coastal sea level around the North Sea has risen too (by about the same amount as the global average).
5. The other climate problem: acidification of the oceans through the absorption of carbon dioxide. Since the beginning of the industrial time the seas have absorbed about half of the CO₂ emitted by mankind through burning fossil fuels.
6. Despite many mitigation initiatives global carbon dioxide emissions are continuously rising and presently moving along the worst-case scenario. This would result in a globally averaged surface temperature rise of about 4° C by the end of the century – with unforeseeable consequences for climate and both terrestrial and marine ecosystems.
7. Climate change is a prime example for a systemic risk. Systemic risks are characterized by being global and cross-linked, by leading to multiple impacts with comprehensive adversities and by the fact that one tends to underestimate these risks. This applies as well to other systems like supply infrastructure, the financial system, or epidemics as the present Ebola Crisis shows.
8. People underestimate the risk of climate change because climate change cannot immediately be detected by our five senses. Our intuitive way of thinking is insufficient to analyze complex cause-and-effect relationships, because gradual, hardly noticeable changes do not have news value for most media (and therefore will not be covered). Last but not least: climate change is not verifiable individually and at the same time confidence in experts, decision makers and scientists decreases. People tend to “solve” this dilemma by turning away from a problem perceived as ambiguous and confusing.
9. How to deal with this dilemma? We cannot trust our intuition when it comes to systemic risks. The precautionary principle should apply here.