

The EU's Climate Law is an important milestone. But it's not enough.

EH: It is just two months ago that we saw these tremendous floods in Pakistan. And suddenly, there was this news story that 600,000 pregnant women were displaced by the floods. Can you imagine if you are about to give birth to a child, and you have to leave your home and flee? These are very traumatic experiences that people have now in all continents, and increasing frequency.

NB: That's Professor Edgar Hertwich speaking in October in Brussels to an EU Strategy Summit on Energy.

EH We have droughts in Sichuan, in India, in Europe, at the same time, and in North America, right. And then, you know, you see the, the soil gets dry, and then you get the heavy rains, and the soil has no capacity to absorb these rains. And suddenly you have a drought one, one month and the next month you have this tremendous floods.It is really this succession of extreme events that we are not prepared to face.

NB: I'm Nancy Bazilchuk, and you're listening to 63 Degrees North, an original podcast from NTNU, the Norwegian University of Science and Technology.

Today, in this podcast extra and in the runup to COP27, the big international climate meeting scheduled for Egypt in mid-November, I wanted to share what Professor Hertwich has to say about where the world is heading and what do we need to do now.

Hertwich is international chair at NTNU's Industrial Ecology programme and has been named one of the top 100 climate researchers in the world. He's also one of 15 members of the European Scientific Advisory Board on Climate Change, which is advising the EU on implementing its new Climate law. That matters because the EU is the largest political entity in the world to commit to such ambitious goals.

His assessment of the situation doesn't paint a pretty picture — which probably won't come as a surprise, given the circumstances. It's very no nonsense. Nothing is candy coated. But it's also very clear.

He highlights where we're falling short and what we need to do to move forward. And he has some messages that maybe the politicians don't want to hear, but must. Luckily for Europe, he's in a position to deliver this message.

And lucky for us, it's not all bad news. But we do need to act — now.

EH 0:22 the IPCC just came out with a set of new reports, that tells us what the state of the world is. And it is quite serious.

EH: 2:16 We are not on track to 1.5 degrees. If we want to stabilise the temperature on the planet, we need to stop the increase in the concentration of greenhouse gasses, we need to stabilise the concentration of greenhouse gasses. We cannot do that while emissions are increasing on the global level. We need to bring emissions down immediately. There is no chance to reach the 1.5 or the two degree targets that are both named in the Paris agreement without turning the ship around. And we haven't managed to do that yet.

EH: We are actually on track to a three to four degree increase in temperature. And and that is quite dramatic. So immediate and deep emission reductions are necessary in all sectors to reach this 1.5 degree target

NB: 1.5 degrees, 2 degrees — one of the challenges of climate change is that these numbers are hard for us to imagine, to really feel. It's not the same as when the weather forecast says it's going to be 20 degrees in the morning. We humans don't think in average global temperatures.

But we are about to get a taste of what life might be like under these warmer temperatures, Hertwich says.

EH We have passed 1.1 degrees now, we might experience the first years with a 1.5 degree increase when El Nino kicks in again next year or the year afterwards. And we'll see what that is like.

NB: So what do we do?

EH: We need to achieve zero emissions by 2050. If we want to have any chance to achieve 1.5 degrees, and even if we do that, we'll still have to remove co2 from the atmosphere to reach that goal. Otherwise, we're heading towards two degrees, which we'll see a lot more climate impacts.

So what do we need to do in order to reach 1.5 degrees? Well, we need to bring energy consumption down. We need to move away from fossil fuels. have basically largely phase out fossil fuels by the end of the century, and actually, to a substantial degree by 2050. Already, we need to stop using coal without CCS, we need to dramatically increase the use of renewables, like wind and solar. And we will have to use increased amounts of biomass according to most scenarios. And this is just the changes in the energy sector.

Apart from that, we also need to make changes in the industrial sector, we need to change the ways we produce chemicals have new raw materials, we need to remove co2 from cement production, we need to use hydrogen to produce steel. So there is a lot of dramatic changes that are necessary.

NB: One of the biggest wake up calls for oil producing nations, like Norway, is that there is no way to recoup the value of investments that have been made in the oil sector if we are going to meet either the 1.5 or 2 degree target. In addition to all the oil platforms, pipelines and the like, a lot of oil that is in the ground — or in the case of Norway, under the Norwegian Continental Shelf — will have to stay there. These are

called stranded assets, because they will no longer have the value they once had.

EH: I'm sure that you're all aware of this, but we have invested in Norway into this massive infrastructure to produce and use fossil fuels, we will not be able to amortise this infrastructure. This will become stranded assets, if we manage a 1.5 degree pathway. If we decide to use this infrastructure until it is amortised, we will not be able to reach the 1.5 degree target.

NB: Then there's the inevitable question: What if we don't act fast enough?

EH: So of course, we can decide to leave this to our kids and ask them to remove CO₂ from the atmosphere. A friend of mine has looked at these scenarios that remove CO₂ from the atmosphere at the end of the century. He's calculated that the costs of that corresponds to the budgets of the health in the school sector taken together, it's very unrealistic that we can expect our kids to shoulder that burden.

NB: As I mentioned in the introduction, Professor Hertwich is one of 15 members appointed to the European Scientific Advisory Board on Climate Change. He says the EU is positioned to take a real leadership role here.

EH: The European climate law is really an important milestone. There isn't such a large political entity that has decided to take such drastic action and is serious, at least about the two degree target. We're not on track for 1.5 degree target with the climate law. But there is this carbon negative commitment in there after 2050.

NB: Yes, 2 degrees isn't perfect. But it's much better than 3 degrees or 4 degrees. And if the EU can do it, other countries can too. There's one catch though.

EH: With all its efforts, the EU is on target for following a two degree trajectory, but taking up a larger share of emissions than would be fair from an equality perspective.

NB: We'll hear more about this issue of fairness and equality later. But here he tells the policymakers in the room that politicians, anyway, haven't completely grasped how quickly we need to get moving.

EH: One of the things that the advisory board works with is the carbon budget, because we have been asked to look at the targets for 2040. The idea for the carbon budget is that you can only put a certain amount of co2 into the atmosphere before you reach that concentration at which you need to stabilise to reach the 1.5 or two degree target.

NB: Hertwich says the total remaining carbon budget is 400 gigatons, or 400 billion tons. Right now, our emissions are at about 50 gigatons.

EH: So at the current rate that we are going, we have about eight years left before we have used up that carbon budget. On the per person basis, the budget is 50 tonnes. And you can go online and use one of those carbon calculators to figure out how much co2 you emit yourself each year. I have looked for Norway, the average is 7.6 tonnes per year. It's not the carbon footprint, but those are the direct emissions from Norway per person. And if we want a decline on a steady clip, we have to reduce our emissions with more than half a tonne per year until we reach zero after 13 years. So this is a lot earlier than what our politicians are planning for the current carbon budget.

NB: One issue is the question of fairness. Edgar says that most of the scenarios presume that the cuts will be made in a cost efficient way. That presumption essentially awards developed countries license to use up more of the remaining carbon budget.

EH: The current scenario calculations are all based on the cost efficiency basis. And that means that we have a lot more carbon to emit than people in poor countries.

And we don't need to think that we could reach any of the other sustainable development goals, if we actually use that approach, that the people who have already put most CO₂ into the atmosphere also have the largest share of the remaining carbon budget.

NB: He also offered some perspectives on how the war in Ukraine has affected energy expenditures in Europe — and what that means in terms of Europe being able to afford to make the investments it needs to make to cut its emissions.

EH: Now, we've heard a lot about Putin — why is this so large an issue? Given the prices that were predominant in 2019, and the amount of energy we used in the EU, about 4% of the GDP was sufficient to pay for that energy. Today, if you take today's prices and the same amounts, it would take 17% of the GDP to purchase the same amount of energy. So that is a huge change in the economy. Of course, some of this energy is domestically produced. And there are some long term contracts that make the reality be a little bit lower than this. The calculations by the Commission show that about 3% of the GDP would need to be invested over time to reach the provisions of the climate law. This is up from 1.5% of GDP that are normally invested in energy, energy infrastructure. So this is a substantial chunk. But it's still a small number compared to what we're spending today.

NB: And investing in renewable energy in Europe has additional benefits, he said.

EH: Producing energy from renewables would also save Europe spending money on importing all these fossil fuels from abroad, because a lot of these fossil fuels are actually being imported. And as we hear this dependency on Russia is important with about 40% on gas, and 22% of the overall energy supply of, of the European Union.

NB: But one surprise — Europe's energy crisis is due to more than just Putin shutting off the Russian supply of natural gas.

EH: The main issue with electricity production is that there is a lot of nuclear power plants that are down right now — at the peak, it was almost 60% of the French generation capacity. And two reactors in Belgium, in addition to the reactors in Germany and Sweden that are being shut down. And then we have the drought in much of Europe, Italy, Spain, Austria and so on, that have reduced the production of hydropower. So it is not purely a Russia story. It is the story is that there is climate change happening, there are some things happening with the nuclear power plants that actually necessitate to produce electricity from other sources. And normally, we will use gas for that. But because of Putin, we don't have the gas available at cheap enough costs, and therefore we are switching back on these old coal fired power plants.

The gas demand has been at the lower end of what we have historically had, there have been some substantial savings, because of industry sectors shutting down and some savings on the household side. But overall, that's not quite enough yet.

NB: Energy prices have been so high in Europe that many governments are providing subsidies to their citizens, so they don't end up freezing in the dark. Hertwich said some of these subsidies actually work against smart climate policy.

EH: Governments are spending heavily — around 2% of GDP — to support companies and households with energy bills. And these are tremendous amounts of funding being mobilised to deal with the crisis today. And a lot of the things that are being done by national governments is to reduce taxes. Exactly what we've seen in Norway, as well subsidise the the energy consumption prices, have price regulations, or to have direct transfers to households.

So I think it is important to think about that, because we are at this juncture now, where there's a rationale to do a lot more with the energy sector and to accelerate the energy transition. But there's also a lot of pressure to do something about the prices in the short term. And a lot of these actions that governments have taken actually work in the other direction. So if you subsidise energy consumption, or put a price cap on,

you prevent the market from the natural reaction of increasing prices leading to reduced demand. And that's not what we can have.

NB: Still, maybe the energy crisis in Europe is the kind of warning European society needs — if floods, droughts and hurricanes haven't been enough.

EH: There's plenty of challenges ahead. I think that more people understand these challenges now. And the crisis was really a wake up call. And there is a lot more people now who are thinking about the solutions who are seeing solutions. And I think that's really what I see as the Great Awakening now. But there are more people working in the same direction.

NB: I'm Nancy Bazilchuk, and you've been listening to 63 Degrees North, an original podcast from NTNU, the Norwegian University of Science and Technology. This is the first of two special podcast episodes related to the COP 27 climate talks. The second is the story behind some of the surprising climate technologies being developed in Norway right now that can help cool the planet.

If you want to know more about Edgar Hertwich's research and the EU's climate plan, check out our show notes. Thanks for listening.