



MARTIN-LUTHER-UNIVERSITY HALLE-WITTENBERG

Faculty of Law and Economic Sciences
Chair of Economic Ethics
Prof. Dr. Ingo Pies

Ethics and Economics of Institutional Governance

*Lecture 11
Winter Term 2025/26*

Overview

Ethics and Economics of Institutional Governance: 14 Lectures (L)

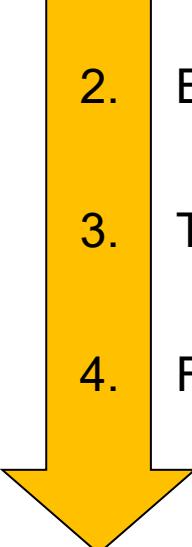
Introduction (L 1)

1. The Ordonomic Approach (L 2 + 3)
2. The Social Structure of Modern Society (L 4 + 5)
3. The Semantics of Modern Society (L 6)
4. Societal Learning Processes for the Reciprocal Adaptation of Social Structure and Semantics (L 7 + 8 + 9)
5. Case Study on Climate Policy (L 10 + 11)
6. Applications: The Ordonomic Line of Argumentation (L 12 + 13)

Summary and Outlook (L 14)



Structure of Last Lecture

- 
1. The Open Letter
 2. Background information on the climate problem
 3. The approach by Nordhaus
 4. Further elaboration of the Nordhaus approach



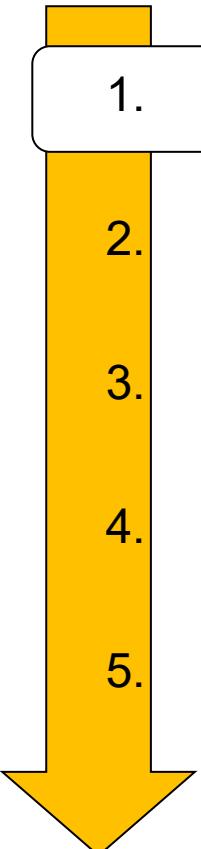
What have we learned?

The most important lessons of the tenth lecture are:

- Rational climate policy requires a consilient cooperation between the natural sciences and the social sciences.
- We need a global and long-term predictable link between greenhouse gas emissions, global temperature trends and estimates of climate damages, based on population and GDP projections for global and regional development.
- There is a discrepancy between the politically set climate protection targets (of 2° or even 1.5° C) and the results of economic cost-benefit analyses, which are more likely to suggest an optimal increase in the global temperature average by more than 3° C.
- There is a discrepancy between the economic estimation of climate damage and the "feeling" dimension of the climate problem, which is often called a "climate catastrophe".
- Economic estimates are that 3° C warming would reduce global production by 1.6%, or that 2.5° C warming would reduce global income by 1.3%.
- These values are subject to extraordinarily large uncertainties (and therefore large confidence intervals).
- Nevertheless, economists agree that it makes sense to carry out as early and as consistently as possible a reliable price increase of greenhouse gases over time, which is comprehensive in the intersectoral and inter-national dimensions and operates with globally uniform prices.
- This requires fundamentally new governance structures, e.g. a climate club.



Structure of Today's Lecture

- 
1. Climate alarm? – a provocative perspective
 2. The IPCC study of 2018
 3. Solar Valley in Saxony-Anhalt
 4. Renewable energy versus ETS
 5. On the governance structure of global climate policy



Nobel Prize Speech AER 2019

Nordhaus criticizes climate deniers and all those who disorient the public through misinformation, thus discouraging a rational climate policy.

William D. Nordhaus



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„[H]umans are clearly failing, so far, to address climate change.“
(p. 1991)

„The ... free-riding difficulties are aggravated by interest groups that muddy the water by providing misleading analyses of climate science and economic costs. Contrarians highlight anomalies and unresolved scientific questions while ignoring the strong evidence supporting the underlying science and current projections of climate change.“
(p. 2007)

„Scientists must continue intensive research on every aspect from science and ecology to economics and international relations. Those who understand the issue must speak up and debate contrarians who spread false and tendentious reasoning. People should be alert to the claims of contrarians who find some negative results or list reasons to wait for decades to take the appropriate steps.“
(p. 2013)



We are now also illuminating the other side of the spectrum



Climate Fear



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Martin-Luther-Universität Halle-Wittenberg, Lehrstuhl für Wirtschaftsethik
Prof. Dr. Ingo Pies

False Alarm: Introduction (I)

Björn Lomborg (2020): *False Alarm. How Climate Change Panic Costs Us Trillions, Hurts the Poor, and Fails to Fix the Planet*, Basic Books: New York. – The purpose of the book:

Björn Lomborg



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„The science shows us that fears of a climate apocalypse are unfounded. Global warming is real, but it is not the end of the world. It is a manageable problem. Yet, we now live in a world where almost half the population believes climate change will extinguish humanity. This singular obsession with climate change means that we are now going from wasting billions of dollars on ineffective policies to wasting trillions. At the same time, we're ignoring ever more of the world's more urgent and much more tractable challenges. And we're scaring kids and adults witless, which is not just factually wrong but morally reprehensible.

If we don't say stop, the current, false climate alarm, despite its good intentions, is likely to leave the world much worse off than it could be. That is why I'm writing this book now. We need to dial back on the panic, look at the evidence, face the economics, and address the issue rationally. How do we fix climate change, and how do we prioritize it amid the many other problems afflicting the world?“ (p. 6)



False Alarm: Introduction (II)

Lomborg writes about the climate-economic literature:

Björn Lomborg



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„Climate change will have an overall negative impact on the world, but it will pale in comparison to all of the positive gains we have seen so far, and will continue to see in the century ahead. The best current research shows that the cost of climate change by the end of the century, if we do nothing, will be less than 4 percent of global GDP. This includes all the negative impacts; not just the increased costs from stronger storms, but also the costs of increased deaths from heat waves and the lost wetlands from rising sea levels. This means that instead of seeing incomes rise to 450 percent by 2100, they might “only” increase to 434 percent. That’s clearly a problem. But it’s also clearly not a catastrophe. This is the information we should be teaching our children. The young girl holding the sign “I’ll die of climate change” will not, in fact, die of climate change. In fact, she is very likely to live a longer, more prosperous life than her parents or her grandparents, and be less affected by pollution or poverty.“ (p. 9 f.)



False Alarm: Introduction (III)

Lomborg on Tradeoffs:

Björn Lomborg



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„ONE OF THE great ironies of climate change activism today is that many of the movement's most vocal proponents are also horrified by global income inequality. They are blind, however, to the fact that the costs of the policies they demand will be borne disproportionately by the world's poorest. This is because so much of climate change policy boils down to limiting access to cheap energy.“ (p. 11)

„In poor countries, higher energy costs harm efforts to increase prosperity. A solar panel, for instance, can provide electricity for a light at night and a cell phone charge, but it cannot deliver sufficient power for cleaner cooking to avoid indoor air pollution, a refrigerator to keep food fresh, or the machinery needed for agriculture and industry to lift people out of poverty. Countries in the developing world need cheap and reliable energy, for now mostly from fossil fuels, to promote industry and growth. Not surprisingly, a recent study of the consequences of implementing the Paris Agreement showed that it will actually increase poverty.“ (p. 12)



False Alarm: Introduction (IV)

Lomborg on the collateral damage of excessive scaremongering:

Björn Lomborg



„Our extraordinary focus on climate also means we have less time, money, and attention to spend on other problems. Climate change frequently sucks out the oxygen from almost any other conversation about global challenges. In rich countries, this monomaniacal focus means we have fewer and shorter conversations on how to fix our pension plans, improve our schools, and achieve better health care. For poor countries, climate policy threatens to crowd out the much more important issues of health, education, jobs, and nutrition. These are the issues that, if addressed appropriately, we know will help lift the developing world out of poverty and generate a much better future.“
(p. 12)

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False Alarm: Introduction (V)

Lomborg on how to proceed :



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„First, we need to evaluate climate policy in the same way that we evaluate every other policy: in terms of costs and benefits.“
(p. 12, emphasis in original)

„Second, we need to look at smarter solutions to climate change. Top climate economists agree that the best way to combat its negative effects is to invest in green innovation.“ (p. 14, emphasis in original)

„Third, we need to adapt to changes. The good news is that we have done this for centuries, when we were much poorer and less technologically advanced. We can definitely do this in the future.“
(p. 15, emphasis in original)

„Fourth, we should research geoengineering, which mimics natural processes to reduce the earth's temperature.“ (p. 16, emphasis in original)

„Fifth, ... we need to remind ourselves that climate change is not the only global challenge.“ (p. 16, emphasis in original)



False Alarm: Introduction (VI)

Lomborg on innovation policy:

Björn Lomborg



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„If we innovate the price of green energy down below that of fossil fuels, everyone will switch—not just rich world countries but also China and India. The models show that each dollar invested in green energy research and development (R&D) will avoid \$11 of climate damage. This will be hundreds of times more effective than current climate policies.“ (p. 15)

„Unfortunately, we are not doing this now. While everyone in principle agrees we should be spending much more on R&D, the fraction of rich countries' GDP actually going into R&D has halved since the 1980s. ... This is one more cost of the relentless alarmism. Since we're so intent on doing something right now, even if it is almost trivial, we neglect to focus on the technological breakthroughs that in the long run could actually allow humanity to move away from fossil fuels.“ (p. 15)



False Alarm: Introduction (VII)

Lomborg on the opportunity costs of alarmism:

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„By focusing most of our attention on climate change, we're ignoring other, bigger issues that if addressed could make the world a much better place for billions of people. Expanding immunization and curbing tuberculosis, improving access to modern contraception, ensuring better nutrition and more education, reducing energy poverty—all of these are well within our power and, if we focused on them, could alleviate suffering for huge swaths of the world's population right now.

Moreover, if we invest more in development, it will also make everyone more climate resilient. Making a community more resilient and prosperous means more people are able to invest in adaptation and preparedness, and are far less vulnerable to climate shocks. It turns out that helping the extremely poor improve their circumstances also helps them the most with tackling climate.“ (p. 16 f.)



False Alarm: Introduction (VIII)

Lomborg on development cooperation, the resources of which are increasingly being reallocated in order to pursue climate policy:

Björn Lomborg



„We need to be aware that when we insist, as part of foreign aid packages, that the developing world align with our climate priorities, we are enacting a kind of imperialism. We are not listening to what the citizens of these countries want. We are jeopardizing their opportunity to lift their populations out of poverty for the sake of our own concerns. This isn't just bad policy. It's grossly unethical.“ (p. 17)

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False Alarm: Chapter 15 (I)

Lomborg illustrates the relevant tradeoffs using the example of Bangladesh:

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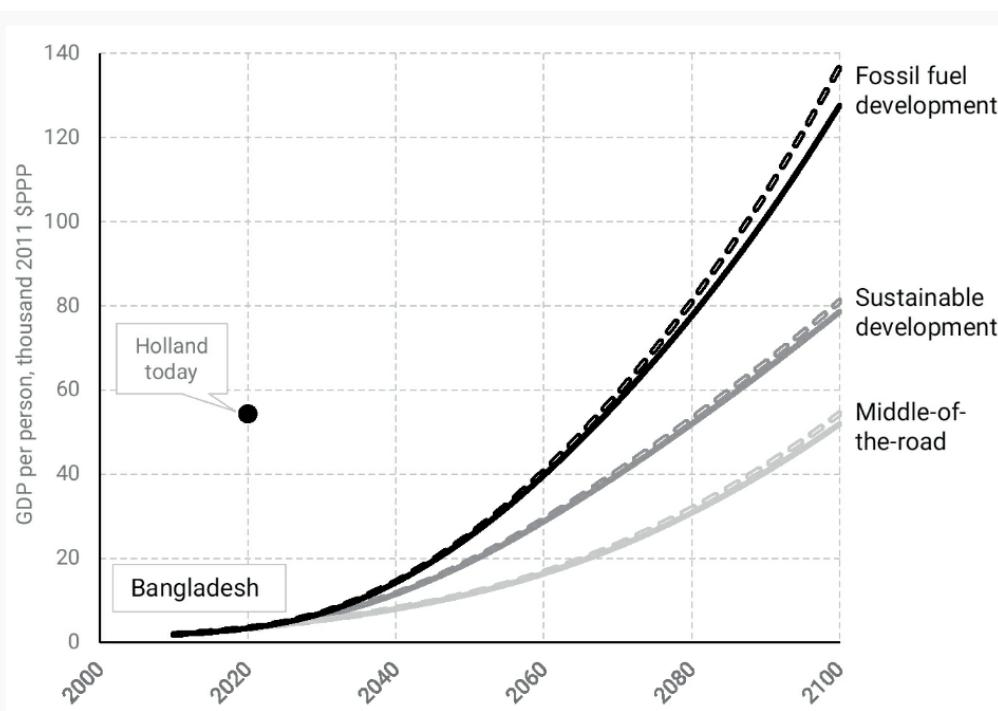


FIGURE 15.1 Three scenarios for GDP per person in Bangladesh over the century. Dashed lines show the actual amount; full lines show the amount when adjusted for climate damages. Holland in 2020 is shown for reference.⁵

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False Alarm: Chapter 15 (II)

Lomborg writes about this:

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„Picking the high-growth pathways to ensure that Bangladesh gets out of poverty and into a better life with more capacity for adaptation, innovation, and green taxes *is in itself* a climate policy. Yes, development will also lead to more carbon emissions, higher temperatures, and greater climate damages, as is indicated as the difference between the dashed and solid lines in figure 15.1. But the positive effects will vastly outweigh the negative ones, in terms of higher climate resilience, more sustainable long-term climate policies, and in terms of development itself.“ (p. 204, emphasis in original)

„THE IDEA OF prosperity as a climate change policy is rarely considered. We are much more focused on specific actions like putting up a solar panel or abstaining from meat. But the idea has been around for decades. Back in 1992 when climate negotiations were just beginning, Nobel Prize–winning economist Thomas Schelling (with whom I collaborated for decades) first posed the question, are poor people really best helped through cutting CO₂ and adaptation, or could we achieve more if we focused on making them more prosperous? The so-called Schelling conjecture suggests that getting richer is likely to be the better way to help people, even those faced with climate problems.“ (p. 206 f.)



False Alarm: Chapter 1 (I)

Lomborg points to misincentives in the media, in politics, civil society and science:

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„People are panicking about climate change in large part because the media and environmental campaigners tell us to, because politicians overhype the likely effects, and because scientific research is often communicated without crucial content. ... There are strong incentives to tell the scariest possible story about climate change. Media gets more clicks and views with frightening stories. Campaigners get attention and funding. Researchers who position themselves as addressing apocalyptic threats get outsized attention, more recognition for their universities, and more future funding opportunities. Politicians who emphasize the scary scenarios get to promise to save us, and in the process gain the authority to distribute significant resources to fix the problem.“ (p. 19)



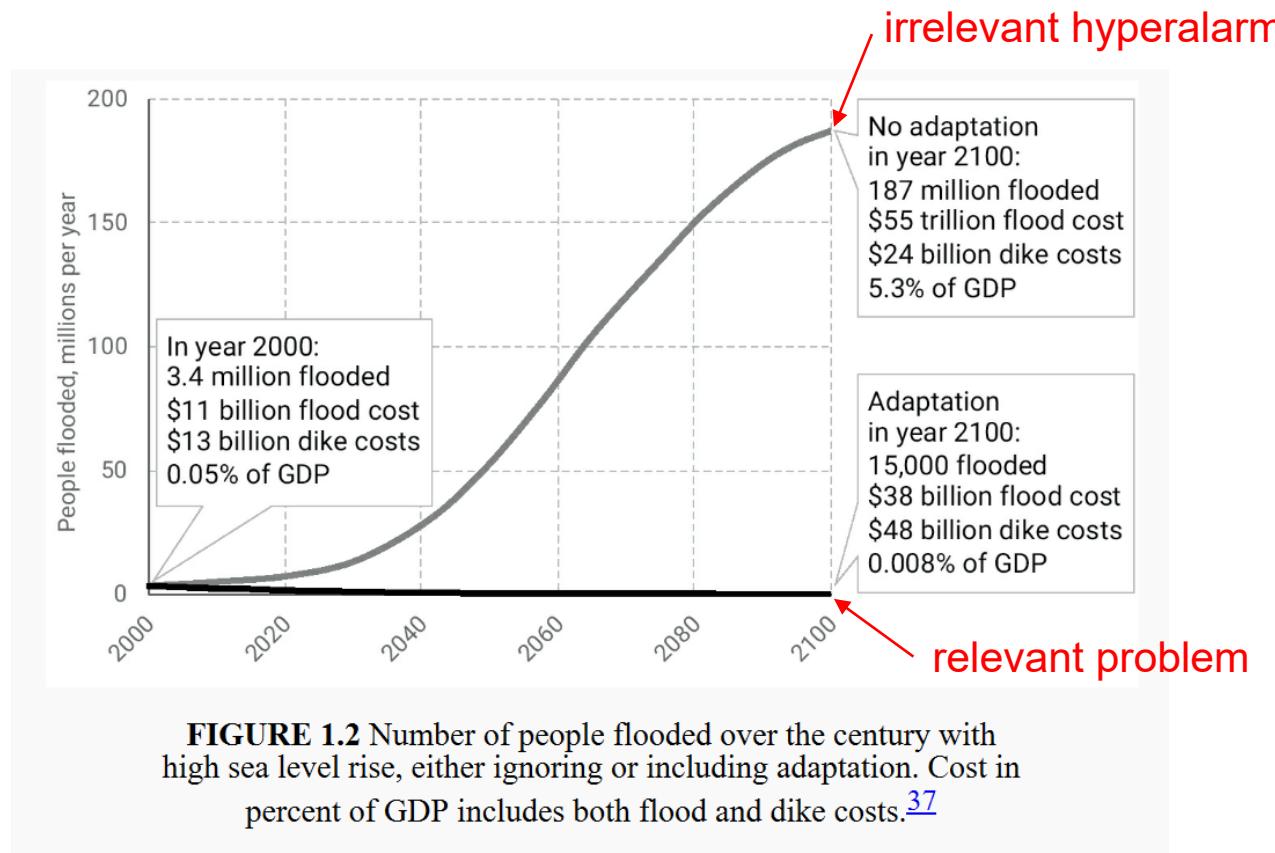
False Alarm: Chapter 1 (II)

Lomborg discusses a concrete example: the media keep reporting that at the end of the 20th century 350 million people will be affected by flooding, and the (discounted) costs then will amount to 100 trillion US dollars, which corresponds to 11% of global income. Lomborg's thesis: The underlying study is misinterpreted! The alarm ignores adjustments.

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False Alarm: Chapter 1 (III)

Lomborg comments:

Björn Lomborg



„With realistic projections of adaptation, the number of people flooded will drop dramatically, to about fifteen thousand per year by the end of the century. Yes, dike costs will increase to \$48 billion, and flood damage costs will also increase to \$38 billion. But the total cost to the economy will actually decline, from 0.05 percent of GDP to 0.008 percent. And a 99.6 percent reduction in flood victims will be an undeniable victory.“ (p. 32 f.)

„[T]his study was quoted by many media outlets, without any mention of adaptation. The narrative that has repeatedly and consistently been told was that 187 million people would be flooded, and trillions of dollars in damages would be caused.“ (p. 33)

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False Alarm: Chapter 2 (I)

Lomborg models the relationship between emissions and global temperature – Info on conversion between Fahrenheit and Celsius: $\Delta 2^\circ C \sim \Delta 3.6^\circ F$ and $\Delta 1.5^\circ C \sim \Delta 2.7^\circ F$.

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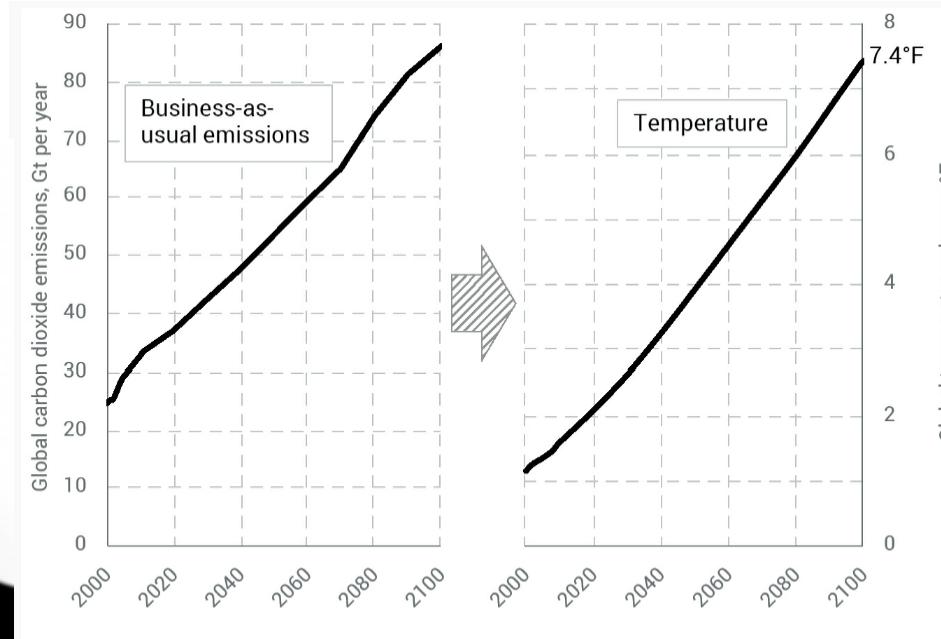


FIGURE 2.1 Emissions and temperature rises. The left shows the UN's middle-of-the-road CO₂ emissions over this century. Put these emissions into the MAGICC climate model, and it outputs the temperature increase across the century, shown on the right.⁵



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False Alarm: Chapter 2 (II)

What would happen if all OECD countries stopped their CO₂ emissions completely overnight – that is, immediately and radically reduce them to zero?

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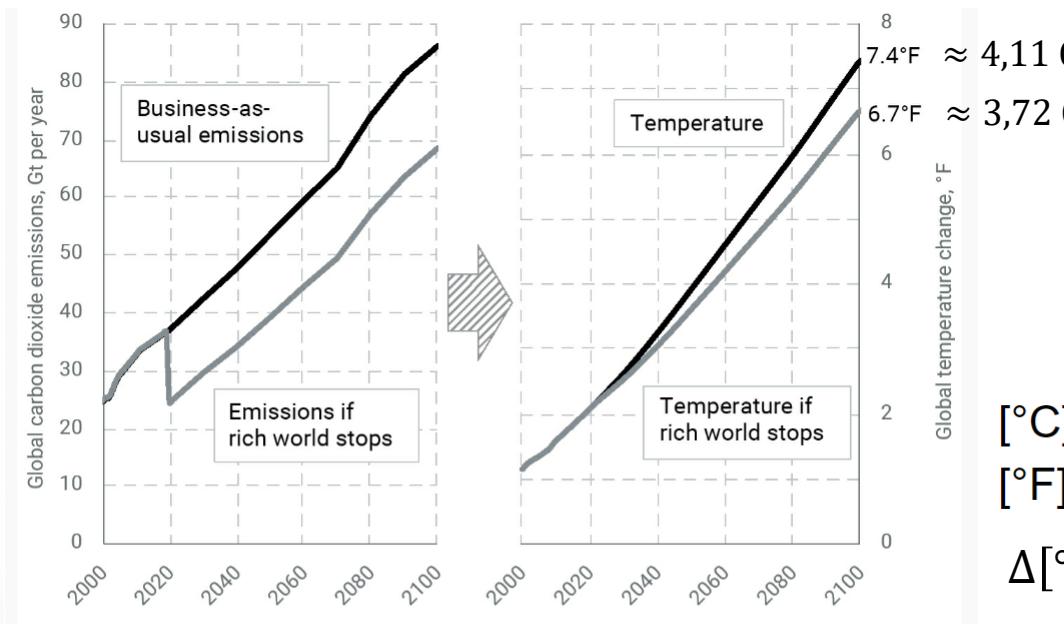


FIGURE 2.2 Emissions and temperature rises with the rich world stopping emissions. On the left, as in [figure 2.1](#), are the UN's middle-of-the-road CO₂ emissions over this century. The gray line shows emissions if the entire rich world ended all carbon dioxide emissions in 2020, and kept them at zero for the next eighty years. When this data is put through the MAGICC climate model, two different temperature outcomes are shown on the right. In a world where the rich countries stop emitting carbon dioxide, the temperature ends up at 6.7°F above what it was in 1750, or almost 0.8°F lower than it otherwise would be by the end of the century.⁶



False Alarm: Chapter 2 (III)

Lomborg comments:

Björn Lomborg



„Even if rich countries completely curtail all emissions (an impossible scenario), overall carbon dioxide content continues to rise, and the temperature continues to rise with it. So, the temperature increase is smaller, but only a tiny bit smaller. Even after eight decades, the difference is just below 0.8° F. Since the United States emits just over 40 percent of rich country carbon dioxide, in this scenario the effect of just the US going to zero fossil fuels from today onward would be a reduction in temperatures of about 0.33° F in 2100.“ (p. 41 f.)

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False Alarm: Chapter 2 (IV)

Lomborg points to the findings of happiness research: a positive correlation between GDP and Happiness – both between countries and within countries.

Björn Lomborg



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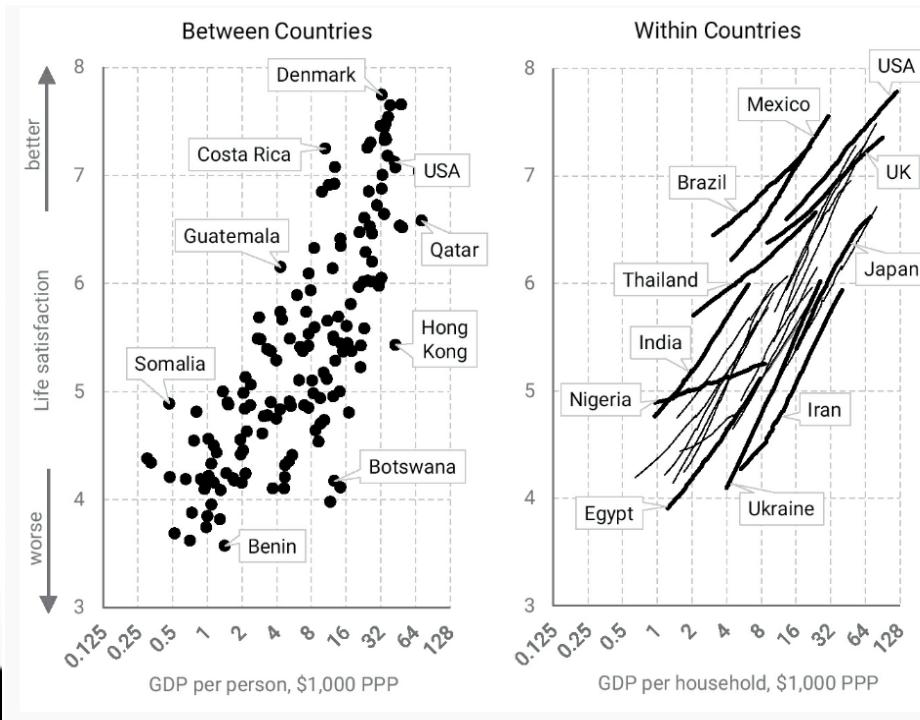


FIGURE 2.3 Life satisfaction for different levels of income. Zero is the worst life possible and 10 is the best life possible. The left graph shows average life satisfaction for each nation. As people get richer, the average satisfaction of the nation is likely to be higher. The right graph shows the same relation inside a nation, for the world's twenty-five most populous countries. Looking at the US line, people at the lowest household income level (less than \$16,000 per year) have an average satisfaction level of 6.6; the rich households with \$128,000 are on average much more satisfied at nearly 8.¹⁵



False Alarm: Chapter 2 (V)

Lomborg explains his view of things by pointing to pros and cons, which must be rationally weighed:

Björn Lomborg



„We have to find the right balance between the two factors we have examined in this chapter. If we focus solely on growing global GDP, we risk temperatures rising to such an extent that the negative impact on our well-being will more than offset the benefits brought about by extra growth. Yet, if we try to cut as much carbon dioxide as we can, out of a sense of panic, we could easily end up reducing human well-being to a degree that far offsets any environmental benefits we achieve.

But if we find the right balance, we can make the world better off overall. We can reduce some of the worst effects of warming while generating sufficient benefits to more than offset the reduction in GDP.“ (p. 46)

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False Alarm: Chapter 11 (I)

Lomborg explains his view of things by using Nordhaus's DICE model to find the cost-minimal solution: $6.3\text{ F}^{\circ} \approx 3.5\text{ C}^{\circ}$

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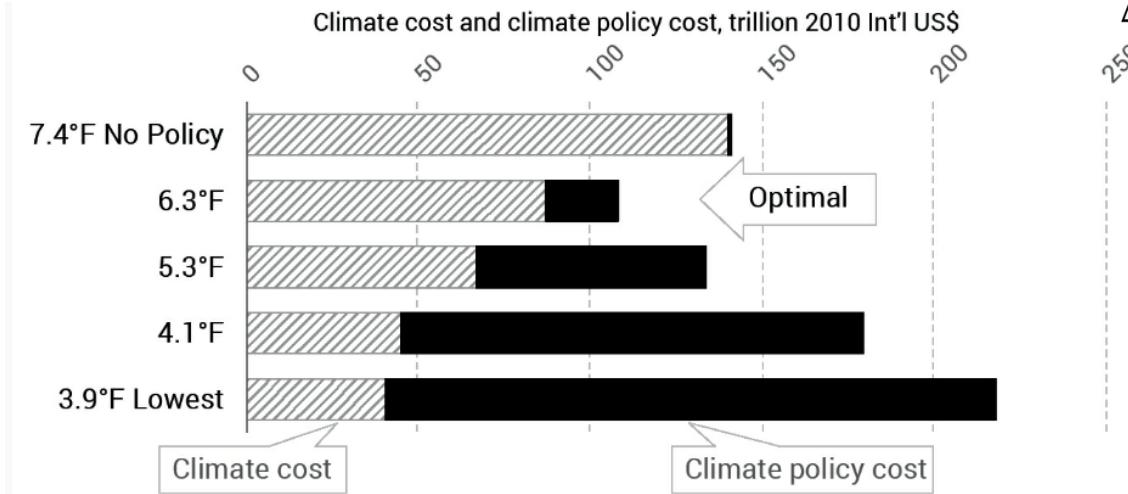


FIGURE 11.3 Total global climate change impact cost and climate change policy costs over the next five hundred years for different temperature rises by 2100, using Nordhaus's DICE model. Climate policy is, implausibly, expected to be efficiently implemented across all countries and centuries. Optimal policy (with the lowest total cost) indicated.⁹

$$[{}^{\circ}\text{C}] = ([{}^{\circ}\text{F}] - 32) \times 5/9$$

$$[{}^{\circ}\text{F}] = [{}^{\circ}\text{C}] \times 9/5 + 32$$

$$\Delta[{}^{\circ}\text{C}] = \Delta[{}^{\circ}\text{F}] \cdot 5/9$$

$$\Delta[{}^{\circ}\text{F}] = \Delta[{}^{\circ}\text{C}] \cdot 9/5$$



False Alarm: Chapter 11 (II)

Lomborg diagnoses discourse failure:

Björn Lomborg



„MANY CAMPAIGNERS BELIEVE that allowing temperature rises of 6.3° F is not nearly ambitious enough. But that is only because it has become commonplace to talk about incredibly costly or even impossible temperature cap targets like 3.6° F (2° C) or 2.7° F (1.5° C) without any acknowledgment of their costs or plausibility.“
(p. 158)

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False Alarm: Chapter 11 (III)

Lomborg compares the optimal solution to the extreme solution:

Björn Lomborg



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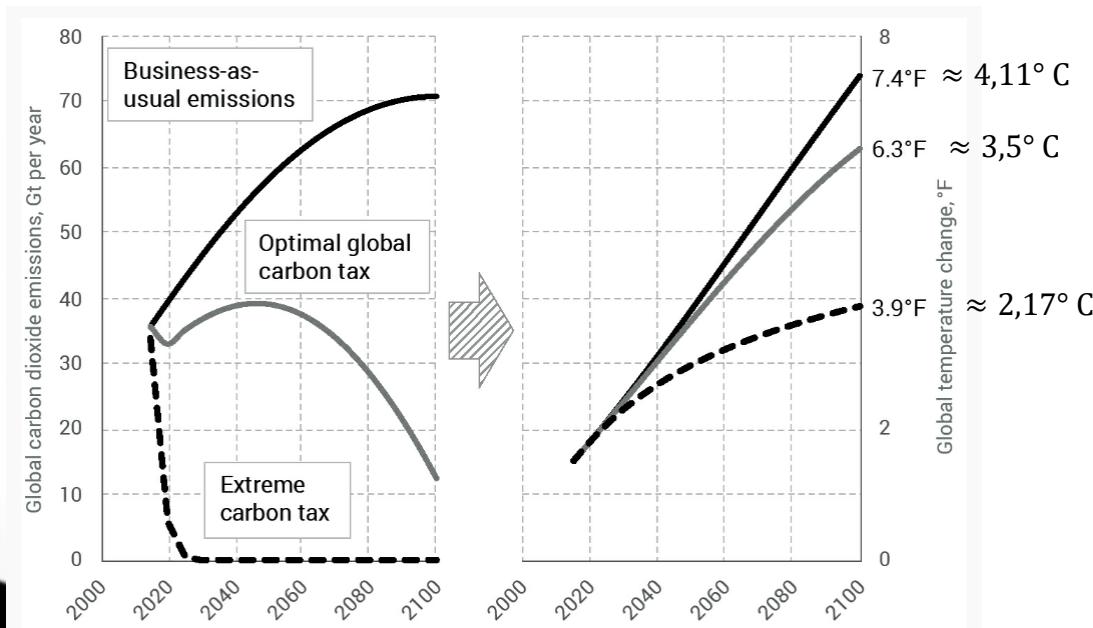


FIGURE 11.4 On the left, three possible emissions scenarios for the rest of the century. The black line is if we do nothing. The gray line shows the optimal global carbon tax, discussed above. The dashed line shows the favorite scenario of climate campaigners, essentially eradicating carbon dioxide emissions by 2030. On the right are the temperature increases for these three emission scenarios.¹³

$$[{}^{\circ}\text{C}] = ([{}^{\circ}\text{F}] - 32) \times 5/9$$

$$[{}^{\circ}\text{F}] = [{}^{\circ}\text{C}] \times 9/5 + 32$$

$$\Delta[{}^{\circ}\text{C}] = \Delta[{}^{\circ}\text{F}] \cdot 5/9$$

$$\Delta[{}^{\circ}\text{F}] = \Delta[{}^{\circ}\text{C}] \cdot 9/5$$



False Alarm: Chapter 11 (IV)

Lomborg points to an important modeling assumption that needs to be carefully considered:

Björn Lomborg



„It beggars belief to think that climate change policy will follow an optimal path. The chances are basically zero that there will be one uniform, steadily increasing global carbon tax carefully coordinated among China, India, the United States, Iran, Saudi Arabia, the European Union, and every other nation over the next eighty years and beyond. The real world will see much muddling through, with some countries setting carbon taxes too high, others setting them too low, and all adjusting them up and down according to local events and political pressures. This will mean that any actual carbon tax will become more expensive than the theoretically pure model with a single, global carbon tax.“
(p. 161)

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False Alarm: Chapter 11 (V)

Lomborg outlines the realistic solution as follows:

Björn Lomborg



„In a realistic world starting from the close to no climate policy that we have today, careful climate policies can save us \$18 trillion (the difference between \$140 trillion in no-policy costs and the \$122 trillion from the optimal policy). Reckless policies, by contrast, could cost us \$250 trillion dollars more (the difference between the no-policy cost of \$140 trillion and the \$390 trillion cost for the 3.9° F policy). Despite everything we are told, climate policies have a small upside (that we should exploit) and a potentially very large downside.“
(p. 162 f.)

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False Alarm: Chapter 11 (VI)

Lomborg creates the corresponding graph: $6.75\text{ F}^{\circ} \approx 3.75\text{ C}^{\circ}$

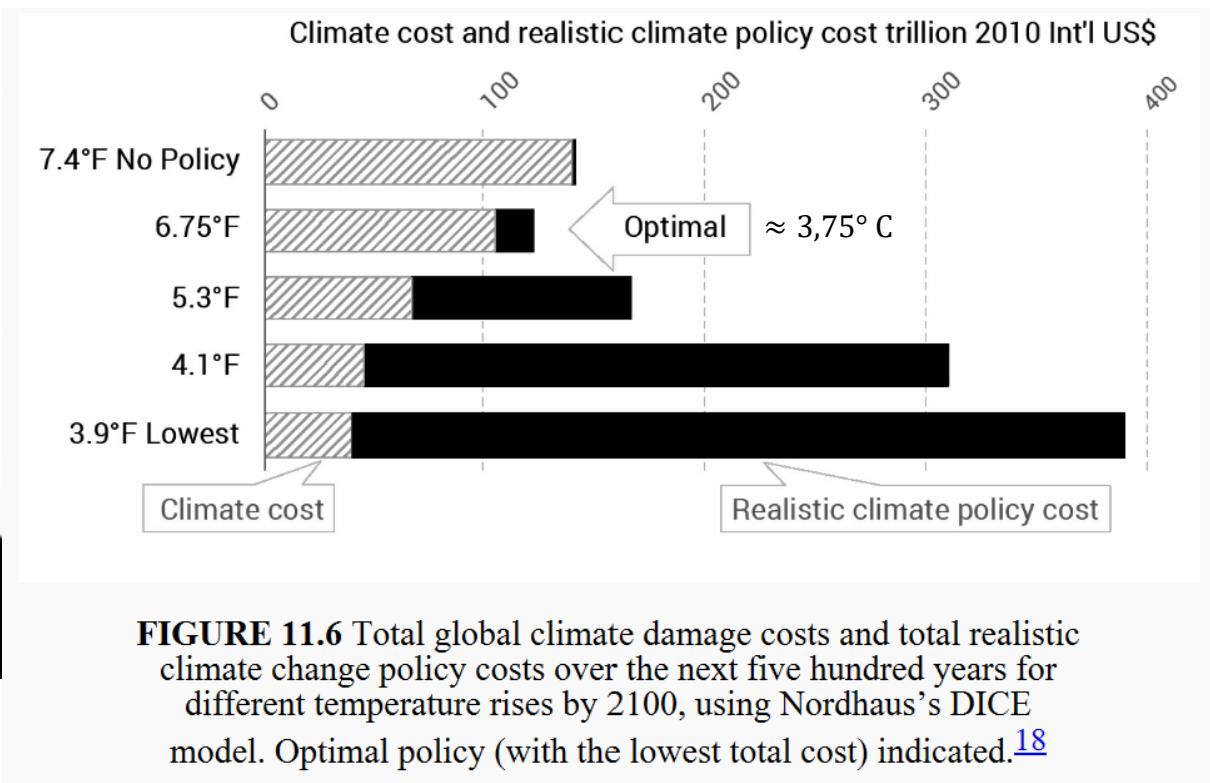
$$[\text{C}^{\circ}] = ([\text{F}^{\circ}] - 32) \times 5/9$$

$$[\text{F}^{\circ}] = [\text{C}^{\circ}] \times 9/5 + 32$$

$$\Delta[\text{C}^{\circ}] = \Delta[\text{F}^{\circ}] \cdot 5/9$$

$$\Delta[\text{F}^{\circ}] = \Delta[\text{C}^{\circ}] \cdot 9/5$$

Björn Lomborg



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False Alarm: Chapter 11 (VII)

To round off the overall picture, Lomborg models a look into the future of the next 500 years:

Björn Lomborg



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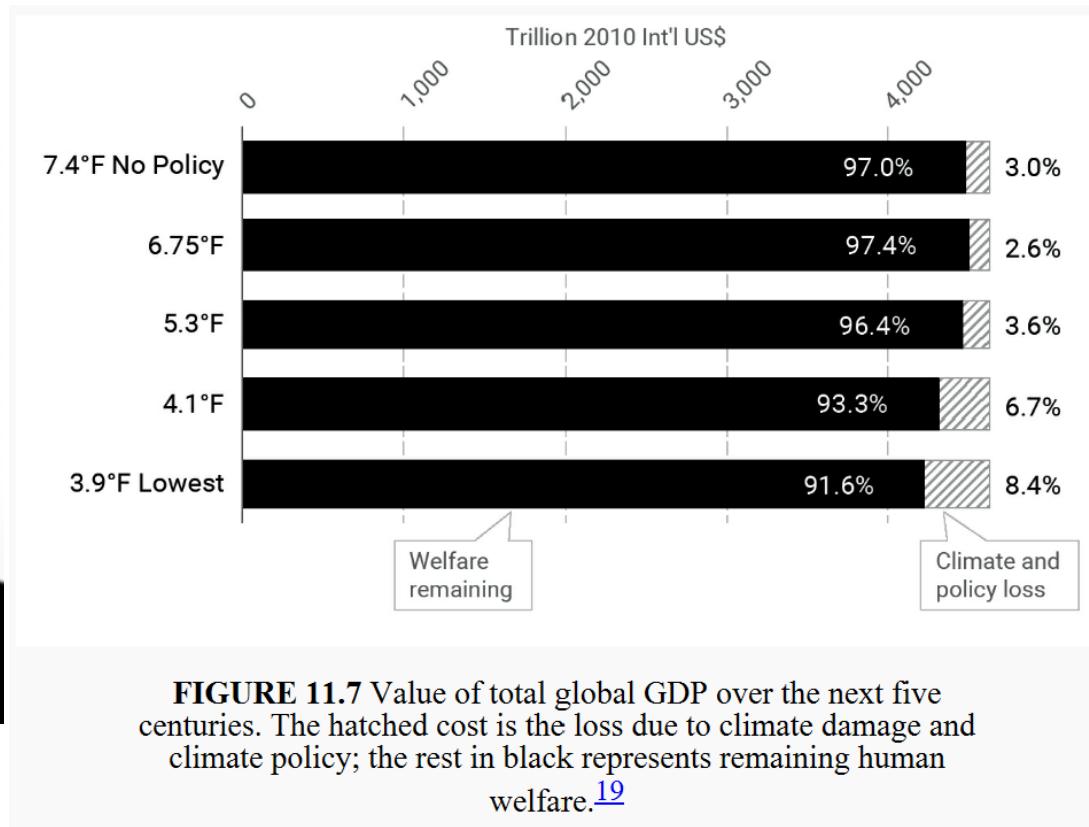


FIGURE 11.7 Value of total global GDP over the next five centuries. The hatched cost is the loss due to climate damage and climate policy; the rest in black represents remaining human welfare.¹⁹



False Alarm: Chapter 11 (VIII)

Lomborg comments:

Björn Lomborg



„One important point to note is that humanity's welfare (the black) is large, no matter which climate policy we end up choosing. Even measured over the next five centuries, climate change damages and climate change policy costs will not do more than nibble away at the world's GDP. In other words, climate change and climate policy are responsible for only a smaller part of our future welfare.“
(p. 164)

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False Alarm: Chapter 12 (I)

Lomborg emphasizes – perhaps even more so than Nordhaus – the absolutely central role that innovation must play if climate policy is to be successful.

Björn Lomborg



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„It has long been clear that an economically optimal carbon tax will solve only a small part of the climate change problem. That's why I started work with my think tank, the Copenhagen Consensus, back in 2009, to identify other effective solutions to help fix climate change. We worked with twenty-seven of the world's top climate economists and three Nobel laureates to evaluate the costs and benefits of the whole gamut of possible climate change responses. These academics found that green energy research and development is by far the best long-term investment to solve climate change. The experts concluded that globally, we need to spend \$100 billion on green energy innovation each year. This would still be much less than what solar and wind energy are costing us in subsidies today, and it would likely substantially bring forward the day when low- or zero-carbon-dioxide energy sources can take over the world.“

(p. 171 f.)



False Alarm: Chapter 12 (II)

Unfortunately, the reality is different:

Björn Lomborg



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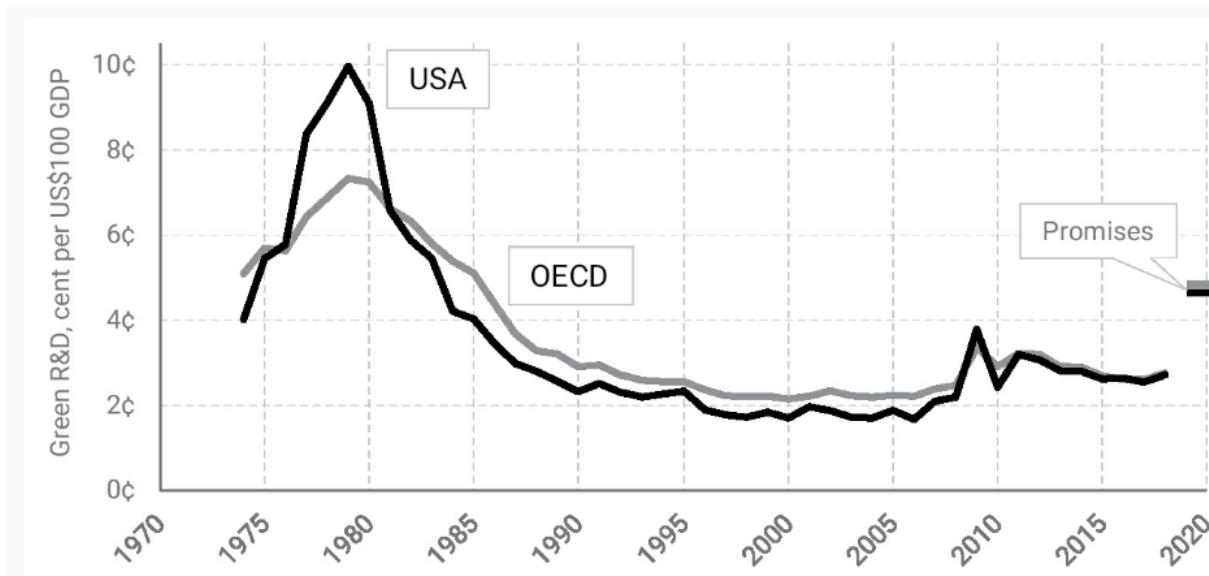


FIGURE 12.1 Green R&D by the United States and OECD from 1974 to 2018 in cents per \$100 of GDP. "Promises" signifies what the world leaders promised to spend under Mission Innovation in 2020



False Alarm: Chapter 12 (III)

Lomborg draws the following conclusion:

Björn Lomborg



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„To achieve more green energy research and development, we need to spend our money directly on it, rather than relying on indirect industry support and a prayer that it works. Globally, in 2020 taxpayers will pay \$141 billion to subsidize inefficient solar and wind energy. This will buy us just \$6 billion in actual R&D. Instead, we should spend \$100 billion directly on research and development. It will get us \$94 billion more for green R&D, and it would still leave us with \$41 billion to improve the world in many other ways.

If we want to change the world, we need to commit to doing things differently and coming up with new ideas. Because the old ones aren't working.“

(p. 173)



False Alarm: Chapter 16 (I)

Lomborg puts the climate problem in the context of other challenges:

Björn Lomborg



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„Let's look at the big picture for a moment. Instead of thinking just about the single issue of climate change, let's look at how well humanity is doing right now on *all* of the biggest challenges confronting us.

Are things getting better or worse? One way of answering this question is to look at these challenges, expressed as costs to humanity.

Figure 16.1 is the result of work I undertook with ten world-class teams of economists. We set out to establish what different global problems have cost—and will cost—from 1900 to 2050, as a percentage of global GDP. This figure reveals two essential points.

First, things are generally getting better. From air pollution to gender inequality to malnutrition, we have managed to reduce the impact of the biggest challenges humanity has faced, and we are on target to reduce them even further. If we think about what the world looked like in 1900 and what it looks like today, this lesson comes as no surprise. Second, the figure shows us that climate change is a moderate problem in a sea of problems, big and small.“ (p. 211)



False Alarm: Chapter 16 (II)

Lomborg puts the climate problem in the context of other challenges. Here is the corresponding graphic:

Björn Lomborg



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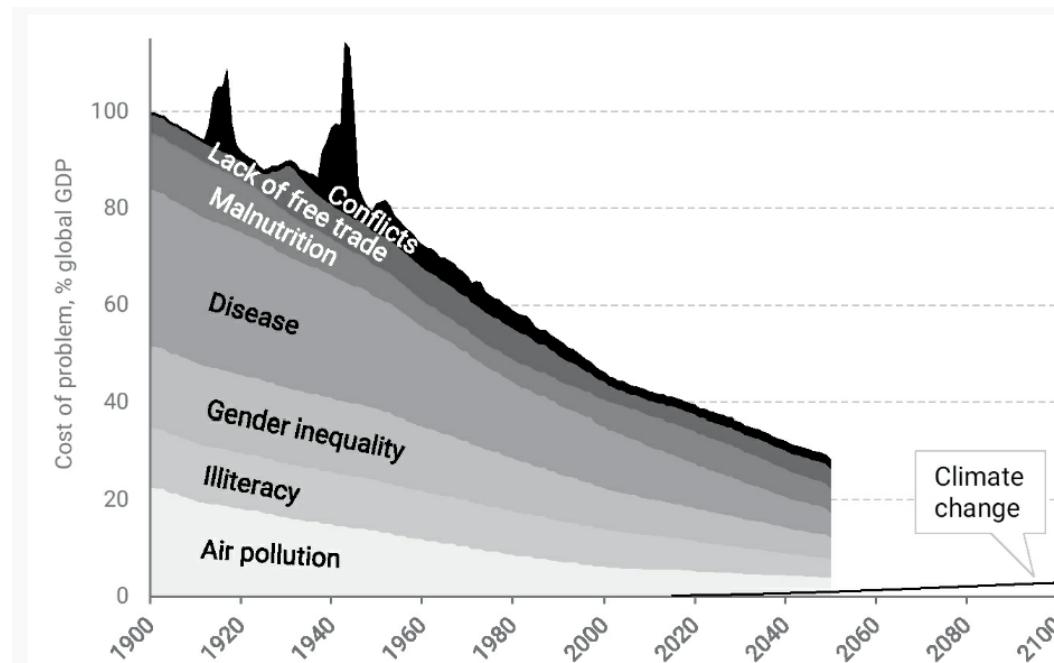


FIGURE 16.1 How much richer would the world have been had we solved different issues, 1900–2050. Cost of climate change with optimal policy added for reference.³



False Alarm: Chapter 16 (III)

Lomborg ends his book with the following statements:

Björn Lomborg



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„WE DEFINITELY NEED to address global warming—it's a real problem and we need to put policies in place both to limit its extent and to enable the world to best manage its impact.

But if we truly want to make the world a better place, we have to be very careful that our preoccupation with climate change doesn't distract us from other crucial problems. We can improve the human condition far more by opening the world to free trade, ending tuberculosis, and ensuring access to nutrition, contraception, health, education, and technology.

Fixating on scary stories about climate change leads us to make poor decisions. As individuals, we feel compelled to transform our lives, in ways both minor (not eating meat) and major (foregoing parenthood). As societies, we are making treaties that promise to squander hundreds of trillions of dollars on incredibly inefficient carbon-cutting policies.

Overspending on bad climate policies doesn't just waste money. It means underspending on **effective** climate policies and underspending on the opportunities we have to improve life for billions of people, now and into the future. That's not just inefficient. It's morally wrong.“ (p. 221 f., H.i.O.)



Inconvenient Truth

The climate problem is important. But there are other global problems that are also important!



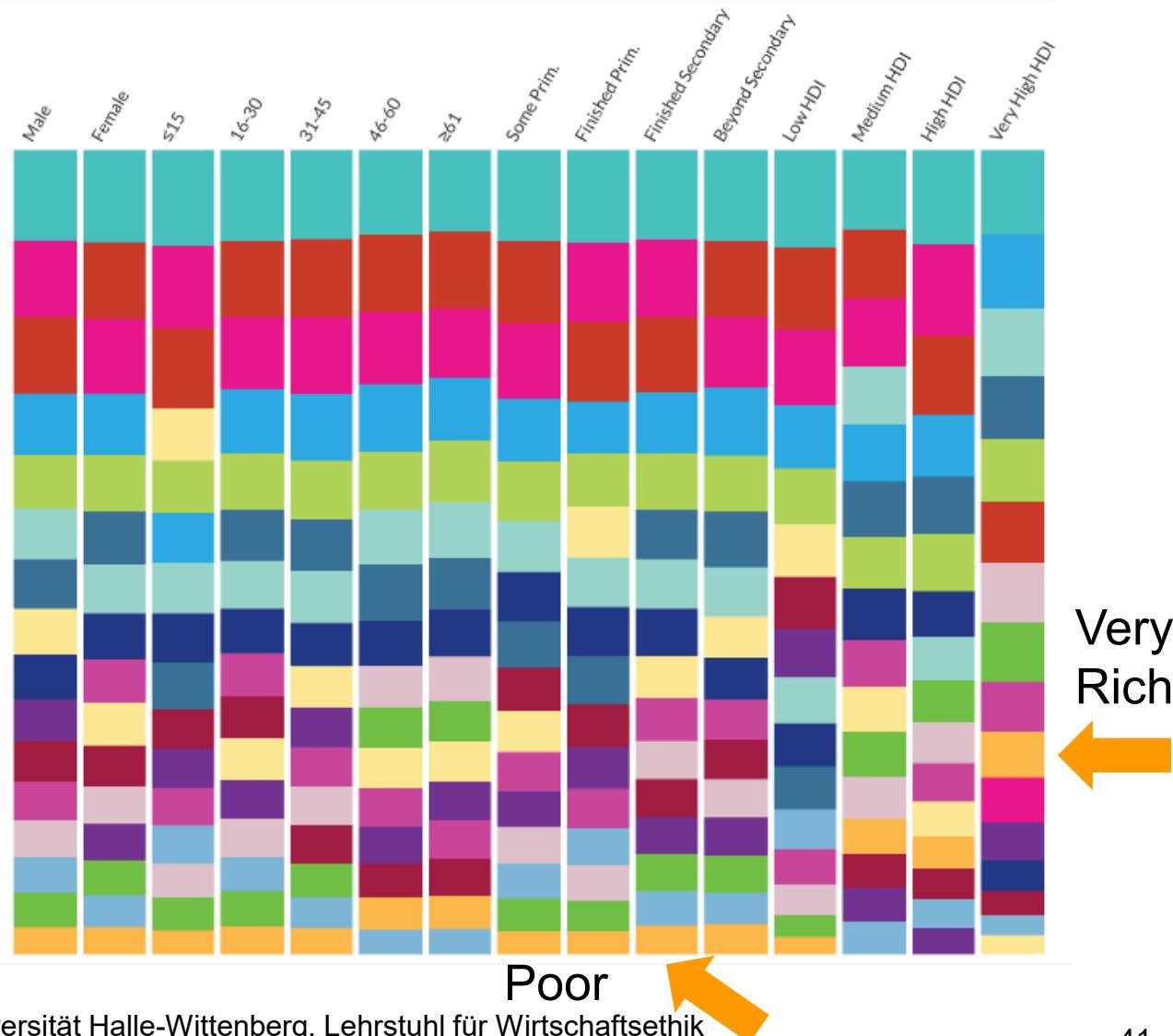
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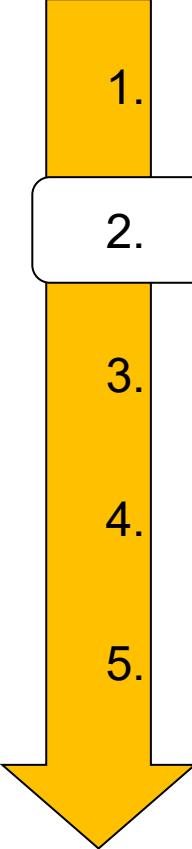
Source: UN MyWorld 2015: Global Policy Priorities

<http://data.mvworld2015.org/>

- A good education
- Better job opportunities
- Better healthcare
- An honest and responsive government
- Affordable and nutritious food
- Access to clean water and sanitation
- Protection against crime and violence
- Better transport and roads
- Support for people who can't work
- Political freedoms
- Reliable energy at home
- Equality between men and women
- Freedom from discrimination and persecution
- Phone and internet access
- Protecting forests, rivers and oceans
- Action taken on climate change



Structure of Today's Lecture

- 
1. Climate alarm? – a provocative perspective
 2. The IPCC study of 2018
 3. Solar Valley in Saxony-Anhalt
 4. Renewable energy versus ETS
 5. On the governance structure of global climate policy



IPCC Special Report (2019): Global Warming of 1.5° C

Source:

https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf

Global warming of 1.5°C

An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty

Edited by

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J. B. Robin Matthews
Science Officer

Melissa I. Gomis
Graphics Officer

Melinda Tignor
Head of WGI TSU

Tim Waterfield
IT Officer

Working Group I Technical Support Unit

„In its decision on the adoption of the Paris Agreement, the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) at its 21st Session in Paris, France (30 November to 11 December 2015), invited the IPCC to provide a special report in 2018 on the impacts of global warming of 1.5° C above pre-industrial levels and related global greenhouse gas emission pathways. The Panel accepted the invitation and placed the Report in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.” (p. vii)



False Alarm: Chapter 2 (I)

Lomborg turns against exaggerations.

Björn Lomborg



„CLIMATE CHANGE IS REAL, it is caused predominately by carbon emissions from humans burning fossil fuels, and we should tackle it intelligently. But to do that, we need to stop exaggerating, stop arguing that it is now or never, and stop thinking climate is the only thing that matters. Many climate campaigners go further than the science supports. They implicitly or even explicitly suggest that exaggeration is acceptable because the cause is so important.“ (p. 7)

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False Alarm: Chapter 2 (II)

Lomborg writes about the public response to the IPCC (2019) study.

Björn Lomborg



„We are being told that we must do everything right away. Conventional wisdom, repeated ad nauseam in the media, is that we have only until 2030 to solve the problem of climate change. *This is what science tells us!*

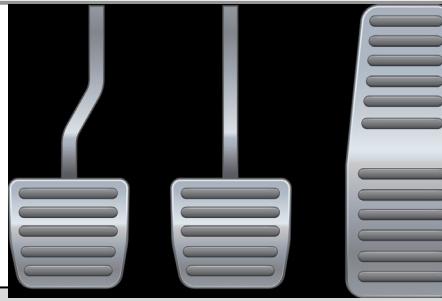
But this is not what science tells us. It's what politics tells us. This deadline came from politicians asking scientists a very specific and hypothetical question: basically, what will it take to keep climate change below an almost impossible target? Not surprisingly, the scientists responded that doing so would be almost impossible, and getting anywhere close would require enormous changes to all parts of society by 2030.“ (p. 7, emphasis in original)

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False Alarm: Chapter 2 (III)

Lomborg argues with the following comparison:



bay.com/de/vect
auto-maschine-
-4519485/

Björn Lomborg



„Let's return to the speed limit analogy. No sensible person would argue that we don't need any speed limits, just as no sensible person would argue that we should do nothing in response to climate change. At the same time, nobody argues that we should set the speed limit at three miles per hour, even though it would save thousands of lives, because the financial and personal costs would be too high for us to bear. And so we find a compromise solution somewhere in the range of fifty-five to eighty-five miles per hour. People who worry primarily about safety will argue for speed limits at the lower end, while those who care more about the financial implications of free movement will argue for the higher end. It's a reasonable range for conversation.“
(p. 14)

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A Similar View (I)

Prominent IPCC author Joel B. Smith (2019) writes:

Source: <https://www.dailycamera.com/2019/08/24/joel-smith-harm-exaggerating-climate-change-risks/>

Joel B. Smith



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„[L]et me make it clear that the climate is changing because of us; we are on a trajectory to exceed 3 or 4 degrees Celsius of warming above preindustrial levels; there will be many adverse impacts; and reductions to date in greenhouse gas emissions have been woefully inadequate. Therefore, we need to dramatically increase our efforts to reduce and eliminate net greenhouse gas emissions over the coming decades.

Having assessed climate change impacts for more than three decades, and having led the first two Intergovernmental Panel on Climate Change assessments of what levels of climate change may be considered dangerous, it is my contention that we do not need to exaggerate the impacts of climate change. Explaining what the science demonstrates that climate change is already doing and can do in the future should be motivation enough for real action.“



A Similar View (II)

Prominent IPCC author Joel B. Smith (2019) writes:

Source: <https://www.dailycamera.com/2019/08/24/joel-smith-harm-exaggerating-climate-change-risks/>

Joel B. Smith



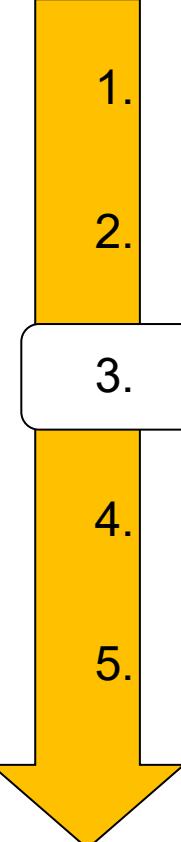
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„The IPCC released a report last fall comparing a 1.5 and 2 degree Celsius warming and concluded 2 degrees warming would pose more harm to society and nature than 1.5 degrees. Nowhere in that report is there any mention of climate change posing an existential risk to society or to humanity itself. Nonetheless, this report and other assessments identify many risks to human health, economic output, and the environment from unmitigated climate change. ...

So, let's keep our heads on by carefully following the science. What we know about climate change already provides sufficient motivation to take ambitious and prudent measures to get control of this problem.“



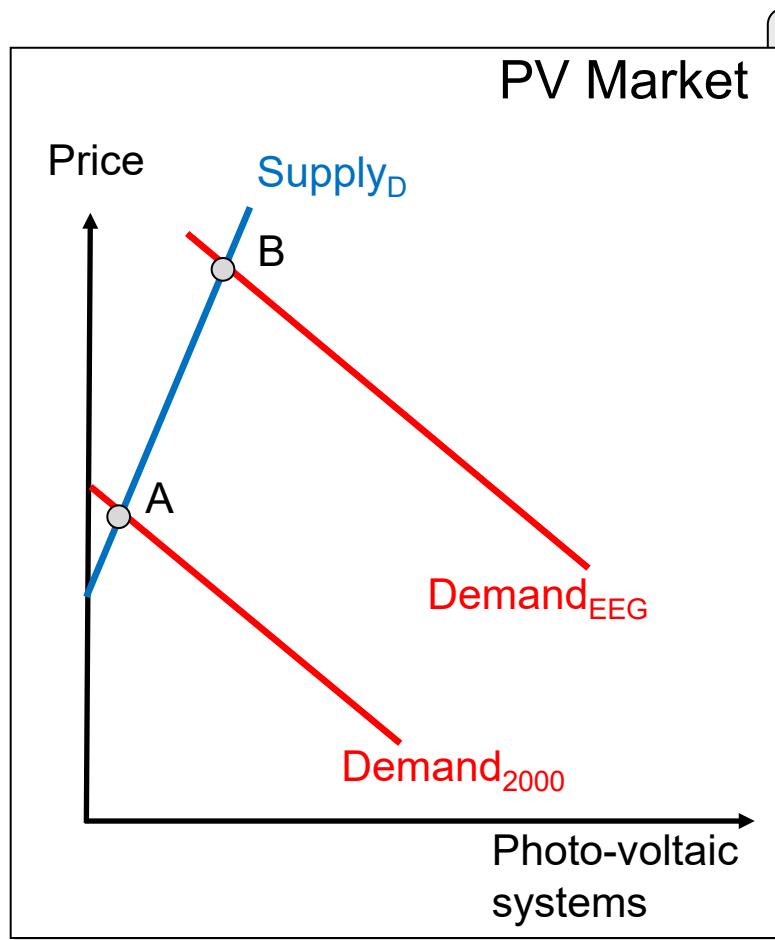
Structure of Today's Lecture

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1. Climate alarm? – a provocative perspective
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- 
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Solar Valley?

The Renewable Energy Promotion Act (EEG) has led to straw-fire effects on the labour market.



What happened in the photo-voltaic (PV) market?

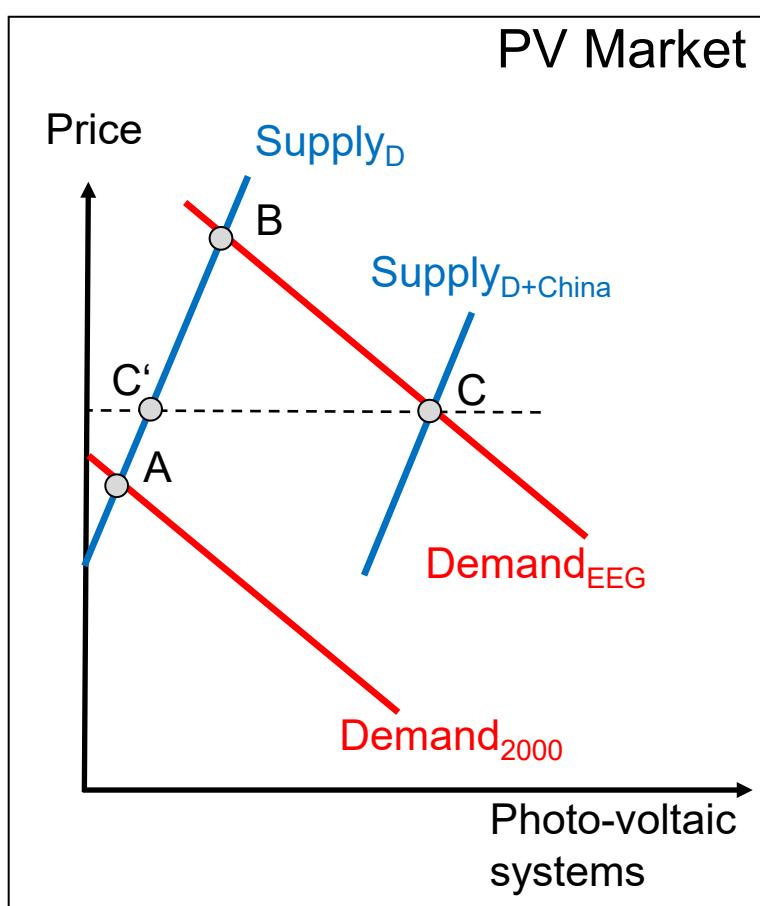
- A: Initial situation before EEG
- B: EEG subsidizes demand and causes Solar Valley to boom

Own presentation



The energy transition is unsustainable, especially in this dimension!

The Renewable Energy Promotion Act (EEG) has led to straw-fire effects on the labour market.



What happened in the PV market?

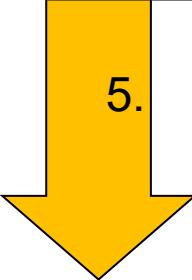
- A: Initial situation before EEG
- B: EEG subsidizes demand and causes Solar Valley to boom
- C: China subsidizes supply and drives German manufacturers into insolvency ($B \rightarrow C'$)

Effect: German electricity customers finance jobs in China with compulsory contributions.

Own presentation



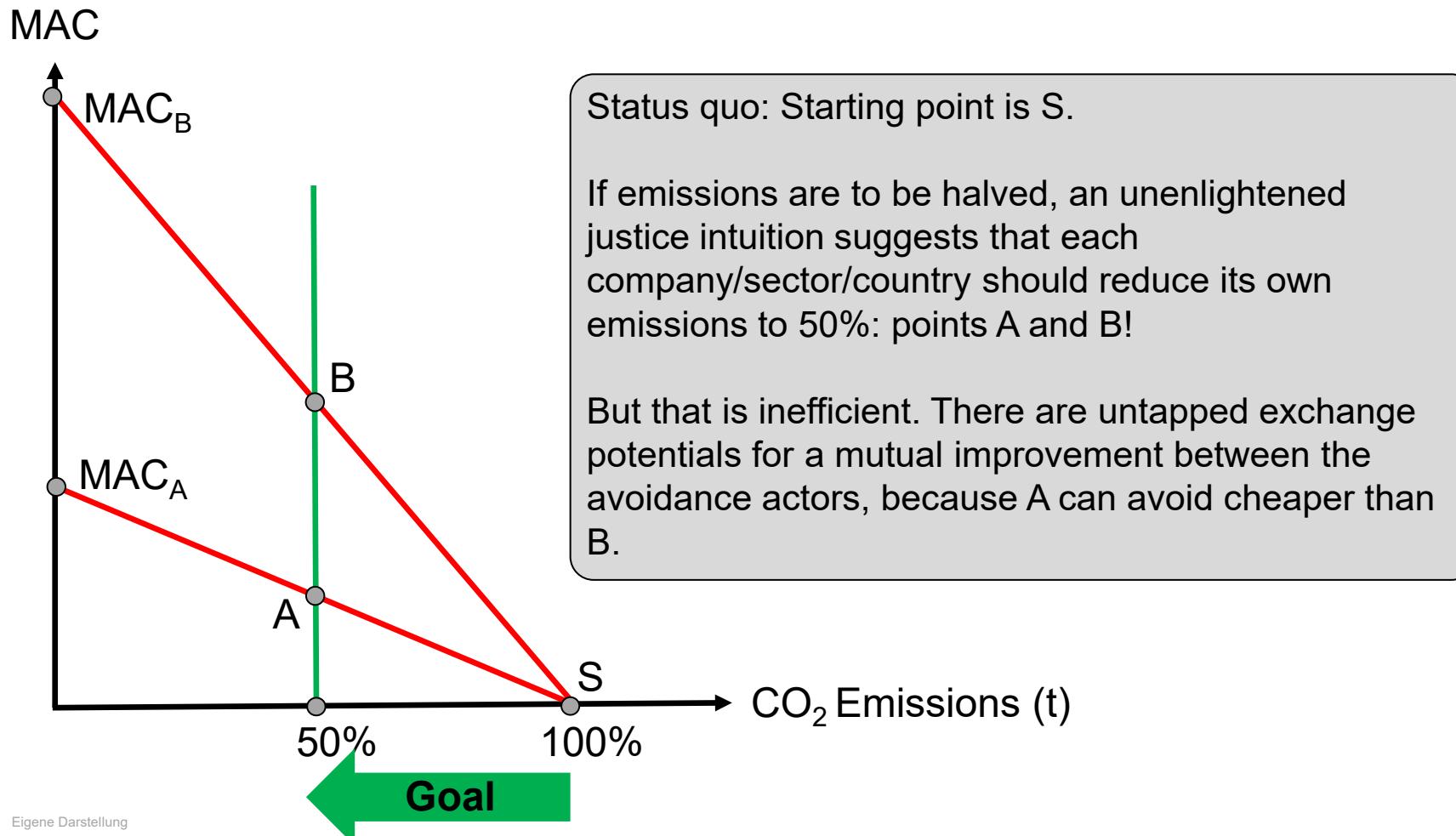
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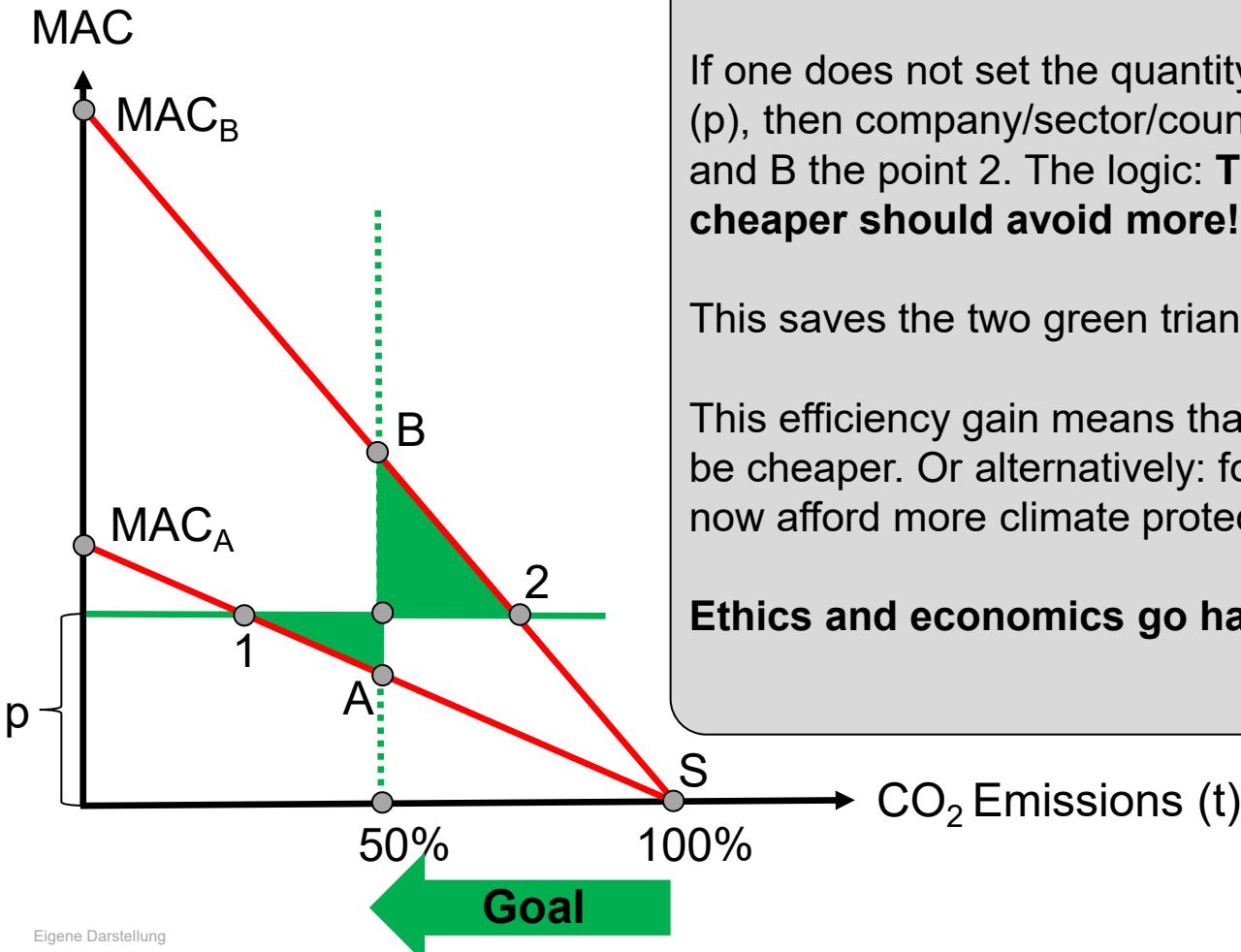
A disfigured view of the perfect solution

How would a moralistic Martian reduce emissions? How would he distribute the marginal abatement costs (MAC)? (MAC = the cost of saving an additional tonne (t) of CO₂)



An unobstructed view of the perfect solution (I)

Static orientation rule: For each ton of CO₂ a uniform price should apply.



If one does not set the quantity, but instead the price (p), then company/sector/country A will realize point 1 and B the point 2. The logic: **Those who can avoid cheaper should avoid more!**

This saves the two green triangle surfaces as costs.

This efficiency gain means that halving emissions will be cheaper. Or alternatively: for given costs, you can now afford more climate protection!

Ethics and economics go hand in hand here!



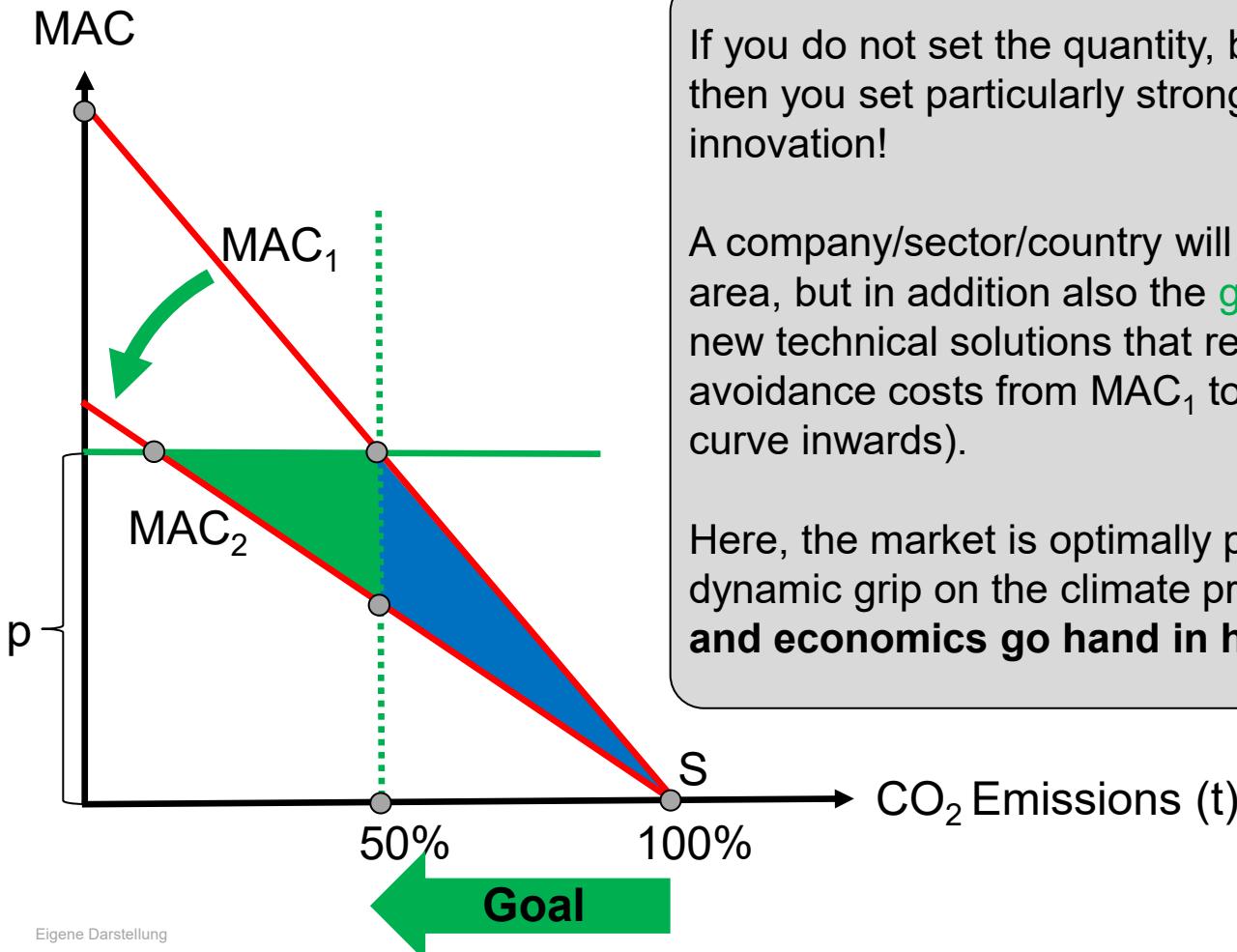
http://i.telegraph.co.uk/multimedia/archive/02945/handshake_2947510b.jpg

Eigene Darstellung



An unobstructed view of the perfect solution (II)

Dynamic orientation rule: For each ton of CO₂ a uniform price should apply.



If you do not set the quantity, but instead the price (p), then you set particularly strong incentives for innovation!

A company/sector/country will not only use the blue area, but in addition also the green area to invest in new technical solutions that reduce its own marginal avoidance costs from MAC₁ to MAC₂ (turning the red curve inwards).

Here, the market is optimally put into service to get a dynamic grip on the climate problem. **Again, ethics and economics go hand in hand.**



http://i.telegraph.co.uk/multimedia/archive/02947/handshake_2947510b.jpg



Constructive Criticism (I)

Critical finding: The EEG promotes diffusion, but does not promote innovation.



<https://goo.gl/YDo56K>

„The fixed feed-in tariffs of the EEG do not offer any incentive to develop novel technologies.

Since the remuneration is based on the average costs, an innovator does not earn more money from a new kind of technology than from an existing technology, while the investment in the novel technology is more risky.

The EEG is a **sales subsidy** for electricity from renewable energy sources and thus creates a policy-induced expansion of the markets for renewable energy. **This can reduce the pressure to innovate for technology providers:** Companies have an increased incentive to use their scarce resources to exploit existing market potential, rather than doing research and development. Furthermore, rapid expansion of more mature technologies, which lead to further cost reductions, might create barriers to market entry for novel technologies. “ (p. 52)



Constructive Criticism (II)

Empirical finding: The EEG does not have any positive climate protection effect at the European level!



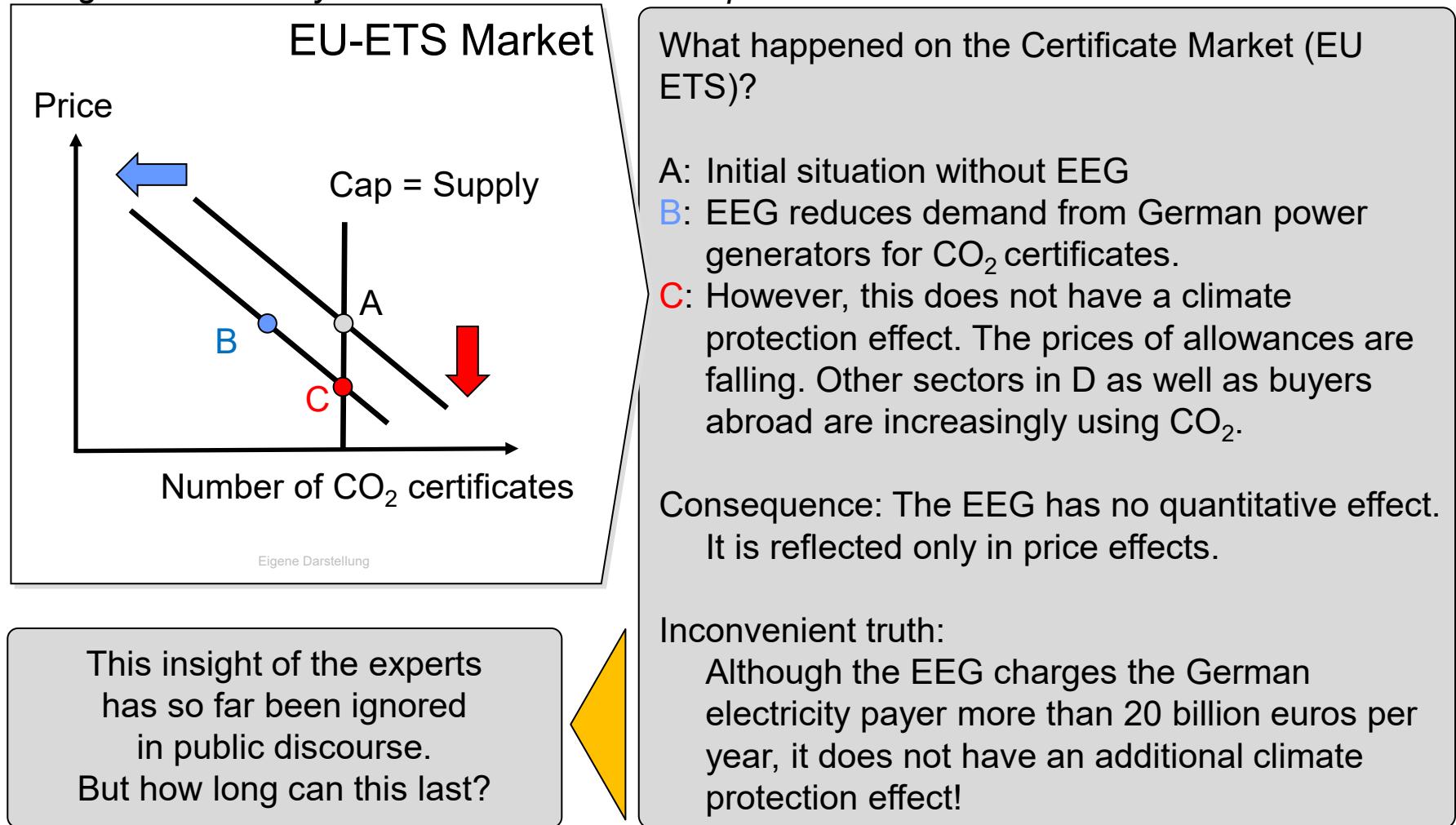
<https://goo.gl/YDo56K>

„The argument on climate protection, which is often cited as justification for the EEG, does not bear. In the EU, the CO₂ emissions of energy-intensive industries are capped by an emissions trading system for which the amount of emission rights is fixed. **The increased expansion of renewable energies in the German electricity production, induced by the EEG, does not avoid additional CO₂ emissions throughout Europe, but merely shifts them to other sectors or European countries.** The EEG therefore does not provide for more climate protection, but makes it significantly more expensive.“ (p. 52)



The German energy transition is not sustainable!

Serious policy error: The climate protection effect of the national promotion of renewable energies in Germany is neutralized at the European level.



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The Paris Climate Agreement

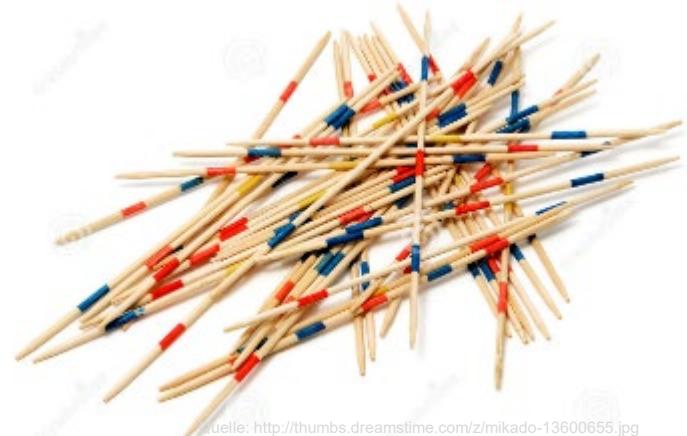
The Kyoto Protocol was not a model of success. But now it gets worse: after the failure of the Copenhagen climate conference in 2009, a paradigm shift took place in Paris in 2015. Instead of a binding global target for reducing emissions, we are now relying on voluntary national commitments.

In plain language: From now on "Mikado" is played.

Economists call it a "waiting game"

and warn that we are no longer on the right track

*Analogy: Everyone praises the state, but
it is now up to each individual person to choose
how much tax she wants to pay. This is sub-optimal.*



Quelle: <http://thumbs.dreamstime.com/z/mikado-13600655.jpg>



Quelle: http://polpix.sueddeutsche.com/polopoly_fs/1.2780261.1449946249!/httplimage/image.jpg_gen/derivatives/640x360/image.jpg

Quelle: https://www.tagesschau.de/multimedia/bilder/paris-klimakonferenz-101~_v-videowebm.jpg



Bjorn Lomborg

Paris climate agreement will reduce temperatures by just 0.05° C by 2100.



- If each nation fulfills all the promises by 2030, the temperature reduction will only be 0.048° C by 2100.
- Even if the promises were kept by 2100 (i.e. another 70 years), the temperature reduction would only be 0.17° C.
- Even the most optimistic climate policies of the US, Europe, and China would only bring in a temperature reduction of between 0.031° C (US) and 0.053° C (Europe).
- Even the most optimistic climate policy of the rest of the countries would only come down to 0.036° C.

Quelle: <https://www.lomborg.com/press-release-research-reveals-negligible-impact-of-paris-climate-promises>

Quelle: https://de.wikipedia.org/wiki/Bj%C3%B8rn_Lomborg#/media/Datei:Bj%C3%B8rn_Lomborg_1.jpg



The real challenge concerns the supply side

In order to reach the 2° goal, significant quantities of the currently known stocks of fossil fuels would have to remain unused in the soil. McGlade and Ekin (2015; p. 187): "Our results suggest that, globally, a third of oil reserves, half of gas reserves and over 80 per cent of current coal reserves should remain unused from 2010 to 2050 in order to meet the target of 2° C."

http://www.welt.de/multimedia/archive/00880/erdoel_BM_Bayern_Du_880686p.jpg



Oil: approx. 33%

http://www.stadtwerke-walldorf.de/pb/suite/Stadtwerke-Walldorf/get/params_E-889461854/100164/gas.jpg



Gas: approx. 50%

http://www.hartmann-kamen.de/images/stock/feature_kohle.jpg



Coal: approx. 80%

This problem can only be solved, if at all, if radical innovation succeeds in making alternative energy sources so cheap that people prefer substitutes on a global scale.

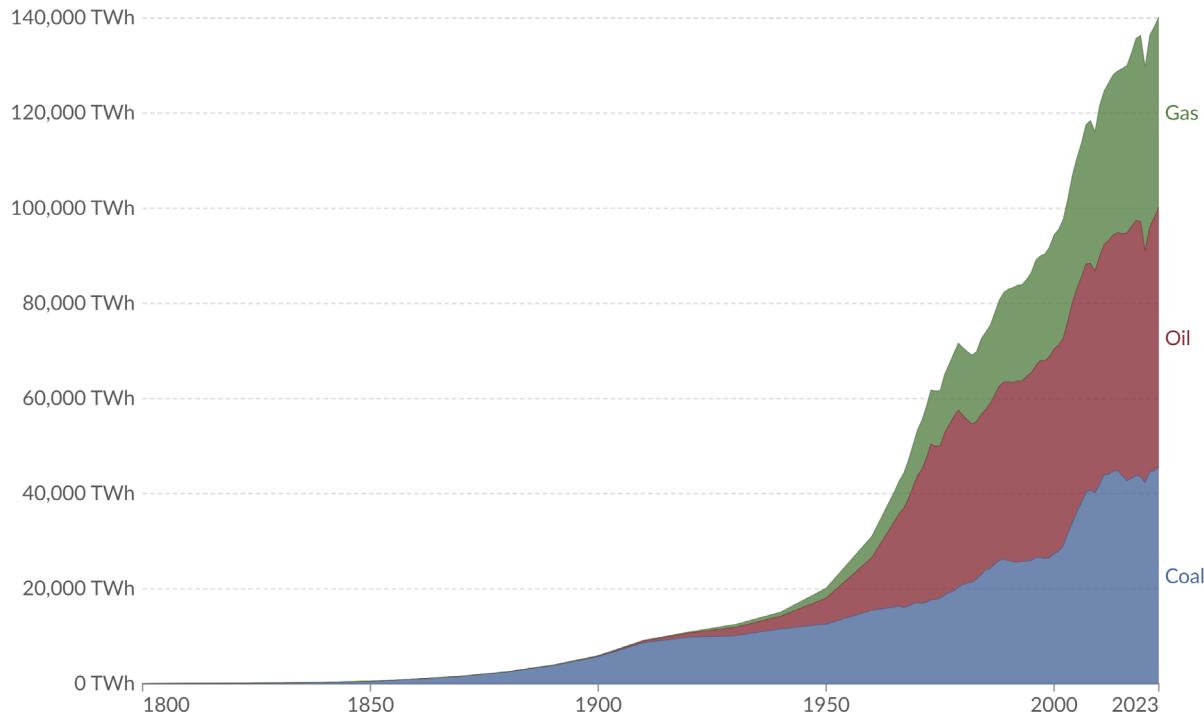


Global Fossil Fuel Consumption Has Not Peaked Yet

Global fossil fuel consumption

Measured in terawatt-hours¹ of primary energy² consumption.

Our World
in Data



Data source: Energy Institute - Statistical Review of World Energy (2024); Smil (2017)

OurWorldinData.org/fossil-fuels | CC BY

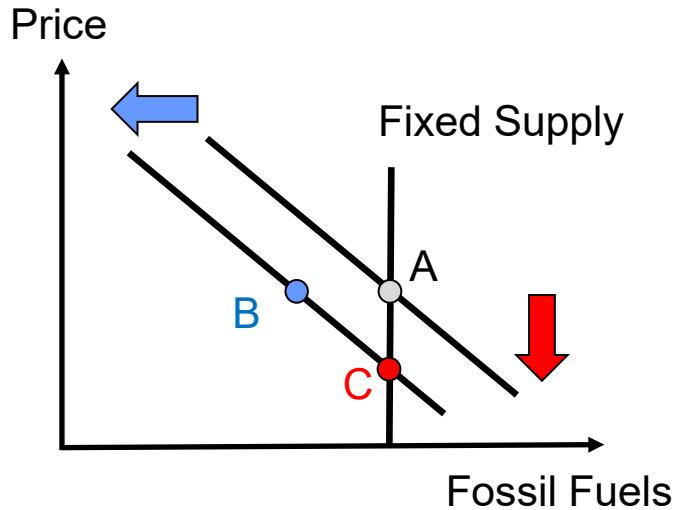
1. Watt-hour: A watt-hour is the energy delivered by one watt of power for one hour. Since one watt is equivalent to one joule per second, a watt-hour is equivalent to 3600 joules of energy. Metric prefixes are used for multiples of the unit, usually: - kilowatt-hours (kWh), or a thousand watt-hours. - Megawatt-hours (MWh), or a million watt-hours. - Gigawatt-hours (GWh), or a billion watt-hours. - Terawatt-hours (TWh), or a trillion watt-hours.

2. Primary energy: Primary energy is the energy available as resources – such as the fuels burnt in power plants – before it has been transformed. This relates to the coal before it has been burned, the uranium, or the barrels of oil. Primary energy includes energy that the end user needs, in the form of electricity, transport and heating, plus inefficiencies and energy that is lost when raw resources are transformed into a usable form. You can read more on the different ways of measuring energy in our article.



The Green Paradox

The problem that arises within the ETS is duplicating on a global scale in the supply of fossil fuels.



Own presentation

Hans-Werner Sinn drew attention to the "green paradox":

- A: Initial Situation
- B: Climate policy reduces demand for fossil fuels.
- C: However, this does not have a climate protection effect. Oil, coal and gas prices are falling.

As a result, a purely demand-oriented climate policy has no quantitative effect. It only translates into price effects.

This insight of the experts
has so far been ignored
in public discourse.
But how long can this last?

Inconvenient truth:

A purely demand-oriented energy policy leads to a dead end in terms of climate policy. We need a solution to the supply problem! Without radical innovation, this will be impossible.



Food for Thought

From an ordonomic point of view, it is important to distinguish between constructive and destructive criticism. A destructive critique denies the problem and therefore wants no or much less climate policy. Constructive criticism, on the other hand, wants a better climate policy.



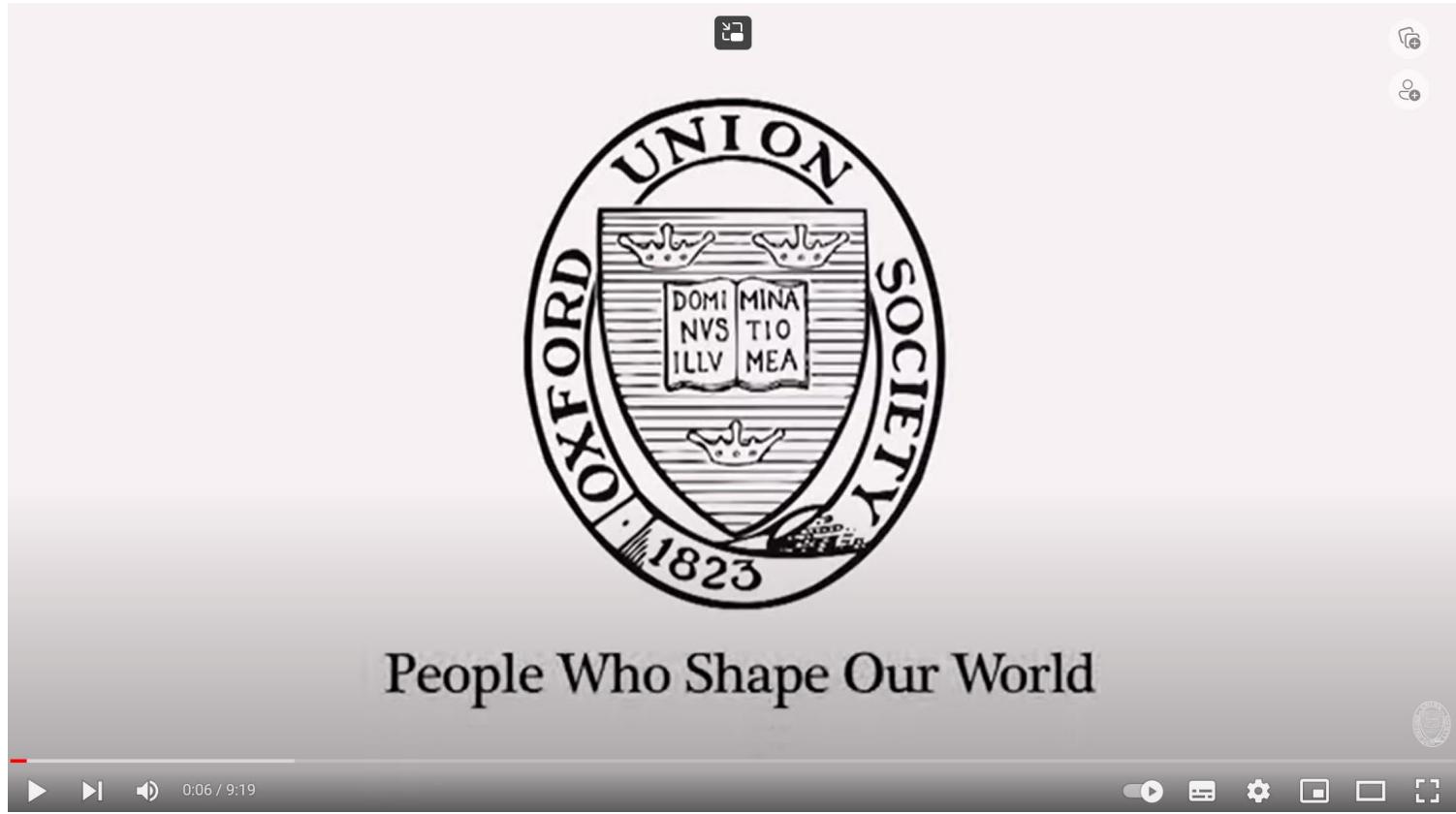
Pricing of CO₂ is generally desirable, but certainly not sufficient (and strictly speaking not even necessary) for solving the problem of global warming. **Decarbonization of the economy can only be achieved with radical innovations.** So far, there has been a lack of appropriate governance structures, partly because the democratic public is vulnerable to discourse failure and tends to lead the fight against climate change often on the wrong front.



Semantics is important! We must be consistent in asking the right questions.



More Food for Thought



<https://www.youtube.com/watch?v=zJdqJu-6ZPo>



Martin-Luther-Universität Halle-Wittenberg, Lehrstuhl für Wirtschaftsethik
Prof. Dr. Ingo Pies

More Food for Thought

If the UK has lots of renewables, why do electricity prices follow gas prices?

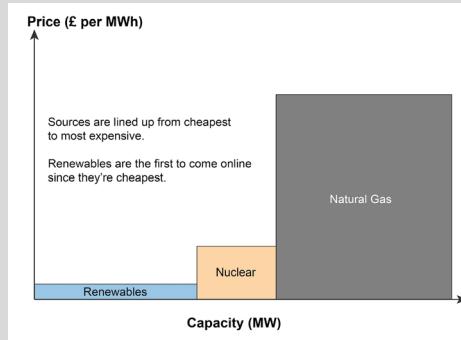
https://www.sustainabilitybynumbers.com/p/electricity-pricing?utm_source=share&utm_medium=android&r=7cvv9



It's the wholesale costs of electricity – not green taxes – that are driving the price hike



In many electricity markets, the price is set by the most expensive source that has to be “turned on”



More Food for Thought

Net-zero plans exclude Africa

<https://www.nature.com/articles/d41586-022-03475-0>



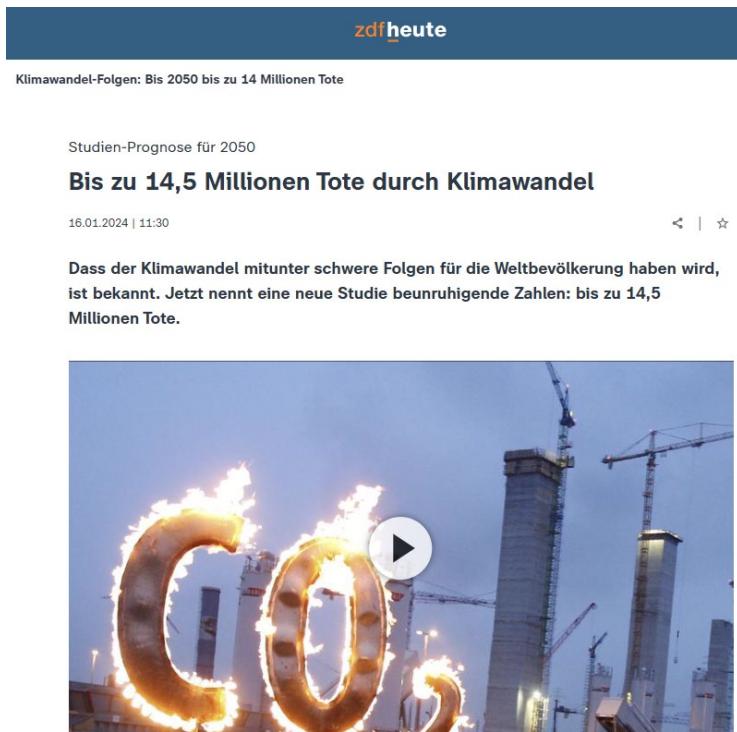
“Energy-transition plans leave out African data, models and expertise, excluding more than one billion people on the continent.”



Even More Food for Thought

Who publishes disinformation?

<https://www.zdf.de/nachrichten/politik/ausland/davos-wef-klimawandel-100.html>



Klimawandel-Folgen: Bis 2050 bis zu 14 Millionen Tote

Studien-Prognose für 2050

Bis zu 14,5 Millionen Tote durch Klimawandel

16.01.2024 | 11:30

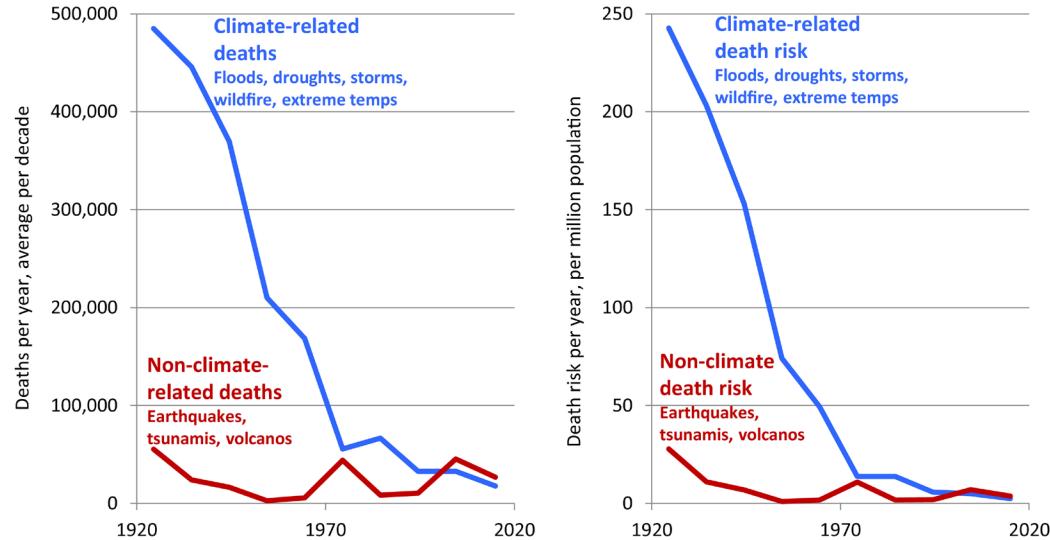
Dass der Klimawandel mitunter schwere Folgen für die Weltbevölkerung haben wird, ist bekannt. Jetzt nennt eine neue Studie beunruhigende Zahlen: bis zu 14,5 Millionen Tote.

Deaths per year, average per decade

| Year | Climate-related deaths (approx.) | Non-climate-related deaths (approx.) |
|------|----------------------------------|--------------------------------------|
| 1920 | 480,000 | 60,000 |
| 1930 | 380,000 | 20,000 |
| 1940 | 220,000 | 10,000 |
| 1950 | 170,000 | 10,000 |
| 1960 | 70,000 | 10,000 |
| 1970 | 50,000 | 40,000 |
| 1980 | 40,000 | 20,000 |
| 1990 | 30,000 | 30,000 |
| 2000 | 20,000 | 40,000 |
| 2010 | 10,000 | 40,000 |
| 2020 | 5,000 | 20,000 |

Despite climate change, the number of deaths has fallen in relative and even absolute terms over the last 100 years

https://www.sciencedirect.com/science/article/pii/S0040162520304157?casa_token=9AH41dThyr0AAAAA:DmnwbV6K6TRSAf4a9Ww6QtLVjuJA9tqFvfM7uU44SWyHzFracfE46rDnwBt96DyWdQyqKVgltE5



Even More Food for Thought: A Controversial Viewpoint

DeAngelo, Harry, and Judith A. Curry. 2025. "A critique of the apocalyptic climate narrative." *Journal of Applied Corporate Finance* 1–8. <https://doi.org/10.1111/jacf.1266>

Main message and 9 recommendations

Climate risks are overstated – Global warming is manageable, not an existential threat

1. Avoid costly climate policies with negligible impact.
2. Don't eliminate fossil fuels without viable alternatives.
3. Invest in energy innovation and climate adaptation.
4. Avoid bans and restrictions on everyday carbon-emitting activities.
5. Develop a diversified, reliable energy portfolio.
6. Revive nuclear power for clean, stable energy.
7. Don't focus solely on solar, wind, and biofuels.
8. Prevent financial institutions from distorting fossil-fuel investments.
9. Avoid imposing anti-fossil-fuel policies on developing nations.

p. 5: "Aggressive suppression of fossil-fuel use would be morally unconscionable under any reasonable ethical code, as it would impose costs on the more than 3 billion people who have virtually no access to electricity. This large swath of humanity would like access to abundant, cheap, and reliable fossil-fuel-based energy to help lift themselves out of poverty and to reduce the substantial health risk from long-term exposure to airborne particulate matter caused by indoor burning of dung and wood. There are now more than 6 billion people who would like to live in ways that most of us in wealthy countries take for granted, with abundant and reliable energy that few of us would willingly give up to any degree."



Form your own opinion!

