Sabine Mauderer: Price stability and climate change

Speech by Dr Sabine Mauderer, Member of the Executive Board of the Deutsche Bundesbank, at the European Central Bank Conference "Climate and price stability: navigating inflation and monetary policy in the green transition", Frankfurt am Main, 15 May 2025.

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1 Introduction

Ladies and gentlemen.

I am delighted to have the opportunity to open this conference today.

I am sure, we all agree: climate change alters the environment in which central banks operate.

According to the NGFS long-term scenarios, unmitigated climate change leads to losses in global GDP of almost 15% by 2050–relative to a scenario without climate change. This is a conservative estimate, as it does not yet account for key risks, such as sea level rise and climate tipping points.

Given the context of this conference, there is no need to give you any further examples about the relevance of climate change. Instead, allow me to briefly recap why and how we as central bankers need to deal with climate change: In doing so, I will focus on some of the most important aspects.

2 Physical impacts and climate policies

Let me turn to the two dimensions of what we call "climate change" for short: the impacts of climate change itself, and the effects of our attempts to mitigate it.

Central banks monitor both dimensions because of their relevance for output and prices. This is why I highly appreciate that the impacts of physical risk and transition risk on inflation are at the core of today's conference.

Let's start with physical risks.

In addition to the consequences of gradual shifts in temperature patterns or sea level rise, acute physical risks such as hurricanes, droughts or floods can damage the economy, with impacts lasting beyond the short-term. As the timing, location and magnitude of such shocks are largely unpredictable, central banks are on high alert.

In theory, the direction of price developments depends on the balance between supply and demand. Severe weather events could affect either side. Supply-side disruptions tend to cause higher prices whereas a reduction in demand tends to entail lower prices. Without pre-empting the work presented at this conference: As outlined in a recent technical paper by the NGFS¹, the emerging empirical work on the linkage between weather shocks and inflation suggests that the upward pressure from the supply side dominates, for instance, for agricultural production.

One key finding is that food prices tend to rise in the aftermath of a weather shock–associated with negative supply impacts–with some spillovers into overall inflation.² Moreover, the specific nature of the shock matters, with nonlinear inflationary effects being documented in the case of heatwaves.

The type of damages can differ as well: while heatwaves tend to impact labour and agricultural productivity, leaving the capital stock unaffected, severe storms tend to impair infrastructure, housing, and the capital stock of an economy.³

There is also the second dimension–transition risk. Many jurisdictions have committed to decarbonise their economies. This goes hand in hand with substantial structural changes that can also pose risks for price stability.

But the picture emerging here is more mixed: the impact of a green transition on inflation depends on its drivers and how it unfolds in the economy.

Moreover, short and long-run effects can differ.

What are these drivers? Let me briefly elaborate.

Depending on the policy mix, the pace of technological progress, changes in preferences and the role of international trade relations⁴-to mention just a few main aspects-the transition will affect the supply and demand side of the economy in multiple ways.

Hence there is no straightforward answer to the question whether inflationary or disinflationary effects will dominate. A higher carbon price, for example, makes carbon intensive products and businesses more expensive. As a result, consumer price inflation may rise in the short-term.

Over the medium to long run, however, higher costs of brown products will make it more attractive to shift to greener production processes—and invest in innovative green technologies.

Green innovations, efficiency gains and maturing technologies, together with an increasing usage of clean energy, can drive energy costs and prices down over time.⁵ Therefore, inflationary pressures are likely to remain contained in the medium to long run, especially in the event of an orderly transition with predictable carbon prices.

Along the way, central banks will have to make sure that inflation expectations remain well-anchored, as maintaining price stability is their core mandate.

Accelerating the green transition is up to our governments, but price stability and a sound financial system are important facilitators of this process.

3 Conclusion

Ladies and gentlemen.

Our economies are facing multidimensional, unprecedented structural changes. The green transition is just one aspect.

At the current juncture, the approaching threats of climate change are overshadowed by other topics. We are all witnessing the shift in attention to artificial intelligence, tariffs and trade wars, and the rising geopolitical uncertainties.

The many unknowns associated to these topics make strategic long-term decisions particularly challenging for policymakers, firms and households alike.

Yet, climate change is and remains an urgent issue that involves answering complicated questions. The physical principles of climate change have not changed. Climate change will not simply disappear if we try to ignore it.

But we will get closer to a solution every day-if we tackle these questions courageously and analytically.

Events like this conference are important to keep the attention on the problem and to improve our understanding of climate risks.

In this spirit, I wish you a successful and productive discussion.

¹See the NGFS technical document, published in August 2024: "Acute physical impacts from climate change and monetary policy" (ngfs_acute_physical_impacts_from_climate_change_and_monetary_policy.pdf), which surveyed existing empirical work in this field.

² Parker (2018) finds that storms and floods increase food price inflation. According to Faccia, Parker and Stracca (2021) hot summers with extreme temperatures can cause increases in food prices. Kotz et al. (2023) find that temperature increases in hotter months and regions have larger inflationary impacts, both on headline and food inflation.

 $\frac{3}{2}$ See NGFS (2024): "While the literature acknowledges that the destruction or impairment of productive capacity by a physical hazard has a negative effect on economic activity in the short run, the long-term effects from physical hazards continue to be debated."

⁴ See, for example, Samaras (2025), Decarbonization can improve energy security, Nature Climate Change. Moving towards net-zero carbon emissions reduces reliance on fossil fuels but requires geographically concentrated materials for clean energy technologies. New research suggests countries can reduce emerging materials risks by expanding trading partnerships. $\frac{5}{2}$ See NGFS technical document, published in October 2024, "The green transition and the macroeconomy: a monetary policy perspective" (NGFS publishes report on the green transition and the macroeconomy with a monetary policy perspective | Network for Greening the Financial System).