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# Climate Adaptation: Who Pays and Who Benefits?

### **KEY MESSAGES**

- Investing in climate adaptation will be much more cost-effective than paying for emergency management and recovery after climate-related disasters
- There is no simple "business case" for specific adaptation initiatives; governments need to take a very long-term perspective on capital spending
- Some locations and population groups often the least powerful members of society – are much more vulnerable to climate risks than others
- Governments need to generate societal consensus on how to prioritize adaptation spending and protect vulnerable groups
- Governments and private actors need to delineate their respective adaptation responsibilities

#### THE "BUSINESS CASE" FOR CLIMATE ACTION

We can think about the costs of addressing climate change by breaking down the process of climate impacts into four distinct phases (Table 1). The first, and cheapest, way to address the issue relates to mitigation – reducing anthropogenic greenhouse gas (GHG) emissions to net zero as rapidly as possible. Economists have long recognized that this is a more cost-effective approach than paying for climate change's inevitable impacts on human, social, and environmental systems (Stern 2007). This approach seeks to minimize the occurrence of climate hazards, such as heatwaves, storms, droughts, and flooding, caused by rising global temperatures.

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The second phase, and second most cost-effective approach, concerns climate adaptation – defined by the IPCC (2022) as "the process of adjustment to actual or expected climate and its effects." Preventive measures (both "nature-based" solutions such as changes to land use or species reintroduction and the installation of "harder" engineering infrastructures) can help to reduce the scale of inevitable climate impacts. Adaptation aims to address climate risks by reducing exposure and vulnerability to climate hazards and thereby limiting their adverse effects on humans or the environment.

The third phase involves crisis management during and immediately following a climate-related disaster, such as the severe flooding in the Eifel region of Germany in July 2021 (Ludwig et al. 2023). Not only do such events have a huge impact on human and societal systems, but it is also worth stressing that crisis management is also a very expensive – albeit usually relatively short – stage in the process.

Finally, the fourth phase involves recovery and rebuilding following a climate-related disaster or severe weather event. This may take many years (the reconstruction of New Orleans after Hurricane Katrina lasted over a decade), during which time huge numbers of people are displaced from their homes, many of whom are also suffering from mental and physical health problems (Fussell 2015). Alongside these human impacts, the financial burdens associated with reconstruction can be astronomical: estimates put the cost of the January 2025 wildfire damage in California at around USD 250 billion (Vincent 2025).

On that basis, we can see how preventative action to reduce GHG emissions should be an economic (as well as an environmental) priority. Yet, since some degree of climate change is now inevitable and indeed already happening, policies to reduce the scale of severe weather impacts are also important. However, even adaptation initiatives will be very expensive, and it may be difficult to persuade key actors in government, the private sector, and wider society of the need to invest in preventative solutions.

An added complication here relates to the inherent unpredictability of climate impacts. Despite advances in climate monitoring systems and the datasets that can underpin risk and vulnerability assessments, we are not able to predict the severity or exact location of severe weather events more than a few days in advance. Yet, preparing for them adequately is likely to take years of planning, investment, and activity – and we may never know how much devastation any specific adaptation initiatives may have prevented, even if a severe weather event occurs.

A famous cartoon by Joel Pett in USA Today, entitled "What If It's a Big Hoax and We Create a Better World for Nothing?" highlighted the livability and societal benefits of action on climate mitigation, including energy security and a healthier environment (Pett 2009). Many of these also apply to adaptation, particularly around the possibilities of using nature-based solutions to create more livable cities. However, most government bodies - particularly at the subnational level, where climate impacts will be most acute - face financial constraints and are often required to demonstrate the "cost effectiveness" of any substantial public spending before projects are approved. It can be difficult to incorporate qualitative benefits associated with livability into these assessments, and therefore policymakers may struggle to argue for adaptation on this basis. The contents and accuracy of "business cases" tend to be generally problematic anyway (Eckersley and Pell 2023), but particularly when proposed investments seek to reduce or eliminate future costs that cannot be calculated in advance and could take many years to materialize (Ford et al. 2015).

As such, although finance ministry officials and policymakers may offer support in principle for climate adaptation, they may be reluctant to provide the necessary funding for specific initiatives. Governments need to adopt a long-term, risk-based perspective in order to make a financial case for adaptation. In some countries, this may require changes to existing investment rulebooks to enable greater up-front spending on capital projects.

#### SPATIAL AND GENERATIONAL JUSTICE IN CLIMATE ADAPTATION

Additionally, even in cases where governments are happy to finance adaptation activity, they are likely to face difficult choices around prioritizing specific projects and locations. There is a burgeoning academic literature on climate justice, but much of this debate focuses on the principle of "common but differentiated responsibility" and how this plays out in international agreements around climate mitigation (Stone 2004). In contrast, most countries in Europe and elsewhere have yet to begin engaging seriously with how adaptation costs and benefits (or, in most cases, the avoidance of even higher costs) should be distributed across populations, territories, and sectors.

This is important, because some locations and population groups are much more vulnerable to climate impacts than others. Cities tend to be particularly vulnerable, due to their higher population densities and greater preponderance of sealed surfaces and buildings that contribute to the "urban heat island" effect, which means summer temperatures are often several degrees higher than in surrounding rural areas (Wilby 2008). Additionally, homes and businesses located in or close to flood plains, forests, and coastal areas at risk of erosion are also particularly exposed. Ultimately, governments and societies may decide to abandon some settlements if they become impractical or impossible to protect in the face of unavoidable risks - i.e., the "recovery" phase in Table 1 is replaced by "abandon" or "relinquish." Municipalities and other public bodies in these areas will therefore face particular challenges, and will need substantial support from higher tiers of government to address them. To state the issue bluntly, places that are less exposed and less vulnerable to climate risks will end up subsidizing adaptation initiatives elsewhere.

Furthermore, older people and those on lower incomes and/or with disabilities will find it much more difficult to adapt than other population groups. Given that vulnerable people are often less able to exert influence in political debate compared to powerful organized interests, there is a real risk that their needs will be marginalized and neglected. For example, a recent study found that although the quality of adaptation planning in European cities has improved since 2005, most municipalities do not take sufficient account of vulnerable groups in policy decisions (Reckien et al. 2023).

#### THE ROLE OF THE STATE IN CLIMATE ADAPTATION

A related issue here concerns the extent to which adaptation should be a public responsibility. Generally speaking, those individuals and businesses that are most threatened by climate hazards are least equipped to cope with them - and therefore highly likely to require government support. Indeed, modern states evolved primarily to protect their citizens, and so we might expect governments to apply this principle to climate change, even though this entails very different risks compared to external attack or invasion. However, adaptation is an even broader, vaguer, and more complex topic than mitigation, and we cannot rely entirely on governments to address it. Indeed, many private businesses and citizens have changed their strategies and behaviors in response to climate threats, even if they are seldom labelled as "adaptation" (Eckersley et al. 2023). Nevertheless, we can see how governments may well need to intervene in areas where private actors are unable or unwilling to act – for example, as an insurance provider of last resort for exposed property owners, or by coordinating rescue operations in a crisis.

Policymakers need to start thinking about where to draw the line between the state and private actors

Table 1
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Four Phases of Addressing Climate Change Impacts					
Phase	Climate mitigation	Climate adaptation	Emergency management	Recovery	
Objective	Reduce GHG emissions as fast as possible	Limit exposure and vulnerability to climate hazards	Rescue humans and key assets from climate- related crises	Rebuild homes, communities, and lives following a disaster	
Rationale	Minimize climate change and associated hazards	Minimize climate risks to human, environmental, and societal systems	Get people out of danger as soon as possible	Enable citizens and businesses to return to "normal"	
Potential costs (indicative)	Moderate	High	Very high	Astronomical	

Source: Author's compilation.

in terms of who is responsible for funding and coordinating adaptation activity. Most countries in the Global North have not begun to have serious public conversations about these issues. Perhaps inevitably, it will involve some kind of partnership approach involving both state and societal actors, but governments should ensure that citizens and businesses are aware of the risks they face and buy in to an agreed vision and approach. In recent years, a growing number of local and national governments have established "climate assemblies" to facilitate societal consensus, primarily around mitigation policies (Pfeffer 2024). A similar program of engagement and public debate will be necessary to address the issue of public and private responsibilities for adaptation.

#### **POLICY CONCLUSION**

Climate adaptation is an issue of huge economic concern. Additionally, communicating the scale of climate risks and mobilizing public support to address them are likely to be enormous political challenges. Societies need to generate consensus on which locations, assets, and population groups should be prioritized for adaptation investment, as well as the respective roles and responsibilities of government and private actors in providing key resources. While climate mitigation is inherently preferable to addressing the consequences of a warming world, preparing societies effectively for the climate hazards they will inevitably face is a far better option than waiting for disasters to happen and dealing with their aftermath. The potential human, environmental, societal, and financial costs of being under-prepared would be enormous.

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