

# 19 Principles guiding welfare impacts of climate action

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Reducing the impact of climate change on poor and vulnerable households is essential to hastening poverty reduction. Policy makers can usefully adapt the hazard, exposure and vulnerability framework that is often used to assess the physical impacts of climate change to identify, measure and monitor the welfare benefits and costs of climate action. This chapter starts by discussing how climate change disproportionately affect poor and vulnerable populations and policy priorities that reduce hazards and/or vulnerability while bringing non-climate benefits. It then proposes a framework for assessing the welfare impacts of climate action and examines the three channels through which climate policy affects welfare before putting forth two principles to guide climate policy decisions: prioritise triple and double win policies and identify and minimise costs to poor households.

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## Key messages

- Climate change disproportionately affects poor and vulnerable people whose livelihoods often depend on natural resources and whose lack of access to savings, credit and insurance makes hazards more costly.
- Policies that address climate hazards or reduce exposure and vulnerability and bring non-climate benefits for poor and vulnerable people – so-called double or triple wins – should be prioritised.
- Addressing the trade-offs inherent in climate policies requires a nuanced understanding of the diverse impacts that these policies can have across different populations and time horizons. While the long-run benefits are clear, it is important to measure and manage them and design compensatory actions to ensure an equitable transition.
- Development co-operation actors play a crucial role in fostering equitable and sustainable transitions. By prioritising strategies with multiple benefits and monitoring and compensating trade-offs as much as possible, achieving a prosperous, equitable and resilient future is within reach.

## Poverty reduction and climate change are inextricably linked

Climate change disproportionately impacts poor and vulnerable populations. Poor households often rely on natural resources for their livelihoods, which makes their incomes more dependent on the weather and thus highly susceptible to changes in the climate. Additionally, the lack of capital that accompanies a life in poverty makes hazards more costly. Inadequate insulation, lack of weatherproofing and substandard construction materials are common characteristics of houses inhabited by poor households, rendering these households more susceptible to weather extremes. Because they live in remote locations, the prices of the goods they buy are more likely to be affected by local weather events. They are less likely to be able to rely on savings, access to credit or insurance to manage their losses of income or assets. The impact of shocks can last for many years after the event itself. In addition, extreme weather events impact welfare not only during disasters but also through the costly behaviours driven by uninsured risk. With climate change altering the frequency and intensity of hazards, poor households and those living just above the poverty line will increasingly face a higher risk of welfare losses from extreme climate events.

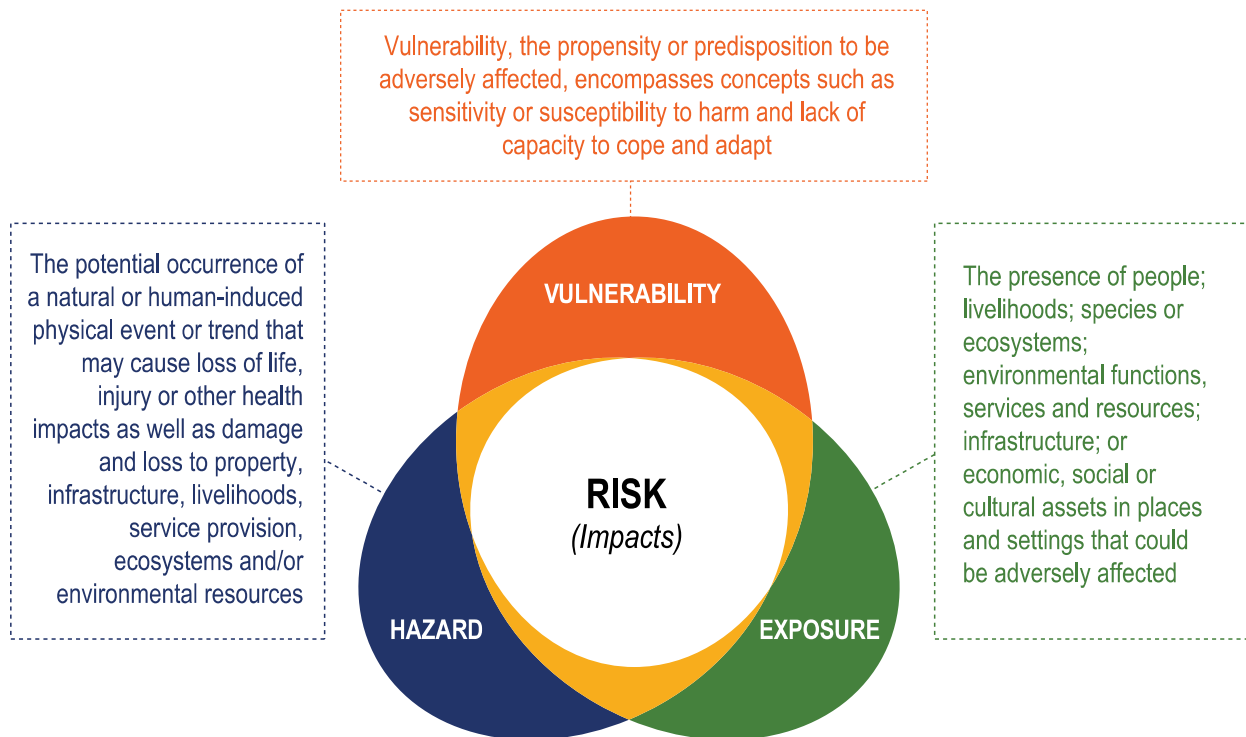
**Assessing how the green transition impacts poor and vulnerable people is essential to ensuring that policies are designed to facilitate a just transition – one that addresses social, employment and welfare impacts and ensures that the benefits are equitably shared.**

The transition to a low-carbon, climate-resilient economy is crucial to securing progress on poverty reduction in both the short and the long run. However, this transition may involve short-term costs, such as higher energy prices and job losses in carbon-intensive industries, that can be particularly hard for poorer people to manage. Assessing how the green transition impacts poor and vulnerable people is essential to ensuring that policies are designed to facilitate a just transition – one that addresses social, employment and welfare impacts and ensures that the benefits are equitably shared.

## A framework for assessing the welfare effects of climate action

Climate research typically follows the hazard, exposure and vulnerability framework proposed by the Intergovernmental Panel on Climate Change to assess the potential adverse impacts on people (Reisinger et al., 2020<sup>[11]</sup>). As Figure 19.1 shows, this framework highlights that the nature of the hazard and the population's exposure and vulnerability both influence the severity of a weather event's impact. It is a useful framework for thinking through the welfare impacts of both climate change and climate action.

**Figure 19.1. The hazard, exposure and vulnerability framework**



Source: Authors' elaboration based on definitions in IPCC (2022<sup>[2]</sup>), "Annex II – Glossary", <https://doi.org/10.1017/9781009325844.029>.

While hazards are shared by all households in a given location, vulnerability varies across households based on the characteristics of the household. A household's vulnerability (and to some extent its exposure) depends on its ability to accumulate and use various assets: human capital (education, skills and health); physical capital (livestock and tools); natural capital (land and ecosystems); financial capital (savings and loans); and social capital (norms and mutual support networks) (López-Calva and Rodríguez-Castelán, 2016<sup>[3]</sup>). For instance, access to efficient irrigation technology can reduce the impact of agricultural losses caused by droughts (Herwehe and Scott, 2018<sup>[4]</sup>), and education and financial assets enable households to switch to a more climate-resilient livelihood and recover swiftly from the shocks (Erman, Obolensky and Hallegatte, 2019<sup>[5]</sup>; Tesfaye and Tirivayi, 2020<sup>[6]</sup>).

### **Climate policy affects welfare through three channels**

Climate actions provide welfare benefits by altering the probability distribution of hazards and/or reducing exposure and vulnerability. Additionally, climate actions can also affect welfare separately from their impact on hazard, exposure and vulnerability; for instance, they can come with additional costs or benefits that

directly affect welfare. Figure 19.2 illustrates how climate policy impacts welfare through the channels of hazards, exposure and vulnerability, along with other household-related benefits or costs.

**Figure 19.2. Ways in which climate policy impacts the welfare costs of climate shocks**



The probability distribution of future hazards can be altered through mitigation policies. An example is carbon taxes, which reduce emissions particularly in high-emitting countries. Other policies, such as those that encourage increasing tree cover, can bring more immediate changes in local weather conditions. Exposure can be altered by policies that enable households to move themselves and/or their assets to less hazard-prone locations. Policies that change a household's vulnerability to hazards include those focused on adaptation, such as encouraging households to invest in water management and soil quality or in better quality housing, as well as more general development policies that increase the capital of poor households, thereby allowing them to better cope with climate shocks or earn more income from activities less affected by hazards. For example, increasing the quality of education, building better roads that connect households to markets, improving city planning, adopting early warning and evacuation systems, or facilitating financial inclusion can all contribute to reducing a household's vulnerability. Many policies affect both exposure and vulnerability. Education, for example, reduces exposure by helping a household migrate and change its livelihood; it also reduces vulnerability by increasing a household's ability to adapt to changes. For the remaining discussion, vulnerability and exposure (as set out in the Intergovernmental Panel on Climate Change's framework) are combined, with no loss of key insights.

If these non-climate impacts are overlooked and not explicitly considered, there can be significant adverse consequences, particularly for poor and vulnerable households.

Climate actions can also bring about additional non-climate benefits or costs that directly impact welfare. These should be assessed at the policy design and implementation stage. For example, upgrading water and sanitation infrastructure in flood-prone areas to be flood-resilient not only reduces exposure to waterborne diseases in the wake of a disaster but also enhances a household's overall health, thereby increasing its productive capacity and income (Hallegatte, Rentschler and Rozenberg, 2019<sup>[7]</sup>). Likewise, the air pollution benefits of mitigation policies can bring immediate health and productivity benefits. On the other hand, the removal of energy subsidies or the introduction of carbon pricing, such as the reduction in the net returns earned from livelihoods that use carbon, can create additional costs (Dorband et al., 2019<sup>[8]</sup>). There also are opportunity costs related to financing climate action in the form of less funding for other development projects. If these non-climate impacts are overlooked and not explicitly considered, there can be significant adverse consequences, particularly for poor and vulnerable households.

Crucially, the welfare valuation of any policy will vary across people, and it cannot be assumed that the impacts on hazards and vulnerability or other direct effects on welfare will be uniform across a population. Some households may experience large welfare gains from a climate action. For others, the gains could be smaller, especially if the cost to these individuals is high. While actions that change the hazard

distribution bring broad benefits across people and generations, the costs are borne now and by some groups more than others. A policy's total social welfare impact on a society will be the sum of the welfare impacts on each person across the welfare distribution taking into account social welfare weights.

## Principles to guide climate policy choices

Policies should be selected that bring the greatest increases in social welfare, and also meet general cascade principles for prioritisation of the use of public finances. Identifying these policies is not easy: it requires long-run valuations of the welfare benefits of policies across people as well as in different countries and over the very long run. As shown by Hendren and Sprung-Keyser (2020<sup>[9]</sup>), the evidence required to make these choices is often not available, but there are some principles that can guide policy making with regard to the welfare implications of climate policies.

**The first principle is to prioritise triple and double wins.** Triple win policies for poor people are those that have positive welfare impacts across all three channels (positively impact future hazards, reduce exposure and vulnerability, and bring about additional non-climate benefits or reduce costs that directly impact welfare) for people at the bottom of the income distribution. Although few in number, there are clear sets of policies that can be considered triple wins.<sup>1</sup> Some examples include:

- **Climate-smart agricultural practices such as crop diversification or soil conservation.** These policies and practices not only mitigate climate change effects but also enhance crop yields and farmers' incomes, particularly in vulnerable regions (World Bank, 2012<sup>[10]</sup>; Aker and Jack, 2023<sup>[11]</sup>; Baquie and Hill, 2023<sup>[12]</sup>).
- **Sustainable forest management initiatives,** which not only safeguard biodiversity and ecosystem services but also create livelihoods for local communities, thereby reducing poverty and enhancing resilience to climate-related disasters (Das, Das and Tah, 2022<sup>[13]</sup>; Grosset, Papp and Taylor, 2023<sup>[14]</sup>; Zaveri, Damania and Engle, 2023<sup>[15]</sup>).
- **Investments in clean energy access,** which deliver triple win outcomes by providing affordable clean energy to underserved populations and reducing reliance on fossil fuels.
- **Reducing inefficiencies in trade,** which are often exacerbated by regulations that limit competition and lead to inefficient fleet management or the prevalence of empty cargos, can simultaneously reduce emissions, improve market integration (reducing vulnerability) and promote economic growth.
- While identifying the triple wins is useful, what matters is not the number of areas of positive impact but the overall welfare benefit from each policy. Many policies offer significant benefits in terms of reducing vulnerability and improving income growth, even after accounting for their costs, but have minimal impacts on the future distribution of hazard. This is particularly the case in low- and lower middle-income countries where growth in incomes will have a limited impact on the local climate or on global emissions. It is, therefore, particularly important to prioritise such policies in these countries. These include, for example, **mobile money services** that facilitate development and enable swift receipt of transfers during crises (Jack and Suri, 2014<sup>[16]</sup>; Batista and Vicente, 2023<sup>[17]</sup>).
- **Better road infrastructure** that improves access to remote areas also enhances market connectivity, thereby lessening the impact of droughts and other weather shocks on local food prices (Burgess and Donaldson, 2010<sup>[18]</sup>).
- **Education,** which not only increases lifetime earnings beyond the initial cost (Hendren and Sprung-Keyser, 2020<sup>[9]</sup>) but also equips households to adapt to changing economic conditions due to climate shocks (Skoufias and Vinha, 2012<sup>[19]</sup>).

Given that these actions are so beneficial, what is constraining their take-up? Identifying the underlying constraints – for example, knowledge, financing or existing policies that are disincentives to adoption – will allow policy makers to design climate action to more effectively increase take-up.

**The second principle is to identify and minimise costs to poor households.** While there are often synergies in achieving progress on poverty and climate goals, there are often trade-offs, and these need to be identified. The costs of transition policies inevitably will worsen welfare for some and must be measured and managed with compensatory finance or other support.

In the case of exposure and vulnerability, many of the available risk reduction and risk management strategies come with a cost for average incomes.<sup>2</sup> For example:

- In the case of risk reduction, agricultural practices that reduce vulnerability by reducing yield losses under weather extremes often also result in lower agricultural income in normal weather years (Hultgren et al., 2022<sup>[20]</sup>; Kala, 2023<sup>[21]</sup>).
- In the case of risk management, the cost of private insurance is always higher than the actuarially fair price of insurance.

The cost of publicly financing shock-responsive safety nets may or may not be recovered through the income growth that these enable; currently, there is not enough evidence in this area to say. The welfare benefit of spending towards reducing vulnerability derives from the fact that individuals are risk-averse and prefer less variable consumption even if it is lower on average. Reducing the variance of consumption is costly, so welfare is maximised when the variance in consumption is reduced to acceptable levels given this cost. Thus, it follows that policies that increase the availability of low-cost risk reduction and management strategies need to be prioritised. Frameworks such as those developed by Gollier and Mahul (2017<sup>[22]</sup>) and Ehrlich and Becker (1972<sup>[23]</sup>) highlight the need to think about optimising investments in risk reduction and risk management concurrently.

Policies that reduce future climate hazards also carry costs. Transitioning to renewable energy sources, for instance, can impose costs on communities that rely on fossil fuel industries. Likewise, rising energy prices and job losses in carbon-intensive sectors can significantly affect poorer and more vulnerable communities. Addressing the trade-offs inherent in climate policies requires a nuanced understanding of the diverse impacts that these policies can have across different populations and time horizons.

To ensure an equitable transition, it is important to also monitor policies' outcomes and costs to affected individuals and communities and to design targeted and compensatory actions. Compensatory actions should aim not only to offset losses but to also actively provide opportunities for disadvantaged households to navigate the transition. Policy makers should pay particular attention to monitoring outcomes and costs in relation to:

- The impact of policies on real household consumption and on labour market outcomes. Targeted social assistance can minimise the impact of climate action on real household consumption, and poor households can be supported in the shift to lower and clean energy consumption through subsidies and behavioural nudges.
- Targeted policies to support job creation in places most affected by employment losses, support to climate-smart agricultural practices, and job and skills training are needed to support the transition to low-carbon and low-methane employment and livelihoods.

The intertwined challenges of climate change and poverty demand a co-ordinated and inclusive response from the global community. Development co-operation actors play a crucial role in fostering equitable and sustainable transitions. By prioritising strategies with multiple benefits and monitoring and compensating trade-offs as much as possible, achieving a prosperous, equitable and resilient future is within reach.

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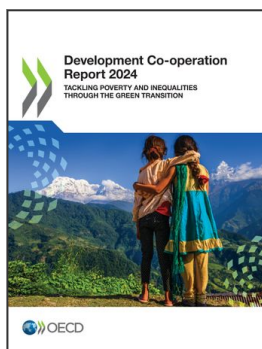
## Notes

<sup>1</sup> The Intergovernmental Panel on Climate Change’s 2022 Sixth Assessment Report, which focuses on adaptation, contains a useful summary of policies that reduce vulnerability while also bringing



improvements in the hazard distribution and income benefits. For details, see Figure SPM.4(b) in the Summary for Policy Makers at: <https://doi.org/10.1017/9781009157926.001>.

<sup>2</sup> Risk reduction strategies are often called *ex ante* strategies since the action reduces the impact of the shock before the shock occurs. These are also referred to income-smoothing strategies. Risk management strategies, on the other hand, are often called *ex post* strategies in that they reduce the impact of the shock after it has occurred. They can also be referred to as consumption smoothing.



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