

Executive Summary

South Asia is the most climate-vulnerable region among emerging market and developing economies. With governments having limited room to act due to fiscal constraints, the burden of climate adaptation will fall primarily on households and firms. Awareness of climate risks is high; more than three-quarters of households and firms expect a weather shock in the next 10 years. Climate adaptation is widespread, with 63 percent of firms and 80 percent of households having taken action. However, most rely on basic, low-cost solutions rather than leveraging advanced technologies and public infrastructure. Market imperfections and income constraints limit access to information, finance, and technologies needed for more effective adaptation. If these obstacles were removed, private sector adaptation could offset about one-third of the potential damage from rising global temperatures on South Asian economies. The policy priority for governments is therefore to facilitate private sector adaptation through a comprehensive policy package. The package includes climate-specific measures such as improving weather information access, promoting resilient technologies and weather insurance, and investing in protective infrastructure in a targeted manner. Equally important are broader developmental initiatives with resilience co-benefits: in other words, policies that generate double dividends. These include strengthening core public goods like transportation, water systems, and healthcare; addressing barriers to accessing markets, inputs, and finance without causing unintended responses that increase vulnerabilities; and supporting vulnerable groups through shock-responsive social protection.

Chapter 2. Under the Weather: Household Climate Risk. South Asia is expected to face more frequent and more severe weather shocks over the coming decade. By 2030, 1.8 billion people (89 percent of the region's population) are projected to be exposed to extreme heat, while 462 million people (22 percent) are projected to be exposed to severe flooding. Poor and agricultural households in the region are more exposed to, and affected by, weather shocks. Weather shocks cause damage to human capital and assets, as well as income losses. However, when households receive early warnings, nearly 90 percent take preemptive action to reduce damages. Households' access to early warning systems is uneven: in vulnerable coastal and riverine areas, most households have access to early warnings for cyclones but fewer than half of them have access to early warnings for floods and other shocks. These findings call for better early warning systems, targeted programs to assist vulnerable households during shocks in a timely fashion, and policies to help households adapt to the growing risk of extreme weather shocks.

Chapter 3. Prepared for the Worst: Building Household Resilience. Rising exposure to climate risk in South Asia has increased pressure on households to adapt, but current adaptation strategies among rural households are inadequate for the scale of the problem. While 80 percent of surveyed households in South Asia have adapted to climate change in some way, 80 percent of these adapting households rely on accessible, low-technology methods, with limited use of more advanced tools such as weather insurance or climate-

resilient agricultural inputs. Limited access to credit, land, and information all constrain household adaptation. Extreme weather events lead to short-lived adaptations whose longer-term effectiveness may be limited, while underestimation of future climate risk leads to inadequate investment in adaptation. Protective public infrastructure tends to substitute for private adaptation. This removes some of the burden on households but carries a risk of investing in places rather than people, generating lock-in, and forestalling necessary reallocations. Policies to alleviate financial and land market failures and information constraints can help households adapt in place, while faster job creation in non-agricultural sectors and urban areas would help them move to more productive sectors and locations.

Chapter 4. Shutters Down: Firm Climate Risk. Increasingly frequent and severe weather shocks reduce revenues, damage physical assets, and require costly shifts in products, markets, and labor practices for South Asian firms. Firm managers in the region expect that increasingly frequent and severe weather shocks will cause damages in 2025–2029 that are three times as great as those experienced from 2019–2024. More experienced and more highly skilled managers tend to have expectations about future weather shocks that are more aligned with consensus forecasts. They also expect lower damages, possibly because better managers tend to be better able to adapt to extreme weather.

Chapter 5. Back to Business: Building Firm Resilience. South Asian firms are acting to mitigate the impact of weather-related shocks on their business, with 63 percent of them having undertaken at least one such action in the past five years. But these firms have largely relied on low-cost upgrades to buildings and equipment for adapting to the growing risk of weather shocks rather than major upgrades to capital, technologies, or business practices. Firms that have experienced, or expect, more weather shocks have been more likely to undertake adaptations, while firms with less-advanced management practices, and firms facing greater financial and regulatory obstacles have adapted less. These results suggest that there is scope for policies to encourage adaptation by improving access to information about adaptation options, by helping firms to strengthen managerial capabilities, and by easing regulatory burdens and expanding access to finance.

Chapter 6. Returns to Resilience: Aggregate Impacts of Adaptation. Because of South Asia's already-high average temperature and reliance on rain-fed agriculture, rising global temperatures could lead to aggregate output and per capita income losses by 2050 that are larger than those in the average emerging market and developing economy (EMDE). Higher temperatures would cause significant damage in the most vulnerable sectors, such as agriculture, but more limited damage in the most resilient sectors, such as services. About one-third of the total climate damage could be reduced if the private sector could flexibly shift resources across activities and locations in response to these climate-induced changes in relative prices and incomes. Even South Asia's fiscally constrained governments have scope to facilitate these shifts, including by expanding access to finance, improving transport and digital connectivity, and providing well-targeted and flexible social benefit systems.

Spotlight. Who Bears the Burden of Climate Adaptation and How? A Systematic Review. South Asia's high vulnerability to rising global temperatures and increasingly common weather shocks, combined with constrained fiscal positions limiting public adaptation measures, means the burden of adaptation will fall disproportionately on firms and households—particularly poor households, which are more vulnerable to weather shocks. A comprehensive and systematic review of research identifies a variety of adaptation strategies used by households, firms, and farmers. These strategies have reduced the damage from weather shocks by 46 percent, on average, in the examples covered by the literature. Adaptations that involve new resilient technologies or public support—typically in the form of core public goods such as roads and health systems that help access jobs and protect human capital—tend to be the most effective in reducing the damage from weather shocks. Compared to households and farmers, firms have access to more effective adaptation strategies, typically technology-related. The analysis suggests that policy should be guided by three principles: (i) implementing a comprehensive package of policies; (ii) prioritizing policies that generate “double dividends”; and (iii) designing policies that target broader developmental goals in a manner that does not set back adaptation-related goals.

Deep dive 1. Climate Adaptation and Agriculture in South Asia. South Asian agriculture faces significant challenges from rising global temperatures, compounded by the sector's existing constraints, including the predominance of smallholder farming and low productivity. Rising temperatures, water scarcity, irregular rainfall patterns, and more frequent extreme weather events such as droughts and floods threaten to reduce South Asia's agricultural output by 7.5 percent by 2050, considerably more than in other EMDE regions. The key strategies needed to build agricultural resilience are the promotion of climate-smart farming practices, expansion of weather insurance markets, redirection of inefficient input subsidies, modernization of irrigation infrastructure, and leveraging of digital technologies to deliver weather information and advisory services to farmers.

Deep dive 2. Bridging the Adaptation Financing Gap in South Asia. Dedicated adaptation finance meets only a fraction of South Asia's needs for climate adaptation. This gap stems from limited fiscal space for public funding and financial market imperfections that limit private financing. To help finance public goods for adaptation, governments can mobilize resources by eliminating distortions like fossil fuel subsidies; scaling up innovative instruments like blended finance; and strengthening institutional capacity to access concessional sources of climate finance. Credit and insurance market failures that limit access to adaptation financing can be overcome through standardized metrics to improve lending decisions, strategic use of public finance for de-risking private credit, emergency credit guarantee schemes, and expanded markets for weather index insurance.

Deep Dive 3. Adaptive Social Protection in South Asia. Social protection systems can help strengthen resilience, before a shock strikes, by reducing poverty and, once a shock strikes, by supporting the most vulnerable. These programs can also help build resilience to climate change by encouraging adaptation, asset accumulation, and income

diversification. However, while South Asia's social protection systems have good coverage at 77 percent of the population, they are underfunded, with expenditure at only 4 percent of GDP, less than half the EMDE average. These programs are also generally not well-targeted and not rapidly scalable, which could be addressed with investments in information systems and program design. Case studies from Bangladesh, India, and Pakistan show that well-targeted social assistance programs, combined with up-to-date information, can be rapidly scaled up to respond to shocks and provide support for the poor and vulnerable.

Deep Dive 4. Urban Policy for Climate Adaptation in South Asia. Just like South Asia's rural population, its urban population is also highly exposed to extreme weather shocks and this exposure is projected to grow. By 2030, 322 million (24 percent of the urban population) are projected to be exposed to flooding, while 1.2 billion (92 percent) are projected to be exposed to extreme heat. Large and growing concentrations of vulnerable population groups in cities add to the region's challenge of building urban resilience to extreme weather. South Asian cities can build climate resilience by better integrating climate risk data into urban planning and regulation, further investing in early warning systems and resilient infrastructure, supporting targeted interventions for vulnerable populations, and strengthening the technical capacity of city governments to implement resilience-related programs.