



GLOBAL
COMMISSION ON
ADAPTATION

#AdaptOurWorld

ADAPT NOW: A GLOBAL CALL FOR LEADERSHIP ON CLIMATE RESILIENCE



THE GLOBAL COMMISSION ON ADAPTATION

The Global Commission on Adaptation seeks to accelerate adaptation by elevating the political visibility of adaptation and focusing on concrete solutions.

The Commission is led by Ban Ki-moon, 8th Secretary-General of the United Nations, Bill Gates, Co-chair of the Bill & Melinda Gates Foundation, and Kristalina Georgieva, CEO, World Bank. It is guided by 34 Commissioners, consisting of leaders from political, business, multilateral, and scientific worlds; and it is convened by 20 countries. A global network of research partners and advisors support the Commission. The Commission is co-managed by World Resources Institute and the Global Center on Adaptation.

ABOUT THIS REPORT

This report focuses on making the case for climate adaptation, providing specific insights and recommendations in key sectors: food security, the natural environment, water, cities and urban areas, infrastructure, disaster risk management, and finance. It is designed to inspire action among decision-makers, including heads of state and government officials, mayors, business executives, investors, and community leaders.



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This report and its Action Tracks were produced on behalf of the Global Commission on Adaptation. Commissioners serve in their personal capacity, contributing to the report's content, based on their individual expertise. As such, the report does not necessarily reflect all views of each Commissioner's respective organization, institution, or government. Further, Commissioners' support for the report does not imply their full engagement in all of the proposed Action Tracks.

CONVENING COUNTRIES

Established initially by the Netherlands, the Commission is now co-convened by 19 other countries. This growing movement of countries supports the Commission in its mission to forge a bold strategic vision for accelerating adaptation; it shares the Commission’s goal of catalyzing global adaptation solutions around the world. These national governments have not been asked to formally endorse this report.

Argentina

Bangladesh

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China

Costa Rica

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Germany

Grenada

India

Indonesia

Marshall Islands

Mexico

Netherlands

Senegal

South Africa

United Arab Emirates

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Uzbekistan

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FOREWORD

A young woman in Bangladesh hears a siren of an incoming typhoon and moves her family to safety. A farmer in Zimbabwe uses a new variety of maize that is more resistant to drought. In Denmark, engineers redesign city streets to make them less prone to flooding. A business executive in Indonesia uses data and maps on water risk to inform his investments. An urban planner in Colombia paints roofs white to deflect dangerous heat.

This is what climate adaptation looks like. Examples like these are taking root and beginning to spread. Of course, not all communities have the same capacity to adapt, and those in fragile areas and living in poverty are most vulnerable.

The world has a moral responsibility to respond in a way that improves lives and livelihoods for all. To end poverty and achieve the Sustainable Development Goals, we must drastically cut emissions and adapt to a warming world. The sooner we act, the better off we will be.

Adaptation is an economic imperative as well. This report finds that investing in adaptation, and in the innovation that comes with it, can unlock new opportunities and spur change across the globe. Adaptation can provide a triple dividend: it avoids economic losses, brings positive gains, and delivers additional social and environmental benefits.

There are bright spots, but so far the response has been gravely insufficient. Meanwhile, the climate crisis is here, now: wildfires ravage fragile habitats, city taps run dry, droughts scorch the land, and floods destroy people's homes and livelihoods.

What will it take to meet the challenge?

Government officials and business leaders need to radically rethink how they make decisions. We need a revolution in understanding, planning, and finance that makes climate risks visible, incorporates these risks into all decisions, and releases public and private financial flows.

Adaptation can bring out bold ideas and inspire innovation beyond what people currently think is possible. Most of all, we need political leadership that shakes people out of their collective slumber.

This Commission was formed to raise the visibility of climate adaptation on the global agenda and inspire action. It brings together over 30 Commissioners and 20 convening countries, from nearly every sector and every region of the world. We are united by a collective determination to accelerate adaptation.

We are working with many partners to support a Year of Action, starting in September 2019, that will jump-start the necessary transitions for change. Together, these actions form a comprehensive platform for urgent, bold, and equitable adaptation.

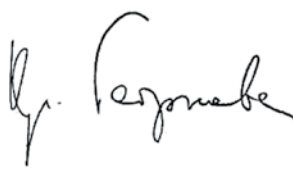
We have reason for hope. Throughout history, people have adapted to change. In turbulent times, they have found ways to reduce risks and create new opportunities. With ingenuity and resourcefulness, people have overcome the most extraordinary challenges—from eradicating disease to rebounding from the devastation of war. We need this courageous spirit today.

We call for global leadership on climate adaptation to create safer, stronger, and thriving communities around the world.

Our work is just beginning. ***We hope you will join us to adapt our world.***



Ban Ki-moon
Chair



Kristalina Georgieva
Co-chair



Bill Gates
Co-chair

We face a crisis.

Climate change is upon us, and its impacts are getting more severe with each passing year.

Global actions to slow climate change are promising but insufficient. We must invest in a massive effort to adapt to conditions that are now inevitable: higher temperatures, rising seas, fiercer storms, more unpredictable rainfall, and more acidic oceans.

We are not starting from a standstill. There are many bright spots where adaptation efforts have begun—but we need more urgency, innovation, and scale.

Adaptation is not an alternative to a redoubled effort to stop climate change, but an essential complement to it. Failing to lead and act on adaptation will result in a huge economic and human toll, causing widespread increases in poverty and severely undermining long-term global economic prospects.

The good news is that adaptation, done right, will lead to better growth and development. It will also save lives, protect nature, reduce inequalities, and create opportunities.

We can do it.



EXECUTIVE SUMMARY

ADAPT NOW: THE URGENCY OF ACTION

Climate change is one of the greatest threats facing humanity, with far-reaching and devastating impacts on people, the environment, and the economy. Climate impacts affect all regions of the world and cut across all sectors of society. People who did the least to cause the problem—especially those living in poverty and fragile areas—are most at risk.

Consider:

- Without adaptation, climate change may depress growth in global agriculture yields up to 30 percent by 2050. The 500 million small farms around the world will be most affected.
- The number of people who may lack sufficient water, at least one month per year, will soar from 3.6 billion today to more than 5 billion by 2050.
- Rising seas and greater storm surges could force hundreds of millions of people in coastal cities from their homes, with a total cost to coastal urban areas of more than \$1 trillion each year by 2050.
- Climate change could push more than 100 million people within developing countries below the poverty line by 2030.

The costs of climate change on people and the economy are clear. The toll on human life is irrefutable. The question is how will the world respond: Will we delay and pay more or plan ahead and prosper?

The Imperatives for Accelerating Adaptation

Accelerating climate change adaptation is a human, environmental, and economic imperative:

THE HUMAN IMPERATIVE

Climate change exacerbates existing inequities by widening the gap between people with wealth and people living in poverty. It has a disproportionate impact on women and

girls, who, in most of the world, have little voice in decisions that affect their lives. It also puts an unfair burden on future generations. Solutions to these climate-related inequities must address underlying power structures and dynamics. We will not accept a world where only some can adapt, and others cannot.

THE ENVIRONMENTAL IMPERATIVE

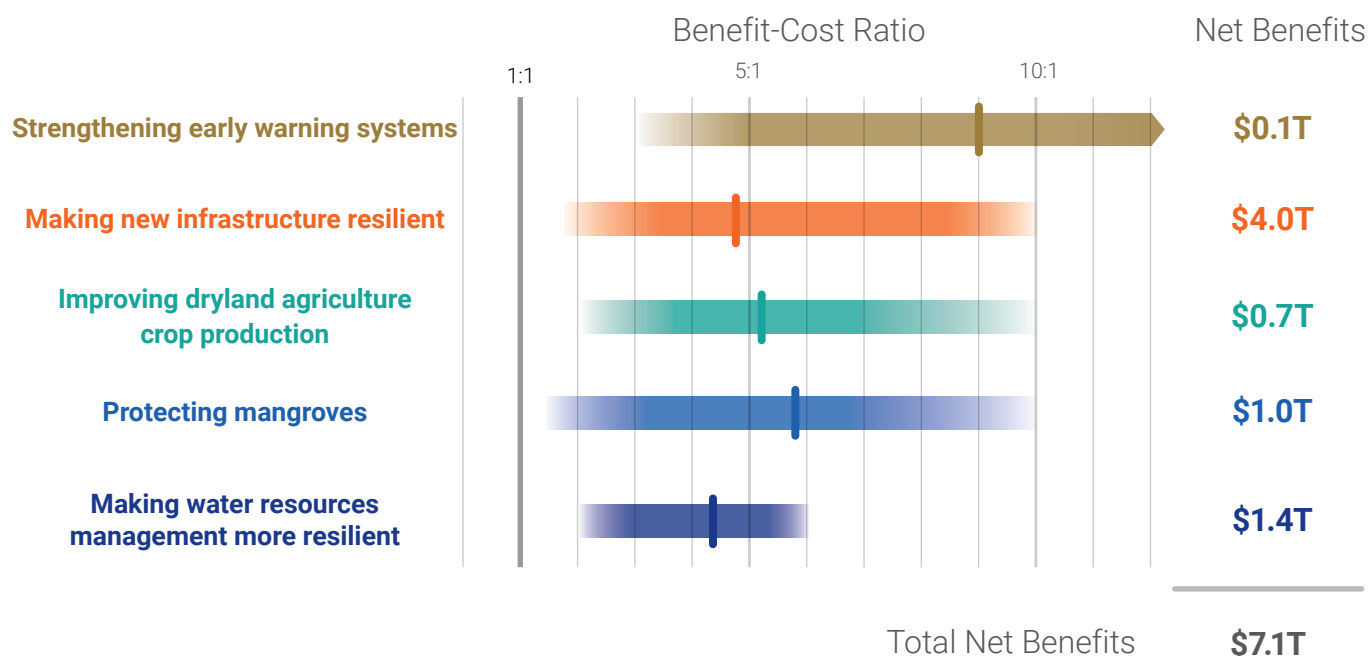
The natural environment is humanity's first line of defense against floods, droughts, heat waves, and hurricanes. A thriving natural environment is fundamental to adaptation in every human enterprise. Yet, one in four species is facing extinction, about a quarter of all ice-free land is now subject to degradation, ocean temperatures and acidity are rising, and climate change is accelerating the loss of natural assets everywhere. There is still time to protect and work with nature to build resilience and reduce climate risks at all scales, but the window is closing.

THE ECONOMIC IMPERATIVE

Adapting now is in our strong economic self-interest. The Commission found that the overall rate of return on investments in improved resilience is very high, with benefit-cost ratios ranging from 2:1 to 10:1, and in some cases even higher (see Figure ES.1).

Specifically, our research finds that investing \$1.8 trillion globally in five areas from 2020 to 2030 could generate \$7.1 trillion in total net benefits. In other words, failing to seize the economic benefits of climate adaptation with high-return investments would undermine trillions of dollars in potential growth and prosperity. The five areas we considered for this estimate are early warning systems, climate-resilient infrastructure, improved dryland agriculture crop production, global mangrove protection, and investments in making water resources more resilient. These areas are illustrative, based on available data on economic returns: the full report has broader recommendations across seven systems that go beyond these five areas.

FIGURE ES.1 Benefits and Costs of Illustrative Investments in Adaptation



Note: This graph is meant to illustrate the broad economic case for investment in a range of adaptation approaches. The net benefits illustrate the approximate global net benefits to be gained by 2030 from an illustrative investment of \$1.8 trillion in five areas (the total does not equal the sum of the rows due to rounding). Actual returns depend on many factors, such as economic growth and demand, policy context, institutional capacities, and condition of assets. Also, these investments neither address all that may be needed within sectors (for example, adaptation in the agricultural sector will consist of much more than dryland crop production) nor include all sectors (as health, education, and industry sectors are not included). Due to data and methodological limitations, this graph does not imply full comparability of investments across sectors or countries.

Source: World Resources Institute.

We find that adaptation actions bring multiple benefits, which we call the triple dividend. The first dividend is avoided losses, that is, the ability of the investment to reduce future losses. The second is positive economic benefits through reducing risk, increasing productivity, and driving innovation through the need for adaptation; the third is social and environmental benefits. In Figure ES.1, all five areas have avoided loss benefits, and the last three—improved dryland crop production, mangrove protection, and water resources management—have further economic, and social and environmental benefits.

While avoiding losses is the most common motivation for investing in resilience, taken alone such losses underestimate the total benefits to society. Many adaptation actions generate significant additional economic, social, and environmental benefits, which accrue on an ongoing basis starting at the time of investment and are not dependent on the future state of the climate. In other words, they are both more certain and more immediate.

Better awareness of and evidence for all three dividends will make the economic imperative case for adaptation ever stronger. We expand on the triple dividends in the Box ES.1.

Three Revolutions for a Better Future

The case for ambitious adaptation is clear, but it's not happening at nearly the pace and scale required. This is because climate impacts and risks are not yet adequately factored into decisions by those who make choices about the future. Achieving the change needed requires revolutions in three areas:

A Revolution in Understanding to ensure that the risks societies and economies face are fully understood—and reflected in the decisions that public and private actors make. A key element is the need to make risk visible, requiring more

The Triple Dividend in Action

Avoided losses:

- Early warning systems save lives and assets worth at least ten times their cost. Just 24 hours warning of a coming storm or heat wave can cut the ensuing damage by 30 percent, and spending \$800 million on such systems in developing countries would avoid losses of \$3–16 billion per year.
- Making infrastructure more climate-resilient can add about 3 percent to the upfront costs but has benefit-cost ratios of about 4:1. With \$60 trillion in projected infrastructure investments between 2020 and 2030, the potential benefits of early adaptation are enormous.

Economic benefits:

- Reducing flood risks in urban areas lowers financial costs, increases security, and makes investments that would otherwise be too vulnerable to climate risks more viable. London's Canary Wharf and other developments in East London would have been impossible without flood protection from the Thames Barrier.
- Drip irrigation technologies, first developed to address severe water scarcity, are spreading because they lead to higher crop productivity than traditional irrigation systems.

Social and environmental benefits:

- Mangrove forests provide more than \$80 billion per year in avoided losses from coastal flooding—and protect 18 million people. They also contribute almost as much (\$40–50 billion per year) in non market benefits associated with fisheries, forestry, and recreation. Combined, the benefits from mangrove preservation and restoration are up to 10 times the costs.

INVESTING IN ADAPTATION YIELDS



precise characterization of who and what is at risk—and why. As part of making risk visible, the public and private sectors can work together to more explicitly price risk in both economic and financial decision-making. Equally important is to understand what works and what options to prioritize by supporting experiential learning, stimulating innovations in science and technology, sharing solutions, and piloting new business models and financial services. It is important to consider all forms of knowledge, recognizing that valuable local knowledge rests with communities and indigenous populations.

A Revolution in Planning to improve how we make policy and investment decisions and how we implement solutions. The climate challenge is both urgent and pervasive across virtually all economic sectors. Mainstreaming in the public sector begins with upstream macroeconomic analysis and extends

through risk screening, environmental and social impact assessments, budgeting, permitting, and project design. Since many climate impacts are local, devolving planning and even financial responsibility to those most affected is critical. In the private sector, companies worldwide are starting to improve planning to protect their operations and assets from climate risks, but current levels of physical risk disclosure remain low. Both the public and private sectors need to learn to better incorporate high levels of uncertainty in their decision-making, as choices will need to be made soon between radically different options—long before we know if the world will actually be on a 1.5°C or a 4°C pathway.

A Revolution in Finance to mobilize the funds and resources necessary to accelerate adaptation. Even though the imperative for action is clear, money is not flowing at the

pace or scale needed. The public sector, first, is an essential provider of finance to protect people and livelihoods across communities and sectors; and second, is an enabler of increased private sector finance through disclosure requirements, metrics, and incentives, like buying down the risk of providing financial services to small-holder producers. The private sector will increase investments on its own account, but it should also increasingly complement the public sector in sharing the costs and benefits of adaptation investments, such as for infrastructure, contingency finance, and insurance. Finally, there is a critical need for higher levels of international financial support for adaptation in developing countries.

Fully implemented, these three revolutions will protect lives, livelihoods, homes, and jobs in the face of climate change.

Accelerating Adaptation in Key Systems

We must apply these revolutions to the key systems affected by climate change: systems that produce food, protect and manage water and the natural environment, plan and build our cities and infrastructure, protect people from disasters, and provide financing for a more resilient future. The report shows how the climate crisis is disrupting these systems and offers specific, actionable recommendations for how to respond.

Food: Global demand for food will increase by 50 percent and yields may decline by up to 30 percent by 2050 in the absence of ambitious climate action. A more resilient food future will rely on sharp increases in agricultural R&D, which has demonstrated benefit-cost ratios between 2:1 and 17:1; better alignment of government finance and incentives for farmers with long-term, sustainable, climate-smart production; and a step change in access to information, innovative technologies, and finance to enhance the resilience of 500 million small-scale farming households whose livelihoods are most critically impacted by climate change.

Natural Environment: Nature-based solutions regulate water flows, protect shorelines, cool cities, and complement built infrastructure. Despite underpinning the resilience of communities and economies, nature is rapidly being degraded. Large-scale protection and restoration of nature will require accelerating progress to meet existing political commitments, such as through the Convention on Biological Diversity; appropriately valuing natural assets in land use and

investment decisions; and increasing the scale of public and private resources to safeguard nature. Many nature-based adaptation solutions are also beneficial for mitigation and can provide one-third of the climate mitigation needed between now and 2030 to keep global warming below 2°C.

Water: Climate change is integrally connected to water systems and resources. Successful adaptation will require scaled-up investments in healthy watersheds and water infrastructure, dramatic improvements in efficiency of water use, and the integration of new climate risks, such as floods and droughts, at every level of planning and operation. More efficient water allocation and use will be vital to economic growth in the face of climate change: without such approaches, the GDPs of India, China and Central Asia would be from 7 to 12 percent lower, and much of Africa would be about 6 percent lower by 2050. Countries that make water management a top national priority, backed up by major governance changes and investments, are more likely to adapt and prosper; those that do not will experience serious challenges.

Cities: Urban areas are home to more than half the global population and are centers of opportunity and innovation. Adaptation efforts, if designed well, can take advantage of this transformative energy and generate high economic returns. In coastal cities, for instance, the cost of good adaptation is one-tenth the cost of no action. To plan and deliver more resilient urban services, cities everywhere need to invest in better climate risk information and technical capacity, drawing on credible topographic and community-level data. They should also invest in nature-based solutions to tackle water and heat risks, and in upgrading the living conditions of the 880 million people living in informal settlements that are highly vulnerable to climate change.

Infrastructure: Ports, roads, power, sanitation, sewer, and communications systems are all examples of infrastructure assets at risk from climate change. Climate-proofing existing infrastructure and building new infrastructure that is more climate resilient makes sound economic sense—on average, the benefits outweigh costs by 4:1. Investments in infrastructure need to directly build resilience, whether for storm-water drainage in cities or protecting coastal communities against sea-level rise. This will require developing blended public-private approaches that share the costs and benefits of investing in resilient infrastructure. Finally, we need to go beyond protecting individual assets to ensuring that whole systems are more resilient by making the right choices about where and what to build, which existing assets to upgrade, prioritizing green infrastructure wherever possible, and ensuring infrastructure continues to function even as damages occur.

Disaster Risk Management: Climate change is often most visible when seen through changes in the intensity and frequency of disasters: hurricanes, floods, heat waves, and wildfires. In the face of more common extreme weather events and climate-related disasters, we need to prevent, protect and recover. We need to proactively yet voluntarily move people and assets out of harm's way through better planning and investment decisions. At the same time, we need to scale up efforts to warn and prepare people ahead of disasters, actions that can dramatically reduce the loss of life, and exhibit very high returns on investment. Finally, social safety nets and improvements in forecast-based planning can help hasten recovery from disasters when they do strike.

The Way Forward: The Year of Action

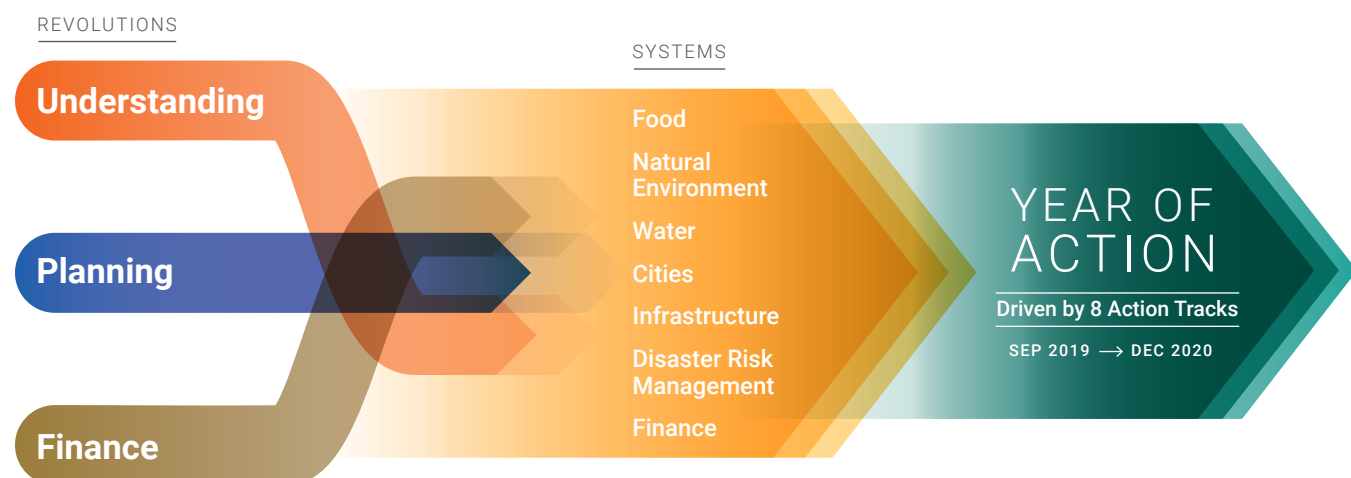
While the major transitions proposed in this report will take time to fully implement, it is essential that they start right away and with great urgency. For this reason, the Commission*—through Commissioner commitments and in partnership with others—will devote the coming 15 months to driving a set of Action Tracks that are essential to jump-start the needed transitions. In some cases, these actions will involve mobilizing political, technical, and financial support to existing initiatives; in other cases, they will entail forging new coalitions for change.

We will support efforts to integrate climate risk into all aspects of national financial planning and decision-making, while also calling for significant increases in the volume of devolved and decentralized funding available to local governments, cities, and community-based organizations. We will marshal a doubling of the scale of agricultural research for climate resilience. We will seek to transform how infrastructure investment decisions are made. We will call for scaled-up investment to improve people's ability to act ahead of extreme weather events, reduce deaths and human suffering, and lessen economic impacts. We will galvanize national, local, and private sector leadership for nature-based solutions. And we will seek to strengthen the resilience of natural freshwater and critical human water systems to reduce risks for billions of people facing high water stress and for those whose lives are impacted by floods and droughts.

The next 15 months are critical to mobilizing action on climate change and support global development. The Commission will champion the Action Tracks at the UN Climate Action Summit in September 2019 and throughout the coming year, including importantly at the Climate Adaptation Summit in the Netherlands in October 2020. The Commission will also aim to encourage countries to raise the level of ambition on adaptation in the lead up to the international climate summit, COP26, in December 2020.

We invite collaboration from all segments of society—governments, the private sector, civil society, and citizens around the global—to join us in urgently taking this agenda forward.

FIGURE ES.2 Adapt Now: The Way Forward



* In the following paragraphs we use the pronoun "we" to refer to individual or groups of Commissioners, Action Track partners, and Managing Partners as the ones carrying forward commitments to action—not all members of the Commission or the Commission as whole.