

world development report **2010**

*Development and
Climate Change*

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Foreword

Climate change is one of the most complex challenges of our young century. No country is immune. No country alone can take on the interconnected challenges posed by climate change, including controversial political decisions, daunting technological change, and far-reaching global consequences.

As the planet warms, rainfall patterns shift and extreme events such as droughts, floods, and forest fires become more frequent. Millions in densely populated coastal areas and in island nations will lose their homes as the sea level rises. Poor people in Africa, Asia, and elsewhere face prospects of tragic crop failures; reduced agricultural productivity; and increased hunger, malnutrition, and disease.

As a multilateral institution whose mission is inclusive and sustainable development, the World Bank Group has a responsibility to try to explain some of those interconnections across disciplines—development economics, science, energy, ecology, technology, finance, and effective international regimes and governance. With 186 members, the World Bank Group faces the challenge, every day, of building cooperation among vastly different states, the private sector, and civil society to achieve common goods. This 32nd *World Development Report* seeks to apply that experience, combined with research, to advance knowledge about *Development and Climate Change*.

Developing countries will bear the brunt of the effects of climate change, even as they strive to overcome poverty and advance economic growth. For these countries, climate change threatens to deepen vulnerabilities, erode hard-won gains, and seriously undermine prospects for development. It becomes even harder to attain the Millennium Development Goals—and ensure a safe and sustainable future beyond 2015. At the same time, many developing countries fear limits on their critical call to develop energy or new rules that might stifle their many needs—from infrastructure to entrepreneurship.

Tackling the immense and multidimensional challenge of climate change demands extraordinary ingenuity and cooperation. A “climate-smart” world is possible in our time—yet, as this Report argues, effecting such a transformation requires us to act now, act together, and act differently.

We must act now, because what we do today determines both the climate of tomorrow and the choices that shape our future. Today, we are emitting greenhouse gases that trap heat in the atmosphere for decades or even centuries. We are building power plants, reservoirs, houses, transport systems, and cities that are likely to last 50 years or more. The innovative technologies and crop varieties that we pilot today can shape energy and food sources to meet the needs of 3 billion more people by 2050.

We must act together, because climate change is a crisis of the commons. Climate change cannot be solved without countries cooperating on a global scale to improve energy efficiencies, develop and deploy clean technologies, and expand natural “sinks” to grow green by absorbing gases. We need to protect human life and ecological resources. We must act together in a differentiated and equitable way. Developed countries have produced most of the emissions of the past and have high per capita emissions. These countries should lead the way by significantly reducing their carbon footprints and stimulating research into

green alternatives. Yet most of the world's future emissions will be generated in the developing world. These countries will need adequate funds and technology transfer so they can pursue lower carbon paths—without jeopardizing their development prospects. And they need assistance to adapt to inevitable changes in climate.

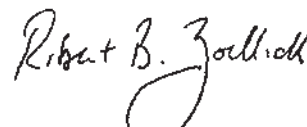
We must act differently, because we cannot plan for the future based on the climate of the past. Tomorrow's climate needs will require us to build infrastructure that can withstand new conditions and support greater numbers of people; use limited land and water resources to supply sufficient food and biomass for fuel while preserving ecosystems; and reconfigure the world's energy systems. This will require adaptation measures that are based on new information about changing patterns of temperature, precipitation, and species. Changes of this magnitude will require substantial additional finance for adaptation and mitigation, and for strategically intensified research to scale up promising approaches and explore bold new ideas.

We need a new momentum. It is crucial that countries reach a climate agreement in December in Copenhagen that integrates development needs with climate actions.

The World Bank Group has developed several financing initiatives to help countries cope with climate change, as outlined in our Strategic Framework for Development and Climate Change. These include our carbon funds and facilities, which continue to grow as financing for energy efficiency and new renewable energy increases substantially. We are trying to develop practical experience about how developing countries can benefit from and support a climate change regime—ranging from workable mechanisms to provide incentives for avoided deforestation, to lower carbon growth models and initiatives that combine adaptation and mitigation. In these ways, we can support the UNFCCC process and the countries devising new international incentives and disincentives.

Much more is needed. Looking forward, the Bank Group is reshaping our energy and environment strategies for the future, and helping countries to strengthen their risk management practices and expand their safety nets to cope with risks that cannot be fully mitigated.

The *2010 World Development Report* calls for action on climate issues: if we act now, act together, and act differently, there are real opportunities to shape our climate future for an inclusive and sustainable globalization.



The World Bank Group

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Main Messages: World Development Report 2010

Poverty reduction and sustainable development remain core global priorities. A quarter of the population of developing countries still lives on less than \$1.25 a day. One billion people lack clean drinking water; 1.6 billion, electricity; and 3 billion, adequate sanitation. A quarter of all developing country children are malnourished. Addressing these needs must remain the priorities both of developing countries and of development aid—recognizing that development will get harder, not easier, with climate change.

Yet climate change must urgently be addressed. Climate change threatens all countries, with developing countries the most vulnerable. Estimates are that they would bear some 75 to 80 percent of the costs of damages caused by the changing climate. Even 2°C warming above preindustrial temperatures—the minimum the world is likely to experience—could result in permanent reductions in GDP of 4 to 5 percent for Africa and South Asia. Most developing countries lack sufficient financial and technical capacities to manage increasing climate risk. They also depend more directly on climate-sensitive natural resources for income and well-being. And most are in tropical and subtropical regions already subject to highly variable climate.

Economic growth alone is unlikely to be fast or equitable enough to counter threats from climate change, particularly if it remains carbon intensive and accelerates global warming. So climate policy cannot be framed as a choice between growth and climate change. In fact, climate-smart policies are those that enhance development, reduce vulnerability, and finance the transition to low-carbon growth paths.

A climate-smart world is within our reach if we act now, act together, and act differently than we have in the past:

- **Acting now** is essential, or else options disappear and costs increase as the world commits itself to high-carbon pathways and largely irreversible warming trajectories. Climate change is already compromising efforts to improve standards of living and to achieve the Millennium Development Goals. Staying close to 2°C above preindustrial levels—likely the best that can be done—requires a veritable energy revolution with the immediate deployment of energy efficiency and available low-carbon technologies, accompanied by massive investments in the next generation of technologies without which low-carbon growth cannot be achieved. Immediate actions are also needed to cope with the changing climate and minimize the costs to people, infrastructure and ecosystems today as well as to prepare for the greater changes in store.
- **Acting together** is key to keeping the costs down and effectively tackling both adaptation and mitigation. It has to start with high-income countries taking aggressive action to reduce their own emissions. That would free some “pollution space” for developing countries, but more importantly, it would stimulate innovation and the demand for new technologies so they can be rapidly scaled up. It would also help create a sufficiently large and stable carbon market. Both these effects are critical to enable developing countries to move to a lower carbon trajectory while rapidly gaining access to the energy services needed for development, although they will need to be supplemented with financial support. But acting together is also critical to advance development in a harsher envi-

ronment—increasing climate risks will exceed communities' capacity to adapt. National and international support will be essential to protect the most vulnerable through social assistance programs, to develop international risk-sharing arrangements, and to promote the exchange of knowledge, technology, and information.

- **Acting differently** is required to enable a sustainable future in a changing world. In the next few decades, the world's energy systems must be transformed so that global emissions drop 50 to 80 percent. Infrastructure must be built to withstand new extremes. To feed 3 billion more people without further threatening already stressed ecosystems, agricultural productivity and efficiency of water use must improve. Only long-term, large-scale integrated management and flexible planning can satisfy increased demands on natural resources for food, bioenergy, hydropower, and ecosystem services while conserving biodiversity and maintaining carbon stocks in land and forests. Robust economic and social strategies will be those that take into account increased uncertainty and enhance adaptation to a variety of climate futures—not just “optimally” cope with the climate of the past. Effective policy will entail jointly evaluating development, adaptation, and mitigation actions, all of which draw on the same finite resources (human, financial, and natural).

An equitable and effective global climate deal is needed. Such a deal would recognize the varying needs and constraints of developing countries, assist them with the finance and technology to meet the increased challenges to development, ensure they are not locked into a permanently low share of the global commons, and establish mechanisms that decouple where mitigation happens from who pays for it. Most emissions growth will occur in developing nations, whose current carbon footprint is disproportionately low and whose economies must grow rapidly to reduce poverty. High-income countries must provide financial and technical assistance for both adaptation and low-carbon growth in developing countries. Current financing for adaptation and mitigation is less than 5 percent of what may be needed annually by 2030, but the shortfalls can be met through innovative financing mechanisms.

Success hinges on changing behavior and shifting public opinion. Individuals, as citizens and consumers, will determine the planet's future. Although an increasing number of people know about climate change and believe action is needed, too few make it a priority, and too many fail to act when they have the opportunity. So the greatest challenge lies with changing behaviors and institutions, particularly in high-income countries. Public policy changes—local, regional, national, and international—are necessary to make private and civic action easier and more attractive.