

Main Messages:

World Development Report 2010

Poverty reduction and sustainable development remain core global priorities. A quarter of humanity 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 environment—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.

Chapter 1: Development goals are threatened by climate change, with the heaviest impacts on poor countries and poor people, and climate change cannot be controlled unless growth in both rich and poor countries becomes less greenhouse-gas-intensive. We must act now: country development decisions lock the world into a particular carbon intensity and determine future warming. Business-as-usual could lead to temperature increases of 5°C or more this century. And we must act together: postponing mitigation in developing countries could double mitigation costs, and that could well happen unless substantial financing is mobilized. But if we act now and act together, the incremental costs of keeping warming around 2°C are small and can be justified given the likely dangers of greater climate change.

Chapter 2: Further climate change is unavoidable. It will stress people physically and economically, particularly in poor countries. Adapting requires robust decision making—planning over a long time horizon and considering a broad range of climate and socioeconomic scenarios. Countries can reduce physical and financial risks associated with variable and extreme weather. They can also protect the most vulnerable. Some established practices will have to be expanded—such as insurance and social protection—and others will have to be done differently—such as urban and infrastructure planning. These adaptation actions would have benefits even without climate change. Promising initiatives are emerging, but applying them on the necessary scale will require money, effort, ingenuity, and information.

Chapter 3: Climate change will make it harder to produce enough food for the world’s growing population, and will alter the timing, availability, and quality of water resources. To avoid encroaching into already-stressed ecosystems, societies will have to almost double the existing rate of agricultural productivity growth while minimizing the associated environmental damage. This requires dedicated efforts to deploy known but neglected practices, identify crop varieties able to withstand

climate shocks, diversify rural livelihoods, improve management of forests and fisheries, and invest in information systems. Countries will need to cooperate to manage shared water resources and to improve food trade. Getting basic policies right matters, but new technologies and practices are also emerging. Financial incentives will help. Some countries are redirecting their agricultural subsidies to support environmental actions, and future credits for carbon stored in trees and soils could benefit emission reductions and conservation goals.

Chapter 4: Solving the climate change problem requires immediate action in all countries and a fundamental transformation of energy systems—significant improvement in energy efficiency, a dramatic shift toward renewable energy and possibly nuclear power, and widespread use of advanced technologies to capture and store carbon emissions. Developed countries must lead the way and drastically cut their own emissions by as much as 80 percent by 2050, bring new technologies to market, and help finance developing countries' transition onto clean energy paths. But it is also in developing countries' interests to act now to avoid locking into high-carbon infrastructure. Many changes—such as removing distortionary price signals and increasing energy efficiency—are good both for development and the environment.

Chapter 5: A global problem on the scale of climate change requires international coordination. Nevertheless, implementation depends on actions within countries. Therefore, an effective international climate regime must integrate development concerns, breaking free of the environment-*versus*-equity dichotomy. A multitrack framework for climate action, with different goals or policies for developed countries and developing countries, may be one way to move forward; this framework would need to consider the process for defining and measuring success. The international climate regime will also need to support the integration of adaptation into development.

Chapter 6: Climate finance provides the means to reconcile equity with effectiveness and efficiency in actions to reduce emissions and adapt to climate change. But current levels fall far short of estimated needs—total climate finance for developing countries is \$10 billion a year today, compared with projected requirements of \$75 billion for adaptation and \$400 billion for mitigation annually by 2030. Filling the gap requires reforming existing carbon markets and tapping new sources, including carbon taxes. Pricing carbon will transform national climate finance, but international financial transfers and trading of emission rights will be needed if growth and poverty reduction in developing countries are not to be impeded in a carbon-constrained world.

Chapter 7: Meeting climate change and development goals requires significantly stepping up international efforts to diffuse existing technologies and develop and deploy new ones. Public and private investment—now in the tens of billions of dollars per year—need to be steeply ramped up to several hundreds of billions of dollars annually. “Technology-push” policies based on increasing public investments in R&D will not be sufficient. They need to be matched with “market-pull” policies that create public and private sector incentives for entrepreneurship, for collaboration, and to find innovative solutions in unlikely places. Diffusing climate-smart technology requires much more than shipping ready-to-use equipment to developing countries: it requires building absorptive capacity and enhancing the ability of the public and private sectors to identify, adopt, adapt, improve, and employ the most appropriate technologies.

Chapter 8: Achieving results in tackling the climate challenge requires going

beyond the international mobilization of finance and technology, by addressing the psychological, organizational, and political barriers to climate action. These barriers stem from the way people perceive and think about the climate problem, the way bureaucracies work, and the interests shaping government action. Policy change requires shifting political incentives and even organizational responsibilities. And it requires the active marketing of climate policies, tapping into social norms and behaviors, in order to translate the public's concern into understanding and understanding into action—starting at home.

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