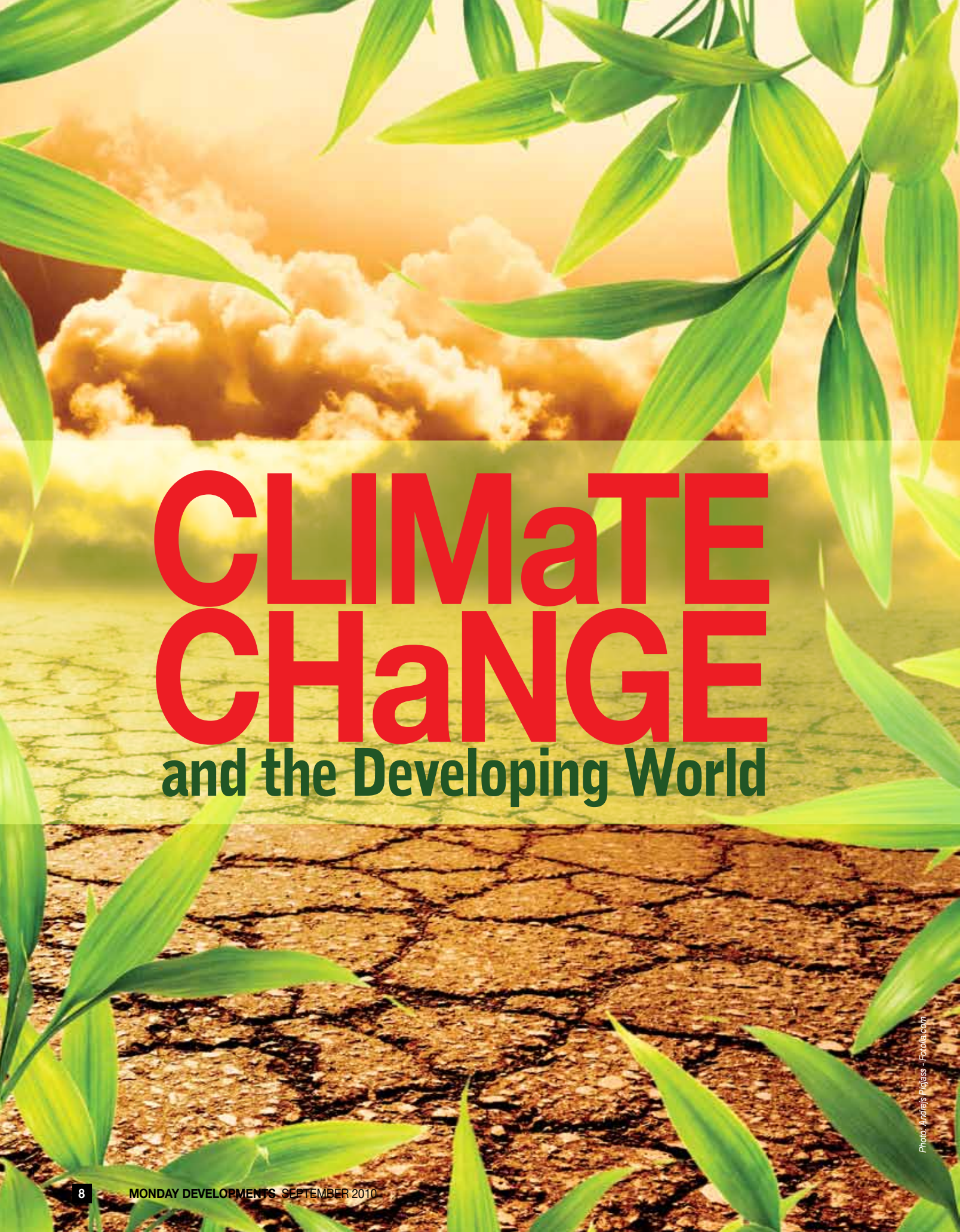

CLIMaTE CHaNGE
and the Developing World

Photo: Andrei's Pridass - Fotolia.com

Without swift, decisive action, a truly global threat could undo decades of progress.

One day in the not-too-distant future, a farmer in Bangladesh may look out over his land and come to the sad but undeniable conclusion that he and his family must leave their home. For decades the land has grown rice, which fed his family and provided a small amount of cash for household needs and his children's education. Now, his harvests are finished. The sea has risen and though the coast is many miles away, the rise often pushes brackish water into the low-lying terrain, slowly ruining the soil's fertility.

But where will his family go? Vast amounts of Bangladesh have been rendered unusable for agriculture; and the rice harvest—source of more than half the country's caloric intake—has plummeted. His nation, already one of the world's poorest and most densely populated, is in crisis as more and more people become refugees searching for new homes.

By Frank Tugwell, President and Chief Executive Officer, Winrock International

The story could be similar in other places around the world. On that same day in the sub-Saharan nation of Niger, a man and his wife might well debate whether they too should abandon their land. Using a simple irrigation system, they once grew peppers, onions, lettuce and cabbage, which they sold even during the dry season of July and August, known locally as "the hungry season." Now, their crops consistently fail even in what was formerly the wet season. Rain comes less often and, when it does, it comes as storms that dump too much water in too short a time. The couple considers moving to begin new lives—but they know they will be joining tens of thousands of others from their region trying to avoid starvation, looking for places to start over.

These scenarios illustrate points that have become increasingly inescapable as governments and development groups contemplate the specter of climate change:

- Nations of the world are unlikely to take the steps needed to limit the carbon dioxide concentration in the atmosphere to 450–500 parts per million, the level needed to avoid what have been called "disastrous consequences" including rising sea levels. The British government-commissioned Stern Review on climate change estimated that the cost of stabilizing CO_2 levels at 550 parts per million would be about one percent of global gross national product per year. Such an investment obviously would pay dividends many times its cost, but prospects for such united action are dim.
- The worst effects of global climate change will fall upon some of the world's poorest countries and upon the poorest people within the poorest countries, especially in sub-Saharan Africa and southern Asia. The countries that will suffer most from climate change are likely to be those most lacking in resources, infrastructure, and overall capacity to deal with problems. The people who will suffer most are those who already live closest to the edge of survival. Women will be especially vulnerable, as they are generally less able than men to move freely and quickly to new areas in search of work.
- While many of the world's poorest and most vulnerable countries are located in the already-hot tropics, the rise in temperature popularly associated with global climate change will, in the short term, be far less significant than increasing drought, erratic and unpredictable rainfall, and other disruptions in traditional water regimes.
- Issues related to food security loom largest in their potential to create or exacerbate problems of hunger, health (especially water-borne diseases), social conflict and political instability. The poorest countries often are also those whose populations are most rural and most dependent on agriculture for their livelihoods; if crops fail, no safety net exists for these people.

When adapting to climate change, it is important to find ways to address food security issues and growing energy needs without adding greenhouse gases to the atmosphere. Solar panels, such as the ones installed in remote villages in the Philippines, offer clean energy solutions while providing the electricity needed to improve livelihoods.

In the face of these dismaying prospects, which have the potential to undo decades of progress in bettering the lives of people in developing countries, what must be done to best combat the effects of climate change? First, we should already be thinking long and hard about damage control, country-by-country, and about protecting orderly world trade and democratic governance as they come under increasing pressure.

While adapting current programs is beneficial, everyone connected with international development must agree on the first tenet of new programs: Impact on climate change must be a primary consideration. Programs must be developed from their planning stages to have not just a neutral effect on global climate, but a positive one. Where there is no direct connection to the causes of climate change, programs must be designed to accommodate and ameliorate potential effects. Climate forecasting remains an inexact science; and it is impossible, in a practical sense, to fully grasp the multifarious possible consequences of climate change decades in the future. Nonetheless, it is more important than ever to ask: "What if?"

Old ways must be questioned and new questions asked. If rainfall is forecast to decrease long-term in an already drought-prone area, should farmers be encouraged now to change to more drought- and heat-resistant crops, even if that means abandoning long-standing traditional crops? In planning roads, should heightened consideration be given to reaching isolated, at-risk populations to facilitate transportation of food aid?

Infrastructure development must consider ways to deal with vastly different precipitation patterns—in some cases far from the tropics. In the Central Asian country of Uzbekistan, many farmers depend on irrigation fed by glacial runoff and snowmelt from distant mountains. Water is channeled through a system of canals, its flow remaining fairly consistent through the growing season as ice slowly melts. What happens when those distant glaciers disappear when winter snows

Photo: Winrock International

lessen or vanish? Even if, as some predictions indicate, rainfall increases in the region, will rainfall patterns match crop needs, or will rain come at the wrong time? Should planners be thinking now about building dams to capture rain, with the controlled release of reservoir water substituting for the traditional naturally controlled flow of snowmelt?

While adapting to climate change, we must find ways to meet the future food and energy needs of growing populations without adding greenhouse gases to the atmosphere. Some ideas can be found in ongoing efforts to reverse forest loss and develop clean and renewable energy sources such as solar power. Concepts such as payment for environmental services (for example, rewarding villages for protecting vital watersheds) and REDD (Reducing Emissions from Deforestation and Forest Degradation, which financially aids countries for maintaining forests, should be encouraged and rapidly implemented in a working landscapes approach. The carbon-trading market, led by voluntary registries such as the American Carbon Registry, can aid progress toward these goals by defining and standardizing the monetary value of forests and other carbon-sequestering resources, allowing trading in a global market and facilitating payments to nations, communities and private entities.

We are likely to be faced with a balancing act as we attempt to protect natural landscapes and the biodiversity they host, while increasing agricultural output to feed the earth's growing population. The Green Revolution of a generation ago transformed agriculture to an unprecedented degree, yet we are far from exhausting the means to reach greater productivity. Better yields through improved seeds, irrigation and other techniques have allowed more food to be produced per unit of land. New plant varieties and advances in technology will help increase the food supply while helping to preserve forests, grasslands and wetlands, as will simply expanding use of the best current methods and technologies to more farmers in more places.

At the same time, developed countries must continue to help poor countries adapt by building capacity in governance and supporting them as they move forward in recognizing and prioritizing their needs, such as predicting population growth, nutrition needs, and national food production potential. Improved agricultural varieties and practices must be developed, including biotechnology where benefits outweigh risks—particularly drought and saline resistant crops. We are helped in these efforts by the seemingly exponential growth in technology, especially telecommunications, which allows the dissemination of information and up–to-date technological advice even to the most remote areas. Agricultural leadership roles for women—who are often among the most vulnerable in developing countries—should be emphasized and improved.

It will require an unprecedented degree of cooperation to move forward simultaneously on all these fronts. The organizations that will be most effective will be those with the greatest experience in understanding conceptual linkages among programs and effectively implementing them, whether through increased use of remote sensing and geographic information systems for long-range planning or simple solutions such as more-efficient cookstoves that require less firewood harvest. Additionally, we need a return to leadership roles for private voluntary organizations, hopefully reversing a trend that includes the marginalization of community-based approaches.

It is easy to be pessimistic about our ability to coordinate efforts to fight worldwide climate problems, especially in the developing world. While millions of people have been affected by warmer winters in boreal regions, scarcer water in drought-prone areas and flooding of low-lying islands, others remain essentially untouched by the consequences of our planet's changing environment. Postponing effective action increases costs many times, but people in developed countries whose lives remain (for now) unchanged are reluctant to pay them. Hunter Lovins famously used the phrase "global weirding" to describe the odd weather patterns that are becoming increasingly less anomalous: drought, unseasonable rain, warm Arctic winters and more severe hurricanes. Yet the seeming randomness of such events allows many to dismiss their collective warning.

On the positive side, never before in human history has there been such widespread acknowledgment of our common fate. Perhaps this sense of global community will encourage us to make the unprecedented effort needed to fight and, hopefully, reverse the factors contributing to climate change. Its consequences, otherwise, could be devastating and far-reaching. MD