

LESTER BROWN

# WORLD ON THE EDGE

HOW TO PREVENT ENVIRONMENTAL AND ECONOMIC COLLAPSE



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*How to Prevent Environmental  
and Economic Collapse*



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accredited company. The paper used is FSC certified.

“Lester Brown has produced another ‘planetary survey’ book that tells us how to get off the wrecking train we are on courtesy of a dozen environmental assaults such as climate change. The better news (and there’s plenty) is that turning problems into opportunities generally puts money into our pockets.”

**Norman Myers, 21st Century School, University of Oxford**

“*World on the Edge* details the vice closing around us: a quadruple squeeze of global warming and shortages in food, water and energy. Then it explains the path out – and how little time we have left to take that path. Got anything more important to read than that?”

**Peter Goldmark, former head of the Port Authority of New York and New Jersey, President of the Rockefeller Foundation, and CEO of the International Herald Tribune**

“Brown’s comprehensive review of human civilization’s impending crises never becomes overwhelming, as it is accompanied by clear-eyed, pragmatic solutions that constitute a road map to a cleaner, more just world.”

**David Roberts, senior staff writer, [grist.org](http://grist.org)**

# *World on the Edge*

## *Preface*

When I meet old friends and they ask, “How are you?” I often reply, “I’m fine; it’s the world I am worried about.” “Aren’t we all” is the common response. Most people have a rather vague sense of concern about the future, but some worry about specific threats such as climate change or population growth. Some are beyond questioning whether civilization will decline if we continue with business as usual, and instead they are asking when this will occur.

In early 2009, John Beddington, chief science advisor to the U.K. government, said the world was facing a “perfect storm” of food shortages, water scarcity, and costly oil by 2030. These developments, plus accelerating climate change and mass migration across national borders, would lead to major upheavals.

A week later, Jonathon Porritt, former chair of the U.K. Sustainable Development Commission, wrote in the *Guardian* that he agreed with Beddington’s analysis but that the timing was off. He thinks the crisis “will hit much closer to 2020 than 2030.” He calls it the “ultimate recession”—one from which there may be no recovery.

These assessments by Beddington and Porritt raise two key questions. If we continue with business as usual, how much time do we have left before our global civilization unravels? And how do we save civilization?

*World on the Edge* is a response to these questions. As to how much time we have left with business as usual, no one knows for sure. We are handicapped by the difficulty of grasping the dynamics of exponential growth in a finite environment—namely, the earth. For me, thinking about this is aided by a riddle the French use to teach schoolchildren exponential growth. A lily pond has one leaf in it the first day, two the second day, four the third, and the number of leaves continues to double each day. If the pond fills on the thirtieth day, when is it half full? The twenty-ninth day. Unfortunately for our overcrowded planet, we may now be beyond the thirtieth day.

My sense is that the “perfect storm” or the “ultimate recession” could come at any time. It will likely be triggered by an unprecedented harvest shortfall, one caused by a combination of crop-withering heat waves and emerging water shortages as aquifers are depleted. Such a grain shortfall could drive food prices off the top of the chart, leading exporting countries to restrict or ban exports—as several countries did when prices rose in 2007–08 and as Russia did again in response to the heat wave of 2010. This in turn would undermine confidence in the market economy as a reliable source of grain. And in a world where each country would be narrowly focused on meeting its own needs, the confidence that is the foundation of the international economic and financial systems would begin to erode.

Now to the second question. What will it take to reverse the many environmental trends that are undermining the world economy? Restructuring the economy in time to avoid decline will take a massive mobilization at wartime speed. Here at the Earth Policy Institute and in this book, we call this massive restructuring Plan B. We are convinced that it, or something very similar to it, is our only hope.

As we think about the ecological deficits that are lead-

ing the world toward the edge, it becomes clear that the values generating ecological deficits are the same values that lead to growing fiscal deficits. We used to think it would be our children who would have to deal with the consequences of our deficits, but now it is clear that our generation will have to deal with them. Ecological and economic deficits are now shaping not only our future, but our present.

Beddington and Porritt deserve credit for publicly addressing the prospect of social collapse because it is not easy to talk about. This is partly because it is difficult to imagine something we have never experienced. We lack even the vocabulary. It is also difficult to talk about because we are addressing not just the future of humanity in an abstract sense, but the future of our families and our friends. No generation has faced a challenge with the complexity, scale, and urgency of the one that we face.

But there is hope. Without it this book would not exist. We think we can see both what needs to be done and how to do it.

There are two policy cornerstones underlying the Plan B transformation. One is to restructure taxes by lowering income taxes and raising the tax on carbon emissions to include the indirect costs of burning fossil fuels, such as climate change and air pollution, in fossil fuel prices. The amount of tax we pay would not change.

The second policy cornerstone is to redefine security for the twenty-first century. The threats to our future now are not armed aggression but rather climate change, population growth, water shortages, poverty, rising food prices, and failing states. Our challenge is not only to redefine security in conceptual terms, but also to reallocate fiscal priorities to shift resources toward achieving the Plan B goals. These include reforestation, soil conservation, fishery restoration, universal primary school education, and reproductive health care and



family planning services for women everywhere.

Although these goals are conceptually simple and easily understood, they will not be easily achieved. They will require an enormous effort from each of us. The vested interests of the fossil fuel and defense industries in maintaining the status quo are strong. But it is our future that is at stake. Yours and mine.

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# *World on the Edge*



## *On the Edge*

In the summer of 2010, record-high temperatures hit Moscow. At first it was just another heat wave, but the scorching heat that started in late June continued through mid-August. Western Russia was so hot and dry in early August that 300 or 400 new fires were starting every day. Millions of acres of forest burned. So did thousands of homes. Crops withered.

Day after day, Moscow was bathed in seemingly endless smoke. The elderly and those with impaired respiratory systems struggled to breathe. The death rate climbed as heat stress and smoke took their toll.

The average July temperature in Moscow was a scarcely believable 14 degrees Fahrenheit above the norm. Twice during the heat wave, the Moscow temperature exceeded 100 degrees Fahrenheit, a level Muscovites had never before experienced. Watching the heat wave play out over a seven-week period on the TV evening news, with the thousands of fires and the smoke everywhere, was like watching a horror film that had no end. Russia's 140 million people were in shock, traumatized by what was happening to them and their country.

The most intense heat in Russia's 130 years of record-keeping was taking a heavy economic toll. The loss of standing forests and the projected cost of their restora-

tion totaled some \$300 billion. Thousands of farmers faced bankruptcy.

Russia's grain harvest shrank from nearly 100 million tons to scarcely 60 million tons as crops withered. Recently the world's number three wheat exporter, Russia banned grain exports in a desperate move to rein in soaring domestic food prices. Between mid-June and mid-August, the world price of wheat climbed 60 percent. Prolonged drought and the worst heat wave in Russian history were boosting food prices worldwide.

But there was some good news coming out of Moscow. On July 30th, Russian President Dmitry Medvedev announced that in large parts of western Russia "practically everything is burning." While sweating, he went on to say, "What's happening with the planet's climate right now needs to be a wake up call to all of us." In something akin to a deathbed conversion, Russia's president was abandoning his country's position as a climate change denier and an opponent of carbon reduction initiatives.

Even before the Russian heat wave ended, there were reports in late July of torrential rains in the mountains of northern Pakistan. The Indus River, the lifeline of Pakistan, and its tributaries were overflowing. Levees that had confined the river to a narrow channel so the fertile floodplains could be farmed had failed. Eventually the raging waters covered one fifth of the country.

The destruction was everywhere. Some 2 million homes were damaged or destroyed. More than 20 million people were affected by the flooding. Nearly 2,000 Pakistanis died. Some 6 million acres of crops were damaged or destroyed. Over a million livestock drowned. Roads and bridges were washed away. Although the flooding was blamed on the heavy rainfall, there were actually several trends converging to produce what was described as the largest natural disaster in Pakistan's history.

On May 26, 2010, the official temperature in Mohenjo-daro in south-central Pakistan reached 128 degrees Fahrenheit, a record for Asia. Snow and glaciers in the western Himalayas, where the tributaries of the Indus River originate, were melting fast. As Pakistani glaciologist M. Iqbal Khan noted, the glacial melt was already swelling the flow of the Indus even before the rains came.

The pressure of population on natural resources is intense. Pakistan's 185 million people are squeezed into an area 8 percent that of the United States. Ninety percent of the original forests in the Indus Basin are gone, leaving little to absorb the rainfall and reduce runoff. Beyond this, Pakistan has a livestock population of cattle, water buffalo, sheep, and goats of 149 million, well above the 103 million grazing livestock in the United States. The result is a country stripped of vegetation. When it rains, rapid runoff erodes the soil, silting up reservoirs and reducing their capacity to store flood water.

Twenty or more years ago, Pakistan chose to define security largely in military terms. When it should have been investing in reforestation, soil conservation, education, and family planning, it was shortchanging these activities to bolster its military capacity. In 1990, the military budget was 15 times that of education and a staggering 44 times that of health and family planning. As a result, Pakistan is now a poor, overpopulated, environmentally devastated nuclear power where 60 percent of women cannot read and write.

What happened to Russia and to Pakistan in the summer of 2010 are examples of what lies ahead for all of us if we continue with business as usual. The media described the heat wave in Russia and the flooding in Pakistan as natural disasters. But were they? Climate scientists have been saying for some time that rising temperatures would bring more extreme climate events. Ecologists have warned that as human pressures on



ecosystems mount and as forests and grasslands are destroyed, flooding will be more severe.

The signs that our civilization is in trouble are multiplying. During most of the 6,000 years since civilization began we lived on the sustainable yield of the earth's natural systems. But in recent decades humanity has overshoot the level that those systems can sustain.

We are liquidating the earth's natural assets to fuel our consumption. Half of us live in countries where water tables are falling and wells are going dry. Soil erosion exceeds soil formation on one third of the world's cropland, draining the land of its fertility. The world's ever-growing herds of cattle, sheep, and goats are converting vast stretches of grassland to desert. Forests are shrinking by 13 million acres per year as we clear land for agriculture and cut trees for lumber and paper. Four fifths of oceanic fisheries are being fished at capacity or overfished and headed for collapse. In system after system, demand is overshooting supply.

Meanwhile, with our massive burning of fossil fuels, we are overloading the atmosphere with carbon dioxide ( $\text{CO}_2$ ), pushing the earth's temperature ever higher. This in turn generates more frequent and more extreme climatic events, including crop-withering heat waves, more intense droughts, more severe floods, and more destructive storms.

The earth's rising temperature is also melting polar ice sheets and mountain glaciers. If the Greenland ice sheet, which is melting at an accelerating rate, were to melt entirely, it would inundate the rice-growing river deltas of Asia and many of the world's coastal cities. It is the ice melt from the mountain glaciers in the Himalayas and on the Tibetan Plateau that helps sustain the dry-season flow of the major rivers in India and China—the Ganges, Yangtze, and Yellow Rivers—and the irrigation systems that depend on them.