ENVIRONMENT

Learning to Love Climate 'Adaptation'

It's too late to stop global warming. Now we have to figure out how to survive it.

By SHARON BEGLEY

TWO WORDS: AIRPORT RUNWAYS. AS SCIENtists and policy types figure out what changes will be necessary to cope with global warming, it's obvious that massive sea walls will be required to hold back rising oceans, that enormous new reservoirs will be needed to cope with the alternating droughts and deluges that many regions will suffer and that a crash program to develop heat- and drought-resistant crops would be a good idea if people are to keep eating. But it's the less-obvious yet no-less-necessary adaptations to climate change that are likely to wreak havoc. So, runways: hotter air, which we'll have more of in a greenhouse world, is less-dense air (hence, hot air rises). In less-dense air, says Bernoulli's principle, for planes to gain lift and stay aloft they need to take off faster. Ergo, airport runways will need to be longer to give planes the requisite ground speed before they're wheels up. Will someone please tell O'Hare?

It's such a polite, unthreatening word: "adapt." The kind of thing you do as you roll with the punches or keep a stiff upper lip, modifying your behavior to a new situation. But as it will be used in 2008, adaptation is a euphemism for widespread, expensive changes that will be needed to cope with climate change. Although some adaptations will be modest and low tech, such as cities' establishing cooling centers to shelter residents during heat waves, others will require such herculean efforts and be so costly that we'll look back on the era beginning in 1988, when credible warnings of climate change reached critical mass, and wonder why we were so stupid as to blow the chance to keep global warming to nothing more extreme than a few more mild days in March.

According to the Intergovernmental Panel on Climate Change (which just picked up its Nobel Peace Prize), we are in for a minimum of 90 more years of warming no matter how many Hummers are junked in favor of Priuses. The reason is both atmospheric (greenhouse gases such as carbon dioxide remain aloft for about a century) and political (the world can't seem to summon the will to reduce greenhouse emissions). We are now at 385 parts per million of carbon dioxide, and there is no way, short of an asteroid impact that sends the world economy back to the Stone Age, to avoid reaching 450ppm by midcentury, says Jay Gulledge of the Pew Center on Global Climate Change. Unfortunately, the effects of even 385ppm are worse than forecast. More Arctic sea ice is melting, for instance, and global sea levels are rising faster. "Climate change is with us now, and the rates and impacts are greater than predicted," says Pew's Vicki Arroyo. "We have no choice but to talk about adaptation."

The required adaptations will be much more profound than turning up the air conditioning a notch come summertime. Melting glaciers will trigger "glacier lake outburst floods," warns the IPCC; if you have a child wondering which field to enter, dam-engineering and -building look like excellent bets. Permafrost is melting, so villages and roads in the (once) frozen north that are built on it will have to be relocated. Sea-level rise is inundating the wetlands and mangrove swamps that once absorbed storm surges; sea-wall design and construction will also be a growth industry, at least in areas that can afford it. For the tens of millions of Bangladeshis and other impoverished people living in coastal regions that will be underwater, inland areas can "adapt" by making room for unprecedented waves of environmental refugees. In a warmer world, the atmosphere holds more moisture. When moist air collides with Arctic air, freezing rain will fall, as it did in the nation's midsection in December, leaving tens of thousands of people without power for more than a week. Let's hope some smart utility engineers are figuring out how to build power lines that don't snap when they've got hundreds of pounds of ice on them.

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Already some cities (New York, Seattle) and states (California, Alaska, Maryland, Oregon, Washington) have adaptation plans. Alaska is figuring out how to protect or relocate villages at risk from wave surges or flooding. California is beefing up its firefighting capacity because, in a greenhouse world, more forest fires will rage; it has also proposed desalinization plants for when seawater must substitute for rain that never fell and snowpack that never accumulated. Other locales are requiring new bridges to be built above anticipated storm surges (as for existing bridges, good luck) and developing heat-wave early-warning systems so they can ramp up cooling centers and get the word out to at-risk populations such as the elderly. They are vulnerable for both biological reasons (old bodies have trouble keeping cool) and social ones (they resist leaving their homes).

A trickle of money is beginning to fund such efforts. In August the Rockefeller Foundation announced a $70 million program on "climate-change resilience" to help the developing world in particular cope with what's coming. A climate bill in Congress would take some of the money raised from auctioning off permits to emit carbon dioxide and use it to fund adaptation research and programs (though other proposals would give the permits to industry gratis). Of course, if we do as competent a job adapting to climate change as we've done preventing it, too-short runways will be the least of our problems.