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Time to get serious about climate change

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Climate change has hit the American West. The number of large wildfires in Western forests increased sharply in the mid-1980s, according to a new study in the journal *Science*, with longer fire seasons and longer-burning fires becoming the norm. That should be no surprise to the residents of Yucca Valley, Calif., Sedona, Ariz., Carson City, Nev. and other locales where the fire season already is well under way with dangerous and unpredictable results.

The increased fire threat is linked to warming temperatures and earlier snowmelts in the mountains, the study says. It echoes other reports over the past few years showing that floods and wildfires have been increasing all across the globe and that the average intensity of tropical storms -- hurricanes and typhoons -- has been increasing in all ocean basins. While no single weather event, including California's searing heat wave of the past few days, can be confidently attributed to climate change, the increased frequency of such events is an expected result of rising surface temperatures. There is a clear message in the growing torrent of studies revealing that impacts of global climate change are already occurring: It is time to muster the political will for serious evasive action.

Alas, there are no quick and easy remedies. The biggest culprit is emission of carbon dioxide from fossil-fuel technologies that supply 80 percent of civilization's energy and are not easily modified to limit these emissions. Deforestation also adds carbon dioxide to the atmosphere and is hard to reverse. Agricultural expansion and unsustainable logging are at the root of this part of the problem and are linked to rising population and affluence, coupled with powerful market forces.

Some have suggested "geo-engineering" to offset the effect of heat-trapping gases. One such idea is placing gigantic mirrors in space to reflect away some of the incoming sunlight, yielding a cooling effect. This might conceivably help, but such approaches appear costly, limited in effectiveness, and burdened with large side effects.

Another approach is to adapt to climate changes by modifying farming practices and building additional dams and dikes to limit damage from floods and a rise in sea levels. Such adaptations will be essential because the climate is already changing and will change more before measures to reduce or counter society's emissions of heat-trapping gases can take hold. But the greater the climatic disruption, the more costly and difficult it will be to adapt.

So a prudent strategy must combine adaptation with effective measures to reduce the pace and magnitude of climate change. The best mitigation option immediately available is to accelerate the long-standing trend in raising the efficiency of energy use with the help of more efficient cars, trucks, planes, buildings, appliances and manufacturing processes. Between 1973 and 2005, the United States saved three times more energy through improvements in energy efficiency than through expanded supply. Those reductions in energy use also brought big reductions in what U.S. carbon-dioxide emissions otherwise would have been.

There is a great deal more energy-efficiency potential still to be exploited, with money to be saved through reduced energy purchases even without any monetary reward for the avoided carbon-dioxide emissions. But even a Toyota Prius hybrid still burns fuel, and a compact fluorescent lightbulb still uses electricity. The huge reductions in carbon dioxide emissions required to stabilize the climate will be attainable only if a strong push for increased energy efficiency is accompanied by an equally strong push to replace the predominantly fossil sources of fuel and electricity in today's world with some combination of renewable energy sources, nuclear energy and advanced fossil-fuel technologies that capture and sequester carbon dioxide rather than releasing it to the atmosphere.

Neither push will be strong enough without a penalty on carbon-dioxide emissions, such as a stiff carbon tax or a system of tradable permits to limit total emissions. The Bush administration has steadfastly refused to embrace either approach. And while President Bush and many in Congress insist that improved technology will be the solution to climate change (as well as the solution to our "oil addiction"), actual federal appropriations for energy research, development and demonstration have not risen noticeably since 2001. The president's budget request this year for such spending fell below what Congress appropriated last year, according to Harvard's Energy Technology Innovation Project.

Global climate change is real, and it is serious. The United States -- the largest emitter of carbon dioxide on the planet -- needs to become a leader instead of a laggard in developing and deploying serious solutions. The public should demand no less.

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