

Next 15 years is 'crunch time' for climate change

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Time is running out to avert severe global damage from climate change, says Don Fullerton, a finance professor and co-author of a chapter of the Intergovernmental Panel on Climate Change's fifth assessment report. Credit: L. Brian Stauffer

Time is running out to employ a mitigation strategy that would avert severe global damage from climate change, a University of Illinois energy policy expert says.

Although we still have time to stabilize future temperature levels and neutralize other potential negative outcomes created by climate change, that time is rapidly dwindling, says Don Fullerton, a finance professor and former deputy assistant secretary of the U.S. Treasury Department.

"We really have to get serious over the next decade. Otherwise, it's going to be unstoppable," said Fullerton, the associate director of the U. of I. Institute of Government and Public Affairs and a faculty associate in the Center for Business and Public Policy in the College of Business.

"People may not realize that observed increases in temperature and [sea level](#) are nothing compared to what will happen with the existing increases in [carbon dioxide concentrations](#) already in the atmosphere," he said.

One of the biggest risks is that we don't know exactly what will happen, and when it will happen, Fullerton says.

"We can look all we want at expected sea levels, expected temperature changes, and expected storm severity. Yes, those are all going to be costly. But the real problem is just the great unknowable nature of it all – and the possibility that something much more drastic could occur," he said.

According to Fullerton, who co-wrote a chapter on the social, ethical and economic concepts of climate change for the recently released Intergovernmental Panel on Climate Change's fifth assessment report, the next 15 years are "crunch time," but the global community really has to get moving within the next 10 years.

"International negotiations are continuing, but the problem is that they are especially difficult," he said. "Imagine trying to get more than 200 nations with differing views to signoff on anything."

The main sticking point in international negotiations is the divide between rich, industrialized nations such as the U.S. and rapidly growing and industrializing nations such as China and India.

"Even if most of the current emissions are coming from the rapidly growing nations, the major source of greenhouse gases for the past 200 years has been the rich, industrialized nations," Fullerton said. "So where does the responsibility lie? China and India have high emissions, but they cry foul because they haven't shared in the wealth that the U.S. and other industrialized nations achieved over the past 200 years."

An isolationist position for the U.S. wouldn't work very well, either.

"If the polar ice caps melt faster and sea levels submerge half of Bangladesh – a populous, low-lying country that is very poor – then that would create tens of millions of refugees," Fullerton said. "So it's just not accurate for people to think that's not going to affect us. Sure, we have a rich country and if we wanted to, we could put up higher levees around New Orleans. But it's not true that flooding in poor countries such as Bangladesh wouldn't affect us. When we see 100 million refugees with nowhere to go and nobody to help them, the U.S. is not going to sit idly by and watch all of those displaced people starve to death. It's going to be a lot cheaper if we do something now than if our hand is forced in the future."

From an ethical standpoint, another question is what our responsibility is to future generations, Fullerton said.

"On the one hand, we don't want to leave future generations with all of

our pollution," he said. "On the other, economic welfare around the world is improving. So you could argue that they're going to be better off already."

But if the current projections hold, and it's thought that future generations are going to be better off, then a different moral calculus might say they could bear the cost more easily than we could, Fullerton said.

"But that doesn't suggest waiting," he said. "It suggests doing something now but maybe going partially into debt to do it. We can't wait and have future generations do it all later, because it could be too late. If starting now is necessary, that doesn't mean we need to bear all of the costs now, especially if most of the benefits are going to [future generations](#). But there is an ethical argument for taking on some debt to do it now, in order to do it more effectively than what could be done years from now."

Even if the U.S. government does nothing, new technology is moving in the right direction, Fullerton said.

"The biggest initial step is moving from coal-fired power plants to [natural gas](#) power plants," he said. "Ironically, that's happening already, because of all the advances in fracking technology – it's a major improvement for [climate change](#), but we could be endangering our water supply. That is a good argument against doing things too fast. It's possible that we get better at fracking. We just don't want to build any new coal-fired plants. The new power plants we build should be natural gas plants. But at the same time, we need to continue to work on the technology for wind and solar power."

If we were to have an energy efficiency crash-program – the equivalent of this generation's Apollo program, as some critics have advocated – that could be very costly in its own right, Fullerton says.

"Reducing emissions quickly would mean shutting down coal-fired [power plants](#), which is wasteful because billions of dollars are already invested in those plants," he said. "For better or worse, coal-fired plants produce nearly half of the electricity produced in Illinois. So you can't just shut them down – although that would certainly be the fastest way to reduce greenhouse gas emissions. Or we could undertake extremely expensive carbon capture and sequestration, which is an untested technology. So doing it quickly makes it more expensive than, say, continuing to work on technologies and phasing in changes more slowly.

"It doesn't have to be zero emissions – solar, wind and nuclear, all of which are expensive. We would get way more than halfway there simply by switching from coal to natural gas, on the basis of carbon per kilowatt hour."

Fullerton also notes that substantial efforts are already underway to switch to low-carbon fuels and to embrace high-efficiency technology.

"We see plenty of efforts, both policy- and technology-based, to develop low-carbon fuels, biofuels, make cars more efficient, make houses and appliances more efficient," he said. "Those efforts are all having an impact and should not be discounted."

But it's not enough.

"It's necessary but it's certainly not sufficient, which is why we need a price on carbon, via a tax or cap-and-trade," Fullerton said. "Either option would provide an incentive to firms to make more energy-efficient technologies, to produce energy more efficiently and to use less carbon. And once electricity and gasoline become more expensive, that would also provide incentives for households to use less of it."

Such a price has two different effects: Reduce the carbon per unit of

output, and raise the cost of those carbon-intensive products, Fullerton said.

"And both of those effects would reduce carbon emissions," he said.

"But the current policymakers in the U.S. and other countries do not want to raise the cost of carbon-intensive output like electricity and gasoline; instead they prefer to hand out subsidies for energy-efficiency incentives. But we need both – to become more efficient, and to use less."

But above all else, we need a wake-up call, Fullerton said.

"Because it's only with a rude wake-up call that we'll change our habits, and that's what the IPCC's report hopes to accomplish," he said.

Provided by University of Illinois at Urbana-Champaign

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