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## My Turn: Why climate change report matters

By Alan K. Betts

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Early in February the Intergovernmental Panel on Climate Change, usually known just as IPCC, released a new report on the "Physical Basis for Climate Change." It was a monumental effort. It took 600 volunteer scientists five years to analyze all the new research and reach unanimous agreement. Another 600 scientists then reviewed the report carefully, as did thousands of industry representatives and critics. And at a weeklong meeting in Paris, it was reviewed by 113 governments (including the United States) and again given unanimous consent.

The report says there is unequivocal evidence that the climate system is warming, as a result of rising greenhouse gas levels, mostly coming from the burning of fossil fuels. All the evidence now fits together: The air and oceans have warmed; snow and ice are melting in many regions; and sea-level is rising. It is warming faster over land and in the Arctic; and heat waves, heavy precipitation and droughts have become more frequent. The past 50 years have been warmer than any time in the past thousand. The projections of our models are consistent with what we see happening. For Vermont, this means a mean warming close to 2 degrees Fahrenheit by the year 2030. We may not have made a conscious choice, but the earth is now committed, simply because we took no action in the past 20 years to reduce our burning of fossil fuels. Much of the added carbon dioxide will not be removed from the atmosphere for another century or so. The earth has to warm further, just to radiate more heat energy into space through its stronger "greenhouse" atmosphere.

The next 20 years of warming is committed, but at least we now know clearly what our choices are. Whatever action we take (or fail to take) in the next 20 years will determine our climate later in this century. Our best estimate for the mean warming of the whole earth from a doubling of atmospheric carbon dioxide is about 5 degrees Fahrenheit (and again, more over land and in the north). Only a major effort to make our energy economy more efficient and shift it from fossil fuels to renewable energy sources will prevent a doubling of carbon dioxide. The IPCC report notes one critical further warning. If we go back 125,000 years, to a time when the polar temperatures were much warmer than today (because of differences in the earth's orbit around the sun) global sea-level was about 16 feet higher. We will reach similar temperatures at the North Pole later this century, if our burning of fossil fuels continues to grow. Some of the polar ice may take centuries to melt, but we are already seeing from satellites an acceleration of the melt of sea ice and the Greenland ice cap.

For more than a decade, a lot of money has been poured into generating misinformation on the science of climate change, in an effort to confuse the public and postpone the day when the United States takes action. This resistance has collapsed in the last few months, because this IPCC report, with its clear scientific evidence, was put on the Web in draft form last fall. Finally this Valentine's Day, the last hold-out in the oil industry, Exxon-Mobil, threw in the towel with full-page ads in the Wall Street Journal, admitting that climate change was real. Now the dissenters have shifted from protesting the science to protesting the economic cost of change. I am a scientist, not an economist, but it is clear that the cost of doing nothing will be far higher than the cost of using our technology to intelligently fix a problem that was generated by our technology in the first place. Let us discuss in our communities what we would like to see for our children and grandchildren's future, and earnestly start the search for solutions.

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