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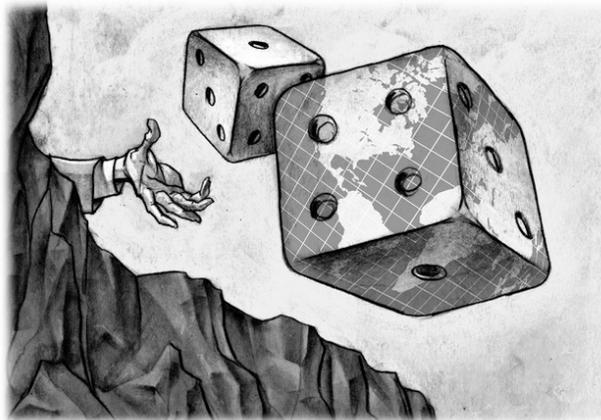
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ECONOMIC VIEW

A Small Price for a Large Benefit

By ROBERT H. FRANK

FORECASTS involving [climate change](#) are highly uncertain, denialists assert — a point that climate researchers themselves readily concede. The denialists view the uncertainty as strengthening their case for inaction, yet a careful weighing of the relevant costs and benefits supports taking exactly the opposite course.



Organizers of the recent [climate conference](#) in Copenhagen sought, unsuccessfully, to forge

agreements to limit global warming to 3.6 degrees Fahrenheit by the end of the century. But even an increase that small would cause deadly harm. And far greater damage is likely if we do nothing.

The numbers — and there are many to choose from — paint a grim picture. According to [recent estimates](#) from the Integrated Global Systems Model at the [Massachusetts Institute of Technology](#), the median forecast is for a climb of 9 degrees Fahrenheit by century's end, in the absence of effective countermeasures.

That forecast, however, may underestimate the increase. According to the same M.I.T. model, there is a 10 percent chance that the average global temperature will rise more than 12.4 degrees by 2100, and a 3 percent chance it will climb more than 14.4 degrees. Warming on that scale would be truly catastrophic.

Scientists say that even the 3.6-degree increase would spell widespread loss of life, so it's hardly alarmist to view the risk of inaction as frightening.

In contrast, the risk of taking action should frighten no one. Essentially, the risk is that if current estimates turn out to be wildly pessimistic, the money spent to curb greenhouse gases wouldn't have been needed to save the planet. And yet that money would still have prevented substantial damage. (The M.I.T. model estimates a zero probability of the temperature rising by less than 3.6 degrees by 2100.)

Moreover, taking action won't cost much. According to estimates by the [Intergovernmental Panel on Climate Change](#), a tax of \$80 a metric ton on carbon dioxide — or a [cap-and-trade](#) system with similar charges — would stabilize temperatures by midcentury.

This figure was determined, however, before the arrival of more pessimistic estimates on the pace of global warming. So let's assume a tax of \$300 a ton, just to be safe.

Under such a tax, the prices of goods would rise in proportion to their carbon footprints — in the case

of gasoline, for example, by roughly \$2.60 a gallon.

A sudden price increase of that magnitude could indeed be painful. But if phased in, it would cause much less harm. Facing steadily increasing fuel prices, for example, manufacturers would scramble to develop more efficient vehicles.

Even from the existing menu of vehicles, a family could trade in its Ford Explorer, getting 15 miles per gallon, for a 32-m.p.g. Ford Focus wagon, thereby escaping the effect of higher gasoline prices. Europeans, many of whom already pay \$4 a gallon more than Americans do for gasoline, have adapted to their higher prices with little difficulty.

In short, the cost of preventing catastrophic climate change is astonishingly small, and it involves just a few simple changes in behavior.

The real problem with the estimates is that the outcome may be worse than expected. And that's the strongest possible argument for taking action. In a rational world, that should be an easy choice,

but in this case we appear to be headed in the wrong direction.

This strange state of affairs may be rooted in human psychology. As the [Harvard](#) psychologist Daniel Gilbert put it in a 2006 op-ed article in The Los Angeles Times, “Global warming is bad, but it doesn’t make us feel nauseated or angry or disgraced, and thus we don’t feel compelled to rail against it as we do against other momentous threats to our species, such as flag burning.”

People tend to have strong emotions about topics like food and sex, and to create their own moral rules around these emotions, he says. “Moral emotions are the brain’s call to action,” he wrote. “If climate change were caused by gay sex, or by the practice of eating kittens, millions of protesters would be massing in the streets.”

But the human brain is remarkably flexible. Emotions matter, but so does logic. Even though we did not evolve under conditions that predisposed us to become indignant about climate

change, we can learn to take such risks more seriously. But that won't happen without better political leadership.

Senator [James Inhofe](#), a Republican from Oklahoma, has said that “the claim that global warming is caused by man-made emissions is simply untrue and not based on sound science.” On compelling evidence, he's wrong. . Yet he and his colleagues have the power to block legislation on greenhouse gases.

WE don't know how much hotter the planet will become by 2100. But the fact that we face “only” a 10 percent chance of a catastrophic 12-degree climb surely does not argue for inaction. It calls for immediate, decisive steps.

Most people would pay a substantial share of their wealth — much more, certainly, than the modest cost of a carbon tax — to avoid having someone pull the trigger on a gun pointed at their head with

one bullet and nine empty chambers. Yet that's the kind of risk that some people think we should take.

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