

## Chapter 2

# Wreck the Economy?

*The Kyoto treaty would have wrecked our economy, if I can be blunt.*

—George W. Bush, 2005.

IF I MAY BE BLUNT myself, of all the fears concerning climate change and addiction to oil, the fear of wrecking our economy is most paralyzing and least substantial. But even if the costs were greater, turning away in fear from the challenges of climate and addiction would sell short America's past and lay our own responsibilities at the feet of future generations.

The irony of America's energy policy, from the Kyoto agreement in 1997 through the present, is that by shouldering little responsibility for our energy use, we have once again handed the power of the oil market to OPEC. The connection is straightforward. The Kyoto treaty called on nations to reduce their use of fossil fuel, mainly coal and oil. Reducing the use of oil makes oil less scarce and reduces its price. In fact, as we saw in the previous chapter, reducing the world's use of oil was what crushed OPEC's market power for eighteen years.

Our choice was not between a wrecked economy and economic growth, it was between controlling our own energy policy and letting OPEC's high prices force upon us an energy policy of its own design.

There is a poor policy indeed, as OPEC has no intention of helping us end addiction or global warming. But its policy is forcing us to conserve oil. Already our oil use has stopped climbing, and we used only one tenth percent more oil in 2007 than in 2004. President Bush is claiming credit for reducing energy intensity, as high prices push us—as they did in 1975—towards tighter fuel-economy standards. While conservation is a benefit, when administered by OPEC it comes at far too high a price.

Instead of idly waiting to see what OPEC had in store for us, we could have chosen our own destiny. Our own market-based policies could have guided the use of better technology to reduce our dependence on coal and oil. This would have, according to the Department of Energy, reduced the world price of oil—just as it did in the 1980s. The DOE discovered this in 1998 when Congress asked it how the Kyoto treaty would affect our economy. The Department also discovered that implementing the Kyoto treaty, flawed as it was, would not wreck our economy.

It is too late to avoid the present bout of tribute-paying to those foreign and domestic powers who control the world's oil. But we can, in a few years, regain control of our energy destiny by heeding the advice of a president who presided over one of the most perilous times in America's history. Before confronting World War II, Franklin D. Roosevelt faced the dangers of the Great Depression. He did not flinch, saying "Only a foolish optimist can deny the dark realities of the moment." But he also warned of the greater danger of being ruled—and paralyzed—by fear, famously declaring: "We have nothing to fear but fear itself."

Just as it was sixty years ago, fear itself is again our greatest enemy. That's why in writing this book I will begin by dispensing with the often exaggerated dangers of economic ruin, catastrophic shortages, and unstoppable climate change. And, although the book is motivated by the real dangers of dependence on foreign oil and global warming, I will not dwell on these. Instead, I will present a plan to improve our chances against both threats, without wasting money and at surprisingly low cost. While no panacea exists, what we need as a nation is courage, cool heads, and a clever, low-risk plan of action.

## **Overcoming Fear**

Only after the fear of taking action has been laid to rest will it make sense to plan a more secure and ecological energy future. But after so much misleading rhetoric, a simple claim that America's economy is strong will not suffice. The belief in economic damage is so ingrained that it afflicts even some of those most willing to take action.

Undoing these misconceptions requires looking at energy policy from all angles—from the expert, rather than the political, perspective, from the perspective of economic growth, from the perspective of physical possibility, and finally, from the present perspective of inaction.

To begin, consider what the government actually found when it studied the cost of complying with the Kyoto Protocol. In 1998, Congress asked the Department of Energy (DOE) to examine this cost. Congress required DOE to assume compliance was initiated as late as possible and then very suddenly. Congress also prohibited any analysis of fuel economy or energy efficiency standards. It only allowed DOE to model a carbon tax.

In spite of these cost-increasing assumptions, DOE found no reduction in long-run economic growth. The shock of sudden compliance was found to cause a temporary slowing of growth, but by 2020 the GDP was less than one percent behind the no-policy scenario. But what about more recent proposals that seek to accomplish even more than the Kyoto Protocol?

For over twenty years economists have been estimating the costs of energy policies. There have been dozens of such studies, and these studies have generally found costs in the range of 1 to 3 percent of GDP for strong policies. I will use a cost of 2 percent as a benchmark, though most proposals have costs that increase slowly and do not reach 2 percent for decades. I will return to the question of why the cost should be this low after dispensing with a more urgent question.

## **Could a 2 Percent Cost Wreck Economic Growth?**

Confusingly, politicians and pundits always seem to tie energy-program costs to reduced economic growth. This happens so consistently that when I first checked on costs, I was afraid that an effective policy would reduce the economy's growth rate by 2 percent—from a normal 3 percent per year to 1 percent per year. That would indeed wreck the economy.

When President Bush announced his Climate Change Initiative on Valentines day 2002, he said:

Our nation must have economic growth -- growth to create opportunity; growth to create a higher quality of life for our citizens. Growth is also what pays for investments in clean technologies, increased conservation, and energy efficiency.

It almost sounds as if growth itself is in question. Perhaps, if the President picked the wrong climate-change initiative, America would stop growing. This didn't sound right to me, but if true and the country grew even 1% slower for 100 years, the economy would make almost two thirds less progress. Such a dire outcome worried me even though the no-growth

punditry appeared to be based on some unspoken pop-economic theory or else a misunderstanding of real economics. No studies or papers were ever cited.

For help with this question I turned to the work of Dale Jorgenson. Jorgenson has a chair at Harvard, has been President of the American Economic Association, and has won many honors in economics. Perhaps more importantly, he is the man who wrote the book, figuratively and literally, in this area of economics.

So I bought Jorgenson's Growth Volume 2: Energy, the Environment and Economic Growth. The first study in the book analyzes the 1973–1986 OPEC crisis, the original great “energy-policy” experiment.

Of all the studies estimating the costs of an economy-wide policy this appears to be the most reliable because it examines a policy that really happened. Most studies examine future proposed policies. The strength of the OPEC policy provided Jorgenson with an ideal data set for his analysis.

Two of his most interesting scenarios in his chapter are called OIL72 and OIL81. The first looks at what would have happened if OPEC had never raised oil price beyond \$12.50 per barrel (in 2007 dollars), the price in 1972. The OIL81 scenario looks at what would have happened if the oil price had stayed at its 1981 value of about \$90 per barrel. In the good-news case, the country would have been a bit richer, and in the bad-news case a bit poorer. The difference is the impact of raising the oil price from \$12.50 to \$90 and keeping it there permanently. Jorgenson found that policy would have reduced GDP by 2.5 percent.

Jorgenson's analysis shows that ten, twenty, or fifty years after oil reached \$90 per barrel, the U.S. would be 2.5 percent poorer than if oil had stayed at \$12.50 per barrel. This tells us that growth has not been damaged. If growth had been permanently slowed by this harsh and permanent energy policy, GDP would have fallen further and further behind each year.

Although this is probably the most convincing analysis, because it is based on a wealth of real-world data and examines a harsh policy, it is completely standard with regard to long-run economic growth. Every analysis I have examined shows the same effect. Long-run growth is not damaged by an energy policy.

In fact economists are not surprised by this. Long-run growth is primarily determined by technological progress, and this is not slowed by energy policy. Because energy policies encourage the use of more advanced and efficient technology in place of fossil fuel, there is no reason to suspect they would slow technical progress, or economic growth.

Looking at the historical performance of the U.S. economy tends to confirm this finding. In 1982 the economy slumped, but in the next three

years it grew 4.5, 7.2 and 4.1 percent—quite a record considering average growth is only 3.1 percent and OPEC’s price didn’t collapse until 1986.

So this answers the question. A policy that costs 2 percent of GDP cannot wreck economic growth. Imposing a 2 percent cost on the economy will slow its growth only until the GDP has fallen 2 percent behind. If it stopped growth, that would take only about eight months. After that the economy will resume normal growth indefinitely.

## **Is 2 Percent a Large Sacrifice?**

President Nixon announced Project Independence just three weeks after the start of the oil embargo in 1973, saying

We must ask everyone to lower the thermostat in your home by at least six degrees so that we can achieve a national daytime average of 68 degrees. —President Nixon, November 7, 1973.

President Carter endorsed the same temperature and suggested wearing a sweater. But over the past thirty years, the talk of sacrifice has shifted dramatically. Even among environmentalists, only a few emphasize sacrifice, and most don’t think much is needed. Perhaps Governor, and Presidential Candidate, Bill Richardson, in an interview posted on the environmental web site [grist.org](http://grist.org), expressed the current view most clearly.

I believe it's going to take ... sacrifice for the common good ... not sacrifice, like Americans wearing sweaters and turning the heat down. ... Maybe, instead of driving to work, once a month go mass transit.

Richardson is not wrong, but he’s missing a crucial part of the picture. Usually sacrifice means getting by with less. A strong energy policy does not require that. It will cost us something, but even with the “sacrifice” we will be getting by with more, not less. But we won’t have quite as much more as we could have had.

Here’s an example of “sacrifice” with growth. The Apollo program sent a man to the moon but made us poorer—we paid more taxes to cover its costs. But it didn’t hurt growth. America grew richer at the same time that Apollo’s costs were increasing. The costs increased much more slowly than the economy grew, so the “sacrifice” for Apollo didn’t make the country poorer. On the day we landed a man on the moon, the country was richer than on the day President Kennedy announced that goal. Just not quite as much richer as it might have been.

Perhaps it’s worth restating the obvious at this point. The purpose of an Apollo program or an energy program is to buy a moon landing, better climate or more security. That’s why there is a cost. If the policy is wise,

the benefit will outweigh the cost. The gain will be worth more than the small sacrifice.

In April of 2007 the Massachusetts Institute of Technology (MIT) looked forty years into the future at the impacts of seven cap-and-trade bills before Congress. These would place a decreasing cap on greenhouse gas emissions. The strictest scenario modeled by MIT was as strict as any of the bills except the Waxman bill. Figure 1 shows the increase in “market consumption” per person (not per family) from 2010 until 2050, under this scenario.

Consumption more than doubles, from \$31,900 per person in 2010 to \$74,500 per person in 2050. But with a strict greenhouse-gas policy, it will be 2.4 percent less in 2050 than without it. The “sacrifice” means getting 128 percent richer instead of 133 percent richer.

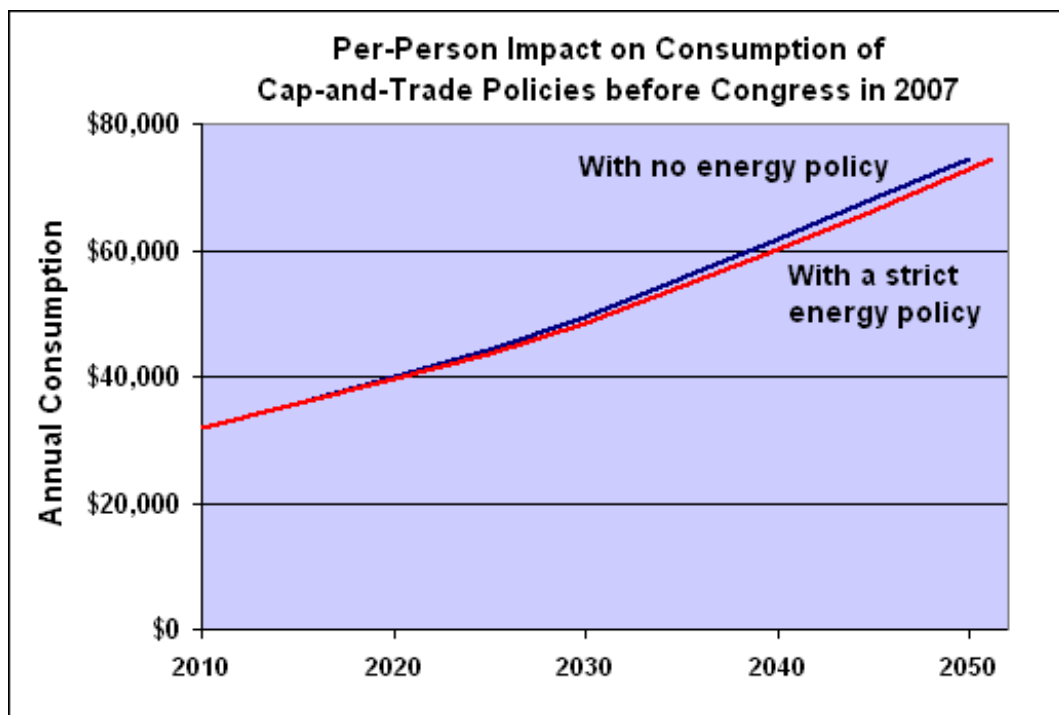


Figure 1. After forty years, per-person (not per family) consumption would only have only reached \$72,700 instead of \$74,500, under a strict greenhouse-gas policy. The policy would reduce emissions 75%. The calculations were published by the Massachusetts Institute of

The required “sacrifice” is much smaller in the first few years of the policy. After ten years, consumption is only half a percent lower. Deeper cuts in CO<sub>2</sub> are required over time. After fifteen years, CO<sub>2</sub> has been cut

about 50 percent and after forty years, about 75 percent, relative to the no-policy case.

The reason the economy falls further behind over time is not because economic growth is damaged, but because the policy becomes stricter. If energy problems abate and the policy stays constant, growth will be unaffected. A constant policy has no impact on growth. The “sacrifice” required can also be viewed as a delayed increase in income. Under MIT’s strict policy, the country must wait until 2051 to achieve the market income it could have attained in 2050.

## **How Can it Be So Cheap?**

You may now be wondering if the economists that come up with these numbers are in touch with reality. How could it be so inexpensive to cut back on fossil fuel, the very life blood of a modern economy? Why are we so addicted, if it’s so cheap to switch?

The basic answer is this. America is rich, and fossil fuel is not as costly as you might think. It has just been too cheap to pass up. Much of the cost of electricity and gasoline is not the cost of fossil fuel, but of wires, generators, refineries and so on.

In 1998 DOE’s model predicted that the largest carbon savings would come from replacing coal-fired generators with natural-gas fired generators. Coal is higher in carbon per unit energy than other fossil fuels and produces 35% of U.S. CO<sub>2</sub> emissions. Natural gas is the cleanest fossil fuel and generates electricity more efficiently. So using gas instead of coal would reduce U.S. CO<sub>2</sub> emissions by 20 percent, a very good start. How much would that cost us?

Coal is cheap. All the coal we use costs only 0.2 percent of GDP. That’s two one thousandths of domestic production. However coal plants are expensive to build, so gas-fired electricity costs only as much as burn double-priced coal in these expensive coal plants. Using gas instead of coal would cost 0.4 percent instead of 0.2 percent of GDP. That would reduce carbon emissions by 20 percent. At that rate, we could eliminate all carbon emissions (that’s over doing it) for only 1 percent of GDP.

Wind power is a little more expensive than using natural gas, but it would eliminate 100 percent of the CO<sub>2</sub> emissions. So it’s almost as cheap a way to reduce emissions as switching to natural gas. A third option is nuclear power. It costs about the same amount as wind power and also eliminates CO<sub>2</sub> emissions. (Of course building power plants of any kind causes some CO<sub>2</sub> emissions but these are very small compared with the amount emitted by producing power with coal.)

What about oil?

As I write this, at the start of 2008, with oil costing almost \$100 per barrel, I cannot escape a startling conclusion. OPEC and the world oil market have already forced on us an oil-conservation policy—in the form of high oil prices—that is more costly than required for the strictest of the proposed climate-change policies. We do not need to spend more, we need to take revenues back from OPEC and Exxon while maintaining a policy as effective as the one now in place. Although OPEC has the most control of world price, all suppliers, including American suppliers, benefit equally from the high prices.

The effect of high oil prices has, for three years running, stopped the growth in oil use, and if the past is a guide, oil use will decline—provided the price stays high. The policy goal should be to keep the price high while recapturing revenues from OPEC and Exxon.

## **Even Cheaper?**

The cost of alternative energy is easier to pin down than the cost of conservation, so I used alternative energy as a reliable way to show that costs could be low. But when OPEC raised prices, the world responded mostly by conserving, because there is more cheap conservation available than cheap alternative fuel.

A 2007 report from the McKinsey Company, the world's leading management consulting firm, examined dozens of different approaches to abating greenhouse gases, including conservation measures, forestation, alternative fuels and more. They found that a large fraction of the required emission reduction could be accomplished at a cost savings (a negative cost) of half a percent of world GDP. For example, better insulation can save more by reducing oil and gas costs than it costs to insulate. To be cautious, they simply count this savings as zero cost, then double their actual estimate for more caution, and conclude that an aggressive policy could cost 1.4% of world GDP.

## **Taking Charge of Oil Policy**

How did OPEC end up in charge again? Before the 1973 oil embargo, the United States spent under 2 percent of its GDP on oil. Then for a few years it spent 4 percent, and then in 1981 the cost spiked to 7.4 percent, and the world took oil prices seriously. By the end of 1985, OPEC was crushed by



world-wide conservation, and for eighteen years, up until 2004, the United States again spent, on average, under 2 percent of GDP on oil.

During the eighteen-year grace period, and especially in the 1986, there were two points of view. Some said to keep the price high, keep conserving, and keep OPEC at bay. Others said they were liking the low prices. “Liking low prices” won out.

Keeping prices low had the predicted effect; conservation wore off, though not completely. Meanwhile, OPEC was wisely making very few new investments in supply capacity and waiting for world oil use to grow. It has grown, and prices are back up. The United States is now spending 4 percent of GDP on oil up from 1.7 percent in 2001. OPEC’s recent “energy policy” is a lot like a Kyoto policy focused on oil, but with a startling difference.

In 1998 DOE concluded that the United States, to comply with the Kyoto treaty, would need to push the price of gasoline up to \$2.31 per gallon (2007 dollars). Similarly MIT found that a price of \$70 per barrel of oil was sufficient up through 2025. In other words oil and gas are costing more now than if we had complied with Kyoto or something even stricter.

But that’s not the difference I’m talking about. To see the real difference, follow the money. DOE assumed the revenues from the tax on oil would be returned “to consumers through a personal income tax lump sum rebate.” In other words all of the higher gas costs of a Kyoto policy would have been returned to you and me with an annual check from the government. (Chapter 7 will explain why this works.) That’s the same way Alaska returns revenues from its oil pipeline to its citizens. Needless to say, when OPEC and Exxon raise the price of gasoline, they forget to put the check in the mail. That’s the difference.

There is no doubt that paying OPEC is worse than paying ourselves, but with a Kyoto-style policy, wouldn’t we have had to pay both at once? The answer is “No” for two reasons. First, gasoline prices only need to be just so high for conservation purposes, say \$3.00 per gallon. To the extent OPEC raises the price, we don’t need to. Second, if we raise the price of oil first, that curbs oil use and makes it hard for OPEC to raise the price.

#### **DOE’s Conclusion:**

##### **Kyoto Compliance would Reduce the Price of Oil**

“Because of lower petroleum demand in the United States and in other developed countries that are committed to reducing emissions under the Kyoto Protocol, world oil prices are lower by between 4 and 16 percent in 2010, relative to the reference case price of \$20.77 per barrel.”

The 16 percent value is for full compliance and the 4 to 16 percent range in oil-price reduction indicates that U.S. compliance has the dominant

A Kyoto policy initiated in 1998 would have preempted OPEC by six years. DOE estimated that a Kyoto policy could have cut OPEC's prices 16 percent, but DOE's policy was focused on coal, and had no fuel economy measures. With a stronger focus on oil, OPEC's price could have been reduced more. Also, DOE did not anticipate such a tight oil market, and when the market is tight, an oil conservation policy has more impact on price.

DOE is not alone in predicting that climate and independence policies will reduce OPEC's price. For example, MIT's model predicts a 47 percent reduction in the world oil price by 2050, and others have made similar predictions. This is because the idea that reducing demand reduces prices dates back to Adam Smith. That's just how markets work, even when part of the market is controlled by a Cartel.

## **What would a good oil policy look like?**

As we'll explore in greater length in chapter 7, a good oil policy would include an "Untax" on oil and a fuel-economy incentive for car makers. An "Untax" is what I will call the DOE study's method of refunding all revenues. It's not a tax because the government keeps none of the revenue. As I mentioned, exactly how this works will be discussed in detail later. The point to understand here is that all revenues are refunded on a per person basis, exactly the way Alaska handles their "Permanent Fund."

The Untax will keep encouraging us to use less oil, even if OPEC lowers its price. Here's an example: suppose the price of oil is \$100 per barrel when the Untax is implemented. The starting Untax rate would be zero, because the oil price is already high enough. If the price went down to \$80, the Untax would go up to \$20 a barrel. For consumers it would be like the price of oil stayed at \$100 so they would keep conserving and keep buying alternative fuel. But they would still get the benefit of OPEC's price reduction. All of the money collected, \$20 per barrel on 20 million barrels per day, would be refunded in June by check, on an equal per-person basis. Same as Alaska.

Keeping the domestic price of oil effectively at, say, \$100 per barrel while pocketing the difference between that and the actual world oil price will hold down demand, and hold down the world price of oil. But the surprising news is that the most expensive part of a climate policy is already in place; that is, the world oil price is already high enough, thank you. As world oil prices come back down, climate policy will only get cheaper.

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Since 1920, U.S. income has increased faster than energy use in every decade. All told, and adjusting for inflation, we now have three times as many dollars to spend per unit energy consumed. Because this trend is expected to continue, and in spite of energy prices rising, DOE predicts that in the future, energy will continue to cost less rather than more as a fraction of national income. As energy has become less important, other things, education, health, leisure, and our natural environment, have become easier to afford and more important.

Given the risks of climate change and energy dependence, and the low cost of reducing these risks, inaction seems inexcusable. Paying OPEC, Exxon and the world oil market to run our energy policy for us seems foolish and cowardly. There is now a groundswell of public sentiment in favor of reversing course and accepting the energy challenge. My hope is that the following chapters will help to improve the effectiveness of the course that will soon be chosen.