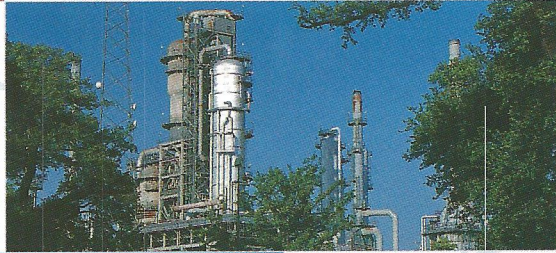


Global Climate Change



The Op-Ed Series



ExxonMobil

This booklet reprints a four-part series of ExxonMobil Op-Eds on Global Climate Change that appeared recently in many widely circulated newspapers.

The articles **Do No Harm**, **Unsettled Science**, **The Promise of Technology**, and **The Path Forward on Climate Change** summarize our views on this important issue.

As you will read, we believe climate change may pose a legitimate long-term risk and that much more needs to be learned about it. We believe that enough is known to address climate change through responsible actions now, but not enough to impose unworkable short-term agreements like the Kyoto Protocol, which would adversely affect the well being of people everywhere in the world.

We believe the responsible path forward relies on rigorous scientific, economic and technical analyses. The approach should include improved understanding of the basic underlying science, cost-benefit analyses of public policy proposals, and research on and development of promising technology. The approach also encourages cost-effective voluntary actions that improve energy efficiency now, and recognizes the need to remove regulatory and tax barriers that slow or prevent introduction and widespread deployment of new technology.

We hope these articles will give you a greater understanding of our views and that they will stimulate you to evaluate the wide range of assertions made by various parties with an interest in this issue.



Lee Raymond

Lee R. Raymond
CEO and Chairman

April, 2000

Do No Harm

Just as changeable as your local weather forecast, views on the climate change debate range from seeing the issue as serious or trivial, and from seeing the possible future impacts as harmful or beneficial.

Some in the debate believe they can predict changes in climate decades from now. Advocating "precaution," and despite scientific uncertainty, they believe actions should be taken immediately to reduce carbon dioxide emissions by mandating severe restrictions on energy use.

Though we wholly support the efficient use of fuel, a prudent approach to the climate issue must recognize that there is not enough information to justify harming economies and forcing the world's population to endure unwarranted lifestyle changes by dramatically reducing the use of energy now.

Enough is known about climate change to recognize it may pose a legitimate long-term risk, and that more needs to be learned about it. Many scientists and economists believe that it is inappropriate to impose costly policies such as the Kyoto Protocol—the result of a 1997 negotiation by governments to reduce greenhouse gas emissions only in certain countries.

In the United States, the Department of Energy has estimated that the Kyoto Protocol would require a dramatic (30 percent) near-term reduction in the projected use of energy. Most economists tell us that such a step would damage our economy and almost certainly require large increases in taxes on gas and oil. It could also entail

enormous transfers of wealth to other countries.

Even if it were implemented, the Protocol would not accomplish what it is supposed to do—reduce the global buildup of greenhouse gases. Why? Because the Kyoto Protocol does not restrict emissions in developing countries. These countries, which are growing rapidly, desperately need energy to improve the welfare of their people. They have not agreed to limit their energy use and could not do so without undermining growth.

Moreover, for most nations the Kyoto Protocol would require extensive diversion of human and financial resources away from more immediate and pressing needs in health care, education, infrastructure, and, yes, the environment—all critical to the well-being of future generations.

We support and are undertaking feasible and affordable ways to voluntarily use less energy today. In addition, we propose an approach that continues a strong focus on scientific understanding, carefully evaluates the costs and benefits of policies, and promotes research and development of technical options that have the potential to make significant longer-term reductions in emissions, if they are needed. Over the next few weeks, we'll discuss these proposals in more detail.

Although it is hard to predict what the weather is going to be this weekend, we know with certainty that climate change policies, unless properly formulated, will restrict life itself.

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Unsettled Science

Knowing that weather forecasts are reliable for a few days at best, we should recognize the enormous challenge facing scientists seeking to predict climate change and its impact over the next century. In spite of everyone's desire for clear answers, it is not surprising that fundamental gaps in knowledge leave scientists unable to make reliable predictions about future changes.

A recent report from the National Research Council (NRC) raises important issues, including these still-unanswered questions:

(1) Has human activity already begun to change temperature and the climate, and (2) How significant will future change be?

The NRC report confirms that Earth's surface temperature has risen by about 1 degree Fahrenheit over the past 150 years. Some use this result to claim that humans are causing global warming, and they point to storms or floods to say that dangerous impacts are already under way. Yet scientists remain unable to confirm either contention.

Geological evidence indicates that climate and greenhouse gas levels experience significant natural variability for reasons having nothing to do with human activity. Historical records and current scientific evidence show that Europe and North America experienced a *medieval warm period* one thousand years ago, followed centuries later by a *little ice age*. The geological record shows even larger changes throughout Earth's history. Against this backdrop of large, poorly understood natural variability, it is impossible for scientists to attribute the recent small surface temperature increase to human causes.

Moreover, computer models relied upon by climate scientists predict that lower atmospheric temperatures will rise as fast as or faster than temperatures at the surface. However, only within the last 20 years have reliable global measurements of temperatures in the lower atmosphere been available through the use of satellite technology. These measurements show little if any warming.

Even less is known about the potential positive or negative impacts of climate change.

In fact, many academic studies and field experiments have demonstrated that increased levels of carbon dioxide can promote crop and forest growth.

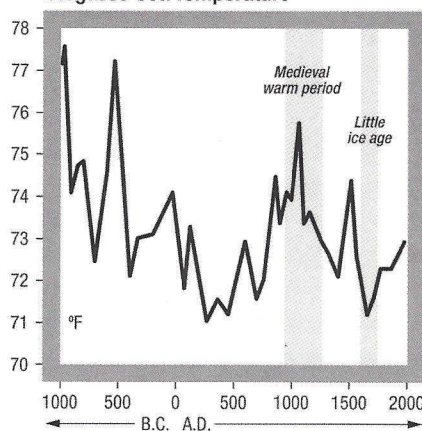
So, while some argue that the science debate is settled and governments should focus only on near-term policies—that is empty rhetoric. Inevitably, future scientific research will help us understand how human actions and natural climate change may affect the world

and will help determine what actions may be desirable to address the long-term.

Science has given us enough information to know that climate changes may pose long-term risks. Natural variability and human activity may lead to climate change that could be significant and perhaps both positive and negative. Consequently, people, companies and governments should take responsible actions now to address the issue.

One essential step is to encourage development of lower-emission technologies to meet our future needs for energy. We'll next look at the promise of technology and what is being done today.

Sargasso Sea Temperature



Source: Science (1996)

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The Promise of Technology

One of the brighter hopes in the climate change debate has to be the benefits to be achieved through technology. For a world that has conquered polio and put a man on the moon, that's no empty promise. Modern technology makes it possible for many to enjoy a way of life far beyond the dreams of previous generations. Engineering ability and entrepreneurial vision give us confidence that technological progress will accelerate through the 21st century. Future advances are likely to meet individual expectations for greater prosperity and also the environmental and social challenges we face.

Many respected economists conclude that research to develop new technology offers the most effective near-term means to address the long-term response to climate change. Corporations, universities and government laboratories are studying technologies that offer the possibility of supplying and utilizing energy with far lower emissions. Later this year, for example, the Business Roundtable, an association of over 160 of the largest U.S. companies, will host a national summit focusing on such technology.

Energy companies are working with large automobile manufacturers on fuel-cell-powered vehicles, hybrid (gasoline plus electric) cars, and systems for advanced fuels and vehicles. Other opportunities include more-efficient power generation, renewable and alternative energy, and methods to separate and dispose of greenhouse gas emissions during fossil fuel

combustion. Many companies work continuously on programs to improve energy efficiency in manufacturing and to supply more-efficient products to their customers.

Although the potential of technology is significant, everyone offering solutions to environmental challenges should bear two cautions in mind.

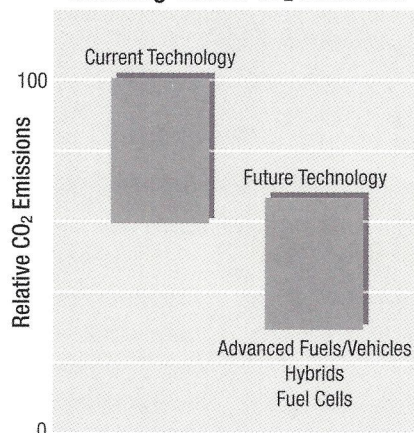
First, research on promising projects does not always succeed commercially. For consumers to accept new technology, it must meet many demands, including affordability, performance, safety and environmental impacts, among others. In short, markets—not politicians—will inevitably decide which products are successful.

Second, new technology requires time to develop and deploy. Consequently, even when a technology proves that it can work and is cost-effective, it may take years for its use to become widespread. Moreover, to address climate change, new technologies

must spread over the entire globe. We cannot pursue high-cost options just for the developed world. To affect global emissions, technology must be affordable everywhere.

Climate change may pose legitimate long-term risks. As one of the world's leading science and technology organizations, ExxonMobil is confident that technology will reduce the potential risks posed by climate change. But we also know it takes time to discover, develop and deploy affordable technologies for world markets. That's why we're working on long-term solutions now.

Reducing Vehicle CO₂ Emissions



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The Path Forward on Climate Change

Climate change may appear as confusing as a maze—especially considering the economic and social consequences of climate policy proposals, the gaps in scientific understanding and the promise of future technology.

A responsible path forward must be marked by rational scientific, economic and technical analysis. And it must include actions now on several fronts:

- Continued research to understand the climate system
- Cost-benefit analyses of proposed responses
- Research on and development of promising technology
- Removal of regulatory and tax restrictions that hamper introduction of new technology and present barriers to its widespread application
- Promotion of energy efficiency.

Universities, industry, national laboratories and consumers can each contribute to this process.

The role of government should be to support and encourage research on climate science and private investment in technology, rather than to target programs that support particular views. In all cases, we must recognize the importance of eliminating regulations and other barriers that inhibit commercialization of cost-effective technologies.

All citizens have a right to know the consequences of suggested governmental policies. Proposals to address climate change issues must first be analyzed to assess their costs and benefits to society. Policy mistakes can be serious and

may even limit our ability to respond effectively later.

Technologies such as fuel cells, hybrid (gasoline and electric) cars and advanced diesel vehicles and fuels all hold promise for transportation. Although battery technology appears to require major breakthroughs, sources such as solar, wind and biomass can satisfy some limited needs now, and possibly more later. Further in the future, hydrogen may play a role in nearly pollution-free power, but this technology faces enormous challenges.

Other research seeks ways to capture and store carbon dioxide emitted during the use of fossil fuels. Even less-conventional options, such as marine fertilization to absorb carbon dioxide, should be examined.

Successful companies have long recognized the importance of lowering costs. Reduced energy use helps meet this goal and lowers emissions, too. Recently, the U.S. Department of Energy announced that reductions by companies that voluntarily report their results tripled between 1994 and 1998. Private industry has also begun to share information on best industrial operating practices and to promote joint research on efficiency steps.

As gaps in climate science are being filled, these approaches can lead to real changes in emissions trends without harming economies and lifestyles. At ExxonMobil, we endorse these steps and conduct our own research and operations in ways that support them. We believe it's the responsible path forward.

*All citizens
have a right to know
the consequences
of suggested
governmental policies.*

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For a more-detailed Global Climate Change brochure, write ExxonMobil, Dept. E, 5959 Las Colinas Blvd., Irving, TX 75039-2298, or see our Web site, www.exxon.mobil.com.

These Op-Eds appeared in several U.S. publications (*The New York Times*,
Washington Post, *National Journal*, *USA Today* and the *Houston Chronicle*)
as well as *The Asian Wall Street Journal* and the *Financial Times*.

Copies are also available on our website: www.exxon.mobil.com

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