

OIL AND ITS CRITICS: THE FACTS AND THE FUTURE

Remarks by
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Under any circumstances, it would be an honor to address such a distinguished gathering. But it's a special pleasure to do so under the sponsorship of Daniel Yergin and his Cambridge Energy Research Associates.

Everyone in the petroleum business owes a debt of gratitude to Dan. He stands outside the industry, but he portrays it with greater accuracy and insight than any other commentator I can name.

Certainly, in setting the theme for this conference, CERA has accurately framed the situation of energy in our time. For all of us, this is an era of change. For all of us, that change is occurring on a global scale and at a pace never seen before.

This era carries new stresses and problems . . . intense competition in all markets . . . planning problems of great complexity. But it also brings tremendous new opportunities -- so many as to almost constitute a problem in themselves. One observer has called this "the age of insurmountable opportunities." In the petroleum business, we know what he means.

In exploration and production, nations formerly closed to foreign companies are re-opening and actively seeking participation from the international industry. It's evident in such nations as Venezuela, Algeria, Iran, Kuwait, Vietnam and China. But clearly the most striking case is the former Soviet Union.

You've all read about the long process of negotiating Chevron's joint venture in Kazakhstan. When you think about the wild changes that occurred during that time -- the fall of communism, the dissolution of the Soviet Union, the emergence of new nations -- it really is a key example of the new era of change. It took five years, through three changes of governments, but, finally, we closed a very, very exciting deal. We're still working out some of the bugs. But we are in business and we sold about 8 million barrels of oil last year.

For Chevron, Tengiz represents the kind of opportunity that only comes along once in a generation. Essentially, this deal could actually double the reserves of our company, and provide tremendous financial benefit.

For Kazakhstan, development of Tengiz is critical to the development of the nation.

Dick Matzke, who heads up our international upstream company, is on the conference program for this afternoon. I think he's planning to talk about the project in some detail.

Looking at the refining and marketing part of the industry, the major change has been the shift in demand patterns. As oil demand in the industrial world has flattened, Asia/Pacific has become the new engine of downstream growth.

Consider China -- over the next 5 years, its oil production is projected to remain at about 3 million barrels a day. Oil demand, however could easily grow to 4 or even 5 million barrels a day. By the year 2000, China will have gone from being an oil exporter to a major oil importer.

The growing market share for natural gas is another wave of change in the global industry. Ten years ago, world gas consumption was about 43 percent of the level of world crude consumption on an energy equivalent basis. Now, gas represents 56 percent of oil use, and is projected to reach 62 percent by the year 2000.

From a U.S. perspective, we've seen a major movement in petroleum investments away from the U.S. and toward the emerging international opportunities.

Of course, that change has been magnified in a big way by the de facto U.S. policy of discouraging nearly all forms of petroleum development.

Every other nation with hydrocarbon resources is encouraging a tremendous development boom. The United States is headed down the opposite path, with a set of regulations that virtually dictate a decline in energy production.

At Chevron, our response to this unfolding story of massive change has been to change ourselves. Like many companies, we've undergone a crash course in managing for change.

We've restructured the company to move authority and accountability closer to where the business opportunities actually lie. That's especially important in managing global operations

And we've focused our business portfolio to concentrate on the regions and activities that make the best fit for our strengths.

As part of that strategy, we've bowed to the pressure of domestic policy choices by shifting the focus of our capital investments away from the U.S. In addition to the Tengiz project, we've made major investments recently in Papua New Guinea, Australia, West Africa, and the U.K. portion of the North Sea.

We have a new international emphasis on natural gas, too. We're working with a number of our partners and host governments to conceive projects that can add value to their gas resources. In Nigeria, for example, we and our partners have a plan to invest as much as \$1 billion over the next decade to develop and market natural gas that's currently being flared.

As an organization, we've taken on a major self-improvement program -- systematically absorbing and transmitting principles of Quality Management throughout all parts of the enterprise.

These new management tools helped us set firm targets for our financial performance . . . and these in turn told us we had to bring our costs under control . . . because cost was the only thing we could control to improve our income statement.

With a tremendous effort from all employees, we've brought our operating costs down by over a dollar a barrel from a 1991 peak level. That represents savings of over \$1.1 billion a year.

All in all, we're a very different company than we were just 5 years ago. I think we've got the efficiency and flexibility to adapt to the current horror-show re-run of \$15 dollar oil, if we have to. We may not thrive, but we will survive . . . and continue to pay good dividends.

In fact, I think we're up to most of the changes that might come at us from the marketplace.

Unfortunately, another major strategic challenge may not be in the marketplace . . . but in the arena of public policy.

It is the on-going challenge of responding to the effect of our activities on the natural environment.

I want to talk about a disturbing new theme in the public dialogue on the environment . . . but I first want to make clear that I support strong environmental protection.

After dealing with environmental issues on three different high-level commissions in the past few years, I certainly recognize and support the need to meet public concerns about our environment.

The public demands a cleaner environment and a safe environment. And they should.

I believe we have an obligation to use our technology to minimize the environmental impact of our operations and our products.

What disturbs me is not the ever-present and perfectly valid public requirements for health and safety in the use of energy. Rather I'm distressed by a growing public conviction that oil does not . . . and can not . . . meet those requirements.

Last year, a survey done for API showed that seventy percent of the people think we should reduce oil use in the United States. Only 24 percent agree that oil helps the U.S. economy. And only 14 percent think that oil is not a threat to human health.

What's behind it? I don't have the whole answer. But at least part of it -- a big part -- has to do with a steady drumbeat of anti-oil rhetoric from the environmental lobby.

Over the last decade or so, an argument has gradually migrated from the fringes of environmentalism into the mainstream which says that there is no real point in trying to make the oil industry clean up its act. The only real solution, for these people, is to eliminate the use of oil.

Recently, Chevron and other major oil companies received a letter signed by the Executive Director of Greenpeace International.

The letter began with a denunciation of oil as the scourge of creation. It concluded by demanding that we stop all exploration and development of new oil and gas reserves, re-direct all our investments to renewable energy projects, and, (quote) "provide us with the earliest possible date that your company can commit itself to entirely phase out oil and gas production."

This extreme view may not be typical. But I think it would be a very big mistake to assume it's an isolated case.

It's pretty clear that what's driving this view is the highly publicized prediction of a catastrophic warming of the climate, due to a rapid buildup of CO₂ in the atmosphere, caused by the use of fossil fuels.

The net effect is this: we are now confronted by a set of interlocked beliefs about oil that have penetrated deep into the public consciousness and that, increasingly, are coming into play in public policy debates. They can be stated in three fairly simple propositions:

First, that the world is rapidly running out of oil.

Second, that oil use is responsible for all forms of air pollution locally, and for climate change globally.

Third, that for both reasons, the world must make a forced march toward alternative energy sources, beginning immediately -- regardless of the severe economic consequences.

I'm very much alarmed by this emerging consensus, because I believe the effort to achieve that goal . . . the effort to tilt the playing field away from oil and toward alternatives . . . the related effort to regulate away the last and least impact of petroleum . . . these are genuine threats . . . with the potential to do great harm not only to the petroleum industry but to the interdependent global economy as well.

A clear example of this threat showed up in last year's proposed BTU tax. As you'll recall, the essential proposal called for taxing all fuels according to their BTU content. Except for oil. The tax on oil was to be essentially doubled beyond the level set by BTU content.

The extra tax handicap amounted to a "sin-tax," like those placed on tobacco and alcohol.

Outside of our industry, nobody seemed to find that a strange comparison.

Unless some note of reason and proportion can be interjected into the public discourse, I fear the petroleum industry could face a future of continual disruption . . . and relentless attrition.

We have got to respond to the alarmist charges against oil. We're going to have to do a world-class job of bringing the facts before the public.

The first point we must make is that the world is not running out of oil. As a matter of fact total world reserves now stand at the highest level most of us have ever seen.

In 1950, world crude reserves were about 76 billion barrels -- roughly a 20-year supply at the rate of consumption of that era. Since then, the world has consumed 600 billion barrels, yet now has about 1 trillion barrels in proved reserves -- a 50-year supply at today's rate of consumption.

It's not hard to predict that continued exploration and development and the evolution of new technologies, such as those related to Enhanced Oil Recovery, will almost certainly extend the world's reserves for an additional 50 years -- certainly far beyond any meaningful planning horizon.

In other words, the world should have ample time for an orderly transition to an era of genuine alternatives.

That era, we must point out, lies far in the future. There simply are no viable, affordable alternatives to oil presently at hand.

That's another point we must get across.

Over the last five years or so, many oil companies have been involved in research and demonstration projects of various alternative fuel and vehicle combinations.

Now the results are in. And I think it's time we simply lay out the facts . . . and let the political chips fall where they may.

The bottom line is this: dollar for dollar, ounce for ounce, the best alternative to gasoline as a motor fuel -- for those regions with special air problems where some alternative is actually required -- is reformulated gasoline in a current model car. This is also the only alternative likely to be available in meaningful volumes for the

foreseeable future

All other possibilities come up short.

The alcohol fuels -- ethanol and methanol -- have some serious emissions problems of their own and are far more costly and less efficient than reformulated gasoline.

Methanol is dangerous to handle and corrosive to standard vehicle parts. You may have seen the report that Los Angeles is moving to scrap its fleet of methanol buses -- a \$100 million dollar investment -- because of intolerable corrosion problems among other difficulties.

The ethanol option should have been discarded some time ago -- next to pure hydrogen it's about the most expensive fuel there is. But it refuses to die. The EPA is proposing to mandate that all reformulated gasoline contain 30 percent renewable oxygenates -- which effectively limits the choices to ethanol or ETBE.

This represents a big victory for the farm lobby -- and a defeat for common sense. The American taxpayer, naturally, will, be picking up the tab -- to the tune of 54 cents per gallon subsidy for the ethanol.

Gas fuels -- propane and CNG -- are probably the next best alternatives, after reformulated gasoline. Certainly they make a lot more sense than others in terms of both economics and anti-pollution performance.

The best application for CNG is probably in large urban fleets where refueling costs can be minimized by one common facility fueling vehicles at night when they aren't in use.

Incidentally, none of these alternatives address the issue of global warming. They all release CO₂ when they burn.

Electric vehicles are the only ones that don't release carbon . . . or any other emissions for that matter. That is, they don't produce emissions from the vehicle.

But of course they very well may emit at the power plant, depending on how the electricity is generated. Apparently, a new EPA study suggests that, when power plant emissions are factored in, electric vehicles may cause more pollution than conventional cars.

Currently, more than two-thirds of the electricity generated in the U.S. comes from plants fired by coal, oil, or natural gas. If new plants can't burn fossil fuels, where will the extra electricity come from?

Another problem is that battery technology will require a quantum breakthrough before electric vehicles can begin to compare in economic or functional terms with the latest automobiles.

Just to give one example of the huge financial hurdle electric cars face, Chrysler recently converted some of its minivans to run on batteries -- 30 batteries to a van, at a cost of \$50,000. The total vehicle sells -- at cost -- for \$120,000.

As you might guess, the major buyers so far have been electric utilities. And they are already looking to ratepayers to pick up the cost. In California, the utilities are asking the Public Utilities Commission for \$334 million in rate increases for all homeowners to subsidize their electric vehicle joy ride.

The facts about alternatives lead to one conclusion -- fossil fuels are likely to remain the world's primary energy source for a long time to come.

And, ladies and gentlemen, until our policy makers come to terms with that conclusion, we can't have a

meaningful discussion about our energy future.

We also need to communicate another point about the push for alternatives. It is not merely that they are impractical or uneconomic.

It is that they are unnecessary.

The environmental problems alternatives would supposedly address are already being addressed by other technologies.

The unprecedented investment of financial and technical resources over the past 20 years is proof: industry has committed itself to breaking the connection between production and pollution.

That course is irreversible. And it has already been very very successful.

Here in the U.S., Gross Domestic Product grew 69 percent from 1970 to 1990. But over that same period, air emissions have declined dramatically: Particulates dropped 59 percent . . . volatile organic compounds, 31 percent . . . sulfur dioxide, 25 percent . . . and carbon monoxide has declined 41 percent.

The rate of progress is intensifying. In 1990, 97 cities failed to meet new Clean Air Act standards for ozone. By the end of 1992, 41 of them achieved compliance.

Even in Los Angeles, public exposure to high ozone levels has been cut 50 percent in the last decade.

The internal combustion engine -- the same device that the anti-oil lobby portrays as the worst threat since the H-bomb -- is actually the brightest spot in this success story.

The current generation of automobiles represent a 96 percent reduction of tailpipe emissions compared to their 1960 ancestors. That's remarkable progress!

Americans today drive more than twice as many cars and three times as many miles as they did 40 years ago. Yet they produce only one-third the tailpipe emissions of that era.

As oil and automobile technologies continue to evolve, new reformulated fuels and new emissions controls will eventually eliminate all but 2 percent of the tailpipe emissions of pre-control days.

Moreover, in another decade, the ten percent of the older cars that cause 50 percent of the current pollution will be gone.

The message is simple: The problem of the internal combustion engine is no longer the problem. Rather than spend huge sums to get rid of the last 2 percent, we ought to be looking at other things that make more sense.

We've got to get that message across. We've got to try much harder to communicate all of the facts on environmental progress, because, so far, the public isn't getting it.

Back in September, the San Francisco Chronicle ran a story about the tremendous progress in cleaning up air pollution in the Bay Area. And it ran a chart that has become a kind of paradigm for me.

The chart plotted improvements in the air versus public perception of air quality over the last decade. The two lines moved in opposite directions: with each passing year the air has gotten cleaner; with each year, a larger percentage of the public has perceived it getting worse.

The lesson is, it is not enough to face our responsibilities and improve our environmental performance. We must tell people that the petroleum industry is well on its way to meeting their deepest concerns.

To really give people that reassurance, we clearly have to confront the issue of global warming.

Clearly, the threat of global warming has penetrated deep into the awareness of the American people. A 1991 poll showed that 74 percent of Americans think the greenhouse effect is a problem. And 41 percent believe it's a serious problem.

Some people in our industry tend to simply wave the issue away by saying that the threat is unproven.

That's true; but it's not an appropriate response. Critics compare it to the tobacco industry's response to cancer studies. And it's disrespectful of the good science that has been done on this subject.

The scientific questions involved in global warming lie outside our traditional network of disciplines. But results of ongoing research are summarized regularly in accessible journals and books. What they tend to show is a very different picture of the issue than the popular vision of a looming catastrophe.

I recommend to you the Spring 1993 edition of National Geographic's scientific journal, Research & Exploration. It's devoted entirely to the global warming debate and features some of the most respected climatologists in the world.

The articles represent a broad range of views, from those who seem persuaded that catastrophic climate change is a real threat, to those who think any changes are more likely to be mild and perhaps even beneficial.

Most of all, the articles reflect the numerous, significant uncertainties of this complex field. At least one contributor, Dr. Richard Lindzen argues that the uncertainties are of such magnitude as to suggest, quote, "the possibility of large warming, while not disproven, is also without a meaningful scientific basis."

In light of the many uncertainties, nearly all the contributors seem to agree -- no matter where they stand on the scale of opinions -- that we can afford to wait and study the issue for another decade without risking significant environmental harm.

One team of climatologists calculated that a ten year delay in CO₂ reduction would mean a difference in the year 2100 of only eight-one-hundredths of a degree, centigrade.

On the other hand, several scholars point out that a crash course to try to reduce CO₂ emissions could bring on a very genuine crisis -- in the global economy.

The cost of a forceful mandate to curtail the burning of fossil fuels is almost beyond calculation. Some economists project a multi-trillion dollar impact in the U.S. alone.

What's needed, I think, is a full airing of the emerging science on global warming. The petroleum industry would be a supporter of such an effort.

There's one last point I'd like to make in response to the anti-oil rhetoric that is now in circulation.

When you add up our huge environmental costs and very heavy tax burden, it should be clear the petroleum industry is already largely compensating for the downside of its role in the global economy.

It is time we asked for a little recognition of the upside.

We are so used to being on the defensive, to apologizing for the problems we sometimes create, that we ourselves have forgotten to mention the solutions we continually provide. We, too, take for granted the enormous range of human needs we meet.

In fact, I only know of one clear statement of what it is we mean to the modern world. By a happy coincidence, that statement occurs in the beginning of Dan Yergin's *The Prize*.

Let me read it, by way of an ending: (quote) "Today, we are so dependent on oil, and oil is so embedded in our daily doings, that we hardly stop to comprehend its pervasive significance. It is oil that makes possible where we live, how we live, how we commute to work, how we travel -- even where we conduct our courtships. It is the lifeblood of suburban communities.

"Oil and natural gas are the essential components in the fertilizer on which world agriculture depends. Oil makes it possible to transport food to the totally non-self-sufficient megacities of the world. Oil also provides the plastics and chemicals that are the bricks and mortar of contemporary civilization, a civilization that would collapse if the world's oil wells suddenly went dry."

There is a view among social scientists that it is this very dependence on oil that has spawned such hostility to it.

I suppose there is truth to that notion. And I can understand it.

But I can't apologize for civilization.

This is where human technology happens to be right now -- in the hydrocarbon age.

All over the world, in hundreds of nations, there are hundreds of millions of people striving to modernize, to learn the secret of economic growth, to enter fully into the promise of the 21st century.

Their hopes depend on acquiring -- as rapidly as possible -- the amazing and still evolving technology of the industrialized nations. Petroleum is still the driving force in that technology.

It will not last forever. You can hear the arrival of its replacement coming into being in laboratories all over the world -- as scientists and engineers explore fuel cells or photovoltaics or nuclear fusion.

Their day will come. But this day still belongs to petroleum.