



Tomorrow's Energy

A Perspective on Energy Trends,
Greenhouse Gas Emissions
and Future Energy Options

February 2006

ExxonMobil

Taking on the world's toughest energy challenges.™

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Projections, targets, expectations, estimates and business plans in this report are forward-looking statements. Actual future results, including energy demand growth and mix; economic development patterns; efficiency gains; resource recoveries; capital expenditures; technological developments; emission reductions; and project plans and schedules could differ materially due to a number of factors. These include changes in market conditions affecting the energy industry; changes in law or government regulation; unexpected technological developments; and other factors discussed in this report and under the heading "Factors Affecting Future Results" on our Web site at www.exxonmobil.com. References to resources in this report include quantities of oil and gas that are not yet classified as proved reserves but that, in the case of ExxonMobil figures, we believe will ultimately be produced. Additional information on terms used in this report, including our calculation of Return on Capital Employed, is available through our Web site under the heading "Frequently Used Terms."

Introduction: Energy for a Growing World

Energy is essential to our way of life, to economic progress and to raising and maintaining living standards. The pursuit of economic growth and a better quality of life in developing countries is driving global energy demand. New supplies of reliable, affordable energy are needed.

At the same time, concerns about future energy supply and climate change have heightened interest in energy supply options, energy prices and the effect of energy use on the environment.

We believe it is essential that industry plays an active role in the ongoing dialogue about the future of energy – one which is grounded in reality, focused on the long term and intent on finding viable solutions.

In this document, we explain our views on future energy trends, the risks of climate change, the prospects for promising new energy technologies and ExxonMobil's activities in these areas.

In particular, we highlight the important relationship between rising energy demand, economic progress and greenhouse gas emissions. As policymakers seek to ensure future energy supplies while addressing the risks associated with global climate change, it is critical that the economic and social consequences – in the developed and the developing world – are taken into account.

Equally critical is a recognition that huge investments will be needed to meet the world's growing energy needs. Energy is a massive business. Even as the largest non-government energy company, ExxonMobil produces just two percent of the energy the world consumes every day. Projects take years to develop, cost billions of dollars to bring on stream and operate for decades.

To be justified in making these large investments, companies need stable, consistent government policies to help projects remain robust over the long term.

In a world featuring both geopolitical and regulatory uncertainty, we believe ExxonMobil will be served well by continuing to focus on operational and technical excellence, prudent risk management and responsible business behavior. ExxonMobil stands ready to meet the many challenges of delivering energy for a growing world.

Section 1: The Next Quarter-Century of Energy

Energy is a long-term, capital-intensive business. As a major participant in the global energy industry, we must anticipate and adapt to trends and changes in our industry so that we can make sound business decisions and invest our shareholders' money wisely in projects that remain attractive over the long term.

Every year, we prepare a long-range outlook of global energy trends. The 2005 outlook covers the period to the year 2030 and provides a strategic framework to aid evaluation of potential business opportunities.

Economic growth and expanding populations drive global energy needs

Energy is critical to economic progress. The global economy is expected to double in size by 2030 – mainly driven by the developing nations that today account for just over 20% of the world's economic output. By 2030, this share will grow to 30%, led by rapidly expanding economies such as China, India, Indonesia and Malaysia.

World population is also expanding. Today, there are nearly 6.5 billion people, about 20% of whom live in developed countries (member nations of the Organization for Economic Cooperation and Development – OECD) and the remainder in developing (non-OECD) countries. By 2030, population is expected to reach 8 billion people, with close to 95% of this growth occurring in the developing world.¹

Yet there are still about 1.6 billion people today without access to electricity and about 2.4 billion who rely on basic fuels such as wood and dung for heating and cooking.²

Economic growth in the developed and developing world over the next quarter-century will have a dramatic impact on global energy demand and trade patterns.

A vast and growing need for energy

Every day, the world consumes about 230 million barrels of energy (expressed in terms of "oil equivalent" or MBDOE), with demand split about equally between developed and developing nations.

By 2030, we expect the world's energy needs to be almost 50% greater than in 2005, with growth most pronounced in the rapidly expanding developing countries (See Fig. 1). Perhaps most significant, we anticipate energy demand in developing Asia/Pacific to grow at 3.2% annually, increasing to one-third of the world's total – an amount equivalent to the energy demand of North America and Europe combined.

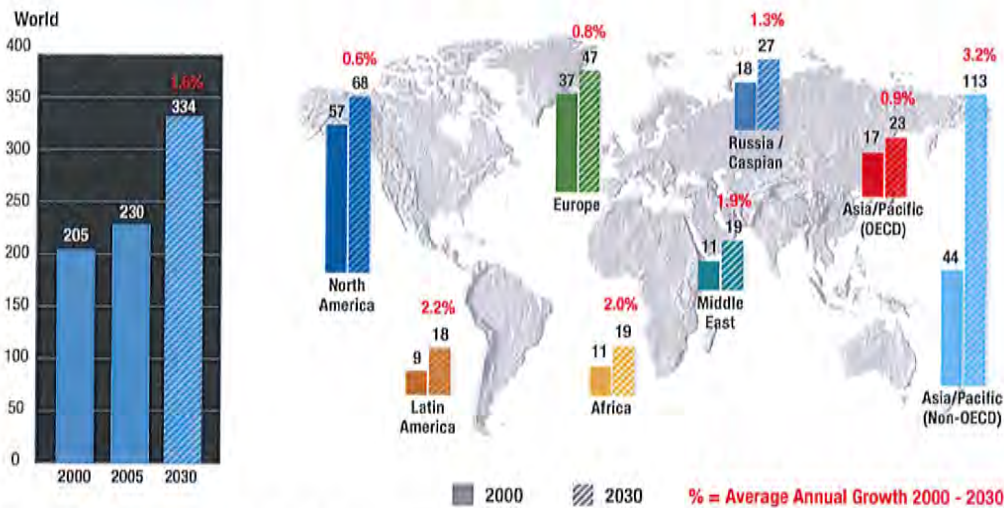
Continuing progress in energy efficiency

Continued rapid improvement in energy efficiency, mainly driven by the development and use of new technology in the transportation and power generation sectors, is expected to temper the growth in global energy demand.

Fig. 1

Growing World Energy Demand

Millions of Barrels per Day of Oil Equivalent (MBDOE)



Note: For the purposes of this report, the phrases "developing countries" and "non-OECD countries" are interchangeable. OECD countries are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Republic of Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the UK and the United States.

Energy intensity improves globally

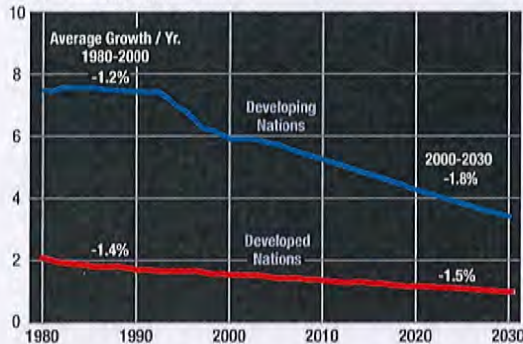
We expect the rate of "energy intensity" (the energy used per \$1,000 of GDP) to improve 1.8% annually in developing countries and 1.5% annually in developed countries from 2000 through 2030, compared with 1.2% and 1.4% per year respectively between 1980 and 2000.

The developing nations are particularly important, given that the energy intensity of their economies is about 3-4 times greater than that of the developed countries. There was a steep drop in the energy intensity of the developing countries during the 1990s, reflecting the collapse of the former Soviet Union (FSU), but today a dramatic level of disparity remains (See Fig.2). There are significant opportunities for efficiency gains as these nations develop.

Fig. 2

Energy Intensity - Declining trend accelerates most notably in developing (non-OECD) countries

Barrels of oil equivalent per \$K GDP



Fossil fuels remain the predominant energy sources

Over time, an increasingly diverse range of energy sources and technologies will be needed. But at least through 2030, fossil fuels will continue to satisfy the vast majority of global demand (See Fig. 3 on page 4). These are the only fuels with the scale and flexibility to meet the bulk of the world's vast energy needs over this period.

- Oil and gas combined will represent close to 60% of overall energy in 2030, a similar share to today.
- Oil use is expected to grow at 1.4% annually. Significant improvements in vehicle fuel economy will dampen demand growth.
- Gas is expected to grow at 1.8% annually, driven largely by strong growth in global electricity demand.
- Coal, like gas, is expected to grow at 1.8% annually, driven by expanding power generation. Despite higher CO₂ intensity, large indigenous supplies will give coal economic advantages in many nations, particularly in Asia.

ExxonMobil's 2005 Energy Outlook: Highlights

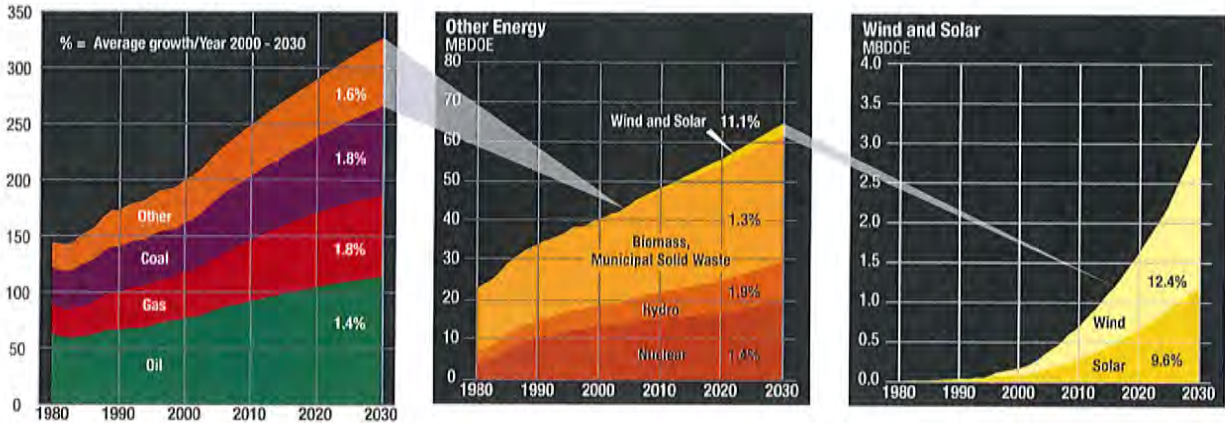
- By 2030, global energy demand will increase almost 50% from the 2005 level, driven by economic progress and population growth.
- About 80% of growing energy demand will occur in developing countries.
- Improvements in energy efficiency and intensity will accelerate, due to advancing technologies.
- Oil, gas and coal remain the predominant energy sources, maintaining about an 80% share of total energy demand through 2030.
- Global resources are sufficient to meet demand. Access to resources and timely investments are vital to developing adequate energy supplies.
- Natural gas will grow rapidly in importance, mainly due to its environmental benefits and efficiency in electricity generation.
- Biofuels, wind and solar will grow rapidly as sources of energy, contributing about 2% of total energy supply by 2030.
- Increased use of fossil fuels will increase global carbon dioxide (CO₂) emissions, with close to 85% of the increase in developing countries (See section 2).
- Advances in technology are critical to successfully meeting future energy supply-and-demand challenges.

Fig. 3

Energy Demand Grows: Fossil fuels remain predominant; renewables grow rapidly from small base

Total World Energy

Millions of Barrels per Day of Oil Equivalent (MBOE)



Non-fossil energy supplies will expand

- Nuclear will grow on average at 1.4% per year, with the largest growth in Asia, although we expect North America and Europe to add new plants late in the outlook period.
- Hydro power is expected to grow at just under 2% per year, with increases likely in China, India and other developing countries.
- The use of biomass, including traditional fuels (wood, dung) used in developing countries, and solid waste will grow about 1.3% per year.
- Wind and solar energy combined will likely average about 11% growth per year, supported by subsidies and related mandates. Even with this rapid projected growth, wind and solar will contribute only 1% of total energy by 2030, illustrating the vast scale of the global energy sector.
- Biofuels, including ethanol and biodiesel, will grow from less than one million barrels per day (MBD) in 2005 to about 3 MBD in 2030.

The prospects for wind, solar, biofuels, nuclear and other longer-term energy technologies are discussed further in Section 3.

Oil: Increased transportation demand and improved engine technology

Growth in oil demand will be driven by increasing transportation needs, especially in developing countries. Widely available, most affordable and supported by a global infrastructure, oil is uniquely suited as a transport fuel. There is no large-scale alternative to oil as a transport fuel in the near term.

Critical to transportation demand will be the size and nature of the personal vehicle fleet. By 2030, we expect the size of the U.S. and European fleets to plateau, while the

number of vehicles in Asia will nearly quadruple (See Fig. 4). Working to offset demand growth from the larger vehicle fleet will be continuing improvements in fuel and engine system technology and efficiency.

Over the next 25 years, we expect the average fuel economy of new vehicles worldwide to improve by over 25% as a result of both the evolution of technology as well as shifts in the kinds of vehicles that people drive. While the rate of increase (about 1% annually) may seem small, it is more than double the rate of global improvement that we have seen in the past 10 years.

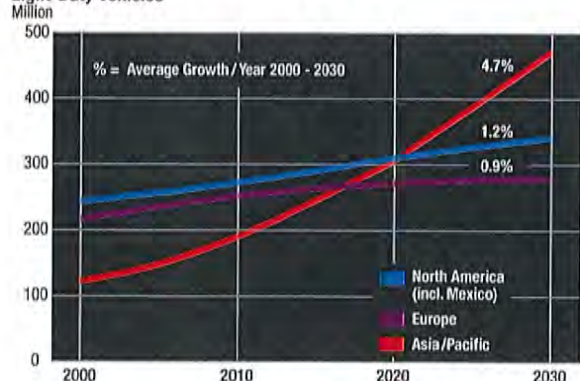
Hybrid vehicle technology, which couples the internal combustion engine with an electric motor, will play an increasingly important role as costs come down and it becomes available on a broader range of vehicles. In cities, where this technology has its greatest advantages, hybrid vehicles could deliver fuel economy improvements in excess of 50%.³

We also anticipate significant efficiency improvements to the basic internal combustion engine. One promising

Fig. 4

Anticipated Growth in Transportation 2000 - 2030

Light-Duty Vehicles



development that ExxonMobil is working on is known as Homogeneous Charge Compression Ignition, or HCCI. This technology combines aspects of gasoline and diesel engines. HCCI has the potential to improve vehicle fuel economy by 30% and be applicable to a broad range of vehicle types, including hybrids.

In addition to technology enhancements in vehicle power trains, we believe that technologies such as lighter-weight materials and improved lubricants will play an important role in delivering valuable efficiency improvements to the transportation sector.

Natural Gas: Power generation, emissions benefits and LNG technology drive growth

Natural gas demand continues to rise with growing electricity needs, aided by inherent advantages in efficiency and lower emissions. Growth will be most rapid in Asia/Pacific.

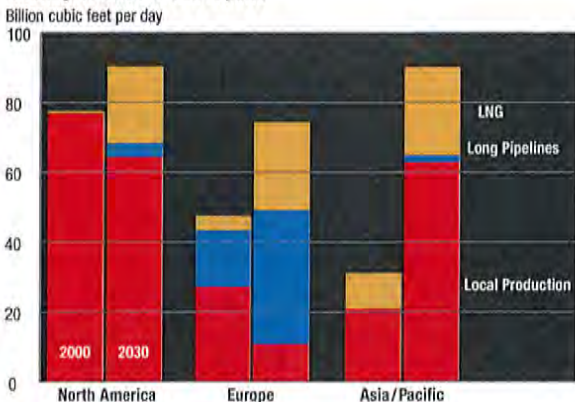
We anticipate that the efficiency of electricity production and distribution will continue to improve, through deployment of more advanced power generation technology and transmission infrastructure.

An important outcome of this growing gas demand is the increasing role of natural gas imports, particularly in the mature regions of North America and Europe, where local production is expected to decline (See Fig. 5). To balance supply and demand, the distance between the major natural gas-consuming nations and their sources of supply will grow. While pipelines will remain an efficient means to transport the majority of natural gas, the world will increasingly rely on liquefied natural gas (LNG), transported in large volumes across oceans via LNG tankers:

- In North America, LNG imports are expected to increase to about 25% of supply by 2030 (versus about 3% today), even with additional supplies via northern pipelines and tight gas developments.

Fig. 5

Growing Reliance on Gas Imports



- In Europe, natural gas imports are expected to increase from about 40% to about 85% of supply by 2030. In addition to LNG, pipeline imports will increase from Russia and the Caspian region.
- Natural gas demand in Asia/Pacific will triple over the next 25 years. Local production will meet a large part of this increased demand, but pipeline imports and increased volumes of LNG are expected in the future.

LNG's dramatic growth

By 2030, the LNG market will change dramatically, with a fivefold increase in volume to nearly 75 billion cubic feet per day (BCFD). That represents about 15% of the total gas market, up from about 5% in 2000. The center of global LNG supply will shift from Asia/Pacific to the Middle East and West Africa. Supplies from the Middle East are expected to be roughly double the supplies from either Africa or Asia/Pacific by 2030. Africa's supply contribution will grow, as LNG supplies there quadruple.

Global oil resources are adequate to meet demand

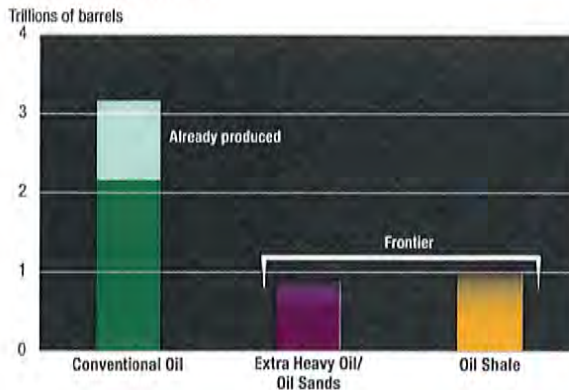
An important factor in predicting future supply trends is the scale of the worldwide oil resource base.

By today's estimates, the world was endowed with recoverable conventional oil resources of over three trillion barrels worldwide. Additional frontier resources (extra-heavy oil, oil sands, oil shale) bring this recoverable total to 4 – 5 trillion barrels. Of this amount, approximately 1 trillion barrels have been produced since oil was first discovered (See Fig. 6)

This global resource base will support production growth through the 2030 time horizon, with growing contributions from the Middle East, Africa and the Russia/Caspian region.

Fig. 6

Recoverable Oil Resources



Meeting Future Energy Needs: Technology, investment and supportive governments are critical

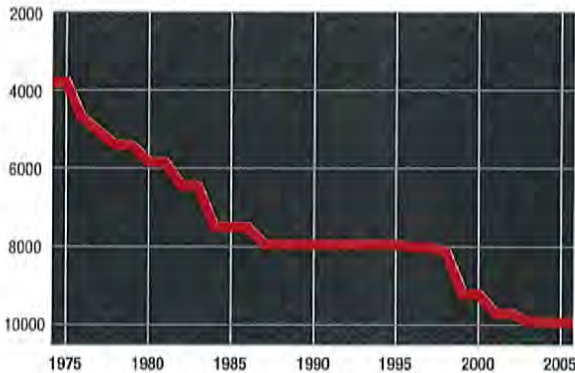
To meet the anticipated 190 MBDOE of oil and gas demand in 2030, the industry will need to find new supplies as well as extend and expand existing production sources.

Continued technology advances will be needed to increase supplies while protecting the environment. Technology has continually expanded the industry's ability to find, develop, produce and transport energy supplies while reducing environmental impact. These advances evolve over time and are expected to continue to assist in meeting growing global energy demand.

Fig. 7

The Move to Deeper Water: Exploration depths

Depth in feet



Sophisticated reservoir imaging, facilitated by the growth in computing power, allows the identification of previously unknown oil and gas deposits. Deepwater exploration technology and extended-reach drilling allow the industry to pinpoint and access previously inaccessible resources (See Fig. 7). Continued success in challenging environments, from arctic locations to water depths approaching two miles, demonstrate the industry's capacity for technical innovation.

Technology not only expands the geological range of where we produce, but it also extends the types of supplies that contribute to meeting global demand. As we move toward 2030, we anticipate an increasing contribution from "frontier" hydrocarbon resources such as oil sands and extra-heavy oil. While the technology needed to produce these resources economically is available today, continued R&D will ensure that the required growth in production can be realized in an efficient, cost-effective and environmentally responsible manner.

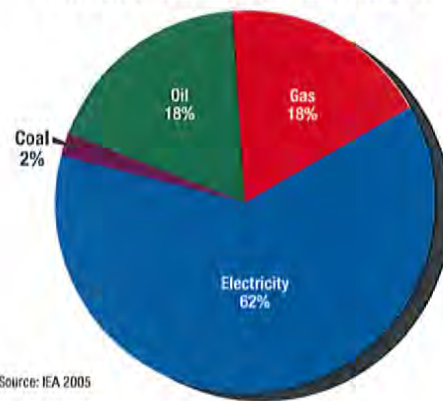
Increasing supplies to meet demand will require substantial investment. The International Energy Agency estimates that the investment required to meet global energy demand for 2004-2030 will be \$17 trillion, of which over \$10 trillion is required for electricity and \$6 trillion (over \$200 billion annually) for oil and gas (See Fig. 8)⁴. Financing will be a critical challenge, with funding dependent on attractive, competitive investment conditions.

Fig. 8

Total World Energy Investment Requirement: \$17 Trillion

World Energy Investment, 2004-2030

Over \$200 billion per year required in Oil and Gas



Source: IEA 2005

But more than investment dollars and technology advances will be needed. Governments have a vital role to play in providing access to acreage, opening markets, reducing barriers to trade and avoiding harmful policies, such as subsidies and regulations that can weaken or distort energy markets. Given the enormous investments involved, potential investors need to be confident of the sanctity of contracts, the recognition of intellectual property and support for the rule of law.

ExxonMobil's Technology Advantage

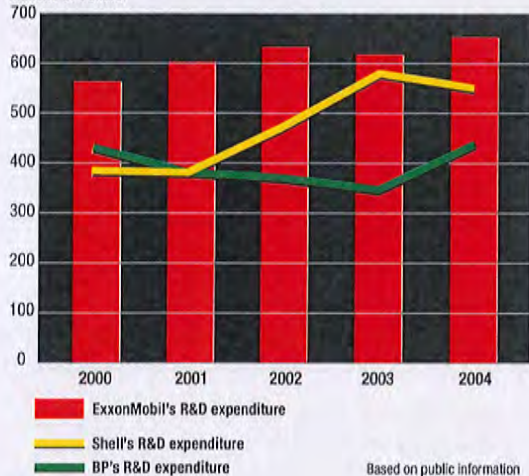
ExxonMobil has long been the industry leader in research and technology, with a history of invention, including 3-D seismic, digital reservoir simulation and industry 'firsts' in such areas as deepwater drilling, refining technology, chemicals and synthetic lubricants.

Today we invest over \$600 million per year in research and development, balancing our investment between technology extensions, which can be rapidly deployed to our existing operations, and breakthrough research in areas that can have a lasting impact on the company and the industry.

Fig. 9

ExxonMobil R&D Investment 2000 - 2004

Millions of Dollars



Examples of our recent achievements in technologies that help unlock the potential in some of the world's hydrocarbon basins include:

- A promising new technology known as R3M (Remote Reservoir Resistivity Mapping) uses electromagnetic energy to directly detect reservoirs of oil and gas before drilling, substantially reducing exploration risk.

- Our proprietary tool EMpower™ is the industry's only next-generation reservoir simulator, allowing engineers to study reservoirs more comprehensively than ever before.
- Proprietary well-bore technology used on Sakhalin Island in Russia's Far East enables us to reach oil reservoirs five miles offshore via extended-reach, horizontal drilling from an onshore location.

With LNG playing an increasingly critical role in meeting demand for natural gas, ExxonMobil engineers have recently developed technology that can double the capacity of liquefaction plants and increase by 80% the LNG carried by a single ship, dramatically reducing LNG costs.

At the same time we have developed unique high-strength steel to lower the cost of transporting natural gas by pipeline.

In the area of vehicle engine and fuel efficiency, ExxonMobil scientists are involved in projects including:

- Partnerships with Toyota and Caterpillar to research improvements to internal combustion fuel and engine systems that could result in a 30% improvement in fuel economy and reduced emissions
- A partnership with DaimlerChrysler to develop new lubricants to improve fuel economy, extend oil change intervals and lower emissions
- Development of new recyclable plastics to enable lighter-weight vehicles
- Groundbreaking research in hydrogen generation (see "hydrogen" - Section 3)

In an effort to apply the combined resources of industry and academia to the challenge of identifying technologies that meet growing energy demand while dramatically reducing greenhouse gas emissions, we launched the Global Climate and Energy Project (GCEP) at Stanford University in 2002. The GCEP research areas are covered in Section 2, and at gcep.stanford.edu.

Section 2: Greenhouse Gas Emissions – A Global Issue

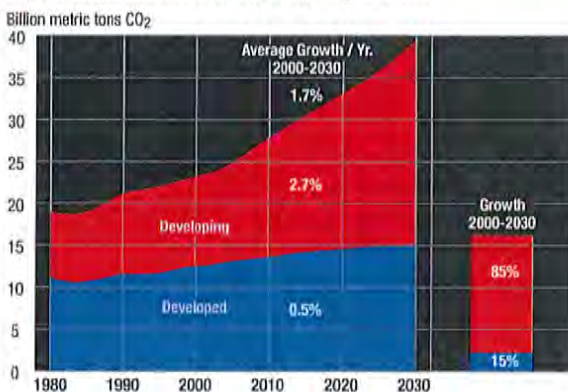
Managing the risks from increases in global greenhouse gas emissions is an important concern for ExxonMobil, industry and governments around the world.

Economic growth and emissions reduction

Section 1 described how increasing population and prosperity, especially in developing countries, will drive up global energy demand. This will result in substantial increases in greenhouse gas emissions, particularly from developing countries, which will account for about 85% of the growth in CO₂ emissions from 2000 through 2030 (See Fig.10).

Fig. 10

CO₂ Emissions Growth Driven by Developing Countries



This poses a challenge. To deliver the benefits of continued economic progress, fossil fuels are expected to remain the predominant source of world energy supply over this period. At the same time, governments at all levels are responding to growing concern about climate change by taking policy actions to reduce greenhouse gas emissions. Policymakers face a difficult task: where these policies restrict fossil fuel use or add cost to their use, they can also retard economic development.

It is therefore vital that policymakers and society take into account the wider social and economic impacts of energy and climate policies.

ExxonMobil is involved in this process through direct participation in scientific, technical, economic and policy forums and by working through trade associations to engage in public policy discussions. We are also taking actions in our own operations.

Climate Policy: Path forward is unclear

Until recently, the policy debate focused primarily on near-term emissions reductions in the framework of targets and timetables set by the Kyoto Protocol. The first compliance period under the Protocol is 2008-2012.

Among those nations ratifying the Protocol, the European Union (EU) has been most active in seeking to implement it. An emissions trading scheme (ETS) has been established, which will limit emissions of CO₂ from certain industrial activities, including power production and refining. Other nations, such as Japan and Canada, are still considering policies and regulations they may adopt.

Most nations are not on track today to meet their 2008-2012 Kyoto targets with domestic actions. The total shortfall could be several hundred million metric tons of CO₂ per year.

That shortfall may be eliminated if international emissions trading enables countries to purchase sufficient allowances from those countries with surpluses, particularly Russia and the Ukraine. These two countries have substantial excess emissions allowances due to the decline and restructuring of their economies since 1990. No further actual emission reduction steps are required to create the surplus, which is large enough to compensate for missed targets among other industrialized nations.

The international debate on what policy actions to take beyond 2012 is now under way, but the outcome is uncertain. The debate is complicated by the following concerns:

- The developing world has indicated it will not accept greenhouse gas emissions reduction targets, leaving the vast majority of the global growth in greenhouse gas emissions outside the reach of the Kyoto Protocol targets.
- Differing targets in developed countries can increase domestic energy costs and accelerate the shift of new investment abroad, including to developing countries, which already enjoy lower labor costs.

The Business Impact: Regulatory uncertainty threatens investment

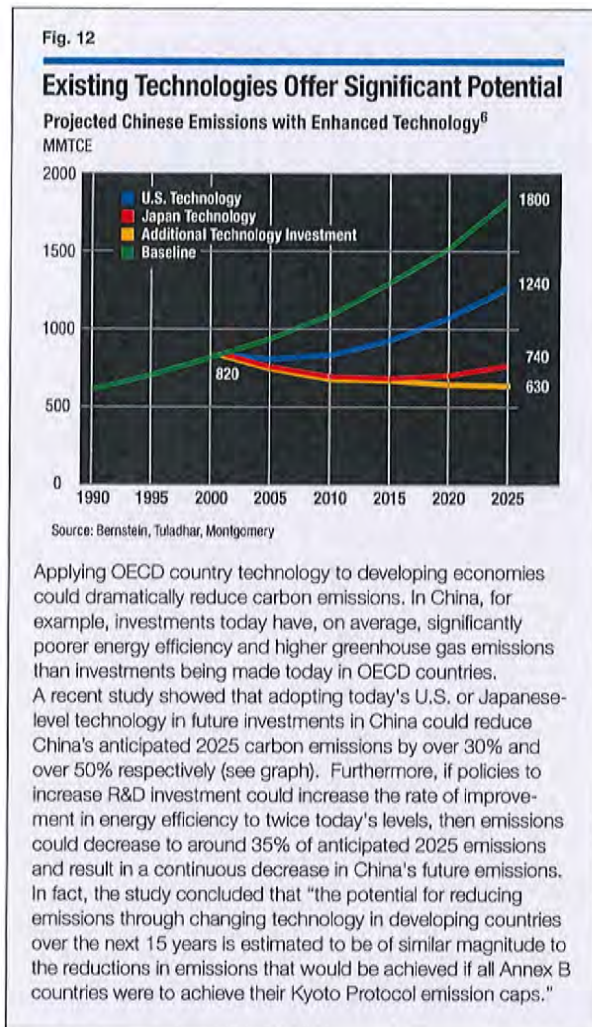
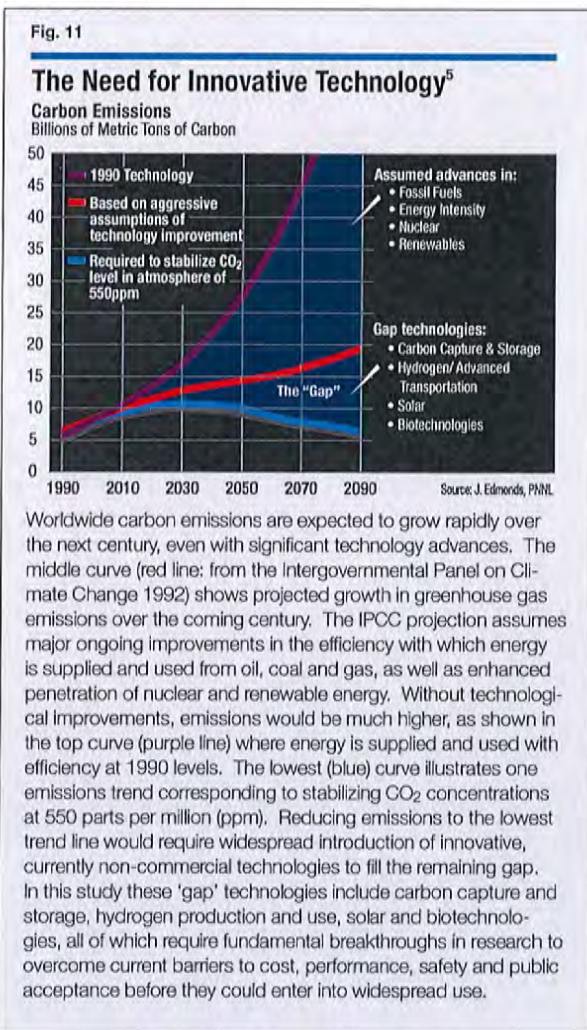
The current uncertainty poses challenges for global businesses. Major energy investments usually have long lives. Uncertainty about regulations, both for 2008-2012 and beyond 2012, creates a higher level of risk for companies. In Europe and Canada, for example, concerns are growing regarding companies' willingness to invest in energy-intensive activities, such as new chemical production and heavy oil production. The uncertainty about future regulations raises questions about the longer-term viability of such investments.

Increasing recognition of technology's vital role

As nations have begun to consider other options for reducing GHG emissions, there is a growing interest in the role technology can play in emissions reduction. For example, the recently announced Asia Pacific Partnership for Clean

Development and Climate aims to promote the use of clean, efficient technology. The latest G8 statement and the EU-China Climate Partnership also highlight the importance of using and developing innovative technologies. The focus on technology development and deployment is supported by the recognition that:

- The more widespread application of existing energy-efficient technologies could significantly reduce the growth in greenhouse gas emissions from economic progress in both the industrialized and the developing world (See Fig. 12).
- Development and deployment of new, energy-efficient technologies can enable lower energy consumption without damage to economic growth.
- New breakthrough technologies offer the possibility of substantial long-term reductions in greenhouse gas emissions at lower costs than current technology options.



- ### ExxonMobil Recommendations: Key Objectives for Long-Term Climate Policy
- Promote global participation
 - Encourage more rapid use of existing efficient technologies (in both developed and developing countries)
 - Stimulate research and development to create innovative, affordable, lower GHG technologies sooner
 - Address climate risks in the context of developing country priorities: development, poverty eradication, access to energy
 - Continue scientific research to assess risks and pace policy response

Climate Science: What we know

ExxonMobil has undertaken climate science research for 25 years. Our work has produced more than 40 papers in peer-reviewed literature, and our scientists serve on the Intergovernmental Panel on Climate Change (IPCC) and numerous related scientific bodies. Contributed papers on climate science are listed on our web site.⁷

Based on this experience, we recognize that the accumulation of greenhouse gases in the Earth's atmosphere poses risks that may prove significant for society and ecosystems. We believe that these risks justify actions now, but the selection of actions must consider the uncertainties that remain. Notwithstanding these uncertainties, ExxonMobil is taking action to address these risks.

Our world has changed

Since the 1800s, concentrations of carbon dioxide (CO₂) in the atmosphere have increased by roughly 30% (from 280 to 380 parts per million today).⁸ Concentrations of other greenhouse gases have also increased – including a doubling of methane levels. Human activities have contributed to these increased concentrations, mainly through the combustion of fossil fuels for energy use; land use changes (especially deforestation); and agricultural, animal husbandry and waste-disposal practices.

Surface temperature measurements have shown that the average global temperature has risen by about 0.6 °C since the mid-1800s. Other changes, consistent with the surface temperature rise, have also been observed. For example, scientists have documented a decrease in the volume of mountain glaciers and an increase in the length of growing seasons. These observations have fueled concern about the potential longer-term consequences of climate change.

Climate is a complex science

The complexity of the climate system makes it difficult to understand past and future consequences of greenhouse gas increases. As a result, the extent to which recent temperature changes can be attributed to greenhouse gas increases remains uncertain.

Limits in climate knowledge – for example in describing the behavior of clouds, hydrology, sea ice and ocean circulation – are well known and continue to be researched.⁹ Climate observations display significant natural variability that cannot be explained with existing models and knowledge. In the recent and ancient geological past, for example, climate has been both warmer and cooler than today for reasons that are not yet understood.¹⁰

Projections of climate change require estimates of future emissions from energy use and other sources over the 21st century. In our own Energy Outlook it is difficult to predict how technology will develop even over the next 25 years.

Longer-term economic and climate forecasts face even more uncertainty about how new technologies and changes in human behavior may affect greenhouse gas emissions.

As a result, researchers must rely on scenarios based on various assumptions, which deliver results ranging from significant emissions growth (a threefold increase in emissions over the 21st century) to a drop in global emissions, even without policy interventions.¹¹

When climate models are used to analyze the implications of these emissions scenarios, they project more severe consequences at the high end – including sea level rises, droughts and polar ice melting – and relatively benign climate changes at the low end.

Uncertainty and risk

While assessments such as those of the IPCC have expressed growing confidence that recent warming can be attributed to increases in greenhouse gases, these conclusions rely on expert judgment rather than objective, reproducible statistical methods. Taken together, gaps in the scientific basis for theoretical climate models and the interplay of significant natural variability make it very difficult to determine objectively the extent to which recent climate change might be the result of human actions. These gaps also make it difficult to predict the timing, extent and consequences of future climate change.

Consequently, the National Research Council¹² cautioned after the most recent IPCC report:¹³ “Because of the large and still uncertain level of natural variability inherent in the climate record and the uncertainties in the time histories of the various forcing agents (and particularly aerosols), a causal linkage between the buildup of greenhouse gases in the atmosphere and the observed climate changes during the 20th century cannot be unequivocally established. The fact that the magnitude of the observed warming is large in comparison to natural variability as simulated in climate models is suggestive of such a linkage, but it does not constitute proof of one because the model simulations could be deficient in natural variability on the decadal to century time scale.”

Even with many scientific uncertainties, the risk that greenhouse gas emissions may have serious impacts justifies taking action. ExxonMobil's actions to reduce greenhouse gas emissions are described in the next section.

ExxonMobil Actions to Reduce GHG Emissions

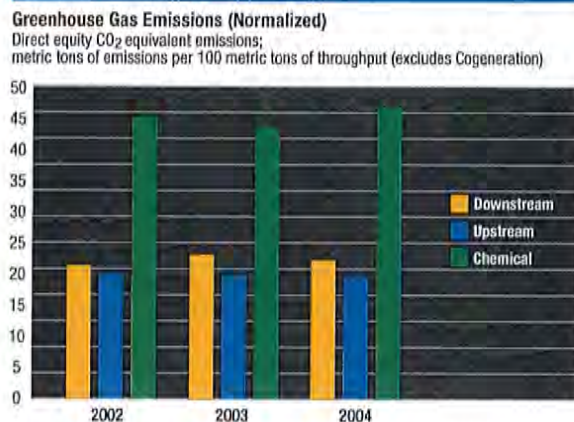
Recognizing the risk of climate change, we are taking actions to improve efficiency and reduce greenhouse gas emissions in our operations.

We are also working with the scientific and business communities to undertake research to identify and develop economically competitive and affordable technologies to reduce long-term global greenhouse gas emissions while meeting the world's growing demand for energy.

Examples of our efforts include:

- Reporting:** ExxonMobil is committed to consistent, comprehensive reporting of greenhouse gas emissions. We have publicly reported greenhouse gas emissions¹⁴ as they relate to our operations since 1998. Starting in 2003, we report direct greenhouse gas emissions, based on our equity share of ownership, both from facilities we operate and those in which we share ownership. We believe that direct, equity-based accounting best reflects shareholder interests in this area.
 In 2004 our greenhouse gas emissions rose by 1% compared to 2003 due to throughput increases and more intense processing to meet clean fuels demand. Energy efficiency steps helped to offset the impact of more intense operations and prevented further increases in emissions per barrel (See Fig. 13).
- Research:** We have conducted and supported scientific, economic and technological research on climate change for more than two decades. Overall, our research has been designed to improve scientific understanding, assess policy options and achieve technological breakthroughs that reduce GHG emissions in both industrial and developing countries. Major projects have been supported at institutions including the Australian Bureau of Agricultural Resource Economics, Battelle Pacific Northwest Laboratory, Carnegie Mellon, Charles River Associates, The Hadley Centre for Climate Prediction, International Energy Agency Greenhouse Gas R&D Programme, Lamont Doherty Earth Observatory at Columbia University, Massachusetts Institute of Technology, Princeton, Stanford, University of Texas and Yale.
- Advanced vehicle technology:** Because the majority of GHG emissions associated with the production and use of oil arises from consumer use of fuels (87%), with the remainder from our industry's operations (13%), we partner with automobile manufacturers to help develop advanced vehicles and fuels. The internal combustion engine is expected to power more than 95% of vehicles in 2030,¹⁵ so technologies that improve fuel efficiency and the emissions performance of the internal combustion engine could substantially reduce environmental

Fig. 13



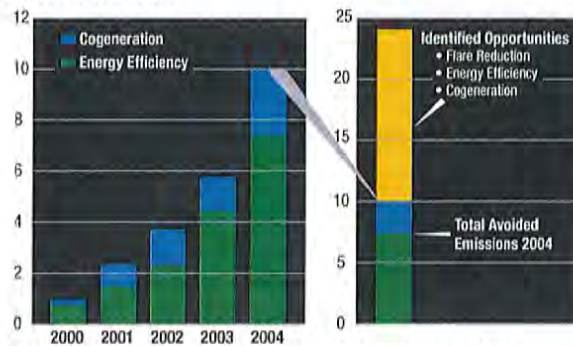
Note: Adding cogeneration of power and steam increases ExxonMobil's emissions but reduces those of others that would have produced the power. The overall impact is a reduction by as much as half in emissions for the same amount of energy produced.

impacts for decades to come. Examples of ExxonMobil's work in this area include:

- Working with Toyota and Caterpillar on separate programs to design high-efficiency, low-emission gasoline and diesel fuel/engine systems. This has already produced groundbreaking research in combustion science.
- Developing a novel technique for hydrogen production, potentially compatible with both on-board vehicle and larger-scale applications.
- Global energy management system (GEMS):** Improving energy efficiency in our operations helps us to reduce costs as well as reduce emissions. ExxonMobil's proprietary GEMS system focuses on opportunities to reduce energy consumed at our refineries and chemical complexes. Since its launch in 2000, the GEMS system has helped us identify opportunities for more than one billion dollars in pre-tax savings, and our energy-conservation efforts have saved enough energy to supply over one million European households each year. The greenhouse gas emission effect has been equivalent to taking more than one million cars off the road (See Fig. 14).
- Cogeneration** is the simultaneous production of electricity and steam, typically using clean-burning natural gas. With the latest technology, cogeneration is up to twice as efficient as traditional methods of producing steam and power separately. ExxonMobil has interests in 85 cogeneration facilities at some 30 locations worldwide, representing a capacity of about 3,700MW, enough to power nearly 3 million U.S. homes. These facilities, which represent decades of investment, enable a reduction in carbon dioxide emissions by 9 million metric tons a year versus traditional methods

Fig. 14

Avoided Greenhouse Gas Emissions from ExxonMobil actions since 1999
Million metric tons per year



Since 1999, our energy-saving initiatives have had a GHG effect in 2004 equivalent to taking over 1.5 million U.S. cars off the road. We have identified opportunities for avoiding GHG emissions equivalent to taking another two million U.S. cars off the road.

of separate power and steam generation. Our cogeneration capacity has increased by 800MW in the last two years, representing an investment of \$1 billion. In 2005 the cogeneration system at our refinery in Beaumont, Texas, was awarded a Certificate of Recognition from the U.S. Environmental Protection Agency. The EPA commended ExxonMobil for "exceptional leadership in energy use and management" and estimated that the system at Beaumont alone reduced CO₂ emissions by more than two million tons.

- Reduction in flaring:** Flaring is the burning of natural gas that is produced along with oil during oil production. In parts of the world where gas has no market outlet, gas production beyond that needed for fuel and other operational needs is often flared. In Africa, the region where flaring is most significant, we are undertaking major projects to reduce flaring. When fully implemented, we expect these projects to reduce greenhouse gas emissions by about seven million metric tons per year, the equivalent of removing approximately one million cars from U.S. roads. We are also working to reduce flaring at our refineries and chemical plants. For example, flaring at our Baytown refinery in Texas has been reduced by more than 70% since 2002.
- The Global Climate and Energy Project (GCEP):** ExxonMobil worked to establish and is providing \$100 million to Stanford University's Global Climate and Energy Project – the largest-ever independent climate and energy research effort. GCEP is a major long-term research program designed to accelerate development of commercially viable energy technologies that can lower GHG emissions on a worldwide scale. Current GCEP research



GCEP Research Programs

At the end of 2005, 27 GCEP research programs were under way at Stanford and other institutions, comprising:

- 7 hydrogen
- 6 advanced combustion
- 5 solar energy
- 4 CO₂ storage
- 2 CO₂ capture and separation
- 2 biomass
- 1 advanced materials and catalysts

Building capacity to address climate change risks – through research results and by training a new generation of scientists and engineers – is an important GCEP deliverable. GCEP research programs involve contributions from more than 30 faculty and from more than 80 students and postdoctorate fellows.

areas include hydrogen, solar energy, biomass, advanced combustion, CO₂ sequestration and advanced materials. A full list of ongoing projects is available on the GCEP web site (gcep.stanford.edu).

In 2005 GCEP announced new research grants totaling approximately \$20 million to Stanford faculty and collaborating researchers at several U.S. and international institutions.¹⁶ Other participating institutions include the Energy Research Centre of the Netherlands, the Delft University of Technology in the Netherlands, the Swiss Federal Institute of Technology in Zurich, the Carnegie Institution of Washington, D.C., University of Montana, University of New South Wales in Australia and the Research Institution of Innovative Technology for the Earth in Japan.

Responding to Greenhouse Gas Regulations

We actively engage with government authorities seeking to implement regulations regarding greenhouse gas emissions accounting and trading.

We believe that reliable inventories of emissions are an essential component of emissions control procedures and trading. As a result, we played a leading role in developing reliable, consistent tools to estimate and report greenhouse gas emissions in the oil and gas industry, namely:

- API Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry, April 2001. (available at <http://api-ec.api.org/policy/>)¹⁷
- IPIECA Petroleum Industry GHG Reporting Guidelines, December 2003. (available at www.ipieca.org/)¹⁸

These procedures now form the basis for our own internal measurement and reporting. Building on these guidelines, our Rotterdam refinery developed a monitoring and reporting protocol that was recognized by the Dutch government as a best practice and recommended for use throughout the European Union.

Climate Policy: Assessing risks to investors

ExxonMobil continually considers risks to operations and investments from a wide variety of perspectives. In the case of climate change, market and technological considerations are important, as well as policy and regulatory developments. In our view, it is impossible today to assess the potential implications for shareholder value from initiatives to address climate change. No governments have established definitive regulations for the 2008-2012 Kyoto Protocol compliance period, and there is currently no consensus on plans for the post-2012 period.

There has been some recent effort to quantify the potential implications of climate-related policies for oil and gas industry shareholders.¹⁹ However, in light of trends in climate negotiations, the regulatory assumptions made are speculative and unlikely. The analyses also fail to take into account adjustments to investments and other business decisions that companies may make in the context of evolving regulatory frameworks or, indeed, how OPEC and other producing nations may react to regulations affecting demand for oil.

Technological, political and regulatory risks have been inherent in the oil industry since its earliest beginnings. Shareholder value will depend, as it always has, on how companies manage operations and investments in a changing business environment. Those best able to manage investment risks and operate efficiently will achieve competitive advantage.

Against this background we believe that the same strengths that have generated industry-leading returns for ExxonMobil in the past position us well to succeed in an uncertain future:

- Our strong financial position enables us to evolve in new directions when attractive opportunities appear.
- We manage business operations and investments with disciplined efficiency based on strong management and management systems.
- We utilize industry-leading technical capacity both to develop proprietary technologies that provide a competitive advantage and to maintain a window on external research developments that might affect our business.

Assessing the Impact on ExxonMobil of Europe's Emissions Trading Scheme (EU-ETS) for 2005-2007

In Europe ExxonMobil operates approximately 40 facilities and shares ownership in another 40 facilities that are covered under the EU-ETS. In total, ExxonMobil's equity share of covered emissions amounts to approximately 20 million metric tons of CO₂ annually.

As a result of internal actions, we expect to meet our obligations for the period 2005-2007 without acquiring allowances through emissions trading.

The overall impact of the EU-ETS for 2005-2007 includes the cost of monitoring and reporting efforts, third-party verification and the increased cost of purchased electricity due to EU-ETS restrictions on power generation. These costs will be offset in some part by the revenue from sales of surplus emissions allowances. While the net impact of these factors is unknown, it is not expected to be material to the Corporation.

The impact of the EU-ETS for 2008-2012 is unknown, as the member governments have not yet determined what emissions will be covered or how emissions allowances will be allocated.

To comply with the EU-ETS, we have established management systems to:

- monitor, report and verify emissions
- control and manage disposition of greenhouse gas allowances
- participate in emissions trading
- plan future emission reduction steps

Required system changes have been fully implemented and are in place at all covered ExxonMobil facilities.

Section 3: Technology Options for the Longer Term

Meeting future energy needs will require a diverse range of energy technologies. Looking to the long term, concern about energy security and rising greenhouse gas emissions has brought a number of new or enhanced technologies to the forefront of public discussion.

Among these, wind, solar and biofuels are growing rapidly, albeit from a small base. Other technologies, such as hydrogen, are considered to hold promise, but face substantial challenges in terms of cost and large-scale implementation.

Over and above the technical hurdles, the scale of the global energy business means that widespread global deployment of new technologies, however promising, will take decades before the cumulative effect of investments makes a substantive contribution to overall energy supply.

Energy companies are involved in a wide range of new technology options, whether through research or the manufacture and marketing of products.

Our own approach is based on the belief that technological breakthroughs, and not simply expanded scale, are key to unlocking the potential of alternative energy technologies. We closely analyze the potential of emerging technologies. Based on these assessments, we determine our approach, and – if appropriate – a level of involvement consistent with our business needs and strengths. This may involve proprietary research, shared knowledge through participation in industry groups or the funding of external research in those areas where fundamental breakthroughs are needed for a technology to reach its potential.

In this section, we highlight some of the most prominent technology options, the challenges that need to be overcome and – where relevant – ExxonMobil's involvement.

Carbon Capture and Storage

Fossil fuels are expected to dominate the world's energy supply portfolio for some decades to come. A technology option that could play a significant role in helping reduce CO₂ emissions from the use of fossil fuels is carbon capture and storage (CCS). CCS technology separates CO₂ from a gas stream, compresses it to reduce volume and transports it by pipeline to a storage site (See Fig. 15).

This technology could have a major impact, as it is applicable to any large-emission source of CO₂. The IPCC estimates that these large facilities account for nearly 60% of global man-made CO₂ emissions.²⁰

All of the important components of CCS systems are practiced commercially today at industrial scale by ExxonMobil. For example, ExxonMobil recovers CO₂ at LaBarge, Wyoming, which is used for enhanced oil recovery. As part of that activity, a gas stream including CO₂ is removed and geologically sequestered. Commercial-scale CCS is practiced today only in a few niche applications and pilot demonstration studies. One of the best-known and longest-running CCS projects is in the Sleipner Field in the North Sea²¹ – in which ExxonMobil shares ownership. Before CCS can be widely deployed on a global scale, it must overcome important challenges. In particular,

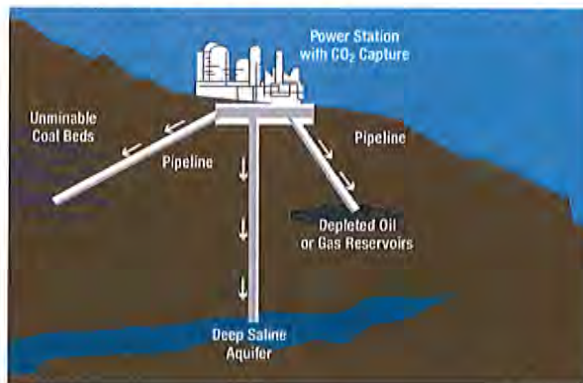
- CO₂ capture from power plants and most other large combustion facilities remains expensive.
- CO₂ storage presents technical and regulatory issues associated with ensuring safe operations and the integrity of the site over the long term.

Recognizing these challenges, ExxonMobil believes that CCS represents an important option to address global CO₂ emissions.

We have conducted research relevant to CCS for many years and have supported external research and other activities to understand scientific, economic, technical and policy aspects of carbon capture and storage. In addition to the CCS studies as part of GCEP, ExxonMobil has supported the IEA's Greenhouse Gas R&D Programme and the Geological CO₂ Storage Research Program at the University of Texas. The research that we conduct and support is aimed at improving the performance, lowering the cost and assuring the integrity of CCS systems and their component technologies.

Fig. 15

Carbon Capture and Storage



Hydrogen

Hydrogen is widely considered to hold promise as an energy carrier, particularly as it offers the potential for fuel-efficient, emissions-free vehicles and can be produced from multiple primary energy sources.

It is important to remember that hydrogen, while abundant, does not occur naturally in pure form and must first be produced from water or hydrocarbons. This requires the use of energy generated from primary sources: oil, gas, coal, nuclear or renewables. So any evaluation of hydrogen needs to recognize the costs and the greenhouse gas emissions associated not only with its consumption, but also its production and distribution.

For hydrogen to become a viable transportation fuel, a number of formidable challenges must be met, including its safe handling and the high cost of production and distribution. While hydrogen has been used safely for decades by highly trained technicians in industrial settings, its characteristics pose unique challenges for use in consumer markets such as self-service vehicle fueling.

The high cost of producing and distributing hydrogen results in a fuel cost that is higher than gasoline on a cents-per-mile-driven basis. Based on an analysis by the National Academy of Engineering (NAE), the cost of fueling a hydrogen fuel cell vehicle is 1.9 to about 15 times greater than that of fueling a gasoline hybrid, depending on how the hydrogen is produced²² (See Fig. 16). Significant R&D effort will be required to lower these costs to a competitive level.

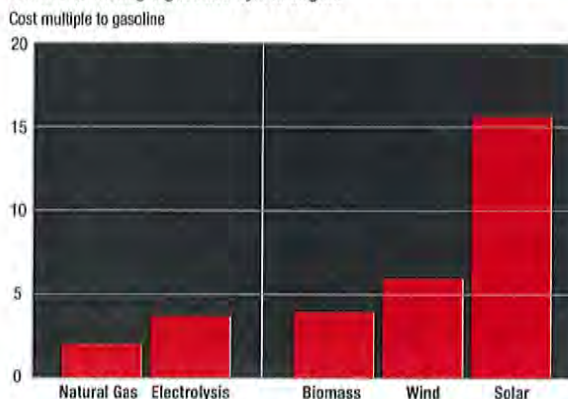
A number of studies conducted by different sponsors in different regions have assessed the potential for reducing CO₂ emissions via the use of hydrogen. All have concluded that there is some reduction in full-cycle CO₂ emissions for hydrogen fuel cell vehicles compared with hybrid technology (approximately 11% to 35%).²³

Interest in the use of renewable energy to make hydrogen is high, as this is the only option that would result in a "zero emissions" transportation fuel system on a total supply-chain basis. There are, however, a number of additional challenges associated with the manufacture of hydrogen from renewable energy. The NAE estimated that hydrogen is five times more expensive than gasoline when produced from wind and 15 times more expensive when produced from solar energy.²²

With limited supplies of renewables in the coming decades, it is reasonable to ask whether the use of renewables to produce hydrogen for transportation would be the best use of those resources. A unit of wind or solar energy that is used to displace coal in power generation saves 2.5 times more carbon dioxide than using the same unit of wind or solar energy to replace gasoline with hydrogen.²⁴

Fig. 16

Cost of fueling a vehicle with hydrogen from different energy sources relative to fueling a gasoline hybrid engine



Source: National Academy of Engineering

ExxonMobil is currently pursuing groundbreaking research in hydrogen generation. Our unique skills in catalysis and process technologies have enabled us to identify a new approach to hydrogen production from hydrocarbon fuels that overcomes many of the challenges faced by alternative approaches.

If successfully developed, this technology would be scalable for applications ranging from on-board a vehicle to use at either retail stations or large centralized production facilities to produce hydrogen for fleets of fuel cell vehicles. We are also active members of the U.S. Department of Energy's FreedomCAR and Fuel Partnership.

Biofuels

The use of biofuels in transportation is another way that CO₂ emissions could be reduced. Today ethanol and biodiesel, liquid fuels derived from organic matter, are receiving a lot of attention.

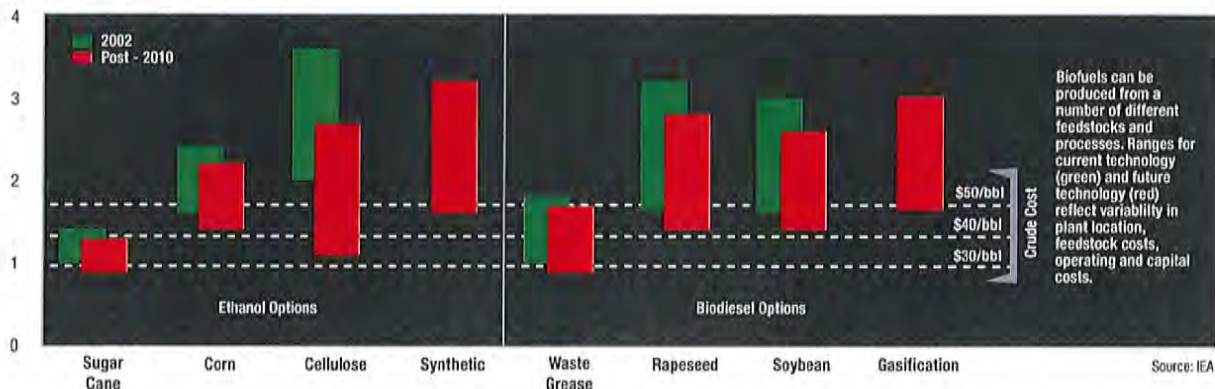
The current generation of biofuels, however, has scale limitations due to their cost and large land requirements. With continued research, a new generation of processes capable of using a more diverse set of biomass feedstocks may be able to overcome these challenges. A recent study by the International Energy Agency examined the economics of both current and potential future technologies (See Fig. 17).²⁵

When considering the potential of biofuels, a number of factors must be analyzed, including land use impacts, fertilizer requirements and water use. The last is particularly important, as studies indicate that by 2015 half the world's population will live in countries where availability of sufficient fresh water is a concern.²⁶

Most current biofuels production processes convert only a small portion of the plant. In the future, however, processes involving cellulosic conversion hold the promise of being able

Fig. 17

Cost of Production for Biofuels Options
2004 \$ per gallon gasoline equivalent



to utilize a much larger portion of the feed biomass. This would result in full-cycle CO₂ savings of about 90% versus up to 50% with current processes.²⁷

Important, too, is the question of which biomass applications yield the greatest benefit. A recent study in Europe involving the energy and auto industries, as well as the Joint Research Commission of the European Union, concluded that greater energy and GHG savings can be achieved if biomass is used in heat and power generation rather than in transportation, especially if efficient cogeneration schemes can be used.²⁸

Wind and Solar

Currently, the most competitive renewable energy source is wind power (See Fig. 18). While growing rapidly, its impact on the overall energy supply mix is limited. In some applications, wind-generated electricity can be cost-competitive with that generated from natural gas, but it generally relies on government subsidies to be economical.

A key challenge for wind power is that the areas best able to produce electricity at low cost from wind are also located far from where the electricity is needed. New technology will be required to allow either the capture of wind energy in areas with low average wind speeds or to enable transmission of electricity over long distances at lower cost and with lower losses than is currently possible.

Solar energy remains far more costly, except in limited applications. Existing solar photovoltaic technology is significantly more costly than conventional electricity generation. Breakthrough technology is needed to enable fundamentally new photovoltaic materials that will allow power generation at competitive costs.

A key issue in the ability of wind and solar technologies to contribute to electric power supply is intermittence. Stable electric grids require traditional generating facilities or costly

backup systems to ensure uninterrupted supply to consumers on cloudy days, at night or at times the winds fail.

Without a breakthrough in energy storage technology, intermittency limits the ability of wind and solar energy to contribute to electricity supplies and increases the overall costs of integrated power supply systems.

Research into solar energy is a core research area of the ExxonMobil-sponsored Global Climate and Energy Project at Stanford University.

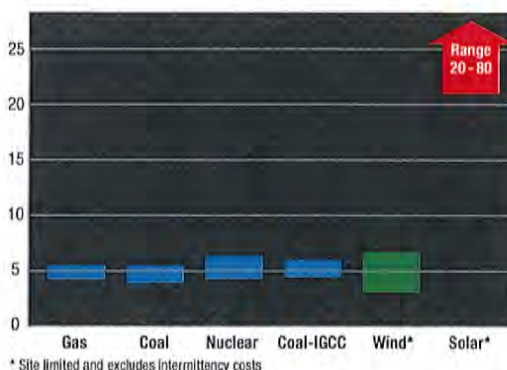
Gasification

Gasification, a technology that was developed decades ago, may see increased use in the future.

Gasification can process any carbon containing feedstock – such as coal, biomass or heavy oil – and convert it into a “synthesis gas” that can be used to produce electricity, liquid fuels, hydrogen or chemicals. Gasification is also better suited to use with carbon capture and sequestration than other processes that can use the same feeds.

Fig. 18

Cost of Electricity from Traditional and Emerging Sources
Cents per kWh (2005 \$)



While gasification has many attractive properties, it is still more costly relative to alternative ways of producing the same products. For example, electricity produced by the gasification of coal (without CO₂ capture) is about 13%²⁹ more costly than that from a conventional coal power plant. By comparison, if CO₂ capture were included, then a coal gasification plant could produce electricity at a cost 20% lower than a conventional coal-powered plant retrofitted for carbon capture and storage (CCS).³⁰ Clearly there are synergies between gasification and CCS technologies.

Further work is needed to both lower the costs and improve the reliability of gasification technology, and ExxonMobil researchers are evaluating the opportunities in this area. If successful, studies could result in a technology option that provides a level of both feed and product flexibility that no current process is able to offer.

Advanced Nuclear

Nuclear energy has the potential to become an increasingly important option for meeting a growing portion of our long-term energy needs, specifically in the power generation sector.

Key barriers to increased use of nuclear today are cost, perceived safety risks and the lack of an acceptable solution to the long-term management of radioactive waste.

Research is continuing into advanced nuclear systems that are passively safe and offer the potential of significantly lower cost than current reactors. Systems with these safety features will have a very low likelihood of reactor core damage and address the problems that occurred at Three Mile Island and Chernobyl.³¹

Designs include advanced third-generation versions of conventional reactors, as well as fundamentally new designs such as the “pebble bed modular reactor.” If successful, these designs could reduce the capital cost of nuclear power plants by 15% to 20% and thereby add another economically competitive option to our long-term energy supply portfolio. Addressing the long-term waste storage issue is largely a matter that will require extensive dialogue between governments, communities and industry to resolve.

Technology Choice and CO₂ Emissions

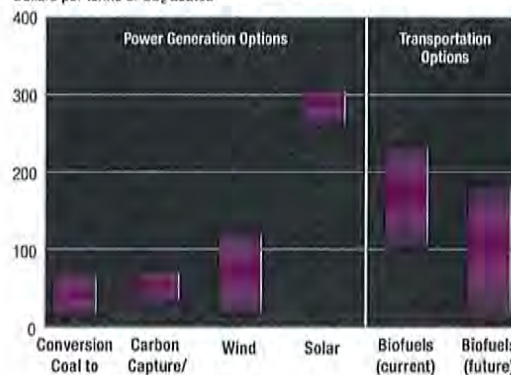
If new technologies are to be applied to realize reductions in CO₂ emissions, then it is important to understand the cost of various options in terms of dollars per tonne of CO₂ abated. Applying the lowest abatement cost options first will maximize impact while minimizing costs. European researchers in both the power and transportation industries have been working to quantify the abatement cost of technologies, and their work is helpful in understanding the relative attractiveness of different options.³²

The chart in Fig. 19 illustrates ranges of abatement costs for various power generation and transportation technologies. The lowest cost reductions in CO₂ are likely to be realized in the power generation sector. This is due in part to the fact that it is easier to deal with a few large point sources of CO₂ than millions of individual sources, such as vehicles. It is also important to note that continued R&D can have a significant impact on lowering the cost of CO₂ abatement as illustrated by the current and future biofuels ranges.

ExxonMobil is well positioned to participate in the implementation of the lowest cost options through our focus on natural gas resource development, our experience with carbon capture and storage and our support of breakthrough research.

Fig. 19

The Cost of Reducing CO₂
CO₂ abatement costs for different technology options
Dollars per tonne of CO₂ abated



Source: CONCAWE, European Climate Change Project

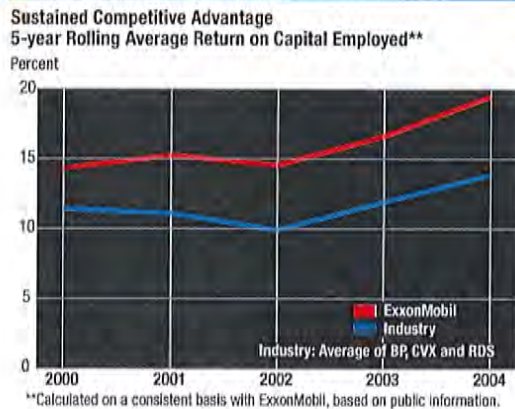
Although wind, solar, biofuels and nuclear all compete with fossil fuels as sources of primary energy, their contribution to the world's total energy demand is limited because they are more expensive than fossil fuels – and in the case of nuclear, limited by waste and disposal concerns. Technology advances and government policy will support rapid growth in alternative fuels, but they start from such a small base that their contribution to total energy supply will be modest well into the future. Their limited but growing contribution should be used in ways that make the greatest possible difference in CO₂ emissions.

While we recognize the risks of climate change, we also conclude that the world will continue to demand oil and gas for a majority of its primary energy supplies for many decades to come. This will be true even if governments continue to support alternative energy sources and limit greenhouse gas emissions. ExxonMobil is well positioned across a range of possible futures to conduct our operations competitively in a responsible and profitable manner.

Section 4: Managing in a Changing Environment

ExxonMobil's long-term perspective, disciplined approach to investment and focus on world-class operational performance explain why the company has continually delivered industry-leading returns, even through times of dramatic and unforeseen change.

Fig. 20



In addition, our scale, geographic diversity and range of businesses provide a hedge that reduces sensitivity to changes in commodity prices, business cycles and local market conditions. Our financial and technology strength enables us to invest in any opportunity that meets our rigorous investment criteria.

These attributes, which we believe set us apart from our competitors, position us well to respond successfully to change, whether driven by markets, competitors or governments.

In response to rising environmental concerns, we anticipate more regulatory requirements than we face today. Uncertainty and risk are familiar territory in our industry, but we believe the way we manage our business puts us at an advantage over the competition in meeting new expectations.

Investment discipline and long-term perspective

The \$200 billion industry investment required annually to meet growing demand for oil and gas through 2030 reflects not just the scale of demand, but also the fact that significant new resources are increasingly found in more remote areas and difficult environments.

Investment decisions can have long-term consequences. So we adopt a highly selective and disciplined approach to investment, which considers:

- political and technical risks, along with potential regulatory changes
- business and societal trends

- the resilience of investment opportunities over a range of economic scenarios

Regular, formal reviews enable us to evaluate emerging issues and plan accordingly.

Our objective is to seek out projects that:

- are profitable and sustainable over the long term
- are not reliant on government subsidies
- are consistent with our own scale and capabilities
- yield a well-balanced and diversified business
- do not compromise our high safety and environmental standards

Fig. 21



We believe that the world's energy needs will be met through consistent investment strategies that are not driven by periodic swings in commodity prices. Our capital investments over the period 1995 through 2004 averaged \$14 billion a year, although our annual earnings ranged from \$8 billion to \$25 billion over that period.

A focus on operational excellence

We apply the same rigor to our operations as we apply to our investments, via a wide range of proven management systems, including:

- **Standards of Business Conduct:** These 16 foundation policies and related procedures form the framework by which we operate around the globe – providing employees with principles for managing compliance with company standards.

- **Financial Controls:** Sound financial control is fundamental to our business model. Authority to approve business arrangements on behalf of our company is clearly assigned and delegated. Our System of Management Control (SMC) defines the principles, concepts and standards, and our Control Integrity Management System (CIMS) provides common processes and tools for compliance with the SMC.
- **Project execution and appraisal:** Our disciplined approach continues from concept through start-up and ongoing operations. All projects are rigorously appraised after completion, and learnings are incorporated into future planning. These processes have earned ExxonMobil a reputation for excellence in project management and distinguish us from the competition. For example, in Africa and the Gulf of Mexico, ExxonMobil-operated projects have consistently started up on or ahead of schedule.
- **Operating Reliability:** Safely increasing plant reliability and availability while lowering total maintenance costs is the objective of our Reliability and Maintenance Management System. This program has been applied to all our refineries worldwide and has reduced the amount of time that units are down for maintenance by 40% and reduced maintenance costs by 30%.
- **Safety, Health and Environment:** At the core of our approach to safety, health, security and environment management is our Operations Integrity Management System (OIMS). This system fully meets the requirements of the International Standards Organization (ISO) 14001 benchmark and is used at every ExxonMobil facility. It is a disciplined management framework that enables us to track experiences, measure progress, plan future improvements and ensure management accountability. OIMS covers the collection and reporting of emissions data, including greenhouse gas emissions for all facilities.

2004 OIMS assessment by Lloyd's

"It is the opinion of Lloyd's Register Quality Assurance that the environmental management components of ExxonMobil's Operations Integrity Management System are consistent with the intent and meet the requirements of the ISO 14001 Environmental Management Systems Standard."

"Deployment of the Operations Integrity Management System has contributed toward the overall improvement in the Corporation's environmental performance. At the locations visited, individuals at all levels demonstrated a high degree of personal commitment to OIMS implementation and environmental care. The integration of Environmental Business Plans into the annual planning cycle has strengthened the process for continual improvement of the Corporation's environmental performance."

- **Energy Efficiency:** As a major consumer of energy, energy efficiency is important to us. Our Global Energy Management System (GEMS), developed in the late 1990s, uses international best practices and benchmarking techniques to identify energy efficiency opportunities at all our facilities and promote continuous improvement. In 2004, we achieved record energy efficiency performance across our worldwide refining and chemicals businesses, improving by more than 3% over 2003. In fact, our rate of improvement in refining is significantly better than the historical industry average.
- **Environmental Business Planning:** Continuous improvement of environmental performance is the objective of our Environmental Business Planning (EBP) process, which integrates environmental improvement activities into annual operating plans at each of our facilities and businesses. This process includes assessment of potential regulatory changes affecting environmental aspects of our operations and systematic management of any consequent business impacts.

Fig. 22

OIMS' 11 Elements



The management systems that underpin our business enable us to consistently deliver superior results in terms of financial, safety and environmental performance, while playing our part in meeting the world's growing energy needs.

Summary

Summary

- Energy is vital to economic growth and progress.
- Global energy demand is expected to grow by almost 50% by 2030, driven mainly by rapidly growing economies in the developing world.
- Fossil fuels will remain predominant, with a growing role for natural gas.
- Greenhouse gas emissions will rise substantially, particularly as developing economies grow.
- ExxonMobil recognizes that the risk from climate change requires action, and we are taking action both to address our operational emissions and to promote more efficient use of our products.
- Policies to address climate change need to consider consequences not only for environmental risks but also for social and economic development, especially in developing countries.
- More widespread use now of existing efficient technologies in industrialized and developing countries offers significant potential to reduce greenhouse gas emissions growth.
- Over the next 25 years, technologies that enable expanded energy supplies, along with those that moderate energy demand via improved energy efficiency, will be critical to meeting the world's growing need for energy while managing greenhouse gas emissions.
- New energy sources, while they hold promise, require substantial technological advances to enable them to compete for a significant share of global energy supply – and the vast scale of the global energy business means that penetration of new technologies on a meaningful, global scale will take decades.
- Fundamental research is necessary to identify and develop viable technologies for the long term that allow energy demand to be met while dramatically reducing greenhouse gas emissions.
- Uncertainties about future climate-related policies will create issues for investors in global energy provision. However, we believe that ExxonMobil's well-proven, disciplined approach to investment and operational risk positions the company well to successfully manage this uncertainty, maintain our position as the technology leader in our industry and take advantage of attractive business opportunities that may emerge.

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