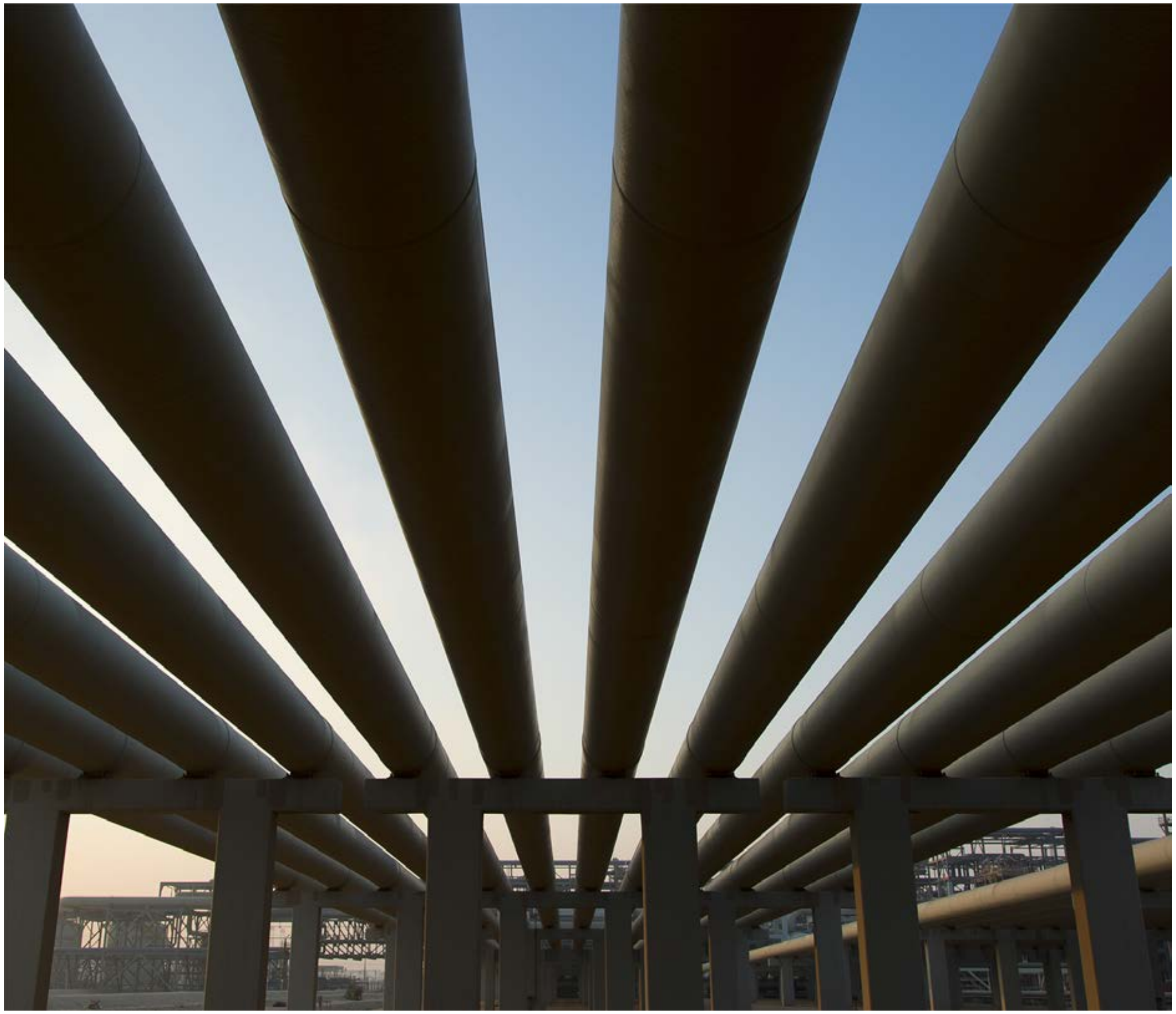
2019 ENERGY & CARBON SUMMARY



2019 ENERGY & CARBON SUMMARY

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Statements of future events or conditions in this report, including projections, targets, expectations, estimates, future technologies, and business plans, are forward-looking statements. Actual future results or conditions, including: demand growth and energy source mix; the impact of new technologies; production rates and reserve growth; efficiency gains and cost savings; emission reductions; and results of investments, could differ materially due to, for example, changes in the supply and demand for crude oil, natural gas, and petroleum and petrochemical products and resulting price impacts; the outcome of exploration and development projects; the outcome of research projects and ability to scale new technologies on a cost-effective basis; changes in law or government policy, including environmental regulations and international treaties; the actions of competitors and customers; changes in the rates of population growth, economic development, and migration patterns; trade patterns and the development of global, regional and national mandates; military build-ups or conflicts; unexpected technological developments; general economic conditions, including the occurrence and duration of economic recessions; unforeseen technical difficulties; and other factors discussed in this report and in Item 1A of ExxonMobil's most recent Form 10-K. Third-party scenarios discussed in this report reflect the modeling assumptions and outputs of their respective authors, not ExxonMobil, and their use or inclusion herein is not an endorsement by ExxonMobil of their likelihood or probability. References to "resources," "resource base," and similar terms include quantities of oil and gas that are not yet classified as proved reserves under SEC definitions but that are expected to be ultimately moved into the proved reserves category and produced in the future. For additional information, see the "Frequently Used Terms" on the Investors page of our website at exxonmobil.com.
References to "oil" and "gas" include crude, natural gas liquids, bitumen, synthetic oil, and natural gas.
Prior years' data have been reclassified in certain cases to conform to the 2017 presentation basis.
The term "project" as used in this publication can refer to a variety of different activities and does not necessarily have the same meaning as in any government payment transparency reports.

COVER PHOTO:
LNG ship, Gaslog Savannah, delivers gas from the Gorgon project in Western Australia to customers in Asia. ExxonMobil has a 25 percent interest in the Gorgon project.

ExxonMobil

There are few challenges more important than meeting the world's growing demand for energy while reducing environmental impacts and the risks of climate change.

ExxonMobil is committed to doing our part to help society meet this dual challenge.

Energy underpins modern life. People around the world rely on energy to cook their meals, heat their homes, fuel their cars, and power their hospitals, schools and businesses. Our industry plays a critical role in fulfilling society's economic needs and providing the foundation for a healthier and more prosperous future.

We also play an essential role in protecting the environment and addressing the risks of climate change. ExxonMobil is taking significant steps to minimize the greenhouse gas (GHG) emissions from our own operations. For example, we have committed to reducing methane emissions from our operations by 15 percent and flaring by 25 percent by 2020*, as well as reducing the GHG intensity at our operated Canadian oil sands facilities by 10 percent by 2023*.

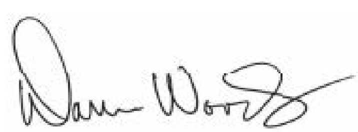
Since 2000, we have invested more than $9 billion in our facilities and research to develop and deploy lower-emission energy solutions such as cogeneration, algae biofuels, and carbon capture and storage (CCS). We have partnered with more than 80 universities around the world to support emerging energy research.

At the same time, we help our customers reduce their emissions through the use of our energy-saving technologies and sustainable products.

We also actively engage in climate-related policy discussions. We understand that dealing successfully with climate change risks will require a coordinated effort involving individuals, governments and industry leaders around the world. ExxonMobil supports the 2015 Paris Agreement. In 2017 we became a founding member of the Climate Leadership Council to help promote a revenue-neutral carbon tax. And last year we joined the Oil and Gas Climate Initiative (OGCI), a voluntary collaboration of leading companies in our industry aimed at reducing climate-related risks.

Together with our Board of Directors and senior management team, we regularly review our efforts to address climate-related matters.

This year's *Energy & Carbon Summary* details some of these efforts. It is aligned with the core elements of the framework developed by the Financial Stability Board's Task Force on Climate-related Financial Disclosures, designed to encourage the informed conversation society needs on these important issues. Through our active participation in this conversation, and our ongoing actions to meet energy needs and environmental expectations, ExxonMobil will continue to take a leadership role in meeting the world's dual challenge.



Darren Woods, Chairman and CEO

**when compared to 2016*

Our Company has a proven record of successfully responding to changes in society's needs. With long-standing investments in technology, we are well-positioned to meet the demands of an evolving energy system.

Our annual Outlook for Energy provides a view of energy demand and supply through 2040, incorporating important fundamentals including population growth, economic conditions, policy developments and technology advances.

The 2018 *Outlook for Energy* anticipates global energy needs will rise about 25 percent over the period to 2040, led by non-OECD[1] countries. While the mix shifts toward lower-carbon-intensive fuels, the world will need to pursue all economic energy sources to meet this need.

- Efficiency gains and growing use of less-carbon-intensive energy sources will contribute to a nearly 45 percent decline in the carbon intensity of global GDP
- Worldwide electricity from solar and wind will increase about 400 percent
- Natural gas will expand its role, led by growth in electricity generation and industrial output
- Rising oil demand will be driven by commercial transportation and the chemical industry. Road fuel demands for cars and heavy-duty vehicles reflect efficiency improvements and growth in alternative fuels
- According to the International Energy Agency (IEA), cumulative investments in oil and natural gas supplies could approach $21 trillion from 2018 to 2040

The *Outlook* includes sensitivities to illustrate how changes to base *Outlook* assumptions might affect the energy landscape. In this report, we highlight sensitivities related to light-duty vehicle fuel economy gains and electric vehicle penetration, and also introduce new sensitivities tied to efficiency and alternative fuel use potentially affecting the heavy-duty vehicle sector.

Relative to our* Outlook*, a theoretical 2°C pathway would generally lower demand for oil, natural gas and coal, and increase use of nuclear and renewables.

- Signposts in the energy system provide indicators on the world's progress toward a 2°C pathway
- Even under a 2°C pathway, significant investments will be required in oil and natural gas capacity. In this scenario, according to the IEA, cumulative oil and natural gas investments could exceed $13 trillion by 2040
- Production from our proved reserves and investment in our resources continue to be needed to meet global requirements and offset natural field decline

Our businesses are well-positioned for the continuing evolution of the energy system.

Near-term actions, consistent with society's energy requirements and environmental objectives, include:

- Expanding the supply of cleaner-burning natural gas
- Transitioning our refining facilities to growing higher-value distillates, lubricants and chemical feedstocks
- Mitigating emissions from our own facilities through energy efficiency, cogeneration and reduced flaring, venting and fugitive emissions, including GHG intensity reduction in Imperial Oil Limited's (Imperial) operated oil sands facilities
- Supplying products that help others reduce their emissions, such as premium lubricants and fuels, lightweight materials, and special tire liners
- Engaging on policy to address the risks of climate change at the lowest cost to society

Importantly, on a longer-term horizon, we are pursuing technologies to enhance existing operations and develop alternative energy technologies with lower carbon intensity, including:

- Researching breakthroughs that make CCS technology more economic for power generation, industrial applications and hydrogen production
- Developing technologies to reduce energy requirements of refining and chemical manufacturing facilities
- Progressing advanced biofuels for transportation and chemicals

GOVERNANCE

ExxonMobil's Board of Directors and Management Committee work together to oversee and address risks associated with our business, including risks related to climate change. Structured risk management is interwoven into ExxonMobil's corporate governance framework to ensure risks are appropriately identified and addressed.

Climate change risk oversight

ExxonMobil's Board of Directors provides oversight of Company risks, including climate change risks. These risks have the potential to manifest in a variety of ways, including through strategic, financial, operational, reputational and legal compliance matters. Effectively managing these risks is essential to the long-term success of the Company.

Board committees conduct deeper reviews and provide additional insight on important topics. For example, the ExxonMobil Board Audit Committee assesses ExxonMobil's overall risk management approach and structure to confirm that enterprise-level risks are being appropriately considered by the Board. The Public Issues and Contributions Committee (PICC) regularly reviews ExxonMobil's safety, health and environmental performance, including actions taken to address climate change risks (see page 5).

The potential for changes in demand for ExxonMobil's products for any reason, including climate change, technology or economic conditions, is considered a key strategic risk. The full Board annually considers this risk as part of its review of the *Outlook for Energy*, the Company's long-term supply and demand forecast, in addition to the Board's regular reviews and discussions of the Company's strategies and business plans.

ExxonMobil's corporate and environmental strategy, and performance, are reviewed and discussed by the Board at multiple points throughout the year. The Board provides oversight of ExxonMobil's strategy to research, develop and implement technology to address GHG emissions by reviewing the Company's technology portfolio, including ExxonMobil's low-emissions technologies, and long-range research and development programs.

To learn about and discuss the latest developments in climate science and policy, the Board engages with subject matter experts, and holds briefings and discussions on the Company's public policy positions and advocacy.

Risk management starts at the top, with oversight from the Board of Directors, and leadership from the CEO and the rest of the ExxonMobil management team. However, management does not act alone. Risk management occurs at multiple levels of the business as part of ExxonMobil's risk management framework (see page 32). This framework provides a structured approach to managing risk while ensuring the Company is able to provide reliable and affordable energy to meet rising global energy demand. This framework ensures that key risks, including climate change risks, are incorporated and considered at all levels of the business.

HIGHLIGHT:

Integrating risk management into executive compensation

ExxonMobil's compensation of senior executives is determined by the Board Compensation Committee, which is comprised entirely of independent directors. The compensation program is specifically designed to incentivize effective management of all operating and financial risks associated with ExxonMobil's business, including climate change risks.

Features of the program include the long-term vesting of performance shares and the linkage of compensation to overall company performance, including all aspects of risk management. Executive remuneration is designed to support sustainability of our operations and management of climate-related risks. Performance in managing climate change risks is further emphasized under Strategic Objectives and Operations Integrity performance metrics. ExxonMobil's executive compensation program requires that these longer-term risks be considered carefully at all levels of the organization, ensuring that the stewardship does not stop at the Board or executive level, but is required for success throughout the Company. Further details on compensation can be found in our annual Proxy Statement and the 2018 *Executive Compensation Overview*.

UP CLOSE:

Public Issues and Contributions Committee (PICC)

The Board appoints committees to help carry out its duties. In particular, Board committees work on key issues in greater detail than would be possible at full Board meetings. The PICC's primary duties are to review and provide advice, as the committee deems appropriate, regarding the Corporation's policies, programs and practices on public issues of significance, including their effects on safety, health and the environment; and to review and provide advice on the Corporation's overall objectives, policies and programs.

To accomplish this, the PICC regularly reviews ExxonMobil's safety, health and environmental performance, including actions taken to identify and manage climate change risks and opportunities. The PICC is comprised of four independent directors who are appointed by the Board. A broad range of backgrounds and areas of expertise for individual PICC members ensures that the PICC is able to effectively evaluate and inform the Board on dynamic and complex issues such as climate change risks that span a range of disciplines.

In addition, the PICC, along with other members of the Board of Directors, makes annual site visits to ExxonMobil operations to observe and provide input on current operating practices and external engagement. In 2018, the PICC traveled to ExxonMobil's Permian operations near Carlsbad, New Mexico. The visit included a tour of a well site where directional drilling and hydraulic fracturing technologies are being employed, as well as a production site where oil and gas are separated and stabilized prior to transport and use. Through these field visits, the PICC is able to see first-hand and validate that the risk management process and operations integrity management system (OIMS) are effective at protecting the Corporation's employees, the community and the environment. The PICC utilizes this information, along with reports on the safety and environmental activities of the operating functions throughout the year, to provide recommendations to the full Board.

The Board of Directors, Chairman and senior executives toured XTO operations near Carlsbad, N.M., in September 2018 as part of the annual PICC trip.

STRATEGY

Our business strategies are underpinned by a deep understanding of global energy system fundamentals. These fundamentals include the scale and variety of energy needs worldwide; capability, practicality and affordability of energy alternatives; carbon emissions; and government policy. We consider these fundamentals in conjunction with our *Outlook* to help inform our long-term business strategies and investment plans. We are committed to providing affordable energy to support human progress while advancing effective solutions. Our actions to address the risks of climate change, which are prioritized under the four pillars below, position ExxonMobil to meet the demands of an evolving energy system.

DEVELOPING SCALABLE TECHNOLOGY SOLUTIONS

ENGAGING ON CLIMATE-RELATED POLICY

PROVIDING PRODUCTS TO HELP OUR CUSTOMERS REDUCE THEIR EMISSIONS

MITIGATING EMISSIONS IN OUR OPERATIONS

Highlights from the 2018 *Outlook for Energy*

The *Outlook* is ExxonMobil's global view of energy demand and supply through 2040. ExxonMobil uses a data-driven, bottom-up approach to help produce a comprehensive view of future energy demand and supply that recognizes the dual challenge of providing affordable energy to support prosperity while reducing environmental impacts.

Energy supports rising prosperity

Access to modern technologies and abundant energy – including oil and natural gas – continues to enable substantial gains in living standards. Over the period to 2040, the world population is expected to reach 9.2 billion people, while global GDP likely will double. Billions of people are expected to join the middle class. Energy demand is likely to rise about 25 percent over the period to 2040, while efficiency gains and a shift in the energy mix – including rising penetration of wind and solar – are likely to enable nearly a 45 percent fall in the carbon intensity of global GDP.

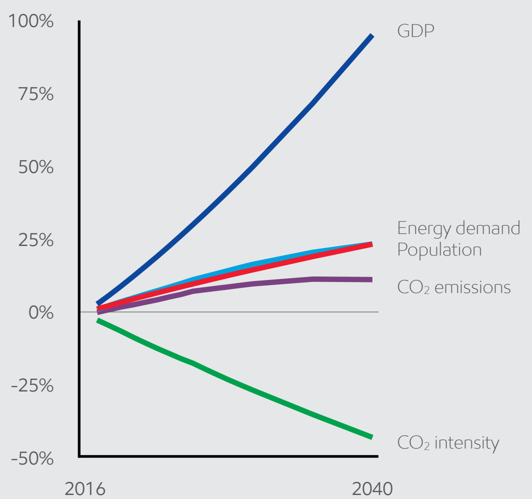
While overall energy demand is likely to be fairly stable in OECD nations, demand in non-OECD nations will likely grow about 40 percent, led by expanding economies in the Asia Pacific region, such as China and India.

Meeting growing demand for reliable, affordable energy to support prosperity and enhanced living standards is coupled with the need to do so in ways that reduce potential impacts on the environment, including those relating to air quality and the risks of climate change. Accordingly, the *Outlook* anticipates significant changes through 2040 to reshape the use of energy through efficiency gains and a shift in the energy mix. In this regard, nationally determined contributions (NDCs)[2] related to the Paris Agreement provide important signals on government intentions related to the general direction and pace of policy initiatives to address climate change risks.

Electrification and a gradual shift to lower-carbon energy sources are expected to be significant global trends. Renewables and nuclear energy see strong growth, contributing nearly 40 percent of incremental energy supplies to meet demand growth through 2040. Natural gas grows the most of any energy type, reaching a quarter of all demand. Oil will continue to play an important role in the world's energy mix, as commercial transportation (e.g., trucking, aviation, marine) and chemical sectors lead to demand growth. Coal's share will fall as the world shifts to lower-emission energy sources, helping enable a peak in global energy-related CO_2 emissions by 2040.

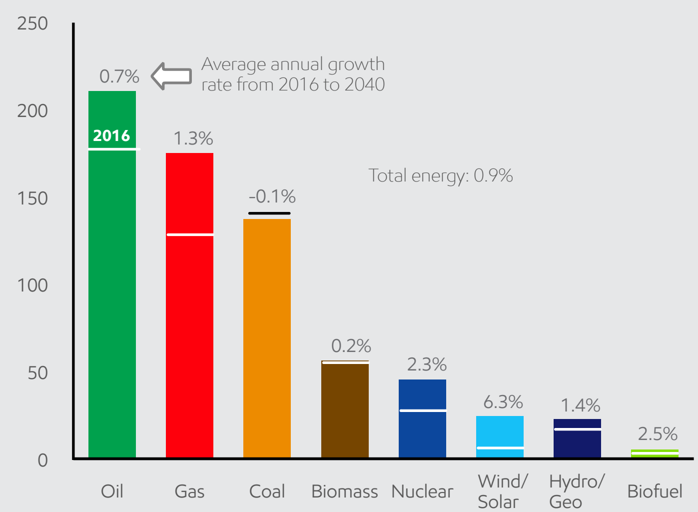
Global fundamentals impact *Outlook for Energy*

(Percent change)



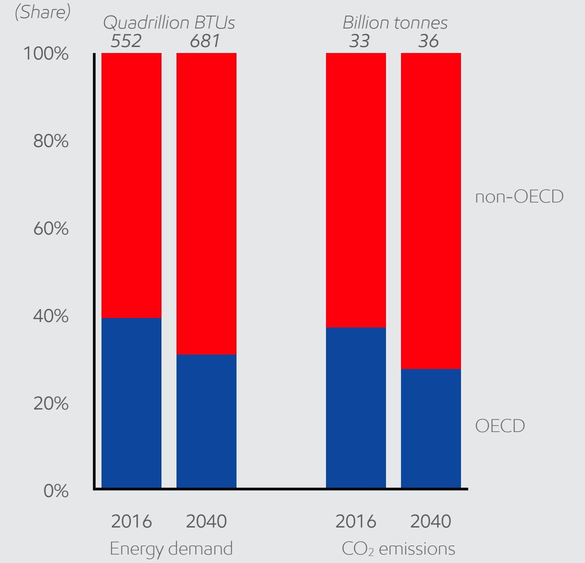
Growth led by natural gas & non-fossil energy sources

(Quadrillion BTUs)



Energy demand & CO_2 emissions led by non-OECD

(Share)



Considering 2°C scenarios

According to the IEA, a "well below" 2°C pathway implies "comprehensive, systematic, immediate and ubiquitous implementation of strict energy and material efficiency measures."[3] Given a wide range of uncertainties, no single pathway can be reasonably predicted. A key unknown relates to advances in technology that may influence the cost and potential availability of certain pathways toward a 2°C scenario. Scenarios that employ a full complement of technology options are likely to provide the most economically efficient pathways.

Considerable work has been done in the scientific community to explore potential energy pathways. A comprehensive multi-model study coordinated by the Energy Modeling Forum 27 (EMF27)[4] at Stanford University brought together many energy-economic models to assess possible technology and policy pathways associated with various climate stabilization targets (e.g., 450, 550 ppm CO_2 equivalent or CO_2e), partially in support of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

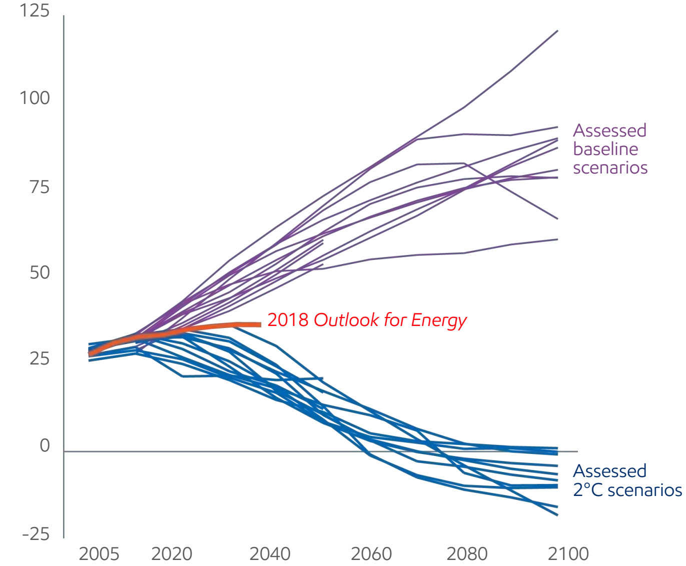
The chart (top right) illustrates potential global CO_2 emission trajectories under EMF27 full-technology scenarios[5] targeting a 2°C pathway relative to our 2018 *Outlook*, and baseline pathways with essentially no policy evolution beyond those that existed in 2010.

The chart (lower right) illustrates potential global energy demand in 2040 under the assessed 2°C scenarios. As the chart illustrates, the scenarios suggest that predicting absolute 2040 energy demand levels in total and by energy type carries some uncertainty, with particular scenarios likely heavily influenced by technology and policy assumptions.

For comparison purposes, the chart (lower right) also includes energy demand projections in 2040 based on the IEA's Sustainable Development Scenario (SDS), which is designed to meet certain outcomes. The IEA specifically notes that its SDS projects global energy-related CO_2 emissions that are "fully in line with the trajectory required to meet the objectives of the Paris Agreement on climate change." In fact, the SDS projects global energy-related CO_2 emissions in 2040 at a level 50 percent lower than the IEA's New Policies Scenario (NPS), which projects emissions generally in line with the aggregation of national commitments under the Paris Agreement. As recognized by the United Nations Framework Convention on Climate Change, the estimated aggregate annual global emissions levels resulting from the implementation of intended NDCs do not fall within least-cost 2°C scenarios.[7] Differences in these scenarios help put in perspective the uncertainty in the pace and breadth of changes in the global energy landscape.

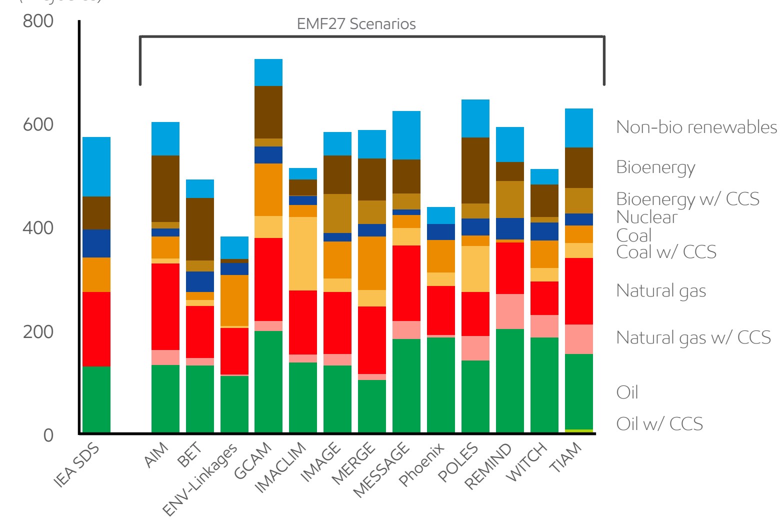
Global energy-related CO_2 emissions[6]

(Billion tonnes)



2040 global demand by energy type by model in the EMF27 assessed 2°C scenarios and the IEA SDS

(Exajoules)



IEA WEO 2018 SDS includes CCS but breakdown by energy type is not readily identifiable

Considering 2°C scenarios, continued

The assessed 2°C scenarios produce a variety of views on the potential impacts on global energy demand in total and by specific types of energy. The scenarios also show a range of possible growth rates for each type of energy. We have taken the average of the scenarios' growth rates in order to consider potential impacts on energy demand for this report.[8]

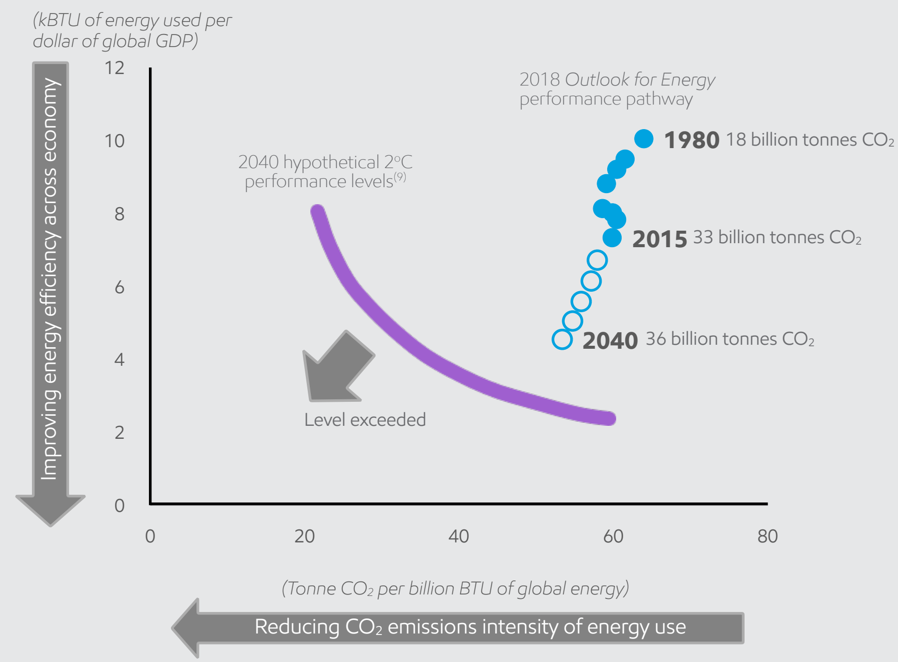
Based on this analysis, primary energy demand on a worldwide basis is projected to increase about 0.5 percent per year on average from 2010 to 2040. Expected demand in 2040 varies by model and energy type (see 2°C chart on prior page):

- Oil demand is projected on average to decline by about 0.4 percent per year
- Natural gas demand is expected on average to increase about 0.9 percent per year
- The outlook for coal is the most negative, with diverse projections showing an average decline of about 2.4 percent per year, or about a 50 percent decline by 2040
- The projected growth rates for renewable energies and nuclear are generally quite strong, averaging between 4 and 4.5 percent per year for non-bioenergy (e.g., hydro, wind, solar) and bioenergy respectively, and about 3 percent per year for nuclear

All energy sources remain important across all the assessed 2°C scenarios, though the mix of energy and technology shifts over time. Oil and natural gas remain important sources, even in models with the lowest level of energy demand. Oil demand is projected to decline modestly on average, and much more slowly than its natural rate of decline from existing producing fields. Natural gas demand grows on average due to its many advantages, including lower GHG emissions. As a result, new investments are required in both oil and natural gas capacity to meet demand, even under the assessed 2°C scenarios.

Low-side energy growth rates for the above scenarios were also considered. The low-side by energy source sees oil dropping 1.7 percent per year, natural gas dropping 0.8 percent per year, and coal dropping 10.2 percent per year through 2040. This is compared with high-side growth rates for bioenergy, nuclear and non-bio renewables of 14.1, 4.8 and 6.3 percent per year, respectively. Even under these extremes, significant investments in oil and natural gas capacity are required to offset natural field decline.

World energy-related CO_2 emissions relative to energy intensity and CO_2 emissions intensity



This chart shows global energy intensity (left axis) and CO_2 emissions intensity (bottom axis).

From 1980 to 2015, there have been large gains in efficiency, though energy-related CO_2 emissions rose from 18 billion to 33 billion tonnes. The blue circle shown for 2040 indicates these emissions are projected to be about 36 billion tonnes even with significant gains in efficiency and CO_2 emissions intensity.

To be on a 450 ppm, or hypothetical 2°C pathway, the performance in 2040 likely needs to be significantly closer to the purple line, implying faster gains in efficiency and/or faster reductions in CO_2 emissions per unit of energy. This would increase the chance of reaching a 2°C pathway, with further gains required between 2040 and 2100.

Technology advances are expected to play a major role in accelerating progress toward a 2°C pathway. However, the International Energy Agency in 2018 estimated in its *Tracking Clean Energy Progress* analysis that only four of 37 technologies are on track to help enable reaching the Paris Agreement climate goals.

Sensitivities included in our *Outlook* projections

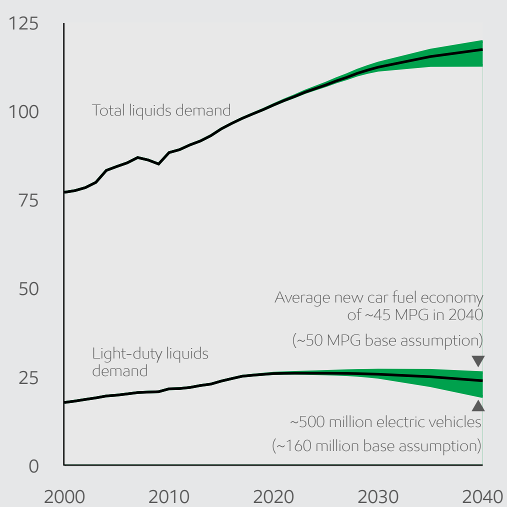
Light-duty sensitivities

We use sensitivity analyses to provide greater perspective on how changes to our base *Outlook* assumptions could affect the energy landscape. The charts below depict potential impacts to demand related to fuel economy and electric vehicle (EV) penetration (sensitivity #1), as well as a potential impact on demand assuming full EV penetration in light-duty vehicles (sensitivity #2) along with an associated possible impact on electricity generation requirements. Further discussion on sensitivities can be found in the *Outlook*.

LIGHT-DUTY SENSITIVITY #1

Liquids demand

(Million oil-equivalent barrels per day)

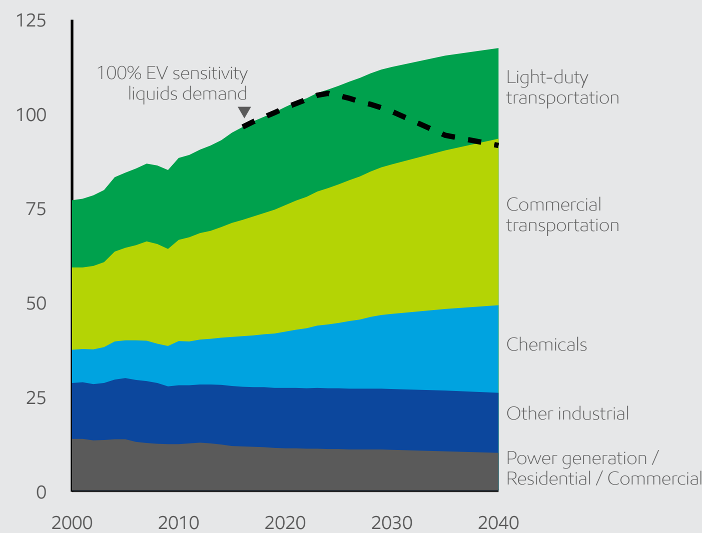


- Shaded ranges are indicative of potential shifts in global demand relative to base *Outlook*
- Liquids demand could fall about 1.2 million barrels per day for every additional 100 million electric vehicles on the road in 2040
- Trends in fuel economy gains lower than the *Outlook* basis could add more than 2 million barrels per day of liquids demand by 2040

LIGHT-DUTY SENSITIVITY #2

Liquids demand by sector

(Million oil-equivalent barrels per day)



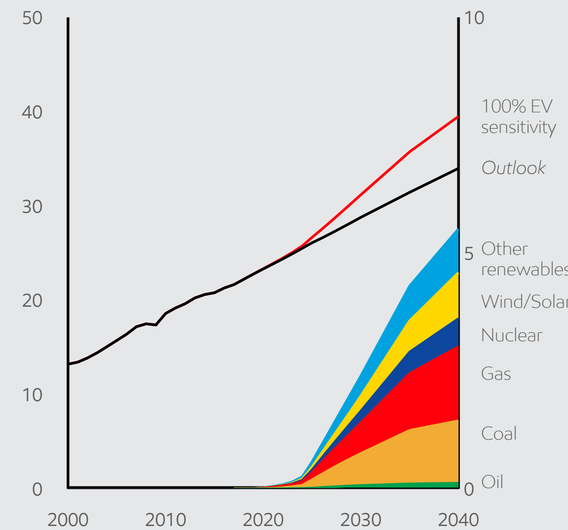
- Sensitivity assumes the global light-duty vehicle fleet is 100 percent electric by 2040, requiring all new light-duty vehicle sales to be electric by 2025
- Battery manufacturing capacity for electric cars would need to increase by more than 50 times from recent levels by 2025
- Total liquids demand in 2040 could be in line with levels seen in 2013

Electricity demand

(World – thousand TWh)

Demand increase

(World – thousand TWh)



- Electricity to power an all-electric light-duty vehicle fleet could increase electricity demand by about 15 percent in 2040 relative to the base *Outlook*
- About 25 percent of the additional electricity would be sourced by natural gas assuming a fuel mix for electricity generation consistent with the *Outlook*
- Under a 100 percent light-duty EV sensitivity, total energy-related CO_2 emissions in 2040 could be reduced by about 5 percent

Outlook projections and potential sensitivities

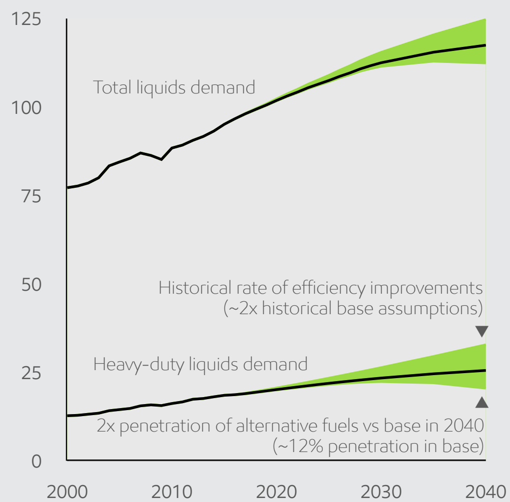
Heavy-duty sensitivities

As a sensitivity analysis to our base *Outlook*, the left chart below depicts potential impacts to heavy-duty vehicle liquid demand related to changes in efficiency assumptions as well as changes in the pace of alternative fuels penetration (sensitivity #1). The middle and right charts below depict a much deeper penetration of alternative fuels (sensitivity #2). Note that because light-duty and heavy-duty fuels are produced from different segments within a barrel of oil, the impacts of light-duty and heavy-duty sensitivities on total liquids demand are independent and not necessarily additive.

HEAVY-DUTY SENSITIVITY #1

Liquids demand

(Million oil-equivalent barrels per day)

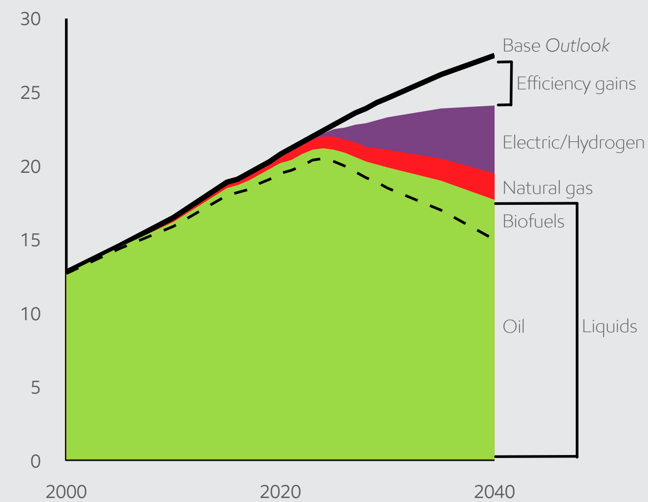


- Shaded ranges are indicative of potential shifts in global demand relative to the base *Outlook*, which includes faster energy intensity gains versus recent global average
- Liquids demand (including biofuels) in 2040 could fall about 0.5 million barrels per day for every percent of alternative fuels
- Slower than expected efficiency improvements could add about 7 million barrels per day of liquids demand versus the base *Outlook* in 2040

HEAVY-DUTY SENSITIVITY #2

Heavy-duty fuels demand

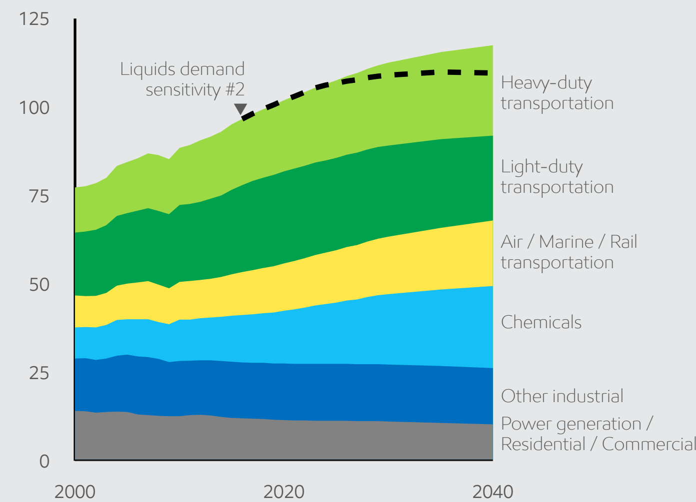
(Million oil-equivalent barrels per day)



- Hypothetical sensitivity to explore deep penetration of alternative fuels; transition of the global vehicle fleet and infrastructure build-out would need to accelerate significantly in the early 2020s
- Sensitivity assumes 2040 share of alternative fuels such as electricity, biofuels, gas and hydrogen about three times the level in 2040 compared with the base *Outlook* at ~12%
- Transition assumes nearly 100% electrification of light commercial vehicles, about 70% alternative fuels in medium commercial vehicles, and about 20% penetration of alternative fuels in heavy-duty commercial vehicles

Liquids demand by sector

(Million oil-equivalent barrels per day)



- Under sensitivity #2, total oil demand in the heavy-duty sector could peak prior to 2025, declining by 2040 to levels observed in the mid-2000s
- Total liquids demand could peak by 2040 if this penetration of alternative fuels in the heavy-duty sector were realized
- Increased electrification would likely drive increased demand for natural gas for both electricity and hydrogen production

Signposts for the evolving energy landscape

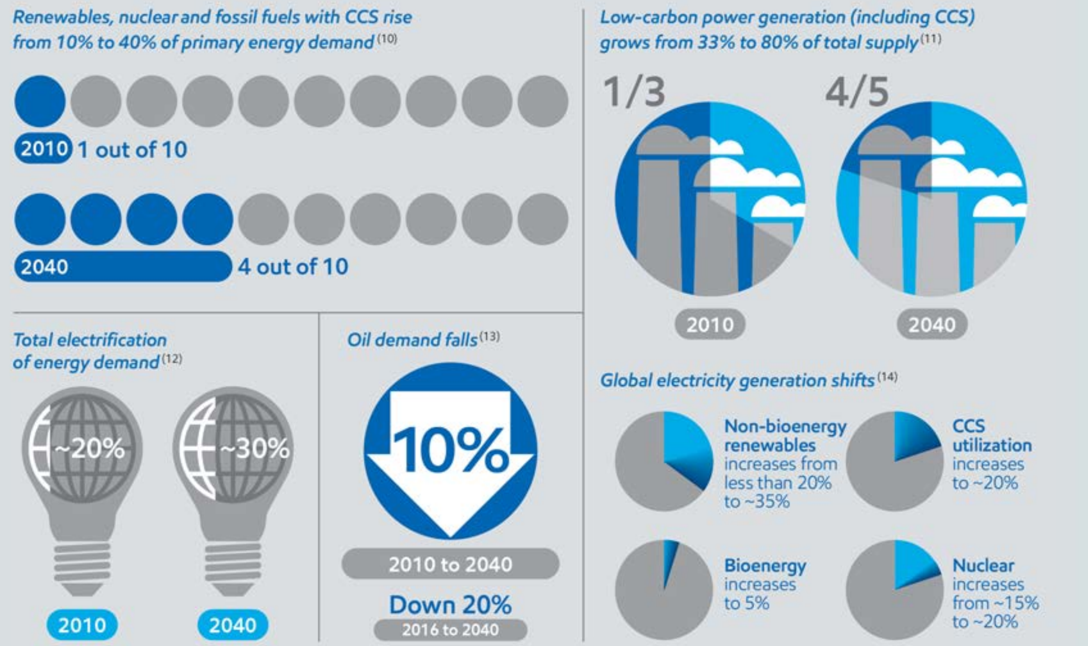
Changes in the relative cost of new technology when compared against existing or alternative energy sources may further increase shifts in the global energy mix. Utilizing Company and external sources, we monitor a variety of indicators that may serve as signposts for potential acceleration in shifts to the energy landscape, such as:

- New NDCs and significant policy initiatives broadly implemented, such as carbon pricing
- Increasing electrification of energy systems
- Increasing penetration of renewables with technology developments that reduce costs and increase reliability of energy storage
- Development of scalable alternative energy technologies such as advanced biofuels, leading to displacement of gasoline and distillate in the fuels market
- Advances in CCS technology to lower cost
- Advances in significant new capacity expansions of multiple technologies, as well as the associated financing that support these expansions
- Energy efficiency gains exceeding historical trends
- Change in consumer preferences and growth in acceptance of alternative energy technologies - including potentially higher costs

Further details and discussion of assessed 2°C scenarios can be found in the special section of the 2018 *Outlook for Energy – Pursuing a 2°C pathway.*

UP CLOSE:
Indicators for a 2°C pathway

The continued evolution of the energy system will provide important indicators on whether society is moving toward a 2°C scenario. The following would demonstrate progress toward that objective by 2040 compared to 2010:



Summary of demand growth rates Mean annual demand growth rate 2010-2040	Average of the Assessed 2°C Scenarios[15]	ExxonMobil 2018 *Outlook for Energy*	IEA World Energy Outlook 2010-2017e
Energy demand	▲ 0.5%	▲ 0.9%	▲ 1.2%
Oil	▼ (0.4)%	▲ 0.8%	▲ 1.0%
Natural gas	▲ 0.9%	▲ 1.4%	▲ 1.9%
Coal	▼ (2.4)%	0.0%	▲ 0.4%
Nuclear	▲ 3.0%	▲ 1.6%	▼ (0.6)%
Bioenergy	▲ 4.3%	▲ 0.7%	▲ 1.8%
Non-bio renewables	▲ 4.5%	▲ 3.7%	▲ 5.9%

Annual reduction carbon intensity/GDP[16]
(monitoring implementation of Paris Agreement)

6.4%	3.0%	2.6%
Needed to stay within 2°C global carbon budget	Implied by G20 NDCs (2015-2030)	In 2017

Potential impact on proved reserves and resources considering 2°C scenarios

Over the coming decades, oil and natural gas will continue to play a critical role in meeting the world's energy demand, even considering the 2°C scenarios assessed in the previous section. The following analysis is intended to address the potential impacts to the Company's proved reserves[17] and resources[18] through 2040 and beyond, considering the average of the assessed 2°C scenarios' oil and natural gas growth rates (2°C scenarios average).[19]

At the end of 2017, ExxonMobil's proved reserves totaled about 21 billion oil-equivalent barrels, of which 57 percent were oil and 43 percent were natural gas. These proved reserves are assessed annually and reported in our annual report on Form 10-K in accordance with the U.S. SEC rules. Proved reserves are the main driver of intrinsic value of an integrated oil and gas company's upstream operations.[20] Based on currently anticipated production schedules, we estimate that by 2040 a substantial majority of our year-end 2017 proved reserves will have been produced. Since the 2°C scenarios average implies significant use of oil and natural gas through the middle of the century, we believe these reserves face little risk from declining demand.

For the remaining year-end 2017 proved reserves that are projected to be produced beyond 2040, the reserves are generally associated with assets where the majority of development costs are incurred before 2040. While these proved reserves may be subject to more stringent climate-related policies in the future, targeted investments could mitigate production-related emissions and associated costs. In addition, these assets have generally lower risk given the technical knowledge that accumulates over many decades of production. Accordingly, the production of these reserves will likely remain economic even under the 2°C scenarios average.

For producing assets that do not currently meet the SEC's definition of proved reserves, we expect to continue producing these assets through the end of their economic lives. We continue to enhance the long-term viability of these assets through increased efficiency, cost reductions, and the deployment of new technologies and processes.

UP CLOSE:

Significant investment still needed in 2°C scenarios

Considering the 2°C scenarios average, global liquids demand is projected to decline from 95 million barrels per day in 2016 to about 78 million barrels per day in 2040. Using the lowest liquids demand growth rate among the assessed 2°C scenarios, liquids demand would still be 53 million barrels per day in 2040, as seen in the left chart below.[21] However, absent future investment, world liquids production to meet demand would be expected to decrease from 95 million barrels per day in 2016 to about 17 million barrels per day in 2040. This decrease results from natural field decline, and the associated decline rate is expected to greatly exceed the potential decline rate in global oil demand even under the lowest 2°C demand scenarios assessed. Natural gas natural field decline rates are generally similar to liquids.

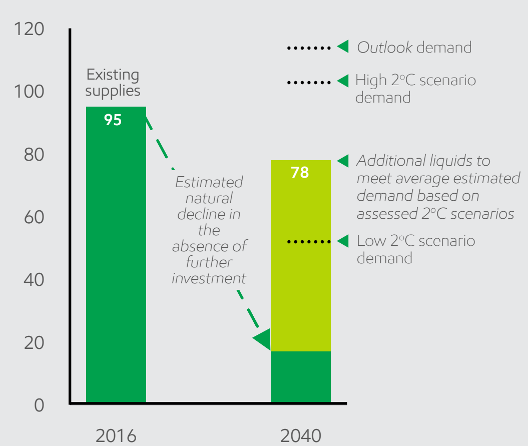
With the potential 2040 imbalance (absent future investment), the substantial majority of our proved reserves that are projected to be produced by 2040 are clearly supported by ample demand, and therefore face little risk related to the 2°C scenarios average.

Natural gas reserves face even less risk, as demand in 2040 is expected to increase under the 2°C scenarios average versus 2016 demand levels.

Considering the IEA's Sustainable Development Scenario (a 2°C scenario), the IEA estimates that more than $13 trillion of investment will be needed for oil and natural gas supply for 2018-2040.[22]

Global liquids supply estimates

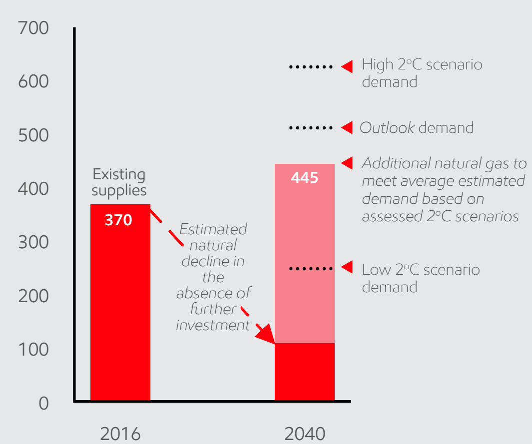
(Million oil-equivalent barrels per day)



Excludes biofuels
Source: IEA, EM analyses

Global natural gas supply estimates

(Billion cubic feet per day)



Source: IHS, EM analyses

Potential impact on proved reserves and resources considering 2°C scenarios, continued

Resources

At the end of 2017, ExxonMobil's non-proved resources totaled about 76 billion oil-equivalent barrels. The size and diversity of this undeveloped resource base provide us with considerable flexibility to profitably develop new supplies to meet future energy demand and replenish our proved reserves. We also continue to enhance the quality of our resources through successful exploration drilling, acquisitions, divestments, and ongoing development planning and appraisal activities.

The underlying economics of commercializing and producing resources are dependent on a number of factors that are assessed using a dynamic resource development process, as highlighted further in the box on the following page. We seek to advance the best resource opportunities and monetize or exit lower potential assets. As noted before, the world will continue to require significant investment in both liquids and natural gas, even under the assessed 2°C scenarios. Under the 2°C scenarios average, ExxonMobil still would need to replenish approximately 35 billion oil-equivalent barrels of proved reserves by 2040, assuming the Company retains its current share of global production over that time period.[23]

In light of the multiple factors that will influence decisions to commercialize undeveloped resources, it is not possible to identify which specific assets ultimately will be commercialized and produced. As we consider the implied oil and natural gas demand to 2040 under the 2°C scenarios average, it is possible that some higher-cost assets, which could be impacted by many factors including future climate-related policy, may not be developed. We are confident, however, that the size, diversity and continued upgrading of our undeveloped resources, along with technology developments, will enable the ongoing replenishment of our proved reserves for decades to come under a range of potential future demand scenarios.

We test our investments over a wide range of commodity price assumptions and market conditions. Notably, the IEA's estimates of future prices under its 2°C pathway fall within the range we use to test our investments.[24] Additionally, over our long history we have successfully competed in periods where supply exceeds demand. In such a business environment, the lowest cost of supply will be advantaged. ExxonMobil's long-standing focus on efficiency and continuous improvement will position us to compete successfully.

UP CLOSE:

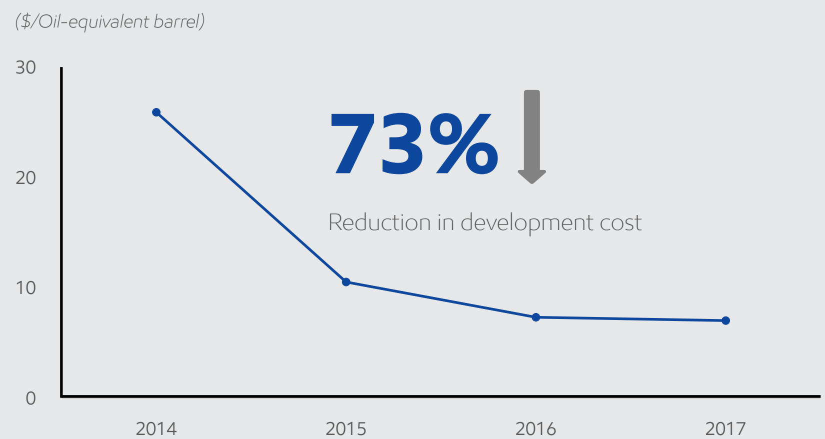
Reducing costs using technology to compete

Trillions of dollars of investment in oil and natural gas will be needed, even considering a 2°C scenario. By leveraging high-impact technologies from our research organization, we can reduce costs and environmental impacts. This positions our portfolio to continue to compete successfully.

Examples of technology-enabled cost and environmental footprint reductions:

- Record-setting extended-reach wells in Sakhalin to significantly reduce drilling costs and environmental footprints
- Full-physics modeling and next-generation completion designs for unconventional developments to reduce drilling and improve recovery
- Combination of horizontal drilling with hydraulic fracturing to significantly reduce land surface footprint and cost

Drilling and completion cost reduction
operated Midland Basin horizontal wells



Potential impact on proved reserves and resources considering 2°C scenarios, continued

Lastly, a portion of our non-proved resources represent unconventional liquids assets in the United States. These assets have shorter development cycles than other capital-intensive resources, which we believe make this class of assets resilient under the 2°C scenarios average. Natural gas assets form another portion of our non-proved resources. The 2°C scenarios average anticipates demand growth of this cleaner-burning fuel in the future, making these assets resilient under the 2°C scenarios average. Our remaining undeveloped liquids resources, in some cases, may not be attractive investments under the 2°C scenarios average, assuming no advances in technology, processes or designs. However, the carrying value of these undeveloped liquids resources is less than 5 percent of ExxonMobil's total net book value of property, plant and equipment as of September 30, 2018.[25]

UP CLOSE:

Dynamic resource development planning

This process considers a wide range of variables over time, including as appropriate: the extent and quality of the resource, development concepts, fiscal terms, regulatory requirements, proximity to existing infrastructure, market conditions, enabling technologies, and policy developments, including climate-related policy.

We optimize our resource development plans in line with these variables and prioritize developments that are competitively advantaged in delivering long-term shareholder value. Decisions can range from developing the resource (which eventually moves to proved reserves), monetizing the resource by selling it to others, or exiting the acreage.

With a very large resource base, this process can take decades as technologies are developed, market conditions change and competition evolves. Two examples illustrate this:

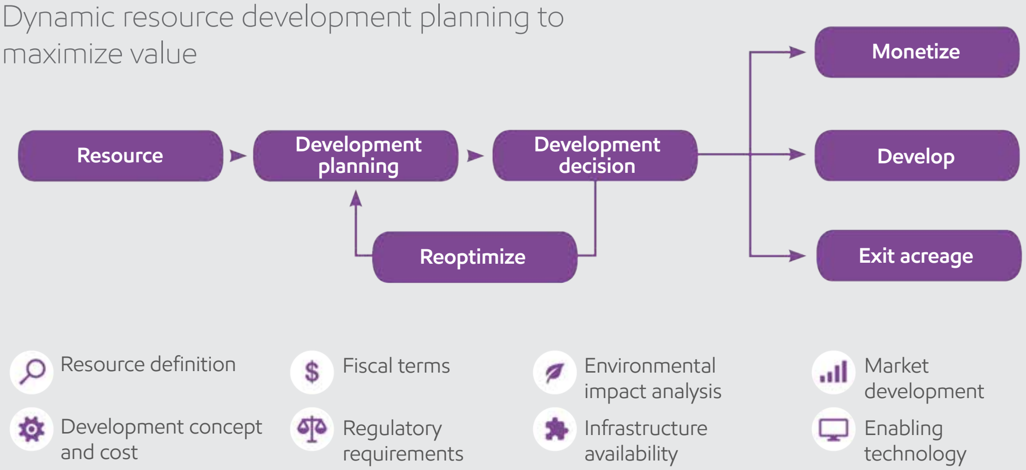
Hebron

The Hebron field in Eastern Canada was originally discovered in 1980. Continuous reoptimization of the development concept over multiple decades allowed this field to be brought on line in 2017.

Scarborough

In contrast, we monetized Scarborough through sale of the asset, which was originally discovered in 1979. After an evaluation of our portfolio, we sold it in 2018 to enable ExxonMobil to focus on more profitable LNG opportunities.

Dynamic resource development planning to maximize value



Positioning for a lower-carbon energy future

Strengthened by integration across our businesses, we are well-positioned to capture value across the entire supply chain, from well to customer, and throughout the commodity price cycle. Our proven business strategy, underpinned by leading-edge technology, has allowed ExxonMobil to transition our products over time to meet demand while maintaining our competitiveness as a low cost supplier and efficient operator. Our success is predicated on relentlessly operating safely and responsibly, taking care of people and the environment, while addressing the risks of climate change.

Upstream

Even in the assessed 2°C scenarios, oil and natural gas remain important energy types over time. By 2040, oil demand is projected to decline modestly, while natural gas demand is projected to grow. Upstream's focus on leading-edge technologies, coupled with industry-leading financial capacity, has enabled ExxonMobil to capture our best investment portfolio in decades. Our growth opportunities are geographically diverse and are expected to yield attractive returns, even in a low-price environment. As one of the largest natural gas producers in the United States, and a significant producer of liquefied natural gas around the world, we are well-positioned for the demand shift from coal to natural gas for power generation and industrial use.

Fuels & Lubricants

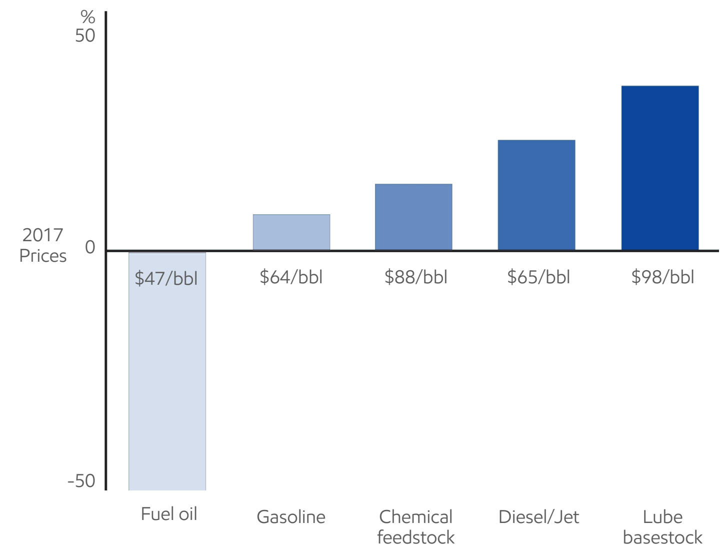
Decrease in demand for certain products may result in capacity rationalization, which our industry has experienced for decades. For example, over the past 20 years the global refining sector has continued to add new large, highly efficient capacity, leading to shutdown of smaller, less-efficient capacity. During this period, we have strengthened our refining business by divesting less competitive facilities (we divested 22 of 43 refinery sites since 2000) and redeploying resources and capital to more efficient sites that are integrated with chemical and lubricant manufacturing facilities. ExxonMobil refining is a leader in energy efficiency.[26] In addition, we continue to deploy technologies in our refineries to improve the mix of products consistent with demand trends (see top right chart). This continuous high-grading of our portfolio has positioned our Fuels & Lubricants business to remain competitive across a wider range of potential future scenarios.

Chemical

ExxonMobil Chemical Company's annual earnings have grown from less than $1 billion USD in 1987 to more than $4 billion USD in 2017. Demand for our products has doubled since 2000, outpacing GDP growth in many regions. Over the next few decades, we expect this demand to continue to grow at about 4 percent annually. Investment in technology and new capacity enables us to support the growing demand for chemical products worldwide. We have a strong market position in every business line we operate, particularly in high-performance products such as advanced materials that make cars lighter and more fuel efficient, and materials for packaging that reduces the energy needed to ship goods around the world. And we are committed to helping our customers reduce their GHG emissions while meeting the growing demand for these products.

ExxonMobil Downstream product shift

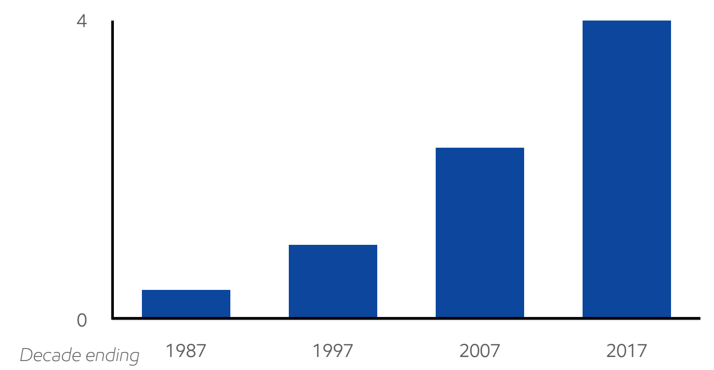
(2025 vs. 2017)



2017 prices source: Platts, Argus and IHS

ExxonMobil Chemical average earnings[27]

(Billion USD)

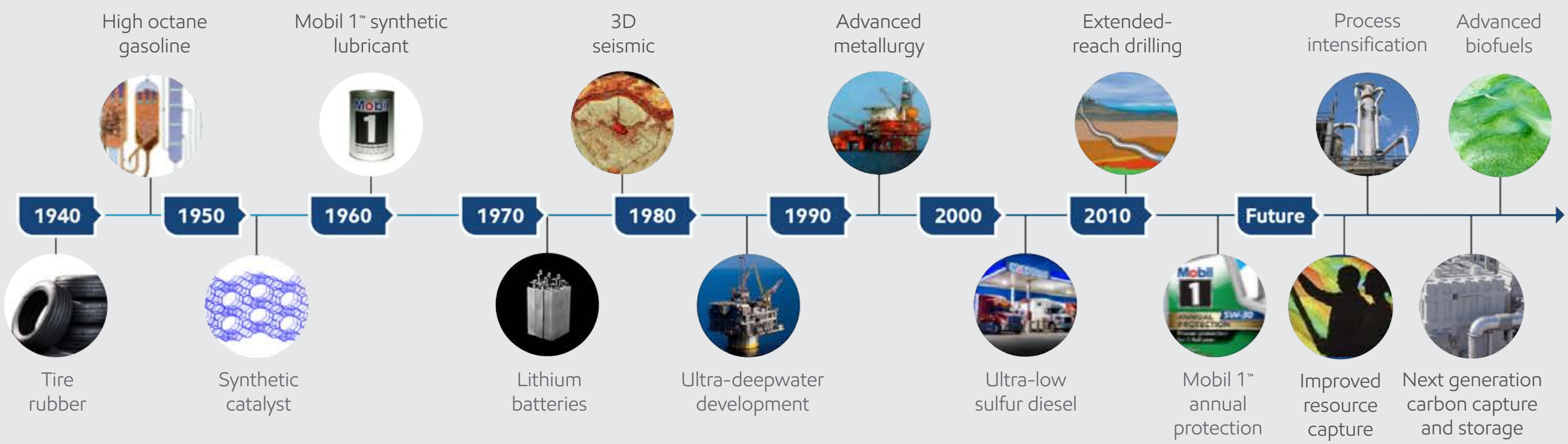


Developing scalable technology solutions

ExxonMobil has been at the forefront of many technologies that have enabled energy to be produced and delivered in a safe, affordable and sustainable manner. Our ability to reliably provide for society's energy needs today were unimaginable when the industry first emerged. Over the past century, we have seen firsthand how technology has enabled us to respond to the ever-changing energy landscape (see our innovation timeline below, noting significant innovation by our scientists and engineers). As the world demands more energy and fewer emissions, we are well-positioned to develop scalable, high-impact solutions to reduce emissions in power generation, industry and transportation. Our work with university energy centers enables us to extend the technical capabilities of our 2,200 scientists and 5,000 employees working in our R&D organizations around the world to potentially accelerate the delivery of new technologies.

We are advancing fundamental science and applying technologies in a number of areas that could lead to breakthroughs, redefining our manufacturing processes and products. We have ongoing work in advanced biofuels, catalysts, materials and manufacturing processes. Successful developments here could change our future and our impact on the environment. We are excited about the promise of this portfolio and have devoted the next few pages to elaborate on each program's criticality in addressing the Paris Agreement goals.

ExxonMobil: A history of innovation



Carbon Capture & Storage (CCS)

Since 1970, ExxonMobil has cumulatively captured more CO_2 than any other company - accounting for more than 40 percent of cumulative CO_2 captured.[28] We have a working interest in more than one-fifth of the world's carbon capture capacity, capturing nearly 7 million tonnes of CO_2 in 2017. While a leader in CCS, we are looking to expand our capacity and are evaluating multiple opportunities that have the potential to be commercially viable through the convergence of advantaged technologies and a supportive policy environment.

ExxonMobil is working to develop new CO_2 capture technologies with a goal of reducing costs, complexity of operation and need for large initial capital investments. For example, ExxonMobil and FuelCell Energy, Inc. have partnered to develop CO_2 capture technologies using carbonate fuel cells. This novel approach has the potential to be less costly and easier to operate than existing technologies, while being deployable in a modular fashion with applicability to multiple industry settings.

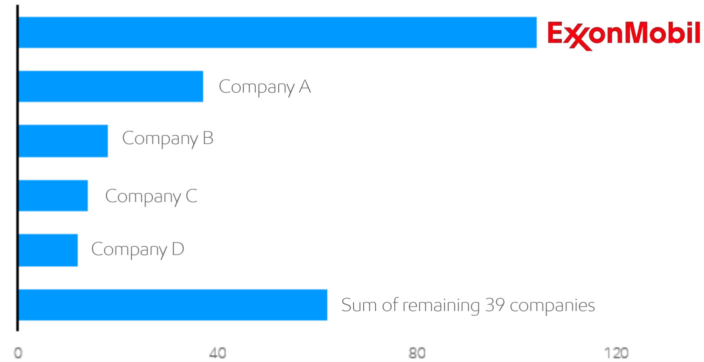
ExxonMobil is also researching subsurface CO_2 storage capability by leveraging decades of experience in the exploration, development and production of hydrocarbon resources. This expertise is key to permanently storing CO_2 deep underground safely and securely. For example, we are collaborating with leading universities around the world to better characterize subsurface storage capacity and develop improved CO_2 monitoring technologies and techniques.

Advancing scalable technologies is only one part of achieving large-scale deployment of CCS. Equal policy treatment of CCS, relative to other low-carbon energy solutions, is also needed. While policies will need to create financial drivers, measures to create favorable regulatory and legal environments are also needed. These measures will need to address a wide range of issues, such as potential legal uncertainty of storage space ownership, and reasonable measurement, reporting and verification standards for injected CO_2. ExxonMobil actively advocates for appropriate policy measures to encourage the large-scale deployment of CCS.

> *"Without CCUS as part of the solution, reaching our climate goals is almost impossible."*
>
> — Fatih Birol, Executive Director of IEA, Twitter on November 26, 2018

Cumulative CO_2 capture volume since 1970

(Million tonnes)



The Shute Creek Gas Plant in Wyoming. CCS will be an important long-term technology to reduce emissions.

Advanced biofuels

ExxonMobil continues to progress research on advanced biofuels to produce fuels from algae and cellulosic biomass with the potential to reduce GHG emissions by 50 percent or more compared to today's transportation fuels. Our advanced biofuels research portfolio includes joint research collaborations focused on algae-based biofuels with Synthetic Genomics, Inc. (SGI), Colorado School of Mines and Michigan State University. Our partnership with Renewable Energy Group (REG) has demonstrated the ability to convert sugars from a variety of non-edible biomass sources into biodiesel by utilizing REG's patented bio-conversion technology. ExxonMobil and REG signed a joint research agreement with Clariant to evaluate the potential to combine Clariant's and REG's processes into an integrated cellulosic biomass-to-biodiesel technology. These programs on advanced biofuels will lead to a better understanding of new technologies with the transformative potential to increase supplies of high-quality, low-carbon diesel while reducing GHG emissions.

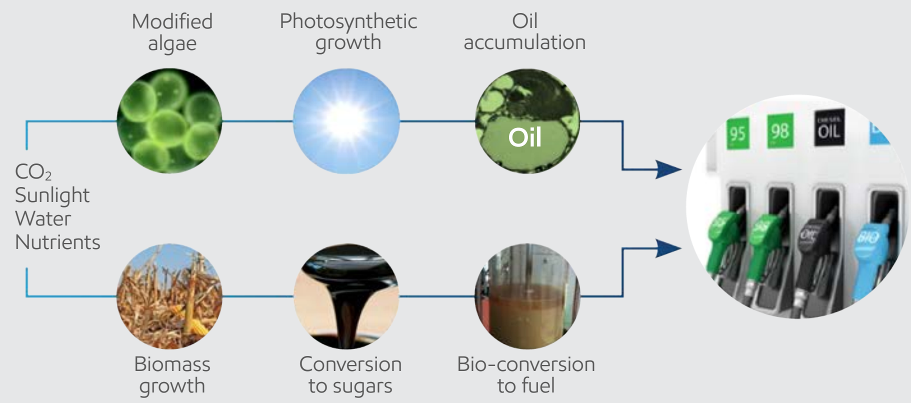
Targeting technical capability to produce 10 KBD by 2025

ExxonMobil and SGI have been working together to turn algae into a low-emission transportation fuel for almost a decade. We are applying our fundamental understanding to develop strains of algae that convert CO_2 into a large amount of energy-rich fat, which can then be processed (similar to crude oil) into renewable diesel. It is an ambitious project that has already achieved important breakthroughs. The research now also involves an outdoor field study in California. There, researchers are growing algae at a much larger scale than the sample-size quantities used in our labs. ExxonMobil is targeting technical capability to produce 10 KBD of algae biofuels by 2025.

Fuel of the future

Currently in the United States, the average corn ethanol plant capacity is 5 KBD[29] and the average yield is 400 gallons per acre.[30] This compares to 650 gallons per acre for palm oil and only 50 gallons per acre for soybean oil.[31] Biofuel yields from algae are potentially much higher – currently 2,000 gallons or more per acre,[32][33] or more than five times the yield of corn ethanol and 40 times the yield of soybean oil. This level of productivity for algae has been demonstrated outdoors on a small-scale pilot (< 0.25 acres),[34] indicating that, for a given quantity of biofuel, algae should require much less land area than traditional biofuels. Therefore, we are working to improve algae productivity, which could result in even less land usage than technically achievable today (see right chart). Algae can also be grown on marginal lands and in brackish water, thus reducing the overall environmental footprint, making algae an attractive, viable low-emissions biofuel. Researchers are working to understand fundamental engineering parameters, including pond design and mixing, as well as strain performance. The algae field study will lead to an improved understanding of how to globally scale the technology.

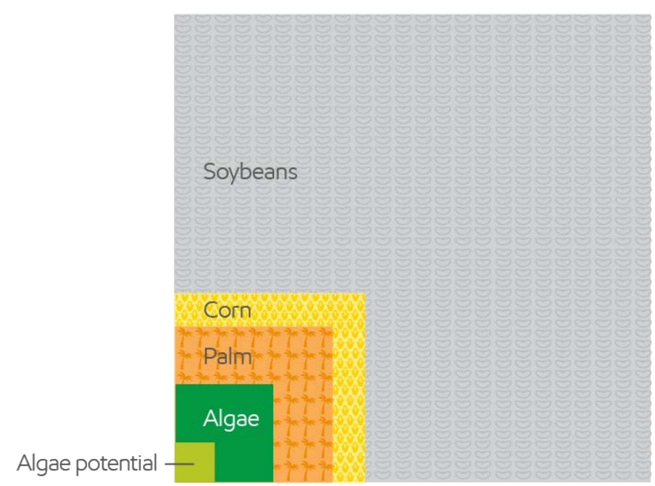
ExxonMobil advanced biofuels program



HIGHLIGHT:
Significant productivity from algae

In the future, algae should require significantly less land usage to produce the same amount of biofuels compared to traditional biofuels today.

Conceptual comparison of land usage required to produce biofuels



Process intensification

Taking the emissions out of manufacturing

The manufacturing sector of the economy – which produces fuel, plastic, steel, cement, textiles and other building blocks of modern life – accounts for about one-third of the world's energy-related CO_2 emissions – more than transportation and second only to power generation. Demand for industrial products is expected to grow as economies expand and standards of living rise in the developing world.

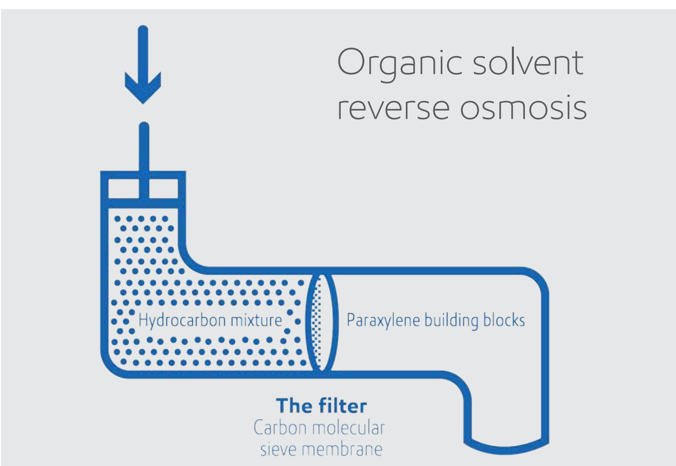
To meet this demand, the world will need manufacturing solutions that are more energy- and GHG-efficient than those currently used. Significant emissions savings would be possible if the manufacturing processes could be redesigned to require much less heat and energy than they currently do, via advanced separations, catalysts and process configurations. That's why ExxonMobil is targeting breakthrough research in these technologies as part of our broader effort in process intensification.

Highlights of process intensification efforts include:

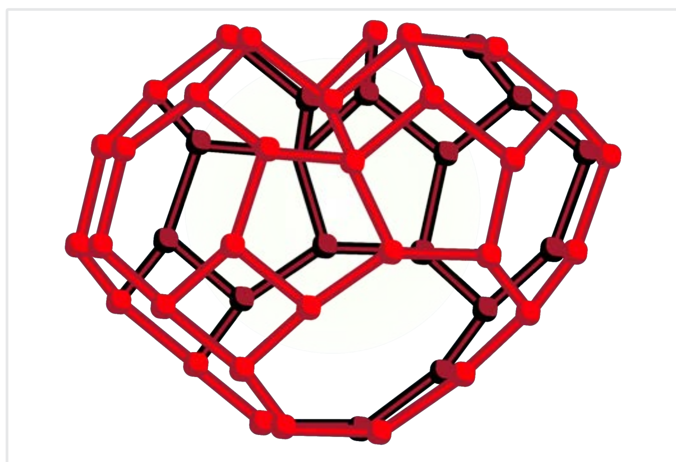
Advanced separations: New materials and processes may provide a step-change reduction in energy use by augmenting conventional separations processes, such as distillation. ExxonMobil and Georgia Tech are advancing a "reverse osmosis" membrane (see left diagram) that could be 50 times more efficient than today's separation techniques. In addition, with Spain's Instituto de Tecnología Química (ITQ), we are developing shape-selective zeolites that can separate ethylene from ethane using adsorption rather than via cryogenic distillation, which is more energy intensive.

Catalysts: Drawing upon decades of leadership in catalysis and newer tools such as 3D printing, ExxonMobil is developing state-of-the-art catalysts and fabrication methods, which can greatly improve the efficiency of the chemical reactions used to produce transportation fuels and petrochemicals.

High efficiency reactors: ExxonMobil is working to transform how hydrocarbons are processed and turned into other useful products. By focusing on thermal efficiency, modern reactor design and process miniaturization, we are developing novel solutions to make products far more efficiently than with traditional manufacturing technologies. Our research also focuses on reactors that can expand the options for using natural gas, an abundant, lower-carbon fuel.



A new organic solvent reverse osmosis process with a novel carbon-based membrane to separate liquid hydrocarbons with much less energy is under development.



This new material, in conjunction with other separation technologies, could reduce the amount of energy needed for light hydrocarbon purification.

The modern oxo alcohol reactor in Singapore (on the far right) has the same reactor volume as four large loop reactors combined (to the left), but with a much smaller footprint.

Engaging on climate-related policy

ExxonMobil believes that the long-term objective of effective policy should be to reduce the risks of climate change at the lowest societal cost, while balancing increased demand for affordable energy and better addressing poverty, education, health and energy security concerns.

Climate change is a global issue that requires the collaboration of governments, private companies, consumers and other stakeholders to create meaningful solutions. We engage with stakeholders directly and through trade associations around the world to encourage sound policy solutions for addressing climate change risks. Our scientists have contributed climate research and related policy analysis in more than 50 papers in peer-reviewed publications, collaborated with top universities and national labs, and participated in the IPCC since its inception in 1988, including co-authoring chapters of IPCC scientific reports.

For more than a decade, ExxonMobil has supported an economy-wide price on CO_2 emissions as an efficient policy mechanism to address GHG emissions. Consistent with this position, ExxonMobil is also a founding member of the Climate Leadership Council (CLC). Formed in 2017, the CLC calls for the adoption of a carbon fee with the revenues returned to Americans coupled with regulatory simplification.

ExxonMobil has also provided financial support for the 501(c)(4) organization "Americans for Carbon Dividends," a national education and advocacy campaign launched in 2018 to promote the policy pillars of the CLC.

UP CLOSE:

Oil and Gas Climate Initiative

ExxonMobil is part of the Oil and Gas Climate Initiative (OGCI), a voluntary initiative representing 13 of the world's largest oil and gas producers working collaboratively toward solutions to mitigate the risks of climate change.

This CEO-led organization focuses on developing practical solutions in areas including carbon capture and storage, methane emissions reductions, and energy and transportation efficiency. As part of the initiative, ExxonMobil will support its investments in technology development and deployment of long-term solutions to reduce GHG emissions, and participate in partnerships and multi-stakeholder initiatives that will pursue lower-emission technologies.

Attributes of sound policy

- Promote global participation
- Let market prices drive the selection of solutions
- Ensure a uniform and predictable cost of GHG emissions across the economy
- Minimize complexity and administrative costs
- Maximize transparency
- Provide flexibility for future adjustments to react to developments in technology, climate science and policy

Providing products to help our customers reduce their emissions

Over the next few decades, population and income growth – and an unprecedented expansion of the global middle class – are expected to create new demand for energy and hydrocarbon-based products. Meeting these demands will require not just more energy, but will also require energy to be used more efficiently across all sectors. ExxonMobil is delivering solutions that enable our customers to reduce their emissions and improve their energy efficiency.

Natural gas

Natural gas emits up to 60 percent fewer GHG emissions and produces significantly less air pollutants than coal for power generation. It is an ideal source of reliable power and can supplement intermittent renewable energy. In 2016, natural gas overtook coal as the leading energy source for electricity generation in the U.S., which is one of the drivers in reducing CO_2 emissions to 25-year lows.[35] ExxonMobil is one of the largest natural gas producers in the U.S. and is a leader in liquefied natural gas.

Lightweight materials and packaging

Demand for auto parts, housing materials, electronics and other products made from petrochemicals continues to grow. We produce weight-reducing materials that result in an estimated 7 percent fuel economy improvement for every 10 percent reduction in vehicle weight. At current volumes, the materials produced by industry could potentially result in 40 million tonnes per year CO_2 savings.[36] We also provide lightweight packaging materials that result in less transportation-related energy use and GHG emissions. Advanced packaging also helps extend the shelf life of fresh food by days or even weeks, improving safety and reducing food waste and agricultural inputs.

Butyl rubber

ExxonMobil is the global leader in producing advanced halobutyl rubber, which is used to make tire innerliners. A synthetic innerliner keeps tires inflated for longer and prevents oxygen from entering and degrading the tire. By improving air retention, halobutyl innerliners increase fuel economy and lower emissions. This application in motor vehicles could avoid up to 30 million tonnes per year CO_2 emissions.[37]

Advanced fuels and lubricants

Our integrated Fuels & Lubricants business produces differentiated fuels and lubricants to meet evolving consumer needs. We leverage our competitive manufacturing assets to produce high-quality products such as Synergy-brand gasoline, Diesel Efficient-brand diesel fuel, marine fuels and aviation fuels. Our lubricants help minimize operational costs through improved energy efficiency and extended equipment life. Synergy fuels yield better gas mileage, reduce emissions and improve engine responsiveness.

Mitigating emissions in our operations

As we seek to produce oil and natural gas to meet growing global energy demand, we are committed to mitigating GHG emissions within our operations.

ExxonMobil has a robust set of processes to improve energy efficiency and mitigate emissions. These processes include, where appropriate, setting tailored objectives at the business, site and equipment level, and then stewarding progress toward meeting those objectives. We believe this rigorous approach is effective to promote efficiencies and reduce GHG emissions in our operations.

In the near term, we are working on increasing energy efficiency while reducing flaring, venting and fugitive emissions in our operations. We also leverage monitoring technology to minimize and reduce GHG emissions. We continue to grow our capacity in cogeneration and carbon capture. Since 2000, these programs have eliminated or captured 400 million tonnes of CO_2, which is equivalent to the energy-related CO_2 emissions associated with about 55 million U.S. homes.

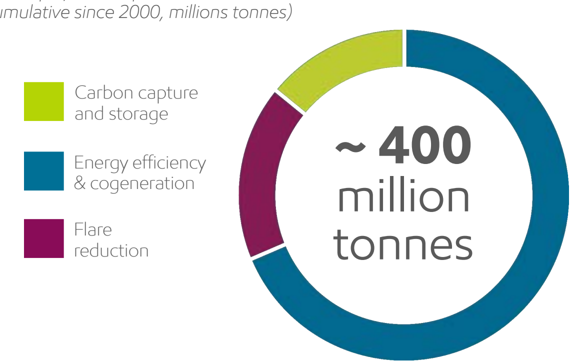
ExxonMobil and our subsidiary XTO Energy have established a methane management program that exceeds current applicable regulations. The program prioritizes actions at the highest-volume production and midstream sites and includes efforts to develop and deploy new, more efficient technologies to detect and reduce facility emissions.

In 2017, along with several industry peers, we signed a Methane Guiding Principles document that provides a framework for continually reducing methane emissions, improving accuracy of methane emissions data, and advocating for sound policies and regulations. In 2018, we joined the Oil and Gas Climate Initiative (OGCI), working with other industry members collaboratively toward solutions to mitigate the risks of climate change.

We continue to actively pursue economic opportunities to deploy proven technologies, such as CCS and cogeneration, to improve energy efficiency and emissions performance.

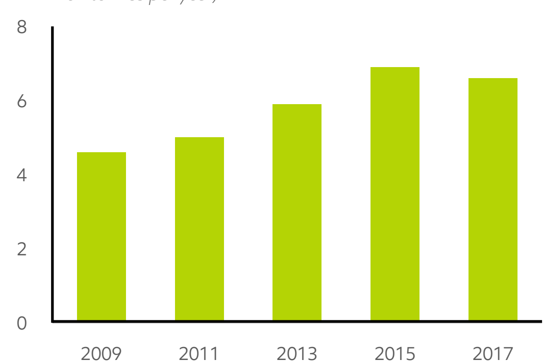
ExxonMobil GHG emissions reductions[38]

(Net equity, CO_2 equivalent emissions cumulative since 2000, millions tonnes)



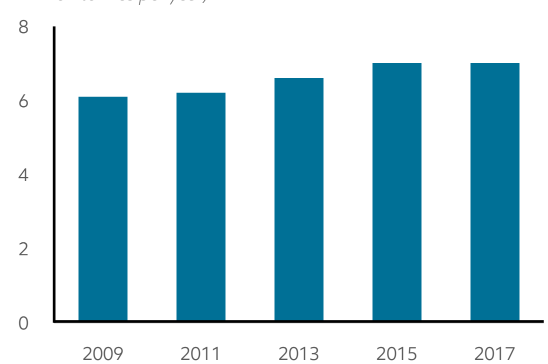
GHG emissions reduction from carbon capture

(Net equity, CO_2 equivalent emissions Million tonnes per year)



GHG emissions reduction from cogeneration

(Net equity, CO_2 equivalent emissions Million tonnes per year)



METRICS & TARGETS

ExxonMobil has established programs to drive improvements in energy efficiency and mitigate GHG emissions. These programs are supported by key performance metrics, which are utilized to identify and prioritize opportunities to drive progress.

Tracking our GHG emissions performance

At ExxonMobil, we are committed to mitigating emissions from our operations and helping consumers reduce their emissions by providing efficient fuels, lubricants and lightweight materials.

In 2018 we announced GHG emissions reduction measures that are expected to lead to considerable improvements in emissions performance when compared with 2016 levels. These included:

- 15 percent reduction in methane emissions by 2020 compared with 2016 (see page 26)
- 25 percent reduction in flaring by 2020 compared with 2016
- 10 percent GHG emissions intensity reduction at Imperial operated oil sands by 2023 compared with 2016 (see page 27)

ExxonMobil invests heavily in lower-emission energy solutions such as cogeneration, flare reduction, energy efficiency, biofuels, carbon capture and storage and other technologies. Since 2000 we have spent more than $9 billion on lower-emission energy solutions.

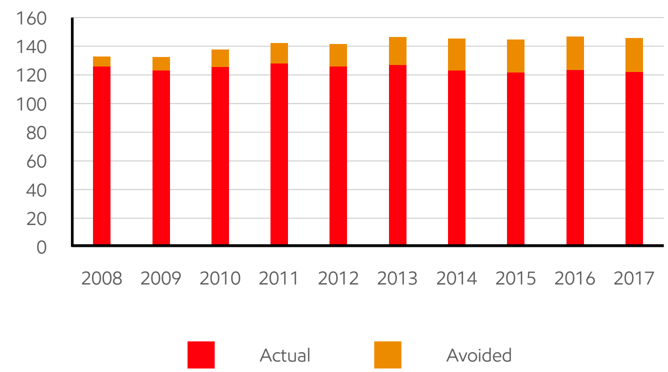
Over the past several years, ExxonMobil's GHG emissions have remained relatively flat as a result of efficiency improvements that have offset increases in production intensity. We have made great progress toward offsetting emissions resulting from implementation of our growth plans by working to reduce emissions from our operations.

Our commitment to mitigating emissions from our operations is unwavering. That said, it is important to understand that while ExxonMobil continues to strive to mitigate emissions, our absolute emission levels are impacted by the size and composition of our asset portfolio.

While we have made progress in reducing emissions, we will continue to apply new thinking and new technologies to successfully meet the energy and environmental challenges of the future. We will also continue to explore opportunities to lower GHG emissions across the energy value chain.

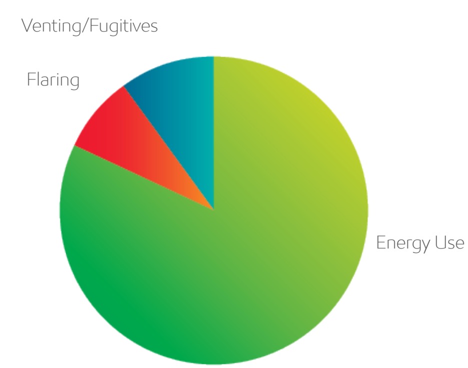
ExxonMobil GHG Emissions[38]

(Net equity, CO_2 equivalent emissions in million tonnes)



ExxonMobil Operated GHG Emissions Sources

(2015-2017 average)



Reduce methane emissions and flaring

Reduce Imperial operated oil sands GHG intensity

Improve energy efficiency in our facilities

Advance carbon capture and storage deployment

UP CLOSE:

Taking actions to reduce methane emissions

In 2017, ExxonMobil subsidiary XTO Energy Inc. (XTO) reduced methane emissions from its operations by 9 percent since 2016, demonstrating significant progress in its emissions reduction program and other initiatives.

In 2017, XTO implemented a methane management program to mitigate emissions associated with its operations. The program includes a leak detection and repair program, a commitment to phase out high-bleed pneumatic devices over three years, extensive personnel training, and facility design improvements for new operations. Additionally, an extensive research program seeks to increase understanding of facility and basin methane emissions, and develop improved detection, measurement and mitigation technologies. XTO has gained significant insight from the data collected through the program and is building on past learnings to make continued progress in reducing emissions and identifying areas for further improvement.

High-bleed pneumatic device phase-out

As of June 2018, XTO has phased out approximately two-thirds of existing high-bleed pneumatic devices across its U.S. operations.

Improved facility design

Low-emission design technologies are also being deployed in new developments, such as in the Permian Basin in West Texas and New Mexico. These technologies include improved tank emission control design and the installation of instrument air packages, which use compressed air instead of natural gas to actuate pneumatic controllers at new tank batteries and compressor stations.

Leak detection and repair

Through the company's expanded leak detection and repair program, progress has been made in verifying data and identifying components with a high potential to leak. This data will be used to prioritize equipment for replacement or implementation in new designs.

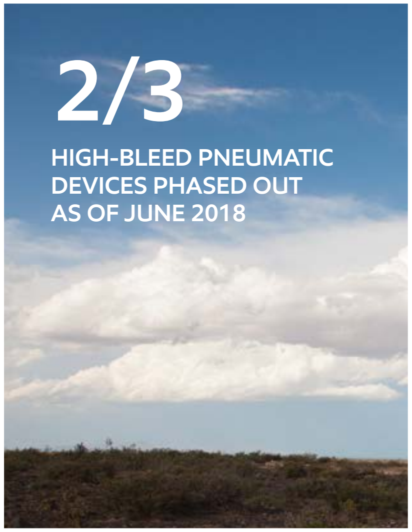
Research

In April 2018, XTO began a pilot program at its James Ranch facility in New Mexico to evaluate new technologies in its efforts to reduce emissions. The facility incorporates low-emission technologies and will serve as a model for future development. ExxonMobil remains active in ongoing methane research. ExxonMobil and other leading energy companies formed a new industry-led research consortium, the Collaboratory to Advance Methane Science (CAMS), to better understand global methane emissions, and identify additional solutions.

Advocacy

We are also active in pursuing sound policies, and we support reasonable, cost-effective regulations. For example, ExxonMobil submitted a letter to the EPA rulemaking docket indicating support for reasonable, cost-effective regulations to manage methane emissions from new and existing sources. We have also engaged with states advancing their own regulatory programs, most recently in New Mexico and Pennsylvania.

XTO PROGRESS



UP CLOSE:

Imperial oil sands GHG intensity reduction

ExxonMobil's Canadian affiliate Imperial is working to apply advanced technologies and improvements in efficiency to reduce the GHG emissions intensity of its operated oil sands facilities. Its work builds on a long-standing commitment to improve the environmental footprint and economics of production associated with its oil sands operations.

In 2016, Imperial opened a new, state-of-the-art research center dedicated to advancing oil sands innovation. The facility, located in southeast Calgary, is home to a team of researchers pursuing technological breakthroughs that are anticipated to deliver significant environmental and economic benefits for Imperial's oil sands operations.

The application of next-generation oil recovery technology at Imperial's Cold Lake in-situ operations, improvements in reliability at its Kearl mining facility, and continuous improvements in energy efficiency are expected to be key drivers behind the reductions, which are anticipated to result in a 10 percent decrease in GHG emissions intensity by 2023[39], compared with 2016 levels.

Imperial is accelerating the pace of innovation as it transitions from using steam to light hydrocarbon for in-situ oil sands recovery. One new technology, solvent-assisted steam-assisted gravity drainage (SA-SAGD), could reduce both GHG emissions intensity and water use intensity by up to 25 percent through lower energy utilization per barrel, compared with traditional SAGD technology.

In addition, following a $100 million, multi-year pilot at its Cold Lake facility, Imperial is evaluating a commercial application of its breakthrough cyclic solvent process, which could dramatically reduce the use of steam and reduce emissions intensity by up to 90 percent in certain areas of Imperial's Cold Lake field.

⇩10%

Decrease in GHG emissions intensity at Imperial's operated oil sands facilities by 2023, compared to 2016 level

NEXT-GENERATION TECHNOLOGIES

Up to **⇩25%**

Reduction in GHG emissions intensity and water usage intensity through solvent-assisted, steam-assisted gravity drainage technology

Up to **⇩90%**

Reduction in GHG emissions intensity and elimination of steam for recovery through cyclic solvent process technology

Next-generation in-situ oil sands recovery technology – how it works

Light oils can be used along with, or to replace, steam to mobilize heavy oil so it can be brought to the surface.

This approach recovers heavy oil using less energy, significantly reducing GHG emissions intensity.

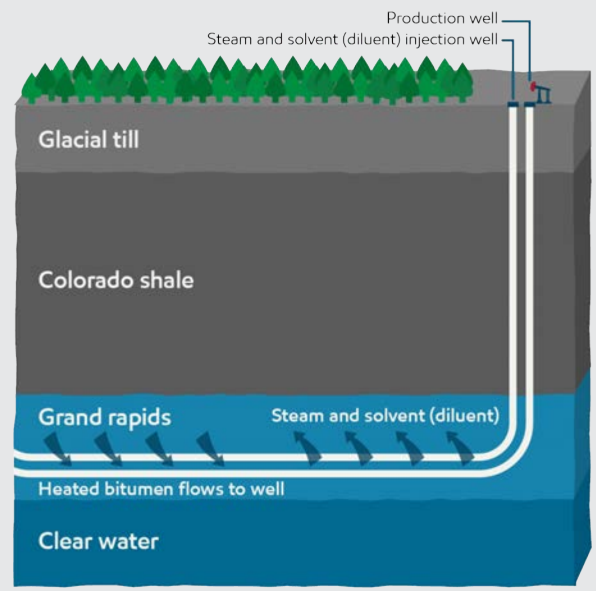


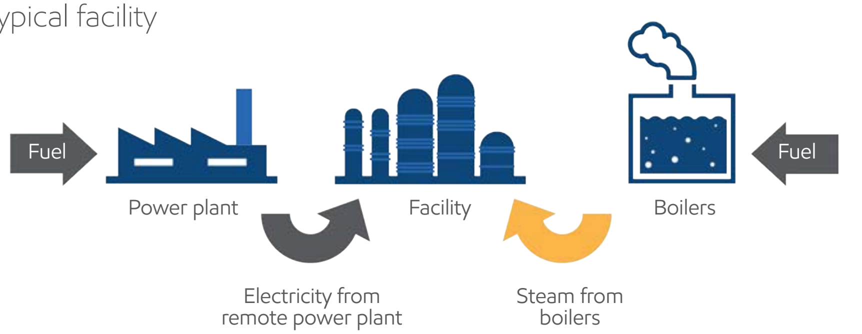
Photo illustration based on Imperial's Cold Lake location, using SA-SAGD technology.

Cogeneration

Cogeneration (also referred to as combined heat and power) is the simultaneous generation of both electricity and useful heat from a heat engine or a power station.

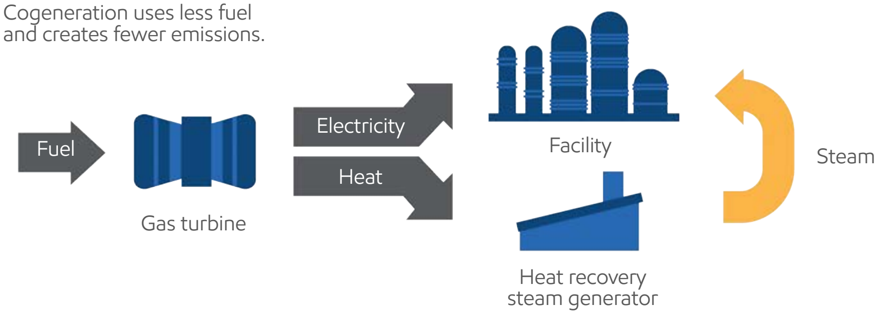
ExxonMobil employs cogeneration in its operations to increase energy efficiency and reduce emissions while also reducing the need to import power. Currently, ExxonMobil's global gross capacity for cogeneration is approximately 5.4 gigawatts, enough to meet the annual electricity needs of 4.3 million U.S. homes. ExxonMobil continues to grow cogeneration capacity in our operations globally.

Typical facility



Typical facility with cogeneration

Cogeneration uses less fuel and creates fewer emissions.



UP CLOSE:

ExxonMobil Singapore Jurong cogeneration plant

In 2017, ExxonMobil started a 84-megawatt cogeneration plant at its Singapore Refinery's Jurong site. This plant increases the refinery's energy efficiency, helps reduce emissions and strengthens the facility's long-term competitiveness.

With completion of the plant, ExxonMobil now has more than 440 megawatts of cogeneration capacity in Singapore and is able to meet the majority of its power and steam needs for the integrated refining and petrochemical complex.

The cogeneration plant is expected to improve the Singapore Refinery's energy efficiency, resulting in a net reduction of 265,000 tonnes per year of CO_2 equivalent emissions. This emissions reduction is equivalent to removing more than 90,000 cars from roads.

This additional cogeneration capacity builds on ExxonMobil's interests in about 100 cogeneration installations at more than 30 locations around the world.

Through partnerships, ExxonMobil is working to research, develop, and deploy technologies needed for sustainable, clean energy.

Purchase of ERCOT wind and solar power

Under 12-year agreements with Lincoln Clean Energy, ExxonMobil will purchase 500 megawatts (MW) of wind (anticipated start-up in 2020) and solar (anticipated start-up in 2021) power for operations in Texas. This project will substitute 70 percent of power purchased from the Electric Reliability Council of Texas (ERCOT) with wind and solar and is expected to avoid an estimated 0.8 million tonnes of CO_2 per year. With these purchases, ExxonMobil is ranked among the top 10 global corporate wind and solar buyers in 2018 (see top chart).

Partner with Aera on solar thermal power

Bakersfield-based Aera Energy, a joint venture between ExxonMobil and Shell, and GlassPoint Solar are set to build California's largest solar energy project. The integrated project will be the first of its kind in the world to use solar-generated steam and electricity to power oil field operations and is expected to start producing 26.5 MW electricity and 12 million barrels of steam per year as early as 2020.

Partner with City of Baton Rouge to utilize landfill offgas

At our Baton Rouge Polyolefins Plant, approximately 850 million standard cubic feet of reclaimed landfill gas is used yearly for fuel to produce steam instead of burned as a waste stream by the City of Baton Rouge. Using this biogas as fuel for the plant steam boilers results in approximately 30,000 tonnes of CO_2 equivalent (CO_2e) reduction per year. This facility has been operating since 2010.

Collaborate with Energy Centers

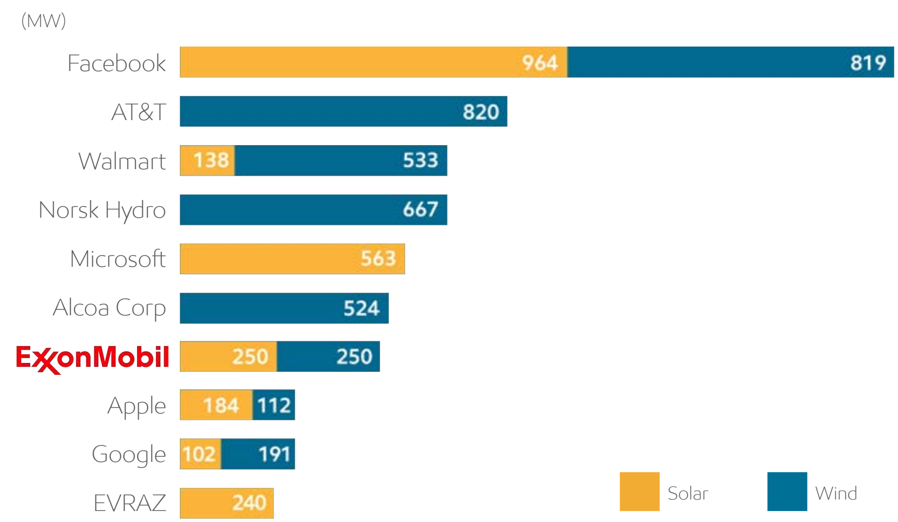
ExxonMobil has been engaged with more than 80 universities and five energy centers to support emerging research. Some examples of research area are show below.

CO_2 utilization — Developing more efficient CO_2 conversion technology to make useful chemical and fuel products through improved understanding at the molecular level. Advances in efficiency will enable broad and earlier deployment of carbon capture, utilization and storage.

Carbon-based materials for solar photovoltaics — Using a combined experimental and computational approach to explore new applications for carbon-based electronic materials and discover new routes to high-efficiency, low-cost and low-carbon intensity photovoltaics.

Lithium-sulfur batteries — Exploring step-change improvements in volumetric energy density in Lithium-sulfur batteries to extend driving range of electric vehicles. Lithium-Sulfur batteries may offer improved storage capacity and lower cost than today's lithium-ion batteries.

Top global corporate wind and solar buyers, 2018[40]



PROJECT	POTENTIAL GHG REDUCTION	CAPACITY
ERCOT wind & solar power purchases	**800,000** ESTIMATED TONNES OF CO_2e PER YEAR	**500 MW** WIND AND SOLAR POWER CAPACITY
Aera solar thermal/ photovoltaic facility	**376,000** ESTIMATED TONNES OF CO_2e PER YEAR	**850 MW** SOLAR THERMAL CAPACITY **26.5 MW** PHOTOVOLTAIC FACILITY

GHG Emissions Performance Data

We assess our performance at many levels of the organization, from individual operational sites to the business line level, to support continual improvement. Starting in 2011, performance data includes XTO Energy information. As part of our commitment to transparently communicate our performance, in 2014 we started reporting our data over a 10-year period to demonstrate performance trends over time. Data included in the performance table is guided by the reporting guidelines and indicators of IPIECA's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (2015).

Managing the risks of climate change[41]

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
[42]GHG emissions, absolute (net equity, CO_2-equivalent emissions), millions of tonnes	126	123	126	128	126	127	123	122	123	122
[43]Direct (excluding emissions from exported power and heat)	117	114	117	119	118	119	115	114	115	114
[44]Emissions associated with imported power	9	9	9	9	8	8	8	8	8	8
CO_2 (excluding emissions from exported power and heat)	122	119	122	124	120	119	116	115	116	115
Methane (CO_2 equivalent)	3	3	3	3	5	7	6	6	7	7
Other gases (CO_2-equivalent)	1	1	1	1	1	1	1	1	<1	<1
Emissions from exported power and heat	13	14	13	15	15	16	7	4	3	3
[42]GHG emissions, normalized (net equity, CO_2-equivalent emissions), tonnes per 100 tonnes of throughput or production										
Upstream	21.0	20.1	20.5	20.7	22.3	23.2	23.9	23.9	24.3	24.6
Downstream	21.0	21.0	20.8	20.0	19.6	19.7	19.2	18.9	19.5	18.6
Chemical	59.8	60.7	57.9	57.2	56.3	57.0	53.4	53.6	52.2	53.3
By-region GHG emissions (net equity, CO_2-equivalent emissions), millions of tonnes										
Africa/Europe/Middle East	45	43	45	45	44	44	43	44	44	43
Americas	62	62	64	66	68	70	66	65	63	63
Asia Pacific	19	18	17	17	14	13	14	13	16	16
By-division GHG emissions (net equity, CO_2-equivalent emissions), millions of tonnes										
Upstream	49	47	50	54	56	58	56	56	57	58
Downstream	57	56	55	54	51	49	47	45	45	43
Chemical	20	20	21	20	19	20	21	21	21	21
Carbon dioxide - captured for storage, millions of tonnes	4.4	4.6	4.8	5.0	4.8	5.9	6.9	6.9	6.3	6.6
Energy use (billion gigajoules)	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.5	1.5	1.5
Upstream (gigajoules per tonnes production)	1.7	1.9	2.0	2.0	2.0	2.1	2.3	2.4	2.4	2.5
Refining (gigajoules per tonnes throughput)	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	3.0	2.9
Chemical (gigajoules per tonnes product)	10.1	9.8	9.5	11.4	12.0	10.9	10.7	10.9	10.6	10.5
Hydrocarbon flaring (worldwide activities), millions of tonnes	5.7	4.4	3.6	4.0	3.5	3.7	4.5	5.3	5.0	3.8
[45]Cogeneration capacity in which we have interest, gigawatts	4.6	4.9	4.9	5.0	5.2	5.3	5.5	5.5	5.3	5.4

RISK MANAGEMENT

ExxonMobil utilizes a risk management framework based on decades of experience to identify, manage and address risks associated with our business, from operational to financial to strategic.

ExxonMobil's approach to risk management

ExxonMobil's corporate risk framework provides a structured, comprehensive way to identify, prioritize and manage risks across the Company. It is designed to drive consistency across risk type, from strategic, to financial, to operations and safety; and monitor that key risks, including climate change risks, are appropriately incorporated and considered across ExxonMobil. The framework includes four elements: (1) a way to organize and aggregate risks (illustrated at the right); (2) a prioritization method; (3) an inventory of systems and processes to manage risk; and (4) risk governance.

ExxonMobil's approach to risk governance includes clearly defined roles and responsibilities for managing each type of risk, utilizing a multi-layered approach. This multi-layered approach includes a definition of the responsibilities of risk owners, functional experts and independent verifiers. Each risk type is managed and supported by functional organizations that are responsible for specifying corporate requirements and processes, appropriate to the risk being managed. Each of these processes includes the critical elements of leadership, people, risk identification and management, and continuous improvement. Oversight responsibilities by the Management Committee and the Board and it's committees, as described on page 4, are a key part of risk governance.

Managing long-term risks associated with climate change is an integral part of managing strategic risks at ExxonMobil. A core element of our management of strategic risks is our annual *Outlook for Energy*. The *Outlook* reflects a long-term, data-driven approach to help promote a deeper understanding of global trends and projections related to population and economic growth, energy demand and supply options, as well as assessments of key uncertainties and potential impacts of alternative assumptions. Uncertainties include changes in economic growth, the evolution of energy demand and/or supply, emerging and disruptive technologies, and policy goals and actions, in part to address climate change risks. The *Outlook* helps inform our business strategies and our assumptions and processes for evaluating our investment opportunities. Managing risk associated with climate change is an integral part of that work, helping to ground our choices related to long-term strategies and individual investments.

ExxonMobil enterprise risk categories

Risk type	Examples of potential risks
1 Strategic	Energy transition, supply/demand, disruptive technology, geopolitical and government changes, climate change
2 Reputational	Industry reputation, corporate reputation
3 Financial	Price volatility, foreign exchange fluctuations, customers' credit risk, insurance
4 Operational	Extreme weather, geological risk, project risk, product quality and brand, cybersecurity, talent, supplier
5 Safety, Security, Health & Environment	Process safety, well control events, environmental incidents
6 Compliance & Litigation	Litigation risks, regulatory compliance

UP CLOSE:

Resiliency: Protection of our assets, the community and the environment

ExxonMobil has long operated facilities in a wide range of challenging physical environments around the globe. Our history of design, construction and operations provides us with a solid foundation to address risks associated with different physical environments. The Company assesses the risks posed by weather and other natural elements, and designs its facilities and operations in consideration of these risks.

When considering physical environmental risks, we evaluate the type and location of our current and planned facilities. As an example, offshore facilities could be impacted by changes in wave and wind intensity as well as by changes in ice floe patterns, while onshore facilities could be vulnerable to sea level rise, changes in storm surge or geo-technical considerations. Environmental assessments are conducted in advance to ensure that protective measures and procedures are in place prior to building and start-up of the facilities.

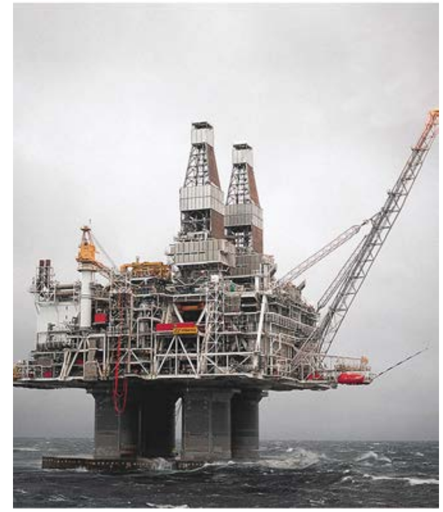
Our facilities are designed, constructed and operated to withstand a variety of extreme weather and environmental conditions. We use historical experience with additional safety factors to cover a range of uncertainties. After construction of a facility, we monitor and manage ongoing facility integrity, such as through periodic checks on key aspects of the structures. In addition, we regularly participate with major engineering societies and industry groups to assess and update engineering standards.

Once facilities are in operation, we maintain disaster preparedness, response and business continuity plans. Detailed, well-practiced and continuously improved emergency response plans tailored to each facility help ExxonMobil prepare for unplanned events, including extreme weather. Regular emergency drills are practiced in partnership with appropriate government agencies and community coalitions to help ensure readiness and minimize the impacts of such events.

ExxonMobil remains steadfast in our commitment to excellence in safety, security, health and environmental performance, referred to collectively as operations integrity. We believe the best way to manage the integrity of our business is through a capable, committed workforce coupled with policies, practices and management systems designed to enable safe, secure and environmentally responsible operations.

ExxonMobil's comprehensive approach and established systems enable us to manage a wide variety of possible outcomes, including risks associated with climate change.

Design standards provide for resiliency and environmental protection



Design standards ensure resiliency of assets

Supporting recovery efforts in our communities

Proactive monitoring and surveillance to protect the environment

ExxonMobil is committed to providing our shareholders with disclosures that impart meaningful insights about our business, including how we manage climate-related risks. This report, along with the rest of our comprehensive set of disclosures, relating to climate-related matters, follow the framework established by IPIECA, including IPIECA's Climate Change Reporting Framework[46]. In addition, this year's report is further enhanced by aligning with the core elements of the TCFD framework. IPIECA members represent a significant portion of the world's oil and natural gas production, including state oil companies, and is the industry's principal channel of communication with the United Nations. This broad, global membership enables a reporting framework that is tailored to the petroleum industry and better permits comparisons of member companies on a more consistent and standardized basis.

Web links to our other various climate-related disclosures are highlighted below:

- ***Sustainability Report*** (*exxonmobil.com/sustainabilityreport*)
- ***Outlook for Energy*** (*exxonmobil.com/energyoutlook*)
- **Technology** (*exxonmobil.com/technology*)
- **Enhanced Methane Emissions Reduction Program** (*exxonmobil.com/methanereduction*)
- **Climate-related materials** (*exxonmobil.com/climate*)
- **SEC Form 10-K** (*exxonmobil.com/secfilings*)
- **Executive Compensation Overview** (*https://cdn.exxonmobil.com/~/media/global/files/summary-annual-report/2018-executive-compensation-overview.pdf*)

Existing policy frameworks (including the Paris NDCs), financial flows, and the availability of cost-effective technologies indicate that society is not currently on a 2°C pathway. Should society choose to more aggressively pursue a 2°C pathway, we will be positioned to contribute through our engagement on policy, development of needed technologies, improved operations, and customer solutions.

(1) OECD – Organisation for Economic Co-operation and Development.

(2) Article 4 paragraph 2 of the Paris Agreement *https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf*

(3) IEA, Perspectives for the Energy Transition, page 57.

(4) "EMF was established at Stanford in 1976 to bring together leading experts and decision makers from government, industry, universities, and other research organizations to study important energy and environmental issues. For each study, the Forum organizes a working group to develop the study design, analyze and compare each model's results and discuss key conclusions." *https://emf.stanford.edu/about*

EMF is supported by grants from the U.S. Department of Energy, the U.S. Environmental Protection Agency as well as industry affiliates including ExxonMobil. *https://emf.stanford.edu/industry-affiliates*

(5) To understand some of the characteristics of future transition pathways, we analyzed energy and emissions data from a range of EMF27 stabilization, policy and technology targets, primarily focusing on 450 and 550 stabilization targets, as well as no-policy cases that utilize a full suite of technologies. The suite of full technologies (FT) includes a range of options, including: energy efficiency, nuclear, carbon capture and storage (CCS), biofuels and non-bio renewables such as solar and wind. The EMF27 study considered other technology-limited scenarios, but a key finding was that the unavailability of carbon capture and storage and limited availability of bioenergy had a large impact on feasibility and cost. Given the potential advantages to society of utilizing all available technology options, we focused on capturing the results of different EMF27 models that ran 450-FT cases; we were able to download data for 13 such scenarios, and utilized that data as provided for analysis purposes (most of the scenarios had projections extending from 2010 to 2100). Data downloaded from: *https://secure.iiasa.ac.at/web-apps/ene/AR5DB*

(6) EMF27 cases include CO_2 emissions from energy and industrial process.

(7) Excerpt from Adoption of the Paris Agreement Proposal by the President dated December 12, 2015, Article II, paragraph 17, 'Notes with concern that the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the intended nationally determined contributions do not fall within least-cost 2˚C scenarios but rather lead to a projected level of 55 gigatonnes in 2030, and also notes that much greater emission reduction efforts will be required than those associated with the intended nationally determined contributions in order to hold the increase in the global average temperature to below 2˚C above pre-industrial levels by reducing emissions to 40 gigatonnes or to 1.5˚C above pre-industrial levels by reducing to a level to be identified in the special report referred to in paragraph 21 below'.

(8) The assessed 2°C scenarios produce a variety of views on the potential impacts on global energy demand in total and by specific types of energy, with a range of possible growth rates for each type of energy as illustrated in this report. Since it is impossible to know which elements, if any, of these models are correct, we used an average of all 13 scenarios to approximate growth rates for various energy types as a means to estimate trends to 2040 indicative of hypothetical 2°C pathways.

(9) Based on the average of assessed 2°C scenarios' CO_2 emissions (~20 billion tonnes including energy and industrial processes), ExxonMobil GDP assumptions are consistent with 2018 *Outlook for Energy*.

(10) Based on the average of the assessed 2°C scenarios referenced in this report, the combination of renewables, nuclear and fossil fuels using CCS is estimated in these scenarios to increase significantly as a percentage of total primary energy demand, rising from approximately 10% in 2010 to roughly 40% in 2040.

(11) Electricity delivered from fossil fuels without CCS as a percentage of total electricity delivered decreases from 66% to 20% on average from 2010 to 2040 under the assessed 2°C scenarios. Share of electricity from non-bioenergy renewables (e.g., wind, solar, hydro) increases from less than 20% to ~35%. Share of electricity generation utilizing CCS increases to about 20%. Share of electricity from nuclear increases from ~15% to ~20% (implies double the level of nuclear capacity from 2016 to 900 GW).

(12) Total electricity delivered as a percentage of total final energy demand increases from 18% to 28% on average across the 13 assessed 2°C scenarios referenced in this report.

(13) Under the assessed 2°C scenarios, the average growth rate for oil demand is -0.36% from 2010 to 2040, which implies a decrease in absolute level of demand in 2040 by ~10% relative to 2010 levels, which is near 2000 levels. Oil demand has increased about 9% since 2010, hence it would require a demand decrease of ~20% to reach the same 2040 level relative to today's demand. Trends toward a level close to 2000 would imply oil used in road transportation trends toward 30 Moebd, and oil used for aviation and marine trends toward 9 Moebd.

(14) Based on average global demand growth rates under assessed 2°C scenarios.

(15) Based on average global demand growth rates under assessed 2°C scenarios.

(16) PwC: Time to Get on With it, The Low Carbon Economy Index 2018, page 2. Figure 1: Low Carbon Economy Index 2018: Transition pathways.

(17) For the purposes of this report, proved reserves are year-end 2017 proved oil and gas reserves for consolidated subsidiaries and equity companies as reported in the Corporation's Annual Report on Form 10-K. Proved oil and gas reserves are determined in accordance with Securities and Exchange Commission (SEC) requirements. Proved reserves are those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible under existing economic and operating conditions and government regulations. Proved reserves are determined using the average of first-of-month oil and natural gas prices during the reporting year.

(18) For the purposes of this disclosure, resources are total remaining estimated quantities of discovered quantities of oil and gas that are expected to be ultimately recoverable. The resource base includes proved reserves and quantities of oil and gas that are not yet classified as proved reserves. At year-end 2017, the total resource base totaled approximately 97 billion of oil-equivalent barrels including 21 billion oil-equivalent barrels of proved reserves.

(19) To estimate global demand in 2040 for oil and natural gas, the average of the assessed 2°C scenarios' growth rates for oil and natural gas covering the period 2010-2040 have been applied to standard baseline estimates of oil and natural gas demand in 2010.

(20) IHS: Climate-Related Financial Risk and the Oil and Gas Sector, page 23.

(21) The assessed 2°C scenarios growth rates imply a range in 2040 global oil demand from about 53 to 103 Moebd and for 2040 global natural gas demand from about 265 to 625 BCFD.

(22) IEA: World Energy Outlook 2018.

(23) Hypothetical cumulative production determined by proportioning ExxonMobil's 2016 average daily production (Form 10-K, page 8) and 2016 average daily global oil and gas production to estimated 2040 average daily production (assuming ExxonMobil's current market share and 100% proved reserves replacement to maintain its proved reserves consistent with its production ratio at the end of 2016) and implied oil and gas demand from the 2°C scenarios average. Assumed linear decline of estimated average daily production through 2040.

(24) IEA: Perspectives for the Energy Transition, page 56. Estimate for IEA crude oil and natural gas and future prices for 2020, 2030 and 2040.

(25) As used here "carrying value" is our property, plant and equipment (PPE) net of accumulated depreciation. ExxonMobil's carrying value of property, plant and equipment as of September 30, 2018, was approximately $249 billion. The reference to "less than 5 percent of ExxonMobil's total carrying value of property, plant and equipment" is calculated by taking the PPE carrying value of ExxonMobil's resource base and subtracting from it the PPE carrying values of ExxonMobil's proved reserves, its producing assets that do not currently meet the SEC's definition of proved reserves, its unconventional liquids assets and its natural gas assets, and comparing this resulting value against ExxonMobil's total PPE carrying value as of September 30, 2018.

(26) Solomon Associates. Solomon Associates fuels and lubes refining data available for even years only.

(27) Exxon only before 1999. The average is based upon a 10-year interval.

(28) Source: Global CCS Institute. Data updated as of April 2018 and based on cumulative anthropogenic carbon dioxide capture volume. Anthropogenic CO_2, for the purposes of this calculation, means CO_2 that without carbon capture and storage would have been emitted to the atmosphere, including, but not limited to: reservoir CO_2 from gas fields; CO_2 emitted during production and CO_2 emitted during combustion. It does not include natural CO_2 produced solely for enhanced oil recovery.

(29) U.S. Energy Information Administration, U.S. Nameplate Fuel Ethanol Plant Production Capacity as of January 1, 2018.

(30) "In 2007, the United States harvested 86.5 million acres of corn at a yield of 151.1 bushel per acre (*http://www.nass.usda.gov/QuickStats/*). Based on these figures, one acre of corn would produce about 423 gallons per acre." *https://articles.extension.org/pages/14044/corn-ethanol-production*

(31) Chisti Y (2007) Biodiesel from microalgae. Biotechnology Adv 25:294-306.

(32) Nelson VC, Starcher KL. Introduction to renewable energy (energy and the environment). 2015; page 243.

(33) "Algae store energy in the form of oils and carbohydrates, which, combined with their high productivity, means they can produce from 2,000 to as many as 5,000 gallons of biofuels per acre per year." *http://allaboutalgae.com/benefits/*

(34) National Renewable Energy Laboratory: A Look Back at the U.S. Department of Energy's Aquatic Species Program: Biodiesel from Algae; Close-Out Report. 1998. *https://www.nrel.gov/docs/legosti/fy98/24190.pdf*

(35) API: Natural gas and industry innovation continues to help drive US GHG emissions reductions.

(36) Ecofys: Greenhouse gas emission reductions enabled by products from the chemical industry, page 68, table 53, annual realized avoided emissions - current implementation level.

(37) ExxonMobil estimates.

(38) Our calculations are based on the guidance provided in API's Compendium of Greenhouse Gas Emission Estimation Methodologies for the Oil and Gas Industry and IPIECA's Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions. We report GHG emissions on a net equity basis for our business operations, demonstrating a share of emissions from any facility or operation in which ExxonMobil holds a financial interest, with the share reflecting the equity interest.

(39) Governmental, legal or regulatory changes could directly or indirectly delay or otherwise impact GHG emission intensity reduction measures.

(40) Source: BloombergNEF. The data were downloaded from BloombergNEF on Dec 13, 2018 and based on total wind and solar power purchase agreements signed in 2018.

(41) Some uncertainty exists in performance data, depending on measurement methods. Data in the report and performance data table represent best available information at the time of publication. Performance data are reported for our affiliates and those operations under direct ExxonMobil management and operational control. Includes XTO Energy performance beginning in 2011.

(42) The net equity GHG emissions metric was introduced in 2011 as a replacement for the direct equity GHG emissions metric. Information has been restated back to 2005 according to the new metric. The net equity GHG emissions metric includes direct and imported GHG emissions and excludes emissions from exports (including Hong Kong Power through mid-2014). ExxonMobil reports GHG emissions on a net equity basis for all our business operations, reflecting our percent ownership in an asset.

(43) The addition of direct emissions and emissions associated with exported power and heat is equivalent to World Resources Institute (WRI) Scope 1.

(44) These emissions are equivalent to WRI Scope 2.

(45) Cumulative figure.

(46) IPIECA climate change reporting framework: Supplementary guidance for the oil and gas industry on voluntary sustainability reporting. Published by IPIECA in 2017.

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