Chevron

climate change resilience

a framework for decision making

human energy®

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"We proactively consider climate change risks and opportunities in our business decisions. We have the experience, processes and governance to manage these risks and opportunities, and we are equipped to deliver industry-leading results and superior stockholder value in any business environment."

— Mike Wirth
Chairman of the Board and CEO

Released March 2018.

forward-looking statements warning

CAUTIONARY STATEMENT RELEVANT TO FORWARD-LOOKING INFORMATION FOR THE PURPOSE OF "SAFE HARBOR" PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

This report contains forward-looking statements relating to Chevron's operations that are based on management's current expectations, estimates and projections about the petroleum, chemicals and other energy related industries. Words or phrases such as "anticipates," "expects," "intends," "plans," "targets," "forecasts," "projects," "believes," "seeks," "schedules," "estimates," "positions," "pursues," "may," "could," "should," "budgets," "outlook," "trends," "guidance," "focus," "on schedule," "on track," "is slated," "goals," "objectives," "strategies," "opportunities" and similar expressions are intended to identify such forward-looking statements. These statements are not guarantees of future performance and are subject to certain risks, uncertainties and other factors, many of which are beyond the company's control and are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or forecasted in such forward-looking statements. The reader should not place undue reliance on these forward-looking statements, which speak only as of the date of this report. Unless legally required, Chevron undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

Among the important factors that could cause actual results to differ materially from those in the forward-looking statements are: changing crude oil and natural gas prices; changing refining, marketing and chemicals margins; the company's ability to realize anticipated cost savings and expenditure reductions; actions of competitors or regulators; timing of exploration expenses; timing of crude oil liftings; the competitiveness of alternate-energy sources or product substitutes; technological developments; the results of operations and financial condition of the company's suppliers, vendors, partners and equity affiliates, particularly during extended periods of low prices for crude oil and natural gas; the inability or failure of the company's joint-venture partners to fund their share of operations and development activities; the potential failure to achieve expected net production from existing and future crude oil and natural gas development projects; potential delays in the development, construction or start-up of planned projects; the potential disruption or interruption of the company's operations due to war, accidents, political events, civil unrest, severe weather, cyber threats and terrorist acts, crude oil production quotas or other actions that might be imposed by the Organization of Petroleum Exporting Countries, or other natural or human causes beyond its control; changing economic, regulatory and political environments in the various countries in which the company operates; general domestic and international economic and political conditions; the potential liability for remedial actions or assessments under existing or future environmental regulations and litigation; significant operational, investment or product changes required by existing or future environmental statutes and regulations, including international agreements and national or regional legislation and regulatory measures to limit or reduce greenhouse gas emissions; the potential liability resulting from other pending or future litigation; the company's future acquisition or disposition of assets or shares or the delay or failure of such transactions to close based on required closing conditions; the potential for gains and losses from asset dispositions or impairments; government-mandated sales, divestitures, recapitalizations, industry-specific taxes, changes in fiscal terms or restrictions on scope of company operations; foreign currency movements compared with the U.S. dollar; material reductions in corporate liquidity and access to debt markets; the impact of the 2017 U.S. tax legislation on the company's future results; the effects of changed accounting rules under generally accepted accounting principles promulgated by rule-setting bodies; the company's ability to identify and mitigate the risks and hazards inherent in operating in the global energy industry; and the factors set forth under the heading "Risk Factors" on pages 19 through 22 of Chevron's 2017 Annual Report on Form 10-K. Other unpredictable or unknown factors not discussed in this report could also have material adverse effects on forward-looking statements.

chairman's letter

for nearly 140 years, chevron has provided affordable, reliable energy to improve lives and power the world forward

In the decades ahead, the world will need all forms of energy in order to maintain the benefits of modern life and help advance people reaching for a better quality of life. We are committed to addressing the risks of climate change while delivering the energy that benefits societies and economies. Throughout our long history, we have shown our resilience through our ability to adapt to changing conditions in the marketplace, and we will continue to adjust our business as needed to effectively and proactively manage climate change risks.

Chevron recognizes that climate change is a growing area of interest for our investors and stakeholders. We have listened to your concerns, and we are responding. In March 2017, we voluntarily published *Managing Climate Change Risks: A Perspective for Investors*, in which we discussed our views on market fundamentals, governance, risk management and strategy.

Continuing the conversation over the past year has helped us better understand your interests and potential concerns related to climate change. We heard that you want to know more about the framework we use to think about climate change in relation to our industry, and specifically in relation to our business. *Climate Change Resilience: A Framework for Decision Making* represents the next step in our ongoing dialogue. We have analyzed the recommendations issued by the Financial Stability Board's Task Force on Climate-Related Financial Disclosures and have developed this report with the aim of aligning our disclosures with the recommendations that we believe are most useful to our stockholders.

This report explains how Chevron assesses climate change risks in connection with other risks affecting our business. We outline our rigorous risk management processes and our governance framework, including how we use them to assess and manage potential risks with active Board of Directors and executive-level oversight.

In response to feedback from our stockholders, this report explains our strategic decision-making approach as it relates to climate change–related risks and opportunities, including our ongoing evaluations of our portfolio and future investments. We also provide insight regarding our approach to supply, demand, commodity and carbon prices, and the factors that drive global economic change. We have tested the competitiveness of our present assets under multiple scenarios, including some of the most aggressive greenhouse gas reduction scenarios, such as the International Energy Agency's (IEA) Sustainable Development Scenario, issued November 2017. As described in this report, the results of our scenario testing demonstrate that our portfolio, due to its maturity and its diversity across assets and geographies, is resilient in many scenarios, and our asset mix enables us to be flexible in response to potential changes.

We welcome feedback on this report and look forward to continued engagement with our investors and stakeholders. This report demonstrates that we proactively consider climate change risks and opportunities in our business decisions. We have the experience, processes and governance in place to manage these risks and opportunities, and we are equipped to deliver industry-leading results and superior stockholder value in any business environment.

Michael K. Wirth
Chairman of the Board and
Chief Executive Officer
March 2018

chevron at a glance

we take great pride in enabling human progress by developing the energy that improves lives and powers the world forward

Chevron is one of the world's leading integrated energy companies. Our success is driven by our people and our collective commitment to delivering industry-leading results and superior stockholder value in any business environment. We do this by operating responsibly, applying advanced technologies, capturing new high-return opportunities, and executing with excellence in a socially and environmentally responsible manner. We explore for, produce and transport crude oil and natural gas; refine, market and distribute transportation fuels and lubricants; manufacture and sell petrochemicals and additives; and develop and deploy technologies that enhance business value in every aspect of the company's operations.

total assets*
$253.8 billion

sales and other operating revenues**
$134.7 billion

net oil-equivalent daily production**
2.7 million barrels

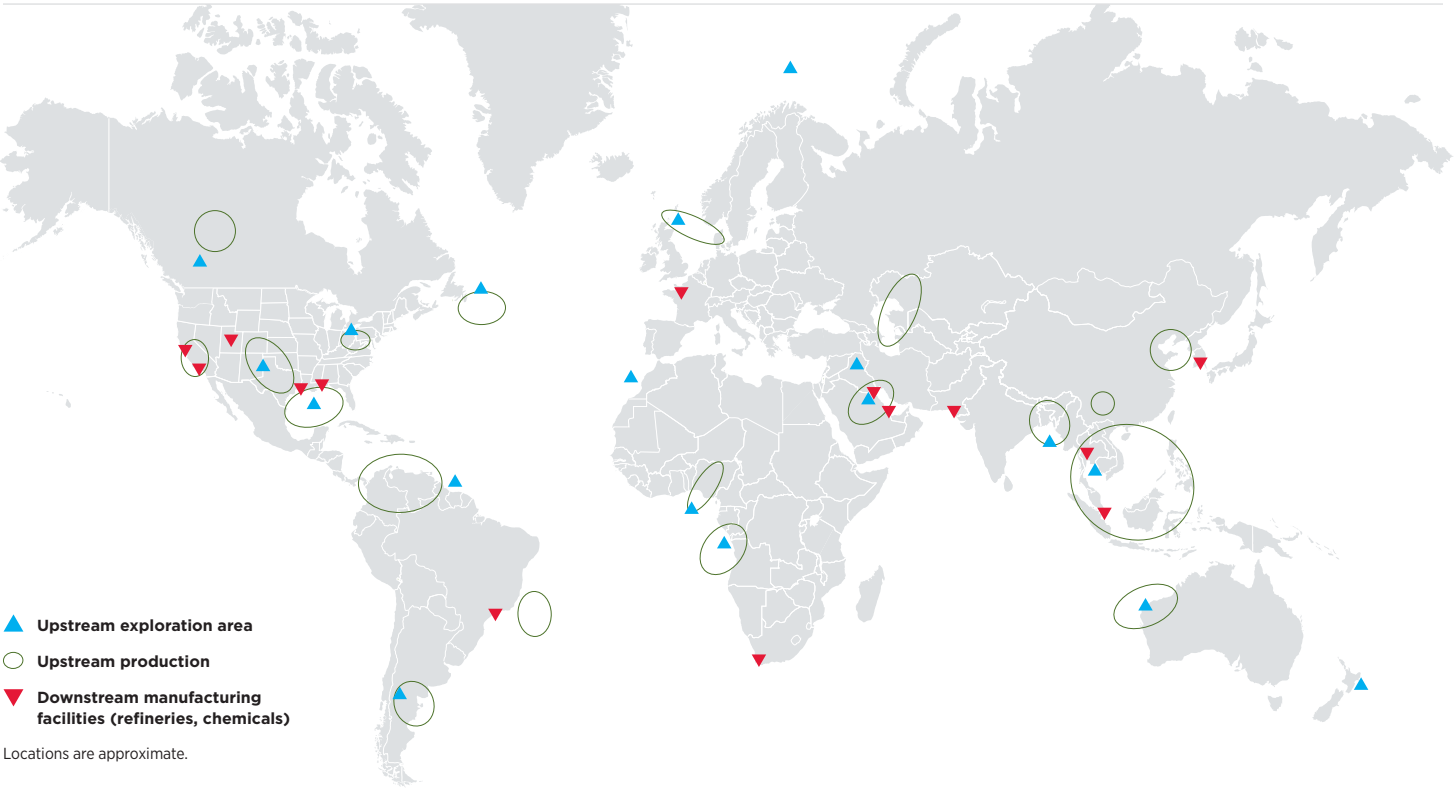
net oil-equivalent proved reserves*
11.7 billion barrels

daily refining capacity*
1.7 million barrels

daily refined product sales**
2.7 million barrels

* At December 31, 2017.
** Year ended December 31, 2017.

overview of upstream and downstream portfolios



Locations are approximate.

Climate change resilience: a framework for decision making

executive summary

we believe that managing climate change risks is an important element of our strategic focus to return superior value to stockholders

providing strong governance

Chevron's governance structure includes multiple avenues for the Board of Directors and executive leadership to exercise their oversight responsibilities with respect to climate change risks, including through our Public Policy, Strategy and Planning, and Global Issues committees, each of which meets regularly throughout the year. We periodically reassess our governance structure to ensure that Chevron maintains a Board composition and framework that is effective for managing the company's performance and risks to our business as we strive to deliver value to our stockholders.

assessing and managing risk

Chevron faces a broad array of risks, including market, operational, strategic, legal, regulatory, political and financial risks. We undertake an enterprisewide process to identify major risks to the company and ensure that appropriate mitigation plans are in place. As part of this process, we conduct an annual risk review with executive leadership and the Board of Directors.

setting business strategy to deliver results in any business environment

Our company's foundation is built on our values, which guide our actions to deliver results. We conduct our business in a socially and environmentally responsible manner, respecting the law and universal human rights, in order to benefit the communities where we work. Chevron's strategic and business planning processes bring together the company's views on energy market conditions to guide decision making by executive leadership and facilitate discussion with the Board of Directors.

The energy demands of the world are greater today than at any other time in human history. Most published outlooks conclude that fossil fuel demand will continue to grow over the coming decades. As part of our strategic planning process, we use our proprietary models to forecast demand, energy mix, supply, commodity pricing and carbon prices—all of which include assumptions about future policy developments, such as those that may be implemented in support of the Paris Agreement.

In 2016, approximately 50 percent of Chevron's total Scope 1 and Scope 2[1] equity greenhouse gas emissions were in regions with existing or developing carbon pricing policies. We use carbon prices in business planning, investment decisions, impairment reviews and reserves calculations.

Due to its diversity across assets and geographies, our portfolio is resilient, and our asset mix enables us to be flexible in response to potential changes in supply and demand, including potential low-carbon scenarios like the IEA's Sustainable Development Scenario. Our intent is to have strategies that drive our actions to enable human progress and deliver industry-leading results and superior stockholder value in any business environment.

taking actions and making investments to mitigate emissions

Chevron is a leader in improving how reliable and affordable energy is developed and delivered to meet global demand. We are making our operations more energy efficient, reducing flaring, managing methane emissions and investing in low-carbon technologies. In addition, we are investing in the innovations and innovators of tomorrow through our research and development and our investments in science-, technology-, engineering- and math-focused education.

in summary

Although we cannot forecast exactly what will happen in the future, we believe Chevron's governance, risk management and strategy processes are sufficient to mitigate the risks and capture opportunities associated with climate change. These processes are appropriate in order to enable the company to continue to monitor and adjust accordingly as climate policy develops. In addition, as demonstrated by our actions, we believe that managing climate change risks is an important element of our strategic focus to return superior value to stockholders.

1 Scope 1 includes direct emissions from sources within a facility. Scope 2 includes indirect emissions from electricity and steam that Chevron imports.

section 1

governance framework

"Climate change is a growing area of interest for our investors and other stakeholders. We're committed to addressing the risks of climate change while delivering the energy that benefits societies and economies. Chevron's management integrates climate change considerations into its risk management, governance and business planning processes. The Board regularly assesses climate change risk and opportunities throughout the year.

"Climate change is also a frequent topic when management and members of the Board meet with stockholders. As a result of stockholder feedback, the Board recently endorsed this second, more detailed voluntary report on climate change related to Chevron."

— Dr. Ronald Sugar
Lead Director

1.1 climate governance that drives performance, manages risk and is responsive to stockholders

Chevron's Board of Directors oversees the company's risk management policies and practices to ensure that we employ appropriate risk management systems. Chevron's governance structure includes multiple avenues for the Board of Directors and executive leadership to exercise their oversight responsibilities with respect to risk, including those related to climate change. Management of climate change risks is fundamentally integrated into Chevron's approach to risk management and governance. The full Board reviews long-term energy outlooks and leading indicators that could signify change on an annual basis. Climate change risks are regularly assessed by Board committees, such as the Public Policy Committee, and by executive-level committees, such as the Strategy and Planning and the Global Issues committees. In addition to providing oversight, the Board is committed to fostering long-term and institutionwide relationships with stockholders and being responsive to their input. Chevron entrusts an executive-level committee with planning and executing the Annual Engagement Plan and Process to engage in dialogue with a substantial portion of our investor base, including our 50 largest stockholders and other stakeholders.

1.2 board and executive-level oversight

The Board of Directors and each of the governing bodies that assists the Board in its oversight of climate change issues meet several times per year. The governing bodies consist of Board-level and executive-level committees.

1.2.1 Board-level committees

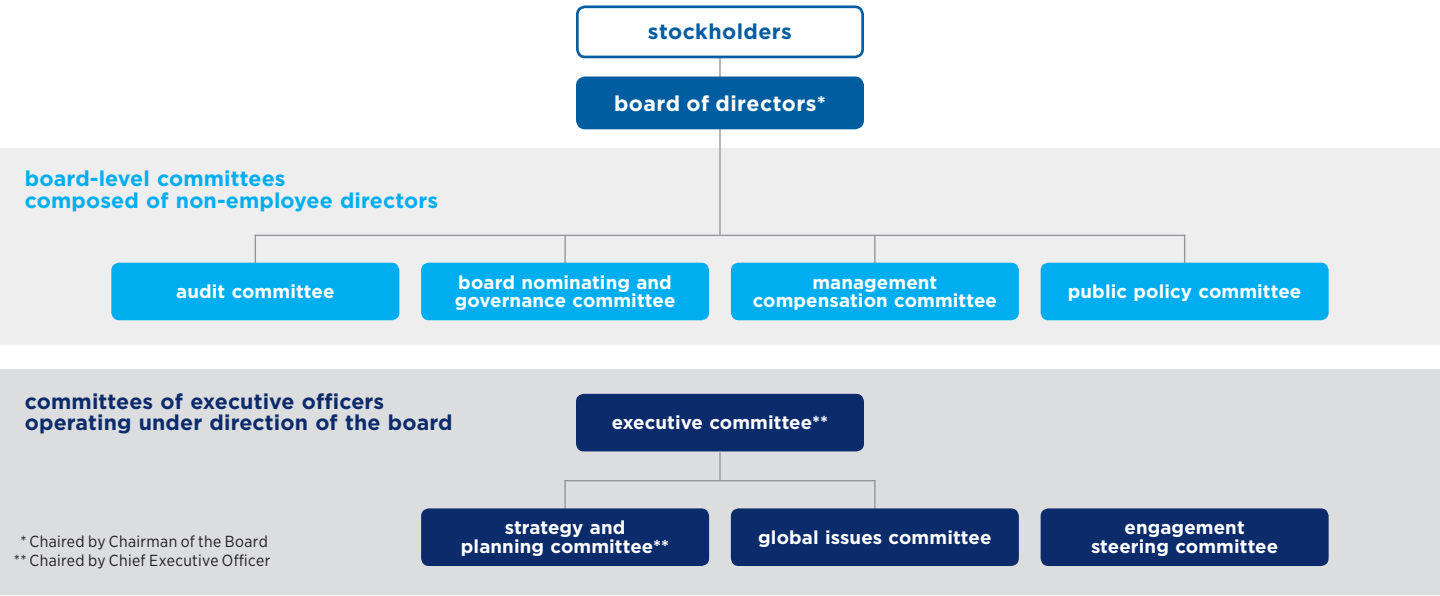
Chevron's Board of Directors has four standing committees: Public Policy, Audit, Board Nominating and Governance, and Management Compensation. Each committee includes only independent Directors and is chaired by an independent Director who determines the frequency, length and agenda of the meetings and who has access to management, information and independent advisors, as needed.

Public Policy Committee (PPC)

The PPC assists the Board by periodically assessing and advising on risks that may arise in connection with social, political, environmental and public policy aspects of Chevron's business. As part of this effort, the PPC considers important issues relating to climate change, such as policy trends and their potential implications. The PPC makes recommendations for anticipating

chevron's governance structure

relevant to climate change risk oversight



and adjusting to these trends so that the company can achieve its business goals and constructively participate in the public policy dialogue. It also reviews and makes recommendations for Chevron's strategies related to corporate responsibility and reputation management.

Other Board-level committees
In addition to the PPC, the Board has other committees within which climate change risks may be discussed. For example:

- The Audit Committee analyzes potential financial risk exposures as part of Chevron's enterprise risk management program, including potential financial risks associated with climate change. These risks are discussed in the Risk Factors section of the company's 2017 Annual Report on Form 10-K.
- The Board Nominating and Governance Committee identifies and recommends prospective Directors with the goal of maintaining a Board composition appropriate to overseeing the wide-ranging risks affecting Chevron. Among the skills and qualifications desired in our Directors are experience in environmental affairs and extensive knowledge of governmental, regulatory, legal or public policy issues.

1.2.2 Executive-level committees

Under the direction of the Board, Chevron's Executive Committee is composed of executive officers of Chevron and carries out Board policy in managing the business affairs of the company. The Strategy and Planning Committee (S&PC) and Global Issues Committee (GIC), described below, are subcommittees of the Executive Committee. The Engagement Steering Committee (ESC) provides updates to the Board Nominating and Governance Committee.

Strategy and Planning Committee
The S&PC is responsible for actively managing the composition, resource allocation and strategic direction of Chevron's portfolio to achieve our long-term objectives. It is also the committee that most actively oversees and endorses enterprise risk management.

Global Issues Committee
The GIC oversees the development of Chevron's policies and positions related to global issues of significance and recommends appropriate actions to respond to these issues.

1.3 engagement steering committee

In an effort to continually improve our governance processes and communications, we developed, and we follow, the Annual Engagement Plan and Process. The ESC, which is composed of senior executives, meets periodically to discuss engagement efforts, key issues and trends, and input from stockholders. An engagement team consisting of senior executives, subject matter experts and, when appropriate, our Lead Director conducts in-depth discussions with stockholders. We consistently aim to engage annually with our top 50 investors and other key stakeholders. Chevron gains valuable feedback during the engagements, and this feedback is shared with the Board and relevant committees.

1.4 strong governance

We frequently reassess our governance structure to ensure that Chevron maintains an effective framework for managing the company's performance and risks to our business. The skills, experience and expertise of our Board of Directors are shown in the chart on the following page.

board of directors

highly engaged, diverse board with relevant skills and qualifications

Michael K. Wirth
Chairman and Chief Executive Officer
Former Vice Chairman of the Board
and Executive Vice President of
Midstream and Development, Chevron

Ronald D. Sugar
Lead Director
Retired Chairman and
Chief Executive Officer,
Northrop Grumman Corporation (3, 4)

Wanda Austin
Retired President and
Chief Executive Officer,
The Aerospace Corporation (2, 3)

Linnet F. Deily
Former Deputy U.S. Trade
Representative and U.S. Ambassador
to the World Trade Organization (2, 3)

Robert E. Denham
Partner,
Munger, Tolles & Olson LLP (1, 4)

John B. Frank
Vice Chairman,
Oaktree Capital Group, LLC (1)

Alice P. Gast
President,
Imperial College London (2, 3)

Enrique Hernandez, Jr.
Chairman, Chief Executive
Officer and President,
Inter-Con Security Systems, Inc. (2, 4)

Charles W. Moorman IV
Retired Chairman and
Chief Executive Officer,
Norfolk Southern Corporation (1)

Dambisa Moyo
Chief Executive Officer,
Mildstorm LLC (1)

Inge G. Thulin
Chairman, President and
Chief Executive Officer,
3M Company (3, 4)

D. James Umpleby III
Chief Executive Officer,
Caterpillar Inc. (3, 4)

Skills and qualifications: Business Leadership/Operations · Environmental Affairs · Government/Regulatory/Public Policy · Finance

Committees of the Board: (1) Audit: Charles W. Moorman IV, Chair (2) Public Policy: Linnet F. Deily, Chair
(3) Board Nominating and Governance: Ronald D. Sugar, Chair (4) Management Compensation: Enrique Hernandez, Jr., Chair

section 2

risk management

chevron employs long-standing risk management processes in assessing the risks to its business, including risks related to climate change

Chevron faces a broad array of risks relating to its business, including market, operational, strategic, legal, regulatory, political and financial. Risks that could materially impact the company's operations and financial condition are discussed in the Risk Factors section of the company's Annual Report on Form 10-K.

Chevron's Enterprise Risk Management (ERM) process provides corporate oversight for identifying major risks to the company and ensuring that appropriate mitigation plans are in place. The ERM process includes an annual risk review with executive leadership and the Board of Directors. As part of this annual risk review, the S&PC evaluates categories of risks to Chevron's business and their potential consequences, financial or otherwise, and identifies and assesses the effectiveness of safeguards and mitigations in place to manage each risk category. When necessary, the S&PC develops and implements improvement actions to strengthen the company's safeguards. Following endorsement by the S&PC, the annual ERM assessment is reviewed by the Board of Directors.

2.1

integration of climate change into chevron risk management

Potential climate change risks are integrated into multiple ERM risk categories because a truly global challenge like climate change requires a comprehensive review strategy. The Board of Directors and executive leadership believe this integrated approach is appropriate because it enables climate change risks to be examined in connection with other broad-ranging risks affecting Chevron.

2.1.1 Operational risk

Climate change presents different potential risks to different segments of our business. Our management of operational risk is aided by several systems and processes across the enterprise. Through application of our risk management processes, Chevron approaches operational risks in a consistent manner.

operational excellence management system (OEMS)

Through application of the OEMS, Chevron assesses risks, identifies safeguards and implements programs to ensure that those safeguards are effective. Chevron has put in place a number of enterprisewide processes and standards as well as technical guidance to meet our goals and expectations for operational excellence (OE). The OE Risk Management process sets expectations for the assessment of risk across the OE focus areas of workforce safety and health, process safety, reliability and integrity, the environment, efficiency, security, and stakeholders and includes specific standards for performance of those assessments.

learn more > chevron.com/oems

Potential climate change risks are considered when conducting risk assessments at the business unit, operating company and enterprise levels. These risk assessments include structured identification of potential risk scenarios, evaluation of the adequacy of safeguards to manage those scenarios and, as needed, identification of risk mitigations. For example, in areas of water scarcity, we identified freshwater use as a risk for some business units. As a result, we actively work to reduce our freshwater use in areas of water scarcity. You can read more about our water management activities in Section 4.6, Managing Water Resources, on Page 39.

Environmental management

We make continual improvements to our environmental performance by following our OEMS and Environmental Stewardship OE processes, which require our businesses to identify, assess and prioritize environmental risk and improvement opportunities. Our approach to environmental stewardship includes an environ-

mental, social and health impact assessment designed to identify and manage potentially significant project-related impacts and opportunities in a consistent manner.

The Board of Directors, and the Public Policy Committee in particular, provide oversight and guidance on environmental matters in connection with Chevron's projects and operations and are regularly briefed by professionals whose focus is on environmental protection and stewardship. Members of the Board regularly visit Chevron operations across the globe and discuss environmental matters specific and relevant to these locations. Significant environmental and process safety issues are reviewed by the Board to ensure compliance with the company's rigorous processes.

2.1.2 Physical risk

For decades, Chevron has managed risks associated with the impact of ambient conditions on our operations. Long-standing practices developed to manage these impacts are being applied and extended to reflect possible effects of climate change and to ensure the ongoing resilience of our infrastructure, both for current operations and for those being developed and considered. For example, to protect the facilities against possible storm surges, we spent $120 million on raising a dike at our Pascagoula, Mississippi, refinery and $16.2 million to construct a seawall at our Port Arthur, Texas, lubricants plant. As another example, the Chevron Engineering Standard for Metocean Design and Operating Conditions was recently updated based on the assessment of future potential impacts to Chevron's marine facilities, such as potential changes in storm intensity, changes to sea level and changing water currents.

Business Continuity Plans

With global operations subject to diverse microclimates and weather phenomena, Chevron stays prepared for the possibility of natural disasters. Based on risk evaluations and business impact analyses, business units develop and implement a Business Continuity Plan to ensure continuous availability—or prompt recovery—of critical business processes, resources and facility operations.

Business units use their Business Continuity Plan to manage operations with a reduced workforce, to direct employees to alternate work locations—such as working from home or alternate office locations—and to overcome localized IT outages. For example, personnel from our Supply and Trading group in Houston identified business-critical employees to deploy to alternative work locations in the event the Houston office is unavailable. The plan, process and alternative facilities are regularly reviewed and tested to ensure business continuity.

2.1.3 Geopolitical and legislative risk

Chevron's ERM process targets a broad range of geopolitical risks, including legislative, regulatory and legal risks, to ensure that they are appropriately assessed and reviewed. In the years ahead, companies in the energy industry, including Chevron, may face an increase in international and domestic regulation of greenhouse gas (GHG) emissions. Such regulations could impose additional costs on the oil and gas sector. To the extent the market allows for pass-through of any direct costs to consumers, the potential impact of such regulations would be reduced.

Chevron's S&PC and GIC receive regular updates on climate policy trends, which may forecast increased or decreased stringency, and their potential implications. Chevron engages in ongoing efforts to understand the potential impact of climate change policy on the different parts of our business—particularly supply, demand and pricing—and works with governments to ensure that they fully understand the perspectives of a major participant in the industry. These efforts help us better evaluate how GHG/climate regulation may unfold in jurisdictions where we operate. Changes in anticipated demand, pricing, competitiveness and regulation become apparent over time, and Chevron takes these factors into account in revising our capital allocation and redirecting our portfolio as needed.

climate change litigation

Chevron, along with many other companies in the oil and gas industry, is named in lawsuits brought by various cities and counties that seek to hold companies financially responsible for changes in climate and the effects of those changes. The claims are factually and legally without merit. Chevron welcomes meaningful efforts to address the issue of climate change, but litigation is not an appropriate or effective tool for accomplishing that objective. As outlined in our Policy Principles for Addressing Climate Change shown on Page 20, reducing GHG emissions is a global issue that requires global engagement and careful consideration of broader policy, regulatory and economic priorities.

2.1.4 Strategic risk

Chevron's ERM process assists the Board of Directors and executive leadership in overseeing risks related to key strategic decisions for the company, including decisions related to commodity price forecasts and capital project approvals. The processes we use are discussed in detail in the Strategy section of this report.

section 3

strategy

we conduct our business in a socially and environmentally responsible manner, respecting the law and universal human rights to benefit the communities where we work

3.1

the chevron way

Chevron's approach to running its business is rooted in The Chevron Way. At the heart of The Chevron Way is our vision: to be the global energy company most admired for its people, partnership and performance. Our company's foundation is built on our values, which guide our actions to deliver consistent results. We conduct our business in a socially and environmentally responsible manner, respecting the law and universal human rights to benefit the communities where we work. Our strategies guide our actions to deliver industry-leading results and superior stockholder value in any business environment.

learn more > chevron.com/chevronway

3.2 chevron's strategic and business planning processes

The risks and opportunities facing Chevron change over time. We develop strategies to deliver results under a range of scenarios, including those resulting from potential carbon-constrained policies and scenarios, such as the one presented in the IEA's Sustainable Development Scenario (SDS), described in more detail in Section 3.4 on Page 30.

We use the company's strategic and business planning processes described in the following pages, as well as the risk management tools discussed in the previous section of this report, to integrate evolving trends, including those related to climate change, into our framework for decision making. Most outlooks we track conclude that oil and gas demand will continue to grow over the coming decades, but we also track and analyze leading indicators that might signal change, such as potential policy developments.

Chevron's strategic and business planning processes bring together the company's views on energy market conditions to guide our executive leadership's decision making and to facilitate discussion with the Board of Directors. Included in our strategic planning are:

- Energy demand and supply projections
- Energy mix projections
- Commodity price outlooks
- Leading indicators such as policy and technology changes

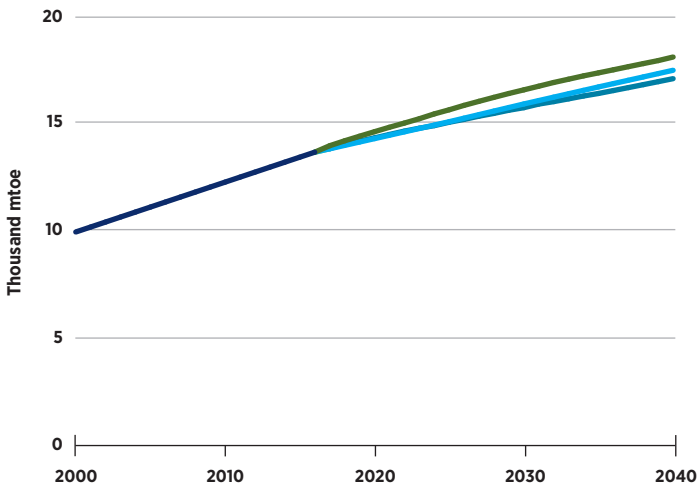
These projections and outlooks are incorporated into portfolio management, business planning and investment decisions. These processes indicate that oil and gas are forecasted to continue to be competitive on price and with scale, reinforcing that Chevron's portfolio is robust under multiple scenarios.

3.2.1 How Chevron approaches future energy demand

The world's energy demands are greater today than at any other time in human history, and they will continue to grow as populations expand, the world's industrial base grows and technologies are invented that will need to be powered. According to the IEA's New Policies Scenario (NPS), energy demand to 2040 is forecasted to add the demand equivalent of another China plus India.[2] Energy is one of the fundamental drivers of economic growth and human progress, enabling access to light, heat, mobility, mechanized agriculture, modern health systems and technologies.

To understand future energy needs, we study different demand drivers and develop a base case and alternative scenarios. We routinely use external views to both inform and challenge our internally derived scenarios. Chevron's views on total primary energy demand are generally aligned with prominent third-party projections, such as the IEA's NPS, IHS's Rivalry case and Wood Mackenzie's reference case, as shown in the chart to the right.

primary energy demand from select third-party sources



Sources, as modified by Chevron Corporation: IEA, *World Energy Outlook 2017*, iea.org/weo2017/; IHS Markit, Global Energy Scenarios dataset—Energy Outlook to 2040; Wood Mackenzie, *Energy Market Tool*, accessed December 2017.

mtoe = million tonnes of oil-equivalent

modeling future demand for oil, gas and refined products

Each year, Chevron develops a range of long-term demand scenarios to inform our views on future oil, gas and refined product prices, test our strategies, and assess business risks. This process incorporates our proprietary views on the principal drivers of demand growth, including:

- Economic indicators like gross domestic product (GDP) growth, income levels and industrial activity in key economies, and changes in global trade
- Capacities of electricity generation and refineries by feedstock
- Use indicators, such as the global vehicle fleet, motor vehicle sales (by type), vehicle miles traveled and airline passenger miles
- Nonmarket influences on fuel prices, such as taxes and subsidies
- Carbon prices and other policies and regulations, such as those related to the Paris Agreement
- Competition from potential substitute products
- Other trends that could affect energy consumption, such as consumer preferences and urbanization

Given the complex set of variables and the uncertainties associated with forecasting long-term demand, we analyze how various factors may combine to accelerate or decelerate trends and use scenarios to stress-test our reference case.

The world's energy demands are greater today than at any other time in human history, and they will continue to grow as populations expand, the world's industrial base grows and technologies are invented that will need to be powered.

IEA scenarios

Current Policies Scenario (CPS): "an outlook on the basis of just those policies already in place."

New Policies Scenario (NPS): "derived from the policies already in place and those officially announced."

Sustainable Development Scenario (SDS): "an integrated approach to achieving internationally agreed objectives on climate change, air quality and universal access to modern energy."

Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

2 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

3.2.2 How Chevron approaches energy mix projections

Driving economic growth and improved living standards in the years ahead will require all forms of energy. We have a dedicated team that forecasts the energy mix decades into the future. To generate this outlook, we track and forecast economic and energy market trends and associated drivers of those trends, including energy policies and relative energy prices.

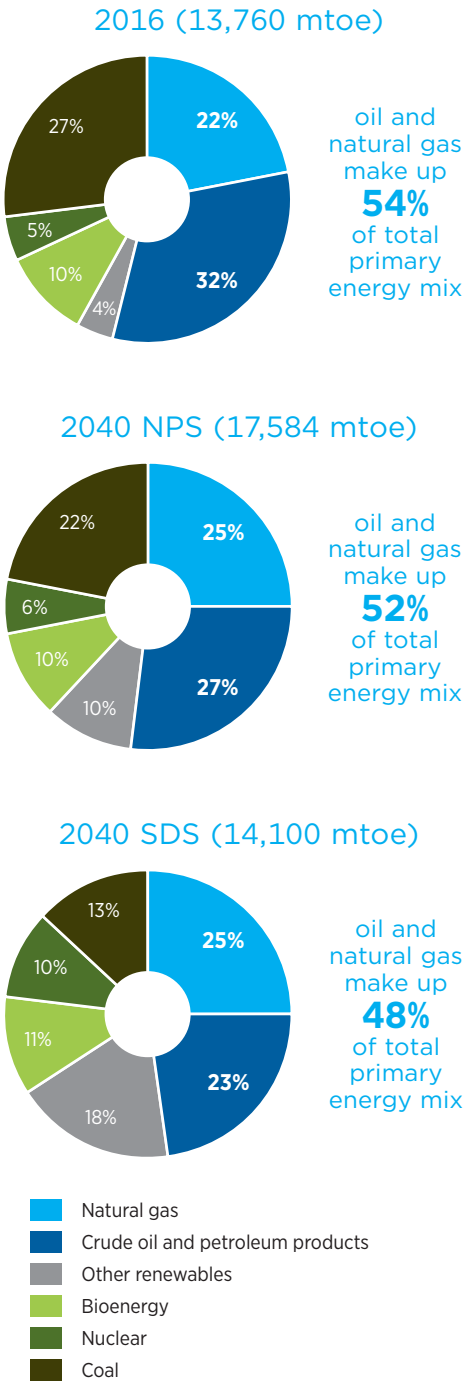
Oil and gas may fall below today's share of the energy mix, but most energy experts agree that oil and natural gas will account for about half of global energy consumption for at least the next two decades under almost any future market scenario—even one in which policy increasingly attempts to limit fossil fuel use and reduce GHG emissions.

Chevron's views on the future energy mix are generally aligned with prominent third-party projections like the IEA's NPS, as shown in the chart to the right. Similar to the IEA's NPS, we incorporate existing energy policies, as well as an assessment of the results likely to stem from the implementation of announced policy intentions, such as those supporting the Paris Agreement.

Energy transitions can take decades, as the amount of time required to turn over the current consuming capital stock and redirect investment to meet global energy demand depends on the asset's service life.

For example, a car purchased today can be in service for 12 to 14 years, a truck 10 to 30 years, an airplane 30 to 40 years, and a new building or piece of equipment more than 30 years.[3] In general, assets are forecasted to be used for their service life, thus tending to slow diffusion of new technologies and energy transitions.

IEA 2016 world total primary energy mix vs. NPS and SDS in 2040

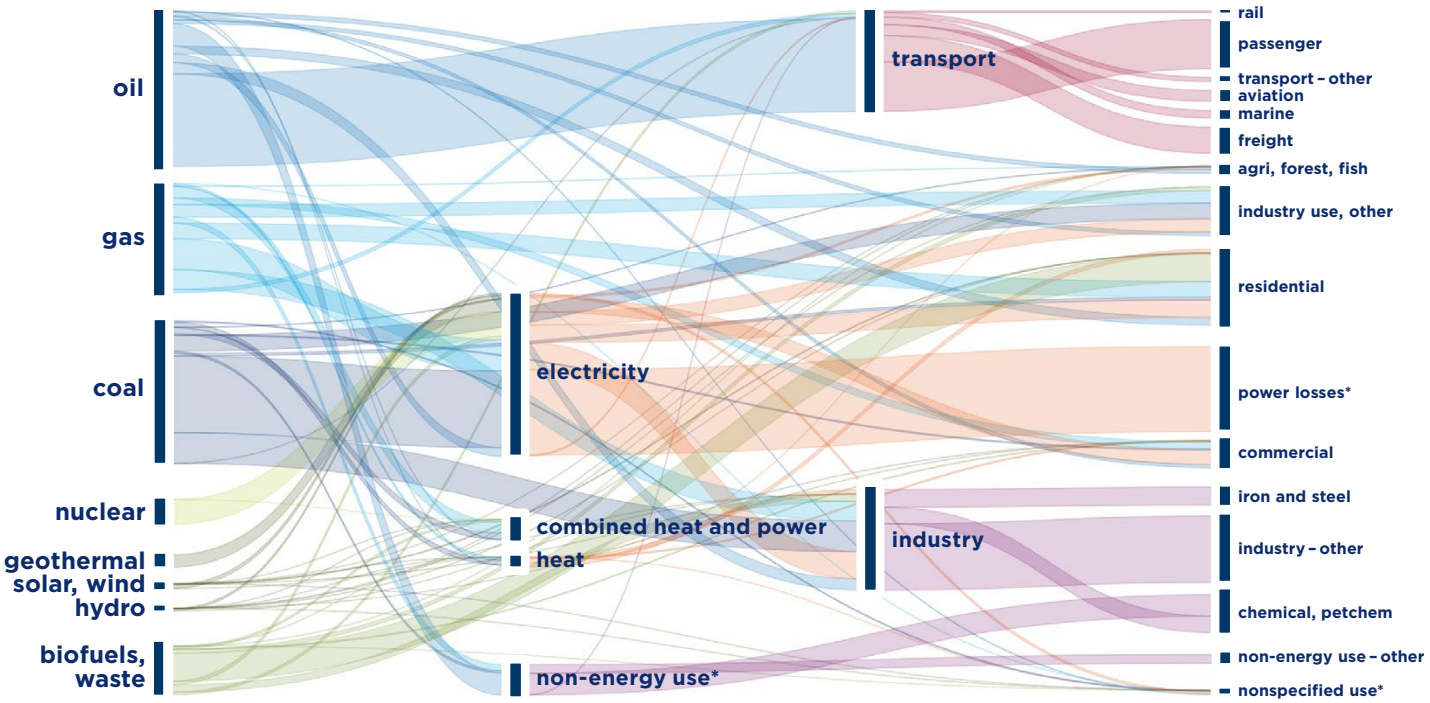


Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
mtoe = million tons of oil-equivalent

3 IEA, *Technology Penetration and Capital Stock Turnover*, May 2007, iea.org/publications/freepublications/publication/capital_stock.pdf.

world energy flows

Oil and gas have a diverse set of end uses. In some uses, like aviation, marine, freight and petrochemicals, there are few, if any, cost-effective and scalable alternatives to oil.



58%

Transportation accounts for about 58 percent of current global oil consumption. About 25 percent of global oil consumption is used in personal vehicles, 21 percent in transporting goods or services, and 12 percent in airplanes.

42%

The remaining 42 percent of global oil consumption is used to fuel tractors, create fertilizers and fuel industrial processes. About 13 percent of global oil consumption is used as a feedstock for the petrochemical sector.

*__Power losses__ = Losses in gas distribution, electricity transmission and coal transport. __Non-Energy Use__ = Those fuels that are used as raw materials in the different sectors and are not consumed as a fuel or transformed into another fuel. Non-energy use is shown separately in final consumption under the heading non-energy use. __Non-Specified__ = includes all fuel use not elsewhere specified as well as consumption in the above-designated categories for which separate figures have not been provided. Military fuel use for all mobile and stationary consumption is included here (e.g., ships, aircraft, roads and energy used in living quarters) regardless of whether the fuel delivered is for the military of that country or for the military of another country.

Based on data from: IEA, 2015 World Balance and Final Consumption dataset, iea.org/sankey/, modified by Chevron Corporation.

3.2.3 How Chevron approaches energy demand drivers

We track and analyze demand drivers to understand which sources of energy supply are likely to meet expected demand. We believe choices will be primarily determined by the economics of each energy supply source, which are influenced by the intersection of policy, technology and consumer trends.

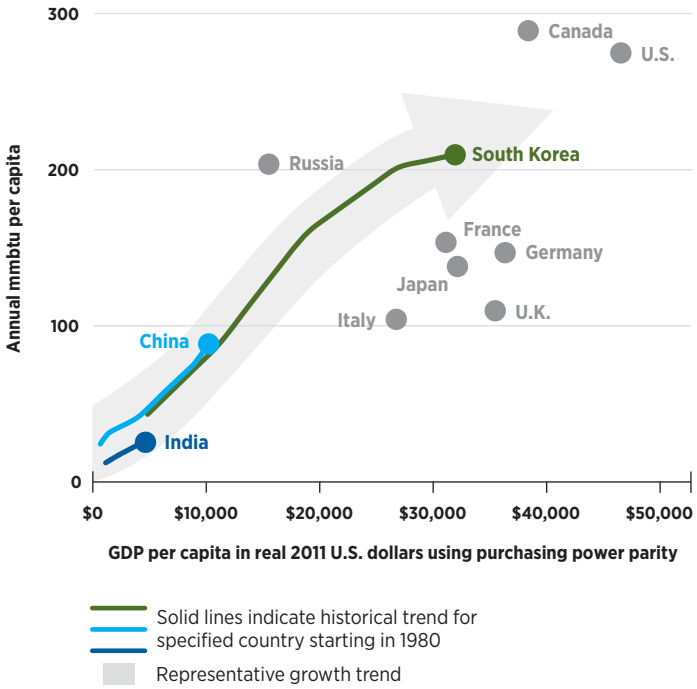
Population growth and increasing standards of living: There is a positive correlation between population growth and energy demand. And as more people's incomes increase and they gain access to personal mobility, electricity and appliances, energy demand increases.

Over the next decade, nearly 40 percent of the world's population is expected to enter the critical $3,000 to $10,000 per capita GDP threshold, where energy demand accelerates (see chart at right).

Policy: Policies, like those that support the Paris Agreement, can change the amount of energy consumed, the growth rate of energy demand, the energy mix and the relative economics of one fuel versus another.

- Energy efficiency improvements are expected to have the largest moderating impact on energy demand growth. Improvements in energy intensity continue to accelerate due to targeted policy initiatives, like vehicle efficiency standards and standards for power, the industrial sector and consumer products. These energy intensity improvements are highest in emerging markets, in which starting efficiency and urbanization levels are lowest. You can read more about what Chevron does on energy efficiency in Section 4.1, Energy Efficiency, on Page 35.
- Fuel mandates, like renewable portfolio standards, renewable fuel standards and low-carbon-fuel standards, can change the fuel mix by requiring certain types of energy sources. Fuel mandates can be driven by concerns other than climate, such as energy security and other environmental concerns like air quality.
- Cost effects like carbon pricing, renewable feed-in tariffs and fuel taxes often increase the cost of using fossil fuels and can affect the relative economics of the fuel mix. Particularly for biofuels, economics may be affected by value from policy-driven compliance credits. When economical, we pursue biofuels opportunities, such as renewable diesel, which you can read more about in Section 4.3, Renewable Energy, on Page 37.

economic growth and energy use per capita



Growth of the middle class is accelerated by industrialization and urbanization. Industrialization creates opportunities that draw people to cities for well-paying jobs, which then drive growth in energy demand.

Sources, as modified by Chevron Corporation: Energy data based on IEA data from *Online Data Service*, OECD/IEA 2016, iea.org/statistics, license: iea.org/t&c; GDP data based on data from International Monetary Fund, *World Economic Outlook Database*, October 2017.

mmbtu = million British thermal units

Technology: Improvements in technology can lead to cost reductions that can influence the forecasted energy mix. Reductions in the cost of energy attributable to technology advancements can increase demand for that energy type and improve relative competitiveness.

chevron and technology

Chevron is engaged in every step of the energy technology development chain, from early-stage research to industrial-scale applications.

Chevron Energy Technology Company (ETC)

Chevron was the first international oil company (IOC) with an integrated technology company that develops and manages technology across the business. ETC invests in fundamental research and development in partnership with world-class universities and laboratories. Our industry experts are working in collaboration with academic experts globally.

Chevron Technology Ventures (CTV)

Chevron was the first IOC with a venture capital arm. CTV scans the globe to identify promising startups that can help develop emerging energy technologies we can test and transfer into our company. We know that new ideas can come from anywhere, from any industry, at any time, so we take an open-innovation approach to technology development and work in close collaboration with our operations worldwide.

CTV screens several hundred opportunities and formally evaluates up to 200 of these opportunities per year. In doing so, we are positioning Chevron to compete profitably within the future energy landscape as those technologies become economical and competitive. As an example, in 2016, we invested in Novvi LLC to develop, market and distribute high-performance oils and lubricants from renewable sources.

Consumer behavior: Changes in consumer behavior can increase or moderate energy use. For example, vehicle choice and use patterns can affect demand for refined products. In large vehicle markets like the United States, the vehicle fleet turns over about every 12 to 14 years. If, however, consumers start to replace vehicles more frequently or choose to purchase an electric vehicle (or to not own a vehicle at all), growth in the demand for liquid transportation fuels could change. Urban planning, car-sharing businesses and the ongoing development of autonomous vehicles will influence how consumers approach mobility in the future.

3.2.4 How Chevron approaches demand for specific resources

View on oil

In 2016, global liquid fuel demand was 97.5 million barrels per day (mmbd), which included 78 mmbd of crude oil, 14 mmbd of natural gas liquids, 3 mmbd of non-petroleum-based fuels like biofuels and 2.5 mmbd of refinery processing gains.[4] Oil demand has grown at a rate of about 1 mmbd, or 1 percent per year, over the past 20 to 30 years,[5] but the IEA's NPS shows oil demand growing at a more modest pace in the future, due to slower economic growth, aging populations in traditional oil-consuming centers like Europe, Japan and the United States, and policy-driven efforts to increase vehicle efficiency and alternative fuel penetration.

chevron's view of the peak

The concept of "peak demand" has been gaining traction among some industry analysts, academics and industry critics. Third-party projections for peak demand are often driven by assumptions like the rapid adoption of electric vehicles (EVs), accelerated growth in the use of new mobility models (e.g., ride sharing), policies that could favor EVs or renewables, higher oil and gas prices, and the dramatic reduction in the cost of renewable power. These scenarios assume rapid technological change in categories that ultimately only account for a portion of global oil consumption, such as light-duty vehicles.

In order to force an oil peak demand in the next two decades, a series of critical demand-reducing factors would need to occur simultaneously, apply across the entire slate of oil products and move at an unprecedented pace. Such a confluence of events in the next two decades would represent a historic and unprecedented revolution.

Although current trends warrant consistent monitoring, they also suggest that peak demand is unlikely in the near or intermediate future.

4 IHS, *Annual Long-Term Strategic Workbook*, May 2017, copyright IHS 2018, used with permission.
5 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

View on gas
In 2016, demand for natural gas was 3,635 billion cubic meters.[6]

Growth in natural gas demand is driven by an abundant low-cost resource, a desire among key energy consumers to diversify fuel sources and efforts in some jurisdictions to reduce air pollution.

The IEA's NPS forecasts gas demand to grow by 45 percent between 2016 and 2040, as shown in the chart to the right, with 80 percent of the growth coming from developing countries such as China, India and other countries in Asia.[7] You can read more about gas demand in the IEA's SDS on Page 32.

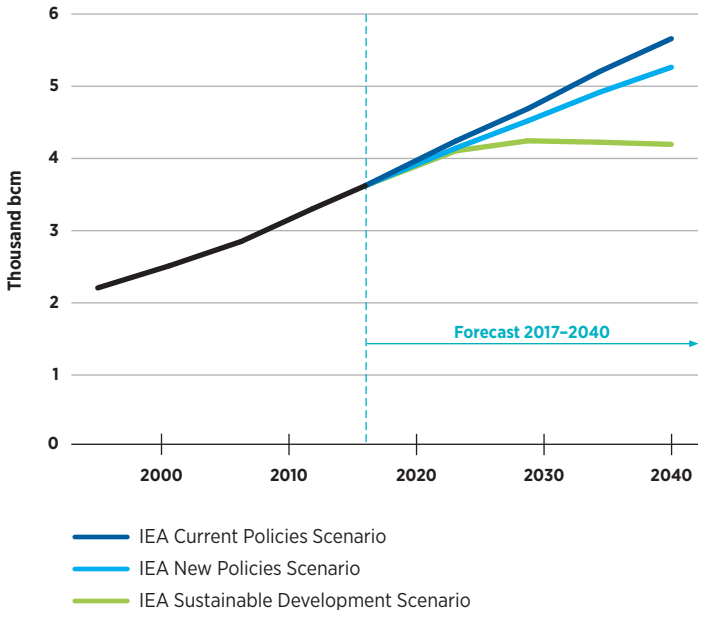
There are potential risks to the role of gas in the power sector, including lower-cost coal and renewables penetration. Nevertheless, we see sustained growth for gas in the industrial sector because gas is better positioned to provide high-temperature heat when compared with renewables. Gas has the advantage over refined products on price and over coal on emissions.[8]

View on refined products
Transportation fuels and petrochemicals have accounted for nearly 95 percent of the growth in global oil demand since 2000 and are expected to underpin sustained growth in demand over the next two decades.

Demand for high-value petrochemicals, used to produce plastics, resins and fibers (among other products), is projected to rise by 60 percent between 2016 and 2040 under the IEA's NPS.[9]

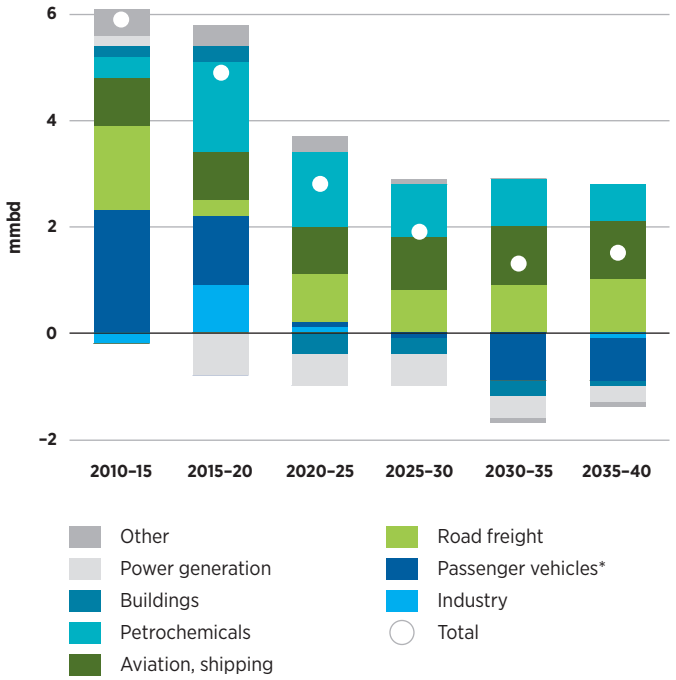
According to the IEA, "[t]he increase could be greater still if, for example, innovation in chemical products triggers further substitution away from other materials (metals, wood) or if a much higher number of EVs are sold (electric vehicles tend to require more plastic than conventional cars)."[10] As shown in the chart to the right, oil use for aviation, shipping and road freight is expected to grow in the decades ahead, even with continued improvements in efficiency.

world natural gas demand by IEA scenario



Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
bcm = billion cubic meters

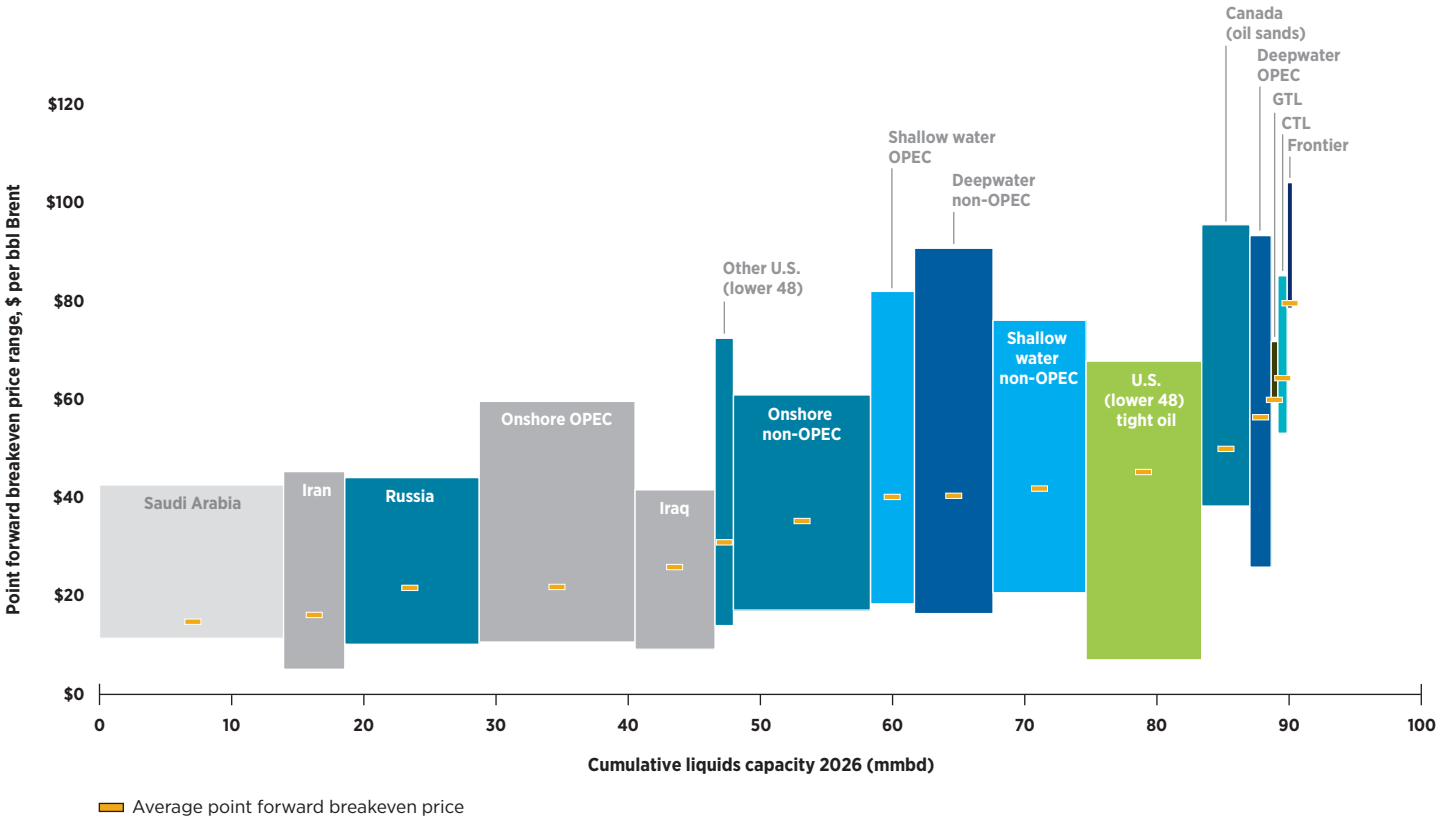
change in global oil demand by sector in the IEA's NPS



*Passenger vehicles include passenger cars, two- and three-wheelers, and buses.
Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
mmbd = million barrels per day

6 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
7 Ibid.
8 According to the IEA, *World Energy Outlook 2017*, iea.org/weo2017/, "The combustion of natural gas results in emissions saving of some 40 percent relative to coal for each unit of energy output."
9 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
10 Ibid.

global liquids long-term supply curve and average point forward breakeven prices in 2026



Liquids supply shown above includes crude oil, natural gas liquids (NGLs), coal-to-liquids (CTLs) and gas-to-liquids (GTLs).

Point forward breakeven is the amount of capital needed to produce the resource from today forward. This differs from full-cycle breakeven, which "includes all costs for developing a new field." For a further discussion of breakeven calculations, see Energy Economics, *Tight oil market dynamics: Benchmarks, breakeven points, and inelasticities*, 2017.

Sources, as modified by Chevron Corporation: IEA, *World Energy Outlook 2017*, iea.org/weo2017/; Wood Mackenzie, *Oil Supply Tool*, February 2017.

mmbd = million barrels per day

bbl = barrel

3.2.5 How Chevron approaches future energy supply

A common way to represent oil and gas supply is a supply curve by resource type, in which the width of the bar represents the amount of total production for a given year and the height of the bar indicates the price range over which that resource is economical to produce. Similar types of resources, or resources from certain regions, are grouped together and thus show a range of prices instead of a single price. In a more detailed and expanded version, every field is its own bar on the supply stack. Assets can move relative to one another up and down the supply stack when their breakeven values change due to technology, geopolitical and policy changes, fiscal terms, or other reasons.

Oil

In 2016, total global liquid fuel demand was 97.5 mmbd, of which 78 mmbd was crude oil.[11]

Although the disruptive potential of demand-side technologies often gets the headlines, the effect of supply-side technologies—more specifically, the unconventional-oil and -gas revolution in the United States—has been more impactful. According to the IEA, the increase in tight oil production and its forecasted continued growth "would be about as fast as the rise in output from Saudi Arabia between 1966 and 1981."[12] Less than a decade ago, the oil and gas industry was operating in a paradigm of scarcity. Experts were focused on peak oil supply, and the business was largely focused on finding frontier resources and increasing production. Today, the industry is in a time of relative abundance, and asset classes like tight oil have moved down and to the left, or to the lower-cost portion, on the supply curve. Fiscal terms and geopolitical conditions can have an outsized impact on the cost of supply and are another way in which individual assets can move left or right on the supply curve relative to other assets.

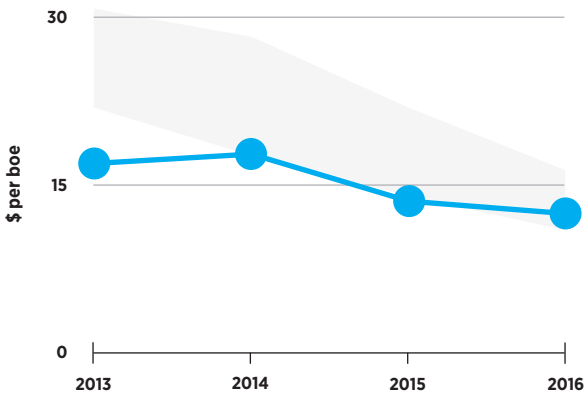
11 IHS, *Annual Long-Term Strategic Workbook*, May 2017, copyright IHS 2018, used with permission.
12 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

Over the past few years, technological advances across the asset classes in data analytics, completion optimization, enhanced oil recovery and automation have enabled the flattening and shifting down of the entire supply curve triggered by tight oil innovation (see chart at right). The lengthening and flattening of the supply curve indicates higher productivity of marginal investments. Less investment is needed to achieve the same level of production as before, all else being equal. Investment has been optimized and redirected to higher-productivity opportunities. Because of the increased competitiveness, there is a heightened focus on improving efficiency, increasing margins and getting production to market in the most cost-effective fashion.

chevron's cost-reduction activities

We've reduced our unit production cost by 30 percent, a savings of more than $5 per barrel relative to 2014.

production cost



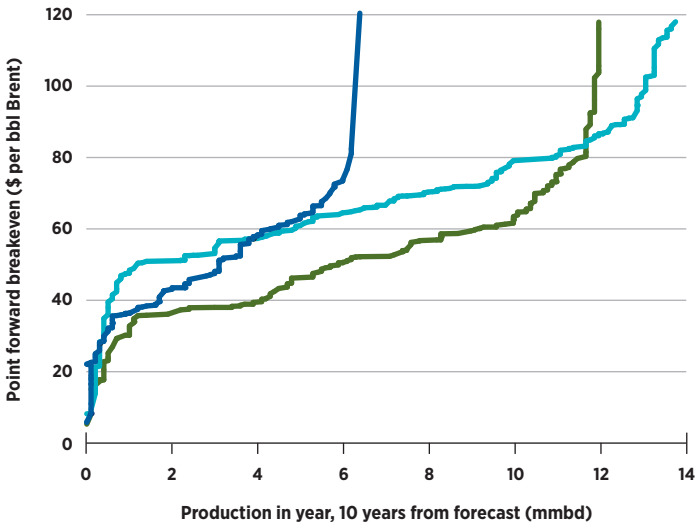
Source: Supplemental information on oil and gas producing activities in 10-K, 20-F.

boe = barrels of oil-equivalent

Production cost is one component of a breakeven calculation. For a further discussion of breakeven prices, see Energy Economics, *Tight oil market dynamics: Benchmarks, breakeven points, and inelasticities*, 2017.

In the current low-price environment, we are expanding our cash margins. In 2016, we delivered our drilling program for about $1 billion less than the same footage would have cost in 2015.

change in global cost curve with development of U.S. tight oil



Point forward breakeven is the amount of capital needed to produce the resource from today forward. This differs from full-cycle breakeven, which "includes all costs for developing a new field." For a further discussion of breakeven prices, see Energy Economics, *Tight oil market dynamics: Benchmarks, breakeven points, and inelasticities*, 2017.

Source: Wood Mackenzie, *The global oil cost curve: can US tight oil fill the supply gap?* February 2017.

mmbd = million barrels per day

bbl = barrel

modeling future supply of oil, gas and refined products

Each year, Chevron develops a range of long-term oil, gas and refined product supply scenarios to inform our views on prices, test our strategies and assess business risks. This process involves our proprietary view of the principal drivers of supply growth, including:

- Resource supply curves
- Production constraints
- Capacities of liquefied natural gas plants, regasification facilities and refineries
- Fiscal and financial requirements
- Geopolitical trends and shifts

Given the complex set of variables and the uncertainties associated with forecasting long-term supply, we routinely examine multiple scenarios and assess our forecasts against third-party perspectives.

A factor that contributes to the need for ongoing investment in oil and gas is the continued need for maintenance and investment in existing assets. The production profile for a well, a field or a geography depends on geological circumstances, engineering practices and government policies, among other things. According to Wood Mackenzie, the non-OPEC historical decline rate average is 6 percent, and the OPEC decline, based on available data, is estimated to be about 2 percent.[13]

One estimate for the average aggregate global capital-assisted production decline rate is about 3 percent annually, which creates a forecasted gap of about 42 mmbd by 2040 in the IEA's NPS.

Because of recent cost reductions and production efficiency gains, less investment is needed than in the past to maintain production levels—but sizable investment is still required.

We analyze the supply gap to forecast which types of resources will be needed in the future. Typically, the most economical barrels are produced from reinvesting in existing production to minimize natural decline.

Gas

As with oil, we analyze future gas supply needs against demand growth in the context of a supply curve to forecast future economically competitive sources of supply for liquefied natural gas (LNG), as shown in the chart to the right, below.

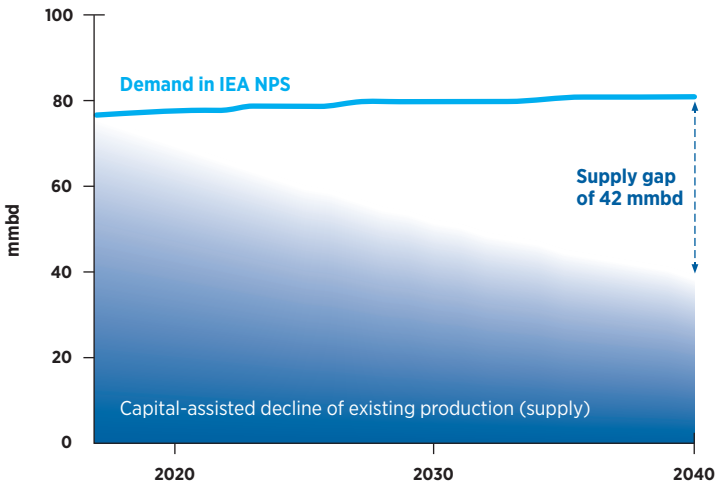
Natural gas benefits from abundant new supplies that have been discovered in the past decade, in large part due to technology advances. The IEA projects natural gas to be the fastest-growing source of fossil fuel through 2040, becoming the second-largest fuel source in the world after oil. Gas markets are priced regionally, and Asia is the market with the greatest forecasted growth. There is not enough gas supplied via pipeline to satisfy the anticipated demand, and thus Asia is expected to import LNG. This is one reason LNG is predicted to be the fastest-growing source of supply within the gas sector.

The availability of low-cost natural gas has resulted in the development of projects in the United States to both utilize natural gas and export LNG. In addition, gas from many other countries around the world, such as Australia and Russia, has also been dedicated to LNG export projects.

13 Sources, as modified by Chevron Corporation: IEA, *World Energy Outlook 2017*, iea.org/weo2017/; oil production decline rates based on data from Wood Mackenzie, *Non-OPEC Decline Rates: Lower for Longer*, August 2017, and *Oil Supply Tool*, October 2017.

Decline rates include capital assistance for the base production. Changes in the assumed decline rates can change the calculated supply gap.

supply gap created by decline of oil production and increase of demand from IEA's NPS

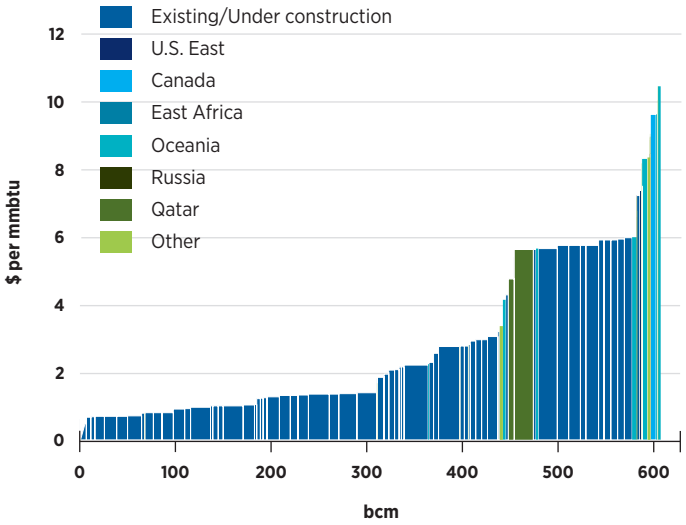


Decline rates can vary significantly across type of asset, geography, individual company and level of investment made to reduce decline rates.

Sources, as modified by Chevron Corporation: IEA, *World Energy Outlook 2017*, iea.org/weo2017/; oil production decline rates based on data from Wood Mackenzie, *Non-OPEC Decline Rates: Lower for Longer,* August 2017, and *Oil Supply Tool*, October 2017.

mmbd = million barrels per day

LNG supply stack for deliveries to Japan in 2025



Deliveries = Delivered Ex Ship at named port of destination.

Source: Wood Mackenzie, *Global Gas Markets Long-Term Outlook: Base Case – H2 2017,* February 2018.

bcm = billion cubic meters

mmbtu = million British thermal units

Refined product supply
Global refining distillation capacity is about 98 mmbd, with another 3 mmbd to 4 mmbd of additions planned in the next few years in line with anticipated demand growth. Utilization averaged 83 percent in 2016.[14] Most of the capacity growth is expected in Asia, where the majority of the demand growth is expected to occur, as the base of refined product supply often develops to satisfy regional demand. Continued investment in refinery conversion capacity, such as coking and hydrocracking units, is required to meet the projected product demand mix in the future. A modest amount of the incremental demand for transport fuels is expected to be met with anticipated growth in biofuels supply.[15]

3.2.6 How Chevron approaches commodity prices

We analyze commodity prices with and without climate change and other policy impacts. Commodity price is set at the intersection of supply and demand, where the marginal or last producer can enter the market and still earn a reasonable market rate of return.

We think about market behavior and prices in both the near and the long term.

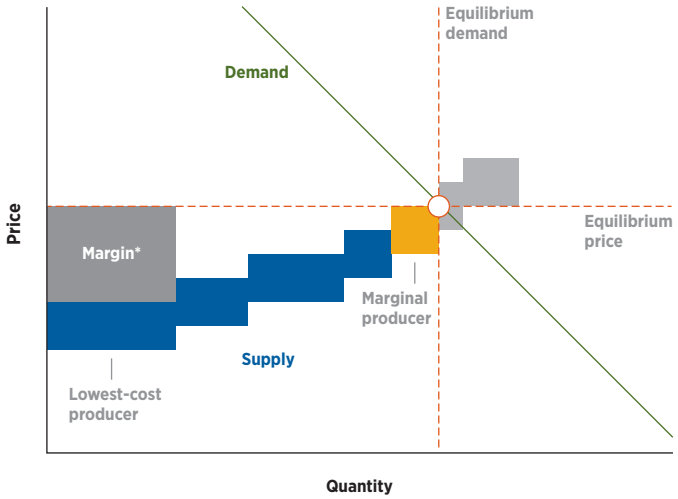
- **Near term:** Markets are primarily characterized by the existing fixed capital stock, which was determined by past capital investment decisions; capital is less mobile in the short term. Thus, new investment cannot bring new supply to the market to affect price in the short term. For example, developing a new conventional oil field typically can take three to 10 years, depending on the asset type and regulation. Increasingly, for now, it is on the shorter end of the range.
- **Long term:** Competitive markets are characterized by mobility of capital investment. Over the long term, prices are determined where long-term supply and long-term demand curves intersect at a point that reflects the marginal operating costs, the investment costs on both the supply side and the demand side, and a minimum rate of return.

commodity price forecasts

Our comprehensive, proprietary forecast of commodity prices drives our strategic and business planning. Because price is determined in a competitive marketplace, scenarios are used to reflect market uncertainties, generating low-, medium- and high-price trajectories. Our price outlooks cover a wide range of oil prices, natural gas prices, and costs of goods and services, among other considerations. These forecasts reflect long-range effects from population and economic growth, renewable fuel penetration, energy efficiency standards, climate-related policy actions, and demand response to oil and natural gas prices.

We analyze commodity prices with and without climate change and other policy impacts.

example long-run oil supply and demand curves



Note: For illustration only. Not drawn to scale.

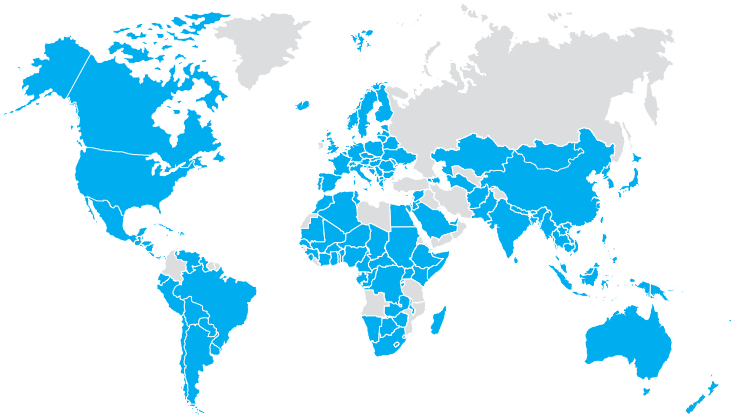
Producers with costs lower than the marginal producer—lower and to the left on the blue stack—produce and have larger margins than the marginal producer, in yellow. Producers with costs higher than the marginal producer—higher and to the right on the gray supply stack—typically would not develop assets.

*Margin is shared between all parties involved in production.

14 IHS, *Refining and Product Markets Annual Strategic Workbook*, copyright IHS 2018, used with permission.
15 Ibid.

Analyzing the impact of the Paris Agreement
Efforts to meet the Paris Agreement goals may include different policies—such as carbon pricing, efficiency standards and renewable energy policies—that can affect supply, demand and commodity prices. Impacts can be analyzed using processes described previously. Since going into force in November 2016, 174 countries, representing more than 88 percent of global GHG emissions, have formally endorsed the Paris Agreement.

countries that have ratified the paris agreement



As of February 15, 2018.

Sources: United Nations Framework Convention on Climate Change, unfccc.int/paris_agreement/items/9444.php; World Resources Institute, cait.wri.org/source/ratification/#?lang=en.

Chevron sees the Paris Agreement as a first step toward a global framework that is generally in line with the first of Chevron's Policy Principles for Addressing Climate Change (see right): Global engagement is needed to solve this global issue. As governments further consider pursuing specific policies and actions, Chevron remains committed to working with policymakers to help inform any decisions and actions. We work constructively with governments toward balanced policies to address potential climate change risks while providing access to reliable and affordable energy to support social and economic progress.

chevron's policy principles for addressing climate change

Chevron shares the concerns of governments and the public about climate change. We recognize the findings of the Intergovernmental Panel on Climate Change (IPCC) that the use of fossil fuels to meet the world's energy needs contributes to the rising concentration of GHGs in Earth's atmosphere, which contribute to increases in global temperatures. As we work to address climate change, we must create solutions that balance environmental objectives with global economic growth and our aspirations for a better quality of life for people across the world.

The following four principles have guided our actions and policy views on climate change for the past decade:

Principle One: Reducing greenhouse gas emissions is a global issue that requires global engagement and action.

Principle Two: Policies should be balanced and measured to ensure that long-term economic, environmental and energy security needs are all met; that costs are allocated in an equitable, gradual and predictable way; and that actions consider both GHG mitigation and climate change adaptation.

Principle Three: Continued research, innovation and application of technology are essential to enable significant and cost-effective mitigations to climate change risks over the long term.

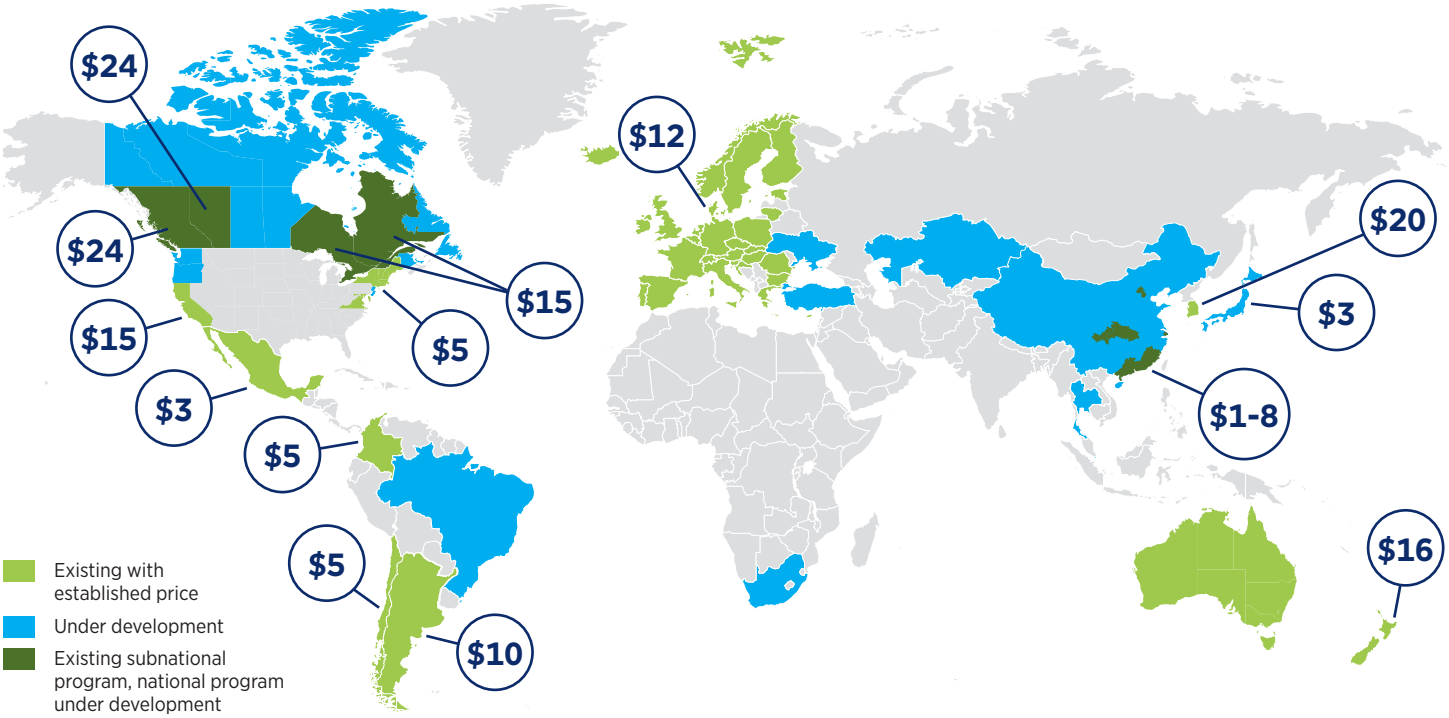
Principle Four: The costs, risks, trade-offs and uncertainties associated with GHG reduction and climate change adaptation efforts must be transparent and openly communicated to global consumers.

learn more > chevron.com/climateprinciples

intergovernmental panel on climate change

The IPCC Fifth Assessment Report concludes that there is warming of the climate system and that warming is due in part to human activity. Chevron does not conduct original climate research. We align our activity with the principles noted above and with the processes for governance, risk management and strategy outlined in this report.

development of carbon pricing programs and recent prices



Sources, as modified by Chevron Corporation: The World Bank, *State and Trends of Carbon Pricing 2017*; The World Bank, *Carbon Pricing Dashboard*, carbonpricingdashboard.worldbank.org/map_data; Energy Intelligence Group, *EI New Energy Global Carbon Prices*, February 15, 2018; IHS Markit, *China Carbon Markets Tracker*, January 2018, copyright IHS 2018, used with permission.

The timing, scope and scale of adoption of policies to support the goals of the Paris Agreement will vary and could have direct and indirect impacts on the company.

- **Direct impacts or costs (e.g., impacts on production, refining and fuel costs)** can result from policies that affect the cost of supply or manufacturing, such as a price on carbon in the form of a carbon tax or a cap-and-trade system. These impacts are dependent on variables such as competitive position and ability to recover costs, discussed in more detail on the following page.
- **Indirect impacts or costs** can result from policies that affect demand for our products, such as efficiency standards, renewable portfolio standards and policies that change the relative price of different fuels, as discussed in how Chevron approaches energy demand drivers in Section 3.2.3 on Page 13.

Our expectations regarding the impacts of these policies are incorporated into the previously described proprietary models that forecast demand, energy mix, supply and prices.

forecasting future carbon prices

Each year, Chevron's corporate experts and regional operating personnel contribute their analyses of policy developments to develop a range of carbon price forecasts. The forecasts are used as inputs to proprietary outlooks on energy mix, oil, gas, and refined product supply and demand and are also built into our business plans, impairment reviews and analyses of investment opportunities. Given the variable state of GHG regulation around the world, this outlook is framed on a jurisdictional, year-by-year basis.

The process involves developing our proprietary view of the principal drivers of carbon prices, which may include:

- Emissions limits
- Economic indicators, such as GDP growth and industrial activity
- Energy mix
- Abatement opportunities, such as fuel switching, methane reductions, and carbon capture and storage
- Limits on prices, like price floors and ceilings
- Interaction with other policies, like renewable and efficiency standards
- Interaction with other markets, such as offsets

We routinely examine alternative scenarios and assess our views and forecasts against available third-party perspectives. We analyze how various indicators may combine to accelerate or decelerate trends, and we use scenarios to stress-test our reference-case projections.

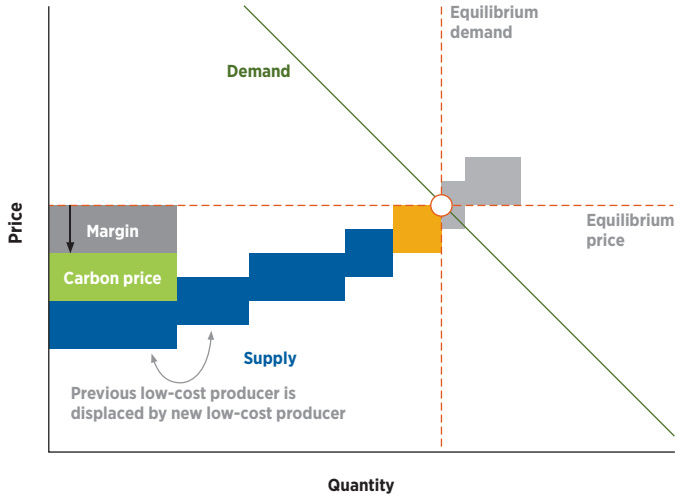
In addition to carbon prices, we forecast potential compliance and investment costs associated with new and potential climate change–related laws and regulations.

Carbon pricing impacts on commodity prices
In some jurisdictions, Chevron is exposed to direct financial costs relating to GHG and climate regulation. Some of the most prominent are payments for emissions allowances under cap-and-trade systems and payments of carbon taxes. According to the World Bank, carbon pricing mechanisms are in place or under development in 42 national and 25 subnational jurisdictions around the world,[16] like those shown on the map on the previous page.

Carbon pricing can be applied to the production, refining and use of oil, natural gas and other refined products. The extent to which carbon prices affect commodity prices and margins depends on the ability to recover the costs in the market-place. Many jurisdictions take this into consideration in the context of local production and refining trade competitiveness.

Least ability to recover costs: If a carbon price is applied to a single producer or jurisdiction, the cost can erode margins and may make the supply/refining/sale uncompetitive.

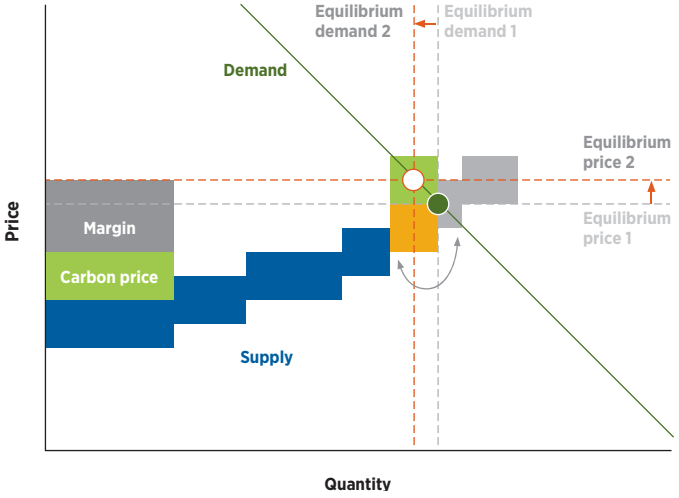
carbon price applied to producer below the marginal producer



Note: For illustration only. Not drawn to scale.

Some ability to recover costs: If a carbon price is applied to the marginal producer, the commodity price can rise to recover a portion of the cost or to the level at which the next producer becomes the marginal producer, whichever is less.

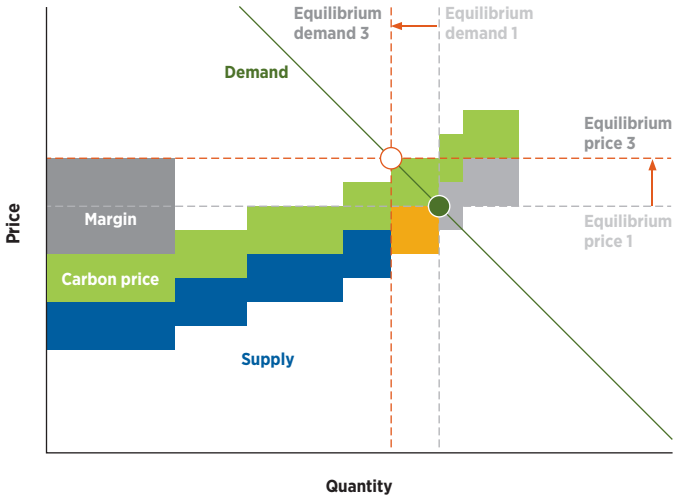
carbon price applied to the marginal producer



Note: For illustration only. Not drawn to scale.

Greatest ability to recover costs: If a carbon price is applied to all producers, the cost of supply rises, thus enabling the greatest cost recovery; however, less total supply is needed.

carbon price applied to all producers



Note: For illustration only. Not drawn to scale.

16 The World Bank, *State and Trends of Carbon Pricing 2017*.

In 2016, approximately 50 percent of Chevron's total Scope 1 and Scope 2 equity GHGs were in regions with existing or developing carbon pricing policies.[17]

Costs initially incurred by Chevron may ultimately be borne by customers through pricing of products sold in the competitive marketplace, mitigating their impact on our financial outcomes.

In addition to carbon pricing regulations, in some jurisdictions Chevron is subject to other GHG regulations, such as low-carbon-fuel standards and methane regulations.

carbon pricing*

Alberta	**Australia**
Our joint venture Upstream assets are subject to the economy-wide carbon price of CAD$30/tonne; a price on carbon has been in effect in Alberta since 2007. A performance benchmark is under development to protect the competitiveness of trade-exposed industries.	Our Upstream facilities are regulated by the federal Safeguard Mechanism that took effect in 2016, which caps facility-level emissions and requires emissions above this cap to be offset, creating an indirect carbon pricing policy.
British Columbia	**California**
Our Upstream assets are subject to the economywide carbon tax of CAD$30/tonne for combustion emissions in effect since 2008. Since 2016, LNG developments would be subject to an emissions cap with performance benchmarks to protect the trade competitiveness of the facilities.	Our Upstream oil assets, refineries, and refined gasoline and diesel sales are regulated under a cap-and-trade regime that took effect in 2012. In Upstream and refining, allowance allocations are aligned with a performance benchmark to consider competitiveness of trade-exposed industries. All fuel suppliers are covered by the regulation for refined product sales.
Canada Federal	**Colombia**
The federal government proposed a carbon tax of CAD$10/tonne starting in 2018, and rising to CAD$50/tonne in 2022, that may be met with an equivalent program at the provincial level. Provinces may use the revenue generated as needed, including to protect trade-exposed industries.	Our fuel supplies, along with others sold in the country, are subject to a $5/tonne carbon tax in effect since 2017. Alternatively, we can sell carbon-neutral fuel via the use of offsets.
EU	***Kazakhstan***
Our U.K. offshore oil fields are regulated under the EU cap-and-trade system in effect since 2005. Regulated assets receive an allowance allocation that aligns with a performance benchmark that considers the competitiveness of trade-exposed industries.	Our joint venture Upstream assets are regulated under a cap-and-trade regime that is scheduled to restart in 2018. Allowance allocations are aligned with a performance benchmark to consider competitiveness of trade-exposed industries.
Korea	***Singapore***
Our joint venture refinery is regulated under a cap-and-trade system in effect since 2015. Allowance allocations are aligned with a performance benchmark to consider competitiveness of trade-exposed industries.	A proposed carbon tax of SGD$5/tonne would be applied to our joint venture refinery.
Others	
Jurisdictions such as China, Mexico, Thailand, Brazil and the state of Washington are in the process of analyzing or developing carbon pricing programs. Coverage and other details of programs are still under consideration.	

**Italics* indicates a policy is under development.

17 Scope 1 includes direct emissions from sources within a facility. Scope 2 includes indirect emissions from electricity and steam that Chevron imports.

biofuels*

California

A low-carbon-fuel mandate, in effect since 2010, applies to all fuel suppliers in California and sets carbon-intensity standards for gasoline, diesel and the fuels that replace them.

Canada Federal

A federal low-carbon-fuel mandate is being discussed.

Colombia

A renewable-fuel-blending mandate, in effect since 2001, applies to all fuel suppliers and requires that volumes of biofuels, if available domestically, be blended into motor fuels.

Malaysia

A renewable-fuel-blending mandate, in effect since 2014, applies to all fuel suppliers and requires that volumes of biofuel be blended into diesel fuel.

Oregon

A renewable-fuel-blending mandate, in effect since 2008, applied to all fuel suppliers and required that volumes of biofuels be blended into gasoline and diesel fuels. A low-carbon-fuel mandate replaced the renewable-fuel-blending mandate in 2016.

Philippines

A renewable-fuel-blending mandate, in effect since 2007, applies to all fuel suppliers and requires that volumes of biofuels be blended into gasoline and diesel fuels.

Thailand

A renewable-fuel-blending mandate, in effect since 2002, applies to all fuel suppliers and requires that volumes of biofuels, if available, be blended into diesel fuel.

U.S. Federal

A renewable-fuel-blending mandate, in effect since 2006, requires the introduction of increasing volumes of biofuels into the U.S. fuel supply. This obligation is applied to all refiners/importers of gasoline and diesel fuels.

Washington

A renewable-fuel-blending mandate, in effect since 2008, applies to all fuel suppliers and requires that volumes of biofuels be blended into gasoline and diesel fuels. A low-carbon-fuel mandate is currently being discussed.

**Italics* indicates a policy is under development.

methane

California

Chevron's California Upstream operations are subject to a methane rule that requires leak detection and repair and storage tank and other equipment controls. Most requirements will be in effect starting in 2018 and apply to both new and existing facilities.

Canada Federal

The federal government has agreed to work with provinces to develop regulations, including limiting use of pneumatic devices, to reduce methane emissions by 45 percent by 2025. Proposals include leak detection and equipment controls, most of which would come into effect between 2020 and 2023. An Alberta plan includes offset protocols for equipment conversions and gas conservation. Initial voluntary actions will be followed by mandatory design standards in 2020.

Colorado

Our Upstream operations are subject to a methane rule that requires leak detection and repair and storage tank and other equipment controls. The rules apply to new and existing facilities and have been in effect since 2014.

Ohio

Upstream facilities operate under standard-permit conditions (general permit), in effect since 2015, which control air emissions, including methane.

Pennsylvania

Pennsylvania released a draft final general air permit in 2017 that requires methane-leak detection and repair and other equipment controls. If adopted, all new general permit requests would follow the requirements.

U.S. Federal

Chevron's Upstream and Midstream assets are regulated under the Clean Air Act for new and modified sources, in effect since 2016. Operations on federally managed lands are regulated under the Bureau of Land Management's 2016 rule. This rule is under legal and administrative review. Methane is regulated as a co-benefit of volatile organic compound regulation in ozone nonattainment areas for both new and existing sources, as well as under several state rules.

3.3 managing chevron's portfolio

Chevron aims to deliver industry-leading results and superior stockholder value in any business environment. Forecasts suggest that oil and gas demand will continue to grow, not only because of population and economic growth, but also because of the scale, reliability and affordability that oil and gas deliver. Given these forecasts, Chevron will continue to develop resources to fulfill this projected demand. At the same time, we maintain flexibility in our portfolio and continually examine ways to adapt investment patterns in response to changing policy and demand. Our experience indicates that superior financial performance is more achievable through active and dynamic portfolio management—including allocating capital where highest predicted returns are forecasted—than through presetting targets for certain types of assets (for example, a targeted percentage of renewables within our portfolio).

In this section, we outline how climate change risks are strategically managed, and we provide examples of how Chevron has aligned specific segments of our portfolio in response to current market conditions.

cost forecast vs. shadow price

Our business plans, impairment reviews, reserve accounting and investment analysis include jurisdiction-specific carbon cost forecasts based on the projected actual cost of a specific asset. This is different from a "shadow" carbon price, which assumes a hypothetical price of carbon for investment analysis purposes. Similar to our forecast of commodity prices, the carbon cost forecasts used in our business are calculated using our dedicated resources, including proprietary information, modeling and analysis. The proprietary information and the analysis that go into these decisions are important to Chevron's overall strategy, and attempts to force disclosure of our carbon cost forecasts, if successful, could erode our competitive advantage.

3.3.1 Business planning

All business units incorporate carbon costs and anticipated capital and operating expenditures related to carbon issues in multiple ways:

Business plans: Business plans are generated to forecast cash flows. In jurisdictions where regulations that impose a carbon price currently exist, they are included in business plans; in jurisdictions where they do not yet exist, but are projected to be implemented in the future, they are included in the year the costs are forecasted to start.

- **Carbon-management plans:** Business units in jurisdictions with regulations that impose a carbon price go through an annual compliance-planning process with the goal of achieving the most efficient manner of compliance. Where we have multiple assets in a single jurisdiction, integrated plans are developed to optimize total compliance costs across the business. We develop marginal abatement cost curves for our facilities and compare the cost of internal reduction options with paying the tax or fees and purchasing offsets or allowances. The anticipated compliance costs, including investments to generate internal reductions, are included in business plans.

Impairment reviews: When triggering events arise, we perform impairment reviews to determine whether any write-down in the carrying value of an asset is required. Impairments could occur, for example, due to changes in national, state and local environmental laws, including those designed to stop or slow the production of oil and gas. Impairment reviews are based on assumptions that are consistent with the company's business plans and long-term investment decisions.

Reserves: When calculating reserves, we incorporate a cost of carbon in jurisdictions with enacted carbon pricing regulations.

the "stranded assets" theory

There has been recent public debate regarding a "carbon bubble" related to oil and gas reserves, which refers to the theory that some assets may become "stranded" as unproduced reserves become uneconomical due to potential future regulations. Although it is possible that not all oil and gas assets will get produced, as explained throughout this report, we take carbon prices into account where appropriate in our business planning to avoid having stranded assets. Additionally, the U.S. Securities and Exchange Commission's definition of "reserves" requires those assets to be economically producible as of a given date. The commodity price used in these calculations is the average of the first-of-the-month pricing of the prior year, projected forward as a "flat" unescalated price for the life of the field. For example, the 2017 commodity price used in reserve calculations is similar to the lower price indicated in the IEA's SDS; thus, current reserves estimates indicate that assets would not be stranded and there would not be a "carbon bubble" even in an aggressive climate change–response scenario such as the IEA's SDS.

3.3.2 Capital project approvals

Individual investments are developed, approved and implemented in the context of the strategic plan, segment-specific business plans and commodity price forecasts. Investment proposals are evaluated by management and, as appropriate, reported to the Executive Committee and the Board of Directors. The company's final investment decisions are guided by a strategic assessment of the business landscape.

Our internal carbon price outlook is considered in the economic evaluations supporting major capital project appropriations. In addition, a number of GHG-related factors are considered in project-appropriation assessments, such as:

- The annual profile of anticipated project GHG emissions (both Scope 1 and Scope 2)
- The assessment of the options for reducing GHG emissions and optimizing energy efficiency

You can learn more about what we are doing on carbon capture and storage, flare reductions, methane reductions, and efficiency in Section 4, Actions and Investments, on Page 35.

scope 1, 2 and 3 emissions

Scope 1 refers to direct emissions from sources within a facility.
Scope 2 refers to indirect emissions from electricity and steam that Chevron imports.
Scope 3 includes all other indirect emissions, such as the combustion of gasoline or diesel in cars and of natural gas in electricity generation and industrial use.

3.3.3 Priorities in the business

Upstream

We strive to ensure that our Upstream business provides competitive returns, regardless of commodity prices. We are focused on expanding cash and earnings margins by reducing operating costs, building efficiency into our day-to-day operations, increasing the reliability of our facilities and completing major capital projects under construction.

Our Upstream portfolio is anchored by key positions shown on the map below: oil and gas in Kazakhstan, Australian LNG, U.S. shale and tight oil, deepwater assets in the U.S. Gulf of Mexico and Nigeria, and oil fields in the San Joaquin Valley, California. These positions are supplemented by other competitive assets globally.

upstream asset locations and resources by asset class

Chevron's Permian Basin results exceeded expectations in 2017, driven by innovations in design and technology.

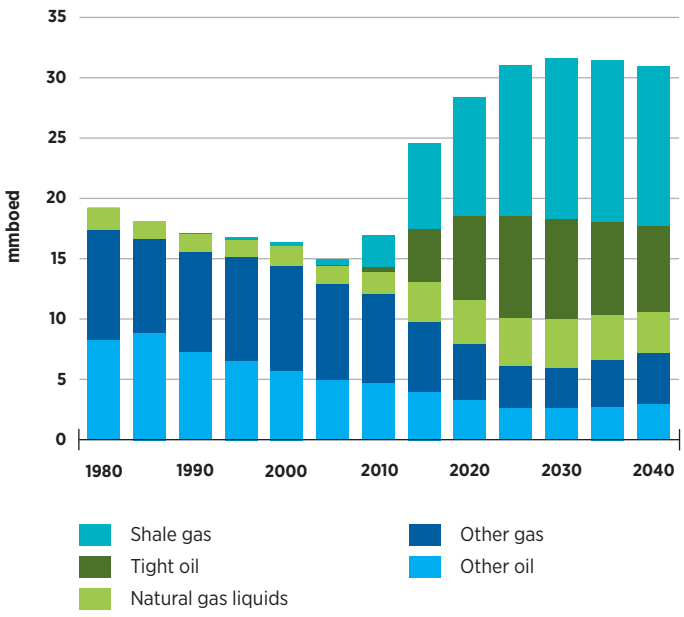
Unconventionals

According to the IEA's NPS, unconventional shale gas and tight oil represent the largest growth opportunities in the United States, as shown in the chart to the right.

According to the IEA, the "rise in shale gas projected from 2008 to 2023 would exceed the growth in gas output in the Soviet Union between 1974 and 1989."[18] In line with this forecast, Chevron has focused on developing positions in the unconventional sector. Spending is focused on the shale and tight formations in the Permian Basin in Texas and New Mexico, Marcellus and Utica Shale in the Appalachian region, the Vaca Muerta Shale in Argentina, and the Duvernay Shale in Canada.

In the Permian, our development strategy has reduced costs significantly and is estimated to generate an internal rate of return greater than 30 percent, at $50/barrel (West Texas Intermediate). In the other basins, the company is focused on identifying the regions best suited for development and bringing those resources to production safely, efficiently and economically. In addition to generating excellent returns, this asset class has a shorter investment cycle, providing quicker realization of cash and greater capital program flexibility. This flexibility enables Chevron to adjust investment patterns in response to anticipated demand and regulatory conditions. For example, approximately 75 percent of our capital spending in 2018 is forecasted to generate cash within two years.

future growth in unconventional resources in the United States under the IEA's NPS



Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
mmboed = million barrels of oil-equivalent per day

18 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

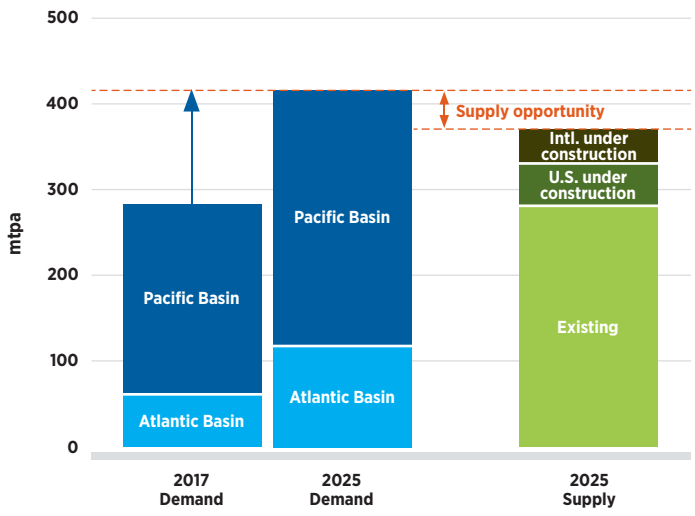
Startup of the third LNG train at the Gorgon Project was achieved in March 2017.

LNG

Chevron sees LNG as a key energy source for the future.

Chevron's global LNG portfolio is on the rise, with our Gorgon and Wheatstone projects in Australia ramping up production. These assets, as well as Angola LNG and Australia North West Shelf, connect the demand from primarily growing Asian markets with Chevron's gas resources. In addition to contributing to Chevron's current growth and providing a long-term source of reliable cash flow, Gorgon and Wheatstone present ongoing opportunities for de-bottlenecking and future brownfield investment, which will support value-driven growth.

LNG supply and demand



Source: Wood Mackenzie, *Global LNG Outlook 4Q2017.*
mtpa = metric tonnes per annum

downstream & chemicals value chains

U.S. West Coast

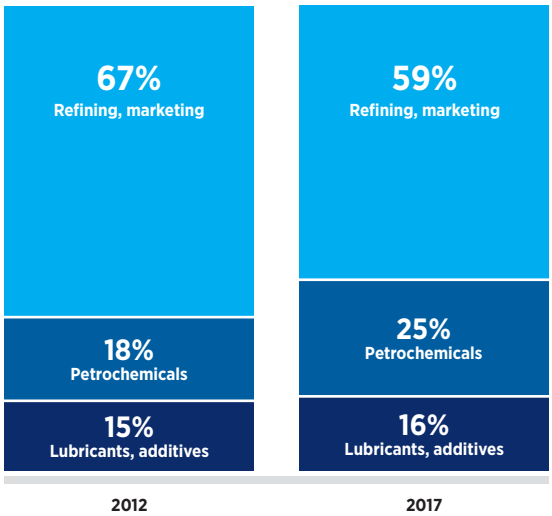
U.S. Gulf Coast

Asia-Pacific

Downstream & Chemicals
Chevron is growing earnings across the Downstream & Chemicals value chain by making targeted investments. In particular, we have been shifting our Downstream & Chemicals exposure to higher-return segments like lubricants, additives and petrochemicals while strengthening our fuels value chains in our refining and marketing business, as shown at right.

We have focused operations on areas of manufacturing strength—mainly on the U.S. West Coast and Gulf Coast and in Asia—and more closely aligned equity product supply with marketing sales, as shown in the maps above. Rather than compete on portfolio size, we have created tightly integrated supply chains in the markets where we operate, and we are well positioned to supply growing markets. Our focus remains on value, not volume. We will continue to improve our operations and to grow margins across the value chain.

downstream & chemicals capital employed



Chevron's 50 percent-owned Yeosu Refinery in South Korea remains one of the world's largest.

3.4 testing resilience of chevron's portfolio against the IEA's sustainable development scenario

We monitor both macroeconomic and microeconomic trends to assess the structural drivers of our projections for oil and gas demand, policy and technology risks, and commodity prices. Overall, current trends support our reference-case-demand views. Nevertheless, we regularly test downside scenarios, such as the IEA's SDS, against our baseline views.

The SDS reflects a view different from broadly expected future conditions and assumes the implementation of policies creating slower growth of energy demand and a more diverse fuel mix. The vision of the future upon which the SDS is based incorporates three major elements:

First, it describes a pathway to the achievement of universal access to modern energy services by 2030, including access not only to electricity, but also to clean cooking.

Second, it outlines a path to 2040 that achieves the objectives of the Paris Agreement, including a peak in emissions being reached as soon as possible, followed by a substantial decline.

Third, it posits a large reduction in other energy-related pollutants, consistent with a dramatic improvement in global air quality and a consequent reduction in premature deaths from household air pollution.

To test the SDS, we input its demand projections into our proprietary model of supply and commodity prices and tested our portfolio against the new price tracks generated to meet the SDS level of demand.

IEA scenarios

Current Policies Scenario (CPS): "an outlook on the basis of just those policies already in place."

New Policies Scenario (NPS): "derived from the policies already in place and those officially announced."

Sustainable Development Scenario (SDS): "an integrated approach to achieving internationally agreed objectives on climate change, air quality and universal access to modern energy."

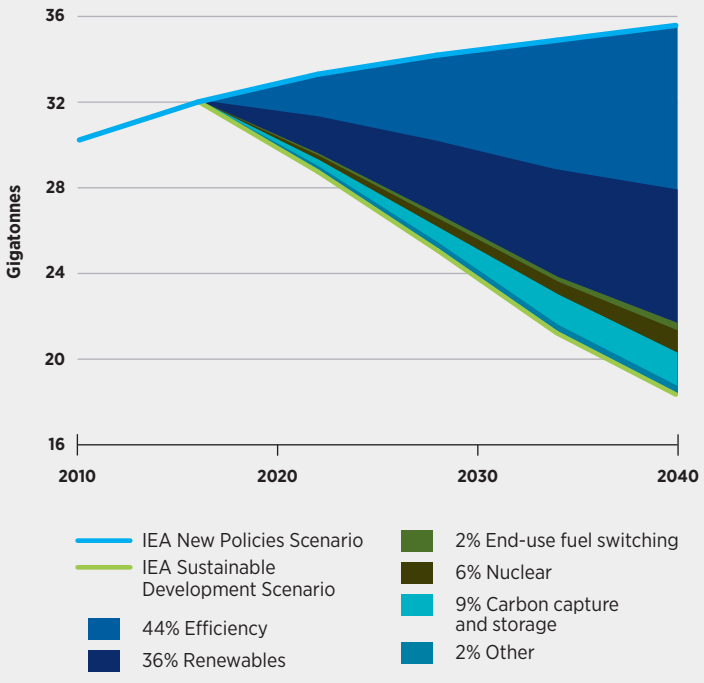
Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

energy demand

The SDS achieves lower emissions mainly through policies aimed at increasing energy efficiency and renewable energy sources, which limits energy demand growth in both the short and the long term, as shown in the chart below. The SDS assumptions that are relevant to the oil and gas sector include:

- Accelerated EV adoption to three times the level in the IEA's NPS
- Tightened efficiency standards for passenger cars, heavy-duty trucks and airplanes
- Displacement of short-haul aviation by high-speed rail and of motor vehicle transit by public transit
- Significantly expanded use of technologies like advanced biofuels, hydrogen and high-efficiency processes
- Nuclear power capacity 1.4 times higher than in the NPS
- Removal of governmental supports for consumer fuel
- Carbon pricing of more than $100/tonne

global CO_2 emissions reductions in the IEA's SDS



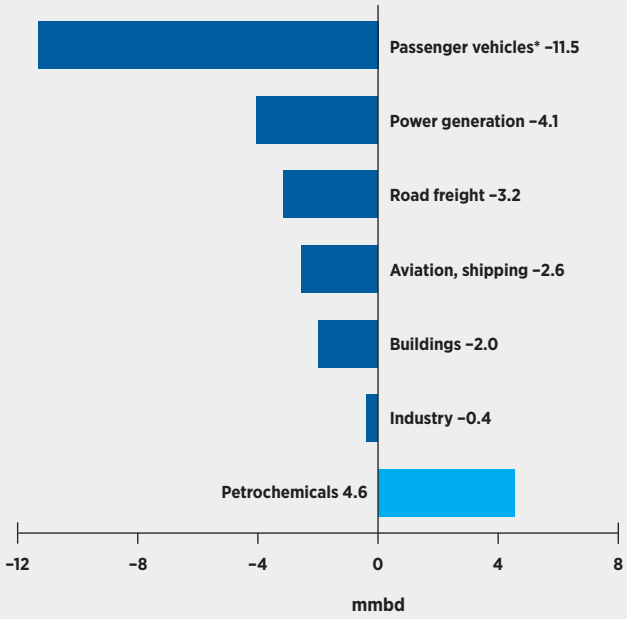
Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.

3.4 testing resilience of chevron's portfolio against the IEA's SDS

oil demand

The SDS projects that oil demand will decline by about 34 mmbd by 2040 relative to 2016. Although this is among the most aggressive third-party scenarios of future oil demand, the SDS still projects that oil will comprise about 23 percent of total energy demand. Relative to the IEA's NPS, there is less demand for oil in all uses except for petrochemicals, where the SDS projects demand to approximate the NPS estimate. Changes relative to demand in 2016 are shown in the chart below.

change in global oil demand 2016 vs. 2040 IEA's SDS demand

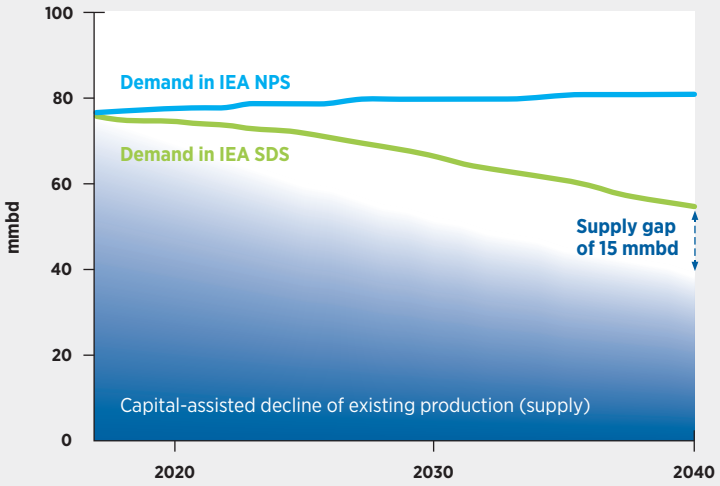


*Passenger vehicles include passenger cars, two- and three-wheelers, and buses.
Source: IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
mmbd = million barrels per day

oil supply

Lower demand implies that less supply is required. However, because of the natural decline in oil resources in the SDS, investment in the most competitive assets, such as existing production and brownfield opportunities, would still be needed. As shown in the chart below, assuming the previously discussed global decline rates, the supply gap in the IEA's SDS would be 15 mmbd; this compares with a gap of about 42 mmbd in the IEA's NPS.

supply gap created by decline of oil production and demand in the IEA's SDS



Decline rates can vary significantly across type of asset, geography, individual company and level of investment made to reduce decline rates.

Sources, as modified by Chevron Corporation: IEA, *World Energy Outlook 2017*, iea.org/weo2017/; oil production decline rates based on data from Wood Mackenzie, *Oil Supply Tool*, October 2017.

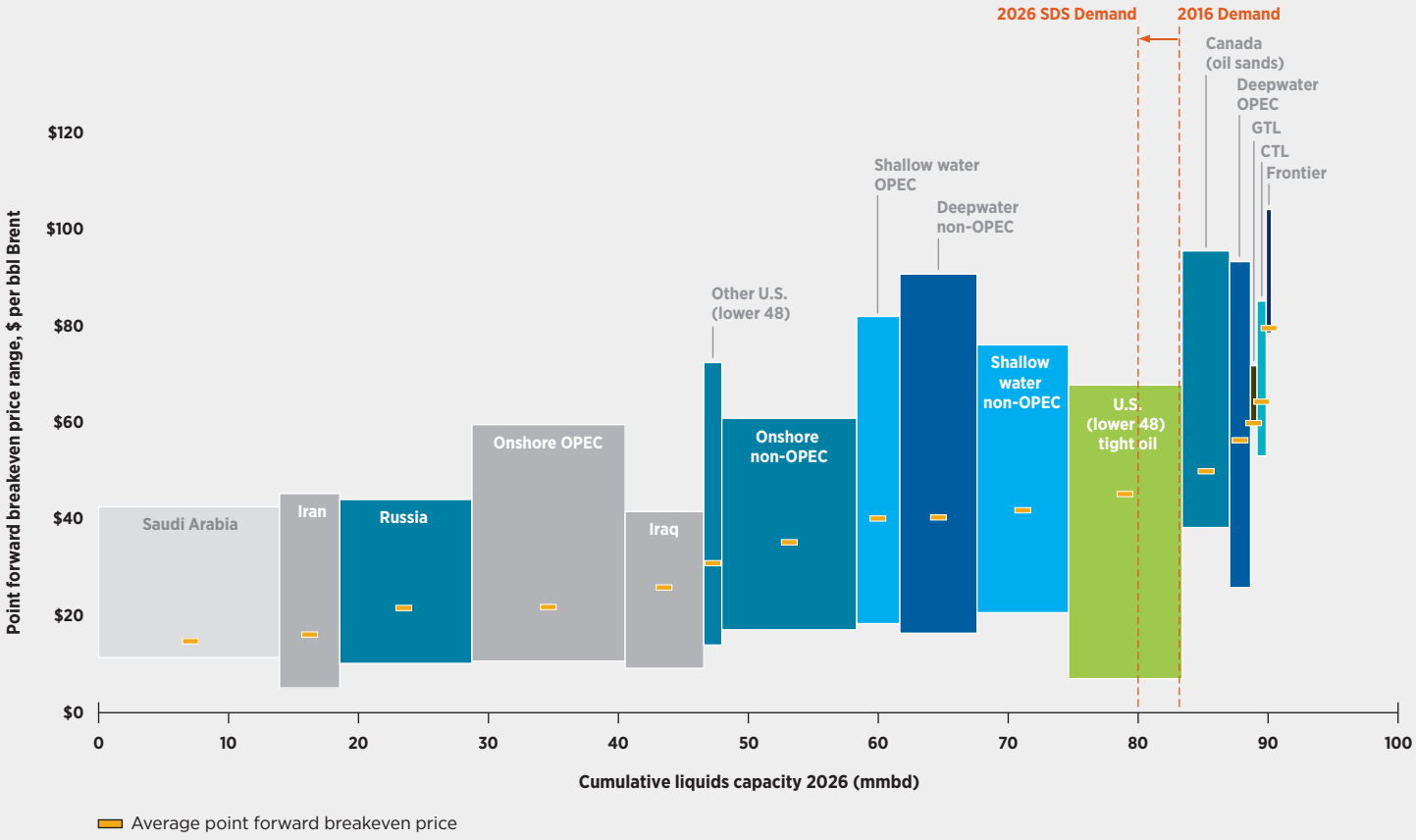
mmbd = million barrels per day

oil price

Shifts in demand would be expected to have a muted impact on oil prices because of the lower, flatter supply curve relative to previous years (see chart on next page). Prices do not necessarily rise to incentivize higher-cost production, but neither do they necessarily fall from their current levels. The resulting oil price is similar to our existing low-price track against which we analyze our portfolio. Typically, a lower price also results in lower development and operating costs, mitigating the impact on profitability to those producers that remain in the market.

3.4 testing resilience of chevron's portfolio against the IEA's SDS

2016 vs. 2026 IEA SDS demand against an example global liquids long-term supply stack in 2026



Liquids supply shown above includes crude oil, natural gas liquids (NGLs), coal-to-liquids (CTLs) and gas-to-liquids (GTLs).

Point forward breakeven is the amount of capital needed to produce the resource from today forward. This differs from full-cycle breakeven, which "includes all costs for developing a new field." For a further discussion of breakeven calculations, see Energy Economics, *Tight oil market dynamics: Benchmarks, breakeven points, and inelasticities*, 2017.

Sources, as modified by Chevron Corporation: IEA, *World Energy Outlook 2017*, iea.org/weo2017/; Wood Mackenzie, *Oil Supply Tool*, February 2017.

mmbd = million barrels per day

bbl = barrel

gas demand

Gas demand continues to grow in the SDS, which projects that demand in 2040 will be 15 percent higher than in 2016 and that gas will account for 25 percent of total energy demand. Most of the demand growth for natural gas occurs between 2016 and 2030, at which point demand plateaus.

gas supply

In the IEA's SDS, there is an ongoing need for new investment in gas supplies—Upstream, pipelines, liquefaction and regasification facilities—that according to estimates by the IEA totals $6.6 trillion over the period 2016 to 2024.[19] This compares with the estimated gas supply investment of $8.6 trillion for the IEA's NPS.[20] These investment estimates indicate new fields would need to be developed even in the SDS.

gas price

In the SDS, gas prices would be lower than in the NPS, but would still increase relative to current prices. The difference in prices relative to the NPS would depend on the region. For example, the price in the United States would not decrease as much as in Europe and Asia, where the NPS price is higher. The resulting gas prices in the SDS are comparable to those assumed in Chevron's low-price scenario against which we analyze our portfolio.

19 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
20 Ibid.

3.4 testing resilience of chevron's portfolio against the IEA's SDS

refined product supply and margins

Declining demand for transportation fuels in the SDS would require lower refinery runs and widespread rationalization in regions most impacted by demand declines. Margins would be pressured until sufficient capacity rationalization occurred to allow rebalancing of the market. Gasoline demand would decline more than would diesel and jet fuel demand, causing a decline in cracking margins for refineries that are optimized to maximize gasoline production. Flexible refineries that can shift production to diesel and jet fuel may gain a competitive edge.

In the first decade of the SDS, there would be a continuing need to create higher-value products from heavier feedstocks through advanced processing technologies like coking. Longer-term, declines in crude runs could limit feedstock availability to these process units, further eroding complex refining margins. In a perfectly competitive world, the least-efficient and -profitable refineries would rationalize, leaving a balanced market. However, given the strategic nature of refining, nonfinancial factors could prolong the overcapacity. Integration of our Upstream and Downstream value chains could become more important to maximizing enterprise value.

portfolio test

We tested our portfolio against the prices we projected under the IEA's SDS. Given Chevron's strategic focus on Upstream's most competitive assets and its actions to align Downstream & Chemicals around integrated and higher-margin activities, our portfolio is resilient, as measured against the SDS.

short-term impact (0–10 years)

Upstream: Our portfolio is diverse in maturity, geography and asset class. In the next few years, we are scheduled to complete the majority of the capital spending on a number of major capital projects, including the Kazakhstan Future Growth Project, Gorgon and Wheatstone. Although lower prices can mean less total cash flow, the Kazakhstan Future Growth Project, Gorgon and Wheatstone will generate cash even in an environment that lacks substantial price growth and will produce resources for decades to come. The base business in Kazakhstan delivers strong earnings and cash generation. Deepwater assets in the Gulf of Mexico and Nigeria and heavy oil in California also generate significant cash and earnings.

Having a presence in different countries enables us to make portfolio decisions that are best aligned with overall economic conditions. A strong Upstream base business acts as insurance against scenarios in which demand can be satisfied through reinvestment in existing assets. For investment decisions, limited price growth in the IEA's SDS would favor the development of brownfield opportunities and lower-cost, short-cycle capital investments versus long-cycle capital projects. Brownfield projects leverage previous investments and infrastructure and typically deliver relatively high-return, low-risk outcomes while returning cost of capital at oil prices of less than $40/barrel. Gorgon, Wheatstone and Kazakhstan will also present opportunities for future brownfield investments.

In addition to brownfield opportunities on existing assets, shorter-cycle, higher-return investments would be favored. The Permian Basin is a strong, short-cycle capital investment opportunity that gives Chevron the flexibility to adjust to changing market conditions. In 2017, we provided guidance for an internal rate of return on Permian investments of more than 30 percent, at $50/barrel (West Texas Intermediate). The typical profile of cumulative cash flow from production enables capital to be recovered quickly.

A diverse portfolio mitigates risk and enables us to take advantage of new opportunities that may arise from climate-induced changes in industry economics.

Downstream & Chemicals: The Downstream portion of our business is resilient in the short term due to actions we have taken to increase feedstock flexibility, such as our recent investments in Richmond, California, and Singapore. We have made targeted investments to strengthen our fuels value chains in our refining and marketing business, focusing on higher-return segments, such as lubricants, additives and petrochemicals, and divesting assets that did not strategically fit our portfolio, such as refineries in the United Kingdom, New Zealand and South Africa. The sale of the latter is currently underway.

Similar to Upstream, our Downstream assets benefit from having made the majority of their capital investments in the past, including completion of the Richmond Refinery Modernization Project, which is expected in 2019.

Petrochemical demand is expected to grow even in the IEA's SDS, which will help maintain earnings from the chemical business.

A diversified business helps mitigate earnings decline in the short term, but overall investment would likely be curtailed.

3.4 testing resilience of chevron's portfolio against the IEA's SDS

long-term impact (10-plus years)

Upstream: In the IEA's SDS, we anticipate there will continue to be competitive investment opportunities like brownfield investments at Wheatstone and Gorgon and tight oil projects like the Permian. Competition for lower-cost barrels would likely be intense as companies competed to fill production declines by investing in assets further down the supply curve. Sustained lower prices would lower overall investment costs and could reduce available total cash flow, although margins would not necessarily be impacted, as costs generally follow price movements. In a case like the SDS, it would be prudent to continue to lower costs, maintain capital discipline and flexibility, track leading indicators, and test investment decisions against a range of prices.

Downstream & Chemicals: Declining demand for hydrocarbon transport fuel such as gasoline would result in lower crude-oil feed to refineries, causing refining margins to drop globally. Increased use of biofuels would displace some hydrocarbon transport fuel demand. Lower crude runs would also result in less feed available for conversion units found in more complex refineries, which would depress margins for high-conversion (for example, coking) refineries relative to simpler refining capacities. Refining investments would remain curtailed and focused on modest reconfiguration of existing facilities. Select regional petrochemical investments could continue as overall petrochemical demand still increases.

summary of portfolio test

Some assets could be exposed if we took no action, although most of our assets are competitive. We cannot forecast the exact speed of an energy transition or how it may happen, but, given the long-term, gradual nature of a potential transition to a lower-demand scenario, like the IEA's SDS, and our processes for tracking leading indicators and managing these risks, our ability to adjust is our best preparation to limit our assets being exposed.

3.5 a strategy to deliver stockholder value in all business environments

How the global energy landscape will evolve in response to growing energy needs and changing climate policy has always been uncertain. Energy transitions take time, and there are limited economic substitutes at scale for some oil and gas needs. This uncertainty is why we engage in a holistic study of supply and demand, and follow leading indicators such as policy developments, like those intended to support the Paris Agreement. Our planning process analyzes both the resilience of our current portfolio and the profitability of future investments under different scenarios. Climate- and carbon-related trends are important, as are many other factors related to supply, demand, technology and economic development. Chevron aims to deliver superior stockholder returns and provide reliable energy to sustain global development and economic growth. Planning our portfolio for an overly restrictive emissions scenario or a scenario in which energy demand growth is not fully accounted for with supply could result in missed opportunities. We take many steps, as outlined in this report, to understand the potential impacts of climate change on our business segments in order to maximize and protect stockholder value.

Our long history in the oil and gas sector convinces us that flexible investment strategies are the best way to maximize stockholder value, and setting targets, such as investing a predetermined percentage of renewables within our asset base, could limit our ability to select the most profitable energy development opportunities. Our present assets are well positioned to compete under multiple scenarios, even some of the most aggressive carbon-transition scenarios. Given the long-term nature of any possible carbon transition, it remains prudent to test a range of scenarios, monitor trends and adjust our portfolio over time. We do this as part of our normal business and strategy development. As we discuss in the next section of this report, we are also taking action to improve our operations to address climate change concerns while continuing to position ourselves as a leader in meeting global energy demand by investing in the future.

We take many steps, as outlined in this report, to understand the potential impacts of climate change on our business segments in order to maximize and protect stockholder value.

section 4

actions and investments

we take prudent, practical and cost-effective actions to address potential climate change risks as part of our commitment to running our business the right way and unlocking the potential for progress and prosperity everywhere we work

In this section, we highlight some of the actions we are taking in the areas of energy efficiency, carbon capture and storage, renewable energy, flaring reduction, methane emissions reductions, water resources management, and investment in the innovations and innovators of tomorrow.

4.1

energy efficiency

Chevron's Pipeline & Power organization collaborates with the company's Upstream and Downstream businesses to help lower their energy costs, test new technologies, achieve efficiency gains, manage emissions and improve power reliability.

Energy efficiency partnership

Chevron is a leadership sponsor of the Energy Efficiency Center (EEC) at the University of California at Davis. This partnership provides us with insights from the EEC's research efforts and from participants in different sectors of the energy efficiency industry. In 2009, Chevron provided a $2.5 million endowment for a permanent chair to head the EEC.

Energy savings

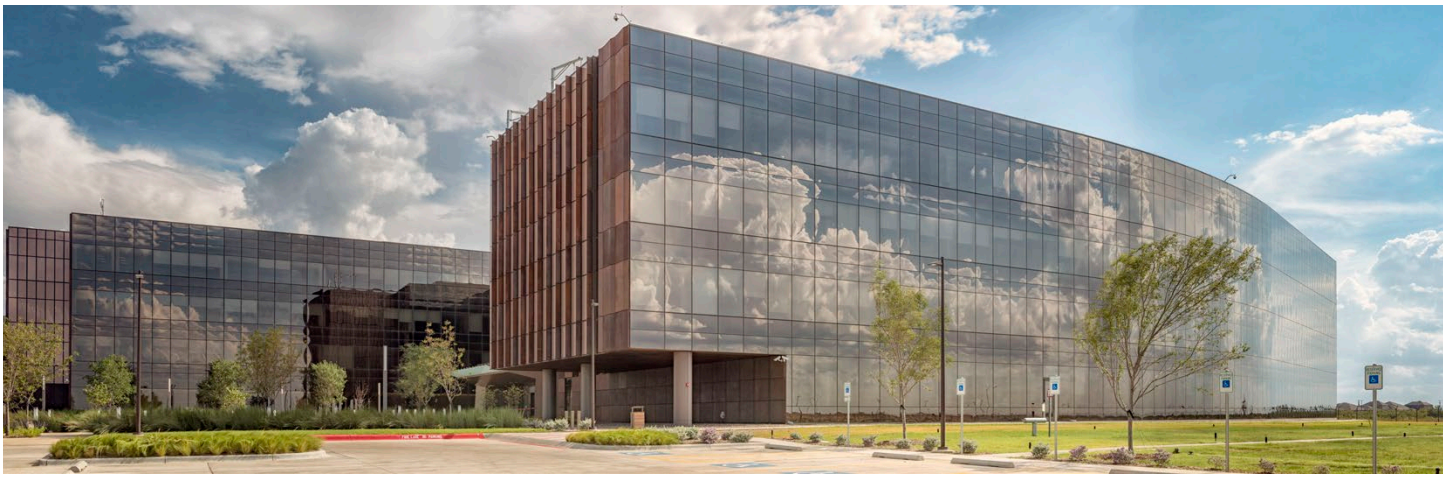
Chevron's Upstream operations manage energy efficiency by identifying, evaluating and implementing projects that will conserve energy. An example of success in reducing energy consumption within Upstream operations is our San Joaquin Valley business unit. Since 2014, this business unit's energy management projects have resulted in a mitigation of approximately 180,000 metric tons of GHGs, or the equivalent of the GHGs from the electricity used by approximately 22,000 U.S. homes for a year.[21] Another example of success is in the Gulf of Mexico, where power generation is optimized through the use of predictive analytics tools. Similarly, in our IndoAsia business unit, we reduced energy intensity by more than 27 percent between 2014 and 2016. This improvement was achieved in part through the establishment of the Integrated Optimization Decision Support Center, which monitors the day-to-day energy performance of surface facilities and provides recommendations for optimizing energy efficiency.

Cogeneration

Cogeneration is a fuel-efficient process that produces steam and electric power simultaneously, generating electricity and thermal energy more efficiently than traditional power plants. Chevron operates cogeneration units at some refineries, Upstream production facilities and other sites worldwide. In 2017, our cogeneration units had a combined electricity-generating capacity of 1,075 megawatts, enough to power approximately 870,000 U.S. homes for a year.[22]

21 According to the U.S. EPA, the U.S. national average grid factor is 0.000744 CO_2/kWh, epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, and per the EIA, *Frequently asked questions: How much electricity does an American home use?* eia.gov/tools/faqs/faq.php?id=97&t=3, "average annual electricity consumption for a U.S. residential utility customer was 10,766 kilowatthours (kWh)."

22 EIA, *Frequently asked questions: How much electricity does an American home use?* eia.gov/tools/faqs/faq.php?id=97&t=3.



In 2018, Chevron achieved LEED Gold Certification in New Construction for its campus in Midland, Texas.

green buildings

We strive to reduce the environmental footprint of our facilities by following frameworks such as the Leadership in Energy and Environmental Design (LEED) certification process, an internationally recognized system that certifies a building's environmental sustainability. Chevron has a number of LEED-certified buildings. In 2008, Chevron's office building in Covington, Louisiana, was the first in the state to earn Gold certification in the LEED program. In 2018, Chevron achieved LEED Gold Certification in New Construction for its campus in Midland, Texas.

4.2 carbon capture and storage (CCS)

CCS is part of a portfolio of emerging GHG-mitigation technologies that can help manage emissions in the future, although the economics of this technology remain challenging. According to the IEA, CCS is an important tool for mitigating GHG emissions and meeting Paris Agreement global warming targets in the 2030 to 2050 time frame.[23] The technical components of CCS, from CO_2 capture to transport and storage, are available now.

Chevron's participation in the development of policy frameworks for CCS spans more than a decade. Chevron participated in the development of the *Intergovernmental Panel on Climate Change Special Report on CCS*, the European Union's CCS Directive, Australian policy frameworks, Canadian CCS standards and the U.S. EPA's CCS guidance. The IPCC recognized Chevron experts for work on the CCS report and other IPCC assessments, which contributed to the IPCC being the recipient of the Nobel Peace Prize in 2007.

Chevron continues to manage its emissions profile and will deploy abatement technologies when they make sense for the business and for the applicable geological settings. For example, the Gorgon carbon dioxide injection project is anticipated to be the largest GHG emissions reduction project undertaken by industry globally. We are also participating in the Quest project through a joint venture in Alberta, Canada. We have invested about $1.1 billion in these two projects, and they are expected to reduce GHGs by about 5 million metric tons per year once operational, or an amount similar to the GHG emissions from the electricity used by approximately 620,000 U.S. homes in a year.[24]

Chevron has invested more than $75 million in CCS research and development over the past decade. Chevron also participates in joint-industry research projects to facilitate the development of CCS technologies that are economical, reliable and safe. The goals of the joint-industry projects are to reduce the cost of CO_2 capture through technology improvements and assure the long-term security of geologically stored CO_2. For instance, Chevron has a leadership role on all technical and policy teams of the CO_2 Capture Project, a group of major energy companies working together to advance the technologies that will underpin the deployment of industrial-scale CCS in the oil and gas industry.

23 IEA, *World Energy Outlook 2017*, iea.org/weo2017/.
24 According to the U.S. EPA, the U.S. national average grid factor is 0.000744 CO_2/kWh, epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, and per the EIA, *Frequently asked questions: How much electricity does an American home use?* eia.gov/tools/faqs/faq.php?id=97&t=3, "average annual electricity consumption for a U.S. residential utility customer was 10,766 kilowatthours (kWh)."

4.3

renewable energy

Chevron continues its commitment to understanding and evaluating the economic viability of renewable energy sources, including solar, wind, geothermal and biofuels. We conduct internal research and collaborate with governments, businesses and academia in researching and developing alternative and renewable energy sources.

Solar
Chevron's photovoltaic projects at Questa, New Mexico, and in the San Joaquin Valley, California, test and evaluate solar technologies. Project Brightfield, in Bakersfield, California, has evaluated seven photovoltaic technologies to determine the potential application of renewable power at other company-owned facilities. Chevron has also invested in five joint venture photovoltaic solar facilities, in California, Arizona and Texas, which, at peak capacity, generate a combined 73 megawatts of renewable energy, or enough electricity to power approximately 60,000 homes for a year.[25]

Wind
Our Casper Wind Farm, commissioned in 2009, has turned a former refinery site near Casper, Wyoming, into an 11-turbine, 16.5 megawatt–capacity wind farm, which, at peak capacity, produces enough electricity to power approximately 13,000 U.S. homes for a year.[26]

Geothermal
In 2012, Chevron invested in a 49 megawatt–capacity joint venture geothermal facility in California that produces enough electricity to power approximately 40,000 U.S. homes for a year.[27]

Biofuels
Chevron believes advanced biofuels can help meet the world's future energy needs if they are scalable, sustainable and affordable for consumers. That is why Chevron is working to develop solutions that meet those criteria under an effective policy framework.

Chevron is actively evaluating options for biomass processing as part of our transportation fuels businesses, particularly in California. To date, our work, as well as that of others, to produce second-generation biofuels that are economical at scale without subsidies has not been successful. This included creating a joint venture with Weyerhaeuser, then the largest landowner in the United States, to try to commercialize cellulosic biofuels. We are exploring leveraging our current manufacturing facilities to produce biofuels along with our traditional petroleum products.

Renewable diesel
Biofuels that complement conventional transportation fuels, such as renewable diesel, can play an important role in reducing the carbon intensity of transportation fuels while meeting the world's growing energy needs. Renewable diesel, also known as biomass-based diesel, is a hydrocarbon diesel vehicle fuel produced from nonpetroleum renewable resources such as vegetable oils (soy, corn, canola, etc.), animal and poultry fat, used cooking oil, municipal solid waste, and wastewater sludges and oils. In 2017, Chevron began to distribute diesel fuel containing between 6 and 20 percent renewable diesel from some of our California fuel terminals.

25 EIA, *Frequently asked questions: How much electricity does an American home use?* eia.gov/tools/faqs/faq.php?id=97&t=3.
26 Ibid.
27 Ibid.

4.4 flaring reduction

Since 2012, we have reduced flaring by 22 percent. We have developed internal country-specific plans to minimize gas flaring, and we are a member of the World Bank–led Global Gas Flaring Reduction Partnership. Chevron flares natural gas when required for safety and operational purposes and in areas where pipelines or other gas transportation alternatives do not exist.

At Tengizchevroil in Kazakhstan, in which Chevron has a 50 percent interest, we have achieved an 85 percent reduction in the volume of gas flared compared with 2000, through projects such as the four-year, $258 million gas utilization project.

Since 2008, activities carried out by the Nigerian National Petroleum Corporation/Chevron Nigeria Limited joint venture have reduced routine gas flaring by more than 90 percent in the Niger Delta. We have also made significant progress in reducing flare gas volumes in Angola through various projects.

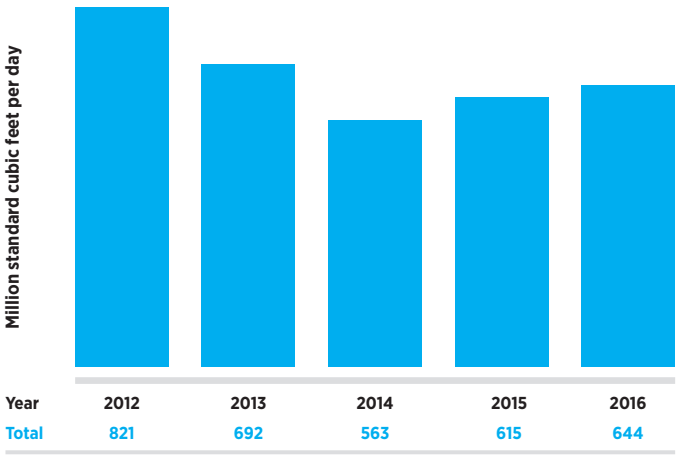
Our Nemba Enhanced Secondary Recovery Project reduced flaring at the South and North Nemba fields by almost 34 million standard cubic feet per day in 2016. In total, flare gas volume rates in Chevron's Angola operations have been reduced by more than 50 percent since 2012.

4.5 methane management

Methane accounts for approximately 9 percent of Chevron's total GHG emissions. Approximately one-quarter of the 9 percent is considered fugitive emissions, or leaks from equipment and piping; of the remaining emissions, most are generated by flaring and venting.

It is in Chevron's business interest to minimize fugitive methane and to maximize the volume of natural gas that we commercialize. We design, construct and operate our facilities with an eye toward reducing emissions from our operations, and we use design requirements to minimize fugitive emissions from our new major capital projects. We monitor and verify the integrity of our wells and production equipment with regular inspections and safety tests. To more efficiently track fugitive emissions, we use infrared cameras in select oil and gas operations around the globe to help pinpoint and remedy leaks. We continue to test and deploy new innovations to improve detection and reduction of emissions.

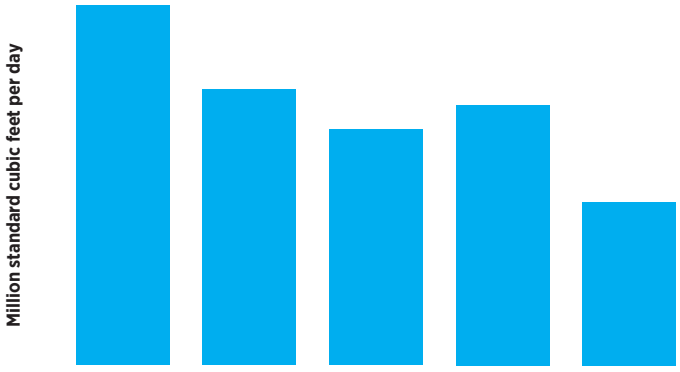
enterprisewide average flare gas volume rate direct, operated basis



Year	2012	2013	2014	2015	2016
Total	821	692	563	615	644

The 2016 enterprisewide flare gas volume rate increased due to the startup of major capital projects (MCPs). It is anticipated that the enterprisewide flare gas volume rate will decrease after steady-state operations of the MCPs are achieved.

Angola average flare gas volume rate direct, operated basis



Year	2012	2013	2014	2015	2016
Total	304	233	199	220	138

Chevron is a founding partner of the Environmental Partnership, led by the American Petroleum Institute (API). The partnership is an industry initiative with the goal of accelerating improvements to reduce methane and volatile organic compound emissions. The voluntary initiative, which launched in December 2017 and is composed of more than 25 operators, will initially focus on reducing emissions associated with the removal of liquid buildup in wells, retrofitting high-bleed pneumatic controllers with low- or zero-emitting devices, and implementing the monitoring and timely repair of fugitive emissions.

In addition, Chevron serves on the Industrial Advisory Board of the Methane Emissions Test and Evaluation Center (METEC), a Colorado State University and ARPA-E test facility that models a natural gas facility. The METEC is used to test methane-sensing technologies and evaluate performance.

4.6 managing water resources

Water plays a critical role in both the development and the refining of oil and natural gas. Chevron recognizes the value of water as a fundamental social, environmental and economic resource, and we strive to use the lowest quantity of fresh water practicable in our operations. We also seek opportunities to reuse water where operational, regulatory and business conditions permit.

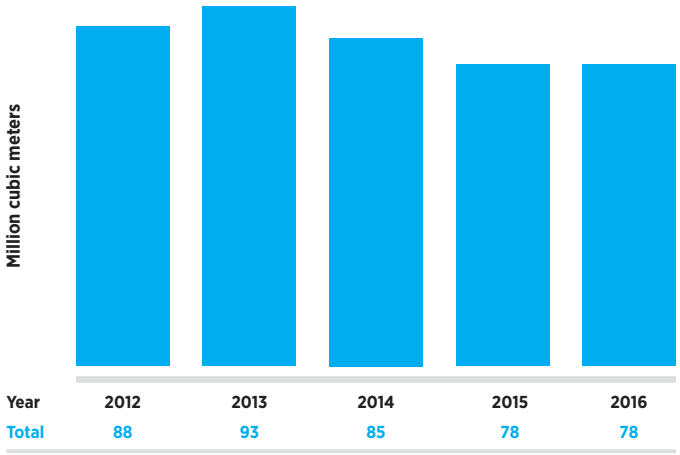
Chevron measures and reports on water withdrawn across the enterprise, including both fresh and nonfresh water, as shown in Section 5, Metrics, on Page 41. From 2012 to 2016, we reduced our fresh water withdrawn, as shown in the chart to the right, and, ultimately, our impact on the environment.

Chevron strives to reduce the amount of fresh water used in our hydraulic fracturing operations. Hydraulic fracturing involves injecting a mixture of fluids under high pressure to create hairline cracks in deep shale formations and release previously inaccessible oil and natural gas. Ninety percent of the injected fluid is water. In the Permian Basin, in lieu of fresh water, we use brackish water, when possible, which is not suitable for human consumption or agricultural use. As shown in the chart to the right, more than 90 percent of the water used in our well completions in the Permian Basin is from brackish water sources.

We also partner with local communities on reusing water. For example, our refinery in Richmond, California, partnered with the local utility district to construct a recycled-water facility. Approximately 60 percent of the water used by the Richmond Refinery is recycled, making it the largest user of recycled water in the San Francisco Bay Area.

From 2012 to 2016, we reduced our fresh water withdrawn, and, ultimately, our impact on the environment.

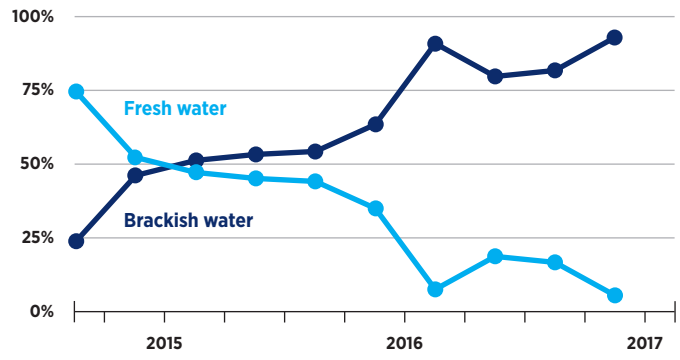
enterprisewide fresh water withdrawn



Year	2012	2013	2014	2015	2016
Total	88	93	85	78	78

Fresh water withdrawn from the environment is defined per local legal definitions. If no local definition exists, fresh water is defined as water extracted, directly or indirectly, from surface water, groundwater or rainwater that has a total dissolved solids concentration of less than or equal to 2,000 mg/L. Fresh water withdrawn does not include effluent or recycled/reclaimed water from municipal or other industrial wastewater treatment systems, as this water is reported under nonfresh water withdrawn, or water that is brought to the surface when extracting oil and gas.

water use in well completions
permian basin



4.7

investing in the innovations and innovators of tomorrow

The energy landscape is constantly evolving. That's why we take an open-innovation approach to technology development and invest in the next generation of energy technology and industry innovators.

Since 2013, we have invested more than $400 million in education, including major funding for programs that promote science, technology, engineering and math, skills that are needed for careers in the energy industry.

Through our research and development efforts, we systematically identify, develop, qualify, integrate and deploy technology from our research, partnership, joint venture and venture capital investments. This approach gives Chevron access to innovative and value-creating ideas in oil and gas, as well as in the emerging energy landscape, and ensures that we can deploy the right technology in the right place at the right time. Since 2000, Chevron has invested more than $8.5 billion in research and development. This investment supports our businesses globally and is focused on protecting people and the environment, ensuring reliability, efficiency and productivity for our portfolio now and in the future.

In addition to investing in research and development, we invest in the next generation of innovators. Since 2013, our global investment in education has been more than $400 million, which included major funding for programs that promote science, technology, engineering and math (STEM), skills that are needed for careers in the energy industry. To help ensure that tomorrow's innovators are prepared for college and their future careers, Chevron invested in programs and partnerships, including Project Lead the Way, the Fab Foundation, the National Academy of Engineering, Achieve, the USA Science and Engineering Festival, and the U.S. News STEM Solutions Summit.

As part of our University Partnerships and Association Relations (UPAR) program, we provide multifaceted support to more than 130 colleges, universities and associations around the world to help strengthen faculty, curriculum and student development. Chevron's global investment in education includes more than $15 million annually in UPAR to help develop academic excellence, research and alliances in STEM education.

4.8 cost-effective and impactful actions as an industry leader

Chevron has always been a leader in improving how reliable and affordable energy is developed and delivered to meet global demand. We have demonstrated our ability to innovate and respond to society's changing needs and expectations over our nearly 140-year history; we will continue to do so as we look forward.

section 5

metrics

performance data from 2016 corporate responsibility report

Environmental performance[28]	2016	2015	2014	2013	2012
Greenhouse gas					
EQUITY BASIS					
Net greenhouse gas (GHG) emissions, equity basis (million metric tons of CO_2-equivalent)[29, 30, 31, 32, 34]	60	59	56	57	57
Direct GHG emissions (Scope 1), equity basis (million metric tons of CO_2-equivalent)[29, 31, 32, 34]	60	59	56	57	58
GHG emissions from imported electricity and steam (Scope 2), equity basis (million metric tons of CO_2-equivalent)[29, 32]	4	4	5	5	4
GHG emissions from exported electricity and steam, equity basis (million metric tons of CO_2-equivalent)[29, 32]	4	5	5	5	6
GHG emissions from third-party use of our products, equity basis (million metric tons of CO_2)[33]	363	366	358	363	364
OPERATED BASIS					
Direct GHG emissions (Scope 1), operated basis (million metric tons of CO_2-equivalent)[29, 31, 32]	66	68	66	69	70
GHG emissions from imported electricity and steam (Scope 2), operated basis (million metric tons of CO_2-equivalent)[29, 32]	6	6	6	6	6
Methane emissions, direct, operated basis (million metric tons of CO_2-equivalent)[32]	6	6	6	7	6
Upstream GHG emissions intensity, direct, operated basis (metric tons of CO_2-equivalent per 1,000 barrels of oil-equivalent production)[32]	35	36	34	36	36
Refining GHG emissions intensity, direct, operated basis (metric tons of CO_2-equivalent per 1,000 barrels of crude oil and other refinery feed)[32]	33	35	37	38	38
Average flare gas volume rate, direct, operated basis (million standard cubic feet per day)[34]	644	615	563	692	821
Energy efficiency					
Total energy consumption, operated assets and nonoperated joint venture refineries (trillion BTUs)[35]	862	865	920	881	870
Total energy consumption, operated assets	703	711	744	697	690
Total energy consumption, operated assets and nonoperated joint venture refineries (million gigajoules)[35]	909	913	970	929	918
Total energy consumption, operated assets	742	750	785	735	728
Manufacturing Energy Index (Refining) (no units)[35]	84.2	85.2	87.6	88.8	88.9
Upstream Energy Intensity (thousand BTUs per barrel of oil-equivalent)[35]	338	330	341	344	325
Pipeline Energy Intensity (BTUs per barrel of oil-equivalent-mile)[35]	20.0	24.1	28.7	30.9	34.5
Shipping Energy Intensity (BTUs per metric ton-mile)[35]	43.4	32.4	48.7	50.5	55.2
Non-Manufacturing Energy Index (Oronite, Lubricants, etc.) (no units)[35]	75.6	79.1	86.0	81.9	73.7
Natural resources – water					
Fresh water withdrawn (million cubic meters)[36]	78	78	85	93	88
Fresh water consumed (million cubic meters)[36]	77	77			
Nonfresh water withdrawn (million cubic meters)[36]	38	43	41	37	35

footnotes are on Page 42

notes to page 41

28 This section reflects 2016 data collected as of April 14, 2017. All data are reported on an operated basis unless otherwise noted.

29 The World Resources Institute/World Business Council for Sustainable Development *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* defines three "scopes" that Chevron uses to report GHG emissions. Scope 1 includes direct emissions from sources within a facility. Scope 2 includes indirect emissions from electricity and steam that Chevron imports. Scope 3 includes all other indirect emissions. Chevron reports information related to two types of Scope 3 emissions: emissions associated with electricity and steam that Chevron exports to third parties and emissions from third-party use of our products.

30 The GHG performance data that reference this footnote were calculated by adding direct (Scope 1) emissions to indirect (Scope 2) emissions and subtracting indirect (Scope 3) emissions associated with electricity and steam that Chevron exports. Due to rounding, individual numbers may not sum to the total number.

31 Direct GHG emissions related to *production* of energy in the form of electricity or steam exported or sold to a third party have been included in the reported Scope 1 emissions to conform to the 2015 IPIECA Reporting Guidance.

32 Refinements were made in the data reporting for 2015 equity and operated GHG emissions.

2016 direct, operated GHG emissions decreased primarily due to variation in which assets were producing and to reduced power generation and steam demand. In addition, the execution of two flare reduction projects in our Nigeria/Mid-Africa and Southern Africa strategic business units contributed to the decrease.

The basis for the methane and GHG intensity data was changed from equity to operated.

All six Kyoto GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride, perfluorocarbons and hydrofluorocarbons—are included in Chevron's Scope 1 emissions. CO_2, CH_4 and N_2O are accounted for in Chevron's Scope 2 emissions and in Chevron's Scope 3 emissions related to the electricity and steam that Chevron exports to third parties.

The following entities are not currently included in the 2016 Chevron corporate GHG inventory: Chevron Phillips Chemical Co., the Caspian Pipeline Consortium, the Chad–Cameroon pipeline joint venture and other nonoperated assets in which Chevron has an equity interest of 16 percent or less.

Information regarding GHG emissions from Chevron Phillips Chemical Company LLC can be found at cpchem.com.

33 Chevron calculated emissions from third-party use of our products by multiplying total 2016 Upstream liquids and gas production by emissions factors from API's *Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry* (2004, 2009).

34 The 2016 enterprisewide flare gas volume rate increased due to the startup of major capital projects (MCPs). It is anticipated that the enterprisewide flare gas volume rate will decrease after steady-state operation of the MCPs is achieved.

The 2015 enterprisewide flare gas volume rate has been refined to include emissions from MCPs that started up in 2015.

In 2016, facilities under Chevron's operational control generated an enterprisewide average vent gas volume rate of 42 million standard cubic feet per day.

35 Total energy consumption for 2014 and 2015 has been restated to include consumption by Chevron Power and Energy Management.

2016 Pipeline Energy Intensity decreased due to changes in calculation methodology. 2016 Shipping Energy Intensity increased because we began reporting energy consumption from time-chartered vessels.

Refining energy performance is measured by the Manufacturing Energy Index (MEI), which is calculated using the Solomon Energy Intensity Index methodology. The MEI includes operated assets and nonoperated joint venture refineries.

Energy performance for Oronite, Lubricants, Americas Products and International Products is measured by the Non-Manufacturing Energy Index, which is the energy required to produce Chevron products compared with the energy that would have been required to produce the same products in 1992 (the index's base year).

36 Produced water is excluded from fresh water withdrawn, fresh water consumed and nonfresh water withdrawn.

Nonfresh water withdrawn totals decreased in 2016 (relative to prior years) due to lower demand from our operations in California and the Partitioned Zone between Saudi Arabia and Kuwait.

climate-related disclosure

Chevron recognizes climate change is a growing area of interest for our investors and stakeholders. The table below shows how the disclosures in this report align with the recommendations of the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD), as the TCFD has described the categories and where the relevant information can be found in this report. Further information can be found in Chevron's 2017 Annual Report Form 10-K, *Managing Climate Change Risks: A Perspective for Investors* (2017) and Chevron's Corporate Responsibility Reports.

TCFD recommendation*		disclosure	location
Governance			
Disclose the organization's governance around climate-related risks and opportunities.	(a) Describe the Board's oversight of climate-related risks and opportunities.	Board-level committees	1.2.1
		Public Policy Committee	1.2.1
		Other Board-level committees	1.2.1
		Board member expertise	1.4
	(b) Describe management's role in assessing and managing climate-related risks and opportunities.	Executive-level committees	1.2.2
		Strategy and Planning Committee	1.2.2
		Global Issues Committee	1.2.2
Strategy			
Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's business, strategy and financial planning where such information is material.	(a) Describe the climate-related risks and opportunities the organization has identified over the short, medium and long terms.	Chevron's strategic and business planning processes	3.2
	(b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.	Managing Chevron's portfolio	3.3
		Business planning	3.3.1
		Capital project approvals	3.3.2
	(c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Testing resilience of Chevron's portfolio against the IEA's Sustainable Development Scenario	3.4
Risk management			
Disclose how the organization identifies, assesses and manages climate-related risks.	(a) Describe the organization's processes for identifying and assessing climate-related risks.	Operational risk	2.1.1
		Physical risk	2.1.2
		Geopolitical and legislative risk	2.1.3
		Strategic risk	2.1.4
	(b) Describe the organization's processes for managing climate-related risks.	Operational risk	2.1.1
		Physical risk	2.1.2
		Geopolitical and legislative risk	2.1.3
		Strategic risk	2.1.4
	(c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.	Integration of climate change into risk management	2.1
Metrics and targets			
Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	(a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Metrics	5
	(b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions, and the related risks.	Metrics	5
	(c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	–	N/A

*See Section 6: About This Report.

section 6

about this report

This report covers our owned and operated businesses and does not address the performance or operations of our suppliers, contractors and partners unless otherwise noted. All financial information is presented in U.S. dollars unless otherwise noted.

This report contains forward-looking statements relating to the manner in which Chevron intends to conduct certain of its activities, based on management's current plans and expectations. These statements are not promises or guarantees of future conduct or policy and are subject to a variety of uncertainties and other factors, many of which are beyond our control, including government regulation and oil and gas prices. See Forward-Looking Statements Warning at the beginning of this report.

Therefore, the actual conduct of our activities, including the development, implementation or continuation of any program, policy or initiative discussed or forecasted in this report, may differ materially in the future. As with any projections or estimates, actual results or numbers may vary. Many of the standards and metrics used in preparing this report continue to evolve and are based on management assumptions believed to be reasonable at the time of preparation, but should not be considered guarantees. The statements of intention in this report speak only as of the date of this report. Chevron undertakes no obligation to publicly update any statements in this report.

this report and additional information on how we view and address climate change–related issues can be found at chevron.com/climatechange

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