Energy and carbon summary

Positioning for a lower-carbon energy future

Contents

Cautionary statement

Statements of future events or conditions in this report, including projections, targets, expectations, estimates, and business plans are forward-looking statements. Forward-looking statements can be identified by words such as believe, anticipate, intend, propose, plan, goal, project, predict, target, estimate, expect, strategy, outlook, schedule, future, continue, likely, may, should, will and similar references to future periods. Disclosure related to planned reductions in GHG intensity and water use in the near, medium and long term, including the timing, development and impact of specific technologies; the Outlook for energy including demand, supply, mix, and efficiency gains; projected CO_2 emissions trajectories and indicators for a 2°C pathway; potential impacts to upstream assets considering 2°C scenarios; cogeneration and advanced fuels efficiency and future capacity; adapting to shifts in product demand and positioning in a lower-carbon future; and facility resiliency, preparedness and response systems constitute forward-looking statements.

Forward-looking statements are based on the company's current expectations, estimates, projections and assumptions at the time the statements are made. Actual future financial and operating results, including expectations and assumptions concerning demand growth and energy source, supply and mix; amount and timing of emissions reductions; production rates, growth and mix; project plans, dates, costs, capacities and execution; applicable laws and government policies, including climate change; development of new technologies; and capital and environmental expenditures could differ materially depending on a number of factors. These factors include changes in the supply of and demand for crude oil, natural gas, and petroleum and petrochemical products and resulting price and margin impacts; transportation for accessing markets; political or regulatory events, including changes in law or government policy; the receipt, in a timely manner, of regulatory and third-party approvals; third party opposition to operations and projects; environmental risks inherent in oil and gas exploration and production activities; environmental regulation, including climate change and greenhouse gas regulation and changes to such regulation; availability and allocation of capital; availability and performance of third party service providers; project management and schedules; response to technological developments; operational hazards and risks; disaster response preparedness; and other factors discussed in Item 1A of Imperial's most recent annual report on Form 10-K.

Forward-looking statements are not guarantees of future performance and involve a number of risks and uncertainties, some that are similar to other oil and gas companies and some that are unique to Imperial Oil Limited. Imperial's actual results may differ materially from those expressed or implied by its forward-looking statements and readers are cautioned not to place undue reliance on them. Imperial undertakes no obligation to update any forward-looking statements contained herein, except as required by applicable law.

References to "oil" and "gas" include crude, natural gas liquids, bitumen, synthetic oil, and natural gas. The term "project" as used in this publication can refer to a variety of different activities and does not necessarily have the same meaning as in any government payment transparency reports.

Published April 2019

Letter from the Chairman

Canada has the opportunity to be a responsible, long-term energy provider to people worldwide. Achieving this potential will require supporting economic growth while reducing environmental impact.

Canada has what it needs to lead the globe in responsible energy development and production. Our world class resources, our history in technology and innovation, our leadership in safety and environmental performance and effective regulatory processes are key enablers.

Our ability to ensure Canada's long-term success, however, lies in our collective commitment to innovation and to an open and ongoing dialogue on constructive solutions.

At Imperial, we are taking action by reducing our greenhouse gas (GHG) emissions intensity, supporting research that leads to technology breakthroughs and participating in constructive dialogue on policy options.

Reducing greenhouse gas emissions intensity

Between 2013 and 2017, our oil sands GHG emissions intensity has decreased by 20 percent. We recently announced plans to further reduce the GHG emissions intensity of our operated oil sands facilities by 10 percent over the next five years, compared to 2016 levels. We have clear plans in place to achieve this reduction through continuous improvements in energy efficiency, the application of next-generation oil recovery technology at our Cold Lake in situ operations and improvements in reliability at our Kearl mining facility.

We are also accelerating the pace of innovation through our transition to next-generation technologies. These technologies are designed to reduce GHG emissions intensity, for each barrel produced.

Supporting research breakthroughs

Imperial's future technology plans are supported by nearly 100-years of commitment to research and technology development (R&D), in which we have invested more than $2.1 billion over the past 20 years. We opened Canada's first petroleum research department in 1924 and continue to be one of Canada's top R&D spenders in any industry.

While we are taking steps to improve our company's performance, ensuring Canada leads the globe in responsible energy development is not a goal we can achieve alone. We partner with academic institutions, industry peers and other third parties to accelerate the pace of environmental performance improvement in Canada.

We are a charter member of Canada's Oil Sands Innovation Alliance (COSIA), a founding sponsor of the Institute for Oil Sands Innovation (IOSI) at the University of Alberta, and are working with a global emissions monitoring company to test satellite technology designed to capture frequent and accurate emissions data.

Constructive dialogue on policy

We continue to work with policymakers, encouraging them to focus on reducing the greatest amount of emissions at the lowest cost to society. We support the Paris Agreement and advocate for carbon policies that ensure a uniform and predictable cost of carbon across the economy.

I am pleased to share with you Imperial's inaugural Energy and Carbon Summary report, which examines a lower-carbon future and what that could look like for our business. The report is guided by the Task Force on Climate-related Financial Disclosures (TCFD) framework and supplements our financial disclosures and evolving sustainability reporting. As we gain more knowledge and receive stakeholder feedback, we expect our Energy and Carbon Summary will continue to evolve.

For nearly 140 years, Imperial has been in the business of providing energy solutions through changing times. I am confident in our ability to remain an industry leader in the evolving worldwide energy landscape of the future.

We look forward to continuing the dialogue on responsible affordable, reliable energy in a lower-carbon energy world.

Rich Kruger
Chairman, President and CEO

Summary at-a-glance

Imperial is well-positioned to help support Canada in responsible energy development and production.

The 2018 *Outlook for Energy (Outlook)* [1] anticipates global energy needs will rise about 25 percent to 2040, led by non-OECD countries. [2] While the mix shifts over the period toward lower carbon-intensive fuels, the world will need to pursue all economic energy sources to meet demand.

Highlights include:

- Worldwide electricity from solar and wind will increase about 400 percent.
- Natural gas use will expand, led by growth in electricity generation.
- Growth in oil demand will be driven by commercial transportation and the chemical industry. Road fuel demands for cars and heavy-duty vehicles reflect efficiency improvements and growth in alternate fuels.
- Efficiency gains and growing use of less-carbon-intensive energy sources will contribute to declines of nearly 45 percent in the carbon intensity of global gross domestic product (GDP).

The 2018 *Outlook* also includes sensitivities to provide greater perspective on the energy landscape. For example, greater penetration of electric vehicles (EV) and/or wind/solar deployment beyond the base *Outlook* assumptions could slow the growth in oil and natural gas demand, respectively. Trends in fuel economy gains lower than the *Outlook* basis could add more than two million barrels per day of liquids demand by 2040.

Imperial supports the Paris Agreement as an important framework for addressing the risks of climate change

In 2015, nations convened in Paris with an aim to 'strengthen the global response to the threat of climate change and hold the global average temperature increases to well below 2°C above pre-industrial levels'.

Relative to the *Outlook* [1], a theoretical 2°C pathway would generally lower demand for oil, natural gas and coal, and increase use of nuclear and renewables.

However, even under a 2°C pathway, significant investment will be required in oil and natural gas capacity, as well as other energy sources, to meet growing global demand and offset natural field decline. Production from Imperial's upstream assets will be needed to meet global demand well into the future.

Imperial's commitment to research has positioned the company well for the challenge of providing reliable, affordable, responsible energy in a lower-carbon future

Imperial has achieved a GHG emissions intensity reduction of 20 percent in our operated oil sands between 2013 and 2017.

Near-term actions include:

- Mitigating emissions in our facilities by implementing process reliability and efficiency improvements, including cogeneration.
- Reducing greenhouse gas (GHG) emissions intensity in the oil sands by applying liquid addition to steam for enhancing recovery (LASER) at Cold Lake.
- Providing our customers options to reduce their emissions by producing advanced fuels such as Synergy™ gasoline and Synergy Diesel Efficient™.

In the medium term, Imperial continues to accelerate technology innovation including light hydrocarbons with steam for in situ oil sands recovery. Examples include:

- Developing in situ opportunities using advanced solvent-assisted, steam-assisted gravity drainage (SA-SAGD) technology. Current estimates indicate GHG intensity and water intensity could be reduced by up to 25 percent through lower energy utilization compared with traditional steam-assisted technology.
- Successfully concluding Imperial's ($100 million multi-year) next-generation cyclic solvent process (CSP) pilot at Cold Lake. CSP has the potential to virtually eliminate the use of steam and reduce GHG intensity up to 90 percent in certain areas of our Cold Lake Field.
- Field trialing enhanced bitumen recovery technology (EBRT) which has the potential to reduce GHG emissions intensity by approximately 60 percent compared with SAGD production.

Longer-term, Imperial is leveraging its relationship with Exxon Mobil Corporation ("ExxonMobil"), which is at the forefront of developing technologies, such as carbon capture and storage (CCS), that could play a significant role in a lower-carbon future. CCS has the potential to be viable through the convergence of advantaged technologies and a supportive policy environment.

Outlook for Energy

The *Outlook for Energy (Outlook)*[1] provides a global view of energy demand and supply through 2040. Importantly, it provides an annual update to reflect recent energy trends and developments, notably in technology and policy. Imperial uses the *Outlook* to help inform its long-term business strategies and investment plans.

Energy supports rising prosperity

A significant energy transition is under way, and many factors will shape the world's energy future. By 2040, world population is expected to reach 9.2 billion people, up from 7.4 billion in 2016. Over that same period, global GDP will likely double. Billions of people are expected to join the global middle class.

Energy efficiency improvements will help curb the growth in global energy demand to about 25 percent over the period to 2040, much less than GDP growth, and roughly equivalent to adding another North America and Latin America to the world's current energy demand. Emerging markets in non-OECD nations will account for essentially all energy demand growth, led by the expanding economies in the Asia Pacific region, such as China and India.

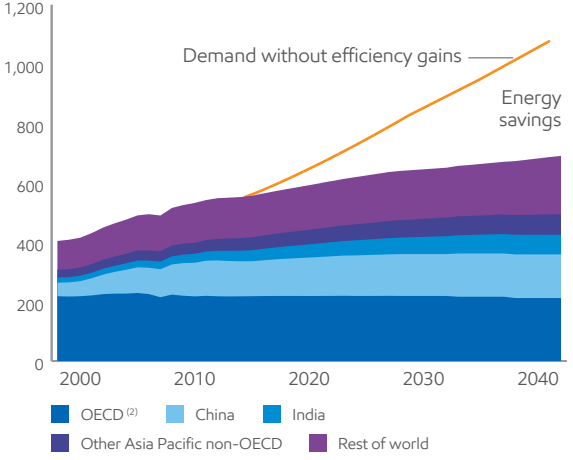
Providing reliable, affordable energy to support prosperity and enhance living standards is coupled with the need to do so in ways that reduce potential impacts on the environment, including the risks of climate change. As the world's economy nearly doubles by 2040, energy efficiency gains and a shift in the energy mix will

The dual challenge is to provide affordable energy to support prosperity while reducing environmental impacts.

likely contribute to a nearly 45 percent decline in the carbon intensity of global GDP. Progress on energy and climate objectives requires practical approaches that will contribute to both while providing high economic value for society.

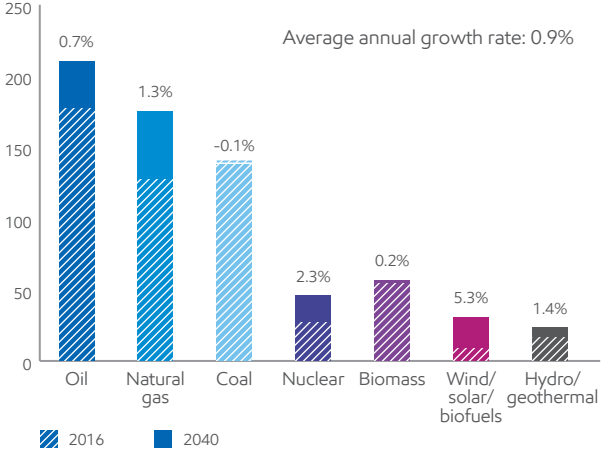
Global efficiency limits demand growth

(quadrillion BTUs or Quads)



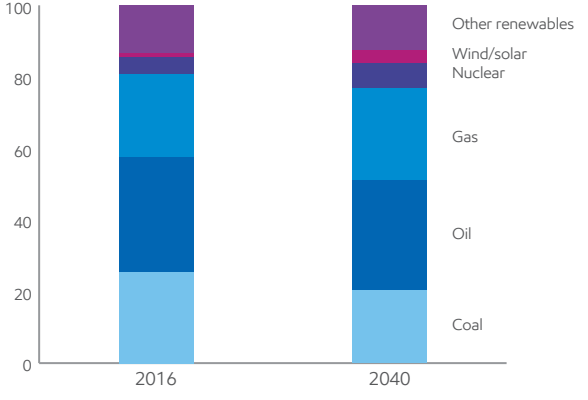
Oil and natural gas: largest energy sources in the future

(quadrillion BTUs or Quads)



Energy mix shifts globally to lower-carbon fuels

(percent of primary energy)



Global energy mix is shifting

Electrification and gradual decarbonization continue as significant global trends. Renewables and nuclear see strong growth, contributing nearly 40 percent of incremental energy supplies to meet demand growth. Natural gas grows the most of any energy type, reaching a quarter of all demand. Oil will continue to play an important role in the world's energy mix, as commercial transportation (e.g., trucking, aviation, marine) and chemicals sectors lead demand growth.

Testing uncertainty

Demand for liquid fuels is projected to grow by about 20 percent through the *Outlook* period, even as liquids demand from light-duty transportation peaks and declines during this period with more-efficient vehicles. Sensitivities help assess potential impacts to light-duty liquids demand using alternate assumptions around electric vehicle penetration, changes in fuel efficiency, or broader mobility trends. As an example, for every additional 100 million electric vehicles on the road in 2040, liquids demand could fall by approximately 1.2 million barrels per day.

Investment needs

Significant investments will be needed to meet global demand for oil and natural gas. The International Energy Agency, in its New Policies Scenario, estimates cumulative oil and natural gas investment may require approximately $21 trillion (2017 U.S. dollars) between 2018 and 2040.

Highlight: *Outlook for Energy* projections

25% increase

Global energy needs rise about 25 percent, led by non-OECD nations (e.g., China, India)

Despite efficiency gains, global energy demand will likely increase nearly 25 percent by 2040. Nearly all growth will occur in non-OECD countries as prosperity expands.

Demand for electricity nearly doubles in non-OECD nations

Natural gas use is likely to increase more than any other energy source, with about half of its growth attributed to electricity generation. Electricity from solar and wind increases about 400 percent.

x2

Oil plays a leading role in mobility and modern products

Oil will continue to play a leading role in the world's energy mix, with growing demand driven by commercial transportation and the chemical industry.

Energy efficiency gathers momentum worldwide

Since 2000, global energy intensity has improved by about 1 percent per year; from 2016 to 2040, this rate will approximately double.

Predicting the energy future is challenging, given uncertainty on policies and technologies

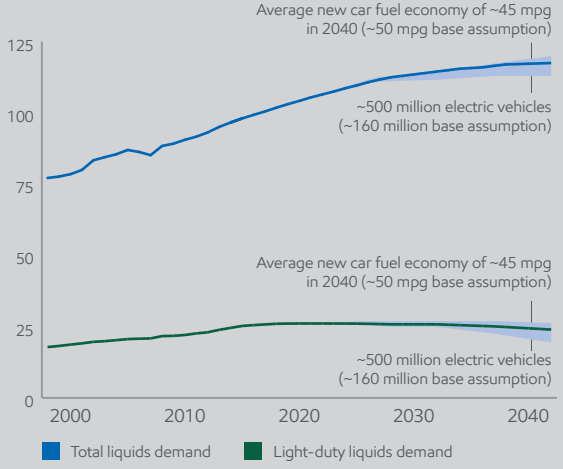
Meeting the dual challenge of mitigating the risks of climate change while boosting standards of living will require additional technology advances.

Sensitivities included in the *Outlook* projections

Sensitivities are used to provide greater perspective on how changes to the base *Outlook* assumptions could affect the energy landscape. The charts below depict potential impacts to demand related to fuel economy and EV penetration, full EV penetration in light-duty vehicles, and potential changes affecting natural gas demand for electricity generation. Further discussion on sensitivities can be found in the *Outlook for Energy.* [1]

Liquids – light-duty demand sensitivities

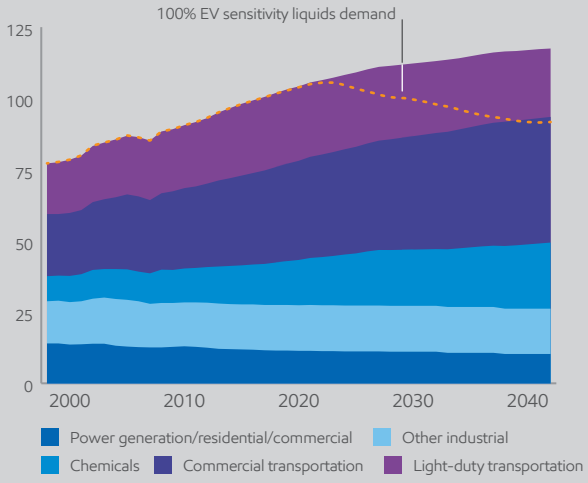
(million oil-equivalent barrels per day)



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

Liquids – full EV demand sensitivity

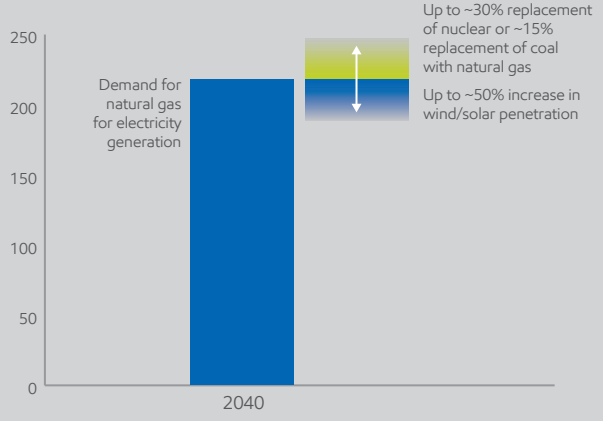
(million oil-equivalent barrels per day)



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

Natural gas – electricity demand sensitivities

(billion cubic feet per day)



- Accelerated deployment of solar and wind globally due to swifter cost declines and/or more generous policies could reduce natural gas demand relative to base *Outlook*
- Stiffer public sentiment against nuclear or coal and/or a shift toward more technology-neutral carbon abatement policies could increase natural gas demand for base load electricity

Considering 2°C scenarios

The annual *Outlook* represents the company's updated view of the most likely future for the global energy system and forms the foundation of the company's strategic decisions, business plans, and investments. However, many uncertainties exist concerning the future of energy demand and supply, including potential actions that society may take to address the risks of climate change. The following analysis is intended to provide a perspective on hypothetical 2°C scenarios.

Since 1992, when nations around the world established the United Nations Framework Convention on Climate Change, an international effort has been under way to understand and address the risks of climate change. After more than two decades of international effort, in December 2015, nations convened in Paris and drafted an agreement that for the first time signals that both developed and developing nations will strive to undertake action on climate change.

The ultimate aim of the Paris Agreement is to "strengthen the global response to the threat of climate change... by: Holding the increase in global average temperatures to well below 2°C above pre-industrial levels." As part of the Paris Agreement, signatories have committed to:

- "prepare, communicate, and maintain successive nationally determined contributions that it intends to achieve."
- "communicate nationally determined contributions every five years."

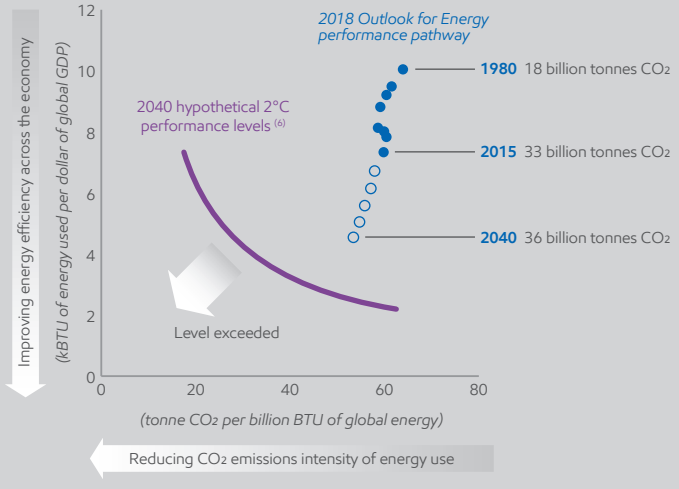
These nationally determined contributions (NDCs)[3] provide important signals on government intentions related to the general direction and pace of policy initiatives to address climate risks. It is worth noting that the Paris Agreement indicates that "the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the intended nationally determined contributions do not fall within the least-cost 2°C scenarios."[4]

While the current NDCs do not appear to achieve a 2°C scenario, the Paris Agreement is a positive step in addressing the risks of climate change.[5]

When considering the aim to achieve a 2°C future, it should be recognized that due to the complexity and scale of the world's energy system and its interaction with societal aspirations, no single pathway to 2°C can be reasonably predicted. However, it is generally recognized that pathways to 2°C depend on multiple variables, the most impactful of which are:

- Population
- Economic growth
- Energy intensity of the economy
- Greenhouse gas (GHG) intensity of the energy system

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



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

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

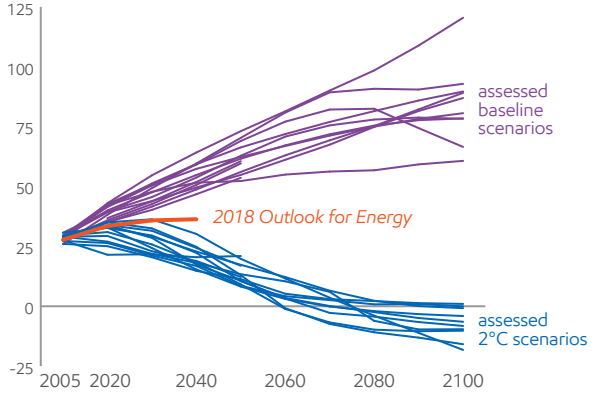
To be on a 450 ppm, or hypothetical 2°C pathway, the performance in 2040 likely needs to be significantly closer to the purple line, implying faster gains in efficiency and/or faster reductions in CO_2 emissions per unit of energy. This would increase the chance of reaching a 2°C pathway, with further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

It is generally accepted that the population and world economies will continue to grow and that measures to address the risks of climate change will evolve to accommodate these factors. The levers that therefore remain for society are: (1) to reduce the energy intensity of world economies via further efficiency, and (2) to reduce the GHG (CO_2 equivalent) emissions intensity of the world's energy system.

The chart on the previous page illustrates 2040 hypothetical "2°C performance levels." This purple line reflects hypothetical combinations of global energy intensity and CO_2 emission intensity levels that, if reached in 2040, would likely indicate the world was on a 2°C pathway. Transitioning towards a 2°C performance level would imply that global emissions have peaked and are steadily declining to near 1980 levels by 2040, in spite of a global population that may have doubled, and a world economy that may be five times as large.

Global energy-related CO_2 emissions [7]

(billion tonnes)



According to the International Energy Agency (IEA), setting upon a "well below" 2°C pathway implies adoption of "comprehensive, systematic, immediate, and ubiquitous implementation of strict energy and material efficiency measures."[8] Because there are multiple potential options for energy efficiency and decarbonization, there are also numerous theoretical paths to a 2°C outcome. Given limited global resources and the wide range of global societal priorities,[9] such as poverty, education, health, security, affordable energy, and climate change, approaches to address these issues will need to be as economically efficient as possible. Inefficient approaches to address the risks of climate change can divert resources and detract from society's ability to address other important priorities. Due to the unprecedented change that would be needed in the global energy system to achieve a 2°C outcome, Imperial believes that only those scenarios that employ the full complement of technology options are likely to provide the most economically efficient paths.

Considerable work has been done in the scientific community to explore energy transformation pathways. A multi-model study coordinated by the Energy Modeling Forum 27 (EMF27)[10] at Stanford University brought together many energy-economic models to assess technology and policy pathways associated with various climate stabilization targets (e.g., 450, 550 ppm CO_2 equivalent or CO_2e), partially in support of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

The chart (below left) illustrates potential CO_2 emission trajectories under EMF27 full-technology scenarios[11] targeting a 2°C pathway (assessed 2°C scenarios) relative to the 2018 *Outlook*, and baseline pathways (Assessed Baseline Scenarios) with essentially no policy evolution beyond those that existed in 2010.

The 2018 *Outlook* incorporates significant efficiency gains and changes in the energy mix, resulting in a projected CO_2 emissions trajectory that resides between the pathways illustrated by the baseline and 2°C scenarios. The emissions trajectory of this *Outlook* closely approximates in shape the intermediate RCP 4.5 fossil fuel CO_2 emissions profile of the IPCC through 2040, but is slightly under it in magnitude. Although the *Outlook* does not extend to 2100 and does not estimate global temperatures, the IPCC projects its intermediate RCP 4.5 emissions profile would result in an average global temperature increase of approximately 2.4°C by 2100 from the pre-industrial age.[12]

The assessed 2°C scenarios, as shown on the following page, produce a variety of views on the potential impacts on global energy demand in total and by specific types of energy.

For comparison purposes, the chart on page 8 includes the IEA's Sustainable Development Scenario (SDS), which specifically notes that global energy-related CO_2 emissions projections are "fully in line with the trajectory required to meet the objectives of the Paris Agreement on climate change." In fact, the SDS projects global energy-related CO_2 emissions in 2040 at a level 50 percent lower than the IEA's New Policies Scenario (NPS), which projects emissions generally in line with the aggregation of national commitments under the Paris Agreement. As recognized by the United Nations Framework Convention on Climate Change, the estimated aggregate annual global emissions levels resulting from the implementation of intended NDCs do not fall within least-cost 2°C scenarios.[13]

Differences in these scenarios help put in perspective the uncertainty in the pace and breadth of changes in the global energy landscape.

The scenarios also show a range of possible growth rates for each type of energy. The average of the assessed 2°C scenarios' growth rates has been taken in order to consider potential impacts on energy demand for this report.[14]

Based on this scenario analysis, primary energy demand on a worldwide basis is projected to increase about 0.5 percent per year on average from 2010 to 2040. Expected changes in demand vary by model and energy type (lower charts):

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

All energy sources remain important across all the assessed 2°C scenarios, though the mix of energy and technology shifts over time. Oil and natural gas remain important sources, even in models with the lowest level of energy demand. Oil demand is projected to decline modestly on average, and much more slowly than its natural rate of decline from existing producing fields.

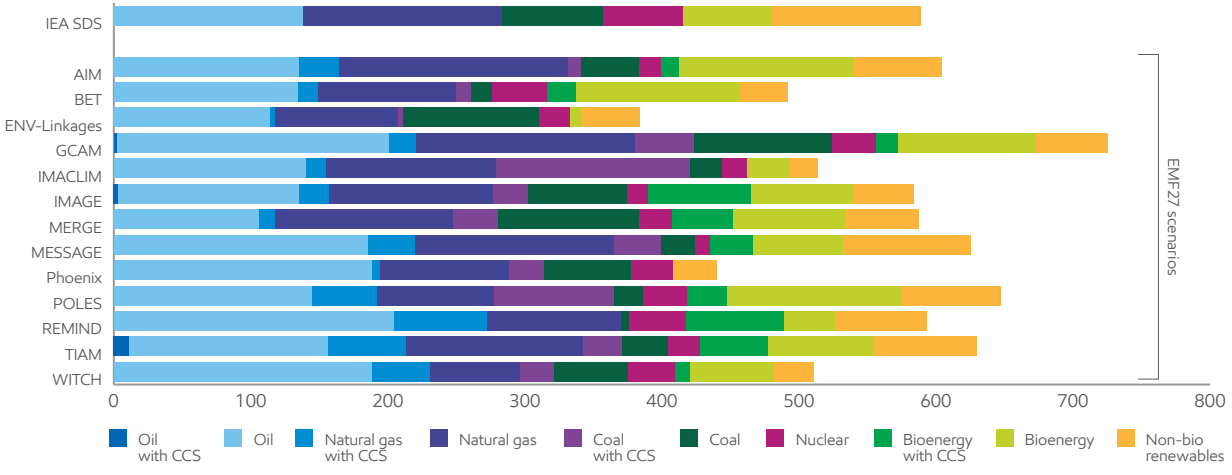
Natural gas demand grows on average due to its many advantages, including lower greenhouse gas emissions.

Oil and natural gas remain important sources, even in models with the lowest level of energy demand.

Low-side energy growth rates for the assessed 2°C scenarios were also considered. The low-side for each energy source sees oil dropping 1.7 percent per year, natural gas dropping 0.8 percent per year, and coal dropping 10.2 percent per year through 2040. This is compared with high-side growth rates for bioenergy, nuclear, and non-bio renewables of 14.1, 4.8, and 6.3 percent per year, respectively.

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

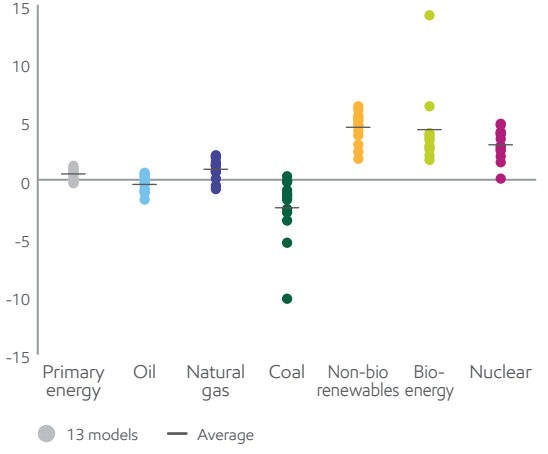
(exajoules)



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

Ranges of predicted changes in global demand in assessed 2°C scenarios

(average annual growth rate in percent, 2010-2040)



Signposts for the evolving energy landscape

Changes in the relative cost of new technology when compared against existing or alternative energy sources may indicate shifts in the global energy mix. Utilizing internal and external sources, a variety of indicators that may serve as signposts are monitored for potential shifts in the energy landscape, such as:

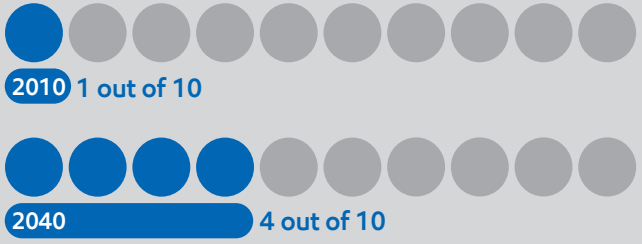
- New NDCs and significant policy initiatives broadly implemented, such as carbon pricing.
- Increased electrification of energy systems.
- Increasing penetration of renewables with technology developments that reduce costs and increase reliability of energy storage.
- Development of scalable alternative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

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

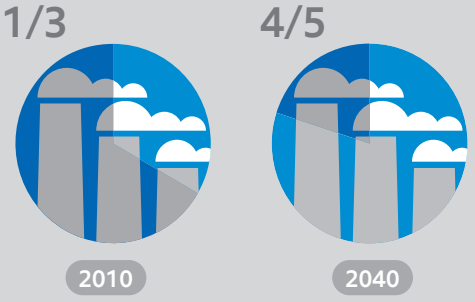
Up close: Indicators for a 2°C pathway

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

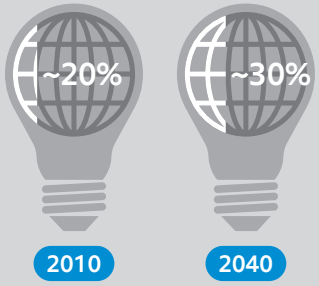
Renewables, nuclear, and fossil fuels with CCS rise from 10% to 40% of primary energy demand (15)



Low-carbon power generation (including CCS) grows from 33% to 80% of total supply (18)

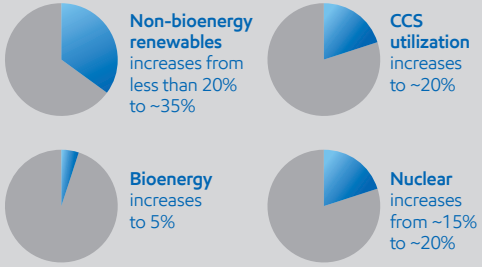


Total electrification of energy demand (16)



Oil demand falls (17)

Global electricity generation shifts (19)



Summary of demand growth rates Mean annual demand growth rate 2010-2040	Average of the Assessed 2°C Scenarios (20)	ExxonMobil 2018 *Outlook for Energy*	IEA World Energy Outlook 2010-2017e
Energy demand	▲ 0.5%	▲ 0.9%	▲ 1.2%
Oil	▼ (0.4)%	▲ 0.8%	▲ 1.0%
Natural gas	▲ 0.9%	▲ 1.4%	▲ 1.9%
Coal	▼ (2.4)%	0.0%	▲ 0.4%
Nuclear	▲ 3.0%	▲ 1.6%	▼ (0.6)%
Bioenergy	▲ 4.3%	▲ 0.7%	▲ 1.8%
Non-bio renewables	▲ 4.5%	▲ 3.7%	▲ 5.9%

Potential upstream asset impacts considering 2°C scenarios

Over the coming decades, oil and natural gas will continue to play a critical role in meeting the world's energy demand, even considering the assessed 2°C scenarios discussed in the previous section. The following is intended to address the potential impacts to Imperial's upstream assets through 2040 and beyond, considering the average of the assessed 2°C scenarios' oil and natural gas growth rates (2°C scenarios average).[21]

At the end of 2018, Imperial's proved reserves totaled about 4.1 billion oil equivalent barrels[22] predominantly consisting of oil sands resources. These proved reserves are assessed annually and reported on National Instrument 51-101. Based on currently anticipated production schedules, Imperial estimates that in 2040 more than half of its year-end 2018 proved reserves will have been produced. As Imperial continues to develop projects over time, it expects that annual production estimates will change.

In addition to Imperial's upstream assets,[22a] effective regulatory processes and strong social and environmental performance are key enablers for responsible development. Although Imperial's upstream assets may be subject to more stringent climate policies in the future, it is the company's view that these upstream assets will continue to improve in competitiveness. Operational knowledge gained over time, and a relentless focus on efficiency, cost reductions and the development and deployment of pace-setting technologies, matched to high quality resources, will help sustain the company's strong competitive status.

In consideration of the significant global investment needed to meet global oil and gas demand and the potential imbalance in 2040, (absent future investment), Imperial's assets are clearly supported by ample demand, provided they remain globally competitive.

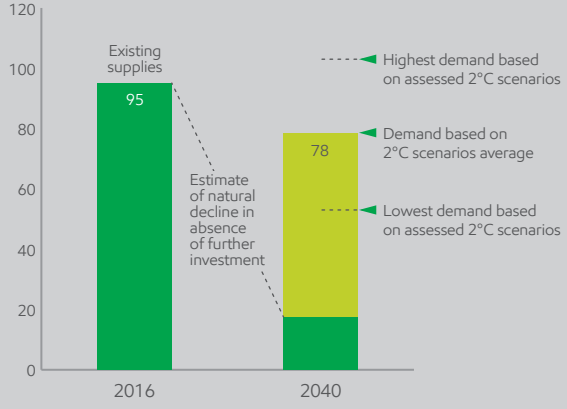
Significant investment still needed in 2°C scenarios

Considering the 2°C scenarios average, global liquids demand is projected to decline from 95 million barrels per day in 2016 to about 78 million barrels per day in 2040. Using the lowest liquids demand growth rate among the assessed 2°C scenarios, liquids demand would still be 53 million barrels per day in 2040, as seen in the chart below.[23] However, absent future investment, world liquids production to meet demand would be expected to decrease from 95 million barrels per day in 2016 to about 17 million barrels per day in 2040. This decrease results from natural field decline, and the associated decline rate is expected to greatly exceed the potential decline rate in global oil demand even under the lowest 2°C demand scenarios assessed. Natural gas natural field decline rates are generally similar to liquids.

Considering the IEA's Sustainable Development Scenario (a 2°C scenario), the IEA estimates that more than $13 trillion [24] of investment will be needed for oil and natural gas supply between 2018 and 2040.[25]

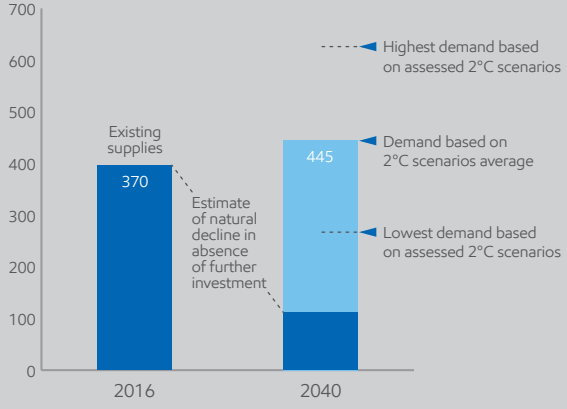
Global liquids supply estimates

(million oil-equivalent barrels per day)



Global natural gas supply estimates

(billion cubic feet per day)



Excludes biofuels
Source: IHS EM analyses

Positioning for a lower-carbon energy future

Canada can be a responsible long-term energy provider. The potential of technology, ingenuity and innovation should not be underestimated.

As the energy system evolves, oil and natural gas will continue to play a critical role in meeting the world's energy demand. Energy, from a variety of sources, will be needed to help society live a modern, healthy life with economic prosperity.

Imperial has achieved a GHG emissions intensity reduction of 20 percent in our operated oil sands between 2013 and 2017. Our future pathway to further reduce GHG emissions intensity deploys next-generation technologies, operational efficiencies and commercially-creative collaboration.

Next-generation upstream technologies underpin our strategy

Imperial's future technology plans are supported by a nearly 100-year commitment to research in Canada and more than $2.1 billion investment over the past 20 years.

Our researchers have developed a suite of technologies that improve the financial competitiveness of our operated oil sands, while reducing our environmental footprint.

Through the use of light hydrocarbons, instead of steam, less energy is required to mobilize heavy oil. Imperial's suite of technologies, currently under varying stages of development, will accelerate the transition to in situ operations with lower GHG emissions intensity and could enable GHG emissions intensity reductions from approximately 25 to 90 percent.

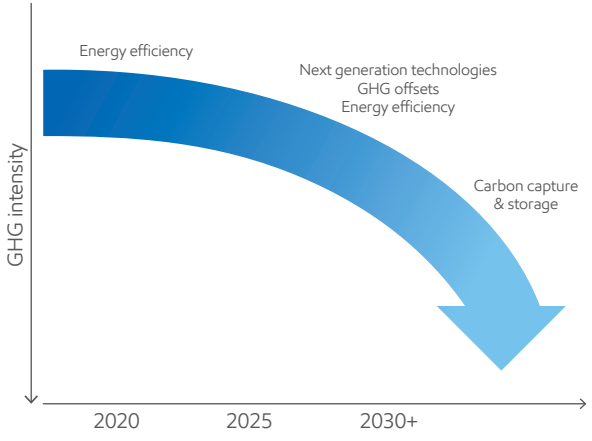
Near-term plans

Imperial is expanding the use of liquid addition to steam for enhancing recovery (LASER) at Cold Lake and, following a successful $100 million multi-year pilot, is evaluating the first commercial application of cyclic solvent process (CSP) technology.

One new technology uses next-generation solvent-assisted, steam-assisted gravity drainage (SA-SAGD) technology to improve economics, reduce GHG emissions intensity and water use intensity. We anticipate SA-SAGD's emissions intensity will be one of the lowest among in situ operations across the industry.

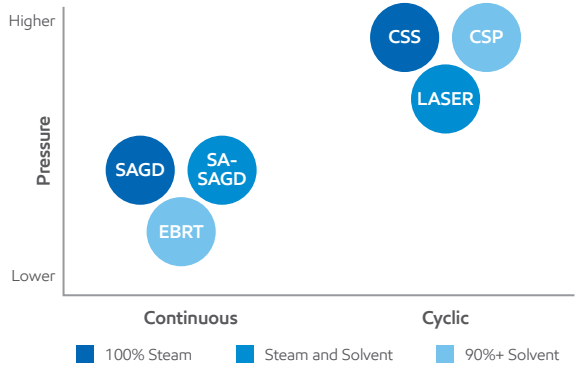
In addition, the company is advancing a field trial of enhanced bitumen recovery technology (EBRT) to demonstrate and validate this technology for commercial use.

Potential GHG intensity reduction pathway



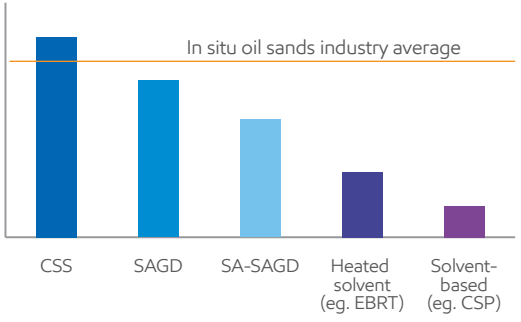
In situ technologies

Suite of technologies to match resource base



Potential impact of next-generation technologies

(GHG emissions intensity)



Source: Modified from Boone World Heavy Oil Conference, 2012

Collaboration

In addition to our in-house research, we partner with academic institutions, industry peers and other third parties to accelerate the pace of environmental performance improvement in Canada.

As a charter member of Canada's Oil Sands Innovation Alliance (COSIA), we have focused on enabling responsible and sustainable growth of Canada's oil sands while delivering accelerated improvement in environmental performance through collaborative action and innovation.

In 2017, Imperial contributed $500,000 to 20 projects at 10 Canadian universities, including funding for energy efficiency technologies.

Imperial is also working with GHGSat, a global emissions monitoring company, to utilize new satellite technologies to gain a more accurate and frequent understanding of methane emissions and their impact on the total oil sands emissions.

Mitigating emissions in our operations

Imperial continues its focus on improving energy efficiency and reducing environmental emissions at our operations.

We are increasing cogeneration capacity by eight percent overall with the addition of a new cogeneration unit at our Strathcona refinery, to be operational by 2020. Imperial currently utilizes cogeneration at Kearl, Cold Lake, Nanticoke and Sarnia.

Providing solutions for our customers to reduce their emissions

Imperial is producing advanced fuels that help our customers improve their fuel efficiency and reduce their emissions.

For passenger vehicles, Imperial's Synergy™ gasoline is designed to help provide better fuel economy, lower emissions and improve engine responsiveness.[26]

For North American trucking applications, Imperial has launched Synergy Diesel Efficient™, which improves fuel consumption (two percent on average) and lowers emissions (11 percent NOx and two percent CO_2). Claims are also applicable for light-duty vehicles on average.[27]

Our lubricants help minimize operational costs through energy efficiency and extended equipment life.

Imperial's Sarnia Research Centre chiefly supports our downstream operations by developing enhancements and solutions for issues from inhibiting rust and increasing efficiency and production quantity at our refineries, to making higher quality petroleum products.

In 2016, Imperial opened a state-of-the-art oil sands laboratory in Calgary, AB that allows us to test potential technologies that could reduce environmental impacts and improve oil sands efficiency.

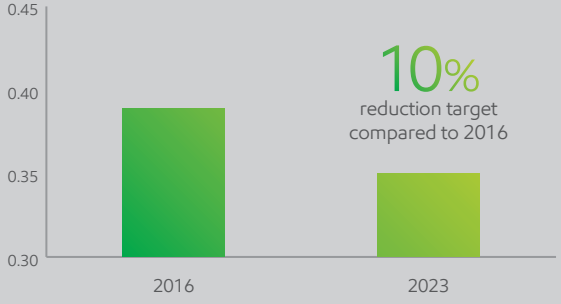
Imperial oil sands GHG intensity reduction

Building on a long-standing commitment to improve both the environmental footprint and economics associated with operated oil sands production, Imperial plans to apply advanced technologies which will also reduce the GHG emissions intensity.

The application of next-generation oil recovery technology at Imperial's Cold Lake in situ operations, improvements in reliability at its Kearl mining facility, and continuous improvements in energy efficiency are expected to be key drivers behind the future reductions, which are anticipated to result in a 10 percent decrease in GHG emissions intensity by 2023,[28] compared with 2016 levels.

GHG intensity

(metric tonnes/m³)



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

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

10%

decrease in GHG emissions intensity at the company's operated oil sands facilities by 2023, compared to 2016 levels

INNOVATION IN ACTION

UP TO 25% ↓

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

UP TO 90% ↓

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

Step-change in situ oil sands recovery technology – how it works

Light oils can be used along with, or to replace, steam to mobilize heavy oil so it can be brought to the surface. This approach recovers heavy oil using less energy, significantly reducing GHG emissions intensity.

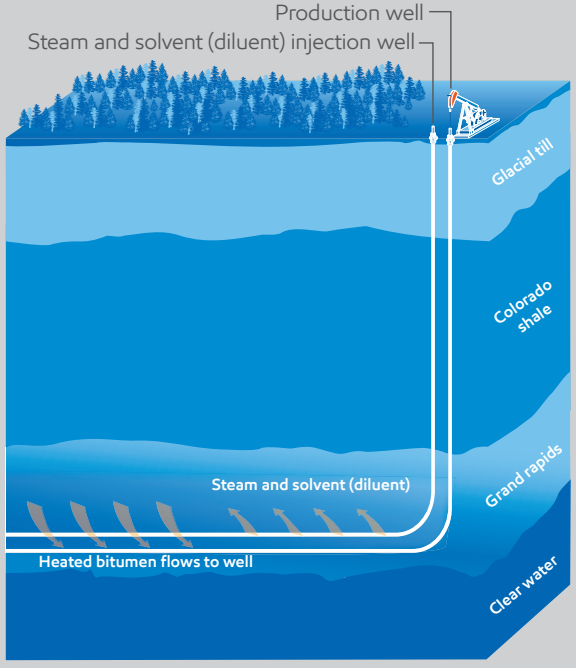
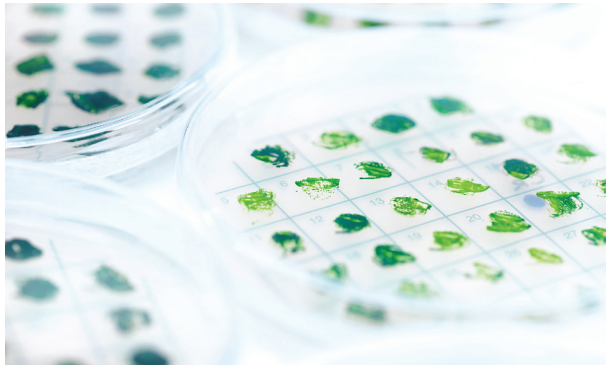


Illustration based on Imperial's Cold Lake location, using SA-SAGD technology.

Leveraging global research

Through our relationship with ExxonMobil, we have access to industry-leading technologies, insights and expertise.

Imperial could **leverage ExxonMobil's research on advanced biofuels, as well as carbon capture and storage (CCS).** ExxonMobil is at the forefront of developing these exciting technologies, many of which could play a significant role in a lower-carbon future.



Algae and other advanced biofuels

ExxonMobil is conducting extensive research on advanced biofuels to produce fuels from algae and cellulosic biomass with the potential to reduce GHG emissions by 50 percent or more compared to today's transportation fuels. In 2017, ExxonMobil and Synthetic Genomics, Inc. announced breakthrough research involving a modified algae strain that more than doubled its oil content without significantly inhibiting growth, a key challenge along the path to commercial scalability. ExxonMobil recently announced a new research phase of this project which includes an outdoor field study that will grow naturally occurring algae in several ponds in California.

Carbon capture and storage

Since 1970, ExxonMobil has cumulatively captured more CO_2 than any other company – accounting for more than 40 percent of cumulative CO_2 captured.[29]

ExxonMobil is conducting research to find ways to improve existing carbon capture technologies. One project is focused on reducing the cost of capturing carbon by using carbonate fuel cells. **ExxonMobil has extensive experience in carbon capture and has a working interest in more than one-fifth of the world's total carbon capture and storage capacity.**

Engaging in climate policy

Imperial has the same concerns as people everywhere – to provide the world with needed energy while reducing GHG emissions. Imperial is committed to taking action on climate change and believes that the long-term objective of a climate change policy should be to reduce the risk of serious impacts to humanity and to ecosystems at minimum societal cost, while recognizing the importance of safe, reliable, affordable and abundant energy for global economic development.

Climate change is a global issue that requires collaboration among governments, companies, consumers and other stakeholders to create meaningful solutions. Imperial engages with a broad range of stakeholders directly and through trade associations to encourage sound policy for addressing climate change risks.

The company believes effective policies are those that:

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

When such principles inform public policy, they minimize overall societal costs and allow markets to determine the technologies that will be most successful. They also help long-term policies align with differing national priorities as well as adapt to new global realities.

Imperial supports an economy-wide price on carbon dioxide emissions as an efficient policy mechanism to address GHG emissions.

Integration and diversification: adapting to shifts in product demand

As society's choices for lower carbon energy sources and technologies evolve, Imperial recognizes that demand for some products it produces may shift or decrease over time. The company continuously strives to strengthen its competitiveness and adapts its business model to customers' needs.

- Highly integrated upstream, downstream and chemicals business.
- Leveraging opportunities from crude to customer.
- Cost-advantaged feedstocks for refineries & chemical plant.
- Sustained petroleum products growth.
- Access to industry-leading technologies and know-how.
- Financial resiliency across commodity cycles.
- Balance sheet strength and optionality.

Imperial refineries positioned to sustain competitiveness

ENERGY INTENSITY
5% more energy efficient[30]

TOTAL OPERATING COST
16% lower[30]

PETROLEUM PRODUCT SALES
2% growth per year[31]

Greenhouse gas (GHG) performance data

	2013	2014	2015	2016	2017
GHG emissions [1], [2]					
Direct GHG emissions – including Cogen					
Downstream & Chemical *(million metric tonnes of CO_2e)*	4.6	4.9	4.8	4.8	4.7
Carbon dioxide emissions *(million metric tonnes)*	4.5	4.8	4.8	4.8	4.6
Methane emissions *(million metric tonnes)*	0.0014	0.0024	0.0011	0.0010	0.0011
Nitrous oxide emissions *(million metric tonnes)*	0.0001	0.0001	0.0001	0.0001	0.0001
Upstream *(million metric tonnes of CO_2e)*	5.5	5.8	8.0	8.2	8.4
Carbon dioxide emissions *(million metric tonnes)* [3]	5.4	5.7	7.8	8.0	8.2
Methane emissions *(million metric tonnes)*	0.0029	0.0016	0.0019	0.0023	0.0018
Nitrous oxide emissions *(million metric tonnes)*	0.0001	0.0002	0.0003	0.0003	0.0003
Operated oil sands *(million metric tonnes of CO_2e)*	5.4	5.7	7.9	8.1	8.3
Carbon dioxide emissions *(million metric tonnes)* [3]	5.3	5.6	7.7	8.0	8.2
Methane emissions *(million metric tonnes)*	0.0023	0.0013	0.0016	0.0020	0.0017
Nitrous oxide emissions *(million metric tonnes)*	0.0001	0.0002	0.0003	0.0003	0.0003
Imported electricity and associated indirect GHG emissions					
Downstream & Chemical – imported electricity *(million MWhr)*	1.08	1.17	1.10	1.07	1.04
Downstream & Chemical – associated indirect GHG emissions *(million metric tonnes of CO_2e)*	0.40	0.43	0.41	0.39	0.39
Upstream – imported electricity *(million MWhr)*	0.29	0.55	0.70	0.83	0.92
Upstream – associated indirect GHG emissions *(million metric tonnes of CO_2e)*	0.11	0.20	0.26	0.31	0.34
Operated oil sands – imported electricity *(million MWhr)*	0.29	0.55	0.70	0.83	0.92
Operated oil sands – associated indirect GHG emissions *(million metric tonnes of CO_2e)*	0.11	0.20	0.26	0.31	0.34
Exported electricity and associated GHG emissions					
Downstream & Chemical – exported electricity *(million MWhr)*	–	–	–	–	–
Downstream & Chemical – associated GHG emissions *(million metric tonnes of CO_2e)*	–	–	–	–	–
Upstream – exported electricity *(million MWhr)*	0.28	0.33	1.25	1.48	1.45
Upstream – associated GHG emissions *(million metric tonnes of CO_2e)*	0.10	0.12	0.46	0.55	0.54
Operated oil sands – exported electricity *(million MWhr)*	0.27	0.32	1.24	1.47	1.45
Operated oil sands – associated GHG emissions *(million metric tonnes of CO_2e)*	0.10	0.12	0.46	0.55	0.53

	2013	2014	2015	2016	2017
GHG emissions [4]					
Downstream & Chemical *(million metric tonnes of CO_2e)*	5.0	5.4	5.2	5.2	5.1
Upstream *(million metric tonnes of CO_2e)*	5.5	5.9	7.7	7.9	8.2
Operated oil sands *(million metric tonnes of CO_2e)*	5.4	5.8	7.7	7.8	8.2
Production/throughput					
Downstream & Chemical – refining throughput *(million m^3)* [5]	22	23	22	21	22
Upstream – production *(million m^3)* [6]	11	14	20	21	21
Operated oil sands – production *(million m^3)* [7]	10	13	19	20	21
GHG emissions intensity [8]					
Downstream & Chemical *(metric tonnes of CO_2e/m^3 refining throughput)* [5]	0.23	0.23	0.23	0.25	0.23
Upstream *(metric tonnes of CO_2e/m^3 upstream production)* [6]	0.50	0.42	0.40	0.38	0.39
Operated oil sands *(metric tonnes of CO_2e/m^3 upstream production)* [7]	0.52	0.44	0.40	0.39	0.39

(1) Greenhouse Gas (GHG) Alberta Regulation is selected as the basis for this report. Please note, ExxonMobil Environmental Performance Indicator (EPI) reporting uses a different basis for GHG reporting. Imported/exported electricity GHG emission factor (0.37 tonnes CO_2e/MWhr) consistent with the benchmark established for electricity from 2018 CCIR (Carbon Competitiveness Incentive Regulation) and draft OBPS (Output Based Pricing System) from Dec 2018.

(2) Some uncertainty exists in performance data, depending on measurement methods. Data in the report and performance data table represent the best available information at the time of publication. Data represents Imperial owned and operated assets (including 100% Kearl; excluding ExxonMobil Canada, XTO Canada and Syncrude). Dartmouth refinery (shut down in 2013), retail stations (sold in 2016) and other assets that were divested between 2013-2017 are not included.

(3) Excluding CO_2 emissions from biomass.

(4) GHG emissions calculated as sum of direct emissions and emissions associated with imported electricity less (minus) emissions associated with exported electricity.

(5) Throughput basis: Refinery throughput is the volume of crude oil and feedstocks that is processed in the refinery atmospheric distillation units; excluding Dartmouth refinery (shut down in 2013).

(6) Production basis: Represents bitumen/crude production at Kearl, Cold lake and Norman wells; Kearl and Cold lake production basis same as reported under Alberta provincial regulation.

(7) Production basis: Operated oil sands (Kearl and Cold lake) production basis same as reported under Alberta greenhouse gas emissions regulation.

(8) GHG emissions intensity is the ratio of GHG emissions to production or throughput.

A CLOSER LOOK

Cogeneration in Alberta

Cogeneration is an energy-efficient process that simultaneously generates electric power and steam by recycling gas turbine generator waste heat to produce steam.

- Energy saving cogeneration, producing steam and electricity, reduces the energy draw from the Alberta grid and lowers GHG emissions.
- 444 MW capacity in Alberta, anticipated to grow by nine percent with the addition of Strathcona cogeneration.

In 2017, cogeneration at our Alberta facilities has enabled avoidance[32] of ~1.2 million tonnes of GHG emissions; almost equivalent to 246,000 passenger vehicles driven for one year or ~2,800 million miles driven by an average passenger vehicle.[33]

Kearl cogeneration unit

- Power generation capacity of 84 MW.
- Operational since 2015.
- Anticipated to provide about 30 percent of plant electricity needs.[34]

Strathcona cogeneration unit

- Power generation capacity of 41 MW.
- Projected to be operational in early 2020.
- Anticipated to provide about 75 to 80 percent of refinery's electricity needs.

Cold Lake cogeneration unit

- Two cogeneration units each with 180 MW of power generation capacity located at Nabiye and Mahkeses sites.
- Operational since 2002 (Mahkeses) and 2015 (Nabiye).
- In 2017, exported 165 MW to the Alberta grid.

A CLOSER LOOK

Collaboration to reduce GHG emissions

Kearl boiler flue gas heat recovery

The Kearl flue gas heat and water recovery project is a first in Alberta's oil sands involving a full-scale field demonstration of the Canadian ConDex technology. Typically, oil sands mining operations heat process water by steam which is generated by burning natural gas. By recovering waste heat from a single boiler's combustion exhaust to preheat process water, we are able to reduce the steam needed to heat the process water, resulting in an overall energy efficiency increase and a reduction in GHG emissions.

This project emerges from ongoing collaboration between Foresight Cleantech Accelerator Centre, COSIA and Alberta Innovates to accelerate clean technologies to field deployment while improving environmental and cost performance in the oil sands. This project was recently selected by Emissions Reduction Alberta's Industrial Efficiency Challenge, based on the project's potential to reduce GHG emissions across the industry. A detailed techno-economic evaluation of this Canadian clean technology concludes that each unit could save up to 30,000 tonnes/year of carbon dioxide equivalent (CO_2e), recover up to 150,000 cubic metres/year of water and generate positive economic results.

The project's primary objective is to demonstrate and quantify the technology's effectiveness on an industrial boiler with mine recycle water and natural gas combustion exhaust, installed outdoors in northern Alberta. If commercially successful, this could represent a significant scale-up of approximately eight times the ConDex current maximum operating duty in other industry sectors.

Depending on the results, this collaboration may benefit Kearl and others in reducing fuel usage and GHG emissions.

Climate risk oversight

Imperial's Board of Directors is responsible for identifying principal risks, including climate-related risks and for overseeing implementation of appropriate systems to manage such risks.

The Board contributes to the annual development and approval of strategic plans that consider Canadian and global economic outlooks. This includes consideration of Management's recommendations regarding major corporate decisions and actions that may have significant societal impact.

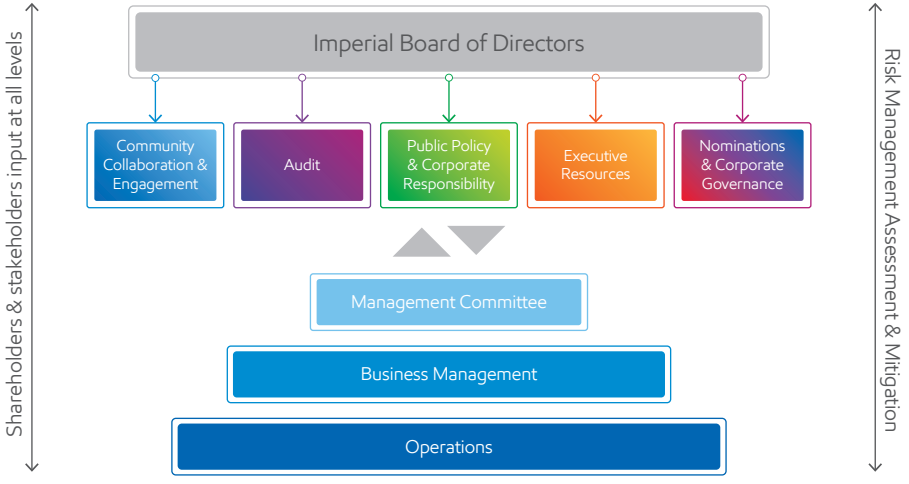
Climate risk is considered throughout the year during the corporate planning process, technology reviews, considering shareholder proposals and when reviewing management recommendations. The Board assesses company performance through a broad range of criteria including site visits, reviews of key reports and regulatory filings such as National Instrument 51-101 Form 1 and the U.S. Securities and Exchange Commission Form 10-K.

The Board routinely reviews and considers environmental stewardship issues through briefings on research and technology, public policy and the company's external communications. They ensure appropriate measures are in place for feedback from stakeholders.

The Public Policy and Corporate Responsibility Committee (PP&CRC) assists the Board by providing oversight on environmental, health and safety performance along with legislative compliance and the assessment of potential long-term impacts of public policy on corporate performance, including climate change risk.

Risk management occurs at multiple levels of the business as part of Imperial's risk management process. The Management Committee, which includes the chairman of the Board and chief executive officer ensure all risks, including climate risks, are addressed throughout the company. The company provides an annual report to the PP&CRC on environmental performance including GHG emissions.

Risk management oversight



Executive compensation: the executive resources committee

The executive resources committee ensures the compensation system is inherently designed to support the sustainability of our operations and the management of risk. This board committee reviews and evaluates goals and objectives relative to compensation which may include:

- safety, health and environmental performance;
- risk management;
- total shareholder return;
- net income;
- return on average capital employed;*
- cash flow from operations and asset sales;*
- operating performance of the upstream, downstream and chemical segments; and
- progress on advancing government relations and long-term strategic interests.

The compensation of the CEO is evaluated as it pertains to the achievement of goals and objectives. The executive resources committee approves salary and other compensation balancing both short-term and long-term incentives for the CEO and key senior executive management positions. The annual report on compensation is reviewed and approved for inclusion in the corporation's management proxy circular in accordance with applicable legal requirements.

* For a definition of return on average capital employed and cash flow from operations and asset sales, see the "Frequently used terms" section of Imperial's most recent annual report on Form 10-K.

Enterprise risk management – comprehensive management

Imperial uses a comprehensive risk management framework to identify and manage risk to the company, including climate change risk. This systemic approach is fundamental and is cascaded throughout the organization.

Imperial engages directly with a variety of external stakeholders including policy makers, investors, customers, regulators, academics, Indigenous peoples, non-governmental organizations and industry associations on issues of relevance to the company. This engagement provides excellent external input and feedback to our risk management system.

Imperial's Operations Integrity Management System (OIMS) is a comprehensive framework with a common set of expectations that embodies Imperial's steadfast commitment to excellence in managing personnel and process safety, and the operational and environmental risks inherent in our business.

Imperial's Controls Integrity Management System (CIMS) provides a structured approach for assessing financial-control risks, establishing procedures for mitigating concerns, monitoring compliance with standards and reporting results to management.

Imperial has been cited by Lloyd's Register Quality Assurance for "being among the leaders in the extent to which environmental management considerations have been integrated into our ongoing business practices."

Operations Integrity Managing System (OIMS)

The OIMS framework includes 11 elements. Each element has an underlying principle and set of expectations.

Protect Tomorrow. Today.

Managers and supervisors are expected to credibly demonstrate leadership and commitment for operations integrity. Environmental business plans are integrated with strategic and financial plans to ensure consideration of environmental risk. To drive continuous improvement, the framework is periodically updated.

Imperial conducts risk assessments for ongoing operations, projects, products etc., to identify and address potential hazards. Assessed risks are prioritized and managed as appropriate to the nature and magnitude of the risk. Decisions are clearly documented and followed up. Risks include, but are not limited to, supply and demand interruptions, extreme weather, government and political factors, and risks associated with exploration and development, operations, and cybersecurity.

Imperial also uses sound standards, procedures and managing systems for facility design, construction, startup, operation and other activities. Facilities meet or exceed applicable regulatory requirements. Quality assurance processes are in place and verifications confirm that risk management recommendations have been addressed.

Facilities are operated within established parameters and according to regulations. Risks are assessed and managed using accurate information on processes, facilities, products' hazards and regulatory requirements. Environmental performance, including emissions, discharges and wastes, are tracked and stewarded to meet performance goals, and the company carefully selects, trains and monitors personnel.

Effective management of stakeholder relationships is important to enhance the trust and confidence of communities with which Imperial interacts. Emergency planning and preparedness are essential. The company periodically conducts simulations and drills including external communications. Ongoing evaluations are performed to ensure framework expectations are met.

OIMS 11 elements

Investment planning – considering future climate-related policies

Nationally determined contributions (NDC's) provide important signals on government expectations related to the general direction and pace of likely policy initiatives to address climate risk. The Canadian Federal government has signed on to the Paris Agreement and is implementing an action plan to achieve Canada's international commitments under the Pan Canadian Framework effective January 1, 2019.

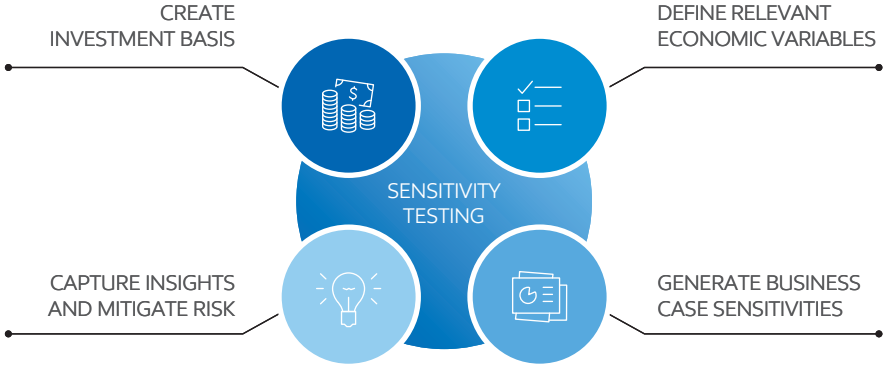
Canadian federal and provincial governments will define the price on carbon into future years. Imperial's significant investments include and consider these inputs.

Imperial has an objective of strengthening its competitive position, focusing on increasing cash flow while delivering industry-leading environmental performance enhancements and economic returns over the business cycle. The company has an inventory of opportunities to support future upstream growth and an unparalleled history of creating value through research and innovation.

Imperial is very disciplined when evaluating projects under various economic conditions. Where appropriate, the company applies sensitivities to evaluate projects for robustness over their intended life time. This is consistent with the objective of building long-term value for Imperial's shareholders and stakeholders.

The company tests its capital investments against many uncertainties, which may include but are not limited to, technology, cost, geopolitics, material services, labour availability, infrastructure and logistics, regulatory, and environment including carbon pricing.

Investment sensitivity testing



Facility resiliency

Imperial has operated many facilities in Canada, over many decades, under adverse weather conditions. Featured below is Imperial's integrated fuels and petrochemical facility in Sarnia, Ontario. Our facilities have evolved, from our early beginnings nearly 140 years ago with dramatic changes in technology. For example, virtual technology is deployed for training, drones are used for surveying and satellites measure GHG emissions.

The company carefully considers the potential for physical and environmental risks in the design, construction, and operation of facilities. Internal design practices utilize available environmental data on infrequent, extreme events (such as forest fires or flooding) to improve facility design. Temperature extremes, especially cold, can be challenging to all Canadian operations. In addition to design considerations, Imperial has procedures to ensure the safety of both personnel and equipment while operating under extreme ambient conditions.

Imperial is committed to responsible and sustainable water development. Fortunately, our operations are located in areas that have ample water to balance our operational needs with economic growth, social development and environmental protection, today and for the future. By deploying technology to minimize water use intensity, considering local water needs and engaging stakeholders in sustainable water solutions, Imperial's systems focus on water conservation, efficiency and productivity. Systems are also designed to operate safely during storm events, based on purpose and risks. For operations with larger consumptive demands, mitigation measures are in place for periods of low water availability.

Emergency preparedness, response and business continuity plans are carefully thought out and maintained. These plans are detailed, practiced and engage external stakeholders and Indigenous communities. In the event of an actual incident, all necessary actions are taken to protect the public, the environment, company personnel and assets.

Imperial's Sarnia operation is our most integrated fuels, chemicals, manufacturing and petroleum research facility in Canada. The refinery can process 120,000 barrels of crude daily.

Real Canadian events that put Imperial's response plans into action

2003 Ontario power grid failure
Ensured hospitals and emergency services had the fuel they needed while restoring operations.

2013 Calgary flood
Operations were maintained during headquarters closure.

2016 Fort McMurray forest fire
An unprecedented evacuation event with challenges in responding to changing air quality while operating at Kearl. Imperial invoked a rapid response to assist the community, including a $100,000 donation to the Canadian Red Cross.

Disclosures/footnotes

(1) *Exxon Mobil Corporation, 2018 Outlook for Energy: A View to 2040*

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

(3) *Article 4 paragraph 2 of the Paris Agreement http://unfccc.int/files/home/application/pdf/paris_agreement.pdf*

(4) *Decision 1/CP.21 Section II.17 https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf*

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

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

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

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

(9) *Such as the 17 sustainable development goals adopted by the United Nations. http://www.un.org/sustainabledevelopment/sustainable-development-goals/*

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

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

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

(12) *IPCC (2013) Climate Change 2013: The Physical Science Basis assessed in its Table SPM.2 that temperature increased from the period of 1850-1900 to the period 1986-2005 by 0.61°C, and that the mean CMIP5 model temperature projection of RCP 4.5 increased from the period 1986-2005 to the period 2081-2100 by an additional 1.8°C, giving a total increase of 2.4°C from the period of 1850-1900 to the period of 2081-2100.*

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

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

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

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

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

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

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

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

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

(22) *Working interest (Imperial share before deducting the shares of mineral owners or governments or both). Alberta Securities Commission National Instrument 51-101 was selected as the basis for the report. Please note, proved reserves reported on the U.S. Securities and Exchange Commission use a different methodology.*

(a) *Property and/or operations that Imperial and its affiliates owns or controls.*

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

(24) *IEA: World Energy Outlook 2017, U.S. dollars.*

(25) *Imperial is a 50-50 partner with ExxonMobil Canada in XTO Energy Canada. The company is continuing to evaluate, develop and produce resources in its Montney and Duvernay unconventional assets in Western Canada.*

(26) *Improvements, such as fuel economy, are based on Synergy-branded gasoline, where and when available, compared to gasoline meeting minimum Canadian government detergency standards. Actual benefits will vary depending on the factors such as vehicle type, driving style and gasoline previously used. Concentration and availability of the seven key ingredients may vary based upon factors beyond our control, including supply disruptions.*

(27) *Based on internal and third-party vehicle engine testing, laboratory testing and/or industry or other scientific literature. Basis for comparison for all claims is versus diesel without detergent additive. Vehicle type, engine type, driving behavior and other factors also impact fuel and vehicle performance, emissions and fuel economy. Synergy Diesel Efficient fuel may be used in other heavy-duty and light-duty vehicles, but results will vary.*

(28) *Governmental, legal or regulatory changes could directly or indirectly delay or otherwise impact GHG emissions intensity reduction measures.*

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

(30) *Energy intensity and total operating cost as defined in the Solomon Associates fuels and lubricants studies. Imperial refinery performance vs. Canadian refining industry average. Solomon Associates 2012 to 2016 average (ex. Dartmouth).*

(31) *2012 used as a base year with data averaged from 2013 to 2018.*

(32) *Difference between GHG emissions from the electricity generated (& used) on-site vs. imported from the grid; GHG's from imported electricity calculated using 2015 AB GHG grid factor from 1990-2015 GHG sources and sinks in Canada, a National Inventory Report published in 2017.*

(33) *https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.*

(34) *Averaged annually.*

Disclosure

Imperial is committed to providing our shareholders with disclosures that impart meaningful insights about our business, including how we manage climate-related risks. This report, along with the rest of our climate related disclosures is guided by the International Petroleum Industry Environmental Conservation Association (IPIECA) including IPIECA's Climate Change Reporting Framework. In addition, there are numerous other reporting frameworks under various stages of development, including the framework proposed by the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD) and we continue to monitor these developments. This report is guided by the TCFD framework and supplements our financial disclosures and evolving sustainability reporting. Our financial reporting is in accordance with regulatory requirements and United States Generally Accepted Accounting Principles.

Related documents

Water management summary

imperialoil.ca/watermanagement

2017 Sustainability Report

imperialoil.ca/sustainability

2018 10-K

imperialoil.ca/company/investors/reports-and-filings/sec-filings

2018 51-101

https://www.sedar.com/DisplayCompanyDocuments.do?lang=EN&issuerNo=00000131

After more than a century, Imperial continues to be an industry leader in applying technology and innovation to responsibly develop Canada's energy resources. As Canada's largest petroleum refiner, a major producer of crude oil, a key petrochemical producer and a leading fuels marketer from coast to coast, our company remains committed to high standards across all areas of our business.

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