

STRATEGIC REPORT

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ACHIEVING **NET-ZERO EMISSIONS**

CHAIR'S MESSAGE

COURAGE AND COVID-19: HOW OUR PEOPLE STEPPED UP

**CHAD HOLLIDAY**

Chair

In 2020, the world faced exceptional adversity in the form of the COVID-19 pandemic. Adversity reveals character. It forces us to find strength we never knew we had.

For the good of all, many people volunteered for medical trials. Scientists and doctors from around the world shared knowledge. Vaccines were developed at a speed no one thought possible. Just imagine what humanity might achieve if it could direct such public-spirited co-operation towards other challenges, like poverty, or climate change.

PEOPLE AND PRODUCTIVITY

If the pandemic revealed humanity's collective strength, it also showed the resilience of Shell. As I prepare to stand down as Chair of the Royal Dutch Shell plc Board in 2021, I am convinced Shell has a bright future. I am also convinced we have a compelling investment case.

The strength and clarity of our strategy will enable us to succeed as a business in the energy transition. We will continue to power progress by generating value for shareholders and investing in energy projects to help meet demand. In turn, this will support supply chains and boost local economies.

My confidence in Shell is made even stronger by the quality of our people. During my 10 years on the Board, I have seen so many colleagues who inspired me as they helped Shell to succeed. When COVID-19 struck, and lockdowns spread, our people rose to the challenge. They continued to produce and deliver vital energy supplies. They helped to power hospitals and fuel ambulances, to keep homes lit and to maintain essential businesses. They showed ingenuity as well as resilience. They put technology to work. For instance, using crawler robots on the roofs of refinery tanks freed our inspectors from having to work at height. The

inspectors could stay in the safety of their homes, focus on analysing the data gathered by the robots, and offer expert opinion. By innovating in such challenging times, we also improved safety and productivity.

And I was struck by the courage and dedication that so many of our people showed in the face of the virus. I heard remarkable personal stories. In Iraq, Niki Jackson and his colleagues at the Basrah Gas Company (BGC) sweated through a summer where temperatures rose to 50 degrees Celsius and COVID-19 spread through the surrounding area. Niki knew he risked catching the virus, despite all the precautions taken by BGC, a joint venture between Shell, the Iraqi government and Mitsubishi. But Niki, from Aberdeen, Scotland, wanted to be on the ground with his colleagues. How else could he be effective in his job as asset services director, responsible for maintenance and engineering operations? His words are worth repeating: "I saw the pride of my Iraqi colleagues, a pride that comes from being able to tell your family: 'I am helping to ensure that everyone around us has electricity, and gas for cooking.'"

"I made my decision: 'Am I still happy doing this? Too right I am. Let's get on with it.'"

Krishna Gupta, a shift superintendent, went out during lockdown to Shell Energy India's regasification facility in Hazira, Gujarat. How did he explain this to his 11-year-old son? He told him: "If I don't go to the facility, our gas can't get to those who need it."

ADAPTING TO THE ENERGY TRANSITION

People like Krishna and Niki give me confidence about Shell's future. So too does our strategy. I have seen the progress we have made, and continue to make, towards becoming fully able to play a role in the transition to a low-carbon future.

We are helped by long experience of serving the needs of our customers. Our global network of around 46,000 service stations, for example, gives us insights into the nature of consumer demand for everything from groceries to electric vehicle charging points. It helps us to understand what we must do to be in step with society in the energy transition.

As our business customers work to reduce carbon dioxide emissions, Shell will increasingly provide the low-carbon energy and products to help. We already have the kind of portfolio that other companies are trying to build. We can invest where we will be competitive, for example, in integrated power, hydrogen and low-carbon biofuels. We will also continue to supply oil and gas because the world will need both for years to come. Our Upstream business will help give us the financial strength to invest in low-carbon sources of energy.

OUR MOST DIFFICULT DECISION

This year has shown how Shell must expect the unexpected and be resilient enough to cope with it. The recession of 2020 was unprecedented. US oil prices briefly turned negative for the first time in history.

In April, we faced a perfect storm. With vaccines not yet on the horizon, no one could predict how bad things might get. That was the backdrop to the most difficult decision I have experienced on a company board: the vote to rebase the dividend. It was historic for Shell. More importantly, it was human. This was about the people who invest in us, whose belief in Shell is partly rewarded by the dividend. The grim reality was there was only one thing worse than rebasing the dividend: not rebasing the dividend.

We could have borrowed to keep the dividend at the same level. But in our view that would have been a mistake. By taking the decisive action to rebase the dividend significantly as we did, I believe we ensured that Shell could emerge from the impact of COVID-19 in strong shape.

In October, we were able to raise the dividend by a modest amount, and signal our intention to have annual dividend increases, subject to Board approval. The fundamentals remain intact. Despite the global economic havoc wreaked by the pandemic, Shell continues to make strategic progress.

FINDING A WAY

Ben van Beurden, the Chief Executive Officer of Royal Dutch Shell, deserves credit for this progress. Over the years, he has listened to those urging Shell to do more to help tackle climate change. He saw we could create new businesses serving new customers and new markets for low-carbon energy products. And the more governments act on climate change, the more successful these businesses can become, and the better it will be for the planet.

We are also making progress in other ways. We hope that in May, shareholders will agree to appoint a Board which, for the first time in Shell's history, will consist equally of men and women. Greater diversity brings greater understanding of people, and better decision-making.

Shell has set challenging emissions targets. In 2020, we announced our target to become a net-zero emissions energy business by 2050 in step with society. We intend to meet our customers' demand for cleaner energy, keeping pace with society's progress towards tackling climate change. As this suggests, we cannot stand still. When necessary, we must be as fast-moving as we were when the pandemic hit. We must also strive constantly to increase productivity, to continue to build financial strength.

In the worst of times, you often see the best of people. In 2020, our people showed great character in adversity. I thank every one of them. I firmly believe their efforts mean Shell will continue to succeed, to deliver energy and to power progress.

CHAD HOLLIDAY

Chair

Adapting to the energy transition

Shell can invest in areas where we will be competitive, such as hydrogen.



Working together across Shell during the COVID-19 global pandemic

Below (clockwise from top left): Shell made innovative use of robots during lockdowns; our people kept service stations open; Krishna Gupta; Niki Jackson.



CHIEF EXECUTIVE OFFICER'S REVIEW

POWERING PROGRESS AND FACING A PANDEMIC



BEN VAN BEURDEN
Chief Executive Officer

In 2020, the COVID-19 pandemic affected us all. Sadly, it claimed the lives of 20 of our Shell colleagues. I heard the stories behind these tragedies, and the cruelty of the pandemic really hit home.

The virus also wreaked havoc with the global economy, dramatically suppressing energy demand. Our income went from \$16.4 billion in 2019 to a loss of \$21.5 billion in 2020, which included non-cash impairments of \$28.1 billion. In April, with oil prices falling rapidly, Shell took swift, decisive action to preserve cash and stay resilient. We rebased the dividend, lowering it by 66%.

It was a very difficult decision to make, but the right thing to do.

Our dividend payments went from \$15.2 billion in 2019 to \$7.4 billion in 2020. We combined rebasing the dividend with the discipline to reduce cash capital expenditure from \$23.9 billion in 2019 to \$17.8 billion in 2020. We reduced net debt from \$79.1 billion in 2019 to \$75.4 billion at the end of 2020.

In October, with global energy demand looking more robust, we raised the dividend by 4% and signalled our intention to have annual dividend increases, subject to Board approval.

Our industry-leading cash flows from operations confirm Shell's underlying strength. Despite the unprecedented challenges, we delivered cash flow from operating activities of \$34.1 billion in 2020, compared with \$42.2 billion in 2019.

Once we have reduced net debt to \$65 billion, we will target total shareholder distributions of 20-30% of cash flow from operations.

In 2020 we began implementing our new safety approach, which places greater emphasis on increasing the chances of people emerging unhurt even if there is an incident. For the first year in our history, there were zero fatal accidents in Shell-operated facilities. I want this achievement to spur us on so that we keep working hard on safety.

THE GOALS OF POWERING PROGRESS

We worked towards refreshing our strategy in 2020, and in February 2021, we announced Powering Progress. It is what I believe Shell does. It is what I believe Shell should continue to do.

Our Powering Progress strategy combines our ambitions under four goals: generating shareholder value, achieving net-zero emissions, powering lives and respecting nature. This will help us accelerate our progress towards becoming a net-zero emissions energy business by 2050, in step with society.

We will lower emissions from our operations, including the energy consumed in running them, and help our customers to reduce their emissions from using our products. Importantly, this will include emissions from oil and gas that others produce and we then sell in our products – an industry-leading approach.

Shell will deal with any of its remaining emissions using carbon capture and storage (CCS) technology, or offsets where plants absorb carbon dioxide.

We expect our total oil production to reduce by 1-2% a year until 2030, taking into account divestments and natural decline. But we expect Upstream oil and gas production to deliver strong cash flows into the 2030s, underpinning our returns to shareholders and helping to fund the low-carbon investments that will transform Shell's energy mix. In all these ways, Shell will change as the world adopts the low-carbon energy system needed to tackle climate change.

WINNING IN A TRANSFORMED ENERGY SYSTEM

Customers and the choices they make will define the nature of the future energy system.

I think the winning energy companies will be those, like Shell, who are best placed to serve customers.

We serve more than 1 million commercial and industrial customers, and 30 million customers at 46,000 retail service stations every day.

We have the leading market positions. We have strong starting positions in products and services that customers are going to want more and more: biofuels, electric-vehicle charging networks, and hydrogen.

Powering Progress

The Powering Progress strategy combines our ambitions under four goals (from top): generating shareholder value; achieving net-zero emissions; powering lives; and respecting nature.



We can work with our customers to develop the low-carbon markets of the future. In this way, Shell would generate value for shareholders while working towards its net-zero carbon emissions target. Society would benefit from reduced emissions.

Take the CrossWind consortium, a joint venture between Shell and Eneco that in 2020 won the tender for the Hollandse Kust (noord) wind farm off the Dutch coast. Shell's plan is to use the wind farm's renewable electricity for powering the industrial-scale production of low-carbon hydrogen by electrolysis, a process that splits water into oxygen and hydrogen.

We will then work with hauliers and truck manufacturers to develop a market for hydrogen as a low-carbon fuel for heavy goods transport.

THE VALUE OF STRATEGIC RELATIONSHIPS

Hollandse Kust (noord) is helping Shell to form other important strategic relationships. In February 2021, Amazon signed an agreement to buy renewable electricity from the wind farm.

Through its air cargo fleet, Amazon also has a growing interest in aviation, one of those sectors that will be hard to decarbonise. Shell has one of the world's most extensive aircraft refuelling networks. We can work with customers, suppliers and regulators to develop a commercially viable and profitable market for sustainable aviation fuel (SAF). We have agreed to supply Amazon with up to six million gallons of blended SAF for its cargo aircraft. This biofuel, produced by the company World Energy using agricultural waste fats and oils, has lower life-cycle carbon emissions than conventional jet fuel.

We also formed a strategic alliance with Microsoft in 2020. Shell is supplying Microsoft with renewable energy, supporting it towards its goal of using 100% renewable energy by 2025. Both businesses will develop digital tools to help Shell's customers decarbonise.

We are working on more of these strategic relationships, generating value while helping sectors to reduce their carbon emissions.

In 2020 we announced a major reorganisation which will take effect from August 2021. We believe this will make us more responsive to customers, as a nimbler organisation with lower costs.

We expect to reduce between 7,000 and 9,000 jobs as we make these changes. It will mean saying goodbye to many people who have shown us great loyalty. We will do this in the spirit of our core values of honesty, integrity and respect for people.

As we prepare for the years ahead, we can draw confidence from how we rose to the challenges of 2020.

What struck me was how our people combined ingenuity with determination to do the right thing: in applying financial discipline, in supplying energy during lockdowns, in making donations to help their communities fight COVID-19. In such hard times, our people generated value for society, and Shell.

They fill me with confidence for the future. With a strong strategy and good people, Shell will power progress for decades to come.

BEN VAN BEURDEN

Chief Executive Officer

SELECTED FINANCIAL DATA

The selected financial data set out below are derived, in part, from the “Consolidated Financial Statements”. These data should be read in conjunction with the “Consolidated Financial Statements” and related Notes, as well as with this Strategic Report.

Consolidated Statement of Income and Statement of Comprehensive Income data

180,543

Revenue (\$ million)

(21,534)

(Loss)/income for the period (\$ million)

146

Income attributable to non-controlling interest (\$ million)

(21,680)

(Loss)/income attributable to Royal Dutch Shell plc shareholders (\$ million)

(23,512)

Comprehensive (loss)/income attributable to Royal Dutch Shell plc shareholders (\$ million)

\$ million	2020	2019	2018	2017	2016
Revenue	180,543	344,877	388,379	305,179	233,591
(Loss)/income for the period	(21,534)	16,432	23,906	13,435	4,777
Income attributable to non-controlling interest	146	590	554	458	202
(Loss)/income attributable to Royal Dutch Shell plc shareholders	(21,680)	15,842	23,352	12,977	4,575
Comprehensive (loss)/income attributable to Royal Dutch Shell plc shareholders	(23,512)	13,773	24,475	18,828	(1,374)

Consolidated Balance Sheet data

379,268

Total assets (\$ million)

108,014

Total debt (\$ million)

651

Share capital (\$ million)

155,310

Equity attributable to Royal Dutch Shell plc shareholders (\$ million)

75,386

Net debt (\$ million)

3,227

Non-controlling interest (\$ million)

\$ million	2020	2019	2018	2017	2016
Total assets	379,268	404,336	399,194	407,097	411,275
Total debt [A]	108,014	96,424	76,824	85,665	92,476
Net debt [A]	75,386	79,093	51,428	65,944	73,346
Share capital	651	657	685	696	683
Equity attributable to Royal Dutch Shell plc shareholders	155,310	186,476	198,646	194,356	186,646
Non-controlling interest	3,227	3,987	3,888	3,456	1,865

[A] Total debt and net debt figures for 2018 and earlier periods are on an IAS 17 basis.

Consolidated Statement of Cash Flows data [A]

34,105

Cash flow from operating activities (\$ million)

16,585

Capital expenditure (\$ million)

13,278

Cash flow from investing activities (\$ million)

7,424

Cash dividends paid to Royal Dutch Shell plc shareholders (\$ million)

1,702

Repurchases of shares (\$ million)

\$ million	2020	2019	2018	2017	2016
Cash flow from operating activities	34,105	42,178	53,085	35,650	20,615
Capital expenditure	16,585	22,971	23,011	20,845	22,116
Cash flow from investing activities	13,278	15,779	13,659	8,029	30,963
Cash dividends paid to Royal Dutch Shell plc shareholders	7,424	15,198	15,675	10,877	9,677
Repurchases of shares	1,702	10,188	3,947	—	—

[A] With the exception of Cash flow from operating activities, which are cash inflows, all other items are cash outflows.

Earnings per share

(2.78)

Basic earnings per €0.07 ordinary share (\$)

(2.78)

Diluted earnings per €0.07 ordinary share (\$)

\$	2020	2019	2018	2017	2016
Basic earnings per €0.07 ordinary share	(2.78)	1.97	2.82	1.58	0.58
Diluted earnings per €0.07 ordinary share	(2.78)	1.95	2.80	1.56	0.58

Dividend per share

0.65

Dividend per share (\$)

\$	2020	2019	2018	2017	2016
Dividend per share	0.65	1.88	1.88	1.88	1.88

Shares

7,795.6

Basic weighted average number of A and B shares (million)

7,795.6

Diluted weighted average number of A and B shares (million)

Million	2020	2019	2018	2017	2016
Basic weighted average number of A and B shares	7,795.6	8,058.3	8,282.8	8,223.4	7,833.7
Diluted weighted average number of A and B shares	7,795.6	8,112.5	8,348.7	8,299.0	7,891.7

SHELL STORY: WHO WE ARE

Shell is a global group of energy and petrochemical companies with 87,000 employees in more than 70 countries.

We have expertise in the exploration, production, refining, marketing and trading of oil and natural gas, and the manufacturing and marketing of chemicals.

We use advanced technologies and take an innovative approach to help build a sustainable energy future. We also invest in power, including from renewable sources such as wind and solar, and new fuels for transport, such as advanced biofuels and hydrogen.

We serve more than 30 million customers at almost 46,000 retail service stations every day.

Our strategy is to accelerate the transition of our business to net-zero emissions, purposefully and profitably.

OUR CONTEXT

The rising standard of living of a growing global population is likely to continue to drive demand for energy, including oil and gas, for years to come. At the same time, technological changes and the need to tackle climate change mean there is a transition under way to a lower-carbon, multi-source energy system with increasing customer choice.

OUR STAKEHOLDERS INCLUDE:

Our investor community
Our customers
Our employees/workforce/pensioners
Our strategic partners/suppliers
Communities
NGOs/civil society stakeholders/
academia/think-tanks
Governments/regulators

See "Section 172(1) statement" on pages 22-27, "Environment and society" on pages 85-93, "Our people" on pages 108-111 and "Governance" on pages 112-189 for more detailed discussions around our context and stakeholders.

OUR PURPOSE

We power progress together by providing more and cleaner energy solutions.

See "Strategy and outlook" on page 18 for more detailed discussion around our purpose.

OUR CORE VALUES

Honesty
Integrity
Respect for people

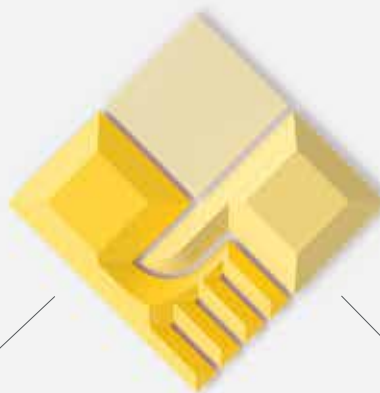
The Shell General Business Principles, Code of Conduct, and Code of Ethics help everyone at Shell to act in line with these values and comply with relevant laws and regulations. We also strive to build and maintain a diverse and inclusive culture within our company.

See "Our people" on pages 108-111 for more detailed discussion around our core values.

THE SHELL INVESTMENT CASE

POWERING PROGRESS

Our strategy to accelerate the transition to net-zero emissions, purposefully and profitably



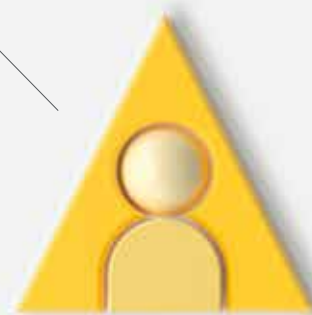
GENERATING SHAREHOLDER VALUE

Growing value through a dynamic portfolio and disciplined capital allocation



RESPECTING NATURE

Protecting the environment, reducing waste and making a positive contribution to biodiversity



POWERING LIVES

Powering lives through our products and activities, and supporting an inclusive society



ACHIEVING NET-ZERO EMISSIONS

Working with our customers and sectors to accelerate the energy transition to net-zero emissions

UNDERPINNED BY
OUR **CORE VALUES**
AND OUR FOCUS
ON **SAFETY**

SHELL STORY: WHAT WE DO

We aim to meet the world's growing need for more and cleaner energy solutions in ways that are economically, environmentally and socially responsible.

OUR INPUTS [A]



FINANCIAL

276,719 2019: 291,142
Average capital employed (\$ million)

17,827 2019: 23,919
Cash capital expenditure (\$ million)

Read more in "Performance indicators" on pages 43-45 and "Non-GAAP measures reconciliations" on pages 305-306.

OPERATIONS

95.5% 2019: 90.8%
Refinery and chemical plant availability

48% 2019: 90%
Project delivery on schedule

104% 2019: 99%
Project delivery on budget

Read more in "Performance indicators" on pages 43-45.

INNOVATION

907 2019: 962
Investments in research and development (\$ million)

8,480 2019: 9,449
Patents [B]

Read more in "Technology and Innovation" on page 17.

HUMAN CAPITAL

87,000 2019: 87,000
Employees [B]

234,000 2019: 373,000
Training days

Read more in "Our people" on pages 108-111.

RELATIONSHIPS

Customers
Joint arrangements
Government relations
Suppliers

>70 2019: >70
Operating countries [B]

Read more in "Section 172(1) statement" on pages 22-27, "Environment and society" on pages 85-93 and "Governance" on pages 112-189.

NATURAL RESOURCES

9,124 2019: 11,096
Proved oil and gas reserves (million boe) [B]

1,239 2019: 1,338
Oil and gas production available for sale (million boe)

171 2019: 192
Fresh water withdrawn (million cubic metres)

Read more in "Oil and gas information" on pages 61-69 and "Environment and society" on pages 85-93.

OUR BUSINESS MODEL



We seek to create shareholder value by:

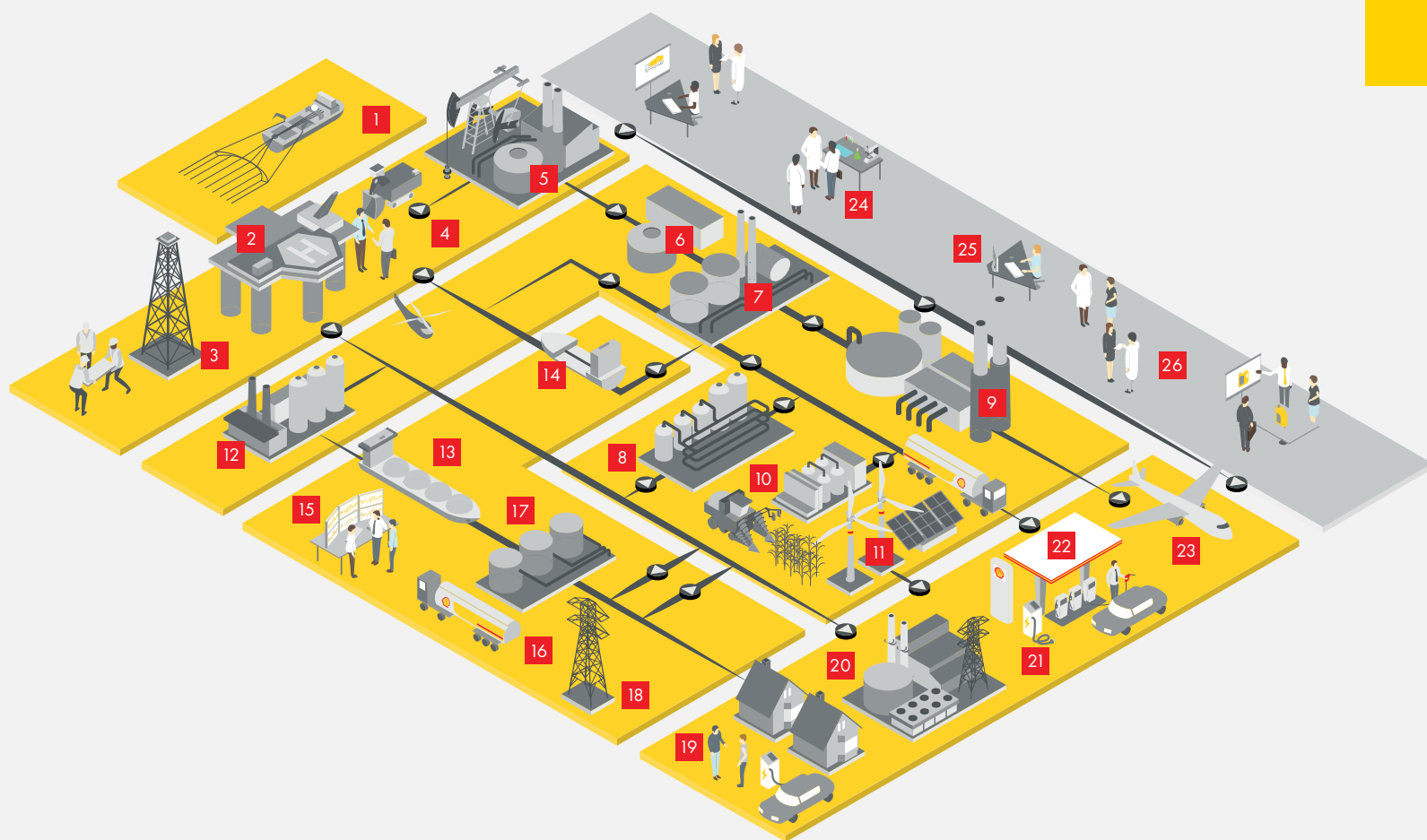
- exploring for crude oil and natural gas worldwide;
- developing new crude oil and natural gas supplies from major fields and extracting bitumen from oil sands;
- cooling natural gas to produce liquefied natural gas (LNG) and converting gas to liquids (GTL);
- supplying, marketing and trading oil, gas and other energy-related products, such as electricity and carbon-emission rights as part of our integrated business model;
- having a portfolio of refineries and chemical plants producing a wide range of products including gasoline, diesel, aviation and marine fuel, lubricants and petrochemicals;
- marketing lubricants, aviation fuels, bitumen, sulphur, retail mobility fuels and convenience products and services, as well as low-carbon fuels to customers;
- capturing carbon dioxide using carbon capture and storage (CCS) technology; and
- investing in nature-based solutions that avoid or reduce carbon dioxide emissions.

The integration of our businesses is one of our competitive advantages, allowing optimisations across our global portfolio.

[A] In 2020 unless stated otherwise.
[B] At 31.12.2020.

OUR BUSINESS MODEL EXPLAINED

BUSINESS ACTIVITIES



EXPLORATION

1. Exploring for oil and gas onshore and offshore

DEVELOPMENT AND EXTRACTION

2. Developing onshore and offshore fields
3. Producing conventional, deep-water and shale oil and gas
4. Capturing carbon dioxide and storing it safely underground
5. Extracting bitumen

MANUFACTURING AND ENERGY PRODUCTION

6. Upgrading bitumen
7. Refining oil into fuels and lubricants
8. Producing gas-to-liquids (GTL) products
9. Producing petrochemicals
10. Producing biofuels
11. Generating renewable power
12. Producing liquefied natural gas (LNG)

TRANSPORT AND TRADING

13. Shipping gas to where it is needed
14. Shipping oil to where it is needed
15. Trading oil and gas
16. Supply and distribution of LNG for transport applications
17. Regasifying LNG
18. Trading power

SALES AND MARKETING

19. Supplying domestic electricity
20. Supplying products to businesses, including gas for cooking, heating and electrical power
21. Progressing electric vehicle and hydrogen refuelling infrastructure
22. Providing mobility solutions for customers, including fuels and lubricants
23. Supplying aviation fuel

TECHNICAL AND BUSINESS SERVICES

24. Researching and developing new technology solutions
25. Managing the delivery of major projects
26. Providing technical and supporting services

Our Powering Progress strategy is designed to create value for our shareholders, customers and wider society.

OUR OUTCOME AND IMPACT [A]


ENERGY TRANSITION AND CLIMATE CHANGE

75 2019: 78

Net Carbon Footprint
(grams of CO₂ equivalent
per megajoule)

63 2019: 70

Direct greenhouse gas (GHG)
emissions (million tonnes of
CO₂ equivalent)

 [Read more in "Climate change and energy transition" on pages 94-107.](#)


ENVIRONMENTAL IMPACTS

68 2019: 67

Operational spills of more
than 100 kg

0.4 2019: 0.2

Weight of operational spills
(in '000 tonnes)

 [Read more in "Environment and society" on pages 85-93.](#)

[A] In 2020 unless stated otherwise.

FINANCIAL PERFORMANCE

(6.8)% 2019: 6.7% **9,126** 2019: 25,386
 Return on average capital employed (ROACE) Shareholder distributions (\$ million)

Read more in "Performance indicators" on pages 43-45 and "Non-GAAP measures reconciliations" on pages 305-306.

RESILIENCE OF BUSINESS MODEL

20,828 2019: 26,399 **75,386** 2019: 79,093
 Free cash flow (\$ million) Net debt (\$ million)

Read more in "Performance indicators" on pages 43-45 and "Liquidity and capital resources" on pages 81-84.

TRUST AND TRANSPARENCY

42.2 2019: 47.5 **1,425** 2019: 1,686
 Brand value (\$ billion) [C] Shell Global Helpline (reports to the helpline)
 Publication of the second Shell Tax Contribution Report

Read more in "Corporate" on page 80 and "Our people" on pages 108-111.

HEALTH, SAFETY AND SECURITY

0.7 2019: 0.9 **103** 2019: 130
 Total recordable case frequency (injuries per million working hours) Operational Tier 1 and 2 process safety events

Read more in "Environment and society" on pages 85-93.

CONTRIBUTION TO COUNTRIES OF OPERATION

47.3 2019: 61.3 **39.3** 2019: 44.9
 Taxes paid and collected (\$ billion) Total spend on goods and services (\$ billion)

Read more in "Environment and society" on pages 85-93.

OUR PEOPLE

27.8% 2019: 26.4% **78** 2019: 78
 Women in senior leadership positions [B] Average employee engagement score (points)

Read more in "Our people" on pages 108-111.

[B] At 31.12.2020.

[C] Source: Brand Finance Global 500 2021 Report.

OUR ORGANISATION

We describe below how our activities are organised. Integrated Gas, Upstream and Downstream focus on our three business pillars (see “Strategy and outlook” on page 18). Our Projects & Technology organisation manages the delivery of Shell’s major projects and drives research and innovation to develop new technology solutions.

INTEGRATED GAS (INCLUDING NEW ENERGIES)

Integrated Gas manages LNG activities and the conversion of natural gas into GTL fuels and other products. It includes natural gas exploration and extraction, and the operation of upstream and midstream infrastructure necessary to deliver gas to market. It markets and trades natural gas, LNG, electricity and carbon-emission rights and also markets and sells LNG as a fuel for heavy-duty vehicles and marine vessels.

In New Energies, which was rebranded to Renewables and Energy Solutions in 2021, we are exploring emerging opportunities and investing in those where we believe sufficient commercial value is available. We focus on new fuels for transport, such as advanced biofuels, hydrogen and charging for battery-electric vehicles; and power, including from natural gas and low-carbon sources such as wind and solar.

UPSTREAM

Upstream manages the exploration for and extraction of crude oil, natural gas and natural gas liquids. It also markets and transports oil and gas, and operates infrastructure necessary to deliver them to market.

DOWNSTREAM

Downstream manages different Oil Products and Chemicals activities as part of an integrated value chain that trades and refines crude oil and other feedstocks into a range of products which are moved and marketed around the world for domestic, industrial and transport use. The products we sell include gasoline, diesel, heating oil, aviation fuel, marine fuel, biofuel, lubricants, bitumen and sulphur. We also produce and sell petrochemicals for industrial use worldwide. Our Downstream organisation also manages Oil Sands activities (the extraction of bitumen from mined oil sands and its conversion into synthetic crude oil).

PROJECTS & TECHNOLOGY

Our Projects & Technology organisation manages the delivery of our major projects and drives research and innovation to develop new technology solutions. It provides technical services and technology capability for our Integrated Gas, Upstream and Downstream activities. It is also responsible for providing functional leadership across Shell in the areas of safety and environment, contracting and procurement, wells activities and greenhouse gas management.

Our future hydrocarbon production depends on the delivery of large and integrated projects (see “Risk factors” on pages 28-37). Systematic management of life-cycle technical and non-technical risks is in place for each opportunity, with assurance and control activities embedded throughout the project life cycle. We focus on the cost-effective delivery of projects through commercial agreements, supply-chain management, and construction and engineering productivity through effective planning and simplification of delivery processes. Development of our employees’ project management competencies is underpinned by project principles, standards and processes. A dedicated competence framework, training, standards and processes exist for various technical disciplines. We also provide governance support for our non-Shell-operated ventures or projects.

SEGMENTAL REPORTING

Our reporting segments are Integrated Gas, Upstream, Oil Products, Chemicals and Corporate. Integrated Gas, Upstream, Oil Products and Chemicals include their respective elements of our Projects & Technology organisation. The Corporate segment comprises our holdings and treasury organisation, self-insurance activities, and headquarters and central functions. See Note 4 to the “Consolidated Financial Statements” on pages 230-232.

With effect from January 1, 2020, additional contracts were classified as held for trading purposes and consequently revenue is reported on a net rather than gross basis.

Revenue by business segment (including inter-segment sales) [A]

	\$ million		
	2020	2019	2018
Integrated Gas			
Third parties	33,287	41,322	43,764
Inter-segment	3,410	4,280	5,031
Total	36,697	45,602	48,795
Upstream			
Third parties	6,767	9,482	9,459
Inter-segment	21,564	35,735	37,125
Total	28,330	45,217	46,584
Oil Products			
Third parties	128,717	280,460	316,409
Inter-segment	6,213	7,819	10,613
Total	134,930	288,279	327,022
Chemicals			
Third parties	11,721	13,568	18,704
Inter-segment	2,850	3,917	4,864
Total	14,571	17,485	23,568
Corporate			
Third parties	51	45	43
Total	51	45	43

[A] Historical comparatives are based on prevailing foreign exchange rates for respective years.

Revenue by geographical area (excluding inter-segment sales) [A]

	\$ million		
	2020	2019	2018
Europe	50,138	98,455	118,960
Asia, Oceania, Africa	65,139	139,916	153,716
USA	50,856	83,212	89,876
Other Americas	14,410	23,294	25,827
Total	180,543	344,877	388,379

[A] Historical comparatives are based on prevailing foreign exchange rates for respective years.

TECHNOLOGY AND INNOVATION

Technology and innovation are essential to our efforts to meet the world's energy needs in a competitive way. If we do not develop the right technology, do not have access to it or do not deploy it effectively, this could have a material adverse effect on the delivery of our strategy and our licence to operate (see “Risk factors” on pages 28-37). We continually look for technologies and innovations of potential relevance to our business. Our Chief Technology Officer oversees the development and deployment of new and differentiating technologies and innovations across Shell, seeking to align business and technology requirements throughout our technology maturation process.

In 2020, research and development expenses were \$907 million, compared with \$962 million in 2019, and \$986 million in 2018. Our main technology centres are in India, the Netherlands and the USA, with other centres in Brazil, China, Germany, Oman, and Qatar. A strong patent portfolio underlies the technology that we employ in our various businesses. In total, we have around 8,480 granted patents and pending patent applications.

OUR STRATEGY

In February 2021, Shell launched Powering Progress which sets out our strategy to accelerate the transition of our business to net-zero emissions, in step with society, purposefully and profitably.

CONTEXT

Our strategy is founded on our outlook for the energy sector and the chance to grasp opportunities arising from the substantial changes in the world around us. We believe the rising standard of living of a growing global population will continue to drive demand for energy for years to come. The world will need to find a way to meet this growing demand, while transitioning to a net-zero emissions energy system to counter climate change.

POWERING PROGRESS

In February 2021, Shell launched Powering Progress, which sets out our strategy to accelerate the transition of our business to net-zero emissions, in step with society, purposefully and profitably.

We will build a strong and resilient business by putting customers at the centre of our strategy, innovating the products and solutions customers need on their journey to net zero. This includes partnering with others to reduce carbon emissions, especially in sectors that are hard to decarbonise. We aim to deliver value through our integrated assets and supply chains, optimising value and managing risk for Shell and our customers as we produce, buy, trade, transport and sell energy products across the world. This is a strategy that combines our financial strength and discipline with a dynamic approach to our portfolio of assets and products, so that we are ready to seize the significant opportunities that exist for us in the energy transition.

POWERING PROGRESS

GENERATING SHAREHOLDER VALUE

Growing value through a dynamic portfolio and disciplined capital allocation

ACHIEVING NET-ZERO EMISSIONS

Working with our customers and across sectors to accelerate the transition to net-zero emissions



Powering Progress generates value for our shareholders, customers and wider society. It has four main goals which integrate sustainability with our business strategy. These goals support Shell's purpose, to power progress together by providing more and cleaner energy solutions. They are underpinned by our core values of honesty, integrity and respect for people, and our focus on safety.

Generating shareholder value: We aim to create the conditions for share price appreciation by preparing our business for the future and accessing the opportunities that the future of energy holds. We will do this while providing sustainable distributions today through our progressive dividend policy. The changing energy landscape means that Shell must take a dynamic approach to its portfolio of assets and products. That means continuing to provide the energy the world needs today, and increasing our investments in cleaner energy. We will keep a disciplined approach to capital investment, and a strong balance sheet, so that our organisation remains strong and resilient. In this way, we will achieve our aim of being a compelling investment case for our shareholders.

Achieving net-zero emissions: Tackling climate change is an urgent challenge. That is why we have set a target to become a net-zero emissions energy business by 2050, in step with society. We are transforming our business and finding new opportunities – selling more low-carbon products such as biofuels, electricity generated by solar and wind power, hydrogen and charging for electric vehicles. We are partnering with customers, businesses and governments to address the energy transition and reduce emissions sector by sector. This includes in sectors that are harder to decarbonise, such as aviation, shipping,

commercial road freight, power, heating and certain parts of industry. We also support government policies to reduce carbon emissions in the economy, sector by sector.

Powering lives: Shell helps to power lives and livelihoods by providing vital energy for homes, businesses and transport. The supply of affordable, reliable and sustainable energy is also crucial for addressing global challenges, including those related to poverty and inequality. Our operations support livelihoods by providing employment and training in the communities where we operate. We are working to become one of the most diverse and inclusive companies in the world, a place where everyone feels valued and respected. We are focusing on four areas: gender, race and ethnicity, LGBT+ and disability. We respect human rights in all parts of our business.

Respecting nature: We are stepping up our environmental ambitions, shaping them to reflect the UN Sustainable Development Goals. Our environmental ambitions include protecting and enhancing biodiversity. We are also focusing on using water and other resources more efficiently across all our activities, reusing as much of them as we can. We are reducing waste from our operations and increasing recycling of plastics. We are helping to improve air quality by reducing emissions from our operations and providing cleaner ways to power transport and industry.

Working with our partners and suppliers and developing new collaborations is key. We will join with others across industry, governments, our customers and supply chains to protect nature.

POWERING LIVES

Powering lives through our products and activities, and by supporting an inclusive society



RESPECTING NATURE

Protecting the environment, reducing waste and making a positive contribution to biodiversity



STRATEGY AND OUTLOOK continued

BUSINESS PILLARS

Powering Progress is a strategy that combines our financial strength and discipline with a dynamic approach to our portfolio of assets and products, so that we are ready to seize the significant opportunities that exist for us in the energy transition. Shell will reshape its portfolio of assets and products to meet the cleaner energy needs of its customers in the coming decades. We will deliver our strategy through three business pillars: Growth, Transition, and Upstream.

Through these three areas, we are creating flexibility in investment opportunities while enabling growth in our customer-facing businesses. Our strategy delivers additional value through trading and optimisation.

Achieving our strategy depends on how we respond to competitive forces. We continually assess the external environment – the markets and the underlying economic, political, social and environmental drivers that shape them – to evaluate changes in competitive forces and business models. We use multiple future scenarios to assess the resilience of our strategy. We regularly review the markets where we operate, assessing our competitive position by analysing trends, uncertainties, and the strengths and weaknesses of our traditional and non-traditional competitors.

To support the delivery of our strategy, we are redesigning Shell to put customers at the centre. That means organising ourselves to help economic sectors to decarbonise, by providing integrated, lower-carbon energy solutions, sector by sector.

We maintain business strategies and plans that focus on actions and capabilities to create and sustain competitive advantage. We maintain a risk management framework that regularly assesses our response to, and risk appetite for, identified risks.

See "Risk factors" on page 28 and "Governance" on page 112.

Our Executive Directors' remuneration is linked to the successful delivery of our strategy, based on performance indicators that are aligned with shareholder interests. Long-term incentives form the majority of the Executive Directors' remuneration for above-target performance. In 2020, the Long-term Incentive Plan (LTIP) included cash generation, capital discipline, value created for shareholders, and an energy transition condition. For 2021, the weighting of the energy transition condition in the LTIP has been increased to 20%.

See the "Directors' Remuneration Report" on page 153.

For more details on how the strategic pillars are embedded into our businesses, see "Shell story" on pages 10-17.

DELIVERING THE STRATEGY: OUR VISION FOR THE FUTURE OF ENERGY

GROWTH PILLAR: THE FUTURE OF ENERGY

MARKETS



TRANSITION PILLAR: ENABLING OUR STRATEGY

ASSETS



UPSTREAM PILLAR: FUNDING OUR STRATEGY

RESOURCES



Enhanced value delivery through trading and optimisation

OUTLOOK FOR 2021 AND BEYOND

We believe that our integrated business model is key to driving our strategy. It means that our portfolio is greater than the sum of its parts. This competitive portfolio has a solid track record on cash generation, where Shell is leading its peer group. We intend to evolve our portfolio of assets and the mix of energy that we sell to meet the cleaner energy needs of our customers in the coming decades, while delivering value for our shareholders.

Delivering our strategy will require clear and deliberate capital allocation choices. We approach capital allocation at three levels: enterprise, portfolio and project. The enterprise level is about how we make choices between increasing distributions to our shareholders, investing in our business and/or strengthening our balance sheet. The portfolio level is about how we allocate capital between our three business pillars – Growth, Transition and Upstream. The project level is about how we evaluate and prioritise investment opportunities.

At the enterprise level, we look to achieve the right balance between shareholder distributions today and investing for value-enhancing growth.

For cash capital expenditure, we plan to spend between \$19 and 22 billion per annum in the near term. In addition, we expect operating costs to be no higher than \$35 billion and to deliver a divestment programme totalling around \$4 billion a year in this period. We remain committed to our progressive dividend policy and focused on targeting AA-equivalent credit metrics through the cycle.

Subject to Board approval, we aim to grow the dividend per share by around 4 percent every year. Once our net debt level has reached \$65 billion, we will target the distribution of 20-30% of cash flow from operations to shareholders, and may choose to return cash to shareholders through a combination of dividends and share buybacks.

Once we have achieved this level of shareholder distributions, additional surplus cash will be allocated between further disciplined capital investments to deliver our strategy and further debt reduction to strengthen the balance sheet.

We fully support the Paris Agreement's goal to keep the rise in global average temperature this century to well below two degrees Celsius above pre-industrial levels and to pursue efforts to limit temperature increase even further to 1.5 degrees Celsius. We announced a long-term target to become a net-zero emissions energy business by 2050, in step with society. This includes a target to be net zero on all emissions from the manufacture of all our products – (our Scope 1 and 2 emissions) – by 2050, and also net zero from the end use of all the energy products we sell (Scope 3 emissions). We aim to reduce the net carbon intensity of energy sold by 6-8% by 2023, 20% by 2030, 45% by 2035 and 100% by 2050, in comparison with 2016. We expect that our total carbon emissions from energy sold will stay below 2018 levels. Further details are in the "Climate change and energy transition" section on page 94.

As a result of COVID-19, there continues to be significant uncertainty in the macroeconomic conditions with an expected negative impact on demand for oil, gas and related products. Demand or regulatory requirements and/or constraints in infrastructure may cause Shell to take measures to curtail or reduce oil and/or gas production, LNG liquefaction and utilisation of refining and chemicals plants. Sales volumes could be similarly affected. Such measures could impact our earnings, cash flow and financial condition.

The statements in this "Strategy and outlook" section, including those related to our growth strategies and our expected or potential future cash flow from operations, organic free cash flow, share buybacks, capital investment, divestments, production and Net Carbon Footprint, are based on management's current expectations and certain material assumptions and, accordingly, involve risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied herein. See "About this Report" on page iii and "Risk factors" on pages 28-37.

CAPITAL ALLOCATION: TARGET SHAREHOLDER DISTRIBUTIONS OF 20-30% OF CFFO

	Clear capital allocation framework	Operationalising the framework
1st PRIORITY	Near-term cash capex Ordinary progressive dividend	<ul style="list-style-type: none"> Apportion near-term \$19-22 billion cash capital expenditure: <ul style="list-style-type: none"> Marketing ~\$3 billion; Renewables and Energy Solutions \$2-3 billion; Integrated Gas ~\$4 billion; Chemicals and Products \$4-5 billion; Upstream ~\$8 billion Inorganic capex included in range ~4% dividend per share growth annually, subject to Board approval
2nd PRIORITY	AA credit metrics through the cycle	<ul style="list-style-type: none"> Reduce net debt to \$65 billion <ul style="list-style-type: none"> Milestone for AA credit metrics threshold in the near term
3rd PRIORITY	Additional shareholder distributions	<ul style="list-style-type: none"> Total shareholder distributions of 20-30% of CFFO (on reaching net debt of \$65 billion) <ul style="list-style-type: none"> Distributions include dividends and share buybacks
4th PRIORITY	Capex growth Continued balance sheet strengthening	<ul style="list-style-type: none"> Measured, disciplined capex growth to enable strategy Further reduce net debt to achieve firm long-term AA credit metrics

First cash priority also includes interest paid (CFFF).

Near-term cash capex numbers split by business are rounded and total will be managed within the near-term range of \$19-22 billion.

SECTION 172(1) STATEMENT

The Companies (Miscellaneous Reporting) Regulations 2018 (2018 MRR) require Directors to explain how they considered the interests of key stakeholders and the broader matters set out in Section 172(1) (a) to (f) of the Companies Act 2006 (S172) when performing their duty to promote the success of the Company under S172. This includes considering the interests of other stakeholders which may affect the long-term success of the company. This S172 statement explains how Shell Directors:

- have engaged with employees, suppliers, customers and others; and
- have considered employee interests, the need to foster business relationships with suppliers, customers and others, and the effects of those considerations, including on the principal decisions taken during the financial year.

The S172 statement focuses on matters of strategic importance to Shell, and the level of information disclosed is consistent with the size and the complexity of Shell's businesses.

GENERAL CONFIRMATION OF DIRECTORS' DUTIES

Shell's Board has a clear framework for determining the matters within its remit and has approved Terms of Reference for the matters delegated to its Committees. Certain financial and strategic thresholds have been set, in order to identify matters requiring Board consideration and approval. The Manual of Authority sets out the delegation and approval process across the broader business. More information on Shell's controls and procedures can be found in "Other regulatory and statutory information" on page 182.

When making decisions, each Director ensures that (s)he acts in the way he or she considers, in good faith, would most likely promote Shell's success for the benefit of its members as a whole, and in doing so has regard (among other matters) to the issues set out below.

S172(1) (a) "THE LIKELY CONSEQUENCES OF ANY DECISION IN THE LONG TERM"

The Directors understand the business and the evolving environment in which we operate, including the challenges of navigating through the energy transition. Based on Shell's purpose to power progress together by providing more and cleaner energy solutions, the strategy set by the Board is intended to strengthen our position as a leading energy company by providing oil, gas and low-carbon energy products and services that meet our customers' cleaner energy needs as the global energy system transforms, while keeping safety and social responsibility fundamental to our business approach.

As outlined in "Our context" in the "Shell story" section on pages 10-17, the rising standard of living of a growing global population is likely to continue to drive demand for energy, including oil and gas, for years to come. At the same time, tackling climate change requires an orderly transition to a lower-carbon, multi-source energy system that is enabled by technological changes and facilitates increasing customer choice. Shell's strategic ambitions have been set in that context. We want to increase long-term value for shareholders, recognising that the long-term success of our business depends on our stakeholders and the effects of our business activities on wider society.

In 2020, we had to operate in the unprecedented context created by the COVID-19 pandemic, the resulting macroeconomic conditions and the imbalance between supply and demand in the oil and gas market.

To retain focus on achieving the strategic ambitions, in 2020 the Board determined a cash allocation framework designed to enable debt reduction, increase shareholder distributions, and facilitate disciplined growth as Shell reshapes its business for the future of energy. Shell also announced the reshaping of its portfolio of assets and products to meet its customers' cleaner energy needs in the coming decades. The key elements of Shell's strategic direction include:

- setting a target to be a net-zero emissions energy business by 2050, in step with society.
- growing its leading marketing business, further developing the integrated power business and commercialising hydrogen and biofuels to support customers' efforts to achieve net-zero emissions;
- transforming its refining portfolio from the current 13 sites into six high-value energy and chemicals parks, integrated with Chemicals. Growth in Chemicals will shift to more performance chemicals and recycled feedstocks;
- extending leadership in liquefied natural gas (LNG) to enable decarbonisation of key markets and sectors;
- focusing on value over volume by simplifying Upstream to nine significant core positions, which will generate more than 80% of Upstream's cash flow from operations; and
- enhancing value delivery through trading and optimisation.

The Directors recognise that there are differing societal views about our operations and that some Board decisions taken today may not align with all stakeholder interests. Given the complexity of the evolving energy transition, the Directors have taken the decisions they believe best support Shell's strategic ambitions.

S172(1) (b) "THE INTERESTS OF THE COMPANY'S EMPLOYEES"

The Directors recognise that Shell employees are fundamental and core to our business and the delivery of our strategic ambitions. The success of our business depends on attracting, retaining and motivating talented employees. The Directors consider and assess the implications of decisions on employees and the wider workforce, where relevant and feasible. The Directors seek to ensure that Shell remains a responsible employer, including with respect to pay and benefits, health and safety issues, and the workplace environment. The Directors recognise that our pensioners, though no longer employees, also remain important stakeholders.

More information on this can be found in "Workforce engagement" on page 138.

S172(1) (c) "THE NEED TO FOSTER THE COMPANY'S BUSINESS RELATIONSHIPS WITH SUPPLIERS, CUSTOMERS AND OTHERS"

Delivering our strategy requires strong mutually beneficial relationships with suppliers, customers, governments, national oil companies and joint-venture partners. Shell seeks to promote and apply certain general principles in such relationships. The ability to promote these principles effectively is an important factor in the decision to enter into or remain in such relationships. This standard and others are described in the Shell General Business Principles, which are based upon our core values of honesty, integrity and respect for people (i.e. our stakeholders). The Board periodically reviews and approves the Shell General Business Principles. The Directors take account of the General Business Principles and core values when exercising their duties and making Board decisions. "Core Value Moments" are built into Board agendas and provide the Board with opportunities to reflect on the importance of the General Business

Principles and Core Values. The Board also reviews and approves Shell's approach to suppliers, which is set out in the Shell Supplier Principles. The businesses continually assess the priorities related to customers and those with whom we do business. The Board engages with the businesses on these topics, for example, within the context of business strategy updates and investment proposals.

The Directors also receive updates on a variety of topics that indicate how these stakeholders have been engaged.

These updates include information provided by the Projects & Technology function on suppliers and joint-venture partners, with respect to items such as project updates and supplier contract management. Businesses also provide information on customers and joint-venture partners in relation to business strategies, projects, and investment or divestment proposals.

S172(1) (d) "THE IMPACT OF THE COMPANY'S OPERATIONS ON THE COMMUNITY AND THE ENVIRONMENT"

This aspect is inherent in our strategic ambitions. The Board receives information on various topics to help it make decisions relating, for example, to issues such as the Net Carbon Footprint target, the COVID-19 pandemic's impact on Shell, country-entry considerations, proposals to invest or divest, and business strategy reviews. The information also goes into Group-level overviews, such as updates on safety and environment performance, reports from the Chief Ethics & Compliance Officer, and reports from the Chief Internal Auditor. In 2020, certain Board committees and Non-executive Directors conducted site visits of various Shell operations and overseas offices and held external stakeholder engagements, where feasible. The physical site visits were not as extensive as in past years because of travel and other restrictions imposed by governments in response to COVID-19. Despite the challenges presented by COVID-19 in terms of international travel and face-to-face meetings, the Board maintained a strong interface with businesses and staff through virtual engagements, making best use of the technology available.

More information on this, including details of face-to-face visits held pre-COVID-19, can be found in "Understanding and engaging with our stakeholders" on page 134, or in the reports of each Board committee.

S172(1) (e) "THE DESIRABILITY OF THE COMPANY MAINTAINING A REPUTATION FOR HIGH STANDARDS OF BUSINESS CONDUCT"

Shell aims to meet the world's growing need for more and cleaner energy solutions in economically, environmentally and socially responsible ways. The Board periodically reviews and approves clear frameworks, such as The Shell General Business Principles, Shell's Code of Conduct, specific Ethics and Compliance manuals, the Ethical Decision-Making Framework, and its Modern Slavery Statements, to ensure that its high standards are maintained in Shell businesses and in Shell's business relationships. This, complemented by the ways the Board is informed and monitors compliance with relevant governance standards, helps to ensure that Board decisions and the actions of Shell companies promote high standards of business conduct.

S172(1) (f) "THE NEED TO ACT FAIRLY AS BETWEEN MEMBERS OF THE COMPANY"

After weighing up all relevant factors, the Directors consider which course of action best enables delivery of our strategy through the long term, taking into consideration the effect on stakeholders. In doing so, our Directors act fairly as between the Company's members but are not required to balance the Company's interest with those of other stakeholders. This can sometimes mean that certain stakeholder interests may not be fully aligned.

CULTURE

The Board recognises that it plays an important role in assessing and monitoring that our desired culture is embedded in our values, attitudes and behaviours, including in our activities and stakeholder relationships. The Board has established honesty, integrity and respect for people as Shell's core values. The General Business Principles, Code of Conduct, and Code of Ethics help everyone at Shell to act in line with these values and comply with relevant laws and regulations. The Shell Commitment and Policy on Health, Safety, Security, Environment & Social Performance applies across Shell and is designed to help protect people and the environment. In 2020, we refreshed our approach to safety to avoid fatalities and life-changing injuries by building on existing strong foundations, with an increased and deliberate focus on "human performance". "Human performance" is the way people, culture, equipment, work systems and processes interact as a system. It remains our ambition to achieve Goal Zero, no harm and no leaks across all our operations.

Shell has an ambitious strategy to achieve net-zero emissions by 2050 in step with society, while generating shareholder value. This also includes medium- and long-term targets of 20% by 2030, 45% by 2035, and 100% by 2050 (compared with 2016). To achieve our strategic goals, we need to adapt our mindset and behaviours as we navigate the increasing complexity in the world around us. "Who we are" captures the mindset and behaviours needed to succeed in the coming years, including:

- applying a learner mindset: everyone has the ability to grow, learn from mistakes and successes, and speak up openly in a safe environment. We encourage curiosity, humility, openness, helping each other to make better decisions and create more value;
- maximising our performance: we collaborate across boundaries and speak up when we see things that can be improved. We enable people to deliver, and we work in an integrated way with discipline, clear focus on priorities, and tangible outcomes in order to reach our full potential;
- increasing trust in Shell: we aim to be a valued member of the communities in which we operate, and to make a positive contribution to society. We seek to listen carefully and with humility and we have a strong desire to understand, and, where possible, adapt to the changing needs and expectations of society, especially as they relate to the environment. We build strong and trusted relationships with customers and partners which are fundamental to our collective success;
- living by our values and Goal Zero: we live by our values and do the right things in respect to ethics, safety and the environment; and
- inspiring and engaging: we aspire to a situation where everyone feels connected to what we stand for. We build trusting and effective teams where everyone feels ownership and has a voice in how work gets done. We strive to maintain a diverse and inclusive culture.

The Board considers the Shell People Survey to be an important tool for measuring employee engagement, motivation, affiliation and commitment to Shell. It provides insights into employee views and has a consistently high response rate. It also helps the Board to understand how the survey's outcomes are being used to strengthen Shell culture and values. The Board has noted that although staff surveys offer insight, limitations exist. The surveys may lack sufficient detail on how culture is embedded. As a result, a more rigorous approach to Board oversight of culture will be adopted in the year ahead to establish more effective ways of monitoring and assessing culture and how it aligns with purpose, values and strategy.

SECTION 172(1) STATEMENT continued

The Board recognises the important role Shell has in society and is deeply committed to public collaboration and stakeholder engagement. This commitment is at the heart of Shell's strategic ambitions. The Board strongly believes that Shell will only succeed by working together with customers, governments, business partners, investors and other stakeholders.

Working together is critical, particularly at a time when society, including businesses, governments and consumers, faces issues as complex and challenging as climate change.

We continue to build on our long track record of working with others, such as investors, industry and trade groups, universities, governments, non-governmental organisations (NGOs) and, in some appropriate instances, our competitors through our joint-venture operations or industry bodies. We believe that working together and sharing knowledge and experience with others offers us greater insight into our business. We also appreciate our long-term relationships with our investors and acknowledge the positive impact of ongoing engagement and dialogue.

STAKEHOLDER ENGAGEMENT (INCLUDING EMPLOYEE ENGAGEMENT)

The guidance on preparing information, proposals or discussion items for the Board asks for these materials to include considerations of the views, interests and concerns of stakeholders and how management addressed them. This helps to strengthen the Board's knowledge of how the broader business undertakes significant levels of stakeholder engagement. Board minutes have also reflected key points on stakeholder considerations, where appropriate. The Terms of Reference for our Safety, Environment and Sustainability Committee also include, within the Committee's remit, the review and consideration of external stakeholder perspectives and how major issues of public concern that could affect Shell's reputation and licence to operate were, or are being addressed.

The Board also engaged with certain stakeholders directly, to understand their views. The Board also leverages its very substantial in-house expertise by receiving input from economics and policy experts on key political and economic themes periodically, with some updates being presented to the Board each quarter. More on this engagement is provided in "Understanding and engaging with our stakeholders" on page 134.

Information on how the Directors have engaged with employees can be found on page 138 and in the "Our people" section on pages 108. The tables below include examples of how Directors have considered the interests of Shell employees and the resulting outcomes.

PRINCIPAL DECISIONS

In the table below, we outline some of the principal decisions made by the Board over the year, explain how the Directors have engaged with, or in relation to, the different key stakeholder groups and how stakeholder interests were considered in decision-making.

To remain concise, we have categorised our key stakeholders into seven groups. Where appropriate, each group is considered to include both current and potential stakeholders. The groups are:

- A investor community;
- B employees/workforce/pensioners;
- C regulators/governments;
- D NGOs/civil society stakeholders/academia/think-tanks;
- E communities;
- F customers; and
- G suppliers/strategic partners.

Principal decisions

We define principal decisions taken by the Board as decisions taken in 2020 that are of a strategic nature and significant to any of our key stakeholder groups. As outlined in the UK Financial Reporting Council (FRC) Guidance on the Strategic Report, we include decisions related to capital allocation and dividend policy.

How were stakeholders considered

We describe how regard was given to likely long-term consequences of the decision including how stakeholders were considered during the decision-making process.

What was the outcome

We describe which accommodations or mitigations were made, if any, and how Directors have considered different interests, and the factors taken into account.

Strategic updates

Over the course of the year, the Board considered strategic options and areas of emerging strategic focus, including in relation to the Net Carbon Footprint target. Principal decisions included: Shell's plans to become a net-zero emissions (NZE) energy business by 2050, in step with society, covering Scope 1, 2 and 3 emissions (the NZE energy business target as announced on April 16, 2020); and the update on strategic direction that clarified the investment proposition and how the value that Shell generates is translated into shareholder distributions (announced on October 29, 2020).

How stakeholders were considered

Given the significance of the strategic topics, the Board had multiple stakeholder engagements. These involved shareholders, employees and our internal climate experts throughout the year, and in earlier years where we also engaged external climate scientists, to help inform the key choices and parameters in the months leading up to the decisions, which included a three-day annual strategy meeting. These engagements included an update and discussion on: the strategic agenda; the proposed strategic pathway and underlying premises; the energy transition strategy; choices for traditional businesses and preparing for alternative strategies; and the financial framework required. These discussions were informed by research undertaken for the Executive Committee to better understand the requirements and expectations of Shell's external stakeholders. This research focused on: investors; environmental, social, and governance (ESG) and sustainability benchmarks; customers; business partners; international organisations; NGOs; civil society stakeholders; think-tanks; academia and schools; and general public audiences. This included qualitative and quantitative interview-based analysis. The Board considered: implications for customer sectors to drive the approach to decarbonising; business opportunities in new areas to develop the energy system; changes to be made to current business to drive competitive performance, delivery and funds for future investments and shareholders; and Shell's Net Carbon Footprint. In later meetings, the strategy was subsequently refined. In these discussions, the Board considered, among other things, shifting societal expectations of the extent and pace of the energy transition; government and regulatory expectations; ways to meet existing investors' expectations and what would be needed to attract new investors in future; and strategic partnerships.

The Board participated in virtual staff engagement sessions that enabled the Board members to speak directly with staff from various locations on themes including leadership styles, safety and controls, the Reshape reorganisation and the future of Shell.

What was the outcome

In relation to Shell's target to become a net-zero emissions energy business by 2050, in step with society, the Board considered whether the NZE energy business target would meet investors' expectations, how Shell can help customers find ways to decarbonise, and how to ensure Shell's credible leadership in informing and driving a societal energy transition. The outcome of those deliberations was the view that we should work with our customers to address the emissions that are produced when they use products they buy from Shell. This is in addition to the other elements of the NZE energy business target.

The direction of the strategic discussion fed through into the discussions on cash allocation, shareholder returns and to the development of Shell's Powering Progress strategy. After feedback from investors seeking an update on our strategic discussions, in October 2020, stakeholders were informed about Shell's response to the COVID-19 pandemic and provided with an explanation of the driver behind the enhanced target to be a NZE energy business. The direction of the ongoing restructuring of Shell's ways of working and organisation was also outlined in order to provide stakeholders with continued updates in the lead-up to Shell's Strategy Day in February 2021.

As part of the Shell Strategy Day 2021, we announced Powering Progress, our strategy to accelerate the transition of our business to cleaner energy while delivering value for our shareholders, our customers and wider society. The strategy includes how we are working towards our target to become a net-zero emissions energy business by 2050, in step with society. We are increasing our investments in the cleaner products and solutions that our customers need, from biofuels to hydrogen and renewable power, so that we can build a low-carbon business of significant scale by the beginning of the 2030s. We will fund these investments, and our returns to shareholders, with the strong returns we expect from our oil and gas production over the rest of this decade. The Board has been involved in formulating the strategy and ensuring that the Company maintains financial resilience while being able to seize the opportunities that transition will bring as part of our journey to net zero. We are the first energy company to offer shareholders an advisory vote on our energy transition strategy at our Annual General Meeting. We will do this every three years, starting in 2021. We will also on an annual basis offer an advisory vote on our progress against the targets we set for ourselves in the energy transition strategy. The Board believe this is a time of tremendous opportunity for Shell. By transforming our business, we will contribute to achieving a net-zero world, help society reach its climate goals and create a compelling investment case for our shareholders, today and in the future. That is the essence of Powering Progress and it has been fully endorsed by the Board through multiple engagements with management over a 12-month period.

SECTION 172(1) STATEMENT continued

Financial strength, cash allocation including shareholder distributions

The year 2020 involved unprecedented conditions for Shell, the industry and society generally. The challenges caused by COVID-19 resulted in material responses by Shell to successfully maintain its financial strength and resilience. The Board considered Shell's financial policies on several occasions and made decisions accordingly (see above, regarding the relationship and direction of the strategic and cash allocation discussions). The long-term financial health of Shell is crucial for staff, customers, the communities in which Shell operates, and for debt holders and shareholders. In early 2020, a key focus area for the Board was cash preservation, which included cost and capital spend reduction, pausing of the share buyback programme and the reduction of the dividend. In the later part of the year, Directors approved the cash allocation framework, which was announced as part of the third quarter 2020 results. For each quarter, the Board assessed the continuation of the share buyback programme and the ongoing payment and rate of dividend per share payable to shareholders.

How stakeholders were considered

A number of metrics and factors underpinned each decision, including the BG intention statement regarding equity issued in connection with the combination with the BG Group.

When making decisions relating to Shell's financial policies, including the cash allocation framework, the Board asked for further information on specific yet broad topics that impacted various stakeholders, such as: information on the proposed operating and capital expenditure reductions; the potential impact of a reduced dividend on strategic options; the articulation of cash allocation plans to investors and other stakeholders; and potential asset and project risks associated with counterparty financial viability risks. These considerations were balanced against prior intention statements.

To support these discussions, the Board was provided with information from an investor survey. This was discussed extensively in order to understand the perceptions of the market in relation to Shell's direction, strategy and financial strength. Having equity advisors and banks present directly to the Board helped build the Board's knowledge of what the markets were looking for. This helped guide the content of the third quarter 2020 communications.

An annual investor perception study was commissioned and considered by the Board. The Board was also provided with periodic reports from the Executive Vice President, Investor Relations which summarised feedback from various brokers and provided detailed analysis of how Shell's messages had been received by investors.

The Board was regularly updated on, and discussed, the management and impact of COVID-19 on Shell's activities and workforce.

Approval of Shell's detailed Operating Plan 2021-2023 (OP20)

The approval of OP20 followed an in-depth review by the Board of proposals on capital allocation, capital investment outlook, competitive outlook, operating expenses, return on average capital employed and shareholder distributions. This included reviews in the latter part of 2020 as an advance engagement on OP20 while it was under preparation, and in December 2020 for final approval.

How stakeholders were considered

OP20 discussions included a full review against Shell's strategic ambitions. The Directors and Executive Committee balanced the priorities in the operating plan versus the strategy by using feedback received as part of continual engagement with investors, discussions with equity and debt market analysts, and commitments made regarding share buybacks, gearing and organic free cash flow. The plan was discussed extensively and reviewed thoroughly.

In the assessment, the interests of investors and capital markets received particular attention and featured heavily in many discussions. Potential differences of interests between debt and equity investors were observed. This was balanced against the importance of the value that societies – (including communities, employees, customers, suppliers) – place on Shell because of the services it provides and the way it conducts business.

Information on employees and our organisational structure featured as part of OP20. The plan maintained the approach to salaries, benefits, health, worker welfare, focus on employee experience and training.

Metrics agreed within OP20 underpin the 2021 organisational scorecard, against which the majority of employee bonuses are calculated. Both the Board and the Remuneration Committee discussed these metrics at length to ensure they are suitably stretching and motivating, support the right culture within the business, and align to the strategic ambitions.

OP20 reflects the refreshing of the strategy with the growth of low-carbon, customer-facing businesses. It considered the economic and social effects of the pandemic in developing the plan and sought appropriate balance between key priorities, including sustaining cash flows, pivoting the portfolio to deliver the strategy (including reductions in carbon emissions), reducing debt and increasing shareholder distributions.

What was the outcome

The Board and management carefully considered various stakeholders in their decisions to reinforce the financial strength and resilience of Shell's business. They also took action to protect staff and customers. Their considerations focused on three key areas: care for staff, customers, and communities; business continuity and the need to continue to serve customers in every way we can, including providing them with certainty; and generating and preserving cash to protect the future financial health of Shell.

For example, in relation to staff and the wider workforce, the Board considered with management the appropriate timing of any large-scale redundancies, given the stress involved and the potential vulnerability of staff and their families to issues associated with COVID-19; how management was engaging with staff while most people were working from home; and how work sites were being equipped and return-to-work plans were being formulated to ensure people could return to work safely.

In relation to the decision to lower the dividend level, the Board and Management considered employees, Shell pensioners, lenders, debt holders, credit-rating agencies, suppliers, customers, governments, partners and communities. As a reduced dividend meant greater retention of cash to use for increasing financial resilience, the outcome of the consideration of stakeholders was that the decision would be largely positive for all stakeholders in the longer term.

Investor feedback received towards the middle of 2020 led to the decision to more clearly communicate the cash allocation framework to investors and the prioritisation of allocation between balance sheet strength, shareholder distributions and investments. More information on this can be found in "Dividend policy" on 183.

What was the outcome

Following the review of the draft operating plan, the Board requested further information on a number of specific matters. Responses were provided on these items and changes were incorporated into the plan where appropriate.

The overall outcome of this decision is an operating plan that the Board believes underpins Shell's strategic ambitions and has taken into account different stakeholder views, realising that not all stakeholder views can or will completely align with OP20.

While stakeholder opinion may differ on Shell's approach, OP20 is based on society's demand for products and services. OP20 supports Shell in maintaining a reputation for high standards on business conduct and health, safety, security and environment issues. It maintained the approach to employee remuneration and benefits to pensioners. OP20 seeks to reward our investors with returns and maintain long-term financial strength to invest in more and cleaner forms of energy and meet the current and future needs of society.

Investing in new business, acquisitions and divestments, and closures	What was the outcome
<p>Over the course of the year, the Board discussed and approved new opportunities, new projects and proposed divestments or closures across the different segments. This was in order to continually high-grade the portfolio, to deliver the best from our traditional businesses, to grow our customer-centric business and to rapidly and purposefully innovate for our future business models.</p> <p>How stakeholders were considered The Board obtained a clearer perspective on the role of Shell's Trading and Supply organisation in the energy transition (for example, in biofuels and renewable energy). This assisted the Board in assessing the possible impact on stakeholders and risks to its reputation in relation to certain stakeholder groups. These considerations included assessing the impact on cash allocation and shareholder distributions.</p> <p>Investors shared their opinions on significant acquisitions in the New Energies sector compared with organic growth/investment.</p> <p>Oil and gas – During the year Shell secured new opportunities in a number of regions, some of which were considered and approved by the Board. The Directors carefully reviewed new significant entries and risk and rewards of new projects. During these discussions, the Board was aware that some stakeholders may disagree with Shell's strategy to continue to invest in oil and gas during the energy transition.</p> <p>Offshore wind farm Hollandse Kust (noord) – The CrossWind Consortium, a joint venture between Shell and Eneco, was awarded the tender for this wind farm. The consortium plans to have Hollandse Kust (noord) operational in 2023 with an installed capacity of 759 MW, generating at least 3.3 TWh per year. This is enough renewable power to supply more than 1 million Dutch households with green electricity. The Board was informed of stakeholder engagements, including with the Rijksdienst voor Ondernemend Nederland (the ministerial entity responsible for the tender).</p>	<p>As a result of discussion and decisions in this area, the Board obtained insights on renewables growth, customers' priorities (around price and interest in clean power), and information on anticipated market direction and regulatory frameworks.</p> <p>Oil and gas – The Board recognises that societal views vary widely in this area. It must also bear in mind that global demand for energy is still growing. Although renewable resources will meet a growing share of the rising energy demand, Shell and other experts believe there continues to be a need for oil and gas for many years to come through the energy transition. The Directors also appreciate that it is this business that provides the capital to invest in the energy transition.</p> <p>Offshore wind farm Hollandse Kust (noord) – Throughout 2019, the Board obtained a clearer understanding of New Energies' investments and their alignment with the Power strategy. In 2020, the Board continued to receive updates on strategic priorities for New Energies/Power investments. The Board also received a summary of potential opportunities being considered in order for Shell to deliver upon the overarching goal of creating a profitable, cohesive and integrated business in the Power strategy's core markets. North-west Europe is a priority region for implementing Shell's Power Strategy. The Board reflected on Shell's differentiators to be successful in the tender, including technology and innovation. During the Board's discussion, particular attention was paid to where this proposal fits in the capital programme and the role of this proposal in customer offerings for decarbonised power.</p>

RISK FACTORS

The risks discussed below could have a material adverse effect separately, or in combination, on our earnings, cash flows and financial condition. Accordingly, investors should carefully consider these risks.

Further background on each risk is set out in the relevant sections of this Report indicated by way of cross-references under each risk factor.

The Board's responsibility for identifying, evaluating and managing our significant and emerging risks is discussed in "Other Regulatory and Statutory Information" on pages 182-189.

STRATEGIC RISKS

Risk description	How this risk is managed
<p>We are exposed to macroeconomic risks including fluctuating prices of crude oil, natural gas, oil products and chemicals.</p> <p>The prices of crude oil, natural gas, oil products and chemicals are affected by supply and demand, both globally and regionally. Macroeconomic, geopolitical and technological uncertainties can also affect production costs and demand for our products. Government actions may also affect the prices of crude oil, natural gas, oil products and chemicals. This could happen, for example, if governments promote the sale of lower-carbon electric vehicles or even prohibit future sales of new diesel or gasoline vehicles, such as the prohibition in the United Kingdom (UK) that is expected to come into force in 2030. Oil and gas prices can also move independently of each other. Factors that influence supply and demand include operational issues, natural disasters, weather, pandemics such as COVID-19, political instability, conflicts, economic conditions and actions by major oil and gas producing countries. In a low oil and gas price environment, we would generate less revenue from our Upstream and Integrated Gas businesses, and parts of those businesses could become less profitable or incur losses. Low oil and gas prices have also resulted and could continue to result in the debooking of proved oil or gas reserves, if they become uneconomic in this type of price environment. Prolonged periods of low oil and gas prices, or rising costs, have resulted and could continue to result in projects being delayed or cancelled. Assets have been impaired in the past, (including in 2020), and there could be impairments in the future. Low oil and gas prices could also affect our ability to maintain our long-term capital investment programme and dividend payments. Prolonged periods of low oil and gas prices could adversely affect the financial, fiscal, legal, political and social stability of countries that rely significantly on oil and gas revenue. In a high oil and gas price environment, we could experience sharp increases in costs, and, under some production-sharing contracts, our entitlement to proved reserves would be reduced. Higher prices could also reduce demand for our products, which could result in lower profitability, particularly in our Oil Products and Chemicals business. Higher prices can also lead to more capacity being built, potentially resulting in an oversupply of products that can negatively affect our LNG and Chemicals businesses.</p> <p>Accordingly, price fluctuations could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Market overview" on page 38.</p>	<p>We maintain a diversified portfolio to mitigate the impact of price volatility. We test the resilience of our projects and other opportunities against a range of prices and costs for crude oil, natural gas, oil products and chemicals. We prepare annual strategic and financial plans that test different scenarios and their impact on prices on our businesses and company as a whole. These plans are appraised regularly throughout the year, especially during periods of significant price and demand volatility as experienced in 2020. We also aim to maintain a strong balance sheet to provide resilience against weak market prices.</p>
<p>Our ability to deliver competitive returns and pursue commercial opportunities depends in part on the accuracy of our price assumptions.</p> <p>We use a range of oil and gas price assumptions, which we review on a periodic basis. These ranges help us to evaluate the robustness of our capital allocation for our evaluation of projects and commercial opportunities. If our assumptions prove to be incorrect, it could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Market overview" on page 40.</p>	<p>The range of commodity prices used in our project and portfolio evaluations is subject to a rigorous assessment of short, medium- and long-term market drivers. These drivers include the extent and pace of the energy transition.</p>
<p>Our ability to achieve our strategic objectives depends on how we react to competitive forces.</p> <p>We face competition in all our businesses. In the crude oil, natural gas, Oil Products and Chemicals businesses we seek to differentiate our products, but many of them are competing in commodity-type markets. Accordingly, failure to manage our costs and our operational performance could result in a material adverse effect on our earnings, cash flows and financial condition. We also compete with state-owned oil and gas entities with access to vast financial resources. State-owned entities could be motivated by political or other factors in making their business decisions. Accordingly, when bidding on new leases or projects, we could find ourselves at a competitive disadvantage because these state-owned entities may not require a competitive return. If we are unable to obtain competitive returns when bidding on new leases or projects, this could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Strategy and outlook" on page 20.</p>	<p>We continually assess the external environment – the markets and the underlying economic, political, social and environmental drivers that shape them – to evaluate changes in competitive forces and business models. We use multiple future scenarios to assess the resilience of our strategy. We maintain business strategies and plans that focus on actions and capabilities to create and sustain competitive advantage.</p>

STRATEGIC RISKS *continued*

Risk description	How this risk is managed
<p>If we fail to stay in step with the pace and extent of society's demands with regard to the energy transition to a low-carbon future, we could fail in sustaining and growing our business.</p> <p>The pace and extent of the energy transition could pose a risk to Shell if our own transition towards decarbonisation moves at a different speed to society. If we are slower than society, customers may prefer a different supplier which would adversely impact our reputation and demand for our products. If we move much faster than society, we risk investing in technologies, markets or low-carbon products that are unsuccessful because there is limited demand for them. This could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Strategy and outlook" on page 21 and "Climate change and energy transition" on page 97.</p>	<p>We actively monitor societal developments, such as regulation-driven carbon-pricing mechanisms and customer-driven preferences for products. We incorporate these into scenarios which provide insights into how the energy transition may unfold in the medium and long term. These insights and those from various other external scenarios (such as the IPCC Special Report 1.5°C) guide us how we set our strategic direction, capital allocation and carbon emission commitments. We have updated our strategy and organisational structure to be more focused on the sectors where our customers operate, in order to make us better able to compete in the current evolving energy landscape.</p>
<p>Rising climate change concerns and the effects of the energy transition have led and could lead to a decrease in demand and potentially affect prices for fossil fuels. This may also lead to additional legal and/or regulatory measures which could result in project delays or cancellations, potential litigation, operational restrictions and additional compliance obligations.</p> <p>Societal demand for urgent action has increased especially after the Intergovernmental Panel on Climate Change (IPCC) 1.5°C special report of 2018 and the Paris Agreement's goal to keep the rise in global average temperature this century to well below two degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Society's increasing focus on climate change and the effects of the energy transition has created a risk landscape that is changing rapidly in response to a wide range of stakeholder actions at global, local and business levels. The potential impact and likelihood of climate change effects on Shell could vary across different time horizons, depending on the specific components of the risk.</p> <p>We expect that a growing share of our GHG emissions will be subject to regulation, resulting in increased compliance costs and operational restrictions. Regulators may seek to limit certain fossil fuel projects or make it more difficult to obtain required permits. Achieving our target to become net zero on all emissions from our operations will result in additional cost. We also expect that actions by customers to reduce their emissions will continue to lower demand and potentially affect prices for fossil fuels, as will GHG emissions regulation through taxes, fees and/or other incentives. This could be a factor contributing to additional provisions for our assets and result in lower earnings, cancelled projects and potential impairment of certain assets.</p> <p>The physical effects of climate change such as, but not limited to, increases in temperature and sea levels and fluctuations in water levels could also adversely affect our operations and supply chains.</p> <p>Some groups are putting pressure on certain investors to divest their investments in fossil fuel companies. If this were to continue, it could have a material adverse effect on the price of our securities and our ability to access capital markets. Groups are also putting pressure on commercial and investment banks to stop financing fossil fuel companies. According to press reports, some financial institutions have started to limit their exposure to certain fossil fuel projects. Accordingly, our ability to use financing for these types of future projects may be adversely affected. This could also adversely affect our potential partners' ability to finance their portion of costs, either through equity or debt.</p> <p>In some countries, governments, regulators, organisations and individuals have filed lawsuits seeking to hold fossil fuel companies liable for costs associated with climate change. While we believe these lawsuits to be without merit, losing any of them could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>In summary, rising climate change concerns and effects of the energy transition have led and could lead to a decrease in demand and potentially affect prices for fossil fuels. If we are unable to find economically viable, publicly acceptable solutions that reduce our GHG emissions and/or GHG intensity for new and existing projects and for the products we sell, we could experience financial penalties or extra costs, delayed or cancelled projects, potential impairments of our assets, additional provisions and/or reduced production and product sales. This could have a material adverse effect on our earnings, cash flows and financial condition.</p>	<p>Our response to the evolving risk landscape requires transparency and clarity around our plans and actions to achieve our climate target. We have a climate change risk management structure which is supported by standards, policies and controls, as part of our health, safety, security and environment and social performance (HSSE & SP) control framework. Climate change and risks resulting from GHG emissions are reviewed and managed in accordance with other significant risks through the Board and Executive Committee. We have established several dedicated climate change and GHG-related forums at different levels of the organisation. These forums seek to address, monitor and review climate change issues. Our strategy to assess and manage risks and opportunities resulting from climate change includes considering different time horizons and their relevance to risk identification and business planning.</p> <p>Overall, mitigation of the risk is addressed through our strategy to accelerate the transition to net-zero emissions, purposefully and profitably. This approach has three components:</p> <ul style="list-style-type: none"> reducing the GHG-emissions intensity of our operations. We expect to reduce our carbon intensity primarily through altering our product mix as customer (Scope 3) emissions represent the largest component of our carbon intensity. Our aim is to achieve this by shifting the focus of our portfolio as we build our power, hydrogen, biofuels, carbon capture and storage and nature-based solutions businesses and activities; demonstrating resilience by adopting the guidance on disclosure by the Task Force on Climate-related Financial Disclosures; and working towards our target to become a net-zero emissions energy business by 2050, in step with society. <p>For further explanations of our climate change governance, risk management, climate ambition and strategy, our portfolio and performance, please refer to the section "Climate change and energy transition" on page 98.</p> <p>For further explanations of how we manage the risk of the physical effects of climate change affecting our operations and supply chains, please refer to the risk factor "The nature of our operations exposes us, and the communities in which we work, to a wide range of health, safety, security and environment risks".</p>

RISK FACTORS continued

STRATEGIC RISKS continued

Risk description	How this risk is managed
<p>We seek to execute divestments in pursuing our strategy. We may be unable to divest these assets successfully in line with our strategy.</p> <p>We may be unable to divest assets at acceptable prices or within the timeline envisaged because of market conditions or credit risk. This would result in increased pressure on our cash position and potential impairments. In some cases, we have also retained certain liabilities following a divestment. Even in cases where we have not expressly retained certain liabilities, we may still be held liable for past acts, failures to act or liabilities that are different from those foreseen. We may also face liabilities if a purchaser fails to honour their commitments. Accordingly, if any of the above circumstances arise, this could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>📖 See “Strategy and outlook” on page 21.</p>	<p>We continually monitor market developments to assess potential divestments in pursuing our strategy. We carefully tailor our sales processes to buyers’ perceived expectations so we can deliver the most competitive outcomes. As a general principle, the sales processes are configured so that buyers will acquire the assets including all related liabilities. For some assets, Shell may agree to retain certain liabilities. We monitor these liabilities closely and make appropriate provisions for them.</p>
<p>We operate in more than 70 countries that have differing degrees of political, legal and fiscal stability. This exposes us to a wide range of political developments that could result in changes to contractual terms, laws and regulations. We and our joint arrangements and associates also face the risk of litigation and disputes worldwide.</p> <p>Developments in politics, laws and regulations can and do affect our operations. Potential impacts include: forced divestment of assets; expropriation of property; cancellation or forced renegotiation of contract rights; additional taxes including windfall taxes, restrictions on deductions and retroactive tax claims; antitrust claims; changes to trade compliance regulations; price controls; local content requirements; foreign exchange controls; changes to environmental regulations; changes to regulatory interpretations and enforcement; and changes to disclosure requirements. Tensions between nation states can also affect our business. Any of these, individually or in aggregate, could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>In 2020, many governments ran deficits to deal with the economic impacts of the COVID-19 pandemic. Given the ongoing nature of the pandemic, there will be uncertain long-term fiscal consequences, with possible subsequent effects on government policies that affect Shell’s business interests.</p> <p>From time to time, social and political factors play a role in unprecedented and unanticipated judicial outcomes that could adversely affect Shell. Non-compliance with policies and regulations could result in regulatory investigations, litigation and, ultimately, sanctions. Certain governments and regulatory bodies have, in Shell’s opinion, exceeded their constitutional authority by: attempting unilaterally to amend or cancel existing agreements or arrangements; failing to honour existing contractual commitments; and seeking to adjudicate disputes between private litigants. Certain governments have also adopted laws and regulations that could potentially conflict with other countries’ laws and regulations, potentially subjecting us to both criminal and civil sanctions. Such developments and outcomes could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>📖 See “Other regulatory and statutory information” on page 187.</p>	<p>We continually monitor geopolitical developments and societal issues relevant to our interests. Our Legal and Tax functions are organised globally and support our business lines in ensuring compliance with local laws and fiscal regulations. Our Government Relations department engages with governments in countries where we operate to understand and influence local policies and to advocate Shell’s position on topics relevant to our industry. We are prepared to exit a country if we believe we can no longer operate there in accordance with our standards and applicable law, and we have done so in the past.</p>

OPERATIONAL RISKS

Risk description

Our future hydrocarbon production depends on the delivery of large and integrated projects, and our ability to replace proved oil and gas reserves.

We face numerous challenges in developing capital projects, especially those which are large and integrated. Challenges include: uncertain geology; frontier conditions; the existence and availability of necessary technology and engineering resources; the availability of skilled labour; the existence of transportation infrastructure; project delays; the expiration of licences; delays in obtaining required permits; potential cost overruns; and technical, fiscal, regulatory, political and other conditions. These challenges are particularly relevant in certain developing and emerging-market countries, in frontier areas and in deep-water fields, such as off the coast of Mexico. We may fail to assess or manage these and other risks properly. Such potential obstacles could impair our delivery of these projects, our ability to fulfil the full potential value of the project as assessed when the investment was approved, and/or our ability to fulfil related contractual commitments. This could lead to impairments and could have a material adverse effect on our earnings, cash flows and financial condition.

Future oil and gas production will depend on our access to new proved reserves through exploration, negotiations with governments and other owners of proved reserves and acquisitions, and through developing and applying new technologies and recovery processes to existing fields. Failure to replace proved reserves could result in an accelerated decrease of future production, potentially having a material adverse effect on our earnings, cash flows and financial condition.

Oil and gas production available for sale

	Million boe [A]		
	2020	2019	2018
Shell subsidiaries	1,104	1,182	1,179
Shell share of joint ventures and associates	135	156	159
Total	1,239	1,338	1,338

[A] Natural gas volumes are converted into oil equivalent using a factor of 5,800 scf per barrel.

Proved developed and undeveloped oil and gas reserves [A][B] (at December 31)

	Million boe [C]		
	December 31, 2020	December 31, 2019	December 31, 2018
Shell subsidiaries	8,222	9,980	10,294
Shell share of joint ventures and associates	902	1,116	1,285
Total	9,124	11,096	11,578
Attributable to non-controlling interest in Shell subsidiaries	322	304	331

[A] We manage our total proved reserves base without distinguishing between proved reserves from subsidiaries and those from joint ventures and associates.

[B] Includes proved reserves associated with future production that will be consumed in operations.

[C] Natural gas volumes are converted into oil equivalent using a factor of 5,800 scf per barrel.

See "Shell story" on page 16.

The estimation of proved oil and gas reserves involves subjective judgements based on available information and the application of complex rules. This means subsequent downward adjustments are possible.

The estimation of proved oil and gas reserves involves subjective judgements and determinations based on available geological, technical, contractual and economic information. Estimates can change over time due to new information from production or drilling activities, changes in economic factors, such as oil and gas prices, alterations in the regulatory policies of host governments, or other events. Estimates also change to reflect acquisitions, divestments, new discoveries, extensions of existing fields and mines, and improved recovery techniques. Published proved oil and gas reserves estimates could also be subject to correction because of errors in the application of published rules and changes in guidance. Downward adjustments could indicate lower future production volumes and could also lead to impairment of assets. This could have a material adverse effect on our earnings, cash flows and financial condition.

See "Supplementary information – oil and gas (unaudited)" on page 265.

How this risk is managed

We continue to explore for and mature hydrocarbons across our Deep Water, Conventional Oil and Gas, Shales and Integrated Gas businesses. We use our subsurface, project and technical expertise, and actively manage non-technical risks across a diversified portfolio of opportunities and projects. This involves adopting an integrated approach for all stages, from basin choice to development. We use competitive techniques and benchmark our approach internally and externally.

A central group of reserves experts undertakes the primary assurance of the proved reserves bookings. A multidisciplinary committee reviews and endorses all major proved reserves bookings. Shell's Audit Committee reviews all proved reserves bookings and Shell's Executive Committee is responsible for final approval. The Internal Audit function also provides further assurance through audits of the control framework, including the information disclosed in "Supplementary information – oil and gas (unaudited)".

RISK FACTORS continued

OPERATIONAL RISKS continued

Risk description	How this risk is managed
<p>The nature of our operations exposes us, and the communities in which we work, to a wide range of health, safety, security and environment risks.</p> <p>The health, safety, security and environment (HSSE) risks to which we and the communities in which we work are potentially exposed cover a wide spectrum, given the geographic range, operational diversity and technical complexity of our operations. These risks include the effects of natural disasters (including weather events), earthquakes, social unrest, pandemic diseases, criminal actions by external parties, and safety lapses. If a major risk materialises, such as an explosion or hydrocarbon leak or spill, this could result in injuries, loss of life, environmental harm, disruption of business activities, loss or suspension of permits, loss of our licence to operate and loss of our ability to bid on mineral rights. Accordingly, this could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>Our operations are subject to extensive HSSE regulatory requirements that often change and are likely to become more stringent over time. Governments could require operators to adjust their future production plans, as has occurred in the Netherlands, affecting production and costs. We could incur significant extra costs in the future because of the need to comply with such requirements. We could also incur significant extra costs due to violations of or liabilities under laws and regulations that involve elements such as fines, penalties, clean-up costs and third-party claims. Therefore, if HSSE risks materialise, they could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Environment and society” on page 86.</p>	<p>We have standards and a clear governance structure to help manage HSSE risks and avoid potential adverse effects. The standards and governance structure also help us to develop mitigation strategies aimed at ensuring that if an HSSE risk materialises, we avoid catastrophic consequences and have ways of trying to remediate any environmental damage. Our standards and governance structure are defined in our Health, Safety, Security, Environment and Social Performance (HSSE & SP) control framework and supporting guidance documents. The process safety and HSSE & SP assurance team provides assurance on the effectiveness of HSSE & SP controls to the Board. We routinely practise implementing our emergency response plans to significant risks (such as a spill, toxic substances, fire or explosion).</p> <p>We have assessed the impact of COVID-19 on activities and we are implementing measures to minimise the adverse effect of the pandemic on our operations. These measures include monitoring the level of infections among staff, ensuring the safety and well-being of all staff, (particularly critical staff who continue to operate our assets), scenario planning, deploying continuity plans and ensuring our sites and offices are “COVID safe”.</p>
<p>A further erosion of the business and operating environment in Nigeria could have a material adverse effect on us.</p> <p>In our Nigerian operations, we face various risks and adverse conditions. These include: security issues affecting the safety of our people, host communities and operations; sabotage and theft; our ability to enforce existing contractual rights; litigation; limited infrastructure; potential legislation that could increase our taxes or operating costs; the effect of lower oil and gas prices on the government budget; and regional instability created by militant activities. These risks or adverse conditions could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Upstream” on page 58.</p>	<p>We test the economic and operational resilience of our Nigerian projects against a wide range of assumptions and scenarios. We seek to proportionally share risks and funding commitments with joint-venture partners. When we participate in joint ventures in Nigeria, we require that they operate to internationally accepted business standards. We monitor the security situation, and liaise with host communities, governmental and non-governmental organisations to help promote peaceful and safe operations.</p>
<p>An erosion of our business reputation could have a material adverse effect on our brand, our ability to secure new resources or access capital markets, and on our licence to operate.</p> <p>Our reputation is an important asset. The Shell General Business Principles (Principles) govern how Shell and its individual companies conduct their affairs, and the Shell Code of Conduct tells employees and contract staff how to behave in line with the Principles. Our challenge is to ensure that all employees and contract staff comply with the Principles and the Code of Conduct. Real or perceived failures of governance or regulatory compliance or a perceived lack of understanding of how our operations affect surrounding communities could harm our reputation.</p> <p>Societal expectations of businesses are increasing, with a focus on business ethics, quality of products, contribution to society, safety and minimising damage to the environment. There is increasing focus on the role of oil and gas in the context of climate change and energy transition. This could negatively affect our brand, reputation and licence to operate, which could limit our ability to deliver our strategy, reduce consumer demand for our branded and non-branded products, harm our ability to secure new resources and contracts, and restrict our ability to access capital markets or attract staff. Many other factors, including the materialisation of the risks discussed in several of the other risk factors, could negatively affect our reputation and could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Other Regulatory and Statutory Information” on page 185 and “Our people” on page 110.</p>	<p>We continually assess and monitor the external environment for potential risks to our reputation. We engage in ongoing dialogue with our key stakeholders such as investors, industry and trade groups, universities, governments and non-governmental organisations (NGOs) to gain greater insights into societal expectations of our business. We have mitigation plans for identified brand and reputation risks at the Group, country and line of business level. Our country chairs are responsible for the implementation of country reputation plans which are updated annually. We continually develop and defend our brand in line with Shell’s purpose and promises, and target our investments to drive brand differentiation, relevance and preference.</p>

Risk description	How this risk is managed
<p>We rely heavily on information technology systems in our operations.</p> <p>The operation of many of our business processes depends on reliable information technology (IT) systems. Our IT systems are increasingly concentrated in terms of geography and number of systems. They are dependent on key contractors supporting the delivery of IT services. During 2020, information and cyber-security risks developed and changed rapidly. Globally the COVID-19 pandemic and geopolitical tensions have altered the IT threat landscape, increasing the frequency and ingenuity of malware attacks and increasing the temptation to attack targets for financial gain. Also, the prevalence of remote working introduces additional risk because it expands the IT threat landscape. We have experienced breaches and disruptions to our critical IT services in the past. These factors continue to contribute to potential breaches and disruptions of critical IT services. Additionally, breaches can lead to data privacy issues. If the breaches are not detected early and responded to effectively, they could harm our reputation and have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Corporate” on page 80.</p>	<p>We continually measure and improve our cyber-security capabilities. To reduce the likelihood of successful cyber-attacks, our cyber-security capabilities are embedded into our IT systems. Our IT is protected by detective and protective technologies. Identification and assessment capabilities are built into our IT support processes and adhere to industry best practices. When external companies provide us with IT services, the security of those services is managed through contractual clauses and supplier assurance reports. Shell invests constantly in efforts to embed and improve our controls and monitoring. For example, we improved our global web content filtering capability in response to the challenge of increased remote working in 2020. If breaches occur, all entities, including ones that have yet to be fully integrated into Shell's systems and processes, are required to report the incident and use Shell's information security capabilities.</p>
<p>Our business exposes us to risks of social instability, criminality, civil unrest, terrorism, piracy, cyber-disruption and acts of war that could have a material adverse effect on our operations.</p> <p>As seen in recent years, these risks can manifest themselves in the countries where we operate and elsewhere. These risks affect people and assets. Potential risks include: acts of terrorism; acts of criminality including maritime piracy; cyber-espionage or disruptive cyber-attacks; conflicts including war, civil unrest and environmental and climate activism (including disruptions by non-governmental and political organisations).</p> <p>The above risks can threaten the safe operation of our facilities and the transport of our products. They can harm the well-being of our people, inflict loss of life and injuries, damage the environment and disrupt our operational activities. These risks could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Environment and society” on pages 87.</p>	<p>We seek to obtain the best possible information to enable us to assess threats and risks. We conduct detailed assessments for all our sites and activities, and implement appropriate measures to deter, detect and respond to security risks. Further mitigations include strengthening the security of sites, reducing our exposure as appropriate, journey management, information risk management, crisis management and business continuity measures. We conduct training and awareness campaigns for staff and provide them with travel and health advice and access to 24/7 assistance while travelling.</p>
<p>Production from the Groningen field in the Netherlands causes earthquakes that affect local communities.</p> <p>Shell and ExxonMobil are 50:50 shareholders in Nederlandse Aardolie Maatschappij B.V. (NAM). An important part of NAM's gas production comes from the onshore Groningen gas field, in which EBN, a Dutch government entity, has a 40% interest and NAM a 60% interest. The gas field is in the process of being closed down due to earthquakes induced by gas production. Some of these earthquakes have damaged houses and other structures in the region, resulting in complaints and lawsuits from the local community. The government has announced it intends to accelerate the close-down, bringing the end of production forward from 2030 to possibly mid-2022. The exact shut-in date depends on security of supply considerations and is still to be decided. While we expect the earlier closing down of the Groningen gas field to further reduce the number and strength of earthquakes in the region, any additional earthquakes could have further adverse effects on our earnings, cash flows and financial condition.</p> <p>See “Upstream” on page 55.</p>	<p>NAM is working with the Dutch government and other stakeholders to fulfil its obligations to residents of the area. These include compensating for damage caused by the earthquakes and paying to strengthen houses where this is required for safety considerations. Negotiations with the state are being conducted to determine how to manage the accelerated close-down. Specific remediations within the agreed scope of responsibilities are planned. NAM's joint-venture partners will review its financial robustness against different scenarios for Groningen's liabilities and costs, with the aim of the venture being able to self-fund any additional expenses and claims.</p>

RISK FACTORS continued

OPERATIONAL RISKS continued

Risk description	How this risk is managed
<p>We are exposed to treasury and trading risks, including liquidity risk, interest rate risk, foreign exchange risk and credit risk. We are affected by the global macroeconomic environment and the conditions of financial and commodity markets.</p> <p>Our subsidiaries, joint arrangements and associates are subject to differing economic and financial market conditions around the world. Political or economic instability affects such markets.</p> <p>We use debt instruments, such as bonds and commercial paper, to raise significant amounts of capital. Should our access to debt markets become more difficult, the potential impact on our liquidity could have a material adverse effect on our operations. Our financing costs could also be affected by interest rate fluctuations or any credit rating deterioration.</p> <p>We are exposed to changes in currency values and to exchange controls as a result of our substantial international operations. Our reporting currency is the US dollar, although, to a material extent, we also hold assets and are exposed to liabilities in other currencies. While we undertake some foreign exchange hedging, we do not do so for all our activities. Even where hedging is in place, it may not function as expected.</p> <p>We are exposed to credit risk; our counterparties could fail or be unable to meet their payment and/or performance obligations under contractual arrangements. Although we do not have significant direct exposure to sovereign debt, it is possible that our partners and customers may have exposure which could impair their ability to meet their obligations. Our pension plans invest in government bonds, and could therefore be affected by a sovereign debt downgrade or other default.</p> <p>If any of the above risks materialise, they could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Liquidity and capital resources” on page 81 and Note 19 to the “Consolidated Financial Statements” on pages 251-255.</p>	<p>We use various financial instruments for managing exposure to foreign exchange and interest rate movements. Our treasury operations are highly centralised and seek to manage credit exposures associated with our substantial cash, foreign exchange and interest rate positions. Our portfolio of cash investments is diversified to avoid concentrating risk in any one instrument, country or counterparty. Other than in exceptional cases, the use of external derivative instruments is confined to specialist trading and central treasury organisations that have the appropriate skills, experience, supervision, control and reporting systems. We have credit risk policies in place which seek to ensure that products are sold to customers with appropriate creditworthiness. These policies include detailed credit analysis and monitoring of customers against counterparty credit limits. Where appropriate, netting arrangements, credit insurance, prepayments and collateral are used to manage credit risk. We maintain committed credit facilities. Management believes it has access to sufficient debt funding sources (capital markets) and to undrawn committed borrowing facilities to meet foreseeable requirements.</p>
<p>Our future performance depends on the successful development and deployment of new technologies and new products.</p> <p>Technology and innovation are essential to our efforts to meet the world’s energy demands competitively. If we fail to continue developing or deploying technology and new products, or fail to make full, effective use of our data in a timely and cost-effective manner, there could be a material adverse effect on the delivery of our strategy and our licence to operate. We operate in environments where advanced technologies are used. In developing new technologies and new products, unknown or unforeseeable technological failures or environmental and health effects could harm our reputation and licence to operate or expose us to litigation or sanctions. The associated costs of new technology are sometimes underestimated. Sometimes the development of new technology is subject to delays. If we are unable to develop the right technology and products in a timely and cost-effective manner, or if we develop technologies and products that harm the environment or people’s health, there could be a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Shell story” on page 17.</p>	<p>Shell’s Technology organisation and the relevant business lines work together to determine the content, scope and budget for developing new technology that supports our activities. The new technology is developed to ensure portfolio alignment with Shell’s strategic ambitions and deployment commitments. A significant proportion of Shell’s technology contributes to Shell’s New Energies portfolio and Net Carbon Footprint target, and is built around key relationships with leading academic research institutes and universities. We also benefit from working with start-ups. In our Shell GameChanger programme, we help companies to mature early-stage technologies. In our Shell Ventures scheme, we invest in and partner with start-ups and small and medium-sized enterprises that are in the early stages of developing new technologies.</p>
<p>We have substantial pension commitments, the funding of which is subject to capital market risks and other factors.</p> <p>Liabilities associated with defined benefit pension plans are significant, and the cash funding requirement of such plans can also involve significant liabilities. They both depend on various assumptions. Volatility in capital markets or government policies could affect investment performance and interest rates, causing significant changes to the funding level of future liabilities. Changes in assumptions for mortality, retirement age or pensionable remuneration could also cause significant changes to the funding level of future liabilities. We operate a number of defined benefit pension plans and, in case of a shortfall, we could be required to make substantial cash contributions (depending on the applicable local regulations). This could result in a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See “Liquidity and capital resources” on page 81.</p>	<p>A pensions forum chaired by the Chief Financial Officer oversees Shell’s input to pension strategy, policy and operation. A risk committee supports the forum in reviewing the results of assurance processes with respect to pension risks. Local trustees manage the funded defined benefit pension plans, and the contributions paid are based on independent actuarial valuations that align with local regulations.</p>

Risk description	How this risk is managed
<p>We mainly self-insure our risk exposure. We could incur significant losses from different types of risks that are not covered by insurance from third-party insurers.</p> <p>Our insurance subsidiaries provide hazard insurance coverage to other Shell entities, who may insure a portion of their risk exposures with third parties. Such insurance would not provide any material coverage in the event of a large-scale safety or environmental incident. Accordingly, in the event of a material incident, we would have to meet our obligations without access to material proceeds from third-party insurance companies. Therefore, we may incur significant losses from different types of risks that are not covered by insurance from third-party insurers, potentially resulting in a material adverse effect on our earnings, cash flows and financial condition.</p> <p>📖 See “Corporate” on page 80.</p>	<p>We continually assess the safety performance of our operations and make risk mitigation recommendations, where relevant, to keep the risk of an accident as low as possible. Our insurance subsidiaries are adequately capitalised and they may transfer risks to third-party insurers where economical, effective and relevant.</p>
<p>Many of our major projects and operations are conducted in joint arrangements or with associates. This could reduce our degree of control and our ability to identify and manage risks.</p> <p>When we are not the operator, we have less influence and control over the behaviour, performance and operating costs of joint arrangements or associates. Despite having less control, we could still be exposed to the risks associated with these operations, including reputational, litigation (where joint and several liability could apply) and government sanction risks. For example, our partners or members of a joint arrangement or an associate, (particularly local partners in developing countries), may be unable to meet their financial or other obligations to projects, threatening the viability of a given project. Where we are the operator of a joint arrangement, the other partner(s) could still be able to veto or block certain decisions, which could be to our overall detriment. Accordingly, where we have limited influence, we are exposed to operational risks that could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>📖 See “Other Regulatory and Statutory Information” on page 187.</p>	<p>Shell appoints a Joint Venture Asset Manager, whose responsibility is to manage performance and create and protect value for Shell. The Joint Venture Asset Manager seeks to influence operators and other partners to adapt their practices in order to drive value appropriately and to mitigate identified risks. An annual assurance review assesses how the joint venture’s standards and processes align with those of Shell. The Joint Venture Asset Manager follows up on any gaps identified.</p>

CONDUCT RISKS

Risk description	How this risk is managed
<p>We are exposed to commodity trading risks, including market and operational risks.</p> <p>Commodity trading is an important component of our Upstream, Integrated Gas, Oil Products and Chemicals businesses and is integrated with our supply business. Processing, managing and monitoring many trading transactions across the world, some of them complex, exposes us to operational and market risks, including commodity price risks which saw significant levels of volatility in 2020. We use derivative instruments such as futures and contracts for differences to hedge market risks. We do not hedge all our activities and where hedging is in place, it may not function as expected. The risk of ineffective controls and oversight of trading activities, and the risk that traders could deliberately act outside limits and controls, either individually or as a group, could have material adverse effects on our earnings, cash flows and financial condition.</p> <p>📖 See “Liquidity and capital resources” on page 81 and Note 19 to the “Consolidated Financial Statements” on pages 251-255.</p>	<p>In effecting commodity trades and derivative contracts, the company operates within procedures and policies designed to ensure that risks are managed within authorised limits. For example, the use of external derivative instruments is confined to specialist trading organisations that have the appropriate skills, experience, supervision, control and reporting systems. Our trading organisation has a compliance manual addressing our operational risks which all staff are required to follow. Senior Management regularly reviews mandated trading limits. We monitor market risk exposure daily, using value-at-risk (VAR) techniques. We monitor trading positions against limits every day. We use marking to fair value to assess trading exposures where appropriate, with a department that is independent of the traders reviewing the market values applied. In response to the COVID-19 pandemic, trader monitoring tools have been upgraded. During the period of extreme market volatility, additional oversight has been provided by a dedicated ‘Liquidity Forum’, chaired by senior executives in our trading organisation. We have increased the monitoring of the financial resilience of our customers, suppliers and the clearing houses that we deal with.</p>

RISK FACTORS continued

CONDUCT RISKS continued

Risk description	How this risk is managed
<p>Violations of antitrust and competition laws carry fines and expose us and/or our employees to criminal sanctions and civil suits.</p> <p>Antitrust and competition laws apply to Shell and its joint arrangements and associates in the vast majority of countries where we do business. Shell and its joint arrangements and associates have been fined for violations of antitrust and competition laws in the past. This includes a number of fines by the European Commission Directorate-General for Competition (DG COMP). Because of DG COMP's fining guidelines, any future conviction of Shell or any of its joint arrangements or associates for violation of EU competition law could potentially result in significantly larger fines and have a material adverse effect on us. Violation of antitrust laws is a criminal offence in many countries, and individuals can be imprisoned or fined. In certain circumstances, directors may receive director disqualification orders. It is also now common for persons or corporations allegedly injured by antitrust violations to sue for damages. Any violation of these laws can harm our reputation and could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Other Regulatory and Statutory Information" on pages 186.</p>	<p>We maintain an antitrust programme with adequate resources, a comprehensive governance structure and established reporting lines. Staff receive clear guidance that includes requirements in Shell's Ethics and Compliance Manual, an antitrust-specific website, training modules where completion is monitored and regular messages from Shell leaders on the importance of managing antitrust risks. Staff must understand and comply with the "Protect Shell Policy", which explains Shell's position on managing antitrust risks in engagements with parties external to Shell. As result of the COVID-19 pandemic, we have issued guidance to address antitrust risks arising from the disruption to supply chains, including procurement guidance which outlines the risks associated with exchanging information and collaborating with Shell's procurement competitors.</p>
<p>Violations of anti-bribery, tax-evasion and anti-money laundering laws carry fines and expose us and/or our employees to criminal sanctions, civil suits and ancillary consequences (such as debarment and the revocation of licences).</p> <p>Anti-bribery, tax-evasion and anti-money laundering laws apply to Shell, its joint arrangements and associates in all countries where we do business. Shell and its joint arrangements and associates have in the past settled with the US Securities and Exchange Commission regarding violations of the US Foreign Corrupt Practices Act. Any violation of anti-bribery, tax-evasion or anti-money laundering laws, including those potential violations associated with Shell Nigeria Exploration and Production Company Limited's investment in Nigerian oil block OPL 245 and the 2011 settlement of litigation pertaining to that block, could harm our reputation or have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Our people" on pages 110, "Other Regulatory and Statutory Information" on page 186 and Note 25 to the "Consolidated Financial Statements" on pages 260-262.</p>	<p>We maintain an anti-bribery and anti-money-laundering (ABC/AML) programme with adequate resources, a comprehensive governance structure and established reporting lines. Staff receive clear guidance which includes requirements in Shell's Ethics and Compliance Manual, an ABC/AML-specific website, training modules where completion is monitored and regular messages from Shell leaders on the importance of managing ABC/AML risks. As regards OPL 245, the 2011 settlement was a fully legal transaction with Eni and the Federal Government of Nigeria, represented by the most senior officials of the relevant ministries. We maintain our view that there is no basis to convict Shell, or any of our former employees who are also on trial in Milan. In response to the COVID-19 pandemic, we have set up fast-track processes to deal with relief donation requests. These processes include counterparty due diligence and are supported by Shell's Ethics and Compliance Office.</p>
<p>Violations of data protection laws carry fines and expose us and/or our employees to criminal sanctions and civil suits.</p> <p>Data protection laws apply to Shell and its joint arrangements and associates in the vast majority of countries where we do business. Most of the countries we operate in have data protection laws and regulations. In some countries that are key to Shell's business operations, legislation continues to be amended or introduced. Shell must be able to adapt dynamically to such legislative changes and be capable of updating our internal programmes if necessary. The EU General Data Protection Regulation (GDPR), which came into effect in May 2018, imposed increased financial penalties of up to a maximum of 4% of global annual turnover. It requires mandatory breach notification in certain situations, the standard which is also followed outside the EU (particularly in Asia). Non-compliance with data protection laws could expose us to regulatory investigations, which could result in fines, penalties and harm to our reputation. With regard to data breaches, we have breached the GDPR in the past and some investigations are still ongoing with European regulators. To date, no material fines have been imposed, but no assurance can be provided that future breaches would have similar outcomes. In addition to imposing fines, regulators may also issue orders to stop processing personal data, which could disrupt operations. We could also be subject to litigation from persons or entities allegedly affected by data protection violations.</p> <p>With data privacy legislation now in force in the USA, the risk of class actions is increased. Class actions after large-scale data breaches are increasingly common in the UK.</p> <p>The COVID-19 pandemic has increased the level of processing of personal data to track employees, suppliers or other visitors to our premises. Some governments require immediate disclosure of information, including sensitive personal data, to identify infected individuals, with some mandating technologies such as tracing applications on all devices, including corporate mobile phones.</p> <p>Violation of data protection laws is a criminal offence in some countries, and individuals can be imprisoned or fined. Any violation of these laws or harm to our reputation could have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>See "Other Regulatory and Statutory Information" on page 186.</p>	<p>We maintain a data privacy programme with adequate resources, a comprehensive governance structure and established reporting lines. Shell has had Binding Corporate Rules in place for the last 10 years. These rules are part of a group wide global programme to ensure consistent levels of data protection across the group. Staff receive clear guidance which includes requirements in Shell's Ethics and Compliance Manual, a website focusing on data privacy, training modules where completion is monitored, and regular messages from Shell leaders on the importance of managing data privacy risks.</p> <p>We have revised the requirements for incident management that are set out in our Binding Corporate Rules, in order to comply with GDPR reporting requirements. We have revised our approach to privacy impact assessments, also to comply with GDPR reporting requirements. We use our Privacy by Design programme to enhance our controls in this area. We continue to address challenges with compliance in data-heavy companies controlled by Shell but not fully integrated into our systems. IT remediation work remains a priority in such companies, as does the strengthening of programmes to support data privacy compliance.</p> <p>To respond to the increased risk resulting from the pandemic, we have developed policies on temperature screening and published a guidance note on "Privacy Best Practices for COVID-19".</p>

Risk description	How this risk is managed
<p>Violations of trade compliance laws and regulations, including sanctions, carry fines and expose us and our employees to criminal sanctions and civil suits.</p> <p>We use “trade compliance” as an umbrella term for various national and international laws designed to regulate the movement of items across national boundaries and restrict or prohibit trade and other dealings with certain parties. The number and breadth of such laws continue to expand. For example, the EU and the USA continue to impose restrictions and prohibitions on certain transactions involving countries such as Syria, Venezuela, Russia and Cuba. The USA continues to impose comprehensive sanctions against Iran, while the EU and other nations continue to maintain targeted sanctions. The EU and the USA imposed restrictions and controls on defined oil and gas activities in Russia in 2014, and these remain in force. The USA introduced further restrictions regarding Russia in 2017, expanding them in 2018. The EU and the USA introduced sectoral sanctions against Venezuela in 2017, with the USA expanding them in 2018 and 2019. The US sanctions primarily target the government of Venezuela and the oil industry. Many other nations are also adopting trade-control programmes similar to those administered by the EU and the USA. The expansion of sanctions, the frequent additions of prohibited parties, the number of markets in which we operate and the large number of transactions we process, make compliance with all sanctions complex and sometimes challenging. Shell has voluntarily self-disclosed potential violations of sanctions in the past. The COVID-19 pandemic has increased trade compliance risks, due to factors such as growing state involvement in business dealings, the need to maintain and develop business opportunities and cross-border movement of goods and technologies, and the increasing likelihood that counterparties will change ownership as the economic crisis continues.</p> <p>Any violation of sanctions could lead to loss of import or export privileges and significant penalties on or prosecution of Shell or its employees. This could harm our reputation and have a material adverse effect on our earnings, cash flows and financial condition.</p> <p>📄 See “Other Regulatory and Statutory Information” on page 186.</p>	<p>We continue to develop and maintain a trade compliance programme with adequate resources, a comprehensive governance structure and established reporting lines. Staff receive clear guidance, which includes requirements in Shell’s Ethics and Compliance Manual, a specific website for trade compliance, training modules where completion is monitored and regular messages from Shell leaders on the importance of managing trade compliance risks. The effectiveness of the trade compliance programme is assessed annually (or more frequently if necessary). In response to the COVID-19 pandemic, we have promoted an increased focus on compliance and assurance. For example, in Trading and Supply we have promoted a particular focus on compliance with trade controls in high-risk areas such as port agency, inspections and terminal operations.</p>

Investors should also consider the following, which could limit shareholder remedies.

OTHER (Generally applicable to an investment in securities)

Risk description	How this risk is managed
<p>The Company’s Articles of Association determine the jurisdiction for shareholder disputes. This could limit shareholder remedies.</p> <p>Our Articles of Association generally require that all disputes between our shareholders in such capacity and the Company or our subsidiaries (or our Directors or former Directors), or between the Company and our Directors or former Directors, be exclusively resolved by arbitration in The Hague, the Netherlands, under the Rules of Arbitration of the International Chamber of Commerce. Our Articles of Association also provide that, if this provision is to be determined invalid or unenforceable for any reason, the dispute could only be brought before the courts of England and Wales. Accordingly, the ability of shareholders to obtain monetary or other relief, including in respect of securities law claims, could be determined in accordance with these provisions.</p>	

MARKET OVERVIEW

We maintain a large business portfolio across an integrated value chain and are exposed to crude oil, natural gas, hydrocarbon product and chemical prices (see “Risk factors” on page 28). This diversified portfolio helps us mitigate the impact of price volatility. Our annual planning cycle and periodic portfolio reviews aim to ensure that our levels of capital investment and operating expenses are appropriate in the context of a volatile price environment. We test the resilience of our projects and other opportunities against a range of crude oil, natural gas, oil product and chemical prices and costs. We also aim to maintain a strong balance sheet to provide resilience against weak market prices.

GLOBAL ECONOMIC GROWTH

The COVID-19 pandemic has delivered an enormous global economic shock, leading to steep recessions in many countries. In the World Economic Outlook of January 2021, the International Monetary Fund (IMF) estimates that despite unprecedented policy support, global GDP contracted by 3.5% in 2020, one of the deepest global recessions in history. The most severe economic downturns occurred in India, Western Europe, the Middle East, and Latin America. China was the only major economy that recorded economic growth.

Developed countries were particularly vulnerable to lockdown measures, because of their economic structure. Services and consumption, which account for a higher share of GDP in developed countries, were disproportionately affected by restrictions on movement and closures of hospitality and leisure facilities. Developing economies suffered from collapses in capital inflows and commodity prices, and from a sharp compression in consumption and investment. Massive fiscal and monetary support measures were deployed in the major economies. In China, the authorities funded infrastructure investments. In the USA and Europe, government transfers supplemented incomes and supported businesses, in order to prevent deeper declines in employment and disposable income.

Led by mainland China, the Asia-Pacific region led the recovery during the year, as public health measures helped to contain community transmission of COVID-19. In other countries, the pandemic proved more difficult to control. European countries experienced renewed rises in infection rates during the fourth quarter of 2020. They responded by reinstating restrictions on activities that have a high risk of transmitting COVID-19.

Encouraging news on vaccines and improvements in therapeutics have increased the chances of a recovery in 2021, but the global economic outlook remains precarious, because markets fear that more virulent variants of COVID-19 could trigger additional waves of infections. The deep recessions triggered by the pandemic could leave lasting scars in the form of: lower investment by companies; high unemployment; increased global debt; and a potential retreat from global trade and supply linkages. There is concern that these effects may well restrict growth in the medium term.

GLOBAL PRICES, DEMAND AND SUPPLY

The following table provides an overview of the main crude oil and natural gas price markers to which we are exposed:

Oil and gas average industry prices [A]

	2020	2019	2018
Brent (\$/b)	42	64	71
West Texas Intermediate (\$/b)	39	57	65
Henry Hub (\$/MMBtu)	2.0	2.5	3.1
UK National Balancing Point (pence/therm)	25	35	60
Japan Customs-cleared Crude (\$/b)	46	67	73

[A] Yearly average prices are based on daily spot prices. The 2020 average price for Japan Customs-cleared Crude excludes December data.

CRUDE OIL

On a daily average basis, Brent crude oil, an international benchmark, traded between \$13 per barrel (/b) and \$70/b in 2020, ending the year around \$50/b. Brent crude oil prices averaged \$42/b for the year, 34% (or \$22/b) lower than in 2019.

In 2020, oil markets experienced unprecedented developments in demand driven by the COVID-19 pandemic. At the start of 2020, global oil demand for the year was expected to grow by 1.2 million barrels per day (b/d). Then in January, oil demand started to contract because demand fell in China as lockdown was imposed to contain the virus outbreak. In subsequent months, oil demand contracted further as the outbreak in China evolved into a global pandemic and lockdowns were introduced across the world. In April, oil demand fell to its lowest level, around 22 million b/d below year-average demand in 2019, according to an estimate of the International Energy Agency (IEA). Contraction of such magnitude has never been recorded before. Country lockdowns deeply impacted transportation sectors, especially passenger road and passenger air in Organisation for Economic Co-operation and Development (OECD) economies. In subsequent months, oil demand started recovering, but only partially, because resurgences of COVID-19 triggered re-imposition of social distancing and travel restrictions. By the fourth quarter, global oil demand was still estimated to be around 5.5 million b/d below the 2019 level, according to the Oil Market Report published by the IEA in January 2021. Averaged for the full year, oil demand contracted by around 9 million b/d, or 9%, to 91.2 million b/d. Oil demand fell by 5.7 million b/d in OECD economies, and by 3.2 million b/d in non-OECD economies. By contrast, oil demand in 2019 was 0.8 million b/d higher than in 2018.

In 2020, oil markets also experienced unprecedented developments in supply. In March, there was a serious disagreement within the OPEC+ alliance, which consists of OPEC members and co-operating non-OPEC resource holders such as Russia. Saudi Arabia and Russia failed to agree on what to do about falling demand for oil. Saudi Arabia responded to the disagreement by boosting its production to almost 12 million b/d, a monthly record. By April, storage capacity was filling up quickly and oil prices were falling rapidly. On April 12, the OPEC+ alliance agreed to jointly reduce production by an unprecedented 9.7 million b/d for May and June. For the month of June, Saudi Arabia voluntarily cut production further, by around 1 million b/d. For the rest of the year, the OPEC+ alliance agreed on and complied with a production cut of 7.7 million b/d.

In April, supply from outside the OPEC+ alliance also started to fall, most notably in the USA. The US Energy Information Administration reported a supply contraction of around 2 million b/d by the end of May, from a level of around 13 million b/d at the start of the year. US producers cut budgets, leading to an unprecedented fall in the number of oil drill rigs to around 26% of the total at the start of the year. Supply from the USA occasionally fell even further to around 10 million b/d because of production shut-ins during the hurricane season.

In aggregate, production of oil supply in 2020 is estimated in the Oil Market Report at 93.9 million b/d, which is 6.7 million b/d lower than in 2019. OPEC production is estimated to have fallen by 3.8 million b/d. Supply from the USA fell by 0.8 million b/d from 2019. By contrast, global oil supply in 2019 was 0.1 million b/d higher than in 2018.

Daily average oil prices reached a low at the end of April before the OPEC+ supply curtailments came into effect. Brent crude oil prices fell to around \$14/b. Contract prices of some crude grades, such as West Texas Intermediate (WTI), even traded well below \$0/b for a short period. Brent crude oil prices started to recover from May and traded in a price range of around \$35-45/b from June. Towards the end of 2020, announcements of promising COVID-19 vaccines supported Brent crude oil prices, allowing them to break through the upper end of this range.

On a yearly average basis, WTI crude oil traded at a discount of about \$2.5/b to Brent crude oil in 2020, compared with \$7/b in 2019. The discount narrowed from 2019 because falling US supply prevented bottlenecks in pipeline capacity from the landlocked Cushing storage hub to the US Gulf Coast. According to the US Energy Information Administration, US crude oil exports increased further to a yearly average of around 3.1 million b/d in 2020, up by 0.1 million b/d from 2019. This helped to ensure a narrow price differential between Brent and WTI.

Looking ahead, the IMF's global economic outlook indicates some increase in global economic growth, which should support oil demand growth.

Demand growth could accelerate further if vaccines can help contain COVID-19 and allow a return to pre-pandemic demand patterns in perhaps two or three years. According to the IEA, global oil demand is projected to increase by around 5.4 million b/d for 2021 to reach 96.6 million b/d. This is still 3.4 million b/d less than in 2019. OPEC+ members may have to carefully balance supply growth with sustained production curtailments in order to achieve price stability. In the near term, once demand has recovered to 2019 levels, the need for OPEC+ cuts may diminish. If there is further demand growth, tightness of supply could even develop. This is because any supply growth from the US shale basins could be limited, since US operators have shifted their focus from volume to value. We expect this shift to be permanent.

The supply growth potential from outside OPEC+ and the USA could be limited by industry-wide lack of investment in new supply projects which also tend to have a long lead time.

In the near term, prices could rise if demand is quicker to recover and OPEC+ members successfully constrain supply. On the other hand, the price environment could weaken if the impact of COVID-19 prevents full demand recovery, and/or OPEC and the non-OPEC resource holders relax their production agreement. The price environment could also weaken if there is an increase in supply from other non-OPEC producers, such as US shale producers.

NATURAL GAS

Global gas demand is estimated to have declined by around 2.4% in 2020, in contrast with the 2.5% annual growth rate observed since the start of the century. The deterioration in gas demand for power generation and in industry was mainly caused by lockdowns related to COVID-19. Resilient gas demand for heating helped offset the overall decline. Demand declined across all regions except non-OECD Asia. In non-OECD Asia, demand grew in China, which experienced a robust recovery after mitigating the impacts of COVID-19. Outside China, aggregate gas demand in non-OECD Asia remained flat year-on-year.

In 2020, global LNG imports were almost unchanged from 2019, rising by about 2 million tonnes year-on-year to 360 million tonnes. Growth in LNG supply capacity was mostly limited to the USA, where 21 million tonnes of new liquefaction started commercial operations in 2020. Liquefaction plants already in operation in the USA responded to the weak gas price environment by significantly curtailing production in the middle of the year. Supply from major LNG-exporting countries such as Egypt, Malaysia and Norway was also lower year-on-year because of operational disruptions and shut-ins to prevent economic losses.

Natural gas prices can vary from region to region.

In the USA, the natural gas price at the Henry Hub averaged \$2.0 per million British thermal units (MMBtu) in 2020, 21% lower than in 2019. It traded in a range of \$1.5 to 3.2/MMBtu. In the earlier part of 2020, there was downward pressure on prices because of decreased demand from a mild winter, lower LNG exports and a weak domestic market caused by COVID-19. Supply fell because activity declined as producers cut investments and because lower oil production meant there was less associated gas. During the summer, prices found support from growing demand for gas that could generate power for cooling during the hotter months of the year. Later in 2020, demand strengthened because of storage ahead of the winter season and increasing US LNG exports.

In Europe, the average price at the UK National Balancing Point (NBP) in 2020 was 28% lower than in 2019. At the main continental gas trading hubs – in the Netherlands, Belgium and Germany – prices were also lower, as reflected by weaker Dutch Title Transfer Facility (TTF) prices. European gas prices were lower because of: the slump in demand in power generation and industry; robust supply of pipeline gas; well-filled gas storage inventories at the start of the year; and competition with renewables in power.

We also produce and sell natural gas in regions where supply, demand and regulatory circumstances differ markedly from those in the USA or Europe.

Long-term contracted LNG prices in the Asia-Pacific region in 2020 were lower than in 2019 because they are predominantly indexed to oil prices, particularly the Japan Customs-cleared Crude (JCC) index which dropped by an 32% year-on-year, tracking Brent crude prices. Meanwhile, delivered North Asia spot prices, reflected by the Japan Korea Marker, declined by 20% compared with 2019, because of oversupply in the global LNG market and weak demand.

Looking ahead, we expect gas markets in North America, Europe and Asia-Pacific to find support from markets recovering from the pandemic. Price developments are very uncertain and dependent on many factors.

MARKET OVERVIEW continued

In the USA, Henry Hub gas prices are expected to increase over the next few years. This is because while production of gas is expected to recover by perhaps late 2021, it could lag behind demand, which may grow earlier, to supply LNG exports and exports to Mexico by pipeline, and to supply residential and industrial users. The Henry Hub gas price could rise more than expected if oil prices stay low, leading to the Permian Basin producing less oil and supplying less associated gas as a result.

On the other hand, if producers increase investments substantially, the extra supply could exert downward pressure on prices.

In Europe, we believe gas prices will be increasingly influenced by the cost of LNG imports from the USA. In the Asia-Pacific region, long-term gas prices are expected to continue to be strongly influenced by oil prices. Spot prices are expected to be increasingly influenced by gas supply and demand fundamentals.

CRUDE OIL AND NATURAL GAS PRICE ASSUMPTIONS

Our ability to deliver competitive returns and pursue commercial opportunities ultimately depends on the accuracy of our price assumptions (see "Risk factors" on page 28). We use a rigorous assessment of short-, medium- and long-term market uncertainties to determine what ranges of future crude oil and natural gas prices to use in project and portfolio evaluations. Market uncertainties include, for example, future economic conditions, geopolitics, actions by major resource holders, production costs, technological progress and the balance of supply and demand. See also Note 8 to the "Consolidated Financial Statements" on pages 234-238.

REFINING MARGINS

Refining marker average industry gross margins

	2020	2019	\$/b 2018
US West Coast	8.5	13.5	11.5
US Gulf Coast Coking	2.3	4.9	7.0
Rotterdam Complex	0.4	2.3	2.5
Singapore	(0.5)	(0.6)	1.4

Industry gross refining margins weakened in 2020 because demand for oil products was significantly reduced by the fall in economic activity and increase in travel restrictions caused by COVID-19. Demand for transportation fuels such as gasoline for passenger cars and kerosene for air transportation was hit particularly hard. During most of the second half of the year, mobility and the resulting demand for transportation fuels improved in some parts of the world, especially in China and South-east Asia. At the end of the year, new waves of COVID-19 infections in Europe and the Americas severely limited any global increase in demand for transportation fuels.

On January 1, 2020, the new International Maritime Organization low-sulphur shipping fuel specification came into effect, limiting the sulphur content of maritime fuel to 0.5%. This had a limited effect on margins because of the economic slowdown in 2020 and because companies had prepared for the new regulations by building inventory in the second half of 2019.

The destruction of demand caused by COVID-19 led to industry idling some refinery capacity. Permanent refinery closures were also announced in 2020, but construction of new capacity did occur during the year, especially in the Middle East and Asia.

The outlook for refining margins for the next few years will be influenced by the uncertainty around the pace of economic and demand recovery from the pandemic, and by the continued addition of new refinery capacity in the Middle East and Asia, often integrated with chemicals production. On balance, refining marker margins are expected to remain under pressure for 2021.

PETROCHEMICAL MARGINS

Cracker industry margins [A]

	2020	2019	\$/tonne 2018
North East/South East Asia naphtha	362	302	594
Western Europe naphtha	513	528	562
US ethane	433	440	412

[A] ICIS data is quoted. Cracker margins have been revised from the fourth quarter 2019 onwards due to updated cracker margin calculation methodology by ICIS. Further revisions based on available market information to external industry data provider up to the end of the period.

Cracker margins were volatile during 2020 because of how COVID-19 affected demand. Overall margins, however, were broadly similar to those in 2019. The effect on chemicals depended on end use. Some sectors, such as automotive, were hit particularly hard, while others, such as packaging, showed robust demand. Chinese demand recovered relatively quickly because the virus was swiftly brought under control. Overall chemicals demand was not hit as hard as GDP. West European cracker margins were supported by the sudden fall in the price of crude oil in March and April. The fact that crude oil was at a lower price than in 2019 reduced naphtha feedstock costs, which reduced product prices. This in turn put pressure on US ethane cracker margins, although plentiful ethane supply helped counter the impact.

The outlook for petrochemical margins in 2021 and beyond depends on feedstock costs and supply and demand balances. Demand for petrochemicals will be affected by the speed and extent of recovery from the COVID-19 pandemic. Supply of petrochemicals will depend on the net capacity effect of new builds and plant closures (taking into account any delays or cancellations in building new plants or closing old ones). Product prices reflect the prices of raw materials, which are closely linked to crude oil and natural gas prices. The balance of all these factors will drive margins.

The statements in this "Market overview" section, including those related to our price forecasts, are forward-looking statements based on management's current expectations and certain material assumptions and, accordingly, involve risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied herein. See "About this Report" on pages iii-iv and "Risk factors" on pages 28-37.

SUMMARY OF RESULTS

Key statistics

	\$ million, except where indicated		
	2020	2019	2018
(Loss)/income for the period	(21,534)	16,432	23,906
Current cost of supplies adjustment	1,833	(605)	458
Total segment earnings [A][B], of which:	(19,701)	15,827	24,364
Integrated Gas	(6,278)	8,628	11,444
Upstream	(10,785)	3,855	6,490
Oil Products	(494)	6,139	6,025
Chemicals	808	478	1,884
Corporate	(2,952)	(3,273)	(1,479)
Identified Items [B]	(24,767)	(1,192)	2,429
Adjusted Earnings [B]	4,846	16,462	21,404
Capital expenditure	16,585	22,971	23,011
Cash capital expenditure [B]	17,827	23,919	24,078
Operating expenses [B]	34,789	37,893	39,316
Return on average capital employed [B]	(6.8)%	6.7%	9.4%
Net Debt at December 31 [B]	75,386	79,093	51,428
Gearing at December 31	32.2%	29.3%	20.3%
Oil and gas production (thousand boe/d)	3,386	3,665	3,666
Proved oil and gas reserves at December 31 (million boe)	9,124	11,096	11,578

[A] Segment earnings are presented on a current cost of supplies basis. See Note 4 to the "Consolidated Financial Statements" on pages 230-232.

[B] See "Non-GAAP measures reconciliations" on pages 305-306.

EARNINGS 2020-2019

Income for the period was a loss of \$21,534 million in 2020, compared with earnings of \$16,432 million in 2019. After current cost of supplies adjustment, total segment earnings were a loss of \$(19,701) million in 2020, compared with earnings of \$15,827 million in 2019.

Earnings on a current cost of supplies basis (CCS earnings) exclude the effect of changes in the oil price on inventory carrying amounts, after making allowance for the tax effect. The purchase price of volumes sold in the period is based on the current cost of supplies during the same period, rather than on the historic cost calculated on a first-in, first-out (FIFO) basis. Therefore, when oil prices are decreasing, CCS earnings are likely to be higher than earnings calculated on a FIFO basis and, when prices are increasing, CCS earnings are likely to be lower than earnings calculated on a FIFO basis.

Integrated Gas earnings in 2020 were a loss of \$6,278 million, compared with earnings of \$8,628 million in 2019. The decrease was mainly driven by higher impairments, lower realised oil, LNG and gas prices, higher charges related to fair value accounting of commodity derivatives and lower contributions from marketing and trading. These effects were partly offset by lower operating expenses. See "Integrated Gas" on pages 46-52.

Upstream earnings in 2020 were a loss of \$10,785 million, compared with earnings of \$3,855 million in 2019. The decrease was mainly driven by lower realised oil and gas prices, higher impairments, higher losses on sales of assets, lower production volumes and unfavourable deferred tax movements. This was partly offset by lower operating expenses and lower well write-offs. See "Upstream" on pages 53-60.

Oil Products earnings in 2020 were a loss of \$494 million, compared with earnings of \$6,139 million in 2019. The decrease was mainly driven by higher impairments, lower combined Refining and Trading margins as well as lower marketing margins. This was partly offset by lower operating expenses and other items mainly including taxation movements. See "Oil Products" on pages 70-76.

Chemicals earnings in 2020 were \$808 million, compared with \$478 million in 2019. The increase was mainly driven by lower tax and operating expenses and higher chemicals prices, which was partly offset by higher redundancy and restructuring charges and higher depreciation, depletion and amortisation. See "Chemicals" on pages 77-79.

Corporate segment in 2020 was an expense of \$2,952 million, compared with \$3,273 million in 2019. The lower expense was mainly driven by the favourable deferred tax movements. See "Corporate" on page 80.

EARNINGS 2019-2018

Income for the period was \$16,432 million in 2019, compared with \$23,906 million in 2018. After current cost of supplies adjustment, total segment earnings were \$15,827 million in 2019, compared with \$24,364 million in 2018.

Integrated Gas earnings in 2019 were \$8,628 million, compared with \$11,444 million in 2018. The decrease was mainly driven by lower gains on sale of assets, lower realised oil, LNG and gas prices, higher impairments, higher operating expenses, negative movements in deferred tax positions and lower liquids production volumes. These effects were partly offset by stronger contributions from LNG marketing and trading, and gains related to the fair value accounting of commodity derivatives. See "Integrated Gas" on pages 46-52.

Upstream earnings in 2019 were \$3,855 million, compared with \$6,490 million in 2018. The decrease was mainly driven by higher impairments, lower realised oil and gas prices, higher depreciation and higher well write-offs. This was partly offset by increased gains on sale of assets and higher volumes. See "Upstream" on pages 53-60.

Oil Products earnings in 2019 were \$6,139 million, compared with \$6,025 million in 2018. The increase was mainly driven by higher Marketing margins and lower operating expenses partly offset by lower Refining and Trading margins. See "Oil Products" on pages 70-76.

SUMMARY OF RESULTS continued

Chemicals earnings in 2019 were \$478 million, compared with \$1,884 million in 2018. The decrease was mainly driven by lower margins and higher legal provisions. See "Chemicals" on pages 77-79.

Corporate segment in 2019 was an expense of \$3,273 million, compared with \$1,479 million in 2018. The higher loss was mainly driven by the introduction of IFRS 16 and reduced capitalised interest, as well as reduced tax credits from financing and one-off charges. See "Corporate" on page 80.

PRODUCTION AVAILABLE FOR SALE

Oil and gas production available for sale in 2020 was 1,239 million barrels of oil equivalent (boe), or 3,386 thousand boe per day (boe/d), compared with 1,338 million boe, or 3,665 thousand boe/d, in 2019. In 2020, lower production was due to the impact of divestments, higher maintenance, demand reduction and OPEC+ restrictions. New fields and ramp-ups offset the impact of field declines.

Oil and gas production available for sale [A]

	Thousand boe/d		
	2020	2019	2018
Crude oil and natural gas liquids	1,752	1,823	1,749
Synthetic crude oil	51	52	53
Natural gas [B]	1,583	1,790	1,863
Total	3,386	3,665	3,666
Of which:			
Integrated Gas	911	922	957
Upstream	2,424	2,691	2,656
Oil sands (reported as part of Oil Products)	51	52	53

[A] See "Oil and gas information" on pages 61-69.

[B] Natural gas volumes are converted into oil equivalent using a factor of 5,800 scf per barrel.

PROVED RESERVES

The proved oil and gas reserves of Shell subsidiaries and the Shell share of the proved oil and gas reserves of joint ventures and associates are summarised in "Oil and gas information" on pages 61-69 and set out in more detail in "Supplementary information – oil and gas (unaudited)" on pages 265-282.

Before taking production into account, our proved reserves decreased by 686 million boe in 2020. This comprised decreases of 614 million boe from Shell subsidiaries and decreases of 72 million boe from the Shell share of joint ventures and associates. The decrease from Shell subsidiaries included a net decrease of 607 million boe from revisions and reclassifications, an increase of 88 million from extensions and discoveries and a net decrease of 95 million boe related to purchases and sales of minerals in place. The decrease of 72 million boe from the Shell share of joint ventures and associates comprises a net decrease of 73 million boe from revisions and reclassifications.

In 2020, total oil and gas production was 1,286 million boe, of which 1,239 million boe was available for sale and 47 million boe was consumed in operations. Production available for sale from subsidiaries was 1,104 million boe and 40 million boe was consumed in operations. The Shell share of the production available for sale of joint ventures and associates was 135 million boe and 7 million boe was consumed in operations.

Accordingly, after taking production into account, our proved reserves decreased by 1,972 million boe in 2020, to 9,124 million boe at December 31, 2020, with a decrease of 1,758 million boe from subsidiaries and a decrease of 214 million boe from the Shell share of joint ventures and associates.

CASH CAPITAL EXPENDITURE AND OTHER INFORMATION

Cash capital expenditure was \$17.8 billion in 2020, compared with \$23.9 billion in 2019.

Operating expenses decreased by \$3.1 billion in 2020, to \$34.8 billion.

Our return on average capital employed (ROACE) decreased to (6.8)%, compared with 6.7% in 2019, mainly driven by lower income in 2020.

Net debt was \$75.4 billion at the end of 2020, compared with \$79.1 billion at the end of 2019, mainly driven by lower share buybacks and dividend payments.

Gearing was 32.2% at the end of 2020, compared with 29.3% at the end of 2019, mainly driven by lower earnings in 2020.

SIGNIFICANT ACCOUNTING ESTIMATES AND JUDGEMENTS

See Note 2 to the "Consolidated Financial Statements" on pages 221-229.

LEGAL PROCEEDINGS

See Note 25 to the "Consolidated Financial Statements" on pages 260-262.

PERFORMANCE INDICATORS

These indicators enable management to evaluate Shell's performance against our strategy and operating plans. Those that are used in the determination of the Executive Directors' remuneration are asterisked below and on the following page. See "Directors' Remuneration Report" on pages 153-156.

FINANCIAL

Total shareholder return (%)*

(32.7) 2019: 0.5

Total shareholder return (TSR) is the difference between the share price at the beginning of the year and the share price at the end of the year (each averaged over 90 days), plus gross dividends delivered during the calendar year (reinvested quarterly), expressed as a percentage of the share price at the beginning of the year (averaged over 90 days). The data used are a weighted average in dollars for A and B shares. The TSRs of major publicly traded oil and gas companies can be compared directly, providing a way to determine how we are performing relative to our industry peers.

Cash flow from operating activities (\$ million)*

34,105 2019: 42,178

Cash flow from operating activities is the total of all the cash receipts and payments associated with our sales of oil, gas, chemicals and other products. The components that provide a reconciliation from income for the period are listed in the "Consolidated Statement of Cash Flows". This indicator reflects our ability to generate cash to service and reduce our debt and for distributions to shareholders and for investments.

See "Liquidity and capital resources" on pages 81-84.

Free cash flow (\$ million)*

20,828 2019: 26,399

Free cash flow is the sum of "Cash flow from operating activities" and "Cash flow from investing activities", which are listed in the "Consolidated Statement of Cash Flows". This indicator is used to evaluate the cash available for financing activities, including dividend payments, after investment in maintaining and growing our business.

See "Non-GAAP measures reconciliations" on pages 305-306.

Organic free cash flow (\$ million)

17,634 2019: 20,116

Organic free cash flow is defined as free cash flow excluding the cash flows from acquisition and divestment activities. It is a measure used by management to evaluate the generation of cash flow without these activities.

See "Non-GAAP measures reconciliations" on page 305-306.

Return on average capital employed (%)*

(6.8) 2019: 6.7

ROACE is defined as income for the period, adjusted for after-tax interest expense, as a percentage of the average capital employed during the year. Capital employed is the sum of total equity and total debt. ROACE measures the efficiency of our utilisation of the capital that we employ and is a common measure of business performance.

See "Summary of results" on pages 41-42 and "Non-GAAP measures reconciliations" on pages 305-306.

Adjusted earnings (\$ million)

4,846 2019: 16,462

Adjusted earnings are income/(loss) attributable to shareholders plus cost of sales adjustment and excluding identified items. This measure aims to facilitate a comparative understanding of Shell's financial performance from period to period by removing the effects of oil price changes on inventory carrying amounts and removing the effects of identified items. These items are in some cases driven by external factors and may, either individually or collectively, hinder the comparative understanding of Shell's financial results from period to period. This measure excludes earnings attributable to non-controlling interest.

See "Non-GAAP measures reconciliations" on pages 305-306.

Adjusted earnings per share (\$)

0.62 2019: 2.04

Adjusted earnings per share is calculated as adjusted earnings, divided by the weighted average number of shares used as the basis for basic earnings per share.

See "Non-GAAP measures reconciliations" on pages 305-306.

Divestment proceeds (\$ million)

4,010 2019: 7,871

Divestment proceeds represent cash received from divestment activities in the period. This is the sum of the following lines from the "Consolidated Statement of Cash flows": proceeds from sale of property, plant and equipment and businesses; proceeds from sale of joint ventures and associates [A]; and proceeds from sale of equity securities.

[A] includes \$313 million (2019: \$155 million) of long-term loan repayments received from joint ventures and associates.

See "Non-GAAP measures reconciliations" on pages 305-306.

PERFORMANCE INDICATORS continued

FINANCIAL continued

Cash capital expenditure (\$ million)

17,827 2019: 23,919

Cash capital expenditure is the sum of capital expenditure, investments in joint ventures and associates, and investments in equity securities, as reported in the "Consolidated Statement of Cash flows". It is used to monitor investing activities on a cash basis, excluding items such as lease additions that do not necessarily result in cash outflows in the period.

See "Non-GAAP measures reconciliations" on pages 305-306.

Net debt (\$ million)

75,386 2019: 79,093

Net debt is defined as the sum of current and non-current debt, less cash and cash equivalents. The net debt calculation includes the fair value of derivative financial instruments used to hedge foreign exchange, interest rate risks relating to debt and associated collateral balances. The inclusion of these debt-related derivative balances reduces the volatility of net debt caused by fluctuations in foreign exchange and interest rates, and eliminates the potential impact of related collateral payments or receipts.

See "Note 14 Debt and Lease Arrangements" on pages 241-243.

Gearing (%)

32.2 2019: 29.3

Gearing is defined as net debt as a percentage of total capital (net debt plus total equity) at December 31, and is a measure of the degree to which our operations are financed by debt.

See "Liquidity and capital resources" on page 81-84 and "Note 14 Debt and Lease Arrangements" on pages 241-243.

OPERATIONAL

Production available for sale (thousand boe/d) *

3,386 2019: 3,665

Production is the sum of all the average daily volumes of unrefined oil and natural gas produced for sale by Shell subsidiaries and Shell's share of those produced for sale by joint ventures and associates. The unrefined oil comprises crude oil, natural gas liquids (NGLs), synthetic crude oil and bitumen. The gas volume is converted into equivalent barrels of oil to make the summation possible.

See "Summary of results" on pages 41-42.

LNG liquefaction volumes (million tonnes) *

33.2 2019: 35.6

LNG liquefaction volumes is a measure of the operational performance of our Integrated Gas business and LNG market demand.

See "Integrated Gas" on pages 46-52.

Refinery and chemical plant availability (%) *

95.5 2019: 90.8

Refinery and chemical plant availability is the weighted average of the actual uptime of plants as a percentage of their maximum possible uptime. The weighting is based on the capital employed, adjusted for cash and non-current liabilities. This indicator is a measure of the operational excellence of our refinery and chemical plant facilities.

See "Oil Products" on pages 70-76 and "Chemicals" on pages 77-79.

Project delivery on schedule (%) *

48 2019: 90

Project delivery on budget (%) *

104 2019: 99

Project delivery reflects our capability to complete major projects on time and within budget on the basis of the targets set in our annual business plan. Project delivery on schedule measures the percentage of projects delivered on schedule. Project delivery on budget reflects the aggregate cost against the aggregate budget for those projects, where a figure greater than 100% means over-budget.

Proved oil and gas reserves (million boe)

9,124 2019: 11,096

Proved oil and gas reserves are the total estimated quantities of oil and gas from Shell subsidiaries and Shell's share from joint ventures and associates that geoscience and engineering data demonstrate, with reasonable certainty, to be recoverable in future years from known reservoirs, at December 31, under existing economic conditions, operating methods and government regulations. Gas volumes are converted into boe using a factor of 5,800 scf/b. Reserves estimates are subject to change owing to a wide variety of factors, some of which are unpredictable.

See "Risk factors" on pages 28-37, "Summary of results" on pages 41-42, "Oil and gas information" on pages 61-69 and "Supplementary information – oil and gas (unaudited)" on pages 265-282.

SAFETY AND ENVIRONMENT

Total recordable case frequency (injuries per million working hours) *

0.7 2019: 0.9

Total recordable case frequency (TRCF) is the number of employee and contract staff injuries requiring medical treatment or time off for every million hours worked. It is a standard measure of occupational safety.

See "Environment and society" on pages 85-93.

Number of operational Tier 1 and 2 process safety events *

103 2019: 130

A Tier 1 process safety event is an unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials, from a process with the greatest actual consequence resulting in harm to employees, contract staff, or a neighbouring community, damage to equipment, or exceeding a threshold quantity, as defined by the API Recommended Practice 754 and IOGP Standard 456. A Tier 2 process safety event is a release of lesser consequence.

See "Environment and society" on pages 85-93.

Upstream and Integrated Gas GHG intensity (tonnes of CO₂ equivalent/tonne of hydrocarbon production available for sale) *

0.16 2019: 0.17

Upstream/midstream GHG intensity is a measure of GHG emissions (direct and indirect GHG emissions associated with imported energy, excluding emissions from exported energy), expressed in metric tonnes of CO₂ equivalent, emitted into the atmosphere per metric tonne of hydrocarbon production available for sale.

See "Climate change and energy transition" on pages 94-107.

Refining GHG intensity (tonnes of CO₂ equivalent/UEDC™) *

1.05 2019: 1.06

Refining GHG intensity is a measure of GHG emissions (direct and indirect GHG emissions associated with imported energy, excluding emissions from exported energy), expressed in metric tonnes of CO₂ equivalent, emitted into the atmosphere per unit of Utilised Equivalent Distillation Capacity (UEDC™). UEDC™ is a proprietary metric of Solomon Associates. It is a complexity-weighted normalisation parameter that reflects the operating cost intensity of a refinery based on the size and configuration of its particular mix of process and non-process facilities.

See "Climate change and energy transition" on pages 94-107.

Chemicals GHG intensity (tonnes of CO₂ equivalent/tonne petrochemicals produced) *

0.98 2019: 1.04

Chemicals GHG intensity is a measure of GHG emissions (direct and indirect GHG emissions associated with imported energy, excluding emissions from exported energy), expressed in metric tonnes of CO₂ equivalent, emitted into the atmosphere per metric tonne of steam cracker, high-value petrochemicals production.

See "Climate change and energy transition" on pages 94-107.

Number of operational spills of more than 100 kilograms

68 2019: 67

The operational spills indicator is the number of incidents in respect of activities where we are the operator in which 100 kilograms or more of oil or oil products were spilled as a result of those activities and reached the environment.

See "Environment and society" on page 85-93.

Direct GHG emissions (million tonnes of CO₂ equivalent)

63 2019: 70

Direct GHG emissions from facilities operated by Shell, expressed in million tonnes of CO₂ equivalent.

See "Climate change and energy transition" on pages 94-107.

Net Carbon Footprint (grams of CO₂ equivalent per megajoule) *

75 2019: 78

Net Carbon Footprint is a comprehensive measure of the life-cycle carbon intensity of the energy products we sell. It is a weighted average of the life-cycle CO₂ intensities of different energy products, normalised to the same point relative to their final end use. It includes emissions from the extraction, transportation and processing of crude oil or gas or other feedstocks, transport of products, and our customers' emissions from the use of products we sell. Also included are emissions from elements of this life cycle not owned by Shell, such as oil and gas processed by Shell but not produced by Shell; or from oil products and electricity marketed by Shell that have not been processed or generated at a Shell facility. Emissions compensated through various measures are also included, such as emissions mitigated by nature-based solutions and carbon capture and storage technology.

See "Climate change and energy transition" on pages 94-107.

INTEGRATED GAS

Key statistics

	\$ million, except where indicated		
	2020	2019	2018
Segment earnings	(6,278)	8,628	11,444
Including:			
Revenue (including inter-segment sales)	36,697	45,602	48,795
Share of profit of joint ventures and associates	562	1,791	2,273
Interest and other income	14	263	2,230
Operating expenses [A]	6,555	6,667	6,014
Exploration	611	281	208
Depreciation, depletion and amortisation	17,704	6,238	4,850
Taxation charge	(2,507)	2,242	2,795
Identified Items [A]	(10,661)	(326)	2,045
Adjusted Earnings [A]	4,383	8,955	9,399
Capital expenditure	3,661	3,851	3,262
Cash capital expenditure [A]	4,301	4,299	3,819
Oil and gas production available for sale (thousand boe/d)	911	922	957
LNG liquefaction volumes (million tonnes)	33.2	35.6	34.3

[A] See "Non-GAAP measures reconciliations" on pages 305-306.

OVERVIEW

Our Integrated Gas segment includes liquefied natural gas (LNG) activities and the conversion of natural gas into gas-to-liquids (GTL) fuels and other products, as well as our New Energies businesses which were rebranded to Renewables and Energy Solutions in 2021. The segment includes natural gas and liquids exploration and extraction, and the operation of upstream and midstream infrastructure that delivers gas and liquids to market. It markets and trades natural gas, LNG, electricity and carbon-emission rights, and markets and sells LNG as a fuel for heavy-duty vehicles and marine vessels.

BUSINESS CONDITIONS

Global gas demand is estimated to have declined by around 2.4% in 2020, in contrast with the 2.5% annual growth rate observed since the start of the century. The deterioration in gas demand for power generation and in industry was mainly caused by lockdowns related to COVID-19. Resilient gas demand for heating helped offset the overall decline. Demand declined across all regions except non-OECD Asia. In non-OECD Asia, demand grew in China, which experienced a robust recovery after mitigating the impacts of COVID-19. Outside China, aggregate gas demand in non-OECD Asia remained flat year-on-year.

In 2020, global LNG imports were almost unchanged from 2019, rising by about 2 million tonnes year-on-year to 360 million tonnes. Growth in LNG supply capacity was mostly limited to the USA, where 21 million tonnes of new liquefaction started commercial operations in 2020. Liquefaction plants already in operation in the USA responded to the weak gas price environment by significantly curtailing production in the middle of the year. Supply from major LNG-exporting countries such as Egypt, Malaysia and Norway was also lower year-on-year because of operational disruptions and shut-ins to prevent economic losses.

Natural gas prices can vary from region to region.

In the USA, the natural gas price at the Henry Hub averaged \$2.0 per million British thermal units (MMBtu) in 2020, 21% lower than in 2019. It traded in a range of \$1.5 to 3.2/MMBtu.

In Europe, the average price at the UK National Balancing Point (NBP) in 2020 was 28% lower than in 2019. At the main continental gas trading hubs – in the Netherlands, Belgium and Germany – prices were also lower, as reflected by weaker Dutch Title Transfer Facility (TTF) prices.

Long-term contracted LNG prices in the Asia-Pacific region in 2020 were lower than in 2019 because they are predominantly indexed to oil prices, particularly the Japan Customs-cleared Crude (JCC) index which dropped by an 32% year-on-year, tracking Brent crude prices. Meanwhile, delivered North Asia spot prices, reflected by the Japan Korea Marker, declined by 20% compared with 2019.

See "Market overview" on pages 38-40.

PRODUCTION AVAILABLE FOR SALE

In 2020, production was 333 million barrels of oil equivalent (boe), or 911 thousand boe per day (boe/d), compared with 336 million boe, or 922 thousand boe/d in 2019. Natural gas production was 83% of total production in 2020 and 2019. In 2020 natural gas production decreased by 1% compared with 2019. This was mainly because of extended maintenance at the Prelude floating liquefied natural gas (FLNG) facility and maintenance activities at the Gorgon project in Australia, as well as lower wells performance. These were partially offset by the transfer of Rashpetco operations in Egypt from the Upstream segment and field ramp-ups. Liquids production decreased by 2%, in line with the decrease in natural gas production.

LNG LIQUEFACTION VOLUMES

LNG liquefaction volumes of 33.2 million tonnes in 2020 were 6% lower than in 2019, mainly driven by lower feedgas availability, higher maintenance activities, primarily at Prelude FLNG and Gorgon, as well as cargo timing.

LNG sales volumes of 69.67 million tonnes in 2020 were 6% lower than in 2019, driven by lower LNG liquefaction volumes partly offset by higher purchases from third parties.

Through our Shell Energy organisation, we market a portion of our share of equity production of LNG and sell and market LNG volumes around the world through our hubs in the UK, Dubai and Singapore. Shell has term sales contracts for the majority of our LNG liquefaction and term purchase contracts. We are able to maximize the income we generate from our LNG cargos through our shipping network, regasification terminals and ability to purchase and deliver LNG spot cargos from third parties. For example, if one customer does not need a scheduled cargo, we can deliver that cargo to another customer who is in need. Similarly, if a customer needs an additional cargo not available from our production facilities, we can contract with third parties to deliver the additional cargo. We also conduct paper trades primarily to manage commodity price risk related to sales and purchase contracts. We also sell trucked LNG in China, Singapore and Europe.

INTEGRATED GAS DATA TABLE

LNG liquefaction volumes

	2020	2019	Million tonnes 2018
Australia	11.8	12.5	12.1
Brunei	1.6	1.6	1.6
Egypt	0.2	0.4	0.3
Malaysia	—	—	0.6 [A]
Nigeria	5.3	5.3	5.1
Norway	0.1	0.1	0.1
Oman	2.5	2.6	2.4
Peru	0.9	0.9	0.8
Qatar	2.4	2.5	2.3
Russia	3.1	3.0	3.1
Trinidad and Tobago	5.4	6.7	5.8
United States	0.1	0.1	—
Total	33.2	35.6	34.3

[A] Includes LNG liquefaction volumes related to our share in equity securities of Malaysia LNG Tiga, which were disposed of in 2018.

EARNINGS 2020-2019

Segment earnings in 2020 were a loss of \$6,278 million, which included a net charge of \$10,661 million. The net charge reflected impairment charges of \$9,282 million mainly reflecting revisions to mid- and long-term price outlook assumptions and primarily related to the Queensland Curtis LNG and Prelude FLNG operations in Australia. It also comprised a net charge of \$969 million due to the fair value accounting of commodity derivatives and a charge of \$607 million related to onerous contract provisions.

Segment earnings in 2019 were \$8,628 million, which included a net charge of \$326 million. The net charge mainly reflected impairment charges of \$890 million mostly in Australia, negative movements in deferred tax positions of \$292 million in Australia and write-offs of \$131 million in Trinidad and Tobago. These were partly offset by a gain of \$787 million related to the fair value accounting of commodity derivatives and a gain of \$203 million on a sale of assets in Australia.

Excluding the net charge described above, segment earnings were \$4,383 million in 2020 compared with \$8,955 million in 2019. Earnings were negatively impacted by lower realised LNG, oil and gas prices, and lower contributions from marketing and trading, partly offset by lower operating expenses.

EARNINGS 2019-2018

Segment earnings in 2019 were \$8,628 million, which included a net charge of \$326 million as described above.

Segment earnings in 2018 were \$11,444 million, which included a net gain of \$2,045 million. The net gain primarily reflected gains of \$1,937 million on sale of assets, mainly related to the divestment of assets in Thailand, New Zealand and India. It also comprised a gain of \$481 million related to the fair value accounting of commodity derivatives and impairment charges of \$371 million related to investments in Trinidad and Tobago and Shell's investment in a joint venture.

Excluding the net charge above, segment earnings were \$8,955 million in 2019 compared with \$9,399 million in 2018. Earnings were negatively impacted by lower realised oil, LNG and gas prices, higher operating expenses (of which about 50% related to New Energies, reflecting underlying business growth), and lower liquids production volumes, partly offset by significantly stronger contributions from LNG marketing and trading.

CASH CAPITAL EXPENDITURE

Cash capital expenditure in 2020 was \$4.3 billion, unchanged from \$4.3 billion in 2019. Our cash capital expenditure is expected to be around \$6 billion in 2021.

PORTFOLIO AND BUSINESS DEVELOPMENT

Key portfolio events in 2020 included the following:

- In February 2020, we announced that we will build and operate our first industrial-scale solar electricity farm near Wandoan in central Queensland, Australia. The solar farm will generate 120 MW of solar electricity and is expected to be completed in early 2021.
- In March 2020, we decided not to proceed with an equity interest in the proposed Lake Charles LNG project. Energy Transfer will take over as the project developer.
- In July 2020, the CrossWind consortium, a joint venture between Shell in the Netherlands and Eneco, was awarded the tender for the offshore wind farm Hollandse Kust (noord). Both companies have already taken their final investment decisions (FID) on the project. The consortium plans to have Hollandse Kust (noord) operational in 2023 with an installed capacity of 759 MW.

The following major milestones were reached in 2020:

- In April 2020, we took a FID to develop the first phase of Arrow Energy's Surat Gas Project in Queensland, Australia. This decision will bring up to 90 billion cubic feet per year of new gas by the end of the decade, which will flow to Shell-operated QGC to be sold locally and exported through its plant on Curtis Island.
- In May 2020, we took a FID on a new LNG processing unit known as Train 7 at Nigeria LNG (NLNG).
- In August 2020, the tenth and final movable modular liquefaction system (MMLS) unit at the Elba Island export terminal in Georgia, USA, was delivered to the energy infrastructure company Kinder Morgan.
- In August 2020, the Blauwwind consortium, which is developing offshore wind projects in the Netherlands, achieved its first power.

We continued our divestment activities for selected assets during 2020, including:

- In December, QGC Common Facilities Company Pty Ltd, a wholly-owned subsidiary of Shell, announced it had agreed to the sale of a 26.25% interest in the Queensland Curtis LNG (QCLNG) Common Facilities to Global Infrastructure Partners Australia. The transaction is subject to regulatory approval in Australia and customary conditions. It is expected to complete in the first half of 2021.

INTEGRATED GAS continued

BUSINESS AND PROPERTY

Integrated Gas

Our complete list of LNG and GTL plants in operation and under construction in which we have an interest is provided below.

LNG liquefaction plants in operation at December 31, 2020

	Asset	Location	Shell interest (%)	100% capacity (mtpa) [A]	Shell-operated
Europe					
Norway	Gasnor	Bergen	100	0.3	Yes
Asia					
Brunei	Brunei LNG	Lumut	25	7.6	No
Oman	Oman LNG	Sur	30	7.1	No
	Qalhat LNG	Sur	11 [B]	3.7	No
Qatar	Qatargas 4 [C]	Ras Laffan	30	7.8	No
Russia	Sakhalin LNG [C]	Prigorodnoye	27.5	10.9	No
Oceania					
Australia	Australia North West Shelf [C]	Karratha	16.7	16.9	No
	Gorgon LNG [C]	Barrow Island	25	15.6	No
	Prelude [C] [D]	Browse Basin	67.5	3.6	Yes
	Queensland Curtis LNG T1 [C]	Curtis Island	50	4.3	Yes
	Queensland Curtis LNG T2 [C]	Curtis Island	97.5	4.3	Yes
Africa					
Egypt [E]	Egyptian LNG T1	Idku	35.5	3.6	No
	Egyptian LNG T2	Idku	38	3.6	No
Nigeria	Nigeria LNG	Bonny	25.6	24.1	No
South America					
Peru	Peru LNG	Pampa Melchorita	20	4.5	No
Trinidad and Tobago	Atlantic LNG T1	Point Fortin	46	3	No
	Atlantic LNG T2/T3	Point Fortin	57.5	6.6	No
	Atlantic LNG T4	Point Fortin	51.1	5.2	No

[A] 100% capacity represents the total capacity that all trains can process as reported by the operator.

[B] Interest, or part of the interest, is held via indirect shareholding.

[C] These assets are clustered as integrated assets and have onshore or offshore upstream production.

[D] Following a number of operational issues and shutdown since February 2020, Prelude continues to progress towards safe and reliable operations with LNG rundown restart in late December 2020.

[E] In January 2014, force majeure notices were issued under the LNG agreements as a result of domestic gas diversions severely restricting volumes available to the ELNG plant. These notices remain in place.

LNG liquefaction plants under construction at December 31, 2020

	Asset	Location	Shell interest (%)	100% capacity (mtpa) [A]	Shell-operated
Africa					
Nigeria	Train 7 [B]	Bonny	25.6	7.6	No
North America					
Canada	LNG Canada T1-2 [C]	Kitimat	40.0	14.0	No

[A] 100% capacity represents the total capacity that all trains can process as reported by the operator.

[B] First LNG is expected in the middle of the 2020s.

[C] Construction started in October 2018 and first LNG is expected before the middle of the 2020s.

GTL plants in operation at December 31, 2020

	Asset	Location	Shell interest (%)	100% capacity (b/d) [A]	Shell-operated
Asia					
Malaysia	Shell MDS	Bintulu	72.0	14,700	Yes
Qatar	Pearl	Ras Laffan	100.0	140,000	Yes

[A] 100% capacity represents the total capacity of the plant.

We also have interests and rights in various regasification terminals listed below. Extension of leases or rights beyond the periods mentioned below will be reviewed on a case-by-case basis.

LNG regasification terminals

Project name	Location	Shell capacity rights (mtpa)	Capacity rights period	Status	Shell interest (%) and Rights
Altamira	Tamaulipas, Mexico	3.3 [A]	2006–2021	In operation	Leased
Costa Azul	Baja California, Mexico	2.7	2008–2028	In operation	Leased
Cove Point	Lusby, MD, USA	1.8	2003–2023	In operation	Leased
Dragon LNG	Milford Haven, UK	3.1	2009–2029	In operation	50
Elba Island Expansion	Elba Island, GA, USA	4.2	2010–2035	In operation	Leased
Elba Island	Elba Island, GA, USA	2.8	2006–2036	In operation	Leased
Elba Island	Elba Island, GA, USA	4.6	2003–2027	In operation	Leased
GATE (Gas Access to Europe)	Rotterdam, The Netherlands	1.5	2015–2031	In operation	Capacity rights
Shell Energy India Pvt Ltd (formerly Hazira)	Gujarat, India	5	2005–2035	In operation	100
Lake Charles	Lake Charles, LA, USA	4.4	2002–2030	In operation	Leased
Lake Charles Expansion	Lake Charles, LA, USA	8.7	2005–2030	In operation	Leased
Singapore SGM	SLNG, Singapore	up to 3.0 [B]	2013–2029	In operation	Import rights
Singapore SETL	SLNG, Singapore	up to 1.0 [C]	2018–2035	In operation	Import rights
Shell LNG Gibraltar	Gibraltar	up to 0.04	2018–2038	In operation	51

[A] 100% capacity rights are held by Gas del Litoral joint venture with which Shell has a contract to supply 75% of the volumes. Our capacity rights end in September 2021 and the contract will not be renewed.

[B] Exclusive licence to import LNG and sell regasified LNG in Singapore for up to 3.0 mtpa.

[C] Second licence to import LNG and sell regasified LNG in Singapore.

Our Integrates Gas business also includes oil and natural gas production, exploration and development in the following locations:

Australia

We have interests in offshore production, LNG liquefaction and exploration licences in the North West Shelf (NWS) and Greater Gorgon areas of the Carnarvon Basin and in the Browse Basin. Woodside is the operator on behalf of the NWS joint venture (Shell interest 16.7%). We have a 25% interest in the Chevron-operated Gorgon LNG joint venture that includes offshore production.

We relinquished positions in asset and exploration areas in the Exmouth Plateau, leading to us relinquishing four exploration permits in the Exmouth Plateau in June 2020.

Our interests in the Browse basin include joint arrangements, with Shell as the operator, for the Prelude field (Shell interest 67.5%), the pre-FID Crux gas and condensate field (Shell interest 82%), and other backfill and contingent resources for Prelude FLNG, including the Bratwurst field (Shell interest 100%). Bratwurst, discovered in 2019, is currently under evaluation as a future backfill opportunity.



QGC is one of Australia's leading natural gas producers.

We are also a partner in the Browse joint arrangement (Shell interest 27%) covering the Brecknock, Calliance and Torosa gas fields, which are under development and operated by Woodside.

We also operate the Queensland Curtis LNG (QCLNG) venture's natural gas operations, including wells, compression stations and processing plants, in Queensland's Surat Basin. We have interests ranging from 44% to 74% in 25 field compression stations and six central processing plants. Our production of natural gas from the onshore Surat Basin supplies the QCLNG liquefaction plant and the domestic gas market.

We have a 50% interest in Arrow, a Queensland-based joint venture with China National Petroleum Corporation (CNPC). Arrow owns coal-bed methane assets and a domestic power business.

Bolivia

We hold a 37.5% participating interest in the Caipipendi block where we produce and explore. We also have a 25% interest in Tarija XX West block where we produce from the Itaú field. We have the rights to explore and further develop the onshore Huacareta block (Shell interest 100% during exploration), and we are exploring there. We hold a 15% participating interest in the Repsol-operated Iniguazu exploration.

China

We jointly develop and produce from the onshore Changbei tight-gas field under a production-sharing contract (PSC) with CNPC. In 2017, we took the FID on the Changbei II Phase 1 project and started drilling activity in early 2019.

Egypt

We have a 25% interest in the Burullus Gas Company (Burullus), a self-operated joint venture which operates the West Delta Deep Marine concession (Shell interest 50%) and supplies gas to the domestic market and the Egyptian LNG plant. We have a 50% interest in the Rashid Petroleum Company (Rashpetco), a self-operated joint venture which operates the Rosetta concession (Shell interest 100%).

We have a 60% interest in the development rights for the Harmattan Deep discovery and the Notus discovery offshore the Nile Delta.

INTEGRATED GAS continued

Indonesia

We have a 35% interest in the INPEX Masela Ltd joint venture which owns and operates the offshore Masela block.

Oman

In February 2019, we signed an interim upstream agreement that detailed a funding and work programme for 2019 and 2020 to develop gas resources for projects to help meet the Sultanate of Oman's growing need for energy. The other signatories were Petroleum Development Oman (PDO), Oman Oil Company (OOC) and Total. The project covers investments in gas exploration and production.

Qatar

We operate the Pearl GTL plant (Shell interest 100%) in Qatar under a development and PSC with the government. The fully integrated facility has the capacity to produce, process and transport 1.6 billion standard cubic feet per day (scf/d) of gas from Qatar's North Field.

We have a 30% interest in Qatargas 4, which comprises integrated facilities to produce about 1.4 billion scf/d of gas from Qatar's North Field, an onshore gas-processing facility.

Russia

We have a 27.5% interest in Sakhalin-2, the joint venture with Gazprom, an integrated oil and gas project located on Sakhalin island.

Singapore

We have a 50% interest in a joint venture with KS Investments (the investment arm of Keppel Group) that holds a licence to supply LNG fuel for vessels in the Port of Singapore. We have aggregator licences to import LNG into Singapore and market the gas to power plants and other customers.

Tanzania

We operate and have a 60% interest in Blocks 1 and 4 offshore southern Tanzania. In June 2020, the government granted a 4.5-year licence extension for both blocks. We continue to develop a potential domestic gas and LNG project.

Trinidad and Tobago

We have interests in three concessions with producing fields: Central Block (Shell interest 65%), East Coast Marine Area (ECMA) (Shell interest 100%) and North Coast Marine Area (NCMA) (Shell interest 80.5%). We also own a 100% interest in Block 5(c), 90% interest in Block 22 and 80% interest in NCMA 4 which include five undeveloped discoveries. Our interests range from 35% to 100% in exploration activities in Blocks 5(d), 6(d), and Atlantic Area Blocks 3, 5, and 6.

USA

We have offtake rights via a lease to 100% of the capacity (2.5 mtpa) of the Kinder Morgan-operated Elba Island liquefaction plant in Georgia which consists of 10 MMLS units. We also lease regasification capacity on Elba Island with a contracted capacity of 11.6 mtpa.

Other

We have a 17.9% share in the West African Gas Pipeline Company Limited which owns and operates a 678-kilometre pipeline transporting gas from Nigeria to Ghana, Benin and Togo.

We have a 40% interest in a gas pipeline connecting Uruguay to Argentina.

We have a 35% interest in Cyprus Block 12, holding the Aphrodite discovery, which is currently under appraisal. In Colombia, we have a 60% interest in two deep-water blocks that we operate and 50% interests in three other blocks that we operate. We have interests in offshore blocks in Myanmar. We have a 90% interest in one exploration block licence in Namibia.

Renewables and Energy Solutions

Renewables and Energy Solutions includes power generation, trading and supply, hydrogen and nature-based solutions.

The Renewables and Energy Solutions portfolio is being built through organic growth and acquisitions. Most of these opportunities are in sectors that are different from Shell's existing oil and gas businesses, but have some similarities and/or adjacencies to our downstream and gas and power trading businesses. Shell-controlled Renewables and Energy Solutions companies are subject to the Shell Control Framework. Some are not yet in full compliance with the Shell Control Framework and we are working to bring them into compliance with this framework in a fit-for-purpose manner.

In 2020, cash capital expenditure in Renewables and Energy Solutions amounted to \$0.9 billion.



Shell is investing in renewables such as wind power.

Power

In the UK, through Shell Energy Retail, we supply 100% renewable electricity via the purchase of renewable energy guarantees of origin (REGO) certificates, and natural gas and smart home technology to more than 900 thousand homes. In Germany, we supply electricity and/or gas to more than 80 thousand homes through Shell Energy Retail GmbH.

Through Sonnen, we provide battery storage systems to homes with solar panels, with over 60 thousand installations globally. Through our London-based energy technology firm Limejump, we manage distributed, renewable and flexible power generation assets in supplying power to the UK national grid.

Our Shell Recharge electric vehicle (EV) charging service offers ways for drivers to recharge their vehicles at home, at their destination or during their journey. Shell New Energies is also developing charging networks for EV drivers through our NewMotion and Greenlots subsidiaries. NewMotion operates around 60 thousand private electric charge points in the Netherlands, Germany, France and the UK.

Greenlots provides EV charging posts, charging network software and grid services. It operates 8 thousand charge points for businesses and private drivers in the USA, Canada and Singapore.

Through MP2, we provide retail electricity and renewable energy solutions to commercial and industrial customers across the USA.

Silicon Ranch is an independent power producer and Shell's US solar platform, with a diverse portfolio of operating facilities including utility-scale solar.

In Australia, through ERM, we are the second-largest electricity retailer serving commercial and industrial customers.



Shell Recharge allows drivers to charge their electric vehicles.

Our major renewable power projects in operation and in development are listed below:

Renewable power projects in operation

Project	Location	Shell interest (%)	100% capacity (MW)	Type	Theme	Shell-operated
Silicon Ranch	USA	46.47	1,130	Solar Developer	Solar	No
Cleantech Solar	Asia	24.5 [A]	252	Solar Developer	Solar	No
Moerdijk	The Netherlands	100	27	Solar Operations	Solar	Yes
Noordzee Wind NL	The Netherlands	50	108	Offshore Wind JV	Offshore wind	No
Brazos, TX	USA	100	160	Onshore wind Operations	Onshore wind	Yes
Whitewater Hill, CA	USA	50	61.5	Onshore wind Operations	Onshore wind	No
Rock River, WY	USA	50	49	Onshore wind Operations	Onshore wind	No
Cabazon Pass, CA	USA	50	41	Onshore wind Operations	Onshore wind	No
Sohar Solar Quabas	Oman	100	34	Solar Development	Solar	Yes
Emmen	The Netherlands	100	12	Solar Development	Solar	Yes
Heerenveen	The Netherlands	100	14.5	Solar Development	Solar	Yes

[A] Shell interest in Cleantech is 49% where Cleantech owns 50% of the projects. Therefore 24.5% Shell interest is reported.

Renewable power projects under construction

Project	Location	Shell interest (%)	100% capacity (MW)	Type	Theme	Shell-operated
Gangarri	Australia	100	120	Solar Development	Solar	Yes
Silicon Ranch [A]	USA	46.47	1,744	Solar Developer	Solar	No
Cleantech Solar [A]	Asia	24.5 [B]	174	Solar Developer	Solar	No
CrossWind	The Netherlands	79.9	759	Offshore Wind Development	Offshore wind	No
Borsselle III and IV	The Netherlands	20	731.5	Offshore Wind Development	Offshore wind	No
Sas van Gent	The Netherlands	100	29.6	Solar Development	Solar	Yes

[A] These solar projects are shown in Projects in operation and under construction as they are in multiple phases.

[B] Shell interest in Cleantech is 49% where Cleantech owns 50% of the projects. Therefore 24.5% Shell interest is reported.

Renewable power projects in development

Projects in development represent various earlier stages where FID has not yet been taken.

Project	Location	Shell interest (%)	100% capacity (MW)	Type	Theme	Shell-operated
GBI	France	29.5	28.5	Offshore Wind JV	Offshore wind	Yes
Mayflower	USA	50	1,600	Offshore Wind JV	Offshore wind	No
Atlantic Shores	USA	50	2,500	Offshore Wind JV	Offshore wind	No
Pottendijk	The Netherlands	100	100	Solar and Onshore Wind	Onshore Renewable Power	Yes

INTEGRATED GAS continued

Hydrogen

We are part of joint ventures and alliances that have built hydrogen filling stations for passenger cars in Canada, Germany, the UK and the US state of California. We have announced plans to build several hydrogen filling stations in the Netherlands, the first of which opened in the fourth quarter of 2020.

We aim to complete the construction of a 10 MW electrolyser at our Rheinland refinery in Germany by mid-2021. In China, Shell and Zhangjiakou City Transport have signed a joint-venture agreement to build a 20 MW renewable power electrolyser and hydrogen refuelling stations in Zhangjiakou City in the Beijing-Tianjin-Hebei region.



Shell opened its first hydrogen refuelling station in the Netherlands in 2020.

Nature-based solutions

In 2020, we completed the acquisition of Select Carbon, a specialist company that partners with farmers, pastoralists and other landowners in Australia to develop carbon farming projects, where plants are grown and soil managed to absorb carbon dioxide from the atmosphere. Select Carbon represents the first corporate acquisition for our nature-based solutions programme. This programme invests in forests, grasslands, wetlands and other natural ecosystems around the world to offset emissions by using plants to absorb carbon dioxide. The investment in natural ecosystems also helps biodiversity.

Marketing and Trading

We also market and trade natural gas, power and carbon-emission rights in multiple markets in North and South America, Europe, Asia and Australia, of which a portion includes equity volumes from our upstream operations.

We have set up a power marketing and trading business in the Philippines and China which began operations in 2020.

UPSTREAM

Key statistics

	\$ million, except where indicated		
	2020	2019	2018
Segment earnings	(10,785)	3,855	6,490
Including:			
Revenue (including inter-segment sales)	28,330	45,217	46,584
Share of profit of joint ventures and associates	(7)	379	285
Interest and other income	542	2,180	605
Operating expenses [A]	10,983	11,582	11,690
Exploration	1,136	2,073	1,132
Depreciation, depletion and amortisation	23,119	16,881	12,871
Taxation charge/(credit)	(467)	5,878	8,756
Identified Items [A]	(7,933)	(598)	19
Adjusted Earnings [A]	(2,852)	4,452	6,472
Capital expenditure	6,911	10,003	12,002
Cash capital expenditure [A]	7,296	10,205	12,134
Oil and gas production available for sale (thousand boe/d)	2,424	2,691	2,656

[A] See "Non-GAAP measures reconciliations" on pages 305-306.

OVERVIEW

Our Upstream business explores for and extracts crude oil, natural gas and natural gas liquids. It also markets and transports oil and gas, and operates infrastructure necessary to deliver them to market.

BUSINESS CONDITIONS

In 2020, oil markets experienced unprecedented developments in demand driven by the COVID-19 pandemic. At the start of 2020, global oil demand for the year was expected to grow by 1.2 million barrels per day (b/d). Then in January, oil demand started to contract because demand fell in China as lockdown was imposed to contain the virus outbreak. In subsequent months, oil demand contracted further as the outbreak in China evolved into a global pandemic and lockdowns were introduced across the world. In April, oil demand fell to its lowest level, around 22 million b/d below year-average demand in 2019, according to an estimate of the International Energy Agency (IEA). Contraction of such magnitude has never been recorded before. Country lockdowns deeply impacted transportation sectors, especially passenger road and passenger air in Organisation for Economic Co-operation and Development (OECD) economies. In subsequent months, oil demand started recovering, but only partially, because resurgences of COVID-19 triggered re-imposition of social distancing and travel restrictions. By the fourth quarter, global oil demand was still estimated to be around 5.5 million b/d below the 2019 level, according to the Oil Market Report published by the IEA in January 2021. Averaged for the full year, oil demand contracted by around 9 million b/d, or 9%, to 91.2 million b/d. Oil demand fell by 5.7 million b/d in OECD economies, and by 3.2 million b/d in non-OECD economies. By contrast, oil demand in 2019 was 0.8 million b/d higher than in 2018.

On a daily average basis, Brent crude oil, an international benchmark, traded between \$13 per barrel (/b) and \$70/b in 2020, ending the year around \$50/b. Brent crude oil prices averaged \$42/b for the year, 34% (or \$22/b) lower than in 2019.

On a yearly average basis, WTI crude oil traded at a discount of about \$2.5/b to Brent crude oil in 2020, compared with \$7/b in 2019. The discount narrowed from 2019 because falling US supply prevented bottlenecks in pipeline capacity from the landlocked Cushing storage hub to the US Gulf Coast. According to the US Energy Information Administration, US crude oil exports increased further to a yearly average of around 3.1 million b/d in 2020, up by 0.1 million b/d from 2019. This helped to ensure a narrow price differential between Brent and WTI.

Global gas demand is estimated to have declined by around 2.4% in 2020, in contrast with the 2.5% annual growth rate observed since the start of the century. The deterioration in gas demand for power generation and in industry was mainly caused by lockdowns related to COVID-19. Resilient gas demand for heating helped offset the overall decline. Demand declined across all regions except non-OECD Asia. In non-OECD Asia, demand grew in China, which experienced a robust recovery after mitigating the impacts of COVID-19. Outside China, aggregate gas demand in non-OECD Asia remained flat year-on-year.

In the USA, the natural gas price at the Henry Hub averaged \$2.0 per million British thermal units (MMBtu) in 2020, 21% lower than in 2019. It traded in a range of \$1.5 to 3.2/MMBtu. In the earlier part of 2020, there was downward pressure on prices because of decreased demand from a mild winter, lower LNG exports and a weak domestic market caused by COVID-19. Supply fell because activity declined as producers cut investments and because lower oil production meant there was less associated gas. During the summer, prices found support from growing demand for gas that could generate power for cooling during the hotter months of the year. Later in 2020, demand strengthened because of storage ahead of the winter season and increasing US LNG exports.

In Europe, the average price at the UK National Balancing Point (NBP) in 2020 was 28% lower than in 2019. At the main continental gas trading hubs – in the Netherlands, Belgium and Germany – prices were also lower, as reflected by weaker Dutch Title Transfer Facility (TTF) prices. European gas prices were lower because of: the slump in demand in power generation and industry; robust supply of pipeline gas; well-filled gas storage inventories at the start of the year; and competition with renewables in power.

See "Market overview" on pages 38-40.

PRODUCTION AVAILABLE FOR SALE

In 2020, production was 887 million boe, or 2,424 thousand boe/d, compared with 982 million boe, or 2,691 thousand boe/d in 2019. Liquids production decreased by 4% and natural gas production decreased by 19% compared with 2019.

UPSTREAM continued

The decrease in liquids production was mainly caused by divestments, OPEC+ curtailment, higher maintenance and hurricanes in the Gulf of Mexico interrupting production. Increased production from ramp-ups and new field start-ups more than offset field decline. The decrease in gas production was mainly caused by divestments, lower demand from Nederlandse Aardolie Maatschappij B.V. (NAM) in the Netherlands, and the transfer of Rashpetco operations in Egypt from Upstream to Shell's Integrated Gas segment.

We expect that oil production peaked in 2019. Going forward, we expect a gradual reduction in oil production of around 1-2% each year, including divestments and natural decline.

EARNINGS 2020-2019

Segment earnings in 2020 were a loss of \$10,785 million, which included a net charge of \$6,447 million related to impairments, primarily in the US Gulf of Mexico, unconventional assets in North America, offshore assets in Brazil and Europe, and a project in Nigeria (OPL245), mainly triggered by revision of Shell's mid- and long-term commodity price and updated Appomattox sub surface understanding. Also included was a net charge of \$782 million related to the impact of the weakening Brazilian real on a deferred tax position.

Segment earnings in 2019 were \$3,855 million, which included a net charge of \$1,930 million related to impairments, primarily in the US Appalachia unconventional gas assets and a drilling rig joint venture, partly offset by a gain of \$1,609 million on sale of assets, mainly in Denmark and the US Gulf of Mexico.

Excluding the net charges described above, segment earnings in 2020 were a loss of \$2,852 million, compared with a profit of \$4,452 million in 2019. Earnings excluding the net charges were adversely impacted by lower prices and lower volumes, mainly driven by the unfavourable macroeconomic conditions as described in the business condition section and severe weather conditions in the Gulf of Mexico.

In the second quarter of 2020, we made cost interventions by reducing the size of our contingent workforce and initiating an organisational review in line with Reshape.

EARNINGS 2019-2018

Segment earnings in 2019 were \$3,855 million, which included a net charge of \$598 million as described above.

Segment earnings in 2018 were \$6,490 million, which included a net gain of \$19 million. This included a net gain of \$888 million on sale of assets, mainly related to our divestments in Iraq, Malaysia, Oman and Ireland, and a gain of \$152 million related to the fair value accounting of commodity derivatives. These gains were partly offset by a charge of \$561 million related to the impact of the weakening of the Brazilian real on a deferred tax position, a net impairment charge of \$350 million mainly related to assets in North America and deep-water rig joint ventures, and a charge of \$90 million related to the release of historic currency differences.

Excluding the net charges described above, segment earnings in 2019 were \$4,452 million compared with \$6,472 million in 2018. Earnings excluding the net charge were adversely impacted by lower realised oil and gas prices, higher depreciation and higher well write-offs, mainly in Albania and Kazakhstan, partly offset by higher sales volumes associated with the timing of liftings.

CASH CAPITAL EXPENDITURE

Cash capital expenditure in 2020 was \$7.3 billion, compared with \$10.2 billion in 2019. Our cash capital expenditure is expected to be around \$8 billion in 2021.

Lower cash capital expenditure in 2020 was mainly driven by actions to preserve cash. The lower cash capital expenditure and capital investments in 2020 also reflected our continuing efforts to improve capital efficiency by pursuing developments which cost less.

PORTFOLIO AND BUSINESS DEVELOPMENT

We took the following key portfolio decisions during 2020:

- In Argentina, in January 2020, partnering with Equinor, we completed the acquisition of Schlumberger's 60% interest in the Bandurria Sur block, located in the Vaca Muerta Basin (Shell interest 30%).
- In Brazil, in August 2020, we took the final investment decision (FID) to contract the Mero 3 floating production, storage and offloading (FPSO) vessel to be deployed at the Mero field within the offshore Santos Basin.
- In Brunei, in March 2020, we completed the acquisition of deep-water exploration Block CA-1 (Shell interest 86.95%).
- In Kazakhstan, in December 2020, we successfully settled a long-running contractual dispute with the Republic of Kazakhstan government about the profit share between the parties in the Karachaganak joint venture. Shell paid \$424 million as its share of the settlement.
- In Norway, in May 2020, partnering with Equinor and Total, we made a final investment decision on the Northern Lights carbon capture and storage (CCS) project. The project will involve the capture, transport and storage of carbon dioxide produced from industrial regions around the Norwegian continental shelf. Equinor is the operator of the project.
- In Russia, in April 2020, we cancelled our acquisition of the 50% participation interest in LLC Meretoyahaneftgaz from Gazprom Neft.
- In Russia, with Gazprom Neft, we established a joint venture (Shell interest 50%) to explore and develop the Leskinsky and Pukhutsayakhsky blocks in the Gydan peninsula, in north-western Siberia. The deal was completed in November 2020.
- In September, we agreed to acquire seven exploration licences in four countries from Kosmos Energy. Suriname represents a new country entry for Shell. In São Tomé and Príncipe, we will deepen our position in two blocks and enter two others. In both Namibia and South Africa, we will expand our position in two blocks. Transfer has been completed in Suriname, São Tomé and Príncipe and Namibia. South Africa is expected to complete in 2021.
- In the US Gulf of Mexico, in March 2020, we acquired seven blocks across multiple plays in the Gulf of Mexico Lease 254.

We achieved the following operational milestones in 2020:

- In Brazil, Atapu 1, (the FPSO vessel P-70), came on stream and delivered first oil in June.

We continued to divest selected assets during 2020, including:

- In Brazil, in June 2020, we sold a 30% interest in the Gato do Mato project in the Santos Basin. We are still the project operator, with a 50% interest.
- In Brazil, we agreed to sell our 23% interest in the P-71 FPSO vessel, the deal is expected to be completed in the first quarter of 2021.
- In Canada, in August 2020, we completed the sale of our Tourmaline shares.
- In Canada, we agreed to sell our Duvernay shale light oil position in Alberta. The deal is expected to be completed in the second quarter of 2021.
- In Nigeria, we agreed to sell our 30% interest in oil mining lease (OML17). The deal was completed in January 2021.
- In the USA, we completed the sale of our Appalachia shale gas position. The deal was completed in July 2020.
- In Egypt, we agreed to sell our onshore assets in the Western Desert. The deal is expected to be completed in the second half of 2021.

BUSINESS AND PROPERTY

Our subsidiaries, joint ventures and associates are involved in all aspects of upstream activities, including such matters as land tenure, entitlement to produced hydrocarbons, production rates, royalties, pricing, environmental protection, social impact, exports, taxes and foreign exchange.

The conditions of the leases, licences and contracts under which oil and gas interests are held vary from country to country. In almost all cases outside North America, legal agreements are generally granted by, or entered into with, a government, state-owned company, government-run oil and gas company or agency. The exploration risk usually rests with the independent oil and gas company. In North America, these agreements may also be with private parties that own mineral rights. Of these agreements, the following are most relevant to our interests:

- Licences (or concessions), which entitle the holder to explore for hydrocarbons and exploit any commercial discoveries. Under a licence, the holder bears the risk of exploration, development and production activities, and is responsible for financing these activities. In principle, the licence holder is entitled to the totality of production less any royalties in kind. The government, state-owned company or government-run oil and gas company may sometimes enter into a joint arrangement as a participant, sharing the rights and obligations of the licence but usually without sharing the exploration risk. In a few cases, the state-owned company, government-run oil and gas company or agency has an option to purchase a certain share of production.
- Lease agreements, which are typically used in North America and are usually governed by terms similar to licences. Participants may include governments or private entities. Royalties are either paid in cash or in kind.
- Production-sharing contracts (PSCs) entered into with a government, state-owned company or government-run oil and gas company. PSCs generally oblige the independent oil and gas company, as contractor, to provide all the financing and bear the risk of exploration, development and production activities in exchange for a share of the production. Usually, this share consists of a fixed or variable part that is reserved for the recovery of the contractor's cost (cost oil). The remaining production is split with the government, state-owned company or government-run oil and gas company on a fixed or volume/revenue-dependent basis. In some cases, the government, state-owned company or government-run oil and gas company will participate in the rights and obligations of the contractor and will share in the costs of development and production. Such participation can be across the venture or on a field-by-field basis. Additionally, as the price of oil or gas increases above certain predetermined levels, the independent oil and gas company's entitlement share of production normally decreases, and vice versa. Accordingly, its interest in a project may not be the same as its entitlement.

Europe Italy

We have a 39% interest in the Val d'Agri producing concession, operated by ENI.

We also have a 25% interest in the Tempa Rossa producing concession operated by Total.

Netherlands

Shell and ExxonMobil are 50:50 shareholders in Nederlandse Aardolie Maatschappij B.V. (NAM). A significant part of NAM's gas production comes from the onshore Groningen gas field, in which NAM holds a 60% interest. The remaining 40% interest is held by EBN, a Dutch government entity.

Production from the Groningen field induces earthquakes that have damaged houses and other buildings and structures in the region. This has led to complaints and claims for compensation for damage from the local community. NAM is working with the Dutch government and other stakeholders to fulfil its obligations to the residents of the area. These obligations include compensating for earthquake damage.

Since 2013, the Dutch Minister of Economic Affairs and Climate (the Minister) has set an annual production level for the Groningen field, taking into account all interests, including residents' safety, security of supply in the domestic gas market and supply commitments in EU member states. The production level in the gas year 2019-2020 (ending October 1, 2020) was 8.7 billion cubic meters.

In June 2018, NAM's shareholders and the Dutch government signed a heads of agreement (HoA) to reduce production from Groningen and to ensure the financial robustness of NAM to fulfil its obligations. In the HoA, NAM's shareholders agreed not to declare dividends for 2018 and 2019. Dividend payments in 2020 and beyond will be made only if a solvency ratio of 25% is reached and maintained. In September 2018, detailed agreements were signed to further implement the HoA. As part of these agreements, Shell guarantees NAM's payment obligations vis-à-vis the Dutch government in relation to earthquake-related damages and costs of strengthening houses, up to a maximum of 30%. This maximum equates to Shell's indirect interest in the Groningen production system.

In conjunction with the HoA, it was agreed that NAM would cease all involvement in handling damage claims or strengthening buildings to make them safe. The Dutch government has stepped into these two roles and has developed legislation and policies to deal with earthquake-related matters. One of the consequences of the legislation is that duty of care has shifted from NAM to the Dutch government. The Dutch government passes on to NAM the cost of the elements for which NAM is liable. There are escalation and arbitration options to settle any disputes.

In September 2019, the government issued an update announcing that it was able to reduce Groningen production faster, stopping production in 2022, eight years earlier than initially planned. Negotiations are ongoing between the government and the NAM shareholders regarding the compensation payable by the government to NAM in order to restore the balance of the package of arrangements laid down in the 2018 HoA. If no agreement can be reached on such re-balancing, NAM shareholders can go to arbitration to resolve the matter.

NAM also has a 60% interest in the Schoonebeek oil field and operates 25 other hydrocarbon production licences. Some of these are onshore and others are offshore in the North Sea.

UPSTREAM continued

Norway

We are a partner in 27 production licences on the Norwegian continental shelf. We are the operator in 14 of these, of which two are producing: the Knarr field (Shell interest 45%), and the Ormen Lange gas field (Shell interest 17.8%). We have a non-operated interest in the producing field Troll.

We are a partner in the Northern Lights carbon dioxide transport and storage project. In this phase the partnership is governed by a collaboration agreement between Equinor, Shell and Total (equal partners).



The Nyhamna gas plant processes gas from the Ormen Lange field, 120 kilometres off the Norwegian coast.

UK

We operate a significant number of our interests on the UK continental shelf under a 50:50 joint-venture agreement with ExxonMobil. On February 24, 2021, ExxonMobil announced that it had signed an agreement with HitecVision (through its wholly owned portfolio company Neo Energy) for the sale of most of its non-operated upstream assets in the UK central and northern North Sea, including a number of interests subject to the Shell ExxonMobil 50:50 joint venture agreement. The sale, which ExxonMobil expects will close later in 2021, is subject to regulatory and third-party approvals. In addition to our oil and gas production from North Sea fields, we have various interests in the Atlantic Margin area where we are not the operator, principally in the West of Shetland area (Clair, Shell interest 28%), and Schiehallion (Shell interest 44.89%).

In 2020, new production came on stream in the Fram (Shell interest 32%), Shearwater (Shell interest 28%) and Pierce (Shell interest 92.52%) fields. We are a participant in the Acorn project, which is in its early stages and will involve carbon capture, utilisation and storage (CCUS) and hydrogen production (joint venture, Shell interest 25%).

We continued with decommissioning Heather assets and the Curlew FPSO, and continued Brent decommissioning. In June 2020 the Pioneering Spirit vessel safely completed the single-lift removal of the 17,000-tonne Brent Alpha topside from the North Sea. This was followed in August 2020 by the SSCV Sleipnir vessel safely lifting and removing the upper portion of the Brent Alpha jacket. Brent Alpha is the third of four platforms, after Brent Delta and Brent Bravo, to be decommissioned and removed from the Brent oil and gas field. In July 2020, the UK government approved the Brent Alpha decommissioning programme, including the derogation to leave in place the Brent Alpha steel jacket footings. A decision on the proposed derogations to leave in place each of the gravity-based concrete installations of Brent Bravo, Brent Charlie and Brent Delta is expected in the first half of 2021.

Rest of Europe

We also have interests in Albania, Bulgaria and Germany.

Asia (including the Middle East and Russia) Brunei

Shell and the Brunei government are 50:50 shareholders in Brunei Shell Petroleum Company Sendirian Berhad (BSP). BSP has long-term oil and gas concession rights onshore and offshore Brunei, and sells most of its gas production to Brunei LNG Sendirian Berhad (see "Integrated Gas" on pages 46-52), with the remainder (23% in 2020) sold in the domestic market.

In addition to our interest in BSP, we have a 35% non-operating interest in the offshore Block B concession, where gas and condensate are produced from the Maharaja Lela field.

We also have non-operating interest in a gas holding area for deep-water exploration Block CA-2 (Shell interest 12.5%), under a PSC. The exploration acreage in Block CA-2 was relinquished in 2020.

We completed the acquisition of Total E&P Deep Offshore Borneo B.V. on March 31, 2020, and renamed the company Shell Exploration and Production Brunei B.V. The acquisition gives us an operator interest in the deep-water Block CA-1 (Shell interest 86.95%), under a PSC.

Iraq

We have a 44% interest in the Basrah Gas Company, which gathers, treats and processes associated gas that was previously being flared from the Rumaila, West Qurna 1 and Zubair fields. The processed gas and associated products, such as condensate and LPG, are sold to the domestic market. Any surplus condensate and LPG is exported.

Kazakhstan

We are the joint operator of the onshore Karachaganak oil and condensate field (Shell interest 29.3%), where we have a licence until the end of 2037. In December 2020, we successfully settled a long-running contractual dispute with the Republic of Kazakhstan government about the profit share between the parties in the Karachaganak joint venture. Shell paid \$424 million as its share of the settlement.

We have an interest in the North Caspian Sea production-sharing agreement (Shell interest 16.8%) which includes the Kashagan field in the Kazakh sector of the Caspian Sea. The North Caspian Operating Company is the operator. This shallow-water field covers an area of around 3,400 square kilometres. Phase 1 development of the field is expected to lead to plateau oil production capacity of around 66 thousand boe/d (Shell interest) by 2021, with the possibility of increases after later phases of development.



The Pioneering Spirit vessel has now lifted and removed the topsides of Brent Alpha, Brent Bravo and Brent Delta.

We have a 7.4% interest in the Caspian Pipeline Consortium, which owns and operates an oil pipeline running from the Caspian Sea to the Black Sea, across parts of Kazakhstan and Russia.

Malaysia

We explore for and produce oil and gas offshore Sabah and Sarawak under 16 PSCs, in which our interests range from 20% to 85%.

Early in 2020, the Malaysian Inland Revenue Board (MIRB) started a tax audit on Sabah and Sarawak Contiguous, which comprises the Sabah and Sarawak upstream businesses. This resulted in preliminary audit findings. The Company has determined it is probable that each uncertain tax treatment used in its income tax filings will ultimately be defensible, either during the next phase of the audit or on appeal to the courts. To date, no notices of additional assessments have been received.

Offshore Sabah, we operate two producing oil fields. These are the Gumusut-Kakap deep-water field (Shell interest 29%), and the Malikai deep-water field (Shell interest 35%). In August 2020, we took FID on phase 3 of the Gumusut-Kakap project. The project involves drilling four subsea wells, (two oil producers and two water injectors), to enhance Gumusut-Kakap's expected recoverable oil volumes.

In October 2020, drilling started for phase 2 of the Malikai project. Phase 2 is expected to deliver first oil in 2021. We also have a 21% interest in the Siakap North-Petai deep-water field and a 30% interest in the Kebabangan field, both operated by third parties. We also have exploration interests in Blocks SB-J, SB-G, SB-N, SB-3G, ND-6 and ND-7.

Offshore Sarawak, in 2020 we were the operator of eight producing gas fields (Shell interest 30%-50%) and one field producing oil and gas (Shell interest 50%). Shell handed over interest and operations of the E11 field/hub, one of the eight producing gas fields, to Petronas at the end of December 2020. After a binding heads of agreement (HoA) in December 2019 to extend the MLNG PSC, the PSC and joint operating agreement (JOA) were amended on November 16, 2020. Under the extended MLNG PSC, as of January 1, 2021, Shell (with 40% interest) will continue to be the operator of the F6 and F23 hubs and the producing E8, F13 East and F13 West fields. Shell will also continue to be the operator for new exploration acreage and new fields (F22, F27, Selasih).

Shell is also the operator for Block SK318 PSC (Shell interest 75%), which contains the discovered Rosmari, Marjoram and Timi fields.

In Block SK408 (Shell interest 30%), first gas was successfully produced from the Gorek field in May 2020 and from Bakong in June 2020. The block also contains the producing Larak gas field.



First oil and gas for phase 2 of the E6 project in Malaysia is expected in 2021.

For SK308 PSC, first oil and gas for phase 2 of the E6 project is expected in 2021.

First gas is expected from the Pegaga field in Block SK320 (Shell interest 20%) by the fourth quarter of 2021.

Nearly all the gas produced offshore Sarawak is supplied to Malaysia LNG and to our gas-to-liquids plant in Bintulu. See "Integrated Gas" on pages 46-52.

Shell has exploration interests in Block SK320. Exploration periods expired in June 2020 for Blocks SK318 and SK408, and in December 2020 for Block SK319. We also have a 40% interest in the amended 2011 Baram Delta enhanced oil recovery PSC, and a 50% interest in Block SK-307.

Oman

We have a 34% interest in the Block 6 concession and its operator Petroleum Development Oman (PDO); the Omani government has a 60% interest. PDO is the operator of more than 200 oil fields, mainly located in central and southern Oman, over an area of 90,874 square kilometres.

We have a 50% interest in the Block 42 exploration and production-sharing agreement. Oman Oil (OQ) has the remaining 50% interest. Shell is the operator of Block 42, an area of 31,068 square kilometres. We have signed an exploration and production-sharing agreement that makes us the operator and gives us a 100% working interest in Block 55, an area of 7,564 square kilometres.

Russia

We have a 50% interest in Salym Petroleum Development N.V., a joint venture with Gazprom Neft that is developing the Salym fields in the Khanty Mansiysk Autonomous District of western Siberia. In March 2020, Salym Petroleum Development N.V. expanded its area of operations by acquiring a 100% interest in LLC Salymsky 2, holder of the licence for the Salymsky 2 block.

Shell and Gazprom Neft each have a 50% interest in the Khanty-Mansiysk Petroleum Alliance VOF partnership. Through this, Shell is a holder of 50% of shares in the JSC Khanty-Mansiysk Petroleum Alliance. Acquisition of the 50% participating interest in LLC Meretoyahaneftgaz from Gazprom Neft through the VOF was cancelled in April 2020. Since then, neither Khanty-Mansiysk Petroleum Alliance VOF partnership nor JSC Khanty-Mansiysk Petroleum Alliance has undertaken any significant activities.

Because European Union and US sanctions prohibit certain defined oil and gas activities in Russia, we have since 2014 suspended our support to Salym Petroleum Development N.V. and JSC Khanty-Mansiysk Petroleum Alliance in relation to shale oil activities.

In November 2020, Shell acquired from Gazprom Neft a 50% shareholding in LLC Gazpromneft-Aero Bryansk, which holds the Leskinsky and Pukhutsayakhsky licences on the Gydan peninsula. The joint venture will be managed by Gazprom Neft and Shell on a parity basis aiming to develop an exploration cluster in the north-eastern part of the Gydan Peninsula.

United Arab Emirates

In Abu Dhabi, we have a 15% interest in the licence of ADNOC Gas Processing. ADNOC Gas Processing exports propane, butane and heavier-liquid hydrocarbons, which it extracts from the wet gas associated with the oil produced by ADNOC Onshore.

UPSTREAM continued

Syria

Shell holds a 65% interest in Shell Petroleum Development B.V. (SSPD), a joint venture between Shell and the China National Petroleum Corporation (CNPC). SSPD holds a 31.3% interest in Al Furat Petroleum Company (AFPC), a Syrian joint stock company, which performs operations under SSPD contracts. In December 2011, in compliance with international sanctions on Syria, including European Council Decision 2011/782/CFSP, Shell suspended all exploration and production activities in Syria.

Rest of Asia

We also have interests in Kuwait, the Philippines and Turkey. In the Philippines, Shell is exploring options to divest its interest in SC 38 (Malampaya).

Africa Egypt

We have a 50% interest in the Badr Petroleum Company (BAPETCO), a joint venture between Shell and the Egyptian General Petroleum Corporation (EGPC). BAPETCO operates 10 oil- and gas-producing concessions and two exploration concessions, (North East Obaiyed, North Matruh), in the Western Desert. We also have onshore concessions with 100% Shell interest (West El Fayum, South East Horus, South Abu Sennan) and one producing concession extension (Bed 2-17). In 2021, we agreed to sell our onshore upstream assets in Egypt. The deal is expected to be completed in the second half of 2021.

Nigeria

Our share of production, onshore and offshore, in Nigeria was 223 thousand boe/d in 2020, compared with 266 thousand boe/d in 2019. Security issues, sabotage and crude oil theft in the Niger Delta remained significant challenges in 2020.

Onshore

The Shell Petroleum Development Company of Nigeria Limited (SPDC) is the operator of a joint venture (Shell interest 30%) that, after the completion of the sale of its interest in OML 17 on 15 January 2021, has 16 Niger Delta onshore oil mining leases (OML).

SPDC started litigation in May 2019 against the Federal Government (FGN) in the domestic court to challenge the non-renewal of oil mining lease 11 (OML 11). In August 2019, the Federal High Court ruled in favour of SPDC, affirming that it has fulfilled its obligations under the law for the renewal of OML 11. The court ordered the FGN to renew OML 11 for 20 years. In December 2019, the court refused to grant an application by the FGN to suspend the implementation of the judgement. The FGN appealed the court's decision and, in February 2021, the Court of Appeal granted a stay of the judgment in favour of FGN thereby suspending implementation pending a determination of the appeal on the merits. SPDC is taking various steps to protect its right to continue operating OML 11 pending a determination of the appeal.

In separate litigation, in August 2020, the Rivers State Government (RVSG) obtained judgment against SPDC. This judgement, by the Rivers State High Court, sought to reinforce the RVSG's purported purchase of SPDC's interest in OML 11. The purported purchase was said to have

occurred through a court-auction sale arising out of the Ejema Ebubu (Ogoniland) community litigation. SPDC has appealed against the judgement of the Rivers State High Court.

Notwithstanding the FGN appeal and the judgement in favour of the RVSG, SPDC continues to operate OML 11. In doing so, it is supported by the August 2019 Federal High Court judgement in its favour, which remains in force.

SPDC supplies gas to Nigeria LNG Ltd (see "Integrated Gas" on pages 46-52) mainly through its Gbaran-Ubie and Soku projects.

Offshore

Our main offshore deep-water activities are carried out by Shell Nigeria Exploration and Production Company Limited (SNEPCO, Shell interest 100%). SNEPCO has interests in four deep-water blocks, three of which are under PSC terms: the producing assets Bonga (OML 118) and Erha (OML 133) and the non-producing asset Bolia Chota (OML 135). SNEPCO operates OMLs 118 (including the Bonga field FPSO, Shell interest 55%) and 135 (Bolia and Doro, Shell interest 55%) and has a 43.8% non-operating interest in OML 133 (including the Erha FPSO). Separately, SNEPCO holds a 50% non-operating interest in oil prospecting licence (OPL) 245 (Zabazaba, Etan) under a production-sharing agreement.

Authorities in various countries are investigating our investment in Nigerian oil block OPL 245 and the 2011 settlement of litigation pertaining to that block. See Note 25 to the "Consolidated Financial Statements" on pages 260-262.

SPDC also has three shallow-water licences (OMLs 74, 77 and 79) and a 40% interest in the non-Shell-operated Sunlink joint venture that has one shallow-water licence (OML 144).

In our Nigerian operations, we face various risks and adverse conditions which could have a significant adverse effect on our operational performance, earnings, cash flows and financial condition (see "Risk factors" on pages 28-37). There are limitations to the extent to which we can mitigate these risks. We carry out regular portfolio assessments to remain a competitive player in Nigeria for the long term. We support the Nigerian government's efforts to improve the efficiency, functionality and domestic benefits of Nigeria's oil and gas industry. We monitor legislative developments and the security situation. We liaise with host communities, governmental and non-governmental organisations to help promote peace and safe operations. We continue to be transparent about how we manage and report spills, and how we deploy oil-spill response capability and technology. We implement a maintenance strategy to support sustainable equipment reliability and have begun a multi-year programme to reduce routine flaring of associated gas. See "Climate change and energy transition" on pages 94-107.

Rest of Africa

We also have interests in Algeria, Mauritania, Namibia, São Tomé and Príncipe, South Africa, Tanzania and Tunisia.

North America

Bitumen and synthetic crude oil

From January 1, 2020, our interest in bitumen and synthetic crude oil is reported in the Oil Products segment. Comparative information has not been restated.

Canada

We have mineral leases mainly in Alberta and British Columbia. We produce and market natural gas, natural gas liquids and condensate.

Shales

We have around 1.3 million net mineral acres, primarily in the Duvernay play in Alberta and the Montney play in British Columbia. Our Groundbirch asset in British Columbia will be an integral part of the LNG Canada value chain. We currently operate four natural gas processing area facilities in British Columbia. In 2021 we agreed to sell our Duvernay shale light oil position in Alberta. The deal is expected to be completed in the second quarter of 2021.

In 2020, we drilled and brought 17 wells on stream. We have interests in 757 productive wells.

USA

We produce oil and gas in deep water in the Gulf of Mexico, heavy oil in California and oil and gas in Texas. The majority of our oil and gas production interests are acquired under leases granted by the owner of the minerals underlying the relevant acreage, including many leases for federal offshore tracts. Such leases usually run on an initial fixed term that is automatically extended by the establishment of production for as long as production continues, subject to compliance with the terms of the lease (including, in the case of federal leases, extensive regulations imposed by federal law). Our total share of production in the USA was 571 thousand boe/d in 2020.

Gulf of Mexico

The Gulf of Mexico is our major production area in the USA and accounts for around 55% of our oil and gas production in the country. We have an interest in around 315 active federal offshore leases and secured a further 19 blocks as an outcome of the US Gulf of Mexico Lease Sale 256 held in November 2020. Our share of production averaged 313 thousand boe/d in 2020.

We are the operator of eight production hubs – Mars, Olympus, Auger, Perdido, Ursa, Enchilada/Salsa, Appomattox and Stones – and the West Delta 143 processing facilities (Shell interests ranging from 33% to 100%). We continue to produce from Coulomb (Shell interest 100%) which ties into the Na Kika platform, where Shell has a 50% non-operating interest.

We continued exploration, development and abandonment activities in the Gulf of Mexico in 2020.

We continued the ramp-up of the Appomattox floating production system, which started production in May 2019. We also advanced the development of Pownap and Vito, which are both in the execution phase. Pownap, a subsea tie-back to the Olympus production hub, is expected to produce up to 35 thousand boe/d. Vito, Shell's eleventh deep-water project in the Gulf of Mexico, is expected to achieve first oil in 2022 and reach around 100 thousand boe/d at peak rates.

The 2020 Atlantic hurricane season adversely impacted production at our US Gulf of Mexico assets. We experienced extended shutdowns at our Auger and Enchilada/Salsa production hubs because of the storms and the subsequent recovery efforts.



The Turritella FPSO in the Gulf of Mexico.

Shales

We have around 410 thousand net mineral acres. Our activity is focused in the Permian Basin, following our divestment of the Appalachia asset. This was completed in July 2020 and covered the sale of around 443 thousand net leasehold acres across Pennsylvania, with around 358 producing wells in the Marcellus and Utica shale formations, and associated facilities in Tioga County. The transaction also included the transfer of owned and operated midstream infrastructure.



Our shales activity in the USA is focused on the Permian Basin.

In 2020, we drilled and brought on stream 181 wells. We have interests in 1,588 productive wells and operate eight central processing facilities.

California

We have a 51.8% interest in Aera Energy LLC which operates around 13 thousand wells in the San Joaquin Valley in California, mostly producing heavy oil and associated gas.

Alaska

We have sold or relinquished all frontier licences in Alaska and have no plans for frontier exploration offshore Alaska. We retain two exploration acreage positions in the long-established North Slope area of Alaska. One is a non-operating interest of 50% in 13 federal leases held since 2007 and operated by ENI. The other position consists of 18 state leases in nearby West Harrison Bay that have been held since 2012, which we plan to turn over to an alternative operator.

UPSTREAM continued

Rest of North America

Shell has equity in nine deep-water licences and one shallow-water licence in Mexico (Shell interest 40%-100%). We are currently evaluating these positions through exploration drilling.

In November 2020, we agreed a farm-in transaction with the China National Offshore Oil Corporation (CNOOC) E&P Mexico, acquiring a participating interest (Shell interest 30%) in the deep-water round 1.4 Block 4 exploration licence in the offshore Mexico Perdido. This transaction is subject to regulatory approval.

South America

Argentina

Shales

We have more than 178 thousand net mineral acres in the Vaca Muerta Basin, a liquids- and gas-rich play located in the Neuquén Province. The operated acreage includes blocks in Cruz de Lorena and Sierras Blancas (Shell interest 90%), Coiron Amargo Sur Oeste (Shell interest 80%), and Bajada de Añelo (Shell interest 50%). We have a 45% non-Shell-operated interest in the Rincon La Ceniza and La Escalonada blocks.

In 2020, we drilled and brought 23 wells on stream. We have interests in 88 producing wells. We have a 90% interest in our operated Sierras Blancas/Cruz de Lorena central processing facility.

In 2020, in a 50:50 partnership with Equinor, we acquired a 60% working interest (Shell 30% interest) in the Bandurria Sur block, operated by YPF S.A., in the Vaca Muerta Basin.

Offshore

We have two frontier exploration blocks offshore Argentina. For both blocks, Shell is the operator with a 60% interest.

Brazil

Our total share of production in Brazil was an average of 394 thousand boe/d in 2020.

Our operated portfolio consists of offshore assets in:

- the Bijupirá and Salema fields (Shell interest 80%) and the BC-10 field (Shell interest 50%) in the Campos Basin;
- the Gato do Mato field in the Santos Basin and the adjacent Sul de Gato do Mato area (Shell interest 50%, after the completed sale of a 30% stake to Ecopetrol in 2020), subject to unitisation, with development options under evaluation; and
- a total of 17 exploration blocks in the following areas:
 - Barreirinhas Basin (10 blocks with Shell interests ranging from 50% to 100%);
 - Santos Basin (Alto Cabo Frio Oeste PSC, Shell interest 55%; Saturno PSC, Shell interest 45%);
 - Potiguar Basin (POT-M-948, Shell interest 100%); and
 - Campos Basin (C-M-659, Shell interest 40%; C-M-713, Shell interest 40%; C-M-791, Shell interest 40% and C-M-757, Shell interest 100%). (Block C-M-757 was awarded to Shell in the National Petroleum Agency (ANP) permanent offer round in December 2020 and is awaiting ratification.)

Our non-operated portfolio consists of the following fields in the offshore Santos Basin:

- Sapinhoá field (Shell interest 30%, operated by Petrobras), straddling the BM-S-9 and Entorno de Sapinhoá blocks, already unitised;
- Lapa field (Shell interest 30%, operated by Total) in Block BM-S-9A;
- Berbigão and Sururu fields (Shell interest 25%, subject to ongoing discussions about unitisation agreements, operated by Petrobras) in Block BM-S-11A;
- Atapu field (Shell interest 4%, unitised in September 2019) in Block BM-S-11A;
- Lula field in Block BM-S-11, recently renamed the Tupi field because of a court decision (subject to unitisation in effect since April 2019, Shell interest 23%, operated by Petrobras);
- Iracema field in Block BM-S-11 (Shell interest 25%, not subject to unitisation, operated by Petrobras); and
- Mero field in the Libra PSC area (Shell interest 20%, unitisation with an adjoining area still subject to government approval, operated by Petrobras).

In addition to the producing assets, we hold interests in two non-operated exploration blocks in the Santos Basin:

- BM-S-50, containing the Sagitário discovery (Shell interest 20%, operated by Petrobras); and
- Tres Marias (Shell interest 40%, operated by Petrobras).

We also hold interests in two non-operated exploration blocks in the Potiguar Basin:

- POT-M-859 (Shell interest 40%, operated by Petrobras); and
- POT-M-952 (Shell interest 40%, operated by Petrobras).



P69 FPSO produces oil and gas in the pre-salt Santos basin, offshore Brazil.
Photo credit: Agência Petrobras.

The activities of operated and non-operated fields are currently supported by 17 producing deep-water FPSOs, of which the 17th (P-70) delivered first oil in June 2020. Two additional FPSOs are expected to be brought online over the period 2022-2023 (Mero 1 and Mero 2). In August 2020, we announced the final investment decision to contract the Mero 3 FPSO vessel to be deployed at the Mero field. We agreed to sell our 23% interest in the P-71 FPSO, the deal is expected to be completed in the first quarter of 2021.

Rest of South America

We also have interests in Suriname and Uruguay.

TRADING AND SUPPLY

We market and trade crude oil from most of our Upstream operations.

OIL AND GAS INFORMATION

Proved developed and undeveloped reserves of Shell subsidiaries and Shell share of joint ventures and associates

	Crude oil and natural gas liquids (million barrels)	Synthetic crude oil (million barrels)	Bitumen (million barrels)	Natural gas (thousand million scf)	Total (million boe)[A]
Shell subsidiaries					
Increase/(decrease) in 2020:					
Revisions and reclassifications	(63)	57	-	(3,477)	(607)
Improved recovery	-	-	-	-	-
Extensions and discoveries	48	-	-	228	88
Purchases and sales of minerals in place	8	-	-	(599)	(95)
Total before taking production into account	(7)	57	-	(3,848)	(614)
Production [B]	(606)	(20)	-	(3,012)	(1,144)
Total	(613)	37	-	(6,860)	(1,758)
At January 1, 2020	4,374	607	-	28,992	9,980
At December 31, 2020	3,761	644	-	22,132	8,222
Shell share of joint ventures and associates					
Increase/(decrease) in 2020:					
Revisions and reclassifications	(32)	-	-	(234)	(73)
Improved recovery	-	-	-	-	-
Extensions and discoveries	1	-	-	2	1
Purchases and sales of minerals in place	-	-	-	-	-
Total before taking production into account	(31)	-	-	(232)	(72)
Production [C]	(36)	-	-	(615)	(142)
Total	(67)	-	-	(847)	(214)
At January 1, 2020	283	-	-	4,829	1,116
At December 31, 2020	216	-	-	3,982	902
Total					
Increase/(decrease) before taking production into account	(38)	57	-	(4,080)	(686)
Production	(642)	(20)	-	(3,627)	(1,286)
Increase/(decrease)	(680)	37	-	(7,707)	(1,972)
At January 1, 2020	4,657	607	-	33,821	11,096
At December 31, 2020	3,977	644	-	26,114	9,124
Reserves attributable to non-controlling interest in Shell subsidiaries at December 31, 2020					
	-	322	-	-	322

[A] Natural gas volumes are converted into oil equivalent using a factor of 5,800 standard cubic feet (scf) per barrel.

[B] Included 40 million boe consumed in operations (natural gas: 225 thousand million scf; synthetic crude oil: 1 million barrels).

[C] Included 7 million boe consumed in operations (natural gas: 42 thousand million scf).

OIL AND GAS INFORMATION continued

PROVED RESERVES

The proved oil and gas reserves of Shell subsidiaries and the Shell share of the proved oil and gas reserves of joint ventures and associates are set out in more detail in "Supplementary information – oil and gas (unaudited)" on pages 265-282.

Before taking production into account, our proved reserves decreased by 686 million boe in 2020. This comprised of decreases of 614 million boe from Shell subsidiaries and of decreases of 72 million boe from the Shell share of joint ventures and associates.

After taking production into account, our proved reserves decreased by 1,972 million boe in 2020 to 9,124 million boe at December 31, 2020.

SHELL SUBSIDIARIES

Before taking production into account, Shell subsidiaries' proved reserves decreased by 614 million boe in 2020. This comprised decreases of 7 million barrels of crude oil and natural gas liquids and 664 million boe (3,848 thousand million scf) of natural gas and an increase of 57 million barrels of synthetic crude oil. The 614 million boe decrease is the net effect of a net decrease of 607 million boe from revisions and reclassifications, an increase of 88 million boe from extensions and discoveries, and a net decrease of 95 million boe related to purchases and sales of minerals in place. On January 15th 2021 Shell announced that the Shell Petroleum Development Company of Nigeria Limited (SPDC) had completed the sale of its 30% interest in Oil Mining Lease (OML17) in the Eastern Niger Delta, and associated infrastructure. Proved reserves at end-2020 associated with this transaction were 26 million boe.

After taking into account production of 1,144 million boe (of which 40 million boe were consumed in operations), Shell subsidiaries' proved reserves decreased by 1,758 million boe in 2020 to 8,222 million boe. In 2020, Shell subsidiaries' proved developed reserves (PD) decreased by 872 million boe to 6,978 million boe, and proved undeveloped reserves (PUD) decreased by 886 million boe to 1,244 million boe.

SHELL SHARE OF JOINT VENTURES AND ASSOCIATES

Before taking production into account, the Shell share of joint ventures and associates' proved reserves decreased by 72 million boe in 2020. This comprised a decrease of 31 million barrels of crude oil and natural gas liquids and a decrease of 41 million boe (232 thousand million scf) of natural gas. The 72 million boe decrease comprises a net decrease of 73 million boe from revisions and reclassifications and an increase of 1 million boe from extensions and discoveries.

After taking into account production of 142 million boe (of which 7 million boe were consumed in operations), the Shell share of joint ventures and associates' proved reserves decreased by 214 million boe to 902 million boe at December 31, 2020.

The Shell share of joint ventures and associates' PD decreased by 169 million boe to 791 million boe, and proved undeveloped reserves (PUD) decreased by 45 million boe to 111 million boe.

For further information, see "Supplementary Information – oil and gas (unaudited)" on pages 265-282.

PROVED UNDEVELOPED RESERVES

In 2020, Shell subsidiaries and the Shell share of joint ventures and associates' PUD decreased by 932 million boe to 1,355 million boe. There were decreases of 339 million boe due to maturation to proved developed – mainly 98 million boe in Brazil, 95 million boe in the USA and 146 million boe spread across other countries. There were also decreases of 682 million boe due to other revisions resulting mainly from a combination of lower year average price and reductions in planned

capital expenditure (mainly in Australia (354 million boe), USA (121 million boe) and Brazil (100 million boe)), partly offset by net increases of 89 million boe due to extensions and discoveries.

In addition to the maturation of 339 million boe from PUD to PD, 75 million boe was matured to PD from contingent resources through PUD as a result of project execution during the year.

PUD held for five years or more (PUD5+) at December 31, 2020, amounted to 184 million boe, a decrease of 74 million boe compared with the end of 2019. These PUD5+ remain undeveloped because development either requires the installation of compression equipment and the drilling of additional wells, which will be executed when required to support existing gas delivery commitments (Russia), or will take longer than five years because of the complexity and scale of the project (Australia and the UK).

The decrease in PUD5+ during 2020 was driven mainly by changes in Jansz-Lo (Australia) and Clair (UK).

The fields with the largest PUD5+ at December 31, 2020, were Lunskeye (Russia), Gorgon and Jansz-Lo (Australia) and Clair (UK).

During 2020, we spent \$6.5 billion on development activities related to PUD maturation.

DELIVERY COMMITMENTS

We sell crude oil and natural gas from our producing operations under a variety of contractual obligations. Most contracts generally commit us to sell quantities based on production from specified properties, although some natural gas sales contracts specify delivery of fixed and determinable quantities, as discussed below.

In the past three years, we met our contractual delivery commitments, with the notable exceptions of Egypt, Trinidad and Tobago, and Malaysia. In the period 2021-2023, we are contractually committed to deliver to third parties, joint ventures and associates a total of 7,490 billion scf of natural gas from our subsidiaries, joint ventures and associates. The sales contracts contain a mixture of fixed and variable pricing formulae that are generally referenced to the prevailing market price for crude oil, natural gas or other petroleum products at the time of delivery.

In the period 2021-2023, we expect to meet our delivery commitments for almost all the areas in which they are carried, with an estimated 71.9% coming from PD, 5.5% through the delivery of gas that becomes available to us from paying royalties in cash, and 22.6% from the development of PUD as well as other new projects and purchases.

The key exceptions are:

- BG Egypt Development NOV: The government decision to divert gas from the offshore West Delta Deep Marine fields to domestic use has caused a tangible shortfall of 770 billion scf (83% of the promised gas delivery), expected to continue in the near future leaving LNG gas commitment mostly under force majeure;
- Trinidad and Tobago (East Coast Marine Area and North Coast Marine Area), where PD for all fields fail the economic test at the yearly average price for natural gas. But we expect to cover 86% of our delivery commitments from existing developed resource volumes and new projects, resulting in an expected true shortfall of some 103 billion scf; and
- In Malaysia, one of the third-party gas supply lines which was under maintenance has not been repaired during 2020. Force majeure has been declared, and no penalties have been incurred, resulting in an expected true shortfall of some 72 billion scf (54% of the promised gas delivery).

Summary of proved oil and gas reserves of Shell subsidiaries and Shell share of joint ventures and associates (at December 31, 2020)

Based on average prices for 2020

	Crude oil and natural gas liquids (million barrels)	Natural gas (thousand million scf)	Synthetic crude oil (million barrels)	Total (million boe)[A]
Proved developed				
Europe	108	1,817	-	421
Asia	1,609	12,850	-	3,825
Oceania	68	3,699	-	707
Africa	316	1,341	-	548
North America				
USA	539	669	-	654
Canada	12	720	644	780
South America	675	925	-	834
Total proved developed	3,327	22,021	644	7,769
Proved undeveloped				
Europe	76	886	-	229
Asia	174	755	-	304
Oceania	5	520	-	93
Africa	63	1,022	-	239
North America				
USA	189	132	-	212
Canada	3	575	-	102
South America	140	203	-	176
Total proved undeveloped	650	4,093	-	1,355
Total proved developed and undeveloped				
Europe	184	2,703	-	650
Asia	1,783	13,605	-	4,129
Oceania	73	4,219	-	800
Africa	379	2,363	-	787
North America				
USA	728	801	-	866
Canada	15	1,295	644	882
South America	815	1,128	-	1,010
Total	3,977	26,114	644	9,124
Reserves attributable to non-controlling interest in Shell subsidiaries	-	-	322	322

[A] Natural gas volumes are converted into oil equivalent using a factor of 5,800 scf per barrel.

OIL AND GAS INFORMATION continued

EXPLORATION

We continue to focus and high-grade our portfolio of growth options.

In February 2020:

We acquired a 70% interest as operator of the UK Southern North Sea licences P2304 and P1929 which contain the Resolution gas discovery. Our appraisal programme consists of 3D seismic and a contingent appraisal well.

We added 4,553 square kilometres of exploration licences in the UK and Netherlands Southern North Sea across multiple plays.

We signed a farm-out agreement with Ecopetrol into the Colombia Offshore COL-5, Purple Angel, and Fuerte Sur blocks, as operator with a 50% working interest. Government ratification was obtained in December 2020.

Two exploration blocks, C-M-659 and C-M-713, awarded through Brazil's 16th National Petroleum Agency (ANP) bid round, were ratified. These Shell-operated blocks (Shell interest 40%) are located in the outboard Campos Basin and cover an area of around 1,800 square kilometres. The joint venture has a commitment to acquire 3D seismic in both blocks and to drill one well in Block C-M-659.

In March 2020:

We completed the sale and purchase agreement signed in October 2019 for the acquisition of Total E&P Deep Offshore Borneo B.V. and all its interests in the deep-water exploration Block CA-1 (Shell interest 86.95%) production-sharing agreement (PSA). We assumed operatorship of Block CA-1, with a total area of around 5,800 square kilometres which is largely unexplored. The deal also gave us access to the Jagus East oil field which lies within CA-1.

An exploration and production-sharing agreement for Block 55 in the south-east of the Sultanate of Oman was ratified by Royal Decree. Oman Shell now has a 100% working interest and operatorship of Block 55, with a total area of 7,564 square kilometres. The agreement includes a work programme of regional studies, seismic acquisition and other potential exploration activities.

In US Gulf of Mexico Lease Sale 254, we acquired seven blocks across multiple plays in the US Gulf of Mexico.

In July 2020, we signed a sales and purchase agreement for the Esenin deal, a 50% farm-in into two Gazprom Neft-held blocks on the Gydan peninsula in north-west Siberia, Russia. The deal was finalised in November 2020. The blocks cover an area of around 3,850 square kilometres.

In September 2020, Shell and Kosmos Energy executed a portfolio transaction under which Kosmos divested seven deep-water exploration licences to Shell across four countries: Suriname, São Tomé and Príncipe, Namibia and South Africa. Suriname (Block 42) represents a new country entry for Shell with a 33.33% participating interest. In São Tomé and Príncipe, Shell will expand its position in two blocks – (Block 6 by 25% working interest and Block 11 by 35% working interest) – and enter two others (10 and 13) with a 35% interest in both. In both Namibia and South Africa, Shell will deepen its position by 45% working interest in the two blocks, PEL0039 and NCUD. The agreement received all necessary regulatory approvals and third-party consents in December 2020, with the exception of South Africa which is expected to be completed in 2021.

In November 2020:

We agreed a farm-in transaction with CNOOC E&P Mexico, acquiring a participating interest (Shell interest 30%) in the deep-water round 1.4 Block 4 exploration licence in the offshore Mexico Perdido. This transaction is subject to regulatory approval.

We agreed a farm-in transaction with Impact Africa Limited to acquire a 50% participating interest in the frontier deep-water blocks Transkei/Algoa (ER252) off the east coast of South Africa, with an area of around 46,000 square kilometres. Pursuant to the agreement, we will secure the operatorship from the counterparty. The agreement is subject to customary conditions including regulatory approvals.

In the delayed US Gulf of Mexico Lease Sale 256 held in November 2020, Shell secured a further 19 blocks.

In December 2020:

Our exploration presence in offshore Egypt was bolstered by entries into new blocks in the West Mediterranean and the Red Sea. For the West Mediterranean, Herodotus Block 3 North Ras Kanais (Shell interest 30%) was ratified in December 2020 with more than 4,400 square kilometres of acreage. Red Sea Block 3 (Shell interest 90%, operator) was ratified in December 2020 and covers more than 3,000 square kilometres in an under-explored area south of the Gulf of Suez. Some blocks have been awarded but are yet to be ratified; Red Sea Block 4 (Shell interest 63%, operator) and Herodotus Blocks 6 (North Marina, Shell interest 63%) and 7 (North Cleopatra Offshore, Shell interest 63%) all of which are awaiting government ratification.

In Brazil, we were awarded Block C-M-757 (Outboard Campos Basin) (Shell interest 100%) in the Permanent Offer Bid Round. This is awaiting ratification.

In total, the net undeveloped acreage in our exploration portfolio increased by around 9.4 million acres in 2020. The largest contributions were licence entries in São Tomé and Príncipe, the Sultanate of Oman, the Arab Republic of Egypt, Namibia and the Nation of Brunei. There were some relinquishments and divestments, with the largest being in Australia, Norway and Italy.

For further information, see "Supplementary Information – oil and gas (unaudited)" on pages 265-282.

LOCATION OF OIL AND GAS EXPLORATION AND PRODUCTION ACTIVITIES

Location of oil and gas exploration and production activities [A] (at December 31, 2020)

	Exploration	Development and/or Production	Shell operator [B]
Europe			
Albania	•		•
Bulgaria	•		•
Cyprus		•	
Germany	•	•	
Italy	•	•	
Netherlands	•	•	•
Norway	•	•	•
UK	•	•	•
Asia			
Brunei	•	•	•
China		•	•
Indonesia		•	
Kazakhstan	•	•	
Malaysia	•	•	•
Myanmar	•		
Oman	•	•	•
Philippines	•	•	•
Qatar		•	•
Russia	•	•	
Turkey	•		•
Oceania			
Australia	•	•	•
Africa			
Egypt	•	•	•
Mauritania	•		•
Morocco	•		
Namibia	•		•
Nigeria	•	•	•
Sao Tome and Principe	•		
South Africa	•		•
Tanzania		•	•
Tunisia		•	•
North America – USA			
Mexico	•		•
USA	•	•	•
North America – Canada			
Canada	•	•	•
South America			
Argentina	•	•	•
Bolivia	•	•	•
Brazil	•	•	•
Colombia	•		•
Suriname	•		•
Trinidad & Tobago	•	•	•
Uruguay	•		•

[A] Includes joint ventures and associates. Where a joint venture or an associate has properties outside its base country, those properties are not shown in this table.

[B] In several countries where "Shell operator" is indicated, Shell is the operator of some but not all exploration and/or production ventures.

OIL AND GAS INFORMATION continued

OIL AND GAS PRODUCTION AVAILABLE FOR SALE

Crude oil and natural gas liquids [A]

	2020		2019		2018	
	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates
Europe						
Denmark	—	—	7,490	—	13,036	—
Italy	11,342	—	9,747	—	10,921	—
Norway	6,914	—	7,025	—	13,528	—
UK	30,061	—	30,677	—	31,431	—
Other [B]	609	1,084	723	1,135	795	1,417
Total Europe	48,926	1,084	55,662	1,135	69,711	1,417
Asia						
Brunei	387	17,094	196	20,002	283	18,738
Kazakhstan	37,769	—	34,269	—	32,432	—
Malaysia	18,494	—	21,993	—	24,650	—
Oman	74,854	—	76,493	—	76,847	—
Russia	20,816	9,050	22,442	9,413	22,003	10,403
Other [B]	30,101	7,629	28,796	7,709	28,769	7,768
Total Asia	182,421	33,773	184,189	37,124	184,984	36,909
Total Oceania [B]	7,416	—	10,058	—	8,883	—
Africa						
Nigeria	48,620	—	56,589	—	53,102	—
Other [B]	8,485	—	7,802	—	8,265	—
Total Africa	57,105	—	64,391	—	61,367	—
North America						
USA	165,169	—	171,204	—	140,035	—
Canada	8,128	—	11,506	—	13,111	—
Total North America	173,297	—	182,710	—	153,146	—
South America						
Brazil	131,339	—	126,366	—	118,681	—
Other [B]	5,072	729	3,900	—	3,414	—
Total South America	136,411	729	130,266	—	122,095	—
Total	605,576	35,586	627,276	38,259	600,186	38,326

[A] Reflects 100% of production of subsidiaries except in respect of production-sharing contracts (PSCs), where the figures shown represent the entitlement of the subsidiaries concerned under those contracts.

[B] Comprises countries where 2020 production was lower than 10,100 thousand barrels or where specific disclosures are prohibited.

Synthetic crude oil

	Thousand barrels		
	2020 Shell subsidiaries	2019 Shell subsidiaries	2018 Shell subsidiaries
North America – Canada	18,920	19,076	19,514

Natural gas [A]

	2020		2019		2018	
	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates
Million standard cubic feet						
Europe						
Denmark	—	—	24,433	—	45,027	—
Germany	35,918	—	41,846	—	40,368	—
Ireland	—	—	—	—	44,833	—
Netherlands	—	131,648	—	244,286	—	271,303
Norway	187,627	—	182,683	—	239,253	—
UK	65,012	—	62,174	—	82,695	—
Other [B]	13,005	—	15,062	—	16,422	—
Total Europe	301,562	131,648	326,198	244,286	468,598	271,303
Asia						
Brunei	21,025	159,846	22,185	160,648	21,205	157,476
China	46,750	—	44,510	—	42,419	—
Kazakhstan	86,999	—	84,499	—	78,575	—
Malaysia	226,791	—	226,277	—	237,102	—
Philippines	40,549	—	44,374	—	44,017	—
Russia	4,301	142,418	4,563	134,807	4,044	136,652
Thailand	—	—	—	—	25,973	—
Other [B]	411,979	118,153	407,899	118,253	378,785	117,976
Total Asia	838,394	420,417	834,307	413,708	832,120	412,104
Oceania						
Australia	633,580	20,646	686,956	20,840	648,735	18,923
New Zealand	—	—	—	—	40,153	—
Total Oceania	633,580	20,646	686,956	20,840	688,888	18,923
Africa						
Egypt	104,946	—	92,169	—	148,721	—
Nigeria	190,982	—	234,332	—	232,899	—
Other [B]	27,438	—	30,266	—	30,669	—
Total Africa	323,366	—	356,767	—	412,289	—
North America						
USA	255,383	—	389,130	—	355,075	—
Canada	164,451	—	220,005	—	247,890	—
Total North America	419,834	—	609,135	—	602,965	—
South America						
Bolivia	45,015	—	48,501	—	55,480	—
Brazil	73,914	—	78,526	—	68,865	—
Trinidad and Tobago	141,576	—	159,698	—	104,454	—
Other [B]	9,609	830	8,662	—	8,062	—
Total South America	270,114	830	295,387	—	236,861	—
Total	2,786,850	573,541	3,108,750	678,834	3,241,721	702,330

[A] Reflects 100% of production of subsidiaries except in respect of PSCs, where the figures shown represent the entitlement of the subsidiaries concerned under those contracts.

[B] Comprises countries where 2020 production was lower than 41,795 million scf or where specific disclosures are prohibited.

OIL AND GAS INFORMATION continued

AVERAGE REALISED PRICE BY GEOGRAPHICAL AREA

Crude oil and natural gas liquids

	2020		2019		2018	
	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates
Europe	39.51	39.05	65.11	58.08	68.23	64.24
Asia	38.73	42.51	58.16	65.25	64.06	70.66
Oceania	21.29	—	51.51	—	61.63	—
Africa	41.23	—	65.39	—	71.02	—
North America – USA	34.17	—	54.56	—	61.87	—
North America – Canada	27.17	—	36.61	—	43.72	—
South America	36.01	37.28	56.68	—	62.67	—
Total	36.72	42.31	57.56	65.05	63.96	70.43

\$/barrel

Synthetic crude oil

	2020	2019	2018
	Shell subsidiaries	Shell subsidiaries	Shell subsidiaries
North America – Canada	31.13	50.27	48.90

\$/barrel

Natural gas

	2020		2019		2018	
	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates
Europe	3.66	3.76	5.59	4.95	7.08	4.06
Asia	2.68	4.19	2.66	6.34	2.99	7.06
Oceania	6.21	3.15	8.22	3.91	8.66	4.15
Africa	2.55	—	2.92	—	3.02	—
North America – USA	1.72	—	2.27	—	3.12	—
North America – Canada	1.61	—	1.37	—	1.35	—
South America	1.35	1.90	2.33	—	3.50	—
Total	3.31	4.06	3.95	5.80	4.63	5.74

\$/thousand scf

AVERAGE PRODUCTION COST BY GEOGRAPHICAL AREA

Crude oil, natural gas liquids and natural gas [A]

	2020		2019		\$ / boe 2018	
	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates	Shell subsidiaries	Shell share of joint ventures and associates
Europe	20.50	11.44	14.14	5.76	15.03	6.37
Asia	5.54	6.83	6.30	6.17	6.52	6.24
Oceania	8.92	20.23	9.17	24.49	8.41	32.18
Africa	9.43	—	8.44	—	8.25	—
North America – USA	12.50	—	11.78	—	12.78	—
North America – Canada	10.52	—	11.88	—	11.58	—
South America	5.12	—	6.26	—	8.60	—
Total	8.49	6.94	8.95	6.48	9.66	6.81

[A] Natural gas volumes are converted into oil equivalent using a factor of 5,800 scf per barrel.

Synthetic crude oil

	2020	2019	\$ / barrel 2018
	Shell subsidiaries	Shell subsidiaries	Shell subsidiaries
North America – Canada	18.28	19.29	20.15

OIL PRODUCTS

Key statistics

	\$ million, except where indicated		
	2020	2019	2018
Segment earnings [A]	(494)	6,139	6,025
Including:			
Revenue (including inter-segment sales)	134,930	288,279	327,022
Share of profit of joint ventures and associates [A]	988	1,179	1,101
Interest and other income	(93)	273	393
Operating expenses [B]	13,511	15,730	17,615
Depreciation, depletion and amortisation	10,473	4,461	3,165
Taxation charge [A]	(898)	1,319	1,211
Identified Items [B]	(6,489)	(93)	231
Adjusted Earnings [B]	5,995	6,231	5,794
Capital expenditure	3,236	4,654	4,389
Cash capital expenditure [B]	3,328	4,907	4,643
Refinery utilisation (%) [C]	72	78	78
Refinery processing intake (thousand b/d)	2,063	2,564	2,648
Oil Products sales volumes (thousand b/d)	4,710	6,561	6,783

[A] See Note 4 to the "Consolidated Financial Statements" on pages 230-232. Segment earnings are presented on a current cost of supplies basis.

[B] See "Non-GAAP measures reconciliations" on pages 305-306.

[C] With effect from January 1, 2020, Shell discloses utilisation instead of availability to improve transparency on refinery production volumes. Utilisation is defined as the actual usage of the plants as a percentage of the rated capacity.

OVERVIEW

Our Oil Products business is part of an integrated value chain that refines crude oil and other feedstocks into products that are moved and marketed around the world for domestic, industrial and transport use. The products we sell include gasoline, diesel, heating oil, aviation fuel, marine fuel, low-carbon fuels, lubricants, bitumen and sulphur. We also trade crude oil, oil products and petrochemicals. We provide access to electric vehicle charge points at home, at work and on-the-go, including at our forecourts and at a range of public locations.

Our Oil Products activities comprise Refining and Trading, and Marketing. These are referred to as classes of business. Marketing includes Retail, Lubricants, Business-to-Business (B2B), Pipelines and Low-Carbon Fuels (biofuels and renewable natural gas (RNG)). In Trading and Supply, we trade crude oil, oil products and petrochemicals to optimise feedstocks for Refining, to supply our Marketing businesses and third parties, and for our own profit. We also manage Oil Sands activities – the extraction of bitumen from mined Oil Sands and its conversion into synthetic crude oil. Our Oil Sands activities were previously reported under Upstream. As of January 1, 2020, they are reported under Oil Products.

BUSINESS CONDITIONS

In 2020, oil markets experienced unprecedented developments in demand driven by the COVID-19 pandemic. At the start of 2020, global oil demand for the year was expected to grow by 1.2 million barrels per day (b/d). Then in January, oil demand started to contract because demand fell in China as lockdown was imposed to contain the virus outbreak. In subsequent months, oil demand contracted further as the outbreak in China evolved into a global pandemic and lockdowns were introduced across the world. In April, oil demand fell to its lowest level, around 22 million b/d below year-average demand in 2019, according to an estimate of the International Energy Agency (IEA). Contraction of such magnitude has never been recorded before. Country lockdowns deeply impacted transportation sectors, especially passenger road and passenger air in Organisation for Economic Co-operation and Development (OECD) economies. In subsequent months, oil demand started recovering, but only partially, because resurgences of COVID-19 triggered re-imposition of social distancing and travel restrictions. By the fourth quarter, global oil demand was still estimated to be around 5.5 million b/d below the 2019 level, according to the Oil Market Report

published by the IEA in January 2021. Averaged for the full year, oil demand contracted by around 9 million b/d, or 9%, to 91.2 million b/d. Oil demand fell by 5.7 million b/d in OECD economies, and by 3.2 million b/d in non-OECD economies. By contrast, oil demand in 2019 was 0.8 million b/d higher than in 2018.

Industry gross refining margins weakened in 2020 because demand for oil products was significantly reduced by the fall in economic activity and increase in travel restrictions caused by COVID-19. Demand for transportation fuels such as gasoline for passenger cars and kerosene for air transportation was hit particularly hard. During most of the second half of the year, mobility and the resulting demand for transportation fuels improved in some parts of the world, especially in China and South-east Asia. At the end of the year, new waves of COVID-19 infections in Europe and the Americas severely limited any global increase in demand for transportation fuels.

On January 1, 2020, the new International Maritime Organization low-sulphur shipping fuel specification came into effect, limiting the sulphur content of maritime fuel to 0.5%. This had a limited effect on margins because of the economic slowdown in 2020 and because companies had prepared for the new regulations by building inventory in the second half of 2019.

The destruction of demand caused by COVID-19 led to industry idling some refinery capacity. Permanent refinery closures were also announced in 2020, but construction of new capacity did occur during the year, especially in the Middle East and Asia.

See "Market overview" on pages 38-40.

REFINERY UTILISATION

With effect from January 1, 2020, Shell discloses utilisation instead of availability to improve transparency on refinery production volumes. Utilisation is defined as the actual usage of the plants as a percentage of the rated capacity.

Utilisation was 72% in 2020, compared with 78% in 2019. Lower utilisation in 2020 was mainly because of lower demand and economic optimisation of sites.

OIL PRODUCTS SALES

Oil Products sales volumes decreased by 28% in 2020 compared with 2019. The decrease in sales volumes was largely driven by the COVID-19 pandemic affecting Marketing volumes. There was also a reporting change effective from January 1, 2020 and certain additional Oil Products contracts held for trading purposes were reported on a net rather than a gross basis. This reporting change decreased sales volumes by 10%.

EARNINGS 2020-2019

Segment earnings in 2020 came to a loss of \$494 million, 108% lower than in 2019. Earnings in 2020 included a net charge of \$6,489 million, compared with a net charge of \$93 million in 2019 which is described at the end of this section.

Excluding the impact of the net charges, earnings in 2020 were \$5,995 million, compared with \$6,231 million in 2019. Marketing accounted for 76% of these 2020 earnings, Refining for -19% and Trading & Supply for 43%.

The decrease in Oil Products earnings, excluding the net charge, was \$236 million (4%) lower compared with 2019. This was driven by lower Refining and Trading margins (around \$2,400 million), lower Marketing margins (around \$600 million), partly offset by lower operating expenses (around \$2,000 million) and other items mainly including tax movements (around \$700 million).

The decrease in earnings of \$236 million, analysed by class of business was as follows:

- Refining and Trading earnings were \$101 million lower than in 2019, mainly because of lower realised refining margins driven by lower demand because of the pandemic and its effect on the economy. This was partly offset by higher earnings from crude and oil products trading and optimisation, lower operating expenses and favourable deferred tax movements.
- Marketing earnings were \$135 million lower than in 2019, mainly driven by lower sales volumes due to the impact of the pandemic. This was largely offset by strong margins in Retail and Lubricants on account of better margin management, higher penetration of premium fuels and lower operating expenses.

Segment earnings in 2020 included a net charge of \$6,489 million.

This included:

- impairment charges of \$5,530 million (across sites, reflecting revisions to medium- and long-term price outlook assumptions in light of: changes in supply and demand fundamentals in the energy market; macroeconomic conditions; the COVID-19 pandemic; expenditure at Pulau Bukom in Singapore including transformation; and the shutdown of the Convent refinery in Louisiana, USA);
- restructuring costs of \$365 million (mainly shutdown of Convent, Bukom transformation and various initiatives across Oil Products);
- other net charges of \$552 million (mainly onerous contract provisions due to shutdown of Convent); and
- a net charge of \$101 million due to the fair value accounting of commodity derivatives.

These charges were partly offset by:

- net gains from disposal of assets of \$59 million.

Segment earnings in 2019 included a net charge of \$93 million.

This included:

- impairment charges of \$337 million (mainly expenditure at Bukom and other assets);
- costs of \$84 million relating to restructuring (various initiatives across Oil Products);
- net charge of \$66 million due to the fair value accounting of commodity derivatives; and
- other net charges of \$26 million (mainly provision for discount rate change).

The above were partly offset by:

- net gains of \$329 million from disposal of assets; and
- gains from one-off tax items of \$91 million (tax rate changes in Alberta, Canada).

EARNINGS 2019-2018

Segment earnings in 2019 of \$6,139 million were 2% higher than in 2018. Earnings in 2019 included a net charge of \$93 million described above. Earnings in 2018 included a net gain of \$231 million, reflecting gains on disposal of assets of \$273 million (mainly our Oil Products assets in Argentina and other smaller disposals), a net gain from fair value accounting of commodity derivatives of \$224 million, gains from one-off tax items of \$91 million (mainly corporate income tax rate changes in the Netherlands and the USA) and other net gains of \$50 million (which included a one-off gain from the Ontario cap-and-trade scheme). These were partly offset by impairment charges of \$309 million and redundancy and restructuring charges of \$98 million.

Excluding the impact of these items, earnings in 2019 were \$6,231 million, compared with \$5,794 million in 2018. Marketing accounted for 75% of these 2019 earnings, Refining for 4% and Trading & Supply for 21%.

The increase in Oil Products earnings, excluding the net charge, was \$437 million (8%) compared with 2018. The increase was driven by higher Marketing margins (around \$500 million), benefit from foreign exchange (around \$250 million) and the change in accounting policy IFRS 16 (around \$140 million). This was partly offset by lower Refining and Trading margins (around \$400 million) and other impacts resulting in a net charge of around \$50 million. Marketing margins benefited from stronger unit margins. These were partly offset by lower earnings from Raízen, the joint venture (Shell interest 50%) in Brazil, caused by adverse foreign exchange and lower fuel margins. Refining and Trading margins were lower than in 2018, mainly because of lower realised refining margins caused by adverse price variance across all regions, driven by lower global demand growth and an increase in worldwide refining capacity.

CASH CAPITAL EXPENDITURE

Cash capital expenditure (cash capex) was \$3.3 billion in 2020, compared with \$4.9 billion in 2019.

Cash capital expenditure in Refining and Trading decreased by \$1.3 billion mainly because of cash preservation initiatives (lower capital expenditure spends including turnaround deferrals). In Marketing, cash capital expenditure decreased by \$0.3 billion as a result of cash preservation initiatives and reduced spending in US pipelines projects as they are nearing completion. Our cash capital expenditure is expected to be around \$4-4.5 billion in 2021.

OIL PRODUCTS continued

PORTFOLIO AND BUSINESS DEVELOPMENTS

Shell announced its plans to reshape its portfolio of assets and products to meet the cleaner energy needs of its customers in the coming decades. Significant portfolio and business developments during 2020 included:

- In the USA, in February 2020, our subsidiary Equilon Enterprises LLC, doing business as Shell Oil Products US (Shell) completed the sale of the Martinez refinery to PBF Holding Company LLC in the USA for a consideration of \$1.2 billion, which included the refinery and inventory.
- Also in the USA, in March 2020, we announced our intention to sell the Puget Sound refinery in Washington State and Mobile site in Alabama.
- In August 2020, Pilipinas Shell Petroleum Corporation, a subsidiary of Royal Dutch Shell in which we have an interest of 55%, announced that it will permanently shut down its Tabangao Refinery in Batangas City, Philippines, and convert it to a full import terminal.
- In November 2020, we announced that we had begun transforming our Shell Pulau Bukom manufacturing site in Singapore into an energy and chemicals park. This is part of our strategy to integrate our refining portfolio with Chemicals, resulting in approximately six high-value energy and chemicals parks, of which Bukom will be one. Bukom will switch from a crude-oil, fuels-based product slate towards new low-carbon value chains. Crude processing capacity at Bukom will be reduced by around half.
- In November 2020, we announced that we are shutting down the Convent Refinery in Louisiana, USA. Shell continues to assess market interest for the potential divestment of the asset during and after the shutdown, but does not intend to operate it in the future.
- In January 2021, Shell reached an agreement with Postlane for the sale of A/S Dansk Shell in Denmark, which consists of the Fredericia Refinery and local trading and supply activities.
- In January 2021, Shell signed an agreement to acquire 100% of ubitricity, a leading European provider of on-street charging for electric vehicles. The acquisition was completed in February 2021.
- In January 2021, Shell announced the signing of commercial agreements to invest in Varennes Carbon Recycling, the first waste to low-carbon fuels plant in Québec, Canada. Shell will have a 40% interest in the plant, which will use technology developed by Enerkem. The facility will produce low-carbon fuels and renewable chemicals products from non-recyclable waste. Commissioning of the first phase of the facility is scheduled for 2023.

BUSINESS AND PROPERTY

Refining and Trading Refining

We have interests in 13 refineries worldwide, (after converting Tabangao in the Philippines into a terminal and deciding in November 2020 to shut down Convent, in Louisiana, USA). We have the capacity to process a total of 2.2 million barrels of crude oil per day (Shell share, before it was announced that Bukom's crude capacity would reduce by around 200 thousand b/d). The distribution of our refining capacity is 46% in Europe and Africa, 33% in the Americas and 21% in Asia.

Shell's Refining business is transforming. We will further concentrate our refineries portfolio to meet our strategic aims and to capitalise on the strong integration between our customers, trading operations, chemical plants and, increasingly, our low-carbon fuels output.

The six sites expected to form our energy and chemicals parks include Deer Park and Norco in the USA, Scotford in Canada, Pernis in the Netherlands, Rheinland in Germany and Pulau Bukom in Singapore,

Our Bukom refinery will move from a crude-oil, fuels-based product slate towards new, low-carbon products. It will reduce its crude processing capacity as a result by around 200 thousand b/d sometime in July 2021.

In 2020, Pilipinas Shell Petroleum Corporation (PSPC) approved the transformation of the Tabangao refinery into an import terminal. Shell also decided to shut down the Convent Refinery in Louisiana, USA, starting the process in November 2020.

Trading and Supply

Through our main trading offices in London, Houston, Singapore and Rotterdam, we trade crude oil, refined products, chemical feedstocks and environmental products. Trading and Supply trades in physical and financial contracts, lease storage and transportation capacities, and manages shipping and wholesale commercial fuel activities globally.

Operating in around 25 countries, with more than 125 Shell and joint-venture terminals, we believe our supply and distribution infrastructure is well positioned to make deliveries around the world.

Shipping and Maritime enables the safe delivery of the Shell Trading and Supply contracts. This includes supplying feedstocks for our refineries and chemical plants, and finished products such as gasoline, diesel and aviation fuel to our Marketing businesses and customers.

Shell Wholesale Commercial Fuels provides fuels for transport, industry and heating. Our range of products, from reliable main-grade fuels to premium products, is designed to provide tangible vehicle and business benefits.

Oil Sands

Synthetic crude oil is produced by mining bitumen-saturated sands, extracting the bitumen, and transporting it to a processing facility where hydrogen is added to make a wide range of feedstocks for refineries. The Athabasca Oil Sands Project (AOSP) includes the Albian Sands mining and extraction operations, the Scotford upgrader and the Quest carbon capture and storage (CCS) project.

We have a 50% interest in 1745844 Alberta Ltd. (formerly known as Marathon Oil Canada Corporation), which holds a 20% interest in the Athabasca Oil Sands Project. With effect from January 1, 2020, Oil Sands is reported under Oil Products. It was previously reported under Upstream. Prior-period information has been restated for comparative purposes.



The Quest CCS facility in Alberta, Canada.

Marketing Retail

Shell is the world's largest mobility retailer, by number of sites, with almost 46,000 service stations operating in nearly 80 countries at the end of 2020. We operate different models across these markets, from full ownership of retail sites through to brand licensing agreements.

Every day, around 30 million customers visit these sites to buy fuel, convenience items including beverages and fresh food, and services such as lubricant changes and car washes. We offer our business customers Shell Fleet Solutions, through which they can obtain items including fuel cards, road services and carbon-neutral offers.

We have more than 100 years' experience in fuel development. Aided by our partnership with Scuderia Ferrari, we have concentrated on developing fuels with special formulations designed to clean engines and improve performance. We sold such fuels under the Shell V-Power brand in 64 countries in 2020.

In a growing number of markets, we are offering customers lower-emission products and services, including biofuels, electric vehicle fast charging, hydrogen and various gaseous fuels such as LNG. In 2020, we launched carbon-neutral driving offers in five new countries. Across the seven countries where we now offer carbon-neutral driving, we helped offset customer emissions from more than 1 billion litres of fuel by buying carbon credits linked to projects that plant and protect forests, wetlands and other natural ecosystems.

Shell operates more than 60,000 electric vehicle charge points. This includes over 1,000 charge points at Shell forecourts and new locations as well as operated charge points owned by our individual and business customers.

In January 2021, Shell signed an agreement to acquire 100% of ubitricity, a leading European provider of on-street charging for electric vehicles. The move represents a further step in Shell's efforts to support drivers as they switch to lower-carbon transport. The acquisition was completed in February 2021.



Shell offers electric vehicle drivers access to Shell Recharge points in 19 countries.

We have around 50 hydrogen retail sites in Europe and North America, where drivers can fill up their vehicles with hydrogen fuel.

Lubricants

Shell Lubricants has been the number one global finished lubricants supplier in terms of market share for 14 consecutive years, according to Kline & Company data for 2019. Across more than 160 markets, we produce, market and sell technically advanced lubricants for passenger cars, motorcycles, trucks, coaches, and machinery used in the manufacturing, mining, power generation, agriculture and construction sectors.

We also manufacture premium lubricants for conventional vehicles and Shell E-fluids for electric vehicles using gas-to-liquids (GTL) base oils that are made from natural gas at our Pearl GTL plant in Qatar (see "Integrated Gas" on pages 46-52).

We have a global lubricants supply chain with a network of four base oil manufacturing plants, 32 lubricant blending plants, eight grease plants and four GTL base oil storage hubs.

Through our marine activities, we primarily provide the shipping and maritime sectors with lubricants, but also with fuels, chemical products and related technical and digital services. We supply 259 grades of lubricants and six types of fuel to vessels worldwide, ranging from large ocean-going tankers to small fishing boats.

Business-to-Business

Our Business-to-Business (B2B) activities encompass the sale of fuels, speciality products and services to a broad range of commercial customers.

Shell Aviation provides aviation fuel, lubricants and low-carbon solutions globally. In 2020, we collaborated with many organisations to develop a scalable supply of sustainable aviation fuel made from renewable raw materials and waste products. In partnership with World Energy, Shell Aviation has agreed to supply up to 6 million gallons of sustainable aviation fuel to Amazon Air.

Shell Bitumen supplies customers across 60 markets and provides enough bitumen to resurface 500 kilometres of road lanes every day. It also invests in research and development to create innovative products.

Shell Sulphur Solutions is a business that manages the complete value chain of sulphur, from refining to marketing. The business provides sulphur for use in applications such as fertiliser, mining and chemicals. It also develops new technologies for sulphur that benefit sectors such as agriculture.

Pipelines

Shell Pipeline Company LP (Shell interest 100%) operates 9 tank farms across the USA, owns all of the interest in one such tank farm and, through its subsidiaries, has a majority ownership interest in the other 8 tank farms. It transports around 2 billion barrels of crude oil and refined products a year through around 6,000 kilometres of pipelines in the Gulf of Mexico and five US states. Our various non-Shell-operated ownership interests provide a further 14,000 pipeline kilometres.

We carry more than 40 types of crude oil and more than 20 grades of fuel and chemicals, including gasoline, diesel, aviation fuel, chemicals and ethylene.



The Falcon pipeline will run through 155 kilometres of Pennsylvania, West Virginia and Ohio.

OIL PRODUCTS continued

Shell Midstream Partners, L.P., a midstream master limited partnership, owns, operates, develops and acquires pipelines and other midstream assets in the USA. Its assets consist of interests in entities that own pipelines and terminals for crude oil and refined products. These serve as key infrastructure that transports crude oil produced onshore and offshore to the refining markets of the US Gulf Coast and Midwest. Shell Midstream Partners also delivers refined products from these markets to major demand centres. Its assets also include interests in entities that own natural gas and refinery gas pipelines. These transport offshore natural gas to market hubs, and deliver refinery gas from plants and refineries to chemical sites along the Gulf Coast. Shell controls the general partner.

See "Governance – Related Party Transactions" on page 185 for information on transactions between Shell and Shell Midstream Partners, L.P.

Low-Carbon Fuels Biofuels

In 2020, around 9.5 billion litres of biofuels went into Shell's fuels worldwide, which includes Raízen sales.



Harvesting crops used for the processing of biofuel by Raízen, Brazil.

Raízen, our joint venture in Brazil (Shell interest 50%), produced around 2.5 billion litres of ethanol and around 4.4 million tonnes of sugar from sugar cane in 2020. In 2015, Raízen opened its first cellulosic ethanol plant at its Costa Pinto mill in Brazil. This produced almost 25 million litres of ethanol in 2020.

In February 2021, Raízen announced the acquisition of Biosev, adding an additional 50% of production capacity in low-carbon fuels. It will allow to increase Raízen's bioethanol production capacity to a 3.75 billion litres a year. The transaction contributes to Shell's target to be a net-zero emissions energy business by 2050, in step with society.

RNG

Renewable natural gas (RNG), also known as biomethane, is gas derived from processing organic waste in a controlled environment until it is fully interchangeable with conventional natural gas. Shell has taken a final investment decision to construct, own and operate its first renewable compressed natural gas (R-CNG) fuelling site in the USA. This will be at Shell's products distribution complex in Carson, California. The R-CNG will be sourced from Shell's portfolio of anaerobic digestion projects.

BUSINESS ACTIVITIES WITH SUDAN, SYRIA AND CUBA Sudan

We ceased all operational activities in Sudan in 2008. In 2020, we registered a trademark right in Sudan (north) and paid \$8 to the General Intellectual Property Register Office, and \$79 in agent and handling fees.

The renewal of the trademark rights is not indicative of any sales of products in Sudan.

Syria

We ceased all operational activities in Syria in 2011. In 2020, we renewed our trademark rights in Syria and paid \$1,914 to the Directorate of Industrial and Commercial Property Protection, and \$551 in agent and handling fees. The renewal of the trademark rights is not indicative of any sales of products in Syria.

Cuba

We do not have any operational activities in Cuba. In January 2021, we renewed a trademark right in Cuba and paid \$300 to the Cuban Industrial Property Office, and \$420 in agent and handling fees. The registration of this trademark right is not indicative of any sales of products in Cuba.

OIL PRODUCTS DATA TABLES

The tables below reflect Shell subsidiaries and instances where Shell owns the crude oil or feedstocks processed by a refinery. The tables include Martinez refinery until the date of divestment in February 2020, Tabangao refinery until the date of transformation into a terminal in August 2020 and Convent refinery until the date of shutdown in December 2020. Other joint ventures and associates are only included where explicitly stated.

Oil products – cost of crude oil processed or consumed [A]

	\$ /barrel		
	2020	2019	2018
Total	35.03	54.97	59.94

[A] Includes Upstream and Integrated Gas margins on crude oil supplied by Shell subsidiaries, joint ventures and associates.

Crude distillation capacity [A]

	Thousand b/stream day [B]		
	2020	2019	2018
Europe	1,059	1,057	1,056
Asia	573	767	767
Africa	90	90	90
Americas	1,028	1,171	1,261
Total	2,750	3,085	3,174

[A] Average operating capacity for the year, excluding mothballed capacity.

[B] Stream day capacity is the maximum capacity with no allowance for downtime.

Oil products – crude oil processed [A]

	Thousand b/d		
	2020	2019	2018
Europe	810	829	897
Asia	292	498	545
Africa	54	55	66
Americas	719	1,004	1,041
Total	1,875	2,386	2,549

[A] Includes natural gas liquids, share of joint ventures and associates and processing for others.

Refinery processing intake [A]

	Thousand b/d		
	2020	2019	2018
Crude oil	1,876	2,342	2,434
Feedstocks	187	222	214
Total	2,063	2,564	2,648
Europe	854	875	896
Asia	302	517	543
Africa	54	55	66
Americas	853	1,117	1,143
Total	2,063	2,564	2,648

[A] Includes crude oil, natural gas liquids and feedstocks processed in crude distillation units and in secondary conversion units.

Refinery processing outturn [A]

	Thousand b/d		
	2020	2019	2018
Gasolines	771	952	966
Kerosines	158	417	321
Gas/Diesel oils	774	818	965
Fuel oil	140	223	284
Other	279	282	321
Total	2,122	2,692	2,858

[A] Excludes own use and products acquired for blending purposes.

Oil Products sales volumes [A][B]

	Thousand b/d		
	2020	2019	2018
Europe			
Gasolines	224	334	323
Kerosines	165	317	294
Gas/Diesel oils	610	720	745
Fuel oil	(42)	138	178
Other products	(19)	278	314
Total	938	1,787	1,854
Asia			
Gasolines	346	408	373
Kerosines	98	208	210
Gas/Diesel oils	455	535	543
Fuel oil	308	330	407
Other products	383	518	620
Total	1,590	2,000	2,153
Africa			
Gasolines	43	46	42
Kerosines	11	13	10
Gas/Diesel oils	59	70	74
Fuel oil	1	2	2
Other products	6	6	6
Total	120	137	134
Americas			
Gasolines	1,136	1,419	1,446
Kerosines	103	239	236
Gas/Diesel oils	496	582	567
Fuel oil	87	120	117
Other products	240	277	276
Total	2,062	2,637	2,642
Total product sales [C][D]			
Gasolines	1,749	2,207	2,184
Kerosines	377	777	750
Gas/Diesel oils	1,620	1,907	1,929
Fuel oil	354	590	704
Other products	610	1,079	1,216
Total	4,710	6,561	6,783

[A] Excludes deliveries to other companies under reciprocal sale and purchase arrangements, that are in the nature of exchanges. Sales of condensate and natural gas liquids are included.

[B] Includes the Shell share of Raizen's sales volumes.

[C] Certain contracts are held for trading purposes and reported net rather than gross. The effect in 2020 was a reduction in oil product sales of approximately 1,284,000 b/d (2019: 546,000 b/d; 2018: 458,000 b/d). With effect from January 1, 2020 certain contracts held for trading purposes and reported net for Europe and Asia regions are consolidated in Europe.

[D] Reported volumes in 2020 and 2019 include the Shell joint ventures' sales volumes from key countries.

OIL PRODUCTS continued

MANUFACTURING PLANTS AT DECEMBER 31, 2020

Refineries in operation

				Thousand barrels/stream day, 100% capacity [B]			
	Location	Asset class	Shell interest (%) [A]	Crude distillation capacity	Thermal cracking/visbreaking/coking	Catalytic cracking	Hydro-cracking
Europe							
Denmark	Fredericia	●	100	74	44	—	—
Germany	Miro [C]		32	313	40	96	—
	Rheinland	● ●	100	354	49	—	90
	Schwedt [C]		38	233	45	59	—
Netherlands	Pernis	● ●	100	443	—	53	103
Asia							
Singapore	Pulau Bukom [D]	● ●	100	504	81	38	61
Africa							
South Africa	Durban [C]	●	36	180	25	37	—
Americas							
Argentina	Buenos Aires [C]	● ●	50	108	20	22	—
Canada							
Alberta	Scotford	●	100	100	—	—	83
Ontario	Sarnia	●	100	85	5	21	10
USA							
Louisiana	Norco	●	100	250	29	119	44
Texas	Deer Park	● ●	50	341	96	75	60
Washington	Puget Sound	● ●	100	149	25	58	—

[A] Shell interest is rounded to the nearest whole percentage point; Shell share of production capacity may differ.

[B] Stream day capacity is the maximum capacity with no allowance for downtime.

[C] Not operated by Shell

[D] Bukom capacity is as on December 31, 2020 prior to the transformation. Crude processing capacity is expected to decrease by around 200 thousand b/d after the transformation sometime in July 2021.

- Integrated refinery and chemical complex
- Refinery complex with cogeneration capacity
- Refinery complex with chemical unit(s)
- Other

BRANDED RETAIL SITES [A]

	2020	2019	2018
Europe	8,071	7,978	7,888
Asia [B]	10,387	10,138	9,754
Oceania [B]	1,071	1,038	1,030
Africa	2,622	2,494	2,502
Americas	23,461	23,021	23,223
Total	45,612	44,669	44,397

[A] Excludes sites closed for more than six months.

[B] Asia includes Turkey and Russia; Oceania includes French Polynesia, Guam, Palau and New Caledonia.

CHEMICALS

Key statistics

	\$ million, except where indicated		
	2020	2019	2018
Segment earnings [A]	808	478	1,884
Including:			
Revenue (including inter-segment sales)	14,571	17,485	23,568
Share of profit of joint ventures and associates [A]	567	546	684
Interest and other income	—	(7)	(53)
Operating expenses [B]	3,235	3,430	3,594
Depreciation, depletion and amortisation	1,116	1,074	1,034
Taxation charge [A]	7	(2)	339
Identified Items [B]	(154)	(263)	(192)
Adjusted Earnings [B]	962	741	2,076
Capital expenditure	2,608	4,068	3,140
Cash capital expenditure [B]	2,640	4,090	3,212
Chemical plant utilisation (%) [C]	80	76	84
Chemicals sales volumes (thousand tonnes)	15,036	15,223	17,644

[A] See Note 4 to the "Consolidated Financial Statements" on pages 230-232. Segment earnings are presented on a current cost of supplies basis.

[B] See "Non-GAAP measures reconciliations" on pages 305-306

[C] With effect from January 1, 2020, Shell discloses utilisation instead of availability to improve transparency on chemicals production volumes. Utilisation is defined as the actual usage of the plants as a percentage of the rated capacity.

OVERVIEW

Our Chemicals business supplies customers with a range of base and intermediate chemicals used to make products that people use every day. We also have major manufacturing plants which are located close to refineries, and our own marketing network.

BUSINESS CONDITIONS

Cracker margins were volatile during 2020 because of how COVID-19 affected demand. Overall margins, however, were broadly similar to those in 2019. The effect on chemicals depended on end use. Some sectors, such as automotive, were hit particularly hard, while others, such as packaging, showed robust demand. Chinese demand recovered relatively quickly because the virus was swiftly brought under control. Overall chemicals demand was not hit as hard as GDP. West European cracker margins were supported by the sudden fall in the price of crude oil in March and April. The fact that crude oil was at a lower price than in 2019 reduced naphtha feedstock costs, which reduced product prices. This in turn put pressure on US ethane cracker margins, although plentiful ethane supply helped counter the impact.

See "Market overview" on pages 38-40.

CHEMICAL PLANT UTILISATION

With effect from January 1, 2020, Shell discloses utilisation instead of availability to improve transparency on chemicals production volumes. Utilisation is defined as the actual usage of the plants as a percentage of the rated capacity.

Chemicals manufacturing plant utilisation was 80% in 2020 compared with 76% in the full year 2019, mainly because of higher maintenance activities in Asia and Europe in 2019, and the impact of strike actions in the Netherlands in 2019.

CHEMICALS SALES

In 2020, Chemicals sales volumes were 15,036 thousand tonnes, which was 1% lower than 2019 sales volumes of 15,223 thousand tonnes due to lower demand.

EARNINGS 2020-2019

Segment earnings in 2020 of \$808 million were 69% higher than in 2019. Earnings in 2020 included a net charge of \$154 million, compared with a net charge in 2019 of \$263 million, which is described at the end of this section.

Excluding the impact of these charges, earnings in 2020 were \$962 million, compared with \$741 million in 2019.

The increase in Chemicals earnings, excluding the net charges, was \$221 million (30%) compared with 2019. This was driven by higher margins (around \$130 million) because of a favourable price environment, lower operating expenses (around \$50 million) as a result of various initiatives, and favourable tax movements (around \$60 million) partly offset by other costs (around \$20 million).

Segment earnings in 2020 included a net charge of \$154 million.

This included:

- impairment charges of \$4 million;
- costs related to restructuring of \$38 million (various initiatives across Chemicals);
- net loss from disposal of assets of \$1 million; and
- other net charges of \$115 million (mainly legal provision).

These charges were partly offset by:

- a net gain from fair value accounting of commodity derivatives of \$4 million.

Segment earnings in 2019 included a net charge of \$263 million.

This included:

- net charges of \$247 million (mainly legal provisions);
- loss of \$11 million from disposal of assets;
- costs of \$5 million related to restructuring; and
- impairment charge of \$4 million.

These charges were partly offset by:

- gain from one-off tax items of \$5 million (tax rate changes in Alberta, Canada).

CHEMICALS continued**EARNINGS 2019-2018**

Segment earnings in 2019 of \$478 million were 75% lower than in 2018. Earnings in 2019 included a net charge of \$263 million described above. Earnings in 2018 included a net charge of \$192 million, reflecting impairment charges of \$76 million, a net loss from disposal of \$50 million, redundancy and restructuring charges of \$2 million, and other net charges of \$97 million (related to onerous contracts in connection with decommissioning the Stanlow site). These were partly offset by gains from one-off tax items of \$27 million, (mainly corporate income tax rate changes in the Netherlands), and a net gain of \$6 million from fair value accounting of commodity derivatives.

Excluding the impact of these items, earnings in 2019 were \$741 million, compared with \$2,076 million in 2018.

The decrease in earnings, excluding the net charges, was \$1,335 million (64%) compared with 2018. This was driven by lower margins (around \$1,500 million), partly offset by lower operating costs (around \$140 million) and the change in accounting policy relating to IFRS 16 leases (around \$20 million). Margins were impacted by lower realised base chemicals and intermediate margins and by higher maintenance activities in Asia and Europe, including the impact of strike action in the Netherlands in 2019.

CASH CAPITAL EXPENDITURE

Cash capital expenditure (cash capex) was \$2.6 billion in 2020, compared with \$4.1 billion in 2019.

Cash capex decreased by \$1.5 billion, mainly because of lower spend on account of the COVID-19 pandemic impact in the construction of our cracker facilities in Pennsylvania and cash preservation initiatives. Our cash capex expenditure is expected to be around \$3 billion to \$3.5 billion in 2021.

PORTFOLIO AND BUSINESS DEVELOPMENTS

Significant portfolio and business developments during 2020:

- In the USA, in March 2020, we announced our intention to sell the Mobile site in Alabama.

BUSINESS AND PROPERTY**Manufacturing**

Our plants produce a range of base chemicals, including ethylene, propylene and aromatics, and intermediate chemicals such as styrene monomer, propylene oxide, solvents, detergent alcohols, ethylene oxide and ethylene glycol. We have the capacity to produce around 6.5 million tonnes of ethylene a year. We are expanding our product portfolio to include sustainable chemicals, more intermediates and performance chemicals such as polyethylene and polycarbonate. We operate chemical plants worldwide and have a global balance of locations, feedstocks and products that allows us to seize commercial opportunities and get through cycles of lower margins.

Shell's Chemicals business is transforming and will be further integrated with our Refining business. In addition to our standalone, chemicals-only production sites, the six sites (Deer Park and Norco in the USA, Scotford in Canada, Pernis in the Netherlands, Rheinland in Germany and Pulau Bukom in Singapore) are expected to form our energy and chemicals parks. Growth will shift towards performance chemicals and recycled feedstocks.

Marketing

In 2020, we supplied more than 15 million tonnes of petrochemicals to around 1,000 industrial customers worldwide. Products made from chemicals improve everyday life in health care, construction, transport, electronics, agriculture and sports. As global demand for chemicals increases, we plan to grow our business, by understanding and responding to our customers' needs.

BUSINESS ACTIVITIES WITH SUDAN AND SYRIA**Sudan**

We ceased all operational activities in Sudan in 2008.

Syria

We ceased supplying polyols, via a Netherlands-based distributor, to private sector customers in Syria in 2018. Polyols are commonly used for the production of foam in mattresses and soft furnishings.

CHEMICALS DATA TABLES

The tables below reflect Shell subsidiaries and instances where Shell owns the crude oil or feedstocks processed by a refinery. The tables also include Martinez until the date of divestment in February 2020. Other joint ventures and associates are only included where explicitly stated.

Ethylene capacity [A]

	Thousand tonnes/year		
	2020	2019	2018
Europe	1,701	1,701	1,701
Asia	2,530	2,530	2,529
Americas	2,268	2,268	2,268
Total	6,499	6,499	6,498

[A] Includes the Shell share of capacity entitlement (offtake rights) of joint ventures and associates, which may be different from nominal equity interest. Nominal capacity is quoted at December 31.

Chemicals sales volumes [A]

	2020	2019	2018
Europe			
Base chemicals	3,490	3,666	4,069
Intermediates and others	1,990	1,872	1,994
Total	5,480	5,538	6,063
Asia			
Base chemicals	1,192	1,057	2,140
Intermediates and others	2,969	2,848	3,082
Total	4,161	3,905	5,222
Americas			
Base chemicals	2,936	3,261	3,842
Intermediates and others	2,459	2,519	2,517
Total	5,395	5,780	6,359
Total product sales			
Base chemicals	7,618	7,984	10,051
Intermediates and others	7,418	7,239	7,593
Total	15,036	15,223	17,644

[A] Excludes feedstock trading and by-products.

Major chemical plants in operation [A]

		Thousand tonnes/year, Shell share capacity [B]				
	Location	Ethylene	Styrene monomer	Ethylene glycol	Higher olefins [C]	Additional products
Europe						
Germany	Rheinland	315	—	—	—	A
Netherlands	Moerdijk	971	815	153	—	A, I
UK	Mossmorran [D]	415	—	—	—	O
Asia						
China	Nanghai [D]	1,100	650	415	—	A, I, P
Singapore	Jurong Island [E]	281	1,069	1,159	—	A, I, P, O
	Pulau Bukom	1,149	—	—	—	A, I
Americas						
Canada	Scotford	—	475	548	—	A, I
USA	Deer Park	836	—	—	—	A, I
	Geismar	—	—	400	1,390	I
	Norco	1,432	—	—	—	A
Total		6,499	3,009	2,675	1,390	

[A] Major chemical plants are large integrated chemical facilities, typically producing a range of chemical products from an array of feedstocks, and are a core part of our global Chemicals business.

[B] Shell share of capacity of subsidiaries, joint arrangements and associates (Shell- and non-Shell-operated), excluding capacity of the Infineum additives joint ventures.

[C] Higher olefins are linear alpha and internal olefins (products range from C4 to C2024).

[D] Not operated by Shell

[E] The polyethylene, polypropylene and olefins production mentioned refers to Shell share of capacity of our non-operated joint ventures Petchem Corporation of Singapore (PCS) and The Polyolefin Company (TPC) which are in Jurong Island.

A Aromatics, lower olefins

I Intermediates

P Polyethylene, polypropylene

O Other

Other chemical locations [A]

	Location	Products
Europe		
Germany	Karlsruhe	A
	Schwedt	A
Netherlands	Pernis	A, I, O
Americas		
Argentina	Buenos Aires	I
Canada	Sarnia	A, I
USA	Mobile	A
	Puget Sound	I

[A] Other chemical locations reflect locations with smaller chemical units, typically serving more local markets.

A Aromatics, lower olefins

I Intermediates

O Other

CORPORATE

Earnings

	2020	2019	2018
Segment earnings	(2,952)	(3,273)	(1,479)
Comprising:			
Net interest [A]	(2,991)	(3,080)	(2,075)
Taxation and other [B]	39	(194)	596
Identified Items	460	109	327
Adjusted Earnings	(3,412)	(3,383)	(1,806)

[A] Mainly Shell's interest expense (excluding accretion expense) and interest income.

[B] Other earnings mainly comprise net foreign exchange gains and losses on financing activities, headquarters and central functions' costs not recovered from business segments, and net gains on sale of properties. This also includes Shell's share of joint ventures and associates' interest income/(expense) and net foreign exchange gains/(losses) on financing activities.

OVERVIEW

The Corporate segment covers the non-operating activities supporting Shell. It comprises Shell's holdings and treasury organisation, self-insurance activities and headquarters and central functions. All finance expense and income and related taxes are included in Corporate segment earnings rather than in the earnings of business segments.

The holdings and treasury organisation manages many of the Corporate entities. It is the point of contact between Shell and external capital markets, conducting a wide range of transactions, such as raising debt instruments and transacting foreign exchange. Treasury centres in London and Singapore support these activities.

Headquarters and central functions provide business support in communications, finance, health, human resources, information technology, legal services, real estate and security. They also provide support for shareholder-related activities. The central functions are supported by business service centres, which process transactions, manage data and produce statutory returns, among other services. Most headquarters and central-function costs are recovered from the business segments. Costs that are not recovered are retained in Corporate.

EARNINGS 2020-2018

Segment earnings in 2020 were an expense of \$2,952 million, compared with \$3,273 million in 2019 and \$1,479 million in 2018.

Net interest decreased by \$89 million compared with 2019. This was primarily due to a decrease in interest expense following reductions in interest rates, partly offset by a reduction in interest income generated on cash balances. In 2019, net interest increased by \$1,005 million compared with 2018. This was primarily due to the adoption of IFRS 16 and reduced capitalised interest.

Taxation and other earnings increased by \$233 million in 2020, compared with 2019. This largely reflected favourable deferred tax impacts due to the strengthening Brazilian real on financing positions and a reduction in Shell's share of financing expenses from joint ventures and associates, partly offset by a foreign exchange loss from adverse exchange rate movements. In 2019, taxation and other earnings decreased by \$790 million compared with 2018, because of reduced tax credits from financing and one-off charges, and unfavourable exchange rate movements producing net foreign exchange losses.

SELF-INSURANCE

We mainly self-insure our risk exposure. Capital is set aside to meet self-insurance obligations (see "Risk factors" on page 35). We seek to ensure this capital is at least as much as would be held in third-party insurance markets. Periodic surveys of key assets provide knowledge and best practices aimed at reducing exposure to hazards. Follow-up actions are monitored to completion.

INFORMATION TECHNOLOGY AND CYBER-SECURITY

Given our digitalisation efforts and increasing reliance on information technology (IT) systems for our operations, we continually monitor external

developments and actively share information on threats and security incidents. Shell employees and contract staff are subject to mandatory courses and regular awareness campaigns aimed at protecting us against cyber-threats. We periodically test and adapt cyber-security response processes and seek to enhance our security monitoring capability.

Given our dependence on IT systems for our operations and the increasing role of digital technologies across our business, we are aware that cyber-security attacks could cause significant harm to Shell in the form of loss of productivity, loss of intellectual property, regulatory fines and/or reputational damage. As a result, we continuously measure and, where required, further improve our cyber-security capabilities to reduce the likelihood of successful cyber-attacks. Our cyber-security capabilities are embedded into our IT systems, and our IT landscape is protected by various detective and protective technologies. The identification and assessment capabilities are built into our support processes and adhere to industry best practices. The security of IT services, operated by external IT companies, is managed through contractual clauses and additionally through formal supplier assurance reports for critical IT services.

Shell is frequently subjected to cyber-attacks and the pandemic in 2020 caused an increase in such activity. COVID-19 necessitated a switch from office to remote working, which changed and increased the attack surface. Shell's CyberDefence Team responded by enhancing cyber-security controls for remote connectivity, strengthening its monitoring/detection, and taking additional measures to improve cyber-awareness.

In 2020, malicious actors infiltrated several companies and government agencies through a supply chain attack via SolarWinds Orion software. They injected malware into an update that was distributed to SolarWinds' customers globally, allowing the actors to access SolarWinds systems and from there attempt to access other systems. Shell uses SolarWinds software. We detected the malicious SolarWinds applications in our environment, and isolated and removed them. No evidence has been found that any Shell systems were accessed by the attackers. Shell has followed the US Cybersecurity and Infrastructure Security Agency's guidance to rebuild and/or patch affected systems.

In 2020, none of the cyber-security events led to known breaches of our business-critical IT landscape and, as such, did not result in any material business impact. When significant incidents happen, they are addressed through a robust incident management framework and, if needed, will result in appropriate follow-up actions, including notifications towards regulators. See "Risk factors" on Page 33.

BRAND VALUE

In January 2021, Shell's brand value was estimated at \$42.2 billion in Brand Finance Global 500 2021, the annual report by leading brand valuation consultancy Brand Finance. This was down 11% compared with 2020, but up 33% compared with 2016. According to the valuation the Shell brand remains the most valued in the oil and gas industry and the gap to second place widened from \$761 million in 2020 to \$4.7 billion in 2021. The report also showed that Shell's brand rating stayed at AAA, unchanged from 2020.

LIQUIDITY AND CAPITAL RESOURCES

We manage our businesses to deliver strong cash flows to fund investment for profitable growth. Management's priorities for applying Shell's cash are first the reduction of net debt to \$65 billion and, on achieving this milestone, distributing a total of 20-30% of cash flow from operations to shareholders. Remaining cash will be allocated to disciplined and measured capital expenditure growth and further debt reduction.

FINANCIAL CONDITION AND LIQUIDITY

Despite the weak macroeconomic and commodity price environment during the COVID-19 pandemic, Shell Group generated cash flow from operations of \$34.1 billion and free cash flow of \$20.8 billion in 2020. Through the course of the year, Shell took decisive actions (including reducing costs, rebasing the dividends and not continuing with the next tranche of the share buyback programme following completion of the seventh tranche) to increase liquidity and underpin the strength of the balance sheet, positioning the business to navigate the challenging environment and supporting long-term value creation. Reflecting mitigating actions taken, net debt decreased to \$75.4 billion at December 31, 2020 (December 31, 2019: \$79.1 billion). Gearing increased to 32.2% at December 31, 2020, compared with 29.3% at December 31, 2019 due to the reduction in equity mainly driven by lower earnings in 2020. Note 14 to the Consolidated Financial Statements on page 241-243 provides information on our debt arrangements, including net debt and gearing definitions.

LIQUIDITY

We satisfy our funding and working capital requirements from the cash generated from our operations, the issuance of debt and divestments. In 2020, access to the international debt capital markets remained strong, with our debt principally financed from these markets through central debt programmes consisting of:

- a \$10 billion global commercial paper (CP) programme, with maturities not exceeding 270 days;
- a \$10 billion US CP programme, with maturities not exceeding 397 days;
- an unlimited Euro medium-term note (EMTN) programme (also referred to as the Multi-Currency Debt Securities Programme); and
- an unlimited US universal shelf (US shelf) registration.

All these CP, EMTN and US shelf issuances are issued by Shell International Finance B.V., the issuance company for Shell, with its debt being guaranteed by Royal Dutch Shell plc (the Company). We plan to file a new US shelf registration statement with the Securities and Exchange Commission shortly after the filing of our Annual Report on Form 20-F.

We also maintain committed credit facilities. The core facilities, totalling \$10 billion, were extended in December 2020 with \$2 billion now expiring in 2021 and \$8 billion in 2025. Each facility includes a further one-year extension option at the discretion of each lender. Both remained undrawn at December 31, 2020. These core facilities and internally available liquidity provide back-up coverage for our CP programmes. In addition, in April 2020, to increase liquidity amid COVID-19-related uncertainties, Shell entered into a dual currency \$7.2 billion and EUR 4.4 billion revolving credit facility expiring in April 2021, with two six-month extension options at our discretion. This facility remains undrawn. The extension options have not been exercised, and the facility will expire in April 2021. Other than certain borrowing by local subsidiaries, we do not have any other committed credit facilities.

Our total debt increased by \$11.6 billion to \$108 billion at December 31, 2020. The total debt excluding leases will mature as follows: 16% in 2021; 6% in 2022; 7% in 2023; 6% in 2024; and 64% in 2025 and beyond. The portion of debt maturing in 2021 is expected to be repaid from a combination of cash balances, cash generated from operations, divestments and the issuance of new debt.

In 2020, we issued \$6.3 billion of bonds under our US shelf registration and \$6.7 billion equivalent under our EMTN programme. Periodically, for working capital purposes, we issued CP. We believe our working capital is sufficient for current requirements.

While our subsidiaries are subject to restrictions, such as foreign withholding taxes on the transfer of funds in the form of cash dividends, loans or advances, such restrictions are not expected to have a material impact on our ability to meet our cash obligations.

MARKET RISK AND CREDIT RISK

We are affected by the global macroeconomic environment as well as financial and commodity market conditions. This exposes us to treasury and trading risks, including liquidity risk, market risk (interest rate risk, foreign exchange risk and commodity price risk) and credit risk. See "Risk factors" on page 34 and Note 19 to the "Consolidated Financial Statements" on pages 251-255. The size and scope of our businesses require a robust financial control framework and effective management of our various risk exposures.

We utilise various financial instruments for managing exposure to commodity price, foreign exchange and interest rate movements. Our treasury and trading operations are highly centralised and seek to manage credit exposures associated with our substantial cash, commodity, foreign exchange and interest rate positions. Our portfolio of cash investments is diversified to avoid concentrating risk in any one instrument, country or counterparty. Other than in exceptional cases, the use of external derivative instruments is confined to specialist trading and central treasury organisations that have appropriate skills, experience, supervision, control and reporting systems. Credit risk policies are in place to ensure that sales of products are made to customers with appropriate creditworthiness, and include detailed credit analysis and monitoring of customers against counterparty credit limits. Where appropriate, netting arrangements, credit insurance, prepayments and collateral are used to manage credit risk. We maintain a committed credit facility. Management believes it has access to sufficient debt funding sources (capital markets) and to undrawn committed borrowing facilities to meet foreseeable requirements.

PENSION COMMITMENTS

We have substantial pension commitments, the funding of which is subject to capital market risks (see "Risk factors" on page 32). We address key pension risks in a number of ways. Principal among these is the Pensions Forum, chaired by the Chief Financial Officer, which oversees Shell's input to pension strategy, policy and operation. A risk committee supports the forum in reviewing the results of assurance processes in respect of pensions risks. In general, local trustees manage the funded defined benefit pension plans, with contributions paid based on independent actuarial valuations in accordance with local regulations. Our total employer contributions to funded and unfunded defined benefit pension plans were \$0.6 billion in 2020 and are estimated to be \$1.6 billion in 2021. See Note 17 to the Consolidated Financial Statements on pages 246-249.

Capitalisation table

	\$ million	
	December 31, 2020	December 31, 2019
Equity attributable to Royal Dutch Shell plc shareholders	155,310	186,476
Current debt	16,899	15,064
Non-current debt	91,115	81,360
Total debt [A]	108,014	96,424
Total capitalisation	263,324	282,900

[A] Of total debt, \$79.4 billion (2019: \$65.7 billion) was unsecured and \$28.6 billion (2019: \$30.7 billion) was secured. See Note 14 to the "Consolidated Financial Statements" on pages 241-243 for further disclosure on debt.

LIQUIDITY AND CAPITAL RESOURCES continued

STATEMENT OF CASH FLOWS

Cash flow from operating activities in 2020 was an inflow of \$34.1 billion, compared with \$42.2 billion in 2019, mainly due to lower earnings. The decrease in cash flow from operating activities in 2019, compared with \$53.1 billion in 2018, was mainly due to lower earnings and an unfavourable working capital impact.

Cash flow from investing activities in 2020 was an outflow of \$13.3 billion, compared with an outflow of \$15.8 billion in 2019. The decreased cash outflow was mainly due to lower capital expenditure in 2020. The increased cash outflow in 2019 compared with \$13.7 billion in 2018 was mainly due to lower proceeds from the sale of equity securities, partly offset by higher proceeds from sale of assets in 2019.

Cash flow from financing activities in 2020 was an outflow of \$7.2 billion, compared with outflows of \$35.2 billion in 2019 and \$32.5 billion in 2018, due to lower dividends payments to Royal Dutch Shell plc shareholders of \$7.4 billion (2019: \$15.2 billion; 2018: \$15.7 billion), net issuance of debt of \$5.6 billion (2019: \$3.4 billion net repayment; 2018: \$8.3 billion net repayment), and lower repurchases of shares of \$1.7 billion (2019: 10.2 billion; 2018: \$3.9 billion).

Cash and cash equivalents were \$31.8 billion at December 31, 2020 (December 31, 2019: \$18.1 billion; December 31, 2018: \$26.7 billion).

CASH FLOW FROM OPERATING ACTIVITIES

The most significant factors affecting our cash flow from operating activities are earnings, which are mainly impacted by: realised prices for crude oil, natural gas and LNG; production levels of crude oil, natural gas and LNG; chemicals, refining and marketing margins; and movements in working capital.

The impact on earnings from changes in market prices depends on: the extent to which contractual arrangements are tied to market prices; the dynamics of production-sharing contracts; the existence of agreements with governments or state-owned oil and gas companies that have limited sensitivity to crude oil and natural gas prices; tax impacts; and the extent to which changes in commodity prices flow through into operating expenses. Changes in benchmark prices of crude oil and natural gas in any particular period therefore provide only a broad indicator of changes in our Integrated Gas and Upstream earnings in that period. Changes in any one of a range of factors, derived from either within the industry or the broader economic environment, can influence refining and marketing margins. The precise impact of any such changes depends on how the oil markets respond to them. The market response is affected by factors such as: whether the change affects all crude oil types or only a specific grade; regional and global crude oil and refined products inventories; and the collective speed of response of refiners and product marketers in adjusting their operations. As a result, margins fluctuate from region to region and from period to period.

DIVESTMENT AND CASH CAPITAL EXPENDITURE

The level of divestment proceeds and cash capital expenditure in 2020 and 2019 reflects our discipline, and focus on capital efficiency and cash preservation.

Divestment proceeds

	\$ million		
	2020	2019	2018
Integrated Gas	503	723	3,156
Upstream	1,909	5,384	3,364
Oil Products	1,368	1,517	540
Chemicals	26	22	1
Corporate	205	225	3,405
Total divestment proceeds	4,010	7,871	10,465

Cash capital expenditure is used to monitor investing activities on a cash basis, excluding items such as lease additions which do not necessarily result in cash outflows in the period. The capital discipline demonstrated in 2020 allowed us to deliver cash capital expenditure of less than \$20 billion in line with the financial framework initiatives announced in March 2020.

Cash capital expenditure

	\$ million		
	2020	2019	2018
Integrated Gas	4,301	4,299	3,819
Upstream	7,296	10,205	12,134
Oil Products	3,328	4,907	4,643
Chemicals	2,640	4,090	3,212
Corporate	262	418	269
Total cash capital expenditure	17,827	23,919	24,078

Cash flow information [A]

	2020	2019	\$ billion 2018
Cash flow from operating activities excluding working capital movements			
Integrated Gas	10.8	14.8	16.3
Upstream	9.8	19.9	21.4
Oil Products	7.0	10.7	8.5
Chemicals	1.8	1.7	2.8
Corporate	0.1	(0.3)	0.7
Total	29.5	47.0	49.7
(Increase)/decrease in inventories	4.5	(2.6)	2.8
(Increase)/decrease in current receivables	9.6	(0.9)	2.0
Increase/(decrease) in current payables	(9.5)	(1.2)	(1.3)
(Increase)/decrease in working capital	4.6	(4.8)	3.4
Cash flow from operating activities	34.1	42.2	53.1
Cash flow from investing activities	(13.3)	(15.8)	(13.7)
Cash flow from financing activities	(7.2)	(35.2)	(32.5)
Currency translation differences relating to cash and cash equivalents	0.2	0.1	(0.4)
Increase/(decrease) in cash and cash equivalents	13.8	(8.7)	6.4
Cash and cash equivalents at the beginning of the year	18.1	26.7	20.3
Cash and cash equivalents at the end of the year	31.8	18.1	26.7

[A] See the "Consolidated Statement of Cash Flows" on page 220.

DIVIDENDS

Subject to Board approval, Shell aims to grow the dividend per share by around 4% every year, and once the Group's net debt level has reached \$65 billion, the Group will target the distribution of 20-30% of its cash flow from operations to shareholders. The Group may choose to return cash to shareholders through a combination of dividends and share buybacks.

When setting the level of shareholder remuneration, the Board looks at a range of factors, including the macro-environment, the underlying business earnings and cash flow of Shell Group, the current balance sheet, future investment and divestment plans, and existing commitments. We returned \$7.4 billion to our shareholders through dividends in 2020.

The fourth quarter 2020 interim dividend of \$0.1665 per share will be payable to shareholders on the register at February 19, 2021. See Note 23 to the "Consolidated Financial Statements" on page 259. The Board expects that the first quarter 2021 interim dividend will be \$0.1735 per share, representing an increase of around 4% on the fourth quarter 2020 interim dividend.

PURCHASES OF SECURITIES

On July 26, 2018, the Company announced the commencement of a share buyback programme of at least \$25 billion, subject to further progress with debt reduction and oil price conditions. On March 23, 2020, the Company announced that in light of the economic and oil price environment, it had decided not to continue with the next tranche of the share buyback programme following the completion of the tranche announced on January 30, 2020. On April 14, 2020, the seventh tranche of the share buyback programme was completed, and no further tranches were undertaken in 2020.

As at December 31, 2020, 496 million A shares with a nominal value of €34.7 million (\$41.8 million) and 39 million B shares with a nominal value of €2.8 million (\$3.2 million) (6.85% of the Company's total issued share capital at December 31, 2020) had been cumulatively purchased and cancelled since the beginning of this programme, for a total cost of \$15.8 billion including expenses, at an average price of \$29.45 per share.

This was in accordance with the authorities granted by shareholders at the 2018 Annual General Meeting (AGM) for the Company to repurchase up to a maximum of 10% of its issued ordinary shares, excluding treasury shares (834 million ordinary shares), and at the 2019 AGM, to repurchase up to a maximum of 815 million ordinary shares, such authority to expire at the earlier of the close of business on August 21, 2020 and the end of the 2020 AGM. At the 2020 AGM, shareholders granted a renewal of this authority, to repurchase up to a maximum of 783 million ordinary shares, such authority to expire at the earlier of the close of business on August 19, 2021 and the end of the 2021 AGM. As at December 31, 2020, 783 million ordinary shares could still be repurchased under the current AGM authority. The purpose of the share repurchases in 2018 to 2020 was to reduce the issued share capital of the Company.

A new resolution will be proposed at the 2021 AGM to renew the authority for the Company to purchase its own share capital, up to specified limits, for a further year. This proposal will be described in more detail in the 2021 Notice of Annual General Meeting.

Shares are also purchased by the employee share ownership trusts and trust-like entities (see the "Other regulatory and statutory information" on page 185) to meet delivery commitments under employee share plans. All share purchases are made in open-market transactions.

The table below provides information on purchases of shares in 2020 by the Company and affiliated purchasers. Purchases in euros and sterling are converted into dollars using the exchange rate on each transaction date.

LIQUIDITY AND CAPITAL RESOURCES continued

Purchases of equity securities by issuer and affiliated purchasers in 2020 [A]

Purchase period	A shares			B shares			A ADSs [B]	
	Number purchased for employee share plans	Number purchased for cancellation [C]	Weighted average price (\$)[D]	Number purchased for employee share plans	Number purchased for cancellation [C]	Weighted average price (\$)[D]	Number purchased for employee share plans	Weighted average price (\$)[D]
January [E]	—	23,106,521	29.63	—	—	—	1,003,452	59.76
February	—	11,306,918	25.32	—	5,518,503	24.45	—	—
March	—	12,229,299	18.48	—	9,904,356	14.88	133,692	31.25
April	813,021	3,905,280	18.19	1,874,926	7,800,412	17.31	—	—
May	—	—	—	—	—	—	—	—
June	—	—	—	—	—	—	20,109	35.09
July	—	—	—	—	—	—	—	—
August	—	—	—	—	—	—	—	—
September	—	—	—	—	—	—	26,570	26.74
October	—	—	—	—	—	—	—	—
November	3,244,447	—	15.68	113,348	—	13.9	1,509,662	31.36
December	2,783,283	—	18.52	—	—	—	934,246	36.87
Total 2020	6,840,751	50,548,018	24.14	1,988,274	23,223,271	17.9	3,627,731	40.62
January	—	—	—	—	—	—	1,525,265	37.23
Total 2021	—	—	—	—	—	—	1,525,265	37.23

[A] Reported as at settlement date

[B] American Depositary Shares

[C] Under the share buyback programme

[D] Includes stamp duty and brokers' commission

[E] January 2020 number of A shares purchased for cancellation has been revised

CONTRACTUAL OBLIGATIONS

The table below summarises our principal contractual obligations at December 31, 2020, by expected settlement period. The amounts presented have not been offset by any committed third-party revenue in relation to these obligations.

Contractual obligations

	\$ billion				
	Less than 1 year	Between 1 and 3 years	Between 3 and 5 years	5 years and later	Total
Debt [A]	12.8	10.3	12.9	42.3	78.3
Leases	6.1	9.6	7.1	20.0	42.8
Purchase obligations [B]	21.4	24.9	18.1	47.8	112.2
Other long-term contractual liabilities [C]	0.1	0.7	0.6	1.2	2.6
Total	40.4	45.5	38.7	111.3	235.9

[A] See Note 14 to the "Consolidated Financial Statements" on pages 241-243. Debt contractual obligations exclude interest, which is estimated to be \$1.8 billion payable in less than one year, \$3.3 billion between one and three years, \$2.9 billion between three and five years, and \$16.0 billion in five years and later. For this purpose, we assume that interest rates with respect to variable interest rate debt remain constant at the rates in effect at December 31, 2020, and that there is no change in the aggregate principal amount of debt other than repayment at scheduled maturity as reflected in the table. Leases definition follows IFRS 16, which was implemented as of January 1, 2019. Lease contractual obligations include interest.

[B] Purchase obligations disclosed in the above table exclude commodity purchase obligations that are not fixed or determinable and are principally intended to be resold in a short period of time through sale agreements with third parties. Examples include long-term non-cancellable LNG and natural gas purchase commitments and commitments to purchase refined products or crude oil at market prices. Inclusion of such commitments would not be meaningful in measuring liquidity and cash flow, as the cash outflows generated by these purchases will generally be offset in the same periods by cash received from the related sales transactions.

[C] Includes all obligations included in "Trade and other payables" and provisions related to onerous contracts included in "Decommissioning and other provisions" in "Non-current liabilities" in the "Consolidated Balance Sheet" that are contractually fixed as to timing and amount. In addition to these amounts, Shell has certain obligations that are not contractually fixed as to timing and amount, including contributions to defined benefit pension plans (see Note 17 to the "Consolidated Financial Statements" on pages 246-249) and obligations associated with decommissioning and restoration (see Note 18 to the "Consolidated Financial Statements" on page 250).

GUARANTEES AND OTHER OFF-BALANCE SHEET ARRANGEMENTS

There were no guarantees and other off-balance sheet arrangements at December 31, 2020, or December 31, 2019, that were reasonably likely to have a material effect on Shell.

FINANCIAL INFORMATION RELATING TO THE ROYAL DUTCH SHELL DIVIDEND ACCESS TRUST

The results of operations and financial position of the Royal Dutch Shell Dividend Access Trust (the Trust) are included in the consolidated results of operations and financial position of Shell. Certain condensed financial information in respect of the Trust is given below. See "Royal Dutch Shell Dividend Access Trust Financial Statements" on pages 294-297.

The Shell Transport and Trading Company Limited and BG Group Limited have each issued a dividend access share to Computershare Trustees (Jersey) Limited (the Trustee). For the years 2020, 2019 and 2018, the Trust recorded income before tax of £2,777 million, £5,484 million and £5,328 million respectively. In each period, this reflected the amount of dividends received on the dividend access shares.

At December 31, 2020, the Trust had total equity of £nil (December 31, 2019: £nil; December 31, 2018: £nil), reflecting assets of £7 million (December 31, 2019: £3 million; December 31, 2018: £3 million) and unclaimed dividends of £7 million (December 31, 2019: £3 million; December 31, 2018: £3 million). The Trust only records a liability for an unclaimed dividend, to the extent that dividend cheque payments have not been presented within 12 months, have expired or have been returned unpresented.

ENVIRONMENT AND SOCIETY

OUR APPROACH TO SUSTAINABILITY

Our core values of honesty, integrity and respect for people – first laid out in the Shell General Business Principles more than 40 years ago – underpin our approach to sustainability.

A commitment to contribute to sustainable development was added in 1997. These principles, together with our Code of Conduct, apply to the way we do business and to our conduct with the communities where we operate.

Since 1997, we have worked to embed this sustainability commitment into our strategy, our business processes and decision-making. Sustainability is core to our project planning and operational activities. We aim to provide more and cleaner energy solutions in a responsible manner – in a way that balances short- and long-term interests, and that integrates economic, environmental, and social considerations into decision-making.

Today, we continue to build on these foundations while driving change across the organisation to help society meet its most pressing challenges, including those related to climate change, the environment, diversity and inclusion, and human rights. We seek the views of various groups and individuals about the role of an organisation like Shell in addressing these challenges.

Sustainability reporting boundary and guidelines

Data in this section are reported on a 100% basis in respect of activities where a Shell company is the operator (unless noted otherwise). Reporting on this operational control basis differs from that applied for financial reporting purposes in the “Consolidated Financial Statements” on pages 216-264. Detailed data and information on our 2020 environmental and social performance are expected to be published in the Shell Sustainability Report in April 2021.

We use certain guidelines to inform our reporting on sustainability issues:

- As a member of the World Business Council for Sustainable Development, we support the organisation’s updated criteria for membership from 2022, which includes requirements for corporate transparency.
- We report in line with guidelines developed by IPIECA, the global oil and gas industry association for advancing environmental and social performance.
- The recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) help to guide and inform our reporting. For more information, see the “Climate change and energy transition” section.
- In January 2021, we agreed to adopt the Stakeholder Capitalism Metrics, a set of environmental, social and governance metrics released by the World Economic Forum and its International Business Council.

OUR STRATEGY: POWERING PROGRESS

In February 2021, we announced our updated business strategy, called Powering Progress. It has four main goals in support of our purpose – to power progress together by providing more and cleaner energy solutions:

- generating shareholder value: growing value through a dynamic portfolio and disciplined capital allocation;
- achieving net-zero emissions: working with our customers and across sectors to accelerate the transition to net-zero emissions;
- powering lives: powering lives through our products and activities, and by supporting an inclusive society; and
- respecting nature: protecting the environment, reducing waste and making a positive contribution to biodiversity.

Powering Progress is underpinned by our core values and our focus on safety. These include our commitment to doing business in an ethical and transparent way.

For more information on what we mean by becoming a net-zero emissions business, please refer to “Climate change and energy transition” on pages 94-107.

IMPACT OF THE COVID-19 PANDEMIC – HELPING COLLEAGUES, CUSTOMERS AND COMMUNITIES

The COVID-19 pandemic continues to have a serious impact on people’s health and livelihoods around the world. During 2020, we worked hard to assist in the global fight against the virus, and to support recovery efforts while taking care of our employees, our customers and the communities we work with.

In January 2020, Shell set up our Global Health Alert Monitoring Team to equip Shell staff and companies with information and guidance to remain operational in a responsible way. Certain elements of this approach were adopted as the industry standard by the joint health committee of two acknowledged industry associations: the International Association of Oil & Gas Producers (IOGP), and IPIECA, the global oil and gas industry association for advancing environmental and social performance.

More information on the steps we took to protect our staff is expected to be published in the Shell Sustainability Report in April 2021.

UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

The UN’s 17 Sustainable Development Goals (SDGs) seek to address the world’s biggest challenges, including ending poverty, improving health and education, making cities sustainable and tackling climate change.

Governments are responsible for prioritising and implementing approaches that meet the SDGs, but achieving these tasks will require unprecedented collaboration and collective action across businesses, governments and civil society.

We will play our part in helping governments and societies to achieve the SDGs. The goals were one of the considerations in the development of our Powering Progress strategy. Actions we take as part of our Powering Progress strategy can help directly contribute to 13 of the SDGs, while indirectly contributing to others. See our website [shell.com](https://www.shell.com) for information on how Shell and our Powering Progress strategy are contributing to the SDGs.

BOARD OVERSIGHT FOR SUSTAINABILITY

We describe Shell’s overall governance framework on pages 128-129.

It provides information on the roles of the Board, its committees, and the Executive Committee. The Safety, Environment and Sustainability Committee (SESCO) advises the Board on safety, environment including climate change, and Shell’s overall sustainability performance. More information on the SESO’s role and activities during 2020 is provided on page 143-144.

The Annual Report on Remuneration (see page 170) provides details of how the Shell scorecard captures key performance indicators for safety, environment and climate.

SHELL GENERAL BUSINESS PRINCIPLES

The Shell General Business Principles set out our responsibilities to shareholders, customers, employees, business partners and society. They set the standards for how we conduct business with integrity, care and respect for people, while seeking to protect the environment and establish mutually beneficial relationships with communities. All ventures that a Shell company operates must conduct their activities in line with our business principles.

HSSE & SP Control Framework

The HSSE & SP Control Framework defines mandatory standards, requirements and accountabilities. The framework applies to Shell entities and Shell-operated ventures, including employees and contractor staff.

Mandatory manuals describe:

- Purpose of the manual
- Accountabilities and responsibilities
- Scope
- Requirements to be met



HSSE & SP Management System



Health



Personal Safety



Process Safety



Environment



Social Performance



Security



Product Stewardship



Transport



Contractor HSSE Management



Projects



Resources



Shell Commitment and Policy on Health, Security, Safety, the Environment and Social Performance

HSSE & SP CONTROL FRAMEWORK

We aim to minimise the environmental impact of new projects and existing operations, and we engage with local communities and non-governmental organisations (NGOs) to understand and respond to their concerns. Shell conducts an environmental, social and health impact assessment for every major project. We determine whether a project qualifies as major by considering its cost and capacity, including the potential consequences of adverse incidents. This helps us to understand and manage how our projects could affect the surrounding environment and local communities. We have standards and a governance structure to help manage potential impacts. We are committed to the safety of our people and contractors. The Shell HSSE & SP Control Framework (CF) specifies the standards for health, safety, security, environment and social performance (HSSE & SP) and the scope for applying these standards. The CF consists of a series of mandatory manuals that align with the Shell Commitment and Policy on HSSE & SP and the Shell Code of Conduct. They are supported by guidance documents and complemented by assurance protocols.

The CF applies to every Shell entity and Shell-operated venture, including all employees and contract staff. The CF defines standards and accountabilities at each organisational level and sets out the procedures and processes that we require people to follow. We require that all significant HSSE & SP risks associated with our business activities are assessed and managed to make them as low as reasonably practicable. Our HSSE & SP functions provide expert advice and support for our businesses.

The Process Safety and HSSE & SP Assurance team provides assurance to the Board on the effectiveness of the HSSE & SP CF through an audit programme. The full Shell portfolio comprises about 200 organisational

groups covered by this programme. Audits are performed with a frequency of between three and five years, depending on the overall risk and complexity of a particular facility or organisational group. Overall, this results in a rolling five-year plan, with every annual plan being approved by the Board. On average, the assurance team conducts about 50 audits per year. The scope of the audits is designed to test risk areas as defined in the CF. This includes the overall HSSE & SP management system and specific requirements for areas such as personal safety, environment and contractor management. Based on audit outcomes, the audit frequency for an entity may be increased. Audit findings and action items identified are documented and tracked to completion by the relevant business.

We expect joint ventures not operated by Shell to apply standards and principles substantially equivalent to our own. We support these joint ventures in their implementation of these standards and principles, and we offer to assist them in their review of the effectiveness of their implementation. Even if such a review is not conducted, we periodically evaluate HSSE & SP risks faced by the ventures that we do not operate. If one of these joint ventures does not meet our HSSE & SP expectations, we seek to improve performance by working with our partners to develop and implement remedial action plans.

Shell aims to work with suppliers that behave in a safe, economically, environmentally and socially responsible manner. Our approach to suppliers is set out in our Shell General Business Principles and Shell Supplier Principles. These cover expectations in areas such as business integrity, health and safety, environment, and human rights.

SAFETY

A focus on safety is one of the pillars that supports our Powering Progress strategy. We build and operate our facilities with the aim of preventing incidents that may damage or harm our employees, contract staff, nearby communities, the environment or our assets. We strive to help improve safety throughout the energy industry by sharing our safety standards and experience with other operators, contractors and professional organisations, including the International Association of Oil & Gas Producers (IOGP) and the Energy Institute.

Safety risks are managed across our businesses through the use of standards, controls and compliance systems. We combine this with a culture of care and an ambition to learn and continually improve. We strive to reduce risks and to minimise the potential impact of any incident.

Our standards also apply to any joint ventures we operate. We seek to improve safety by focusing on the three areas where the safety risks associated with our activities are highest: personal, process and transport. We require and assure ourselves that people responsible for tasks involving a significant safety hazard have the necessary training, skills and competencies. We also take human performance into account when deciding how to approach safety. This means that in order to minimise the risk of people being harmed, we seek to optimise the way people, culture, equipment, work systems and processes interact.

We employ many contractors and we work with them so that they understand our safety requirements. Together we seek to improve safety performance by building skills and expertise, and by creating an inclusive and safe work environment. We expect everyone working for us to comply with our mandatory Life-Saving Rules which set out simple "do's and don'ts" for activities with the highest potential safety risks. Employees are expected to discuss, coach and intervene so that everyone understands how the rules apply to a particular work task. If employees break these rules, we seek to understand why, but individuals may face disciplinary action up to and including termination of employment if they do not follow the Life-Saving Rules. If contract staff break the Life-Saving Rules, they can be removed from the worksite.

The COVID-19 pandemic necessitated new kinds of risk assessments beyond those that are normally conducted in our industry. The results led to us adopting extra measures to take care of our employees, our contractors, our customers and the communities we work with. We identified potential impacts beyond our local operations, and we continue to work hard to help the global fight against the virus and to support recovery efforts.

We took many practical steps to protect the health of our staff, including requiring or encouraging office-based staff to work from home, based on the advice of local authorities. From March 2020, the average occupancy rate of our 18 largest offices fell to around 10% for the rest of the year. Our information technology (IT) teams ensured that thousands of people could work from home each day. At the same time, measures were taken to protect colleagues' health where operations had to be maintained by staff on sites. We created a wide range of tools and resources which also addressed potential mental, physical and social health issues. For example, we set up a programme called Care for Self to encourage staff to pay attention to their physical and mental well-being, and to support them as they did so.

Safety strategy

In 2019, the Board and the Executive Committee spent considerable time reflecting on the worrying safety performance, measured by the number of fatalities, and what needed to change across Shell to prevent fatalities and all other serious incidents. This included conducting a full review of Shell's safety approach, which covered the effectiveness of current preventative tools, such as the Life-Saving Rules and Goal Zero ambition.

We have made progress in improving the safety of operations since the early 2000s. This was largely because of a stronger safety culture, guided by our Goal Zero ambition to achieve no harm and no leaks, more effective standards, and requirements such as the Life-Saving Rules. In recent years the vast majority of fatalities had no link to a breach of the Life-Saving Rules. Sadly, we have been unable to eliminate all fatal incidents involving Shell employees and contractors.

In 2020, we started what is expected to be a multi-year effort to refresh our approach to safety. The purpose is to avoid life-changing injuries and fatalities by building on existing strong foundations. We aim to achieve this with an increased and deliberate focus on human performance. We recognise that people are key to executing complex tasks and to finding solutions to problems. We call the belief that we can always improve, enhance individual capabilities, learn from mistakes and successes, and speak up without being punished a learner mindset. We seek to create conditions that encourage employees and contractors to share ideas and concerns without fear of rejection or punishment. In addition to specific training, events like our annual Safety Day 2020 provided Shell teams and contractors with the chance to reflect on this concept.

We are now building on our current approach to safety with a more consistent focus on the way people, culture, equipment, work systems and processes all interact. The majority of our fatalities over the last five years were down to the complex interaction between these elements. We aim to better understand the gap between how we anticipate work will be done safely and how the work is actually carried out. We continue to work to prevent incidents by maintaining safety barriers and providing training. We acknowledge that people make mistakes and not all incidents may be preventable. As a result, we started to focus more on how people can "fail safely", and on their response in the moment to avoid the risk of a serious injury. This approach is a change of philosophy, put into practice by improving processes for planning and completing work, and debriefing afterwards. In 2020, tangible changes were piloted and deployed for application by employees and contractors. For example, in 2020, we used earlier experience with drones, remote sensing technology, robots and digital technology, such as augmented reality, as lockdowns caused by the COVID-19 pandemic disrupted the movement of people. This technology enabled us to carry out more remote monitoring and to continue to assure data to meet safety and environmental performance reporting standards.

Personal and process safety

We continue to strengthen the safety culture and leadership among our employees and contract staff. This aligns with our focus on caring for people. Our safety goal is to achieve no harm and no leaks across all Shell company operations. We call this our Goal Zero ambition.

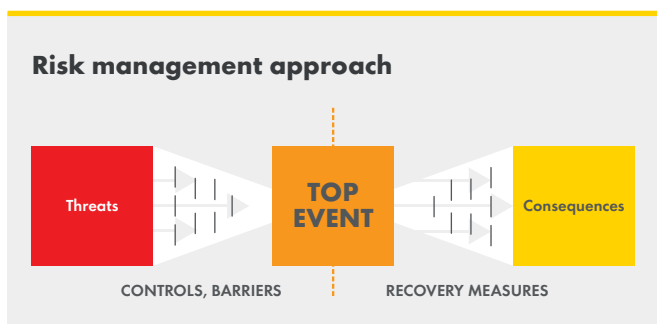
We expect everyone to consider two aspects of their tasks: the hazards that could potentially cause serious harm, and the effectiveness of the barriers in place to avoid serious harm if an incident occurs. In addition to our ongoing safety awareness programmes, we hold an annual global Safety Day to give employees and contractors time to reflect on how to prevent incidents. During Safety Day 2020, we asked all our staff and contractors to reflect on the importance of showing care for each other and ensuring that we are in control of risks with robust barriers in place, particularly under the current challenges of the pandemic. More information on how we implement these measures is expected to be published in our Shell Sustainability Report in April 2021.

Process safety management is about keeping hazardous substances inside pipes, tanks and vessels, and ensuring that well fluids are contained during well construction and well intervention so that they do not harm people or the environment. It starts at the design and construction stage of projects and continues throughout the life cycle of facilities to ensure they are safely operated, well maintained and regularly inspected. Our global

ENVIRONMENT AND SOCIETY continued

standards and operating procedures define our expectations for the controls and physical barriers required to mitigate risks of incidents. For example, to mitigate the risk of an uncontrolled release of hydrocarbons, offshore wells are to be designed with at least two independent barriers in the direction of flow. We regularly inspect, test and maintain these barriers to ensure they meet our standards. In the event of a loss of containment such as a spill or a leak, our standards require the use of independent recovery measures to stop the release from becoming catastrophic. This system of barriers and recovery measures is called a “bow-tie”, a model that visually represents a system where personal and process safety hazards are managed through prevention and response barriers.

We have embedded a set of process safety fundamentals to strengthen barriers that involve critical safety tasks carried out by frontline staff. These fundamentals provide guidelines for good operating practice that should prevent unplanned releases.



We routinely prepare and practise our emergency response to potential incidents such as a spill or a fire. This involves working closely with local services and regulatory agencies to jointly test our plans and procedures. These tests continually improve our readiness to respond. If an incident does occur, we have procedures to reduce the impact on people and the environment.

Transport safety

Transporting large numbers of people, products and equipment by road, rail, sea and air poses safety risks. We seek to reduce these risks by developing best-practice standards within Shell. We also work with specialist contractors, industry bodies, NGOs and governments to find ways of reducing transport safety risks.

Shell employees and contractors drove a combined distance of around 470 million kilometres on business in 2020 in over 50 countries. We run road safety programmes that promote safe driving techniques and behaviour in a number of countries where we operate, for example in India, Malaysia, and the UK. We require everyone driving more than 7,500 kilometres a year on Shell company business on public roads and those who drive in countries with higher road safety risks to take a defensive driving course. We also run an annual online defensive driving course for all who drive on public roads while on Shell company business. Fatigue is one of the most significant risks when on the road. In 2020, at the Shell-operated QGC facility in Queensland, Australia, we worked with four universities and eight contracting companies to evaluate fatigue detection devices and to find the one that performed best in testing. The collaboration was the largest of its kind and involved evaluating around 100 devices on long stretches of Australia's road network. As a result, we aim to start introducing recommended devices in Malaysia in 2021.

We also work to improve general road safety in several communities and countries where we operate, through organisations such as the Global Road Safety Partnership. For example, in India, we continue our road safety campaign which includes eye testing of third-party professional drivers. In 2020, around 20,000 Shell employees and contractors completed such testing.

Safety performance

In 2020, despite the unprecedented challenges faced, Shell and its contractor partners had the safest year that we have ever experienced. It was the first year with zero fatal injuries, and also the best ever process safety performance at ventures operated by Shell. Tragically, two contractors died after they caught COVID-19 during the course of their work for Shell.

Our Total Recordable Case Frequency (injuries per million working hours) was 0.7 in 2020, compared with 0.9 in 2019. There were 103 operational Tier 1 and 2 process safety events in 2020, compared with 130 in 2019. Detailed information on our 2020 safety performance is expected to be published in the Shell Sustainability Report in April 2021.

From 2021, the Total Recordable Case Frequency (TRCF) will be replaced on the Group scorecard by Serious Incidents and Fatalities Frequency (SIF-F). The new metric reflects the number of serious incidents and fatalities per 100 million working hours. The Executive Committee and the Safety, Environment and Sustainability Committee (SESCO) have endorsed the change. Several industry safety leadership groups confirm that root causes for serious and high-potential incidents are often different from the majority of lower-consequence events. Shell's shift is intended to help focus attention on improving its safety systems, and it targets the prevention of life-altering injuries, which aligns with the emphasis on human performance and Goal Zero. We will continue to report on TRCF for benchmarking purposes.

We require incidents to be investigated so we can understand the underlying causes, including technical, behavioural, organisational and human factors. We share learnings and implement mitigations at the site and in the country and business where the incident occurred. We seek to turn incident findings into improved standards or better ways of working that can be applied widely across similar Shell facilities. This is part of embedding the learner mindset approach across the organisation and engaging with contractors to share these learnings.

For example, in 2020, we continued to implement learnings from a tragic roll-over incident that occurred in Pakistan in 2017 and which was not under our operational control. Pakistan continues to be among the countries with the highest risks for road transport. The investigation offered several learnings. Our focus has now moved from technical standards to driver professionalism, including aspects such as fitness to work, training and coaching on the job. One of the most significant risks when on the road is fatigue. Shell Pakistan Limited is managing this through the creation of enhanced awareness for this topic, reduced duty hours and better rest facilities.

In 2021, Shell will take a further step to focus our efforts to enhance safety. We will transition from applying our 12 Life-Saving Rules to using the simplified set of nine Life-Saving Rules of the International Association of Oil & Gas Producers (IOGP). A common approach across the industry makes working within the supply chain easier and can accelerate the adoption of safety measures.

ENVIRONMENT

For many years we have had guiding principles and standards that seek to protect the environment. Now we are stepping up our environmental ambitions and shaping them to contribute to the UN Sustainable Development Goals.

Our environmental ambitions include protecting and enhancing biodiversity – the plant and animal life that is vital for the planet. We are also focusing on using water and other resources more efficiently across all our activities, reusing as much of them as we can.

We are reducing waste from our operations and increasing recycling of plastics. We are helping to improve air quality by reducing emissions from our operations and providing cleaner ways to power transport and industry. Working with our partners and suppliers and developing new collaborations is key. We will join with others across industry, governments, our customers and supply chains to protect nature.

In February 2021, we launched our new environmental framework which focuses on four priority areas: biodiversity, water, circular economy and waste, and air quality. We have set environmental ambitions for 2030 and later, as well as shorter-term goals:

- We will reduce the amount of fresh water consumed in our facilities, starting by reducing fresh-water consumption by 15% by 2025 compared with 2018 levels in areas where there is high pressure on fresh-water resources.
- By 2030, we will increase the amount of recycled plastic in our packaging to 30% and ensure that the packaging we use for our products is reusable or recyclable.
- We are aiming for zero waste by increasing reuse and recycling in our business and supply chains.
- We will demonstrate an overall positive impact on biodiversity from our new projects in areas rich in biodiversity, called critical habitats. This will include investing in conservation and taking steps to safeguard and, where possible, enhance local environments.

We will continue to look for opportunities to go further and will report our progress in a transparent way. We use external standards and guidelines, such as those developed by the World Bank and the International Finance Corporation, to inform our approach. We follow global environmental standards for managing our emissions and discharges, for conserving biodiversity, and for minimising our water use and impact on water resources.

Shell's global environmental standards cover our environmental performance. They include details of how to manage emissions of greenhouse gases (GHG), consume energy more efficiently, reduce gas flaring, prevent spills and leaks of hazardous materials, use less fresh water and conserve biodiversity. We seek to apply our global environmental standards wherever we operate. When planning new major projects, we conduct detailed environmental, social and health impact assessments.

See also "Control Framework" on page 86, more information on how we manage our GHG emission in "Climate change and energy transition" on page 106, and read about our new environmental framework on our website [shell.com](https://www.shell.com).

We believe some areas are too sensitive to enter. Therefore, we made the commitment that we will not explore for or develop oil and gas resources in natural and/or cultural World Heritage Sites.

We aim to minimise the impact of our projects on biodiversity and ecosystems by applying the mitigation hierarchy, a decision-making framework that involves a sequence of four key actions: avoid, minimise, restore and offset. We first aim to avoid impacts on biodiversity and ecosystems. Where our operations have affected biodiversity and communities that rely on biodiversity for their livelihoods, we seek to help restore damaged habitats. We also look for opportunities to make a positive contribution to conservation, also known as a net-positive impact (NPI). For example, to offset and compensate for clearing vegetation and habitat while developing gas resources, the Shell-operated QGC gas project in Australia manages the Valkyrie property, an area with a rich ecosystem. We monitor and measure the impact and seek ways to improve the mitigation strategy.

Managing our impacts on water and ensuring the availability of fresh water is a growing challenge in some parts of the world. Increasing demand for water resources, growing stakeholder expectations and concerns, and water-related legislation may reduce the access to water for our operations. We manage water use carefully, and tailor our use of fresh water to local conditions and requirements. We sometimes use alternatives to fresh water in our operations. These include water that has been recycled from our operations, processed sewage water and desalinated water. For example, the QGC project in Australia produces liquefied natural gas (LNG) from natural gas in a water-scarce region of the Surat Basin in Queensland. Water is produced as a natural by-product during the extraction of gas. Two water plants treat the produced water so that it is suitable for use by local farmers, industry and town water suppliers. We require that all Shell company facilities and projects are assessed to see what risks they might pose to water availability. In places where water is scarce, we develop water-management action plans for using less fresh water, increasing water recycling and closely monitoring water use.

In 2020, our intake of fresh water was 171 million cubic metres, compared with 192 million cubic metres in 2019. The reduction was partly because of divestments in Canada and the USA. Around 90% of our fresh water intake was used for manufacturing oil products and chemicals, with the rest mainly used for oil and gas production. Around 35% of fresh water intake was from public utilities, such as municipal water supplies, with the rest taken from surface water such as rivers and lakes (around 55%) and groundwater (around 10%).

Detailed information on our 2020 environmental performance is expected to be published in the Shell Sustainability Report in April 2021.

See "Climate change and energy transition" on page 106 for more information on how we manage our GHG emissions.

SPILLS

Large spills of crude oil, oil products and chemicals associated with our operations can harm the environment, and result in major clean-up costs, fines and other damages. They can also affect our licence to operate and harm our reputation.

We have requirements and procedures designed to prevent spills. We design, operate and maintain our facilities with the intention of avoiding spills. To further reduce the risk of spills, Shell has routine programmes to reduce failures and maintain the reliability of facilities and pipelines. Our business units are responsible for organising and executing spill responses in line with Shell guidelines and relevant legal and regulatory requirements. Our offshore installations have spill response plans for when an incident occurs. These plans set out response strategies and techniques, available equipment, and trained personnel and contracts. We can engage specialist contracted services for oil-spill response, including vessels, aircraft or other equipment and resources, if required, for large spills. We conduct regular exercises that seek to ensure these plans remain effective and fit for purpose.

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We have further developed our ability to respond to spills to water, and we maintain a global response support network of trained staff to support our worldwide response capability. This is also supported by our global oil spill expertise centre, which tests local capability and maintains our ability globally to respond to a significant spill into a marine environment.

We are involved in several industry consortia formed to improve well-containment capabilities. Shell Offshore Response Company LLC is a founding member of the Marine Well Containment Company, a non-profit industry consortium providing a well-containment response system for the Gulf of Mexico. Shell Response Limited was a founding member of the Subsea Well Response Project, an industry cooperative effort to enhance global well-containment capabilities, which has since become Oil Spill Response Limited, an industry consortium.

Site-specific emergency response plans are maintained in case there is an onshore spill. Like the offshore response plans, these are designed to meet Shell guidelines and relevant local legal and regulatory requirements. The onshore response plans also provide for the initial assessment of incidents and the mobilisation of resources to manage them. In the event of spills on land, businesses are supported by our global Soil & Groundwater team which reviews and implements appropriate remedies. The global Soil & Groundwater Team is engaged throughout the life cycle of our assets. For example, during acquisition and divestment of assets, the team conducts due diligence to identify land contamination liabilities. Through research and development initiatives, the team collaborates with regulators in developing, modifying, and applying sustainable remediation techniques.

Spills still occur for reasons such as operational failure, accidents or unusual corrosion. In 2020, there were 68 operational spills of more than 100 kilograms compared with 67 in 2019. The weight of operational spills of oil and oil products in 2020 was 0.4 thousand tonnes, compared with 0.2 thousand tonnes in 2019. At the time of publication of this Report, there were four spills under investigation in Nigeria that may result in adjustments.

Spills in Nigeria

In the Niger Delta, over the last 10 years, the total number of operational hydrocarbon spills and the volume of oil spilled from them into the environment have been significantly reduced.

Most oil spills in Nigeria's Niger Delta region continue to be caused by crude oil theft or sabotage of oil and gas production facilities, and by illegal oil refining, including the distribution of illegally refined products.

In 2020, the Shell Petroleum Development Company of Nigeria Limited (SPDC) managed to reduce the number of operational spills of more than 100 kilograms to around 0.02 thousand tonnes of crude oil (10 incidents) compared with around 0.03 thousand tonnes of crude oil (seven incidents) in 2019. This was a year-on-year reduction in operational spills of one-third by weight.

To reduce the number of operational spills, SPDC has an ongoing work programme to appraise, maintain and replace key sections of pipelines and flow lines. Over the last nine years, about 1,330 kilometres of pipelines and flow lines have been replaced. This is organised through a pipeline and flow line integrity management system that proactively addresses pipeline integrity. It puts barriers in place where necessary, and recommends when and where pipeline sections should be replaced to prevent failures. In 2018, this integrity management system was enhanced to manage threats arising from frequent pipeline sabotage or vandalism.

Spills caused by sabotage reduced in 2020

In 2020, about 90% oil spills of more than 100 kilograms from the SPDC joint venture's facilities were caused by the illegal activities of third parties. In 2020, the volume of crude oil spills of more than 100 kilograms caused

by sabotage was 1.4 thousand tonnes (122 incidents), compared with 2.3 thousand tonnes (156 incidents) in 2019. The decrease in incidents and volumes was because of improved security and surveillance, including community-based pipeline surveillance.

SPDC continues to undertake initiatives to prevent and reduce spills caused by theft from or sabotage of its facilities in the Niger Delta. In 2020, SPDC continued on-ground surveillance of its areas of operation, including its pipeline network, to mitigate third-party interference and ensure that spills are detected and responded to as quickly as possible.

There are also daily overflights of the most vulnerable segments of the pipeline network to identify any new spills or illegal activity. SPDC has also introduced anti-theft protection mechanisms for key infrastructure such as wellheads and manifolds. The programme to protect wellheads with steel cages continues to help deter theft.

By the end of 2020, 364 cages had been installed, including 73 cages upgraded with CCTV. Only 15 breaches were successful out of 1,706 registered attempts.

Faster response and remediation

Irrespective of the cause, SPDC works to clean up and remediate areas affected by spills originating from its facilities. SPDC reduced the average time to complete recovery of free-phase oil – oil that forms a separate layer and is not mixed with water or soil – from about 13 days in 2016 to about one week in 2020. This is the average time it takes to safely access a damaged site to start joint investigation visits (JIV) with regulators, impacted communities, and in some cases with non-governmental organisations, to clean up oil not mixed with water or soil.

Clean-up activities include bio-remediation which stimulates micro-organisms that naturally break down and use carbon-rich oil as a source of food and energy, effectively removing it. Once clean-up and remediation operations are completed, the work is inspected and, if satisfactory, approved and certified by the Nigerian regulators. With operational spills, SPDC also pays compensation to affected people and communities.

SPDC has been working with the International Union for Conservation of Nature (IUCN) since 2012 to enhance remediation techniques and protect biodiversity at sites affected by oil spills in SPDC's areas of operation in the Niger Delta. Based on this collaboration, SPDC has launched further initiatives to help strengthen its remediation and restoration efforts. In 2020, SPDC, IUCN, the Nigerian Conservation Foundation and Wetlands International worked together on the Niger Delta Biodiversity Technical Advisory Group, which continues to monitor biodiversity recovery at remediated sites.

SPDC also works with a range of stakeholders in the Niger Delta to build greater trust in spill response and clean-up processes. Local communities participate in remediation work for operational spills. Due to the restrictions of COVID-19 there were fewer opportunities to collaborate but the engagement and partnership with communities continued. Various NGOs have sometimes gone on joint investigation visits with SPDC, government regulators and members of affected communities to establish the cause and volume of oil spilled.

SPDC has also implemented several programmes to raise awareness of the negative effects of crude oil theft and illegal oil refining. Examples include community-based pipeline surveillance, and promoting of alternative livelihoods through Shell's flagship youth entrepreneurship programme, Shell LiveWIRE.

Bodo clean-up process

In 2015, SPDC, on behalf of the SPDC joint venture and the Bodo community, signed a memorandum of understanding (MOU) granting SPDC access to begin cleaning up areas affected by two operational spills that occurred in 2008. The MOU also provided for the selection of two international contractors to conduct the clean-up under the oversight of an independent project director. The clean-up project was delayed in 2016 and for most of 2017 because of access challenges from the community. Engagement with the Bodo community and other stakeholders began in September 2015 and was managed by the Bodo Mediation Initiative.

After two years of engagement, in September 2017, it was possible to start the first phase of clean-up and remediation activities. The clean-up consists of three phases:

- 1) removal of oil floating on water surfaces;
- 2) remediation of soil; and
- 3) planting of mangroves and monitoring.

The first phase was completed in August 2018. The contract procurement process for phase two was completed in 2019. Remediation activities in the field started in November 2019. During 2020, work had to be put on hold because of COVID-19 restrictions. Currently, we expect to finalise the activities by about May 2023.

In 2020, the Niger Delta Biodiversity Technical Advisory Group assessed the initial field reports from two pilot sites containing freshwater and swamp forests. The advisory group set out its aims and timeline for work at both sites. Field visits to these remote locations were disrupted by COVID-19 restrictions. The advisory group is also analysing other potential pilot sites identified by SPDC, and planning an engagement session with regulatory agencies in Nigeria.

Ogoniland: commitment to the United Nations Environment Programme

SPDC remains committed to the implementation of the 2011 United Nations Environmental Programme (UNEP) Report on Ogoniland which assessed contamination from oil operations in the region and recommended actions to clean it up. Over the last nine years, SPDC has acted on all and completed most of the UNEP recommendations that were specifically addressed to it as the operator of the joint venture.

The clean-up efforts are led by the Hydrocarbon Pollution and Remediation Project (HYPREP), an agency established by the federal government. In 2018, HYPREP awarded contracts for the first set of remediation projects. In 2019, 21 contractors started operations on 21 lots which add up to 12 of the 67 polluted sites recorded in the UNEP report. Of those 67 sites, two are waste sites without hydrocarbon pollution. In January 2020, HYPREP awarded a further 29 contracts for remediation on 29 lots covering eight polluted sites. The contractors took up remediation activities in the fourth quarter of 2020. Although remediation works continue to make progress, challenges remain. These include re-pollution, lack of contractor funding, land disputes and security issues in Ogoniland.

The UNEP report recommended creating an Ogoni Trust Fund (OTF) with \$1 billion capital, to be co-funded by the Nigerian government, the SPDC joint venture and other operators in the area. The SPDC joint venture remains fully committed to contributing \$900 million to the fund as its share over five years. SPDC JV partners contributed the first instalment of \$180 million for the clean-up by July 2018 and released the second instalment of \$180 million in 2019. HYPREP did not request the release of any funds in 2020. The UNEP continues to monitor the progress of the clean-up exercise via its observer status at both the HYPREP's Governing Council and the Ogoni Trust Fund. Its agencies such as UNDP, UNITAR and UNOPS provide services to HYPREP in the areas of livelihood programmes, training and project services.

HYDRAULIC FRACTURING

Shale oil and gas resources remain a critical part of a modern energy system as we move towards renewable sources. Shale resources are abundant and offer a relatively affordable source of energy. According to US Energy Information Administration (EIA) estimates, there are 7,576.6 trillion cubic feet of unproven technically recoverable wet shale gas resources and 418.9 billion barrels of unproven technically recoverable tight oil resources spread across 46 countries. We believe that developing these resources is critical for meeting the energy needs of growing societies around the world.

The oil and gas industry has used hydraulic fracturing to unlock tight/shale oil and gas resources in vertical wells for decades. In the past 20 years, hydraulic fracturing has also been used in horizontal wells to recover natural gas and oil. The technology has opened up vast resources that were previously thought to be unrecoverable. Hydraulic fracturing has been used by the industry in more than 2.5 million oil and gas wells, many of them in the USA. Hydraulic fracturing involves pumping a fluid that is typically 99.9% water and sand and around 0.1% chemical additives into tight sand or shale rock at high pressure. This creates threadlike fissures – typically the diameter of a human hair – in the rock, making space through which the hydrocarbons can flow more easily.

At Shell, we believe we can explore, develop and produce tight/shale oil and gas resources safely and responsibly. Our operations are underpinned by our Principles for Producing Tight/Shale Oil and Gas (known as Onshore Operating Principles). These provide a framework for protecting the environment and the communities in which we operate. These operating principles cover safety, air quality, water protection and usage, land use and engagement with local communities. We review the Onshore Operating Principles annually and update them as new technologies, challenges and regulatory requirements emerge. We also support appropriate and fit-for-purpose regulations.

We work to reduce greenhouse gas (GHG) emissions associated with our oil and gas development and production. Shell's shale assets implement GHG management plans and have a robust Leak Detection and Repair (LDAR) programme. We are working on multiple fronts to develop cutting-edge technologies that enhance our LDAR programme and enable earlier detection and repair of leaks. As per the Onshore Operating Principles, we seek to minimise routine gas flaring at shale assets. See our website [shell.com](https://www.shell.com) for more information about the GHG management practices, such as the "Onshore Operating Principles in Action: Methane Fact Sheet".

See also "Climate change and energy transition" on page 106.

The availability and quality of water, local environmental conditions and regulatory requirements vary from basin to basin. Therefore, each shale asset develops a tailor-made water management strategy, identifying short- and long-term water needs, options for water sourcing, recycling and sharing, options for treatment and disposal, and options for transportation and storage. The people operating our shale assets aim to minimise the use of water. Depending on local hydro-geologic conditions, they typically use a combination of fresh water, brackish groundwater, produced water and waste water. They actively strive to reduce and ideally eliminate freshwater intake for drilling and hydraulic fracturing operations, by increasing recycling capacity and using municipal water.

Potable groundwater aquifers are isolated from the hydrocarbon-producing shale formations by hundreds of metres of impermeable rock. We often need to drill through potable groundwater aquifers to reach shale formations. We therefore design our drilling, hydraulic fracturing and production activities in ways that aim to maintain isolation from potable groundwater aquifers. Before drilling a well, we conduct a hazard

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assessment in which we analyse risks to groundwater aquifers and develop control measures to reduce those risks. When we drill, we have at least two physical barriers, consisting of steel casing and cement, between the wellbore and potable groundwater aquifers. We continuously monitor wellbore integrity before, during and after hydraulic fracturing and during production activities.

Chemical additives are needed in hydraulic fracturing fluid to carry sand, reduce friction and prevent the growth of bacteria. We have been working to optimise the composition of our hydraulic fracturing fluids since 2015. As a result, we have reduced chemical additive volumes by around 50-60% compared with 2015. Currently, on a volume basis, around 0.1% of our hydraulic-fracturing fluid is chemical additives. We support disclosure of the chemical additives used in hydraulic-fracturing fluids for Shell-operated wells. See our website shell.com for more information about our water management practices, such as the "Onshore Operating Principles in Action: Water Fact Sheet".

SEISMICITY

As oil and gas fields mature, seismic activity may occur, depending on the unique geology of individual fields. An example is the Groningen onshore gas field in the Netherlands, where induced earthquakes have occurred since the 1990s. Some of these earthquakes have damaged houses and other structures in the region, resulting in complaints, claims and lawsuits from local home-owners and residents. Actions have been taken to improve safety, liveability and economic prospects in the region. Nederlandse Aardolie Maatschappij B.V. (NAM, Shell interest 50%) operates the gas field. The Dutch government has taken over policy setting and execution of these mitigating actions and the "duty of care" from NAM. NAM continues to carry the costs. The government is also currently instructing NAM on production levels. Production from the onshore Groningen gas field in the Netherlands is expected to stop by 2022 or shortly thereafter.

📄 See "Upstream" on page 55.

Overall, we believe it is relatively unlikely that hydraulic fracturing or well operations for disposing of produced water will induce seismicity that is felt on the surface. Despite this, Shell still takes precautionary measures around induced seismicity, and proactively manages the risk in accordance with, and sometimes beyond, regulatory requirements. We have added precautionary measures around induced seismicity to our Onshore Operating Principles and developed internal guidelines that we apply to our shale assets. They outline a risk assessment process and provide a framework for risk management. Subsurface and surface conditions vary from basin to basin, which means that management practices need to reflect the risk profile of each basin and provide customised responses to the risks. We support fit-for-purpose, science-based state and provincial regulations. See our website shell.com for more information about our induced seismicity management practices, such as the "Onshore Operating Principles in Action: Induced Seismicity Fact Sheet".

ENVIRONMENTAL COSTS

We are subject to a variety of environmental laws, regulations and reporting requirements in the countries where we operate. Infringing any of these laws, regulations and requirements could harm our reputation and ability to do business, and result in significant costs, including clean-up costs, fines, sanctions and third-party claims.

Ongoing operating expenses include the costs of preventing unauthorised discharges into the air and water, and the safe disposal and handling of waste.

We place a premium on developing effective technologies that are also safe for the environment. But when operating at the forefront of technology, there is always the possibility that a new technology has environmental impacts that were not assessed, foreseen or determined to be harmful when originally implemented. While we believe we take reasonable precautions to limit these risks, we could be subject to additional remedial, environmental and litigation costs as a result of operations' unknown and unforeseen impacts on the environment. Although these costs have so far not been material to us, no assurance can be given that this will always be the case.

SECURITY

Our operations expose us to criminality, civil unrest, activism, terrorism, cyber-disruption and acts of war that could have a material adverse effect on our business (see "Risk factors" on pages 28-37). We seek to obtain the best possible information to enable us to assess threats and risks. This includes building strong and open relationships with government security agencies. Risk mitigation includes strengthening the security of sites, reducing our exposure as appropriate, journey management, information risk management, crisis management and business continuity measures. We conduct training and awareness campaigns for staff, and provide them with travel advice and access to 24/7 assistance while travelling. We consistently verify the identity of our employees and contract staff, and control their access to our sites and activities, both physical and logistical. We manage and exercise crisis response and management plans.

CONTRIBUTION TO SOCIETY

Shell's businesses are part of society and contribute to it by buying and selling goods and services across economies in various countries and jurisdictions. Our employees, suppliers and contractors are part of the local communities where Shell operates.

In 2020, Shell paid \$47.3 billion to governments (2019: \$61.3 billion). We paid \$3.4 billion in corporate income taxes and \$3.5 billion in government royalties, and collected \$40.4 billion in excise duties, sales taxes and similar levies on our fuel and other products on behalf of governments. In 2020, Shell spent \$39.3 billion (2019: \$44.9 billion) on goods and services from more than 29,000 suppliers globally. For more information about our approach to tax and transparency, see Shell's Tax Contribution Report, available via our website shell.com.

Supply chain engagement

Our suppliers are critical to our ability to run our businesses. They are involved in almost every step of our operations – and are often key to having a positive impact on local communities and achieving successful business outcomes. Shell aims to work with suppliers, including contractors, that behave in an economically, environmentally and socially responsible manner, as set out in our Shell General Business Principles and Shell Supplier Principles.

The way we engage with our contractors and suppliers is based on our Shell Supplier Principles which are embedded in contracts. They require contractors and suppliers:

- to commit to protect the environment in compliance with all applicable environmental laws and regulations;
- to use energy and natural resources efficiently; and
- to continually look for ways to minimise waste, emissions and discharge of their operations, products and services.

More information about how we engage with contractors and suppliers is expected to be published in the Shell Sustainability Report in April 2021.

NEIGHBOURING COMMUNITIES

Engaging with communities is part of our approach to managing human rights and providing access to remedy. Our global requirements for social performance aim to ensure that we operate responsibly by avoiding or minimising the negative social effects of our operations. The requirements also help us to maximise the benefits of our activities, such as employment and contractual opportunities that can support local economies.

The requirements set clear rules and expectations for how we engage with and respect communities that may be affected by our operations. We require major projects and facilities operated by Shell to have a social performance plan that defines actions for managing potential negative and positive effects on communities. A key part of these plans is identifying the social environment and stakeholders who may be vulnerable to our operations. Another key component is an appropriate community feedback mechanism for listening to queries and responding to them, or resolving complaints in a timely manner. We have specific requirements to avoid, minimise or mitigate potential impacts on the traditional lifestyles and cultural heritage of indigenous people. We also have specific requirements to avoid, minimise or mitigate their involuntary resettlement.

Early in 2020, we launched a new global community feedback tool (CFT). This enables us to globally track and respond to all queries, complaints and positive and negative feedback that we receive. It allows our network of about 100 community liaison officers (CLO) to document all types of feedback. It is accessible via a mobile app and can be used to send feedback received in the field to those who can act to resolve issues. Asset managers can generate reports to help them analyse trends, detect underlying causes, and decide appropriate action.

The CLOs continue to act as a bridge between local communities and our businesses. The CLOs are in our community centres on workdays, receiving visitors and listening to questions or complaints. Members of the community can also contact CLOs via dedicated telephone lines. It is the job of CLOs to take any concerns back to the Shell facility and involve people who are best placed to take action.

We are using a tool based on the United Nations Guiding Principles' criteria to measure the effectiveness of our mechanisms for managing community feedback on our operations.

In 2019, we had assessed the community feedback mechanisms (CFMs) of 32 sites, and in 2020, we helped 14 of these sites to improve their CFMs. The improvement measures involved included:

- promoting public access to and transparency of the sites' CFMs;
- improving written procedures so they are better aligned with global good practice and more reflective of local circumstances;
- providing clear steps for recognising alternative options for communities to seek remedy; and
- respecting people's anonymity and data privacy.

In 2020, we also developed a guide to help sites make their CFMs effective and address local needs. In 2021, we plan to further improve the quality of sites' CFMs.

📄 See our website [shell.com](https://www.shell.com) for more information about our work with communities.

HUMAN RIGHTS

Human rights are fundamental to Shell's core values of honesty, integrity and respect for people. Respect for human rights is embedded in our Shell General Business Principles and in our Code of Conduct. Our approach is informed by the United Nations Guiding Principles on Business and Human Rights.

We work closely with other companies and non-governmental organisations to improve how we apply these principles. We focus on four priority areas where respect for human rights is critical to how we operate: communities, security, labour rights, and supply chain. For each of these areas, we have systems to identify potential impacts and to avoid and mitigate them. For example, our HSSE & SP Control Framework (CF) contains our mandatory standards and manuals that set out how we identify, assess, and manage our impacts on communities where we operate, including any impact on human rights. We require all our companies and contractors to respect the human rights of our workforce and neighbouring communities. Our joint-venture partners are expected to implement our CF or an equivalent.

An internal Human Rights Working Group consisting of experts from different functions advises on and supports the businesses with the implementation and review of our approach to human rights. The group includes an external adviser. A steering committee composed of senior executives provides steer and support to the work of the Human Rights Working Group.

Our approach to due diligence is informed by the United Nations Guiding Principles on Business and Human Rights. Due diligence in each focus area, including human rights, is typically exercised in countries where there may be a risk of an impact on people's human rights. It is supported by experts working within the applicable functions in Shell. We recognise how due diligence helps us to act on our commitment to respect human rights. For example, in our supply chains, where contractors and suppliers are considered to be at risk of having issues with labour rights, we engage with them to assess their management systems, before deciding whether to award a contract. Results of these supplier assessments are evaluated, and where gaps are found, we may work with suppliers and contractors to help them implement corrective action. We may also conduct on-site audits or consider terminating contracts if serious or persistent shortcomings are found.

The most common shortcomings found during our supplier assessments typically relate to policy rather than performance gaps in the following areas:

- freely chosen employment;
- child labour avoidance;
- working hours, wages and benefits;
- dormitory, housing and working conditions;
- humane treatment, equal opportunities and freedom of association; and
- supply chain and performance management.

The Shell Supplier Principles include specific labour and human rights expectations for contractors and suppliers. Shell companies use a joint industry supplier capability assessment that is delivered in collaboration with other operators. This sharing mechanism is intended to support the improvement of working conditions in the participating companies' supply chains.

📄 See our website [shell.com](https://www.shell.com) for more information about our approach to human rights.

CLIMATE CHANGE AND ENERGY TRANSITION

Shell has long recognised that greenhouse gas (GHG) emissions from the use of hydrocarbon-based energy are contributing to the warming of the climate system. In December 2015, 195 nations adopted the Paris Agreement. We welcomed the efforts made to reach this global climate agreement, which came into force in November 2016. We fully support the Paris Agreement's goal to keep the rise in global average temperature this century to well below two degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. In pursuit of this goal, we also support the vision of a transition towards a net-zero emissions energy system. Shell agrees with the statement of the Intergovernmental Panel on Climate Change (IPCC) special report, Global Warming of 1.5°C that says that in order to limit global warming to 1.5 degrees Celsius above pre-industrial levels, the world economy would need to transform in complex and interconnected ways. Meeting this challenge would require an even more rapid escalation in the scale and pace of change in the coming decades than was foreseen in the Paris Agreement.

Society faces a dual challenge: it must transition to a low-carbon energy future to manage the risks of climate change, while also extending the economic and social benefits of energy to everyone on the planet. This requires, among other things, reducing emissions while also changing how energy is produced, stored, used and made accessible to more people.

Shell recognises that society's attitude towards climate change is shifting rapidly and that it is different in different locations. Regulators in some advanced economies such as the EU and the UK have already started pushing for net-zero emissions by 2050 in an effort to achieve the 1.5 degrees Celsius stretched goal of the Paris Agreement. Potential similar developments in other key locations might lead to similar or more stringent regulatory conditions on Shell's operations and products.

On February 11, 2021, we announced Powering Progress, our new strategy. Powering Progress is our strategy to accelerate progress to net-zero emissions, purposefully and profitably. One of the pillars of this strategy is for Shell to become a net-zero emissions energy business by 2050, in step with society. We believe our net-zero target supports the most ambitious goal of the UN Paris Agreement, to limit warming to 1.5 degrees Celsius above pre-industrial levels. This will require us to transform our business, working with our customers and others, in sectors that are difficult to decarbonise. This includes aviation, shipping, road freight and heavy industries. We also believe that our total oil production peaked in 2019 and our total emissions (Scope 1, 2 and 3) peaked in 2018 at around 1.73 gigatonnes per annum.

Shell's target is to be a net-zero emissions energy business by 2050, in step with society. This means net-zero emissions from our operations – our Scope 1 and 2 emissions – and also net zero from the end use of our products that we sell – our Scope 3 emissions. Our Scope 3 emissions include our customers' emissions from the energy products we produce and sell as well as the life-cycle emissions of the energy products produced by other companies that we resell to our customers. This means that our target covers all the energy we sell, not just the oil and gas we produce and refine ourselves.

But Shell cannot get to net zero without society also being net zero. While we aim to transition slightly ahead of society, where we expect to see higher margins for our low-carbon and renewable energy products, we cannot transition too quickly or we will be trying to sell products that our customers do not want. Accordingly, other than our short-term remuneration targets, all targets are conditional on being in step with society. If society is not on the path to net zero for 2050, it is unlikely that Shell will meet its emissions targets.

We believe it is important for the Board and the management to understand what our shareholders think. Accordingly, in 2021, Shell intends to submit its energy transition strategy to shareholders for an advisory vote at our Annual General Meeting. We will submit our energy transition strategy to such an advisory vote every three years. We will also

seek an advisory vote on the progress we make each year, as disclosed in our Annual Report, starting in 2022.

SHELL'S ABSOLUTE EMISSIONS AND CARBON INTENSITY TARGETS

Our target is to be a net-zero emissions energy business by 2050, in step with society.

Shell's 2050 absolute emissions targets

We aim to achieve these targets in step with society. They are:

- net-zero Scope 1 and Scope 2 emissions from our operations by 2050; and
- net-zero Scope 3 emissions from the energy products we sell by 2050.

Shell's net carbon intensity targets

We aim to achieve these targets in step with society. They are measured by our Net Carbon Footprint (NCF) metric, and are:

- 2030 NCF reduced by 20% from 2016 NCF;
- 2035 NCF reduced by 45% from 2016 NCF; and
- 2050 NCF reduced by 100% from 2016 NCF.

The updated 2035 and 2050 targets reflect that we will start to include all actions taken to reduce emissions when we calculate our net carbon intensity. This includes the actions we take ourselves and actions taken by the users of the energy products we sell.

We will work with our customers to address the emissions created when they use products bought from us (Scope 3) and help them find ways to reduce their emissions and overall carbon footprint to net zero by 2050.

Remuneration targets

We have set specific carbon intensity targets for the following years:

- 2021 NCF reduced by 2-3% from 2016 NCF;
- 2022 NCF reduced by 4-6% from 2016 NCF; and
- 2023 NCF reduced by 6-8% from 2016 NCF.

See below, in this section, for more detail on:

- How we plan to deliver;
- Our climate target;
- Our net carbon intensity targets; and
- Our performance.

See also the Directors' Remuneration Report on page 153-156.

Business milestones

We are taking steps to cut emissions from our existing oil and gas operations, and to avoid generating more in the future.

- We believe our annual oil production peaked in 2019, and we expect our total oil production to decline by 1-2% a year until 2030.
- We do not anticipate any new frontier exploration entries after 2025.
- Natural gas is the least polluting hydrocarbon. We expect the percentage of total gas production in our portfolio to gradually rise to 55% or more by 2030.
- By 2030, we will end routine flaring of gas, which generates carbon emissions, from the assets we operate.
- By 2025, we expect to have kept the methane emissions intensity of Shell-operated assets to below 0.2%.

HOW WE PLAN TO DELIVER

Getting the energy system on a path to net zero will require co-ordinated action between energy providers, energy users and governments. They will need to work together over the coming decades to define rapid, realistic decarbonisation pathways, sector by sector.

We will work with our customers to address the emissions created when they use products bought from us (Scope 3) and help them find ways to reduce their emissions and overall carbon footprint to net zero by 2050.

We are already taking steps to cut emissions from our existing oil and gas operations, and to avoid generating more in the future. We aim to reduce the GHG intensity of our portfolio and we continue to work on improving the energy efficiency of our existing operations. One element of our target is to achieve net-zero emissions from all our operations, as well as from the energy we need to power them.

Shell believes that society must accelerate and increase the scale of all forms of GHG reduction. We are increasing the proportion of lower-carbon products such as natural gas, biofuels, electricity and hydrogen in the mix of products we sell. For example, Amazon Air has secured up to six million gallons of sustainable aviation fuel – made partly from biomass and waste – supplied by Shell Aviation and produced by World Energy. Similarly, we have formed an alliance with Microsoft which includes supply of renewable energy to help them meet their commitment of 100% renewable energy consumption by 2025.

Our shift to energy and chemicals parks means we will reduce our production of traditional fuels by 55% by 2030, from around 100 mtpa to 45 mtpa. We plan to build on Shell's leading position in hydrogen by developing integrated hydrogen hubs to serve industry and heavy-duty transport, aiming to achieve double-digit share of global clean hydrogen sales.

It is not enough for Shell to take action on its own. We can only meet our net-zero target as part of a world that is also heading to net zero. That will require a reduction in the global supply of carbon-based energy, which can only happen if demand for carbon-based energy also reduces. So Shell, as a supplier, must work with customers on a sector-by-sector basis, to develop the right pathways to transition each sector from carbon-based energy to low-carbon solutions.

Shell's marketing business is being restructured on a sectoral basis. This in turn will help us to make progress in working with customers on a sector-by-sector basis.

Our mission is to help the millions of brand-loyal customers whom we serve every day – from individual energy consumers to large businesses – to decarbonise. We have the scale and the competitive advantage to generate profit from this shared ambition.

Our marketing platform is one of the best in the energy industry. Spanning 160 markets, every day we serve more than 30 million customers at our retail sites; and one million businesses.

Our customer access gives us first-hand insights, helping us to deliver what our customers want rather than offering what others think they need.

This will help us to grow our existing marketing platforms profitably, while also increasing the decarbonisation choices across sectors and countries.

Our global ambition is that by 2025 we are operating more than half a million electric-vehicle charging points for businesses, fleets and customers, at our retail sites and people's homes. This number is expected to rise to 2.5 million charging points operated by Shell by 2030. For drivers who are unable to switch to an electric vehicle immediately, we also offer carbon-neutral driving using nature-based carbon offsets, in seven countries including the UK.

We are positioning ourselves to profitably deliver integrated offers by cross-selling to motorists and home energy customers. Our integrated solutions will help our business customers to navigate the challenges and opportunities of decarbonisation.

One such customer is Penske Corporation in the USA. We work closely with this customer across truck leasing, logistics and automotive retail. We provide Penske Corporation with products and services ranging from fuels and lubricants, to electric-vehicle charging and renewable power.

Our approach to commercial road transport is similar to how we work with other hard-to-decarbonise sectors such as shipping and aviation. We are working with transport companies, truck manufacturers and policymakers to identify profitable pathways to decarbonisation.

We are already one of the world's largest blenders and distributors of biofuels, and we will continue to invest in and increase the production of these low-carbon fuels. Over the next decade, we will help customers in Europe, China and on the US West Coast to transition to liquefied natural gas (LNG) and biogas.

Hydrogen also offers a route to lowering emissions. We are part of the H2Accelerate consortium, which looks at ways to create infrastructure for generating and supplying hydrogen across Europe.

In Power, we are working with our customers in different markets, finding commercial ways to meet their specific needs. Our scale, reach, brand strength and trading capability set us up to succeed. An example is our deal to supply Amazon with renewable power, which is helping it to fulfil its climate pledges.

We are also supporting infrastructure development through our investments in Silicon Ranch and Cleantech Solar. Combined, these two companies have over 350 solar farms in the USA and South-east Asia. In Australia and in Oman, Shell is building its first large-scale solar farms.

Shell's infrastructure, systems integration, experience and people put us in a strong position to profitably meet the current and future needs of our customers, helping them and society to decarbonise for a net-zero emissions future.

We are restructuring so that we have marketing teams facing individual sectors. We are also developing a carbon management framework to guide decision-making on investments in assets and businesses that align with our climate target. We intend to have carbon budgets for customer-facing businesses to motivate them to find value growth by switching from high-carbon income to low-carbon income.

Shell believes that the need to reduce GHG emissions will continue to be an important driver in transforming the energy system in this century. This transformation will generate both challenges and opportunities for our existing and future portfolio.

TRANSPARENCY AND COLLABORATION

We support efforts to increase transparency and investors' understanding of companies' strategies for responding to the risks and opportunities of climate change. We do this through engagement with external stakeholders such as industry associations beyond the energy industry, standard setters, non-governmental organisations (NGOs), investors, and initiatives on different topics including climate change. With publications such as our 2020 Sustainability Report and our 2020 Industry Associations Climate Review update (both planned to be published in April 2021) we aim to provide additional information to that in this Report to address requests and recommendations from different reporting frameworks and standards. Some examples of those frameworks and engagements are described below.

- We continue to support the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and apply them to our reporting. We aim to address the recommendations with this Report and other Shell publications such as the 2020 Sustainability Report and 2020 Industry Associations Climate Review update (both due to be published in April 2021), and our latest scenarios Islands, Waves, and Sky 1.5.
- As a member of the Oil and Gas Climate Initiative (OGCI) we are one of a group of 12 national and international energy companies that focus on action that has real impact now and delivers on decarbonisation in the coming decades (see Methane initiatives and collaborations, page 102).

CLIMATE CHANGE AND ENERGY TRANSITION continued

- In December 2020, eight leading energy companies including Shell announced that they had jointly developed and agreed to apply six Energy Transition Principles. These principles aim to support the collective industry acceleration to contribute to the Paris Agreement objectives by delivering progress on reducing GHG emissions, the role of carbon sinks, and the importance of transparency and alignment on climate change with trade associations. The companies are building further on this collaboration to drive more consistency and transparency in greenhouse gas reporting, and in measurement of the emissions which may occur at different points in the value chain.
- We continue to engage with the Science Based Targets initiative (SBTi), and we are a member of its Technical Working Group that is currently working to define the methodology for the oil, gas and integrated energy sector.
- Some governments have introduced carbon pricing mechanisms, which we believe can be an effective way to reduce GHG emissions across the economy at the lowest overall cost to society. We expect more governments to follow. Shell is encouraging carbon pricing mechanisms so that businesses and consumers are further incentivised to improve energy efficiency, provide and switch to lower-carbon options, and reduce carbon emissions. Such mechanisms can also help encourage projects such as CCS facilities and nature-based solutions like the planting of forests. Shell continues to work with governments to produce effective transition plans and policies.

OUR GOVERNANCE OF CLIMATE CHANGE

Climate change and risks resulting from GHG emissions are a significant risk factor for Shell. They are managed in accordance with other significant risks through the Board and the Executive Committee.

See “Other regulatory and statutory information” on pages 182-189.

Shell's climate change risk management structure includes the work of the Board. In 2020, the Board discussed a variety of energy transition and climate change-related subjects. These included environmental topics ahead of Responsible Investment Day and Shell's announcement of its target to be a net-zero emissions energy business by 2050, in step with society. Directors received information on opportunities and priorities in the New Energies area. Throughout the year, Directors were also informed about topics of interest among investors and other stakeholder groups. These included sustainability, governance and the energy transition. During the annual strategy meeting, in virtual format, the Board discussed various topics including the energy transition and its implications.

For more information on the activities of the Board see “Board activities and evaluation” on pages 130-133.

The Board committees play an important role in assisting the Board with regard to governance and oversight of management of climate change risks and opportunities, as described in “Governance” on page 128.

The Safety, Environment and Sustainability Committee (SESCo) assists the Board in reviewing the practices and the performance of the Shell Group of companies, primarily with respect to safety, environment including climate change, and sustainability. When reviewing these areas and deciding how to advise the Board, SESCO takes into account Shell's General Business Principles, Code of Conduct, and HSSE & SP Control Framework. SESCO's duties include reviewing Shell's progress towards meeting our climate targets and the energy transition. SESCO also advises the Remuneration Committee on metrics relating to sustainable development and energy transition.

For more information about SESCO's activities around climate change and energy transition see page 143.

The Remuneration Committee (REMCO) is responsible for determining the Directors' Remuneration Policy, in alignment with our business strategy.

Annual scorecard

Starting in 2021, we are increasing the weight associated with GHG emissions management. The GHG emissions intensity metric and its weight (10%) will remain unaltered, but we will add a new metric that measures the execution of GHG-abatement projects with a weight of 5% (see page 170 for more information).

Performance Share Plan and Long-term Incentive Plan

For 2021 awards made under the Performance Share Plan (PSP), the weighting of the energy transition condition has doubled from 5% to 10%. For 2021, the weighting of the energy transition condition in the Long-term Incentive Plan (LTIP) will also double from 10% to 20%. The target range is a 6-8% reduction in net carbon intensity against the 2016 baseline NCF of 79 grams of carbon dioxide (CO₂) equivalent per megajoule. The other targets linked to our strategic ambitions will also evolve, with the metric connected to commercialising advanced biofuel technology broadening to a measure of growing new cleaner energy product offerings. The targets for the leading energy transition measures are commercially sensitive and will be disclosed retrospectively.

The energy transition condition was included again in the 2020 LTIP awards for Executive Directors and senior executives and was also incorporated into the Performance Share Plan awards made to around 16,500 employees globally.

See “Directors' Remuneration Report” on pages 153-156 for further information. An update on progress on the 2019 and 2020 awards is provided on pages 165.

The Audit Committee has key responsibilities in helping the Board to maintain oversight of areas such as the effectiveness of risk management and internal control. For more information on the work of the Audit Committee see page 145.

The CEO is the most senior individual with accountability for climate change risk. Shell has established specialist forums at different levels of the organisation where climate change and GHG-related matters are addressed, monitored and reviewed. Each Shell entity and each Shell-operated venture is responsible for implementing climate change policies and strategies.

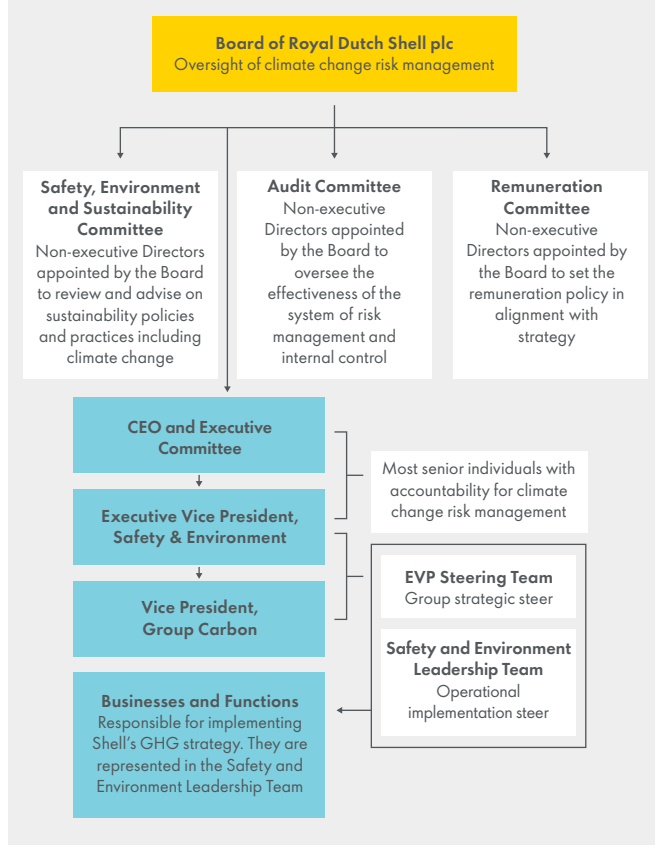
The Executive Vice President (EVP) Safety and Environment, a senior manager who reports directly to the Projects & Technology Director, is accountable for the oversight of GHG issues. This manager's department includes the Group Carbon team and the HSSE & SP Assurance and Reporting team.

Group Carbon is accountable for monitoring and examining the strategic implications of climate change for Shell. Group Carbon also reviews the effects of governmental policy and regulation. It proposes policy positions based on analysis by Shell and external organisations. The team also advises Shell companies to ensure that they are consistent in how they apply our core principles and policies when interacting with policymakers.

Group Carbon also has oversight of Shell's GHG management programme. It helps our lines of business to adopt strategies for managing greenhouse gases. The team includes managers who advise projects on the risks and opportunities of GHG-related issues.

The HSSE & SP Assurance and Reporting team is accountable for the delivery of Shell's non-financial reporting. It is also responsible for auditing the performance of Shell businesses with regards to our HSSE & SP Control Framework requirements, which include climate change risk management.

Climate change management organogram



REORGANISATION IN LINE WITH UPDATED STRATEGY

During 2020, we worked on a comprehensive organisational review in order to enable our new strategy to be effective. We call this project Reshape. The governance of topics around sustainability, including climate change, will not change at the most senior levels of Shell. We are introducing changes at specific levels of the organisation to better address the effects of the strategy update. We expect to adjust the initial structure as we go through the process. Currently, we are working towards going live with the revised organisational structure in the second half of 2021.

For more information, see [Strategy and outlook on page 18](#), and [Our people on page 108](#).

CLIMATE CHANGE RISK MANAGEMENT PROCESS

The framework for managing the climate change and GHG emissions risk is underpinned by Shell's Control Framework and Statement on Risk Management, which are described on pages 186 of the "Other regulatory and statutory information" section of this Report.

For the climate change and GHG emissions risk, several global teams support our businesses in GHG and energy management, comprising a network of experts in subjects related to GHG and risk management. They work globally across our lines of business and assist in:

- identifying and assessing risks;
- planning and implementing responses;
- sharing best practices; and
- monitoring, improving and completing action that affects the objectives and performance of projects and assets.

These teams have created a set of mandatory manuals and complementary guidance documents that are updated periodically and are ultimately based on our HSSE & SP Control Framework (CF). These manuals and documents provide guidance on how to monitor, communicate and report changes in the risk environment, and how to review the effectiveness of actions taken to manage identified risks, including ways to:

- ensure consistent assessment of climate risk across Shell;
- clarify expectations for risk management and reporting, including roles and responsibilities of the risk owners;
- clarify types of assurance activities that may be applicable;
- strengthen decision-making by ensuring that businesses have better awareness and understanding of climate risks (including their likelihood and potential impact) and mitigation plans; and
- enable integration of Shell's reporting.

For more detail on our definition of risk categories and their relationship to different time horizons, see page 98.

The GHG and Energy Management Manual is one of the mandatory manuals of our HSSE & SP Control Framework. It requires that effective steps are taken to track the GHG emissions from Shell's operated and non-operated facilities and the life-cycle emissions of its energy products. The manual also focuses on the efficient operation of existing equipment. This means, for example, using monitoring systems to get real-time information that we can use to make energy-saving changes and identify opportunities for energy-saving investments in the medium term. Shell's scorecard includes GHG measures that create additional incentives for our employees to reduce GHG emissions in our portfolio.

See "Directors' Remuneration Report" on page 153.

The global teams mentioned above support the businesses in monitoring and addressing certain physical risks of climate change. This support includes the input of specialist teams who provide direct technical assistance to facilities, based on their analysis of the potential impacts of climate change in different operating environments. For example, the specialist teams support facilities on an ad hoc basis to address potential operational issues such as flooding of a site that may affect its drainage system.

The teams also provide expertise on how to include considerations of certain potential physical climate change risks in the internal Design and Engineering Practice (DEP) requirements for new projects. The DEPs for new projects are reviewed periodically to take account of changes in the risk environment, including emerging weather and climate factors.

We review our portfolio annually to identify emerging risks from changes in GHG emissions regulations and changing physical conditions. Shell's Group Carbon team provides management with strategic insights on Shell's exposures, risks and opportunities, and recommends actions for Shell to take. Each of Shell's businesses and functions has an assurance committee that considers this risk on a regular basis and coordinates the applicable assurance activities.

At the Group level, the climate change and GHG emissions risk has been identified as a significant risk factor for Shell – see "Risk factors" on page 29. The Executive Committee and Board regularly review this risk in the same way that they do for other significant Group risk factors. Potential impacts and likelihoods are considered and discussed bi-annually. Similarly, the effectiveness of risk responses is also considered and discussed on a regular basis. Where necessary, these reviews are further supplemented by additional in-depth reviews with the relevant management teams. These reviews help to guide operational decisions, maintenance schedules and response planning.

CLIMATE CHANGE AND ENERGY TRANSITION continued

Climate change risk management at project level

Shell requires that the GHG emissions of certain assets and projects are addressed in specific ways. This is described in our internal, mandatory GHG and Energy Management Manual which is part of our HSSE & SP Control Framework (see Environment and society, page 86). This manual specifies the requirements for managing the risks associated with GHGs and energy use, and is owned and signed off by the Vice President Group Carbon. It states that projects with a material GHG footprint must get their targets approved by the Executive Vice President Safety and Environment at certain defined stages. The project's GHG-abatement plan helps to determine the nature of these targets.

Projects under development that are expected to have a material GHG footprint must meet our internal carbon performance standards or industry benchmarks. This indicates that they will be able to compete and prosper in a future where society aims to limit overall GHG emissions.

The performance standards are used as our screening criteria for measuring projects' average lifetime GHG intensity or energy efficiency per asset type. We are working to develop a complete set of standards for our businesses. Performance Standards for the Upstream and Transition pillars are in place, while those for the Growth pillar are under development. The complete set is expected to continue to evolve to incorporate new types of projects that support Shell's portfolio changes in alignment with our NZE energy business target. Our current standards are reviewed and updated annually, based on changes to legislation and external and/or internal benchmarking. The latest update was in 2020. The performance standards were signed off by the Executive Vice President (EVP) accountable for implementation in the relevant businesses, and by the EVP Safety and Environment, who represented the view of a risk owner from outside the relevant business.

We estimate the GHG emissions of facilities in two ways. We apply the performance standards, and we consider the GHG emissions from the use of the products that are manufactured. We assess GHG emissions' impacts alongside economic and technical design factors. These assessments can lead to projects being stopped or designs being changed.

During project development, we consider ways to reduce GHG emissions and whether to include them in the design. Measures considered and adopted have included:

- flaring reduction;
- carbon capture and storage (CCS) capabilities;
- exclusion of high-intensity process equipment;
- using renewable energy; and
- electrification.

Our approach continues to evolve as we increase our understanding of the shifting policy landscape and the differing paces of energy transitions in different regions.

We continue to develop our project managers' and practitioners' competencies for effective GHG emissions management in projects. The Shell Project Academy has been set up to provide competence development programmes that include different ways of learning, such as courses on specific topics and on-the-job training. These courses also aim to ensure sharing of good practice and to encourage collaboration across businesses.

CLIMATE-RELATED RISKS AND OPPORTUNITIES

Our approach for assessing and managing the risks and opportunities associated with climate change includes considering different time horizons. The time horizons and their relevance to risks, opportunities and business planning are as follows:

- Short term (up to three years): we develop detailed financial projections and use them to manage performance and expectations on a three-year cycle.
- Medium term (generally three to 10 years): most of our expected production and earnings in this period come from our existing assets.
- Long term (generally beyond 10 years): for this period, it is expected that the current Shell portfolio will change and evolve with the energy transition. Decision-making and risk identification on the thematic structure of the future portfolio are guided by the pace of society's progress and the aim of being in step with society as it moves towards the goals of the Paris Agreement.

The overall climate change risk consists of four components, based on the nature of our exposure and the options for our mitigation responses. The four components are regulatory risks, commercial risks, physical risks and societal risks:

- Regulatory risks (time horizon: short term) include increased compliance costs for assets and/or products such as carbon costs; restrictions on the use of fossil fuels; and lack of net-zero-aligned global and national policy and frameworks.
- Commercial risks (time horizon: medium to long term) include lower sales volumes and/or margins because of generally reduced or eliminated demand; the possibility of underutilised or stranded oil and gas assets; changing preferences of investors and financial institutions; and additional costs for decarbonisation of operations.
- Physical risks (time horizon ranging from short to long term) include structural damage to assets and downtime caused by acute events; reduced efficiency because of changing ambient conditions; increased operations and maintenance costs; and value-chain disruptions.
- Societal risks (time horizon: continuous) include the potential for a deteriorating relationship with the public, other companies, and governments in countries where Shell operates; class action lawsuits or similar litigation; potential stakeholder criticism related to transparency and clarity around plans and actions to achieve climate targets; and decline in reputation, brand value and competitive advantage.

📖 See "Risk Factors" on page 29.

Climate change and the energy transition have also created some business opportunities for Shell. See also "Our portfolio and climate change" on page 101.

Impact of climate-related risks and opportunities on strategy, planning and business decisions

For Powering Progress, we must evolve our portfolio of assets and the mix of energy that we sell, so we can meet the cleaner energy needs of our customers in the coming decades. We aim to achieve this by repositioning our traditional businesses for resilience and taking advantage of the growth opportunities created by emerging customer needs.

We assess our portfolio decisions, including investments and divestments, against the potential impacts of the energy transition to the use of lower-carbon energy. These include higher regulatory costs linked to carbon emissions and lower demand for oil and gas. We continue to transform our organisation, ensuring that our portfolio is well positioned for the future of energy. In February 2021, we announced our updated strategy (see Strategy and outlook, page 18).

We believe that our business strategy is resilient and adapted to the current implementation of the Paris Agreement, which is now progressing through the mechanism of countries developing their individual nationally determined contributions (NDCs). The Paris Agreement does not stipulate that emissions must fall in all sectors or countries simultaneously, or that all actors within the system will reduce their emissions at the same time or to the same degree. It acknowledges that emissions might even increase in some parts of the world. What is important is that overall emissions fall.

The transition to lower-carbon energy requires major changes to industrial, commercial and residential infrastructure. This takes time and substantial investment. Our annual planning cycle and periodic portfolio reviews aim to ensure that our levels of capital investment and operating expenses are appropriate in the context of an uncertain and changing external environment.

The annual business plan is our way of putting the strategy into effect. A business plan is created, which is then approved by the Board. The plan contains forecasts of Shell's cash flows, and seeks to ensure that we can service financing requirements, pay dividends and fund investment activities.

Shell's business plan includes assumptions about internal and external parameters. Some of the key assumptions relate to:

- commodity prices;
- production levels and product demand;
- exchange rates;
- future carbon costs;
- the schedules of growth programmes; and
- risks and opportunities that may have material impacts on free cash flow.

Shell's strategy recognises that the world is transitioning to a lower-carbon energy system, but acknowledges that the pace and specific path forward remain uncertain and may differ across regions and countries. This means that Shell will need to make agile business decisions in step with society.

Scenario planning is a well-established process for exploring possible future outcomes. Many factors and variables are considered in this exercise. These include the future size and cost of resource bases and macroeconomic, geopolitical, social, technological and regulatory developments. Our portfolio and strategy have been assessed against a wide range of outlooks. These include the potential impacts of various possible energy transition pathways, and changes in societal expectations around climate change. Our latest set of Shell scenarios was one of the many variables used in guiding the updated strategy which we announced in February 2021. One of the key aspects that underpin Shell's financial statements are the oil and gas price and refining margin assumptions. These price assumptions are developed with input from our scenarios and other factors.

GHG elements in the business plans consist of a GHG-emissions forecast, GHG-abatement plan and GHG costs. To assess the resilience of new projects, we consider the potential costs associated with operational GHG emissions. We have developed country-specific short-, medium- and long-term estimates of future carbon costs which are reviewed and updated annually. By 2050, our real-terms carbon cost estimates for all countries are expected to increase to at least \$100 per tonne of GHG emissions.

The process for developing our cost of carbon estimates uses short-term policy outlooks and long-term scenario forecasts, both of which reflect the current nationally determined contributions (NDCs) submitted by countries as part of the Paris Agreement and evolving national policy developments. NDCs under the Paris Agreement are subject to revisions every five years. The United Nations estimate that the current NDCs are consistent with limiting the rise in global average temperature to around three degrees Celsius above pre-industrial levels. In the coming decades, we expect countries to tighten their NDCs to meet the goals of the Paris Agreement. We expect to update our estimates as countries update their NDCs and climate policies. Accordingly, we believe our estimates appropriately reflect society's current implementation of the Paris Agreement. We continue to test the robustness of our projects with a material GHG footprint by using long-term carbon cost estimates that are consistent with limiting the rise in global average temperature to well below two degrees Celsius.

Shell's annual carbon cost exposure is expected to increase over the next decade because of evolving carbon regulations. This expected increase is based on forecasts of Shell's equity share of emissions from operated and non-operated assets, and real-terms carbon cost estimates which range from \$5 to \$110 per tonne of GHG emissions in 2030. This exposure also takes into account the estimated impact of free allowances as relevant to assets based on their location. The regulatory carbon cost estimate is refreshed on an annual basis as part of the development of our business plan.

OUR CLIMATE TARGET

As indicated at the beginning of this section, our long-term climate target is to be a net-zero emissions energy business by 2050, in step with society's progress towards achieving the goal of the UN Paris Agreement on climate change. This target supports the most ambitious goal of the Paris Agreement on climate change to limit the global temperature rise to 1.5 degrees Celsius. We referred to the database developed for the IPCC special report *Global Warming of 1.5°C* while setting this target. We started with all the 1.5 degrees Celsius scenarios and then selected the scenarios which focused on earlier action and placed less reliance on the use of carbon sinks to produce the 1.5 degrees Celsius pathway we have used for target setting.

CLIMATE CHANGE AND ENERGY TRANSITION continued

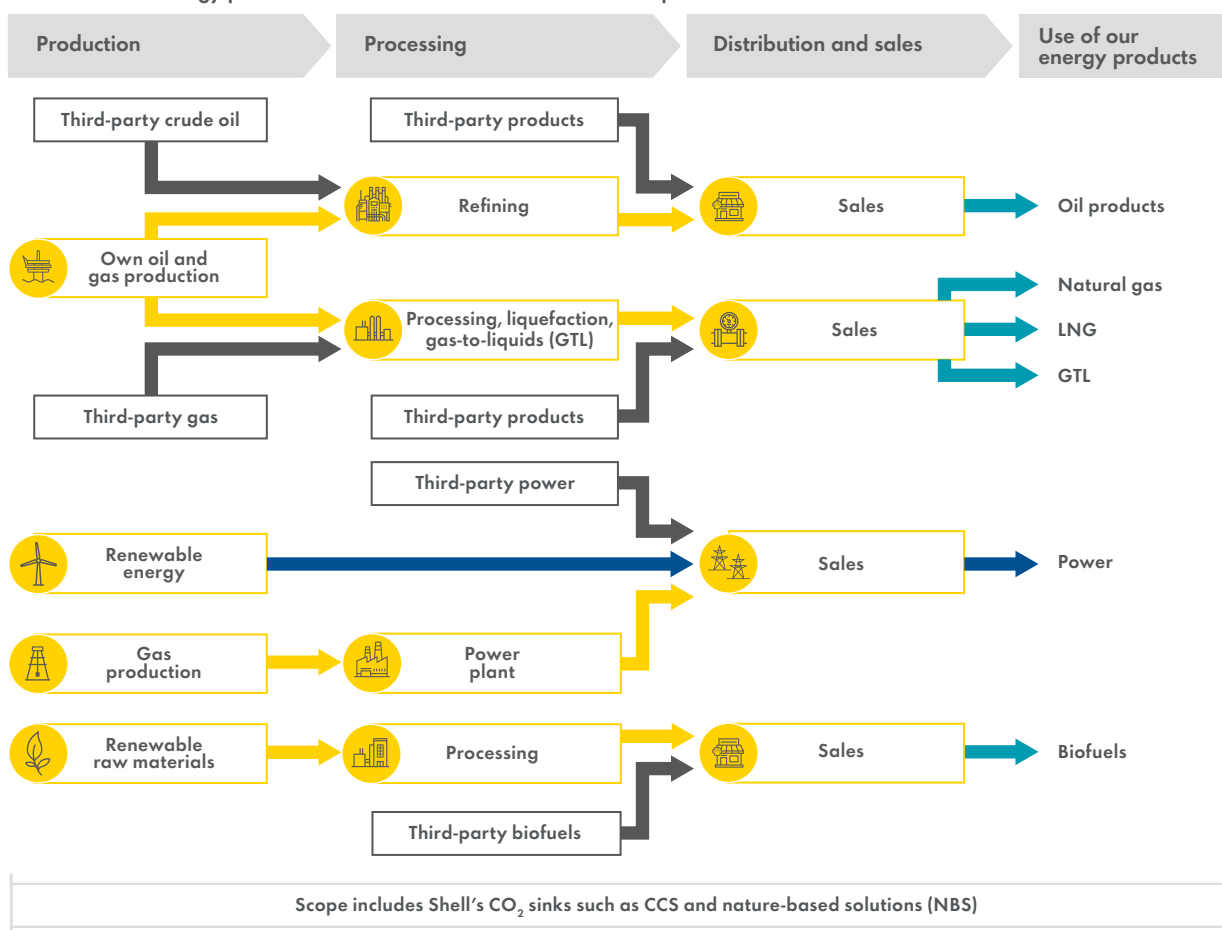
OUR NET CARBON INTENSITY TARGETS

Shell's carbon intensity is the average intensity, weighted by sales volume, of the energy products sold by Shell. This is tracked, measured and reported using the Net Carbon Footprint (NCF) metric and methodology. Our NCF calculation includes the life-cycle greenhouse gas emissions associated with each unit of energy we sell that is used by our customers. This includes the emissions associated with the production, processing, transport and end use of these products. Also included are emissions from other elements of this life cycle not owned or controlled by Shell, such as

oil and gas that we process but do not produce, or emissions from oil products and electricity marketed by Shell that have not been processed or generated at a Shell facility. The calculation also subtracts emissions for those that are stored by using carbon capture and storage (CCS) or are offset using natural carbon sinks, such as forests and wetlands. Chemicals and lubricants products, which are not used to produce energy, are excluded from the scope of this metric. The carbon intensity of the energy products we sell is expressed in grams of carbon dioxide equivalent (CO₂e) per megajoule consumed.

Scope of our Net Carbon Footprint

Emissions from energy products included within the Net Carbon Footprint framework



Impact of physical risks and adaptation measures

The physical effects of climate change may increase Shell's exposure to hazards that could potentially include, for example, higher air and sea temperatures, rising sea levels, an increased chance of flooding and droughts, wildfires and more severe tropical storms. They could potentially impact our operations and supply chains. There could also be potential financial implications, such as increased operating costs and lower revenue because of decreased efficiency.

The potential impacts of physical risks to Shell facilities, where processes, equipment and safety could be affected, are reasonably understood in Shell's oil and gas businesses. For example, rising temperatures could potentially impact the efficiency of our plants, increase equipment corrosion and decrease gas pipeline capacity. Rising sea levels could potentially impact our coastal facilities through increased coastal erosion and flooding, damage to jetties, and salt-water intrusion in freshwater intake.

The potential impacts of physical risks to the wider environment and their indirect effect on our facilities is an area that we continue to monitor and evaluate within the local context. Such risks could potentially disrupt our operations by affecting people, infrastructure or supply chains. For example, wildfires and droughts could disrupt feedstock supply for biofuels or make it difficult to access assets, including areas that support our nature-based solutions programme. Floods, meanwhile, could affect staff and communities in low-lying areas.

Measures to adapt to climate change could help reduce the impact of some of these physical climate change risks. These measures can range from local actions for a specific facility, to more general changes, such as adjustments to engineering design codes and alterations to the set limits and conditions within which facilities are deemed safe to operate. For example, Shell has already completed or started to implement solutions like pumping sand on beaches in to order to stabilise them, dredging works, and using a hovercraft for transport between islands.

OUR PORTFOLIO AND CLIMATE CHANGE

We aim to grow our business in areas that will be essential in the energy transition, and where we see growth in demand over the next decade.

We are seeking cost-effective ways of managing GHG emissions in line with our NCF ambition. We also intend to help customers choose options with lower carbon intensity by bringing to market products with lower carbon intensity, in line with demand. We seek to help reduce global GHG emissions by:

- supplying more natural gas to replace coal for power generation;
- developing carbon capture and storage (CCS);
- implementing energy-efficiency measures in our operations where reasonably practicable;
- developing new fuels for transport such as advanced biofuels and hydrogen;
- maintaining a focus on using natural gas and renewable electricity to generate power; and
- working with nature-based solutions.

See further information on portfolio decisions in "Integrated Gas" on page 47, "Upstream" on page 54, "Oil Products" on page 72, and "Chemicals" on page 78.

NATURAL GAS

Natural gas is the least polluting hydrocarbon. It produces less than one-tenth of the air pollution that coal does when burned to generate electricity. Increasing the role that gas plays in the energy mix is one way countries can take action as the world moves to a net-zero emissions future.

Natural gas is an abundant, secure and readily available source of energy, one of the few that can be used across power generation, industry, the built environment and transport. Gas has significant advantages when used to generate power alongside renewables: it can quickly compensate for dips in supply from solar or wind generation, and can rapidly respond to surges in demand.

In 2020, gas accounted for around 47% of Shell's total production. We are a leading producer, marketer and trader of liquefied natural gas (LNG) and gas-to-liquids (GTL) products. In our new strategy, launched in February 2021, one of the energy transition milestones by 2030 is that we expect the percentage of total gas production in our portfolio to gradually rise to around 55% or more.

See "Integrated Gas" part on page 46.

Methane emissions

Natural gas consists mainly of methane. Methane is a potent greenhouse gas and has a much higher global warming impact than CO₂. Efforts to address climate change therefore require the industry to reduce both deliberate and unintended methane emissions.

The IEA estimates that natural gas operations have an average methane leakage rate of 1.7%. At this rate, natural gas emits between 45% and 55% less GHG than coal when burned at a power plant. Higher levels of methane emissions reduce this benefit.

In 2018, Shell announced an industry-leading target of keeping its methane emissions intensity below 0.2% by 2025. This target covers all the Shell-operated oil and gas facilities in our Upstream and Integrated Gas businesses. The baseline and target intensities are expressed as percentage figures, representing estimated methane emissions from Shell-operated oil and gas facilities as a percentage of the total amount of gas marketed, or the quantity of marketed oil and condensate where facilities have no marketed gas (for example, those that re-inject produced gas). Methane emissions include those from unintentional leaks, venting and incomplete combustion, for example, in flares and turbines.

The largest contributor to our reported methane emissions in 2020 was the flaring and venting of gas (including equipment venting) in our upstream oil and gas operations. We are working to reduce methane emissions from these sources by reducing the overall level of flaring and venting. We also continue to implement programmes across our sites to identify and stop unintended leaks and to replace or repair high-emission equipment, such as high-bleed pneumatic devices. We continue to work on confirming that we have identified all potential methane sources and reported our emissions from these sources in line with regulations and industry standards.

CLIMATE CHANGE AND ENERGY TRANSITION continued

Since 2018, we have tested drone-based leak detection cameras and sensors in our Permian Basin shales asset, where we have more than 400 sites. In 2020, we signed a contract with Avitas, a GE Venture, to expand the use of drones to enhance our existing leak detection and repair programme in the Permian Basin. As a result, we started the drone programme on one of our shales businesses, across sites that have the potential to emit methane.

We played an active role in the advisory committee of The University of Texas at Austin's Project Astra which plans to establish a proof-of-concept network of methane detection sensors in the Permian Basin for high-frequency monitoring.

We have also tested fixed-based methane detection sensors in our Rocky Mountain House (Canada) asset.

At our Shell ONEgas facilities in the North Sea, we have reduced methane emissions by around 55%, (around 2,000 tonnes) since 2017. We have done this through improvements that reduce gas venting, such as minimising valve leakage and substituting nitrogen for natural gas when purging potentially explosive oxygen from equipment. ONEgas also continues efforts to improve the accuracy of its measurement of methane emissions. It is planning a trial of drone-mounted sensors in 2021, to see whether they provide a better way of quantifying emissions from platforms.

Methane initiatives and collaborations

We participate in a number of voluntary initiatives to encourage industry-wide action to reduce methane emissions.

In 2017, we joined the Climate and Clean Air Coalition Oil and Gas Methane Partnership. This brings together industry, governments and NGOs to improve the quantification of methane emissions globally and to work on reducing them.

Also in 2017, Shell formed an industry coalition, supported by organisations such as the Environmental Defense Fund, the UN Environment Programme and the World Bank, to develop a set of Methane Guiding Principles. These principles focus on:

- continually reducing methane emissions;
- advancing strong performance across gas value chains;
- improving the accuracy of methane emissions data;
- advocating sound policies and regulations on methane emissions; and
- increasing transparency.

Shell has been involved in developing all actions associated with the Methane Guiding Principles, including the establishment of a major global outreach programme. This programme seeks to address gaps in knowledge about managing methane emissions. It provides high-quality educational material and courses covering methane science, methane reduction strategies and planning, measurement techniques, technology, policy, and where to get guidance and support. The publicly accessible programme consists of two courses: an executive course for senior managers and executives, and masterclasses for managers of frontline staff. By the end of 2020, the Methane Guiding Principles had been signed by 23 companies.

In 2020, we became a founding signatory to the Oil and Gas Methane Partnership 2.0, the new gold-standard reporting framework that is designed to enhance reporting accuracy and transparency on methane emissions in the oil and gas sector.

The Methane Guiding Principles

The Methane Guiding Principles focus on reducing methane emissions across the natural gas supply chain



1. Continually reduce methane emissions



2. Advance strong performance across the gas supply chain



3. Improve accuracy of methane emissions data



4. Advocate sound policy and regulations on methane emissions



5. Increase transparency

Shell is a member of the Oil and Gas Climate Initiative (OGCI), a CEO-led effort to lead the industry's response to climate change. One of OGCI's focus areas is methane management. In 2018, OGCI announced a target of reducing the collective average methane intensity of its members' aggregated upstream gas and oil operations by one-fifth, to below 0.25% by 2025, with an ambition to achieve 0.2%, which would be a reduction of one-third.

Methane emissions performance

In 2020, our overall methane intensity was 0.06% for facilities with marketed gas and 0.01% for facilities without marketed gas. Intensities at facility level ranged from below 0.01% to 0.6%. We believe our methane emissions are calculated using the best methods currently available: a combination of industry-standard emission factors (established emission rates per throughput or per piece of equipment), engineering calculations and some actual measurements. There are still uncertainties associated with quantifying methane emissions with the available methodologies. To reduce these uncertainties, our Upstream and Integrated Gas businesses are rolling out methane improvement programmes to further improve data quality and reporting. The improvement programmes will also continue leak detection and repair initiatives, and make use of methane abatement opportunities. By 2025, all Shell-operated facilities are expected to have implemented more robust quantification methodologies. Externally, we continue to work on new technologies and improved quantification methods through partnerships and other initiatives such as the OGCI.

Detailed information on our approach to managing methane emissions and performance is expected to be published in the Shell Sustainability Report in April 2021.

RENEWABLES AND ENERGY SOLUTIONS

Renewables and Energy Solutions, formerly New Energies, encompasses Shell's low-carbon businesses. These include Shell's activities in integrated power, hydrogen, nature-based solutions (NBS) and carbon capture and storage (CCS). We want to find ways of helping customers – be they households or businesses – to switch to low-carbon and renewable electricity. That is why we are also developing digitally-enabled platforms that will provide customers with services that make it easier for them to decarbonise and accelerate their progress in this area. We could invest on average \$2-3 billion each year in our Renewables and Energy Solutions business.

See “Integrated Gas” on page 50.

Power

Electricity is the fastest-growing part of the energy system and when generated from renewable sources has a major role to play in reducing GHG emissions. Shell is building an interconnected power business that is designed to be sustainable and offer long-term opportunities. We aim to sell some 560 terawatt hours of electricity a year by 2030, which is twice as much electricity as we sell today. Our integrated power strategy will help Shell in its broader aim to accelerate its transformation into a provider of net-zero emissions energy products and services.

See “Integrated Gas” on page 50.

Low-carbon fuels

Shell believes that low-carbon fuels will play a valuable role in reducing carbon dioxide (CO₂) emissions from the transport sector in the coming decades. Low-carbon fuels projects and operations around the world form part of a wider commitment to provide a range of energy choices for customers.

In 2020, around 9.5 billion litres of biofuels went into Shell's petrol and diesel worldwide. This helped us to make progress towards achieving our climate ambition while complying with applicable mandates and targets in the markets where we operate. Through our own long-established sustainability clauses in supply contracts, we request that all biofuels we buy are produced in ways that are environmentally and socially responsible throughout the production chain. Currently, most available biofuels are produced from cereals, vegetable oils and sugar cane. From cultivation to use, biofuels can emit significantly less CO₂ compared with conventional gasoline. This depends on several factors, such as how the feedstock is cultivated and the way the biofuels are produced. Other challenges include concerns over labour rights, the amount of water used in the production process, and competition for land use between biofuels and food crops.

Over three-quarters of the biofuels we buy are from North American or European feedstock producers. Both regions have regulations for agricultural practices including in relation to sustainability.

We continue to support the adoption of international sustainability standards, including those of the Round Table on Responsible Soy (RTRS), the Roundtable on Sustainable Palm Oil (RSPO) and Bonsucro, an organisation for the certification of sugar cane. We also support the Roundtable on Sustainable Biomaterials (RSB) and the International Sustainability and Carbon Certification (ISCC) scheme for feedstocks. We aim to increase the percentage of volumes that are certified according to these robust multi-stakeholder standards.

Currently, more than 97% of our purchased volumes of biofuels are either covered by our supplier-agreed contract sustainability clauses or certified as sustainable by an independent auditor. We aim to increase the percentage of volumes that are certified according to robust multi-stakeholder standards.

The Raízen joint venture (Shell interest 50%, not operated by Shell) in Brazil has produced low-carbon biofuel from sugar cane since 2011. Through Raízen, Shell is a significant biofuels producer. Raízen hosts the first commercial advanced bioethanol facility and the fourth largest renewable natural gas (RNG) facility in the world.

As part of our target to be a net-zero energy business by 2050, in step with society, we seek to reduce the carbon intensity of the products we sell. This means transforming our refining footprint, keeping sites in key locations but manufacturing low-carbon fuels suitable for use as aviation, road transport and shipping fuels or as a chemical feedstock (for liquid crackers). In 2020, our Rheinland refinery in Germany produced nearly 100 million litres of renewable diesel, produced from sustainably sourced vegetable fats and oils. Our production strategy is anchored around access to competitive feedstock, commercialisation of advanced technology, supportive government policy, and building internal capability.

We are also investing in new facilities that are able to produce sustainable low-carbon fuel suitable for use as aviation, road transport and shipping fuels or chemical feedstock for liquid crackers. Shell's hydro-processed esters and fatty acids (HEFA) technology yields up to 65% low-carbon fuels compared to fossil diesel and aviation equivalent. If HEFA technology is used with green hydrogen – produced by using renewable electricity to split water into hydrogen and oxygen through electrolysis – it can increase the energy content and further reduce the carbon content of the fuels produced.

We are working on a project to add a HEFA facility at our Pernis refinery in the Netherlands. If this project went ahead, production would start in around three to four years. The proposed facility could convert waste fats and oils and other sources into sustainable low carbon vehicle and aviation fuels. A final investment decision has not yet been taken.

CLIMATE CHANGE AND ENERGY TRANSITION continued

In January 2021, Shell announced the signing of commercial agreements to invest in Varennes Carbon Recycling, a plant in Québec, Canada, that will turn waste into chemicals and biofuels. This plant, a joint venture with Enerkem, Proman, Suncor and Invest Quebec (Shell interest 40%), will produce biofuels and renewable chemical products using non-recyclable waste from the industrial, commercial and institutional sectors, from construction, renovation and demolition debris and from residual forest biomass.

In line with our strategy of developing more sustainable feedstocks for transport, we are investing in renewable natural gas (RNG) for use in natural-gas-fuelled vehicles in the USA and Europe. RNG is produced from biogas collected from landfill sites, or via the anaerobic digestion of food waste or manure. It is then processed until it is fully interchangeable with conventional natural gas. The use of RNG in natural-gas vehicles, either in the form of compressed natural gas (CNG) or LNG, offers customers a way to lower their carbon footprint.

The heavy-duty road transport sector is starting to use RNG in its efforts to decarbonise. Shell recently won tenders to supply RNG to fuel around 300 of the Los Angeles (LA) bus fleet and vehicles of the West LA waste haulers fleet.

Shell has taken a final investment decision (FID) to construct, own and operate its first renewable compressed natural gas (R-CNG) fuelling site in the USA. This will be at Shell's products distribution complex in Carson, California. The R-CNG will be sourced from Shell's renewable natural gas projects in the USA, which are currently Shell Junction City in Oregon and Shell Galloway in Plains, Kansas. These convert wastes, such as dairy cow manure and agricultural residues, into pipeline-quality natural gas. Shell will be able to substantially decarbonise the transport of its products from the Carson complex by providing 100% R-CNG to its haulage partners, who are equipped with ultra-low nitrogen oxide natural gas vehicles.

CARBON CAPTURE AND STORAGE

CCS is a technology used for capturing carbon dioxide (CO₂) before it is emitted into the atmosphere, then transporting it, and injecting it into a deep geological formation for permanent storage. The majority of climate change scenarios produced by organisations such as IEA, IPCC and Shell require a large component of CCS in order to achieve the goals of the Paris Agreement. We recognise the scale of the challenge in developing CCS globally as quickly as is required.

In 2020, we refreshed our CCS strategy. We placed greater emphasis on how CCS could enable the energy transition for low-carbon fuels and power, and for industrial hub developments where CO₂ from different industrial sources is routed to a single storage location. We seek to have access to an additional 25 million tonnes a year CCS capacity by 2035.

In 2020, Shell invested around \$70 million in CCS. This included progressing opportunities and operating costs for CCS assets in which Shell has an interest.

By the end of 2020, our Quest CCS project in Canada (Shell interest 10%) had captured and safely stored more than 5.5 million tonnes of CO₂ since it began operating in 2015. Quest CCS was designed to capture about 1 million tonnes of CO₂ each year. The storage reservoir proved to have a significant capacity for CO₂ injection and strong capture reliability with less than 1% downtime annually. This means the facility could exceed its target and reduce estimated costs.

The Gorgon CCS project in Australia (Shell interest 25%, operated by Chevron) started operating in August 2019. It had stored more than 4 million tonnes of CO₂ by the end of 2020.

In Norway, Shell, our project partners and the Norwegian government took the final investment decision (FID) on the Northern Lights CCS project in 2020. This project aims to become the first carbon storage facility with capacity to transport and store CO₂ from industrial facilities in Norway and potentially from across Europe.

Shell is also involved in the Technology Centre Mongstad (TCM), in Norway. TCM is a centre for testing and improving carbon capture technology.

In the Netherlands, we have signed a joint-development agreement to assess the potential to export CO₂ from our Pernis refinery to a Rotterdam-based CO₂ transport and storage provider.

In the UK, we are collaborating with other companies to further understand the potential of CCS. Projects include how to decarbonise our own facilities, to deliver gas power and low-carbon hydrogen.

In other regions, we are pursuing opportunities which are currently in early development phases.

Shell recognises the role of policy as a key enabler for implementing CCS. We are a member of several industry organisations that actively advocate CCS, such as the Zero Emissions Platform in the EU, the American Petroleum Institute in the USA, and the Carbon Capture and Storage Association in the UK. Shell makes representations and contributes to technical and policy papers through these organisations. In 2020, Shell submitted responses to a number of consultations on aspects of CCS, individually and through industry associations, in the EU, USA, UK and other jurisdictions.

Shell is participating in the OGCI's KickStarter initiative to unlock large-scale investment in CCS. The initiative is designed to help decarbonise industrial hubs around the world and started with hubs including North America, North-west Europe and China.

NATURE-BASED SOLUTIONS

We believe that nature will play an important role in the transition to a low-carbon world. Using nature to absorb carbon dioxide helps to limit the overall stock of greenhouse gases in the atmosphere. This can serve as a temporary solution until other low-carbon alternatives are deployed at scale, or it can compensate for emissions that are unavoidable.

As customers' and society's demand for the use of low-carbon products and services grows, nature-based solutions are becoming an increasingly attractive option for emissions offsetting for a range of industries and operators.

Nature-based projects typically involve protecting or redeveloping natural ecosystems such as forests and wetlands, so they can capture and store more carbon. These projects generate carbon emission rights that can be bought by energy consumers around the world. They also support conservation of biodiversity and offer alternative sources of income to local communities.

Nature-based solutions are expected to contribute to meeting our target to be a net-zero emissions energy business by 2050, in step with society.

We have been running a nature-based solutions programme to invest in natural ecosystems since 2019. As well as investing directly in projects that protect or restore nature, we are also working with projects that already generate carbon credits for our customers. In 2020, Shell invested around \$90 million in nature-based projects that reduce or avoid emissions and can also benefit ecosystems by improving biodiversity, water quality and flood protection. This in turn can improve the livelihoods of people in local communities.

Our ambition is to invest around \$100 million per year in nature-based projects that reduce or avoid CO₂ emissions and offer other valuable ecosystem benefits. We aim to use nature-based solutions, in line with the philosophy of avoid, reduce and only then mitigate, to offset emissions of around 120 million tonnes a year by 2030, through projects of the highest independently verified quality.

In 2020, we developed a screening process with clear criteria to help ensure that we invest in nature-based solutions projects that are of high quality and integrity. The criteria include but are not limited to:

- selecting only projects that are certified under credible, high-quality and independent carbon-credit standards;
- selecting projects that deliver wider environmental and social benefits;
- working to ensure project developers maintain appropriate health, safety, security and social governance standards; and
- having an independent third party audit our internal nature-based project screening review and management processes.

In 2019, we started offering what we called “carbon-neutral driving” to our retail customers. We offered service-station customers in the Netherlands and the UK nature-based carbon credits to offset the CO₂ emissions generated by the extraction, refining, distribution and use of the Shell fuel they buy. By the end of 2020, around 18% of Shell’s retail customers in the Netherlands and around 15% of our UK service-station customers were driving carbon neutral. So too were more than 200 fleet customers in 12 countries who took advantage of similar offers for businesses.

In 2020, we continued to roll out our carbon-neutral retail offer in Germany, Austria, Switzerland, and Canada, and via a third-party reseller agreement in Denmark. We also offer a growing range of products with nature-based carbon credits, including home energy in the UK, LNG in Asia, bitumen in Europe, and selected lubricants.

In 2020, we took another step to scale up our activities in natural ecosystems by acquiring Select Carbon, a specialist company that partners with farmers, pastoralists and other landowners in Australia to develop carbon farming projects, where plants are grown and soil managed to absorb carbon dioxide from the atmosphere.

For more information, see the Shell Sustainability Report, due to be published in April 2021.

OUR PERFORMANCE

Shell’s carbon intensity

Shell’s carbon intensity provides an annual measure of the life-cycle emissions intensity of the portfolio of energy products sold. Specifically, we calculate the carbon intensity (gCO₂e/MJ) in terms of the grams of carbon dioxide equivalent (gCO₂e) per unit of energy (MJ) sold. This is measured, tracked and reported using the Net carbon Footprint (NCF) metric and methodology.

Shell’s NCF is not calculated by simply dividing total emissions by total energy, nor is it an inventory of absolute emissions. Instead, Shell calculates the life-cycle carbon intensity of each of the different energy products it sells. Once we have calculated the carbon intensity for each individual energy product, we then calculate the overall carbon intensity by taking a weighted average of the individual product intensities, with the weighting based on their sales volumes. This approach enables like-for-like comparisons across a range of energy products and allows us to establish the average carbon intensity for all the energy products we sell, including renewables.

Finally, we deduct, or “net off”, any emissions that are stored in carbon sinks. For example, we subtract emissions that are stored using carbon capture and storage in our own operations. We also subtract any carbon dioxide emissions that are removed from the atmosphere and stored using natural carbon sinks created using nature-based solutions, such as reforestation.

While Shell’s NCF is an intensity measure and not an inventory of absolute emissions, a notional estimate of the amount of CO₂e emissions covered by the scope of the Net Carbon Footprint calculation can be derived from the final Net Carbon Footprint value for any year.

Net carbon intensity performance

Our NCF performance

NCF in the reference year (2016) = 79 gCO ₂ e/MJ		2018	2019	2020
NCF	gCO ₂ e/ MJ	79	78	75
Estimated total energy delivered by Shell [A]	trillion (10 ¹²) MJ	22	21.05	18.4
Estimated total GHG emissions included in NCF [B], [C]	million tonnes CO ₂ e	1,731	1,646	1,384

[A] Retail sales volumes from markets where Shell operates under trademark licensing agreements are excluded from the scope of Shell’s carbon intensity metric

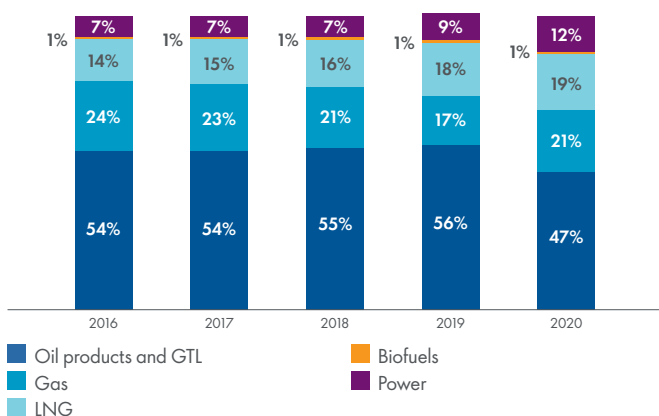
[B] The 2.2 million tonnes of carbon offsets used in 2019, and 3.9 million tonnes of carbon offsets used in 2020 have been subtracted from the estimated total GHG emissions

[C] These numbers include well-to-wheel emissions associated with energy products sold by Shell; they also include the well-to-tank emissions associated with the manufacturing of energy products by others that are sold by Shell. Emissions associated with the manufacturing and use of non-energy products are excluded

We have received third-party limited assurance on our carbon intensity, measured and reported using the Net Carbon Footprint, for the years from 2016 to 2020. Shell’s NCF in 2020 was 75 gCO₂e/MJ, a 4% reduction from the previous year and a 5% reduction from the 2016 reference year. One of the major causes of this larger than expected reduction in 2020 was lower demand for energy, especially for oil and gas. Demand for oil products experienced the most significant reduction, followed by natural gas and LNG. Another important factor contributing to the reduction of the NCF was the increase in our power sales in absolute terms as well as their share of the energy mix sold by Shell. The power we sold also had a lower average emissions intensity than in previous years, which further contributed to the overall NCF reduction.

CLIMATE CHANGE AND ENERGY TRANSITION continued

Share of energy delivered per energy product type [A], [B], [C], [D]

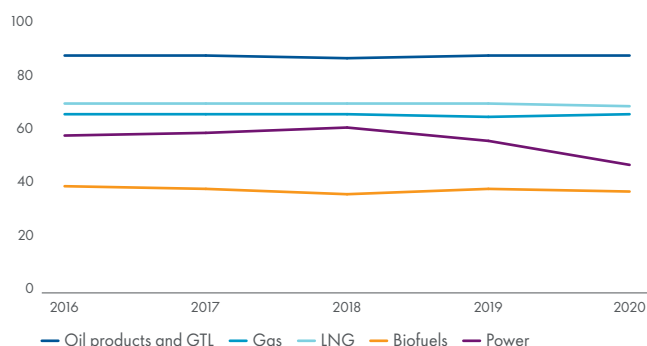


- [A] Percentage of delivered energy may not add up to 100% because of rounding.
 [B] Total volume of energy products sold by Shell, aggregated on an energy basis, with electricity represented as fossil equivalents. This value is derived from energy product sales figures disclosed by Shell in the Annual Report, Form 20-F and the Sustainability Report.
 [C] Lower heating values are used for the energy content of the different products and a fossil-equivalence approach is used to account for electrical energy, so that it is assessed on the same basis as our other energy products.
 [D] Retail sales volumes from markets where Shell operated under trademark licensing agreements are excluded from the scope of Shell's carbon intensity metric.

Carbon intensity of Shell's energy product types

The graph below illustrates the carbon intensity of our delivered energy per product type from 2016 to 2020. Our NCF is calculated by taking a weighted average of these individual carbon intensities, with the weighting based on their sales volumes.

Carbon intensity of Shell's energy product types [A]
(gCO₂e/MJ)



- [A] Emissions included in carbon intensity of power have been calculated using the market-based method in 2020

For hydrocarbon fuels, emissions from end use by customers are by far the biggest contributors to the carbon intensity of the product. As a result, the emissions intensity of hydrocarbon fuels is expected to stay relatively unchanged over time.

This contrasts with the emissions intensity of power, which can be highly variable depending on how it has been generated. To a lesser extent, there is also a contrast between hydrocarbon fuels and biofuels, which can vary significantly in intensity depending on the feedstock and production process used.

The proportion of our renewable power sales and countries where we sell power to the market both affect Shell's overall power mix and its resulting emissions intensity. The carbon intensity of biofuels provided in the graph "Carbon intensity of Shell's energy product types" reflects the global average for biofuels sold by Shell.

Our strategy is to reduce our Net Carbon Footprint, mainly by increasing the proportion of lower-carbon products such as natural gas, biofuels, electricity and hydrogen in the mix of products that we sell to our customers.

GREENHOUSE GAS EMISSIONS

Data in this section are reported on a 100% basis in respect of activities where we are the operator. Reporting on this operational control basis differs from that applied for financial reporting purposes in the "Consolidated Financial Statements" on pages 216-264. Detailed data and information on our 2020 environmental and social performance are expected to be published in the Shell Sustainability Report in April 2021.

GHG Performance

Our direct GHG emissions (Scope 1) decreased from 70 million tonnes of CO₂ equivalent in 2019 to 63 million tonnes of CO₂ equivalent in 2020. The main contributors to this decrease were divestments, (for example, in Canada and the USA), and reduced utilisation at a number of assets caused by lower demand driven by COVID-19. The level of flaring in our Upstream and Integrated Gas businesses combined decreased by around 35% compared with 2019. In 2019, our Prelude floating LNG facility in Australia had experienced an unanticipated spike in flaring during its start-up. In February 2020, we had to shut down Prelude which resulted in a decrease of its GHG emissions by around 80% compared with 2019.

In 2015, we signed up to the World Bank's Zero Routine Flaring by 2030 initiative. This seeks to ensure that all stakeholders, including governments and companies, work together to address routine flaring. Flaring, or burning off, of gas in our Upstream and Integrated Gas businesses contributed around 6% of our overall direct GHG emissions in 2020. Around 35% of this flaring occurred at facilities where there was no infrastructure to capture the gas produced with oil, known as associated gas.

Around 45% of flaring in our Upstream and Integrated Gas facilities in 2020 occurred in assets operated by the Shell Petroleum Development Company of Nigeria Limited (SPDC). Flaring from SPDC-operated facilities decreased by around 15% in 2020 compared with 2019. SPDC, in close collaboration with its joint-venture partners and the Federal Government of Nigeria, continues to make progress towards the objective of ending the continuous flaring of associated gas. Two new gas-gathering projects (Adibawa and Otumara) came on stream at the end of 2017, followed by two more (the Forcados Yokri Integrated Project and Southern Swamp Associated Gas Gathering Solutions) in 2019.

Our indirect GHG emissions associated with imported energy (Scope 2) were 9 million tonnes in 2020 (using market-based method), down from 10 million in 2019, in part driven by divestments (for example in Canada) and lower demand for imported electricity due to reduced utilisation.

Our GHG emissions

		2018	2019	2020
Scope 1 [A]	million tonnes CO ₂	71	70	63
Scope 2 [B]	million tonnes CO ₂	11	10	9
Scope 3 [C]	million tonnes CO ₂	1,637	1,551	1,305

- [A] total direct (Scope 1) GHG emissions from assets and activities under operational control boundary
 [B] total indirect GHG emissions from imported energy (Scope 2) from assets and activities under operational control boundary
 [C] indirect GHG emissions (Scope 3) based on the energy product sales included in the NCF boundary. See our website [shell.com](https://www.shell.com) for more information on our NCF methodology

Greenhouse gas intensity

In 2020, the three GHG intensity metrics included in the Performance Indicators on page 45 covered over 80% of our total Scope 1 and 2 GHG emissions from assets and activities under our operational control.

The Upstream and Integrated Gas GHG intensity – measured in tonnes of CO₂ equivalent per tonne of hydrocarbon production available for sale – decreased from 0.17 in 2019 to 0.16 in 2020. This was partly because of our Prelude FLNG asset being shut down in February 2020.

The Refining GHG intensity – measured in tonnes of CO₂ equivalent per Solomon's Utilised Equivalent Distillation Capacity (UEDC™) – decreased from 1.06 in 2019 to 1.05 in 2020. This was mainly driven by divestment of our Martinez refinery in the USA.

The Chemicals GHG intensity – measured in tonnes of CO₂ equivalent per tonne of high value chemicals – decreased from 1.04 in 2019 to 0.98 in 2020. This was mainly because of increased utilisation following turnarounds on three of our sites in 2019.

GHG emissions and energy consumption data and information in accordance with UK regulations.

GHG emissions comprise CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride. The data are calculated using locally regulated methods where they exist. Where there is no locally regulated method, the data are calculated using the 2009 American Petroleum Institute (API) Compendium of Greenhouse Gas Emissions Methodologies, which is the recognised industry standard under the GHG Protocol Corporate Accounting and Reporting Standard. There are inherent limitations to the accuracy of such data. Oil and gas industry guidelines (API/International Association of Oil & Gas Producers (IOGP)/IPIECA, the global oil and gas industry association for advancing environmental and social performance) indicate that a number of sources of uncertainty can contribute to the overall uncertainty of a corporate emissions inventory.

Greenhouse gas emissions

	2020	2019
Emissions (million tonnes of CO ₂ equivalent)		
Total global direct (Scope 1) [A]	63	70
UK including offshore area [B]	2.0	2.1
Total global energy indirect (Scope 2) [C]	9	10
UK including offshore area [D]	0.0	0.0
Intensity ratio (tonne/tonne)		
All facilities [E]	0.25	0.24

[A] Emissions from the combustion of fuel and the operation of our facilities globally, calculated using global warming potentials from the IPCC's Fourth Assessment Report.

[B] Emissions from the combustion of fuels and the operation of our facilities in the UK and its offshore area, calculated using global warming potentials from the IPCC's Fourth Assessment Report.

[C] Emissions from the purchase of electricity, heat, steam and cooling for our own use globally, calculated using a market-based method as defined by the GHG Protocol Corporate Accounting and Reporting Standard. Using location-based methods, indirect GHG emissions from generation of purchased and consumed energy (electricity, steam, heat and cooling) were 11 million tonnes CO₂e in 2019 and 11 million tonnes CO₂e in 2020.

[D] Emissions from the purchase of electricity, heat, steam and cooling for use by our facilities in the UK including its offshore area, calculated using a market-based method as defined by the GHG Protocol Corporate Accounting and Reporting Standard. Using location-based methods, indirect GHG emissions from generation of purchased energy consumed by our facilities were 0.06 million tonnes CO₂e in 2019 and 0.06 million tonnes in 2020.

[E] In tonnes of total direct and energy indirect GHG emissions per tonne of crude oil and feedstocks processed and petrochemicals produced in downstream manufacturing, oil and gas available for sale, LNG and GTL production in Integrated Gas and Upstream. For an additional breakdown by segment, see Greenhouse gas intensity section above.

The energy consumption data provided below comprise own energy, generated and consumed by our facilities, and supplied energy (electricity, steam and heat) purchased by our facilities for our own use.

Energy consumption data reflect primary (thermal) energy (e.g. the energy content of fuels used to generate electricity, steam, heat, mechanical energy etc.). This includes energy from renewable and non-renewable sources. Own energy generated was calculated by multiplying the volumes of fuels consumed for energy purposes by their respective lower heating values. Own energy generated that was exported to third-party assets or to the power grid is excluded. Thermal energy for purchased and consumed electricity was calculated using actual electricity purchased multiplied by country-specific electricity generation efficiency factors (from IEA statistics). Thermal energy for purchased and consumed steam and heat was calculated from actual steam/heat purchased multiplied by a supplier-specific conversion efficiency, or generic efficiency factor where supplier-specific data were not available.

Energy consumption (billion kilowatt-hours)

	2020	2019
Own energy generated and consumed		
Total energy generated and consumed	202	220
UK including offshore area	7.6	7.6
Purchased and consumed energy		
Total purchased and consumed energy	38	44
UK including offshore area	0.2	0.2
Energy consumption		
Total energy consumed	240	264
UK including offshore area	7.8	7.8

In 2020, we implemented a variety of measures to reduce the energy use and increase the energy efficiency of our operations. Examples of some of the principal measures taken are listed below:

- At our Clipper facility in the UK, we completed a project to optimise the use of compressors.
- At our Bukom facility in Singapore, we completed two projects to minimise energy loss from steam.
- At our Scotford upgrader facility in Canada, we completed several projects to minimise energy use and improve efficiency, for example by removing equipment from service or replacing it with more efficient equipment.
- At our Geismar facility in the USA, we improved flare staging and temperature control which resulted in lower levels of natural gas consumption.
- At our Mobile facility in the USA, we installed new equipment to increase heat transfer between heat exchangers in order to improve the energy efficiency of the units.
- At our GTL facility in Qatar, we completed several projects to reduce energy use and improve efficiency, for example by minimising the generation of excess steam and converting excess energy into electricity for export to the public grid.
- In Brazil, we reduced fuel usage of vessels by optimising how they operate in dynamic position, stand-by and navigation modes.

Detailed information on our 2020 GHG emissions and energy use is expected to be published in the Shell Sustainability Report in April 2021 and on our website.

The statements in this "Climate change and energy transition" section, including those relating to the Net Carbon Footprint targets, are forward-looking statements based on management's current expectations and certain material assumptions and, accordingly, involve risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied herein.

See "About this Report" on pages iii-iv and "Risk factors" on pages 28-37.

OUR PEOPLE

Performing competitively in the evolving energy landscape requires competent and empowered people working safely together across Shell.

EMPLOYEES



87,000

employees at December 31, 2020

REGION



>70

countries in which we operate

TRAINING



234,000

formal training days for employees and joint-venture partners

FEMALE EMPLOYEES



32%

female employees

DIRECTORS



38%

women on the Board of Directors

SENIOR LEADERS



28%

women in senior leadership positions

EXPERIENCED HIRES



957

experienced people joined Shell (31% female)

OPERATIONS CENTRE HIRES



1,879

recruited for Shell Business Operations centres (50% female)

GRADUATE HIRES



160

graduate hires (49% female)

[A] All metrics except the employees metric exclude the employees in certain Upstream, Downstream and Renewables and Energy Solutions (Formerly New Energies) companies that maintain their own HR systems.

[B] As part of its restructuring plans, Shell expects to reduce 7,000-9,000 jobs by the end of 2022.

We recruit, train and remunerate people according to a strategy that aims to organise our businesses effectively. Our people are essential to the successful delivery of the Shell strategy and to sustaining business performance over the long term. Strong engagement helps us to accelerate our people's development, enhance our leadership capabilities and improve employee performance.

EMPLOYEE OVERVIEW

The employee numbers presented here are the full-time equivalent number of people employed by Shell on a full- or part-time basis, working in Shell subsidiaries, Shell-operated joint operations, seconded to non-Shell-operated joint operations, or joint ventures and associates.

At December 31, 2020, there were a total of 87,000 employees in Shell. This total consisted of employees in Shell and employees in certain Upstream, Downstream and Renewables and Energy Solutions (formerly New Energies) companies that operate more autonomously than other Shell subsidiaries and maintain their own HR systems.

The total of 87,000 employees at December 31, 2020 was the same as at December 31, 2019.

There were 81,000 employees in Shell, excluding those in companies with their own HR systems, at December 31, 2018.

As part of Reshape initiative, Shell expects to reduce between 7,000 and 9,000 jobs by the end of 2022, as it seeks to reduce costs and restructures with the aim of becoming a more streamlined, more competitive organisation that is nimbler and better able to respond to customers. The job reductions will include around 1,500 people who have already decided to take voluntary redundancy in 2020, but will exclude anybody who may leave Shell because of divestments. Shell will conduct the job reductions process in accordance with our core values of honesty, integrity and respect for people. We will seek at all times to show care for anyone who loses their role. Job and cost reductions are in comparison with December 31, 2019.

The table below shows actual employee numbers by geographical area. Note 26 to the "Consolidated Financial Statements" on page 262 provides the average number of employees by business segment.

Actual number of employees by geographical area

	2020	2019	2018 [A]
Europe	27	27	24
Asia	31	31	28
Oceania	3	2	2
Africa	4	4	4
North America	20	21	21
South America	2	2	2
Total	87	87	81

[A] As revised, numbers have been changed from average number to actual numbers. These numbers exclude those in companies with their own HR systems.

In 2020, a total of 234,000 formal training days were provided for employees and joint-venture partners, compared with 373,000 in 2019. The decrease in formal training was caused by COVID-19-related travel restrictions, which significantly affected classroom and blended training plans. In response to this, we rapidly increased the number of courses that could be attended virtually, and created more digital resources to help our people learn, train and develop their skills. This allowed us to continue to invest in people and capabilities, while maintaining our focus on safety.

EMPLOYEE COMMUNICATION AND INVOLVEMENT

We strive to maintain a healthy employee and industrial relations environment. We seek to ensure that our work practices involve dialogue between management and employees – both directly and, where appropriate, through employee representative bodies. Management regularly engages with our employees through a range of formal and informal channels. These include webcasts and all-staff messages from our Chief Executive Officer (CEO) Ben van Beurden, senior leader webcasts, town halls, team meetings, virtual coffee/chai connects, interviews with Senior Management and online publications via our intranet. For further information on stakeholder engagement, see the "Governance" section on pages 138-139.

We promote safe reporting of views about our processes and practices. In addition to local channels, the Shell Global Helpline enables our people and third parties to report potential breaches of the Shell General Business Principles and Shell Code of Conduct, confidentially and anonymously, in a variety of languages. In 2020, 1,425 cases were reported via the Shell Global Helpline: 1,153 allegations and 272 inquiries. In 2019, 1,686 cases were reported via the Shell Global Helpline: 1,278 allegations and 408 inquiries. Shell Internal Audit (SIA) is the custodian of the Shell Global Helpline process, which is managed by an independent third party. SIA is accountable for ensuring that the Shell Global Helpline functions as intended and that all allegations of Code of Conduct breaches (including bribery and corruption) are investigated and followed up appropriately. The Board has formally delegated to the Audit Committee the responsibility for reviewing the functioning of the Shell Global Helpline and the reports arising from its operation. The Audit Committee is also authorised to establish and monitor the implementation of procedures for the receipt, retention, proportionate and independent investigation and follow-up action of reported matters.

Strong employee engagement is especially important in maintaining strong business delivery in times of change. The Shell People Survey is one of the principal tools used to measure employee engagement, motivation, affiliation and commitment to Shell. It provides insights into employees' views and has had a consistently high response rate. In 2020, the response rate was 86.1%, our highest ever level and an increase of 0.6 percentage points compared with 2019. The average employee engagement score was 78 points out of 100, the same as in 2019. This result gives Shell one of the leading employee engagement scores across a range of industries.

In 2020, we faced the worldwide COVID-19 pandemic. In response, we strengthened the country chair network so we could respond locally to the challenges of the pandemic as experienced by our staff, businesses, suppliers and customers. We also provided global support on health. We offered a home-working ergonomics programme, which involved more than 50,000 staff having a health-based risk assessment, receiving advice and if necessary receiving support to buy office and IT equipment. We established a Care for Self programme to encourage staff to pay attention to their physical and mental well-being, and to support them as they did so. This was considered particularly important, given the stresses placed on staff by the COVID-19 pandemic and lockdowns.

DIVERSITY AND INCLUSION

Our diversity and inclusion approach focuses on hiring, developing and retaining the best people.

Embedding the principles of diversity and inclusion in the way we do business improves our understanding of the needs of our people, partners, suppliers and customers. A diverse workforce, and an inclusive, caring environment that respects and nurtures diverse people, help us to improve our safety and business performance.

We continue to focus on recruiting, developing and promoting more women, and we are supporting initiatives that encourage girls to study science, technology, engineering and mathematics (STEM). We also do this by creating a culture of respect and inclusion. Our CEO Ben van Beurden joined the Catalyst CEO Champions for Change, a group of more than 50 CEOs who pledge to support women's advancement at all levels of leadership. Our CEO actively supports the Shell global gender gap campaign, which seeks to close the gender gap in STEM roles.

In 2020, 49% of our graduate recruits were female, compared with 48% in 2019. At the end of 2020, the proportion of women in senior leadership positions was 27.8 %, an increase of 1.4 percentage points compared with the end of 2019. "Senior leadership positions" is a Shell measure based on salary group levels and is distinct from the term "senior manager" in the statutory disclosures set out below.

Gender diversity data (at December 31, 2020)

	Men		Number	
			Men	Women
Directors of the Company	8	62%	5	38%
Senior managers [A]	632	71%	258	29%
Employees (thousand)	59	68%	28	32%

[A] Senior manager is defined in section 414C(9) of the Companies Act 2006 and, accordingly, the number disclosed comprises the Executive Committee members who were not Directors of the Company, and other directors of Shell subsidiaries.

We are creating an environment where people with disabilities can excel. We will provide support and can make adjustments for people with disabilities through the recruitment process and throughout their careers with Shell, including equal access to valuable educational resources, training programmes, and emphasis on personal and professional development.

Our workplace accessibility service currently serves 83 locations globally. The service is designed to ensure that all employees have access to reasonable physical workplace or other adjustments so that they can work effectively and productively.

To further support our employees with disabilities, we have created internal employee networks, including the enABLE networks that support and highlight the work of disabled employees in Shell. First launched in the UK in 2005, we now have 13 enABLE networks in countries including Brazil, Canada, France, India, the Netherlands, the UK and the USA. The disability and enablement focus area is sponsored by Harry Brekelmans, Executive Director for Projects & Technology and Huibert Vigeveno, Executive Director for Downstream.

Shell is a member of the disability campaign The Valuable 500, which seeks to eliminate the exclusion of disabled people worldwide and ensure disability remains a priority for global business leaders. We are also members of Business Disability Forum, a membership organisation that exists to create a disability smart world by linking businesses, disabled people, and government, and PurpleSpace, a networking and professional development hub for disabled employees, employee network leads and allies from all sectors and trades.

At Shell, we support and enable remarkable people from every background, and strive to be a leader in lesbian, gay, bisexual and transgender (LGBT+) inclusion in the workplace. We have pledged support for the UN LGBTI Standards of Conduct for Business. We benchmark ourselves externally, with consistent top-tier results. For example, in 2020, in the USA we earned a 100% score in the Human Rights Campaign Foundation's Corporate Equality Index, a recognition we have earned annually since 2016. In 2020, Shell has again been benchmarked as a top employer in the Workplace Pride Global Benchmark inclusive workplace survey, scoring 94.2% compared with a median score of 50-60%.

OUR PEOPLE continued

We have also created a global LGBT+ forum consisting of LGBT+ colleagues and allies and backed by members of the Executive Committee. The forum is taking action in a number of areas, for example, strengthening our approach to talent development and industry collaborations, including with non-governmental organisations.

Shell has established a global D&I Council for Race, sponsored by our CEO Ben van Beurden. The council aims to build on our actions to advance diversity in our workforce so it better reflects communities where we work and from which we draw talent. While seeking to drive change across the organisation, the council has identified the USA and the UK as the focus of much of its initial efforts to address diversity and inclusion challenges.

The local national coverage is the number of senior local nationals (both those working in their respective base country and those expatriated) as a percentage of the number of senior leadership positions in their base country. The total number of senior leadership roles has reduced which resulting in the drop of local national coverage.

Local national coverage (at December 31)

	Number of selected key business countries		
	December 31, 2020	December 31, 2019	December 31, 2018
Greater than 80%	10	12	10
Less than 80%	10	8	10
Total	20	20	20

[A] These numbers exclude those in companies with their own HR systems.

CODE OF CONDUCT

In line with the UN Global Compact Principle 10 (businesses should work against corruption in all its forms, including extortion and bribery), we maintain a global anti-bribery and corruption/anti-money laundering (ABC/AML) programme designed to prevent, detect, remediate and learn from potential violations. The programme is underpinned by our commitment to prohibit bribery, money laundering and tax evasion, and to conduct business in line with our Shell General Business Principles and Code of Conduct.

We do not tolerate the direct or indirect offer, payment, solicitation or acceptance of bribes in any form. Facilitation payments are also prohibited. The Shell Code of Conduct includes specific guidance for Shell staff, (which comprises employees and contract staff), on requirements to avoid or declare actual, potential or perceived conflicts of interest, and on offering or accepting gifts and hospitality.

Communications from our leaders emphasise the importance of these commitments and compliance with requirements. These are reinforced with both global and targeted communications to ensure that Shell staff are frequently reminded of their obligations. To support the Code of Conduct, we have mandatory risk-based procedures and controls that address a range of compliance risks and ensure that we focus resources, reporting and attention appropriately. By making a commitment to our core values of honesty, integrity and respect for people, and by following the Code of Conduct, we protect Shell's reputation.

In 2020, the COVID-19 pandemic brought additional focus on conduct risk. Our core values are undermined if decisions are taken which fall short of the expected standards of ethical behaviour and compliance. Conduct risk arises from human behaviour and is influenced by factors in the external environment. The COVID-19 pandemic has impacted individuals

and businesses globally, resulting in a human health crisis, widespread lockdowns and a severe economic recession. As a general position, our response to the pandemic has been to reiterate and emphasise that adherence to Shell's compliance rules (including the Code of Conduct) remains essential to protect our business and to help us make the right decisions for the future. While maintaining this basic position, pragmatic, risk-based mitigations have been implemented where appropriate to increase response speed and efficiency without undermining the intended purpose of our controls.

Our ethics and compliance requirements are articulated through our policies, standards and procedures. They are communicated to Shell employees and contract staff and, where necessary and appropriate, to agents and business partners. We monitor and report internally on adherence with select ethics and compliance requirements, such as mandatory training completion and due diligence screening. We pay particular attention to our due diligence procedures when dealing with third parties. We also make our requirements clear to third parties through a variety of measures such as standard contract clauses. We publish our Ethics and Compliance Manual on [shell.com](https://www.shell.com/ethics) to demonstrate our commitment in this area.

The Shell Ethics and Compliance Office helps the businesses and functions to implement the ABC/AML and other programmes, and monitors and reports on progress. Legal counsel provides legal advice globally and supports the implementation of programmes. The Shell Ethics and Compliance Office regularly reviews and revises all ethics and compliance programmes to ensure they remain up to date with applicable laws, regulations and best practices. This includes incorporating results from relevant internal audits, reviews and investigations, and periodically commissioning external reviews and benchmarking.

A structured framework for ethical decision-making, expanding on the formulation "Is it legal, is it ethical, is it wise?", was developed and tested during the course of 2020 and subsequently reviewed by an independent third-party panel. The framework will be implemented broadly across Shell from 2021. It will support decision-making by requiring Shell staff to think through, in a structured manner, the legal, ethical and external dimensions of the various opportunities and decisions they face in their daily work.

We investigate all good-faith allegations of breaches of the Code of Conduct, however they are raised. We are committed to ensuring all such incidents are investigated by specialists in accordance with our Investigation Principles. Allegations may be raised confidentially and anonymously through several channels, including a Shell Global Helpline operated by an independent provider.

Violation of the Code of Conduct or its policies can result in disciplinary action, up to and including contract termination or dismissal. In some cases, we may report a violation to the relevant authorities, which could lead to legal action, fines or imprisonment.

Internal investigations confirmed 252 substantiated breaches of the Code of Conduct in 2020. As a result, we dismissed or terminated the contracts of a total of 54 employees and contract staff.

EMPLOYEE SHARE PLANS

We have a number of share plans designed to align employees' interests with our performance through share ownership. For information on the share-based compensation plans for Executive Directors, see the "Directors' Remuneration Report" on pages 153-156.

PERFORMANCE SHARE PLAN, LONG-TERM INCENTIVE PLAN AND EXCHANGED AWARDS UNDER THE BG LONG-TERM INCENTIVE PLAN

Under the Performance Share Plan (PSP), 50% of the award is linked to certain indicators described in "Performance indicators" on pages 43-45, averaged over the performance period. From 2017 to 2019, 12.5% of the award was linked to free cash flow (FCF) and the remaining 37.5% was linked to a comparative performance condition which involves a comparison with four of our main competitors over the performance period, based on three performance measures. For 2020 onwards, 11.25% of the award is linked to the FCF measure and 5% is linked to an energy transition measure. The remaining 33.75% is linked to the comparative performance condition. From 2021, 10% of the award is linked to the FCF measure and 10% is linked to an energy transition measure. The remaining 30% is linked to the comparative performance condition.

Under the LTIP awards made in 2017 and 2018, 25% of the award is linked to the FCF measure and the remaining 75% is linked to the comparative performance conditions mentioned above. For 2019 and 2020, 22.5% of the award is linked to the FCF measure and 10% is linked to an energy transition measure. The remaining 67.5% is linked to the comparative performance condition mentioned above. From 2021, 20% of the award is linked to the FCF measure and 20% is linked to an energy transition measure. The remaining 60% is linked to the comparative performance condition.

Separately, following the BG acquisition, certain employee share awards made in 2015 under BG's Long-term Incentive Plan were automatically exchanged for equivalent awards over shares in the Company. The outstanding awards take the form of nil-cost options.

Under all plans, all shares that vest are increased by an amount equal to the notional dividends accrued on those shares during the period from the award date to the vesting date. In certain circumstances, awards may be adjusted before delivery or subject to clawback after delivery. None of the awards result in beneficial ownership until the shares vest.

See Note 21 to the "Consolidated Financial Statements" on page 256.

RESTRICTED SHARE PLAN

Under the Restricted Share Plan, awards are made on a highly selective basis to senior staff. Shares are awarded subject to a three-year retention period. All shares that vest are increased by an amount equal to the notional dividends accrued on those shares during the period from the award date to the vesting date. In certain circumstances, awards may be adjusted before delivery or subject to clawback after delivery.

GLOBAL EMPLOYEE SHARE PURCHASE PLAN

Eligible employees in participating countries may participate in the Global Employee Share Purchase Plan. This plan enables them to make contributions from net pay towards the purchase of the Company's shares at a 15% discount to the market price, either at the start or at the end of an annual cycle, whichever date offers the lower market price.

UK SHELL ALL EMPLOYEE SHARE OWNERSHIP PLAN

Eligible employees of participating Shell companies in the UK may participate in the Shell All Employee Share Ownership Plan, under which monthly contributions from gross pay are made towards the purchase of the Company's shares. For every six shares purchased by the employee, one matching share is provided at no cost to the employee.

UK SHARESAVE SCHEME

Eligible employees of participating Shell companies in the UK have been able to participate in the UK Sharesave Scheme. Options have been granted over the Company's shares at market value on the invitation date. These options are normally exercisable after completion of a three-year or five-year contractual savings period. From 2017 no further grants were made under this plan.

Separately, following the acquisition of BG, certain participants in the BG Sharesave Scheme chose to roll over their outstanding BG share options into options over the Company's shares. The BG option price (at a discount of 20% to market value) was converted into an equivalent Company option price at a ratio agreed with Her Majesty's Revenue and Customs. These options are normally exercisable after completion of a three-year contractual savings period.

Strategic Report signed on behalf of the Board

/s/ Linda M. Coulter

LINDA M. COULTER

Company Secretary
March 10, 2021