Maximising the value and potential of existing and emerging technologies is core to our strategy to sustain a competitive North Sea business for the long-term.

We believe it is central to our ability to continuously improve our performance in safety, risk management, reliability, operating efficiency, production optimisation, reservoir and well management, hydrocarbon recovery and future exploration success.

We have scientists and technologists at seven major global centres, including here in the UK. Around the world, BP engineers are using “big data” to make critical decisions about wells, reservoirs and fields, with state-of-the-art analytical tools that draw on historical and real-time data.

With these new capabilities, well sensor data is being made available to engineers and operators within seconds for monitoring, analysis and value optimisation. Our long-term research is vital to BP’s capacity to adapt and grow.

Here in the North Sea, we have always been at the leading edge of technology – and we are a region renowned for exporting its skills and expertise around the world.

Unmanned data harvesting on Machar field

BP successfully deployed an unmanned surface vessel (USV) for a first-of-its-kind data harvesting project at the Machar field in the central North Sea.

The 4.5-metre long XOCEAN USV was launched from Peterhead and transited the 160 miles to Machar, which is part of our ETAP hub. On arrival at Machar, the USV gathered data from four in-field seabed sensors and sent real-time video imagery and situational awaremess data to XOCEAN’s onshore operations centre where a team of qualified USV pilots kept watch and controlled the vessel. The system, its sensors and the data-download process were fully tracked live, via satellite communications and the internet.

The XOCEAN survey was in support of a project on the Machar field which requires long-term monitoring of the reservoir.

BP and TechX

For the past two years, BP has partnered with the Aberdeen-based Oil and Gas Technology Centre (OGTC) to support its TechX Pioneers programme.

The programme provides start-up companies with funding, expertise, mentors and global partners to help develop and validate new technologies. Nearly 200 applications from over 35 countries were received for the TechX programme in 2019, covering oil and gas and clean tech solutions that will support the industry to maximise economic recovery and the transition to a low carbon economy.

Each of the chosen start-ups get up to £100,000 to develop their business and technology as part of an intensive 6-month accelerator programme that includes expert mentors, development partners and access to the industry.

It is my pleasure to welcome you to this overview of BP’s business in the North Sea.

BP has been operating in the North Sea for more than 50 years and we plan to be here for many decades to come. Our vision is to be the best upstream business in the North Sea, the safest, most reliable and competitive operator and a trusted partner in the community.

Aberdeen is home to our North Sea headquarters, covering offshore operations on the United Kingdom Continental Shelf (UKCS), our activity set in the North Sea spans the entire industry lifecycle, from access and exploration, through resource appraisal, drilling, commissioning, production and decommissioning.

We are a significant employer in the region and are proud of the work we people do to constantly chase new frontiers.

Last year marked another major milestone in BP’s long history in this region with first oil from our Clair Ridge project. Targeting 640 million barrels of recoverable resources through two new bridge-linked platforms, Clair Ridge is the multi-billion-pound second phase development of the giant Clair field to the west of Shetland.

This year we are excited to be a part of another major project in the North Sea, the non-operated Culben development in which we have a 52% interest having doubled our stake in 2016. Culben is the largest UK gas field to be sanctioned for quarter of a century and is expected to produce into the mid-2030s, supplying 5% of total UK gas demand.

In 2019 we will also continue our strategy to tap into smaller fields that can be rapidly developed through established offshore hubs. Our Allison and Votich fields are two such developments and are expected to produce 30,000 barrels gross of oil equivalent a day at peak production.

Seagull is another of our rapid tiebacks, a high pressure, high temperature development located in the central North Sea, just south of our ETAP hub.

This new activity, combined with safe and reliable operations from our other core hubs in the central North Sea and west of Shetland, will help drive forward our ambitions to grow our North Sea production. It also further highlights BP’s continued commitment to this important region.

I hope you will find this publication informative and share my confidence in the great potential we still have here in the North Sea.
Modernisation and transformation

Our modernisation and transformation programme is about creating a flexible, responsive and innovative business that embraces new technologies, agile ways of working and is a motivating and exciting place to work.

It is critically important that we are not only safe and efficient here in the North Sea, but that we transform the way we work to drive real, sustainable efficiencies so that we can compete for the long-term.

We encourage everyone at BP to find and implement smarter ways of working, without compromising safety, with the goal of getting more from our assets and capturing value from every pound we spend.

From small and simple ideas to large-scale deployment of new technologies and tools, our people are helping to make a positive difference to our operations and our productivity.

Our modernisation and transformation programme is focused around three themes: agility, digital, and mindset.

We will make our organisation more agile and improve decision making; we are looking to truly embrace digital and the opportunities presented by big data; and we want to create a mindset inside the company consistent with a business that values the penny as well as the pound and is always looking to do things better.

Working like this will be very different – we hope to unleash ideas and solutions we can’t imagine today. The good news is we are already in action.

Our portfolio
Our portfolio

We have a refreshed and refocused portfolio that will now sustain production into the 2050s.

Our portfolio today is smaller than in the past but stronger, with less operating complexity, reduced risk, and better potential to increase and sustain production and returns.

See North Sea portfolio map on page 7.

Schiehallion Area

The Schiehallion Area incorporates the Schiehallion, Loyal and Alligin fields located around 175 kilometres west of the Shetland Islands. Schiehallion and Loyal are developed through the Glen Lyon floating production, storage and offloading (FPSO) vessel. Alligin was sanctioned in 2016 and is being developed as a two-well subsea tieback to the Glen Lyon and is expected to come on stream in 2020.

Production from the Schiehallion Area was shut-in between 2013 and 2017 to allow for the Quad 204 project – a multi-billion-pound investment by BP and partners to completely redevelop the hub and maximise production from the fields. Quad 204 saw the removal of the old FPSO, construction and installation of the Glen Lyon FPSO and renewal of much of the subsea infrastructure network.

Through the Quad 204 project, BP and partners expect to unlock a further estimated 450 million barrels of resources, extending the life of the fields out to 2035 and beyond.
Clair Phase One

With an estimated seven to eight billion barrels of oil in place, the Clair field is the largest oilfield on the UK Continental Shelf. The field, located 75 kilometres west of the Shetland Islands, was discovered in 1977, but challenging reservoir characteristics and the technological limits of the time meant it was the mid-1990s before the field saw extensive drilling and 2003 before BP and partners approved a development plan. Production from the Clair field began in 2005 through the Clair Phase One platform which was the first fixed platform west of Shetland.

Clair Ridge

The physical size of the Clair field dictates development via a phased approach. Clair Ridge is the second phase of development. The bridge-linked platforms, which delivered first oil in November 2018, are designed to recover an estimated 640 million barrels of oil and ramp up to 120,000 barrels of oil per day at peak production. The new facilities, which are designed for 40 years of production, required capital investment in excess of £4.5 billion. BP and partners are now considering a third phase of development in the Clair fields.

Building our future

We have an exciting set of future investment and renewal opportunities which will sustain a material UK business for BP for many years to come.

Our intent is to maintain a healthy capital investment programme to sustain our production growth.

In 2019, we committed to the non-operated Seagull development in the central North Sea (BP ownership share 50%).

Seagull is a high pressure, high temperature development located in the central North Sea, 17 kilometres south of the ETAP Central Processing Facility (CPF). It will be tied back to the ETAP CPF partially using existing subsea infrastructure.

This is part of BP’s strategy in the North Sea to develop fields that will maximise value from existing infrastructure.

Seagull, like our Vorlich and Ailglin developments, will have a shorter project cycle from development to production, allowing us to bring on important new production quicker.

Along with our partners, we are exploring options for a possible third phase of development of the Clair field.

Our subsea tiebacks complement our major projects start-ups and will play an important role in building BP’s future in the North Sea.
Foinaven

The Foinaven field is located 190 kilometres west of Shetland in water depths of up to 500 metres. The field was discovered in 1980 and sanctioned for development in 1994. It was the first deepwater development on the UKCS and the first west of Shetland. First oil from the field was in November 1997. The pioneering fast-track development was based on a network of subsea wells linked via a subsea network of pipelines, control umbilicals and risers to the Petrojarl Foinaven FPSO.

Eastern Trough Area Project (ETAP)

ETAP ranks as one of the largest and most commercially complex North Sea oil and gas developments of the past 20 years, multiple fields with varying ownership sharing a central processing facility (CPF). BP operates six of the seven ETAP fields; Machar, Madoc, Mirren, Mungo, Monan and Marnock. The non-operated Seagull field (BP ownership share 50%) will be tied back to the ETAP CPF with first production expected in 2021. We are exploring options to develop another new field, Skua, through the ETAP hub.

ETAP came on stream in July 1999 with an estimated production life of 20 years. However, a multi-million-pound investment programme in 2015 secured its future well into the 2030s.

In the two decades of operations, more than 550 million barrels of oil equivalent (gross) have been produced from the BP-operated ETAP fields.
Andrew Area

The Andrew Area includes the Andrew, Arundel, Cynus, Farragon, and Kinnoull fields which all produce through the Andrew platform. The field started production in 1994. Andrew, Cynus and Farragon were shut in in mid-2011 to allow for the Andrew Area Development (AAD), a major brownfield project enabling the Kinnoull field, located 28 kilometres to the north, to be developed through the existing facilities.

The AAD also included extensive new subsea infrastructure, a new 750-tonne process module and structural strengthening of the platform. In 2017, the Arundel field came on stream - only 18 months after project sanction. The Andrew Area is expected to produce into the mid-2020s.

Culzean

The Total-operated Culzean field (BP ownership share 32%) is one of the largest new projects to be sanctioned in the North Sea in recent years and is expected to supply around 5% of UK gas requirements. The field was sanctioned in 2015 and comprises a high-pressure, high-temperature gas condensate reservoir. First gas is expected in 2019.

Enhanced oil recovery

BP is leading the way in the latest enhanced oil recovery (EOR) techniques to significantly extend the field life of our assets, including the use of reduced salinity water injection technology (LoSa®).

LoSa® was developed by BP’s enhanced recovery technology team following a decade of laboratory tests. These tests were conducted at BP’s research centre at Sunbury-on-Thames using samples from across BP’s global operations. The low-salinity water interacts with the clay in the reservoir to release oil that is stuck to the clay. Our Glen Ridge development will be the first full-field EOR scheme using LoSa® with the potential to unlock an additional 40 million barrels of oil, compared to using conventional seawater for water injection,
Asset spotlight - Clair Ridge

Clair Ridge

2018 saw another major milestone for BP in the North Sea with the start-up of our multi-billion-pound Clair Ridge project, targeting 640 million barrels from the Clair field located 75 kilometres to the west of Shetland.

The Clair Ridge project develops new resources from the Clair field – the largest on-field on the UK Continental Shelf (UKCS).

The Clair field was discovered in 1977, but challenging reservoir characteristics and the technological limits of the time meant it was 2001 before BP and partners approved a development plan for a first phase of development.

Phase One was brought on stream in 2005, targeting approximately 300 million barrels of recoverable reserves. It was the first fixed offshore facility to be installed in the West of Shetland area.

To the north of Phase One is Clair Ridge, where BP is targeting 640 million barrels of recoverable resources. The multi-billion-pound investment by BP and partners delivered two new bridge-linked platforms, offshore construction for which was completed in 2016.

The hook-up and commissioning of the platforms was the largest in the North Sea in more than 20 years, involving more than 6,000 people with 750 offshore at any given time.

Technology played a massive role in turning this discovery into a reality. It is now playing a major role in revitalising production, thanks to the first offshore deployment at Clair Ridge of BP’s enhanced oil recovery technology, LoSaP, which seeks to increase oil recovery from reservoirs by using reduced-salinity water in water injection.

This has the potential to result in up to 40 million additional barrels being cost-effectively recovered over the lifetime of the development.

Designed to produce into the 2050s, Clair Ridge production capacity is expected to peak at 120,000 barrels per day.

Go deeper: www.bp.com/clair-ridge
Delivering the plan

The North Sea is a growth region for BP. Maximising the performance of our assets and successfully bringing on important new production are core strategic priorities.

Over the past few years, we have been delivering a strategy to maximise production from our assets, focus our portfolio and invest for the future. This has served us well.

We are now focused on growing our business in the North Sea.

In recent years, we have invested at record levels in the North Sea. This has brought the Quad 204 and Clair Ridge projects in the west of Shetland into production. Combined, these projects are targeting more than one billion barrels of recoverable resource.

BP now holds a 45.1% interest in the Clair field following the acquisition in 2018 of an additional 16.5% interest from ConocoPhillips’ share, demonstrating our ambitions to look for opportunities around our core hubs in the west of Shetland and the central North Sea.

That is not all we have in the pipeline. We have a 32% interest in a third North Sea mega project, the Total-operated Cuban development. Due on stream in 2019, Cuban was the largest new field development sanctioned in the UK in 2015.

This activity, combined with continuing to improve production, efficiency and reliability from our other core assets, will help us achieve our ambitious goal of doubling our North Sea production to 200,000 barrels a day by 2020.

Safety and environment
Safety

We are proud of the high-quality portfolio we have today, but we are clear that our licence to operate it only exists by prioritising safety every day.

Our North Sea strategy is underpinned by a relentless focus on safety and risk management. Safety is front and centre of all we do. It’s a mindset; fostering a deep culture of care among our workforce so we are always working to be better.

Operating in technically demanding geographies, we are sensitive to local environments and work hard to avoid, minimise and mitigate environmental impacts.

Safety at BP is driven by leadership and applied through our Operating Management System – a set of processes, standards and practices that helps us to consistently deliver safe, reliable and compliant operations.

We know that it’s not just what we do but how we do it that’s important. Safety is the core value that guides all BP people, while our Code of Conduct sets out the basic rules for operating safely, responsibly and consistently.

We take the welfare of our people seriously and strive to create and maintain safe and healthy working environments.

In 2018, we rolled out, “We Care About Zero” – a regional drive for excellence in health, safety and environment performance. Our vision is that everyone who impacts the North Sea business - our leaders, HSE professional, workforce, contractors and suppliers - is committed in mindset and day-to-day behaviour to five Zero Objectives.

These are:
- Zero harm to people
- Zero leaks
- Zero repeat incidents
- Zero emissions growth
- Zero cyber events
Safety in action

How forensic analysis and proactive safety leadership on Clair Ridge overcame an unusual safety challenge.

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Now imagine the problems that 50 miles per hour winds could create, whipping up dust and grit on a busy construction site in the deep water west of Shetland.

The Clair Ridge platform, now in full operation following first oil, was a project that faced exactly this challenge during construction.

Shortly after the start of project execution in May 2015, the construction teams began to experience a series of minor eye injuries.

The safety statistics show 24 eye injuries related to grit, dust and non-metallic particles over the first two years.

The project’s leadership became concerned at the frequency of these incidents and began a series of safety interventions designed to get to the root cause of the problem.

This was key to identifying effective solutions and included a thorough review of where the dust and grit were coming from, site sampling and laboratory-based microscopic analysis.

The results indicated two main sources: grinding dust and rust particles from scaffolding used for one-site construction and residual blasting grit from the module construction phase in South Korea.

Understanding the sources of the hazard gave our Clair Ridge team the opportunity to partner closely with key contractors and work crews on site, share knowledge and ideas, and pull together an intervention plan with several points of attack.

These included:

- Improved housekeeping to target areas that might generate airborne debris
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“The results were incredible with a huge decline in the number of eye injuries on the platform.

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HSE Manager for BP’s Global Projects Organisation

Community in action

Connecting through culture

Since 2005, the BP Big Screens have given Aberdeen audiences the opportunity to enjoy free performances of world-class opera and ballet from the Royal Opera House in London.

Last year, more than 2,000 members of the local community, BP employees and their families enjoyed a live screening in Aberdeen’s Duthie Park of Puccini’s opera La Bohème. This year will mark our 20th year sponsoring the BP Portrait Award organised by the National Portrait Gallery – one of the most prestigious portrait competitions in the world – and our 16th year supporting the Robert Gordon University Grey’s School of Art Degree Show, an annual highlight in the local arts calendar that showcases the work of graduating students.

Developing capability

BP’s thriving Schools Link programme has been running for over 50 years.

It is a comprehensive and practical programme aimed at inspiring young people to develop their skills in science, technology, engineering and maths (STEM), as well as giving them an understanding of business, the energy industry, and how to work as a team. Feeding into every stage of education, BP North Sea is linked with schools across the north-east of Scotland, BP also supports the Career Ready initiative in Scotland, a UK-wide charity linking employers with schools and colleges to open up the world of work to young people. In 2018, BP North Sea employees mentored six secondary school pupils through this scheme with several already signed up for the 2019 intake.

Building community capacity

BP has strong links with the voluntary sector, supporting a range of charities providing vital services. Many BP employees volunteer their time and skills to help make a positive difference.

Earlier in 2019, BP lent its support to the Changing Lives campaign by social care charity Voluntary Service Aberdeen (VSA). VSA is seeking to build a £3.2 million state-of-the-art mental wellbeing centre in the heart of Aberdeen. This, combined with our longstanding partnerships with other local charities like CLAN, Inspire and Cornerstone, is part of our ongoing commitment to support activities that strengthen the skills and abilities of people and community groups.

This year, the annual Coast to Coast charity cycle ride will see a group of 75 current and former BP employees ride 250 miles over three days raising thousands of pounds for charity. Since the event began 11 years ago, BP cyclists have raised more than £1 million for a range of good causes.
Community

We passionately believe in supporting activities that strengthen the skills and abilities of people in the communities where we do business.

We are committed to going beyond our core business responsibilities to work in partnership with communities, local authorities, business organisations and voluntary groups to bring about broader cultural, social and economic benefits.

Our programme focuses on participating in and contributing to communities through education partnerships, making arts and culture accessible to all and helping to enhance the quality of life in the locations in which we operate.

Supporting local festivals and arts institutions and bringing world-class arts events to the community mean BP is adding to Scotland’s rich cultural diversity.

And it's not just about financial support. Every year, hundreds of BP employees and contractors volunteer their time and expertise to help make our communities a better place to live, now and in the future.

The BP Employee Matching Fund encourages active fundraising and volunteering in the community and enables staff to support organisations and charities of their choice.

Environment

We are committed to minimising our impact on the environment and have set ambitious targets and aims to reduce emissions in our operations, improve our products to help our customers reduce their emissions, and create low carbon businesses.

The North Sea oil and gas sector is subject to strict environmental regulation, with which we always strive to comply. We work closely with regulators to constantly review what we do, how we do it, and how we can do it better. Our Operating Management System is designed to drive continuous improvement in our regulatory, compliance and environmental performance.

Our system meets the requirements of the international environmental management standard ISO 14001 and is subject to regular internal and external audit.

Two decades ago, BP was one of the first energy companies to address the threat of climate change and today we continue to embrace the dual challenge of meeting growing demand for energy with fewer emissions. 2018 saw the launch of a new report setting out our commitment to a low carbon future.

The report, Advancing the Energy Transition, details BP’s framework for delivering this commitment: reducing greenhouse gas emissions in our operations, improving our products to help customers reduce their emissions, and creating low carbon businesses. We have set a global target of 3.5 million tonnes of sustainable greenhouse gas (GHG) emissions reductions by 2025. This includes actions taken by our businesses to improve energy efficiency and reduce methane emissions and flaring — all leading to permanent, quantifiable GHG reductions.

We are already well on the way to meeting this target with 2.5 million tonnes of reductions achieved since the beginning of 2016.

The North Sea is playing its part to address the dual challenge facing our industry. We are using Forward Looking Infrared (FLIR) cameras combined with analytics technology to detect, quantify and address methane releases. On our Glen Lyon and Clair Ridge facilities there are Flare Gas Recovery systems, which will enable us to achieve zero routine flaring.

And we have been investing in the Scottish Forest Alliance (SFA) — a native woodland tree planting initiative in Scotland to deliver carbon, biodiversity and social benefits, for the past 20 years.

We have made good progress, but are not complacent. We continue to seek new ways to help advance the energy transition.
People

BP is a leading employer in a vital sector - a place where the brightest minds come together to find new ways of solving complex challenges that make a difference to the UK energy industry and economy.

Our performance as a company depends on maintaining and developing an engaged, skilled workforce and our culture is based on respect for one another. We value the strengths, abilities and talents that different people bring to our organisation, and we reward our people on merit.

The foundation for this is a set of shared values that guides us in our everyday work. BP values safety, respect, excellence, courage and a one team approach. We believe this enables us to create a working environment where everyone can make a difference and give their best.

We hold ourselves to the highest ethical standards and adhere to our Code of Conduct, which outlines our expectations for everyone who works at BP.

We have created three areas of focus for our people designed to help develop a winning team for the future.

These are:

Developing great leaders
Real competitive advantage comes from world-class leadership. We need leaders who engage passionately with our company, vision and role in the world; who demonstrate deep ownership of BP performance; and who inspire others through coaching, continuous feedback and trust.

Creating a truly global workforce
We aim to create a globally connected, culturally fluent workforce, nimble enough to respond to business changes where our people can compete based on merit regardless of background or location.

Growing capabilities
As we modernise the way we work, we are continuing to understand, invest in and build skills we need for the future by investing in technical development and new technologies to build a global, modern, and digitally-enabled workforce.
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Operating in technically demanding geographies, we are sensitive to local environments and work hard to avoid, minimise and mitigate environmental impacts.

Safety at BP is driven by leadership and applied through our Operating Management System—a set of processes, standards and practices that helps us to consistently deliver safe, reliable and compliant operations.

We know that it’s not just what we do but how we do it that’s important. Safety is the core value that guides all BP people, while our Code of Conduct sets out the basic rules for operating safely, responsibly and consistently.

We take the welfare of our people seriously and strive to create and maintain safe and healthy working environments.

In 2018, we rolled out “We Care About Zero”—a regional drive for excellence in health, safety and environment performance. Our vision is that everyone who impacts the North Sea business—our leaders, HSE professional, workforce, contractors and suppliers—is committed in mindset and day-to-day behaviour to five Zero Objectives.

These are:
- Zero harm to people
- Zero leaks
- Zero repeat incidents
- Zero emissions growth
- Zero cyber events
Delivering the plan

The North Sea is a growth region for BP. Maximising the performance of our assets and successfully bringing on important new production are core strategic priorities.

Over the past few years, we have been delivering a strategy to maximise production from our assets, focus our portfolio and invest for the future. This has served us well.

We are now focused on growing our business in the North Sea.

In recent years, we have invested at record levels in the North Sea. This has brought the Quad 204 and Clair Ridge projects in the west of Shetland into production. Combined, these projects are targeting more than one billion barrels of recoverable resource.

BP now holds a 45.1% interest in the Clair field following the acquisition in 2018 of an additional 16.5% interest from ConocoPhillips’ share, demonstrating our ambitions to look for opportunities around our core hubs in the west of Shetland and the central North Sea.

That is not all we have in the pipeline. We have a 32% interest in a third North Sea mega project, the Total-operated Culzean development. Due on stream in 2019, Culzean was the largest new field development sanctioned in the UK in 2015.

This activity, combined with continuing to improve production efficiency and reliability from our other core assets, will help us achieve our ambitious goal of doubling our North Sea production to 200,000 barrels a day by 2025.
Asset spotlight - Clair Ridge

The Clair Ridge project develops new resources from the Clair field – the largest oilfield on the UK Continental Shelf (UKCS).

The Clair field was discovered in 1977, but challenging reservoir characteristics and the technological limits of the time meant it was 2001 before BP and partners approved a development plan for a first phase of development.

Phase One was brought on stream in 2005, targeting approximately 300 million barrels of recoverable reserves. It was the first fixed offshore facility to be installed in the West of Shetland area.

To the north of Phase One is Clair Ridge, where BP is targeting 640 million barrels of recoverable resources. The multi-billion-pound investment by BP and partners delivered two new bridge-linked platforms, offshore construction for which was completed in 2016.

The hook-up and commissioning of the platforms was the largest in the North Sea in more than 20 years, involving more than 6,000 people with 750 offshore at any given time.

Technology played a massive role in turning this discovery into a reality. It is now playing a major role in revitalising production, thanks to the first offshore deployment at Clair Ridge of BP’s enhanced oil recovery technology, LoSaP, which seeks to increase oil recovery from reservoirs by using reduced-salinity water in water injection.

This has the potential to result in up to 40 million additional barrels being cost-effectively recovered over the lifetime of the development.

Designed to produce into the 2050s, Clair Ridge production capacity is expected to peak at 120,000 barrels per day.

2018 saw another major milestone for BP in the North Sea with the start-up of our multi-billion-pound Clair Ridge project, targeting 640 million barrels from the Clair field located 75 kilometres to the west of Shetland.
Andrew Area

The Andrew Area includes the Andrew, Arundel, Cynus, Farragon, and Kinnoull fields which all produce through the Andrew platform. The field started production in 1994. Andrew, Cynus and Farragon were shut in in mid-2011 to allow for the Andrew Area Development (ADD), a major brownfield project enabling the Kinnoull field, located 26 kilometres to the north, to be developed through the existing facilities.

The ADD also included extensive new subsea infrastructure, a new 750-tonne process module and structural strengthening of the platform. In 2017, the Arundel field came on stream - only 18 months after project sanction. The Andrew Area is expected to produce into the mid-2020s.

Culzean

The Total-operated Culzean field (BP ownership share 32%) is one of the largest new projects to be sanctioned in the North Sea in recent years and is expected to supply around 5% of UK gas requirements. The field was sanctioned in 2015 and comprises a high-pressure, high-temperature gas condensate reservoir. First gas is expected in 2019.

Enhanced oil recovery

BP is leading the way in the latest enhanced oil recovery (EOR) techniques to significantly extend the field life of our assets, including the use of reduced salinity water injection technology (LoSaf®).

LoSaf® was developed by BP’s enhanced recovery technology team following a decade of laboratory tests. These tests were conducted at BP’s research centre at Sunbury-on-Thames using samples from across BP’s global operations. The low-salinity water interacts with the clay in the reservoir to release oil that is stuck to the clay. Our Blel Ridge development will be the first full-field EOR scheme using LoSaf with the potential to unlock an additional 40 million barrels of oil, compared to using conventional seawater for water injection.
Building our future

Foinaven

The Foinaven field is located 190 kilometres west of Shetland in water depths of up to 500 metres. The field was discovered in 1990 and sanctioned for development in 1994. It was the first deepwater development on the UKCS and the first west of Shetland. First oil from the field was in November 1997. The pioneering fast-track development was based on a network of subsea wells tied to a subsea network of pipelines, control umbilicals and risers to the Petrojarl Foinaven FPSO.

Eastern Trough Area Project (ETAP)

ETAP ranks as one of the largest and most commercially complex North Sea oil and gas developments of the past 20 years, multiple fields with varying ownership sharing a central processing facility (CPF). BP operates six of the seven ETAP fields; Machar, Maudes, Mirren, Mungo, Mornan and Marnock. The non-operated Seagull field (BP ownership share 50%) will be tied back to the ETAP CPF with first production expected in 2021. We are exploring options to develop another new field, Skua, through the ETAP hub.

ETAP came on stream in July 1998 with an estimated production life of 20 years. However, a multi-million-pound investment programme in 2015 secured its future well into the 2030s.

In the two decades of operations, more than 550 million barrels of oil equivalent (gross) have been produced from the BP-operated ETAP fields.
Clair Phase One

With an estimated seven to eight billion barrels of oil in place, the Clair field is the largest oilfield on the UK Continental Shelf. The field, located 75 kilometres west of the Shetland Islands, was discovered in 1977, but challenging reservoir characteristics and the technological limits of the time meant it was the mid-1990s before the field saw extensive drilling and 2001 before BP and partners approved a development plan. Production from the Clair field began in 2005 through the Clair Phase One platform which was the first fixed platform west of Shetland.

Clair Ridge

The physical size of the Clair field dictates development via a phased approach. Clair Ridge is the second phase of development. The bridge-linked platforms, which delivered first oil in November 2018, are designed to recover an estimated 640 million barrels of oil and ramp up to 120,000 barrels of oil per day at peak production. The new facilities, which are designed for 40 years of production, required capital investment in excess of £4.5 billion. BP and partners are now considering a third phase of development in the Clair fields.

Building our future

We have an exciting set of future investment and renewal opportunities which will sustain a material UK business for BP for many years to come.

Our intent is to maintain a healthy capital investment programme to sustain our production growth.

In 2019, we committed to the non-operated Seagull development in the central North Sea (BP ownership share 50%).

Seagull is a high pressure, high temperature development located in the central North Sea, 17 kilometres south of the ETAP Central Processing Facility (CPF). It will be tied back to the ETAP CPF partially using existing subsea infrastructure.

This is part of BP’s strategy in the North Sea to develop fields that will maximise value from existing infrastructure.

Seagull, like our Vorlich and Aplin developments, will have a shorter project cycle from development to production, allowing us to bring on important new production quicker.

Along with our partners, we are exploring options for a possible third phase of development of the Clair field.

Our subsea tiebacks complement our major projects start-ups and will play an important role in building BP’s future in the North Sea.
Our portfolio

We have a refreshed and refocused portfolio that will now sustain production into the 2050s.

Our portfolio today is smaller than in the past but stronger, with less operating complexity, reduced risk, and better potential to increase and sustain production and returns.

See North Sea portfolio map on page 7.

Schiehallion Area

The Schiehallion Area incorporates the Schiehallion, Loyal and Alligin fields located around 175 kilometres west of the Shetland Islands. Schiehallion and Loyal are developed through the Glen Lyon floating production, storage and offloading (FPSO) vessel. Alligin was sanctioned in 2018 and is being developed as a two-well subsea tieback to the Glen Lyon and is expected to come on stream in 2020.

Production from the Schiehallion Area was shut-in between 2013 and 2017 to allow for the Quad 204 project – a multi-billion-pound investment by BP and partners to completely redevelop the hub and maximise production from the fields. Quad 204 saw the removal of the old FPSO, construction and installation of the Glen Lyon FPSO and renewal of much of the subsea infrastructure network.

Through the Quad 204 project, BP and partners expect to unlock a further estimated 450 million barrels of resources, extending the life of the fields out to 2036 and beyond.
Modernisation and transformation

Our modernisation and transformation programme is about creating a flexible, responsive and innovative business that embraces new technologies, agile ways of working and is a motivating and exciting place to work.

It is critically important that we are not only safe and efficient here in the North Sea, but that we transform the way we work to drive real, sustainable efficiencies so that we can compete for the long-term.

We encourage everyone at BP to find and implement smarter ways of working, without compromising safety, with the goal of getting more from our assets and capturing value from every pound we spend.

From small and simple ideas to large-scale deployment of new technologies and tools, our people are helping to make a positive difference to our operations and our productivity.

Our modernisation and transformation programme is focused around three themes: agility, digital, and mindset.

We will make our organisation more agile and improve decision making; we are looking to truly embrace digital and the opportunities presented by big data; and we want to create a mindset inside the company consistent with a business that values the penny as well as the pound and is always looking to do things better.

Working like this will be very different – we hope to unleash ideas and solutions we can’t imagine today. The good news is we are already in action.
Technology

Maximising the value and potential of existing and emerging technologies is core to our strategy to sustain a competitive North Sea business for the long-term.

We believe it is central to our ability to continuously improve our performance in safety, risk management, reliability, operating efficiency, production optimisation, reservoir and well management, hydrocarbon recovery and future exploration success.

We have scientists and technologists at seven major global centres, including here in the UK.

Around the world, BP engineers are using “big data” to make critical decisions about well, reservoir and field, with state-of-the-art analytical tools that draw on historical and real-time data.

With these new capabilities, well sensor data is being made available to engineers and operators within seconds for monitoring, analysis and value optimisation. Our long-term research is vital to BP’s capacity to adapt and grow.

Here in the North Sea, we have always been at the leading edge of technology – and we are a region renowned for exporting its skills and expertise around the world.

Unmanned data harvesting on Machar field

BP successfully deployed an unmanned surface vessel (USV) for a first-of-its-kind data harvesting project at the Machar field in the central North Sea.

The 4.5-metre long XCEON USV was launched from Peterhead and transited the 160 miles to Machar, which is part of our ETAP hub. On arrival at Machar, the USV gathered data from four in-field seabed sensors and sent real-time video imagery and situational awareness data to XCEON’s onshore operations centre where a team of qualified USV pilots kept watch and controlled the vessel. The system, its sensors and the data-download process were fully tracked live, via satellite communications and the internet.

The XCEON survey was in support of a project on the Machar field which requires long-term monitoring of the reservoir.

BP and TechX

For the past two years, BP has partnered with the Aberdeen-based Oil and Gas Technology Centre (OGTC) to support its TechX Pioneers programme.

The programme provides start-ups companies with funding, expertise, mentors and global partners to help develop and validate new technologies. Nearly 200 applications from over 24 countries were received for the TechX programme in 2019, covering oil and gas and biotech solutions that will support the industry to maximise economic recovery and the transition to a low carbon economy.

Each of the chosen start-ups get up to £100,000 to develop their business and technology as part of an intensive 16-week accelerator programme that includes expert mentors, development partners and access to the industry.

It is my pleasure to welcome you to this overview of BP’s business in the North Sea.

BP has been operating in the North Sea for more than 50 years and we plan to be here for many decades to come. Our vision is to be the best upstream business in the North Sea, the safest, most reliable and competitive operator and a trusted partner in the community.

Aberdeen is home to our North Sea headquarters, covering offshore operations on the United Kingdom Continental Shelf (UKCS). Our activity set in the North Sea spans the entire industry lifecycle, from access and exploration, through resource appraisal, drilling, commissioning, production and decommissioning.

We are a significant employer in the region and are proud of the work our people do to constantly push new frontiers.

Last year marked another major milestone in BP’s long history in this region with first oil from our Clair Ridge project.

This year we are excited to be a part of another major project in the North Sea, the non-operated Culben development in which we have a 52% interest having doubled our stake in 2016. Culben is the largest UK gas field to be sanctioned for quarter of a century and is expected to produce into the mid-2030s, supplying 5% of total UK gas demand.

In 2019 we will also continue our strategy to tap into smaller fields that can be rapidly developed through established offshore hubs. Our Alligin and Vorlich fields are two such developments and are expected to produce 30,000 barrels gross of oil equivalent a day at peak production.

Seagull is another of our rapid tiebacks, a high pressure, high temperature development located in the central North Sea, just south of our ETAP hub.

This new activity, combined with safe and reliable operations from our other core hubs in the central North Sea and west of Shetland, will help drive forward our ambitions to grow our North Sea production. It also further highlights BP’s continued commitment to this important region.

I hope you will find this publication informative and share my confidence in the great potential we still have here in the North Sea.
Our portfolio

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