

Our activities  
**in Denmark**





LARGEST  
OIL AND GAS  
OPERATOR  
IN THE DANISH  
NORTH SEA



OVER  
**1,800**  
EMPLOYEES



MANAGING  
**85%**  
OF THE NATIONAL  
OIL PRODUCTION



MANAGING  
**97%**  
OF THE NATIONAL  
GAS PRODUCTION



DENMARK

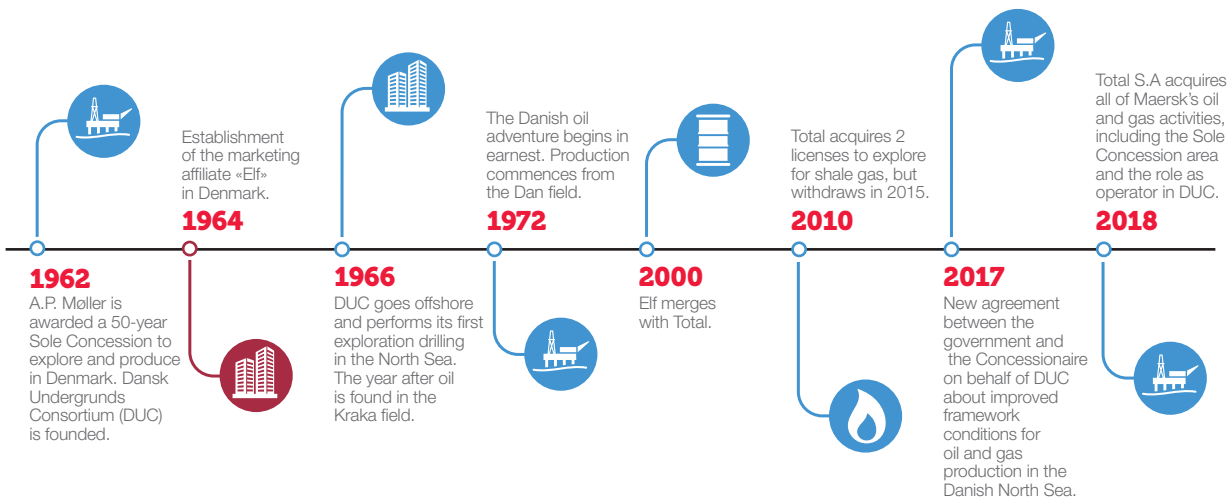
SWEDEN



ESBJERG



COPENHAGEN



## TOTAL IN DENMARK

# BUILDING ON A STRONG LEGACY

**Total is the largest oil and gas operator in Denmark. The country boasts a proud oil and gas industry which extends back more than half a century.** Today Denmark's upstream industry is gearing up for a new chapter with the Total-led full redevelopment of the Tyra Field and its associated gas infrastructure.

Oil was first discovered in the Danish sector of the North Sea in 1967, with commercial production beginning in 1973. In 2017 operated production in Denmark was around 115,000 barrels of oil and 447 million standard cubic feet of gas per day.

Total Denmark A/S, an affiliate of Total Marketing & Services, has been active in Denmark since 1964, serving the markets of industrial, automotive and marine lubricants, plus aviation fuel, bitumen and special fluids. The Copenhagen head office operates as a Nordic hub covering and supporting the Danish, Swedish, Norwegian, Finnish and Icelandic markets.

Total's high profile presence in Denmark was cemented with the acquisition of Maersk Oil which completed in 2018, at this point Total acquired the operatorship of the Danish Underground Consortium (DUC). This consortium is responsible for 85% of the oil and 97% of the gas production in Denmark, making an important contribution to Denmark's economy, energy supply and employment.

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**TOTAL NORDIC**, Head Office: Aldersrogade 6C,  
4th floor, DK-2100, Copenhagen, Denmark.



To find out more:

[www.total.com/dk.total.com](http://www.total.com/dk.total.com)



"It is an exciting new chapter for Total in Denmark. In line with our global strategy to increase the proportion of gas in our hydrocarbon mix, our major capital project, Tyra is underway and progressing on time and on budget. Total is committed to Denmark and to building on the proud upstream heritage it has acquired."

**MICHAEL BORRELL**  
*Senior Vice President, North Sea & Russia and Denmark Country Chair*

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# EXPLORE AND PRODUCE THE RIGHT OPERATOR FOR DENMARK'S UPSTREAM

A strong operator and committed investor, Total is proud to build on an exceptional heritage to continue Denmark's upstream success.

**Total produces a mixture of oil and gas oil from 16 fields in Denmark.** The oil and gas reservoirs in the Danish North Sea are characterized by high-porosity, low-permeability chalk. First oil production from the Dan Field began in 1972. Since then, 15 other fields have been brought on stream including the major Gorm, Tyra, Dan & Halfdan assets. A third-party field, Trym, in the Norwegian North Sea, has been tied-in to the Harald field's infrastructure.

As a global leader in the integrated exploration and production business Total is ideally placed to be the principal operator and caring custodian of Denmark's oil and gas resources.

We have a long-term commitment to meeting our obligations as operator of the "Sole" concession through to 2042 and we have been greatly assisted in this by working relationships with the Danish state, regulators and partners,

not least those in the Danish Underground Consortium (DUC).

Oil and gas production has made a significant contribution to Denmark's economy, energy supply and labour market for decades. From 2004 to 2014, the total contribution to state revenue was more than DKK 220 billion, and DUC's production has made Denmark self-sufficient in oil and gas since 1993. The production of oil and gas has contributed to the creation of a service and supply sector which has generated thousands of direct and indirect jobs nationally and in particular in the city of Esbjerg.

Today, Total Exploration & Production Denmark is a team of more than 1800 people from 45 nationalities, of whom 750 work offshore. 300 people work in Copenhagen providing the regional business with leadership, technology, innovation and service.



**16**  
producing oil and gas fields in Denmark.



**50**  
offshore installations



**5**  
main platforms



**1800**  
employees

## EXPLORE AND PRODUCE

# FOOT ON THE GAS: REJUVENATING DENMARK'S NATIONAL ASSET



The full Tyra redevelopment project. When completed in 2022 the gas field's production will be equivalent to the gas supply for 1.5 million Danish homes.



Tyra will continue to produce gas for **25** years.

The Tyra hub will process **90%** of national gas production.

**Total is pressing ahead with the full redevelopment of the Tyra field, ensuring continued production from Denmark's largest gas field.** This vital megaproject will also protect and rejuvenate important Danish North Sea infrastructure.

The full redevelopment of Tyra represents the largest oil and gas project investment ever made in the Danish North Sea, and will enable Tyra to continue operations for at least 25 more years. At peak production, the redeveloped Tyra gas field will provide enough gas to supply 1.5 million Danish homes, supporting energy security, future tax revenues and employment for Denmark.

The investment cost for the modification to existing facilities and construction of new facilities will run to several billion

DKK, as will the responsible decommissioning of existing facilities, where respecting the environment and habitats in the Danish North Sea will be paramount.

Tyra is the centre of Denmark's national energy infrastructure, processing 90% of the nation's gas production. Through new development projects and third party tie-ins, the redevelopment of Tyra can be a catalyst for extending the life of the Danish North Sea – not just for Total and the DUC, but also for Denmark.

The new infrastructure can enable operators to pursue new gas projects in the northern part of the North Sea, where the most recent development, Tyra Southeast, delivered first gas in 2015 and is currently producing above expectation.

The redeveloped Tyra is expected to deliver approximately 60,000 boe/d at peak, and it is estimated that the redevelopment could enable the production of more than 200 MMboe. Approximately two thirds of the production is expected to be gas and one third to be oil.

Alongside the Total-operated Culzean development in the UK North Sea, the Tyra gas field redevelopment is in line with Total's stated objective of increasing natural gas production; an important bridging fuel addressing climate concerns and the energy transition.

"The redevelopment of Tyra is the largest investment carried out in the Danish North Sea, and when completed in 2022, production from the Tyra field itself has the potential to cover Danish gas consumption for a decade. Tyra has been a key asset in the history of upstream activity in Denmark, and this project sees that success story stretch out for another quarter of a century," says Michael Borrell, Senior Vice President, North Sea & Russia and Denmark Country Chair.

"The redevelopment of Tyra is evidence of a shared interest in prolonging the life of the Danish North Sea. The investment

in this globally significant oil and gas project will support several thousand Danish jobs, and it can enable future significant industry investments in new development projects made possible by the redeveloped Tyra gas infrastructure," he adds.

The Tyra field will be shut-in for the redevelopment in November 2019, and production is expected to recommence in July 2022.



Tyra's production capacity will be of **60,000** boe/d.



**SAFETY**  
IS A CORE VALUE,  
the cornerstone of our operational excellence and that of our partners



Working offshore at one of five principal platform complexes comprising 50 installations.

## SHIP AND MARKET

# THE CENTRAL HUB FOR MARKETING & SERVICES ACTIVITIES ACROSS THE FIVE COUNTRIES OF DENMARK, FINLAND, ICELAND, NORWAY, SWEDEN

**With a strong market presence, and acting as a hub for the Scandinavian region, Total Denmark A/S, is a wholly owned affiliate of Total Marketing & Services, a part of the Total Group,** and has been present and active in Denmark since 1964, supplying the markets of industrial, automotive and marine lubricants, plus aviation fuel, bitumen and special fluids.

Total Denmark A/S is committed to supplying the highest quality lubricants that exceed the most stringent industrial specifications and are recommended by numerous major automotive and equipment manufacturers worldwide. We deliver the performance benefits that only a global Research & Development supported organisation can bring. We continue to lead the way in the development of our Biodegradable and Fuel Economy (FE) ranges as a part of our commitment to reduce CO2 emissions.

Total Denmark A/S is a leading supplier of bitumen for roads and industry. This

leading market position is due to being highly visible, innovative, and pro-active in our customer support. By maintaining this dynamic approach for both products and services, Total Denmark A/S remains the partner of reference for Danish customers. We provide an exemplary service and tailored solutions that take account of customer requirements, and of their sustainable development concerns.

Total Denmark A/S distributes a full range of products, many of which have been developed specifically for the challenging climatic conditions typical of the Nordic region.

Our difference and one key element that sets Total Denmark apart, is our local expertise! Total Denmark A/S has trained experts, to face the growing demands of industry and offer innovative solutions to meet our customer's challenges. Our experts listen and use their knowledge to implement the changes needed to keep our customers ahead of the competition.

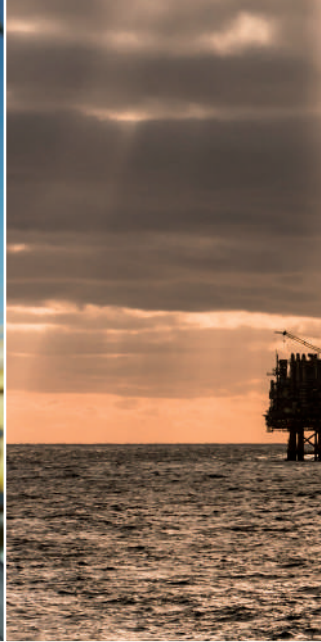


**Marketing in Denmark since 1964.**



**Total A/S Denmark is the principal supplier of bitumen to industry and road surfacing in Denmark.**

**TOTAL NORDIC**  
 Head Office:  
 Aldersrogade 6C  
 4th floor  
 DK-2100, Copenhagen





2



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5



**1** Total's Esbjerg base employs 1500 people, 750 of whom work offshore across five main platform centers.

**2** The Tyra West complex. The Tyra platforms form the export centre for all gas produced in the Danish North Sea.

**3** Total's office in Esbjerg.

**4** Esbjerg staff in a meeting room.

**5** Tyra East. The entire Tyra complex will undergo a full field redevelopment in the coming years.

**6** Total Denmark A/S coordinates distribution of lubricants and special fluids to the Nordic region.

**7** Total company engineers working offshore in the North Sea.

7



8



**8** Total Denmark A/S markets a full range of high quality industrial lubricants, and specialist support.

# A HISTORIC PRESENCE IN EUROPE AND CENTRAL ASIA **AT THE HEART OF THE GROUP'S KNOWLEDGE AND DECISION MAKING**

Europe is home to the Group and its decision-making; it is the hub of its research and innovation work and constitutes a strong industrial base for all its branches.

**In 2017, regional oil and gas production was 761 kboe/d, 30% of the Group total, with two of our main producing countries being Russia and Norway.**

In Russia, home to our largest proven reserves, we produced 318 kboe/d from stakes in Novatek, and since December 2017, the Yamal LNG project. We produce from the Kashagan field (North Caspian license) in Kazakhstan, and we have a production agreement in the Total discovered Absheron gas field, in Azerbaijan.

In Norway, our 2017 production was 239 kboe/d, from numerous fields, notably Ekofisk and Snøhvit, where the Group also holds an 18.4% stake in the LNG plant, and from Troll. We hold stakes in over 80 production licenses on the Norwegian continental shelf, operating 35, we also partner in several fields and projects in the United Kingdom and the Netherlands. Following Maersk Oil's acquisition, in March 2018, we entered Denmark and became the second-largest North Sea operator. In Italy, we operate the Tempa Rossa project, with start-up expected in 2018.

Finally, we boast a network of dedicated research centers located in Aberdeen, Stavanger and Moscow, all working in coordination with our key R&D hub at the "Centre Scientifique et Technique Jean-Féger" (CSTJF) in southwestern France.

**Serving and supporting our customers and major partners, in Marketing & Services we develop and market innovative and creative solutions aimed at performance and energy efficiency. For transport we offer new energies for the digital age with electro-mobility, natural gas vehicles (NGV), hydrogen fuelling, and LNG bunkering.**

We operate a branded service station network of more than 9 000 sites concentrated mainly throughout France, Germany, Belgium, the Netherlands and Luxembourg. We promote new low carbon energy with the deployment of electric charging points on major routes in Europe and hydrogen fuelling stations in Germany. The AS24 brand has a network of over 800 service stations aimed at heavy-duty vehicle customers in 28 European countries. We are also a major fuel card payment provider, with around 3.3 million cards.

We supply high-quality lubricants formulated to the latest technical specifications through our production sites in Rouen (France), Ertvelde and Schoten (Belgium),

Beverwijk (the Netherlands) and Osnabrück (Germany). A new blending plant in Russia will soon be added to enhance this further. Benefiting from our logistics network, we are a partner of choice and a local supplier of products for commercial markets in: bulk fuels, aviation fuel, special fluids, LPG, bitumen and heavy fuel oil.

**In Refining & Chemicals Total is the second largest refiner in Western Europe. The region accounts for 72% of the Group's refining capacity.**

We own and operate eight refineries in Western Europe (five in France, one in Belgium, one in the United Kingdom and one in Germany), including one currently being converted into a bio refinery (La Mède, France). We also have a stake in a refinery in the Netherlands.

The Group's main petrochemical sites in Europe are in Belgium and in France. Europe accounts for 48% of our petrochemicals capacity. Total's 100% affiliate Hutchinson (elastomer processing) has 55 production sites across Europe.

**Across Europe and Central Asia Total's Gas, Renewables, and Power (GRP) division is actively engaged in gas and electricity trading and marketing to industrial, commercial and domestic customers.** With LNG, Total has entered into long term access agreements in France and in the United Kingdom, through Fosmax and the South Hook LNG receiving terminal.

We are present across the full solar value chain, with production and sale of solar cells ranging from residential roof tiles, to industrial scale plants marketed worldwide, supported by development of new technologies with key partners such as the Ile de France Photovoltaic Institute (IPVF). We are also active in solar power production such as in the Montalto plant in Italy (84MWp). The acquisition of Saft (advanced batteries) in August 2016 is essential to promote the growth of renewables. The agreement signed with EREN in September 2017 added a further set of diversified assets in solar and wind power to the Group portfolio.

The Group is participating in large-scale pilot projects in the carbon capture, use and storage (CCUS). The Group is also investing in the energy efficiency services market, which is expected to see strong growth in the coming years. The acquisition of GreenFlex in October 2017 is an example of this commitment.

**30%**  
OF THE GROUP'S  
**PRODUCTION**  
(761 kboe/d of oil and gas)

**4,140**  
**MBOE**  
OF PROVED RESERVES  
IN THE REGION




  
**2nd**  
**LARGEST**  
**REFINER**  
in Western Europe

**40%** OF THE GROUP'S **GAS**  
**PRODUCTION**  
(2,674 Mpc/d of natural gas)

  
**2nd**  
**PETROCHEMICAL**  
**PRODUCER**  
in Europe

**2nd**  
**LARGEST E&P**  
**OPERATOR**  
in the North Sea  
(following Maersk Oil acquisition)



  
MORE THAN  
**900 MWC**  
OF INSTALLED  
POWER CAPACITY  
IN 2017

  
MORE THAN  
**9,000**  
**SERVICE STATIONS**  
(including AS24)



MARKETING OF GAS  
AND ELECTRICITY IN  
**6 COUNTRIES**  
**IN EUROPE**

United Kingdom, France, Germany,  
Netherlands, Belgium, Spain

  
**1,049 kb/d**  
OF PETROLEUM  
PRODUCT SALES

# AN INTEGRATED COMPANY

Our commitment to better energy is reflected in state-of-the-art expertise throughout the whole energy chain. Shedding light on this integrated know-how is part of our responsible energy future.



## EXPLORE AND PRODUCE

To meet the energy needs of a burgeoning global population while preparing for the future, we continually innovate to produce sustainable and responsible solutions in oil and gas, solar energy, and bioenergies.



## TRANSFORM AND DEVELOP

You already know us through our network of service stations. But we do so much more to improve your daily life. Our industrial expertise in transforming oil and gas helps to produce a wide range of everyday items such as cars, packaging and household appliances.



## SHIP AND MARKET

We all require energy for heat, transportation, light in our homes and so much more. Total serves your needs worldwide each and every day. We bring energy from producing regions all the way to consumer hubs, working across a long, complex logistics chain.

- 1 OIL AND GAS
- 2 SOLAR
- 3 BIOENERGIES

- 4 SPECIALTY CHEMICALS
- 5 POLYMERS
- 6 REFINING-PETROCHEMICALS

- 7 TRADING-SHIPING
- 8 PRODUCTS AND SERVICES



Visit our websit to know more about our activities:  
[www.total.com](http://www.total.com)

TOTAL'S ACTIVITIES



# WE ARE COMMITTED TO BETTER ENERGY

Total is a global integrated energy producer and provider, a leading international oil and gas company, and a major player in low carbon energies. We explore for, produce, transform, market and distribute energy in a variety of forms, to serve the end customer.



## Our strength?

Our 98,000 employees who are fully committed to better energy.

### Our ambition?

Becoming the responsible energy major. To do that, we must address the main challenges that lie ahead of us in the next 20 years:

- To meet the needs of a growing world population, we are working to supply affordable energy that meets the highest safety and environmental standards;
- To tackle climate change, we are developing

an energy mix consistent with the 2°C scenario and whose carbon intensity declines steadily;

- To anticipate customer needs and be recognized for our convenient, quality local service, we are introducing innovative solutions to promote responsible energy use.

That is what it means to be committed to better energy.



**6**  
MAJOR  
INTEGRATED  
PLATFORMS  
REFINING &  
PETROCHEMICALS



REFINERY  
CAPACITY

**2.0**  
MILLION B/D



**98,000**  
EMPLOYEES



**\$171.5\***  
BILLION  
REVENUE



**NO. 4**

**INTERNATIONAL OIL  
AND GAS COMPANY**

BASED ON MARKET CAPITALIZATION  
IN U.S. DOLLARS AT DECEMBER 31, 2017



**16,600+**  
SERVICE STATIONS  
(including AS24 networks)



**2,566**  
KBOE/D  
**OIL AND GAS  
PRODUCTION**



**\$14.4**  
BILLION  
ORGANIC  
INVESTMENTS



**\$10.6\***  
BILLION  
ADJUSTED NET  
INCOME

## Abbreviations

- **b**: barrel
- **cf**: cubic feet
- **/d**: per day
- **/y**: per year
- **€**: euro
- **\$ and/or dollar**: U.S. dollar
- **t**: metric ton
- **boe**: barrel of oil equivalent
- **kboe/d**: thousand boe/d
- **kb/d**: thousand barrel/d
- **M**: million
- **B**: billion
- **MW**: megawatt
- **FPSO**: Floating Production Storage and Offloading
- **FPU**: Floating Production Unit
- **FSU**: Floating Storage Unit
- **LNG**: Liquefied natural gas
- **LPG**: Liquefied petroleum gas

## Conversion table

- **1 boe** = 1 barrel of crude oil = approx. 5,390 cf of gas\* in 2015
- **1 b/d** = approx. 50 t/y
- **1 t** = approx. 7.5 b (for a gravity of 37° API)
- **1 Bm<sup>3</sup>/y** = approx. 0.1 Bcf/d
- **1 m<sup>3</sup>** = approx. 35.3 cf
- **1 t of LNG** = approx. 48 kcf of gas
- **1 Mt/y of LNG** = approx. 131 Mcf/d

\* This ratio is calculated based on the actual average equivalent energy content of Total's natural gas reserves and is subject to change.

\*As of December 2017.

**total.com**



Total is a major energy player committed to supplying affordable energy to a growing population, addressing climate change and meeting new customer expectations.

Those commitments guide what we do. With operations in more than 130 countries, we are a global integrated energy producer and provider, a leading international oil and gas company, and a major player in low-carbon energies. We explore for, produce, transform, market and distribute energy in a variety of forms, to serve the end customer.

Our 98,000 employees are committed to better energy that is safer, cleaner, more efficient, more innovative and accessible to as many people as possible. As a responsible corporate citizen, we focus on ensuring that our operations worldwide consistently deliver economic, social and environmental benefits.

Our ambition is to become the responsible energy major.



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