



Statoil: A Journey Across Energy Frontiers

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Editor's note: This is the first in a series of profiles of leading operators, including key international and national oil companies, around the globe. The focus is on the company's strategic direction, relationship to its government, major upstream activity, and significant technology challenges and applications.

Above: The new Statoil logo.
Photo by Øyvind Hagen/Statoil.

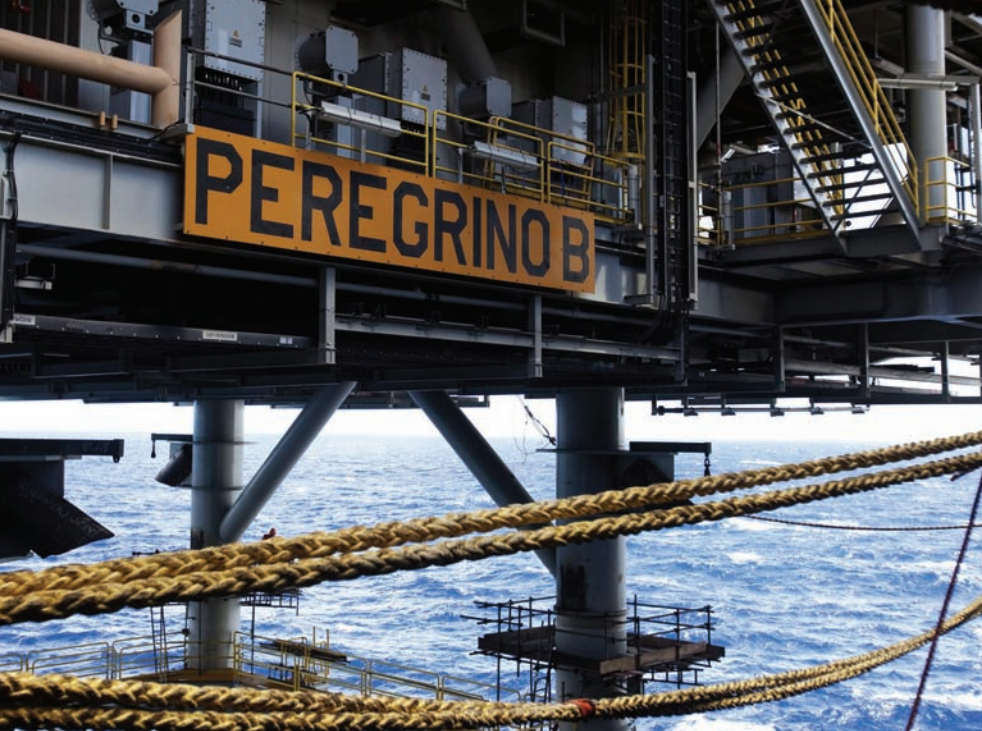
As the Norwegian Continental Shelf (NCS) matures, Statoil is trying to earn maximum value from its home patch, while at the same time repositioning itself for future growth internationally.

Originally formed in 1972, Statoil merged with rival Hydro in 2007 to create StatoilHydro, before the Statoil name was reclaimed last year when the company was rebranded. The new Statoil adopted a star-shaped logo, inspired by the starry skies of the north, to symbolize its aspiration to be a "pathfinder" in oil, gas, and other energy forms.

The merger of the two Norwegian energy giants strengthened the new company organizationally, technologically, and financially, says company Chief Executive Officer Helge Lund.

"We are a larger company, more competitive in an international context. Since the merger we have been able to attack more business opportunities in more countries," he said. "Entering the Shtokman partnership in Russia, taking over as operator of Peregrino in Brazil, acquiring a substantial shale-gas position in the US, and delivering a winning bid in Iraq are some of the business opportunities we have captured since the merger."

Statoil is the largest operator on the NCS, with approximately 60% of its total production. It also operates oil and gas fields in Algeria, Angola, Azerbaijan, Brazil, Canada, China, Iran, Libya, Nigeria, Russia, the United States, and Venezuela.



A platform on the Peregrino field offshore Brazil.

Photo by Anette Westgard/Statoil.

In the long term, as well as garnering maximum potential from the NCS, Statoil is looking to its international asset base to allow it to grow and become more diversified, both in geographical terms and in types of production.

The company also has ambitions to develop profitable midstream and downstream positions as well as a strong renewable base, particularly in wind power. In offshore wind, Statoil is in a partnership to develop the Sheringham Shoal project in the UK, with 88 turbines coming on stream in 2011. The Forewind consortium, in which Statoil participates, was awarded the largest development area in the UK's third licensing round for offshore wind farms. Meanwhile, off the western coast of Norway, Statoil is testing a prototype of the world's first full-scale floating wind turbine, Hywind, designed for operation in deep waters.

Upstream Priorities

Traditionally, Statoil's focus has been on its upstream activities and the company has identified four priority growth areas moving forward: deep water, gas-value chains, harsh environments, and heavy oil.

In deep water, the company plans to build on the experience it has

gained as an operator on the NCS. New technologies made it possible to develop the Ormen Lange field, the largest natural-gas project in the NCS, with subsea installations and Statoil is also attempting to build on knowledge gained on the Tordis field, where solutions for subsea separation and water injection were developed.

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Technologically, the development of Ormen Lange was extremely challenging. Pipelines and subsea installations had to be placed on the extremely steep and uneven area of the seabed where the Storegga Slide took place 8,000 years ago. The subsea installations also had to be capable of with-

standing exceptional currents, sub-zero temperatures, and extreme wind and wave conditions.

The Hydro team built the world's largest antifreeze facility to prevent ice from forming. The system consists of two pipelines that transport a glycol-based liquid out to the field, where it is injected into the gas stream. On land, the antifreeze is separated out from the wellstream and sent back into the system.

On Tordis, Statoil has employed a full-scale separation facility on the seabed to increase oil recovery by 55%, adding 35 million bbl of reserves. Water and sand are separated from the wellstream close to the reservoir and injected into a subsea formation for storage. A multiphase pump then sends oil and gas through a 10-km pipeline to Gullfaks C for processing, storage, and export.

"We hope to use this experience to increase the final recovery factors in some of the most challenging reservoirs in deep waters that we are working on, for example in the US Gulf of Mexico," Lund said.

Statoil has assets in the Walker Ridge area in the Gulf of Mexico, including stakes in the Chevron-operated St Malo (21.5%) and Jack (25%) fields. In the Green Canyon area, the company has interests in the Tahiti (25%), Front Runner (25%), and Caesar Tonga (23.55%), while it also has a 25% share of Thunder Hawk in Mississippi Canyon and shares in San Jacinto (26.67%) and Spiderman (18.3%) in De Soto Canyon.

In natural gas, Statoil has lengthy and significant value-chain experience, which has enabled it to monetize significant, often remote, gas resources. The experience it has gained will be invaluable in helping it push forward future projects, such as Shah Deniz II in the Caspian and the large Marcellus shale-gas accumulation in the US.

The second phase of the BP-operated Shah Deniz gas project in the Azerbaijani sector of the Caspian Sea has been dogged by delays. It originally was due to come on stream in 2014 at rates of 16–17 billion m³/a of gas. However, the uncertainty surrounding export via the Nabucco pipeline and wrangling over prices with Turkey has forced a delay until at least 2016.



A wildcat rig in the Leismer oil-sands project in Canada.

Photo by Harald Pettersen/Statoil.

The bulk of Statoil's operator experience has come from the NCS, where the company has demonstrated its ability to deliver large and complex field developments in harsh conditions under the strictest environmental regulations. These qualities have been demonstrated at Snøhvit, which is the first ever field development in the Barents Sea and the world's northernmost liquefied-natural-gas facility.

And in heavy oil, Statoil plans to use experience gained in advanced drilling techniques and improved oil-recovery technology in projects around the world. Work done on fields like Grane in the North Sea will be applied to the Peregrino project off the coast of Brazil and the Mariner and Bressay fields in the UK North Sea.

Focus on Major Projects

Statoil currently has a number of major projects moving toward fruition. In Norway, preparations are under way for production startup from the Gjøa field later this year.

Gjøa is being developed with a semisubmersible production platform and five subsea templates and will be the first floating platform to get its electricity from the mainland. Compared to using traditional gas turbines on the platform, Statoil esti-

mates this will mean a yearly reduction in emissions to the environment of 250,000 tonnes of carbon dioxide.

Further afield offshore Brazil, production from the Peregrino field is expected to start next year, marking the largest offshore field development Statoil has been operator for outside Norway. In May this year Statoil agreed a USD-3.07 billion deal to sell a 40% stake in Peregrino to Sinochem. Statoil will retain a 60% share and operatorship of the Campos basin field, which is set to start production in early 2011.

The Peregrino field is in blocks BMC-7 and BMC-47. The first phase of the development includes two drilling and wellhead platforms and a ship-shaped floating production, storage, and offloading unit.

The company will be applying skills in produced-water injection, horizontal wells, and flow assurance to sustain the project over a long term. Estimated recoverable resources are in the range of 300–600 million bbl of oil and plateau production is expected to reach 100,000 BOPD within the first year.

Canadian Oil Sands Targeted

In Canada, the first phase of the Leismer oil-sands demonstration project in Alberta is due to start pro-

ducing later this year. Statoil is pursuing a step-by-step approach for the development and has set up a demonstration facility to test new technologies that will be required to produce the field.

The company believes that by building the demonstration facility it will be able to gradually build up its knowledge and train employees as it moves forward, rather than simply focusing on rapid development and production of the oil sands.

After production ramp-up, the project is expected to hit an initial production rate of 10,000 BOPD, with the possibility of ramping up to 20,000 BOPD pending regulatory approval. The next phase is planned to be a 60,000–80,000 BOPD facility.

Speaking of the technology challenges presented by the project, Lund said, "Ambitious application of technology is vital for this type of oil production, from both an economic and an environmental perspective.

"Increased energy efficiency is a key objective, both to lower costs and reduce emissions. We have recently launched a 5-year technology plan [for Leismer] aimed at reducing CO₂ emissions per barrel by up to 25%, and envisaging further reductions of more than 40% by 2025.

"We will develop our oil-sands activities step-by-step. The initial 5-year phase will be the startup and operation of a demonstration pilot facility."

Statoil at a Glance

Founded: 1972 **Headquarters:** Stavanger

Operations: in 40 countries, including exploration and production in 22 countries

Employs: 29,000 staff worldwide

Listed on New York and Oslo stock exchanges
Norwegian government owns 67% of shares

PRODUCTION

Crude oil: 1.217 million BOPD

Natural gas: 4.97 MMcf/d

PROVEN RESERVES

Oil and natural-gas liquids: 2.174 billion bbl

Natural gas: 18.148 Tcf

Statoil has identified more than 20 technology pilots for the project that will be tested further. One is the promising Steam Solvent Co-Injection Project (SOLVE), which will maximize the steam-to-oil ratio, reducing gas, water usage, and CO₂ emissions.

Statoil will use the in-situ production process of steam-assisted gravity drainage at Leismer. The company will also be evaluating a “coinjection” process in which solvent dilution and steam injection are combined to reduce the viscosity of the oil sands to a greater degree than either process in isolation could achieve.

The company believes that this process could result in a 10–20% increase in production, access to 10–20% more incremental reserves, and a 10% reduction in the steam-to-oil ratio.

“We have chosen a stepwise approach in developing resources in Canada. Our focus is on training and building knowledge, rather than on rapid project development and production. The demonstration facility will provide valuable operational experience and a basis for shaping our continued technology-development efforts,” Lund said.

In its own backyard, Statoil has a mixed project portfolio as operator, including some significant field developments such as Gudrun and Valemon in the North Sea and the ultradeepwater Luva field in the Norwegian Sea, as well as several smaller subsea developments.

“The increasing number of smaller subsea tiebacks introduces a different type of challenge, in that we need to develop these projects in a more industrialized way through standardization, simplification of concepts and using off-the-shelf technology,” Lund said.

A first wave of fast-track projects is moving forward with four new subsea tiebacks—Katla (North Sea Oseberg tie in), Pan Pandora (Visund or Gullfaks in the North Sea), Gygrid (Draugen or Njord in the Norwegian Sea), and Vigdis North East (North Sea Snorre tie in).

Technology as the Key

The company sees technology innovation and implementation as critical to its success in many areas of

its activities. These include enabling field development in frontier deep waters and Arctic areas, the production of heavy oil, exploration for hydrocarbons trapped below salt, and managing environmental and climate-related issues.

In February of this year, the Norwegian Ministry of Petroleum and Energy launched its awards in the Pre-Defined Areas 2010 licensing round, which included areas in the Barents Sea. To prepare itself for the Arctic challenges ahead, Statoil has established an environmental and social strategy, which has so far focused on the Barents region. The main objective of the strategy has been to develop technology and operational procedures that will allow it to operate in a sustainable manner anywhere in the Arctic by 2030.

The company will have a strong focus on Arctic areas in the future and its intense R&D programs are tailored to meet the challenges ahead in technology such as drilling and production systems, long-distance transportation of unprocessed oil and gas, material science, oil-spill response, and health and working environment in a cold climate.

In presalt production, Statoil is targeting opportunities in Angola, which could be analogous to presalt formations offshore Brazil. The company sees Angola as a key building block in its international portfolio and already has 200,000 BOEPD in equity production from the region.

Besides being a leading operator of innovative floating production platforms and production ships, Statoil is a world leader in producing hydrocarbons via subsea (seabed) installations. Some 45% of Statoil’s production on the NCS comes from subsea wells.

The company is pursuing further technology development to improve recovery from reservoirs, enable long tiebacks to land, and for use in ultradeepwater. Statoil also sees safe and efficient operations as a priority in its operations. The company emphasizes continuous work for an improved health, safety, and environmental (HSE) performance in all its activities and says it is committed to integrating HSE into how it does business. **JPT**



STATOIL CHIEF
EXECUTIVE
OFFICER

HELGE LUND

Photo by Trond Isaksen/Statoil.

What is Statoil’s strategic outlook for upstream and how is that focus likely to change in the near future?

The upstream industry is facing more and more complexity; we are moving into deeper waters, harsher environments, and more complex reservoirs. At the same time, the world’s energy demand is expected to increase substantially and, for several decades to come, the lion’s share of the energy supply needs to be provided by fossil-fuel producers.

This calls for more innovation and more emphasis on research and technology development, both to tackle the increased complexity within exploration and production, and to provide new oil and gas supplies in the most energy-efficient and carbon-friendly way.

Statoil is a technology-driven, upstream energy company and we have singled out four prioritized growth areas moving forward: deep water, gas-value chains, harsh environments, and heavy oil.

How does Statoil view future production from the offshore Norway region?

A key part of our strategy is to take the full potential out of the Norwegian Continental Shelf (NCS). We are producing around 1.5 million BOEPD in Norway, and our ambition is to largely maintain that level toward 2020.

This is no small feat. Our large legacy fields have been in decline for a long time, and it requires constant attention and relentless efforts to improve recovery, optimize our operations, and explore around

existing infrastructure and tie in new discoveries.

However, the NCS is more than one large, mature region. There are also frontier areas on the NCS, where we believe new significant discoveries can be made. In some areas we are still searching for the “geological key,” while other areas have not yet been opened for exploration.

How is Statoil likely to expand internationally?

Our international strategy has increased the scale of our operations in terms of produced volumes, reserves, and technological and geographical breadth. We are building a robust, diverse, and long-life portfolio with significant optionality and flexibility.

We have production of more than 500,000 BOEPD outside Norway. Currently our largest international production areas are Angola, Azerbaijan, and Algeria. In recent years, we have invested significantly in the US—both in the Gulf of Mexico and in shale gas. Also, Brazil and Canada will be important growth areas going forward.

We have also succeeded in winning the contract for Iraq’s West Qurna 2 field together with Lukoil. This new venture will add new dimensions to our international portfolio.

How did the merger with Hydro change Statoil’s operations and what challenges did it present?

We are a much stronger international organization now than the sum of the two companies. Obviously, it took hard work and dedicated efforts from a lot of people to create one organization that captured the best from two strong companies. There are always challenges when large organizational changes are implemented, but I think the organization overall has responded constructively.

By more luck than foresight, perhaps, the merger was in my view very timely. When the financial crisis and the downturn in the global economy hit us, we had already

realized substantial synergies and efficiency gains.

Have the merger synergies all now been completed?

We have said that we aim for NOK 7 billion (USD 1 billion) in total annual synergies by the end of 2011. By the end of 2009, we had realized 80% of that. The remainder will be realized in 2010.

On cost reduction, we have actually achieved more than was our original ambition. In addition to the merger synergies, we have implemented actions to reduce our administrative cost base by NOK 3 billion annually. We have achieved two-thirds of this and expect the remainder to be realized this year.

What is Statoil’s current upstream R&D focus?

Our technology strategy addresses four key business challenges:

- Resource replacement by finding new reserves as well as increasing the company’s production of oil and gas from existing fields
- Field development and preparation for operations in new areas, developing the Arctic into a core area, and establishing positions in deep water
- Develop the oil-sand value chain and meet challenging production goals for heavy oil at the same time as stringent environmental requirements are met
- Meet climate challenges and establish the foundation for future business opportunities by investing in groundbreaking technology within new energy and environmental technology

In the upstream area, we are particularly concentrating our R&D efforts within exploration, reservoir visualization and management, drilling, and wells and field-development solutions for deepwater and Arctic areas.

How does Statoil partner with the Norwegian government on R&D?

Statoil participates actively together with supplier industries and academia in developing and putting

into practice the Oil and Gas for the 21st Century (OG21) technology strategy for the Norwegian petroleum industry, which was initiated by the Ministry of Petroleum and Energy.

The objective of the OG21 strategy is to assure sustained profitability in the Norwegian petroleum industry and resource optimization on the NCS. We are active in assuring the implementation of the OG21 strategy spanning private and public cofunding of technology-development projects and joint industry projects, together with the Norwegian Research Council and Innovation Norway to joint investments in seed funds and venture funds.

Securing technology piloting is addressed by a separate initiative called DEMO2000, jointly funded by both Statoil and government. As a major operator on the NCS, Statoil allows suppliers to qualify and demonstrate new technology on our operating assets.

The Norwegian tax system is also constructively underpinning technology development on the NCS and should be given some credit for why the North Sea has been dubbed the world’s “offshore laboratory.”

How does the government’s stake in the company affect operations? Are there any built-in advantages or disadvantages?

The Norwegian state’s ownership in Statoil is conducted by the Ministry of Petroleum and Energy. Our experience is that they are committed to follow the commonly accepted rules for good corporate governance. This implies that the state does not interfere with Statoil’s commercial tasks or decisions.

The board of directors in Statoil is elected with basis in Norwegian law, and our board is fully committed to serve our commercial strategic interests. For a government, it may be a challenge not to mix the roles of being a regulator and an owner. I think that the Norwegian state has managed to resolve this in a good manner. **JPT**