Britain's Oil Bubble About to Deflate

The result will be less government revenue but greater funding for research and new technologies, and more jobs

London. Britain's oil boom is fading. Production from oil reserves in the North Sea, which grew from 1.6 million tonnes in 1975 to 126 million tonnes last year, has now peaked and is expected to decline steadily for the rest of the century. Indeed, some time in the mid-1990's, Britain will once again become a net importer of oil, having been producing more than it consumes since the beginning of the 1980's.

The impact on the British economy will be severe. Oil revenues contributed $16 billion to the government's income in 1985 through royalties and taxes paid by the companies that have been developing the North Sea reserves and are estimated to have added 0.5 percent to the increase in gross domestic product every year since the mid-1970's.

However, some compensation is likely as a result of the search which has now begun for less accessible sources of oil. It is expected to generate its own benefits. One is the boost already being given to the development of more sophisticated exploration and extraction techniques. Indeed, Britain's oil minister, Alick Buchanan-Smith, told a meeting in Scotland at the beginning of September that the current push in that direction "could make the United Kingdom the premier center of deepwater offshore technology in the world."

An indirect spin-off will also be the creation of more jobs in the oil industry. The Scottish Development Agency predicts that the number of offshore jobs will rise from 28,000 to 43,000 between now and 1995, and orders for diving and underwater services from $125 million to $292 million. "We are on the threshold of a new wave of North Sea opportunities arising from new technological demand," says SDA chief executive George Matheson.

To some extent, the current situation in Britain is an exaggerated version of the future prospects for oil reserves faced by Western countries as a whole. A report produced in June by the Paris-based International Energy Agency suggested that the total oil production of its member countries—essentially the Western industrialized nations less France—had reached its peak and is now projected to go into decline. "It must be assumed that future IEA production of oil will be lower than the 1984 level of 791 million tonnes of oil equivalent a year, and that, to the extent that demand rises, imports will have to increase," the report says.

Thus, whereas oil production by European countries, according to the IEA, continued to increase by an average of 10.6 percent a year between 1979 and 1983, it has now levelled out and is expected to decrease by 3.1 percent annually by the first half of the next decade, and by 3.4 percent between 1995 and 2000.

Current prospects facing European oil producers are therefore the reverse of those in the early 1970's, when the rapid growth of exploration activities in the North Sea, following the first major oil strikes in 1969 and 1970, almost entirely accounted for the sustained growth in the world's output during the 1970's (the other major contributor being Mexico).

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As with the boom, the impact of this decline will not be evenly spread. The prospects for Norway—the other European country to have shared the main benefits of the North Sea oil bonanza—are likely to be less dramatic than they are for Britain. This is partly because current production levels are considerably smaller, standing at 700,000 barrels a day in 1984 compared to 2.5 million a day in Britain, and partly because prospects for tapping major new reserves are still good. The IEA calculates Norway's undiscovered reserves to be about the same size as those already known, while for Britain the proportion is only three to five.

Last month, for example, the Institute for Industrial Economic Studies in Bergen issued a report in which it estimated that Norway's oil output was likely to increase by 50 percent over the next 5 years. With three large oil fields—Gullfaks, Ula, and Oseberg—coming on line before the end of the decade, economists at the institute claim that production should remain steady up to 1995, although it may drop off sharply after that date.

In Britain, where major new finds are now considered to be unlikely, the decline's impact is expected to be more immediate. Patrick Foley, for example, an economist with Lloyds Bank in London, claims that statistics from Britain's Department of Energy suggest that if production were to continue at its present rate, proven and probable reserves would only last for another 10 years, but that "this could be stretched to 18 years if production were limited to domestic consumption."

However, Foley's predictions are seen as excessively pessimistic by the Department of Energy itself. A spokesman for the department says that Britain still expects to be a "substantial producer" of oil until the mid-1990's, and a "significant producer" after that, particularly if more optimistic assumptions are made about new areas currently being explored.

Furthermore, the idea that production should be regulated by imposing an upper limit linked to national consumption levels conflicts directly with two central components of the philosophy adopted by Prime Minister Margaret Thatcher's Conservative government: that the rate of exploitation should be primarily determined by market factors, and that a substantial part of Britain's oil revenues should result from foreign sales.

Nevertheless, the government has itself been paying increasing attention to the technological challenges that lie ahead for Britain's oil industry. New exploration incentives, for example, were included in the 1983 budget. And at the beginning of the year, the government announced that in awarding the ninth round of exploration licenses—an event which took place in early summer, when more licenses were approved than ever before—preference would be given to those companies prepared to commit themselves to some of the more risky areas in addition to merely seeking incremental additions to known fields.

According to oil minister Buchanan-Smith, there has been an "encouraging response" to the emphasis the government has been trying, through the licensing process, to place on the need to

develop advanced offshore technology for use on the U.K. continental shelf.

"We are at the start of a long process of research and engineering, but we are already seeing the beginnings of the next generation of offshore technology," he said in a speech in Aberdeen, the hub of Britain's oil industry, in which he emphasized that companies operating in the North Sea were now spending almost $200 million a year on offshore research and development.

Details of some of these fields of research were outlined by Don Hallet, the chief geologist with the company Britoil—shortly to be transferred from public to private hands by the government—to a symposium organized during the annual meeting of the British Association for the Advancement of Science at the University of Strathclyde in Glasgow. Three of the most promising he lists as:

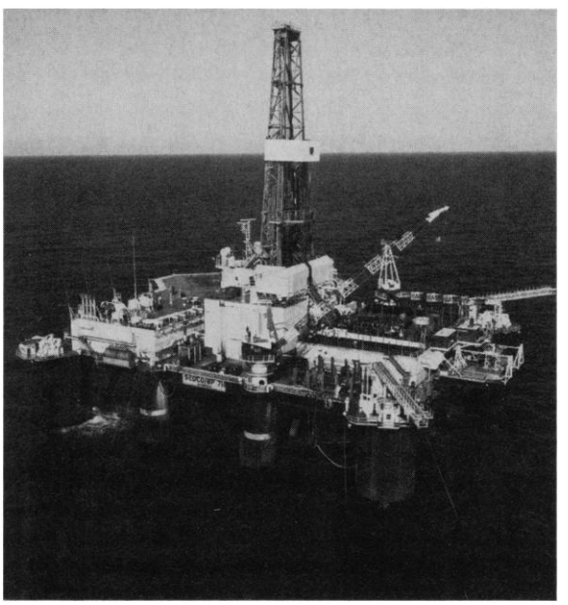
- Satellite-based remote-sensing techniques to identify potential new reserves, in particular using radar altimetry to detect changes in height in the surface of the sea, an indicator of major features on the seabed, such as thick accumulations of sediment, which could indicate the presence of oil.
- Seismic stratigraphy, which attempts to identify "stratigraphic traps" which may contain oil, often indiscernible on normal structure maps, by analyzing the reflections in a sequence of seismic sections.
- The study of diagenesis—the process by which sediment is converted into rock—to give important clues to the potential of a particular rock formation as an oil reservoir. (One technique, for example, involves studying the microscopic tracks formed by the spontaneous fission of naturally occurring Uranium 238 in certain minerals.)

"In order to keep the industry virile into the next century it will be necessary to be much more subtle in our approach to exploration and production, to allow the more difficult—and smaller—oil accumulations of the future to be profitably produced," says Hallett.

This shift in emphasis is already reflected in the activities of the oil companies. British Petroleum (BP), for example, increased its worldwide spending on research and development from $84 million in 1980 to $312 million last year (including $148 million spent by its U.S. subsidiary, Sohio, of which BP owns 55 percent).

In particular, the company has recently introduced a new strategy for R&D in oil drilling with three main objectives: to improve drilling performance at high temperatures and pressures; to develop the techniques of drilling extended-reach wells; and to provide technical support for horizontal drilling into currently producing wells, a method for improving oil production rates.

The shift in focus away from the large, easily accessible oil fields is having other implications. One is the increasing interest in onshore production, where some recently discovered reserves are comparable in size to the smaller North Sea fields. Most of the major British oil companies are now engaged in onshore exploration, and already the amount of oil produced from mainland wells has increased.



North Sea oil drilling may have run the course.

A second implication has been the development of new transport techniques for wells where laying a pipeline would be unprofitable. BP, for example, has recently developed a small tanker that can be connected directly to a wellhead—known as a single-well oil producing system—for use with fields totaling less than 20 million barrels.

Thirdly, many companies are increasing their research into techniques for enhanced oil recovery (EOR) from reservoirs that have been depleted by conventional means. EOR is designed to remedy the current situation in which, as one industry executive puts it, "for every barrel of oil produced, two are left in the ground." Finally, as prospectors advance into deeper waters further from the British mainland, legal and political complications are emerging over the ownership of or rights to any reserves discovered (these have been avoided in the North Sea by the acceptance of both Britain and Norway of a clear dividing line, agreed on the basis on the UN criteria ratified by both countries in the 1960's).

A heated focus of current controversy is the area surrounding the small uninhabited island of Rockall, midway between Scotland and Iceland. Britain has been using a long-standing claim that the island is part of the British Isles to assert its rights to a 200-mile economic zone around the island, including the potentially productive Rockall Trough which lies between it and the mainland.

This claim, however, is being disputed by several other countries. Denmark, in particular, argues that the existence of a trough—a product of plate tectonics—indicates that Rockall is not part of the U.K. continental shelf, but is part of what it calls the Faeroes-Rockall microcontinent. And Iceland, too, has called on geology to argue its own claim to the area.

The debate may yet prove to be academic. According to Randy Ferguson, an economist with the IEA, many of the so-called frontier areas—such as the Rockall Trough—have so far proved "relatively disappointing." Dealing with a large number of unknowns, "the moderate risk areas like the North Sea could become more attractive if oil companies decide to pull in their horns."

The crucial factor is likely to be the price of oil. The more it continues to fall, the less attractive become high-risk exploration ventures—or expensive investments in new technologies. "The big question is whether people are willing to invest [in exploration] while oil prices are declining," says Ferguson.

The danger, as British oil companies are now emphasizing to the government when arguing for a substantial reduction in taxes they are currently obliged to pay, is that a lack of investment now could create substantial supply problems later, when demand picks up again. For, as another IEA economist, Herman Franssen, puts it in a recent article in the *OECD Observer*, "Oil market signals that the world is awash with oil are misleading, and must not be allowed to obscure geological realities"—a principle which is giving the committed non-interventionists in Thatcher's government some uncomfortable food for thought.—**David Dickson**