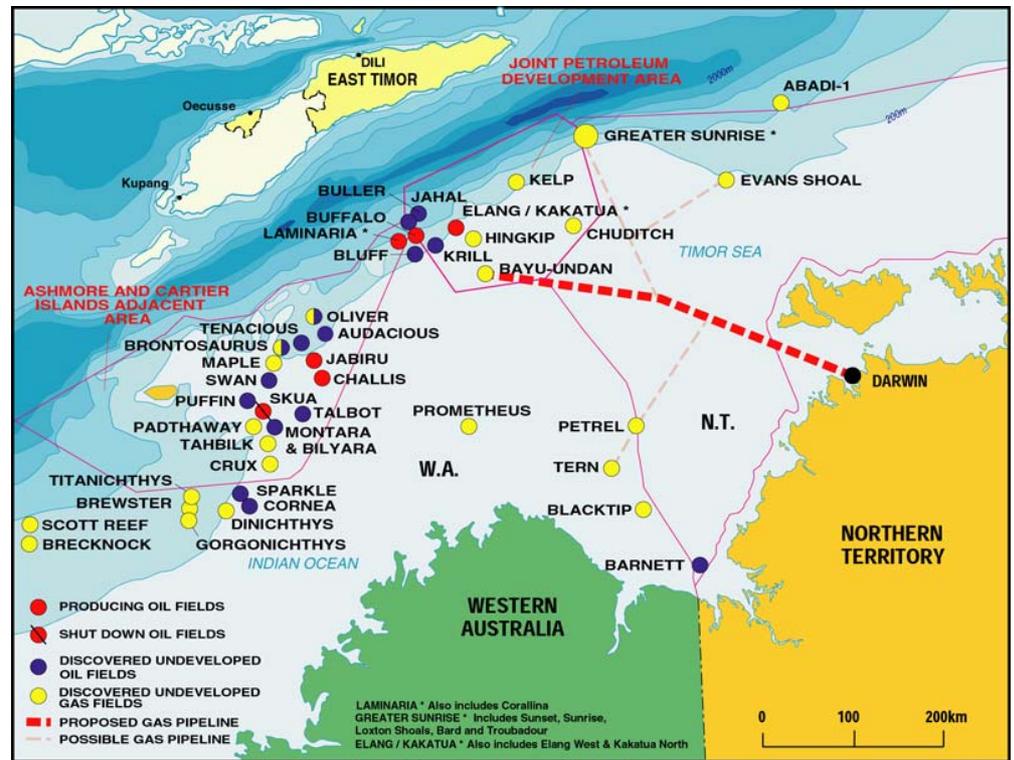


Oil & Gas

TIMOR SEA



Timor Sea Oil & Gas fields

INTRODUCTION

The Timor Sea is regarded as a highly prospective petroleum region. Geological features are the Bonaparte (main) and Browse Basins.

The area is administered by the Northern Territory, Western Australia and the Timor Gap Joint Authority.

The Northern Territory Government administers the Ashmore Cartier Islands Adjacent Area on behalf of the Commonwealth Government and the NT Adjacent Area.

The Northern Territory is close to the vast oil and gas resources of the Timor Sea. The Timor Sea is home to the world scale Bayu-Undan gas project, Sunrise and Evans Shoal gas fields. Major oil developments include the Elang/Kakatua, Laminaria/Corallina and Buffalo projects. The Northern Territory has abundant petroleum resources and is ideally positioned to be the next gas-based manufacturing hub for Australia.

Centrally located to Asian markets and a number of major resource projects in the Timor Sea and beyond, Darwin is rapidly developing into a service and supply hub for the region.

HISTORY

Exploration began in the early 1960s. 32 wildcat wells (rank exploration wells) were drilled to 1975. There were several oil and gas strikes although no commercial developments resulted.

Exploration in the Timor Gap area was suspended in 1975 due to the unresolved border between Australia and Indonesia. Signing of Timor Gap Zone of Cooperation Treaty and award of production sharing contract areas in 1992 hailed the start of the exploration boom.

PRODUCTION AND EXPLORATION

There are currently 5 producing oilfields in the Timor Sea:

- Jabiru (operated by Newfield Australia (Ashmore Cartier) Pty Ltd)
- Challis (Newfield Australia Pty Ltd)
- Elang/Kakatua, (ConocoPhillips)
- Laminaria/Corallina (Woodside Offshore Petroleum Pty Ltd) and
- Buffalo (Nexen Petroleum Australia Pty Ltd).

In the Ashmore Cartier Islands Adjacent Area, Jabiru oil field commenced production in 1986, Challis/Cassini oil fields in 1989 and Skua oil field in 1991. Production from the Skua field was ceased during 1998.

In the Joint Petroleum Development Area (formerly Zone of Cooperation Area A), Elang/Kakatua/Kakatua North oil field began production in 1998.

A number of projects are at various stages of feasibility and development: Bayu-Undan Greater Sunrise and Evans Shoal. US\$1.8 billion is committed for the Bayu-Undan liquids project, with production to commence in 2004.

There were 16 oil and gas discoveries in the past 5 years. US\$1.5 billion is committed to bring gas onshore via a 503 km pipeline to a 3Mtpa LNG plant at Wickham Point in Darwin Harbour. LNG production will commence in early 2006. Between A\$7.75 and A\$19 billion is proposed for capital expenditure potential developments of Timor Sea oil and gas resources.

Emerging technological advances may lead to commercial development of Prospective Fields.

GAS PROJECTS

Estimated gas reserves in excess of 566 billion cubic metres (20 trillion cubic feet) in the Bonaparte Basin and 538 billion cubic metres (19 trillion cubic feet) in the Browse Basin off Western Australia could meet the Territory's current annual gas requirements for over 2,500 years.

Major fields being considered for development include:

- Bayu-Undan - gas/LPG/condensate (ConocoPhillips)
- Greater Sunrise - gas/condensate (Woodside)
- Evans Shoal - gas/condensate (Santos)
- Petrel /Tern - gas (Santos)
- Black Tip - gas (Woodside)



In February 2000, the Bayu-Undan project received approval for Phase 1 – Liquids Stripping from the Joint Authority for the Timor Gap Zone of Cooperation (now known as the Joint Petroleum Development Area). The field holds reserves of 64 million cubic metres (400 million barrels of condensate and LPG). Production is scheduled to start in 2004, with peak production of 17,488 cubic metres (110,000 barrels) per day.

Following ratification of the Timor Sea Treaty in March 2003, and subsequent documentation processes, ConocoPhillips and its joint venture participants gave final approval to the gas phase for Bayu-Undan on the 15 June 2003. A 503 km gas pipeline will connect the field to a 3 Mtpa LNG plant in Darwin Harbour costing US\$ 1.5 billion.

The LNG sales are to the Tokyo Electric Power Company Incorporated and Tokyo Gas Co. Ltd for the sale of three million tonnes per year of LNG from the Bayu-Undan field. Gas deliveries are expected to begin early 2006. The agreement commits nearly 100% of the proven reserves of this field and justifies the initial pipeline infrastructure required to move Timor Sea gas into Australia. Both of the Japanese LNG buyers have now purchased a combined 10.08% interest in the Bayu-Undan project.

Natural Gas Australia has developed a concept to construct a high volume methanol facility on a concrete gravity structure located in shallow water adjacent to the Evans Shoal gas field. The first phase would have a production capability of 5,000 tonnes of methanol per day (1.725 Mtpa). The project design would also incorporate a second phase in which production facilities could be expanded to 10,000 tonnes per day (3.45 Mtpa).

OIL PROJECTS

Estimated remaining oil reserves in the Timor Sea are at least 167.73 million cubic metres (1.05 billion barrels) of oil, condensate and liquid petroleum gas (LPG).

Elang/Kakatua, developed at a cost of A\$140 million, is the first project to proceed in the Joint Petroleum Development Area (formerly known as ZOC-A). Production began in July 1998 via a floating production storage and offtake (FPSO) vessel, the *Modec Venture 1*. Design production capacity is 5,167 cubic metres (32,500 barrels) per day.

Woodside's Laminaria/Corallina development, costing A\$1.37 billion, started production from the *Northern Endeavour*, one of the world's largest floating production facilities, on 6 November 1999. Since start-up the production rate has averaged 142,500 barrels per day, with peak production rates of up to 180,000 barrels per day. Current production is 74,500 bopd.

BHP Petroleum's Buffalo development commenced production on 29 December 1999. The field has reached a net peak production of 20,000 barrels of oil per day, but is now in decline.

Cumulative production to August 2000 at Jabiru was approximately 15.9 million cubic metres (100.2 million barrels) of oil and Challis/Cassini fields had produced 8.1 million cubic metres (51 million barrels) of oil. These fields are approaching the end of their productive lives.

BENEFITS

Darwin is the logistics base for the majority of Timor Sea operations. Supply vessels, helicopter support and other servicing facilities such as maintenance and rig refit capacity are available in Darwin. The new East Arm Port improves Darwin's capacity to service offshore facilities.

The Northern Territory receives 15% of exploration expenditure and 50% operational expenditure from Timor Sea projects - currently about \$70 million per annum.

Large volumes of gas onshore in Darwin will see the development of new industries and major investment in gas-related projects such as liquefied natural gas (LNG), major mineral processing plants, fertiliser, methanol and other gas based manufacturing projects. There will be significant direct and indirect employment benefits for the Territory from these projects.

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