Oil

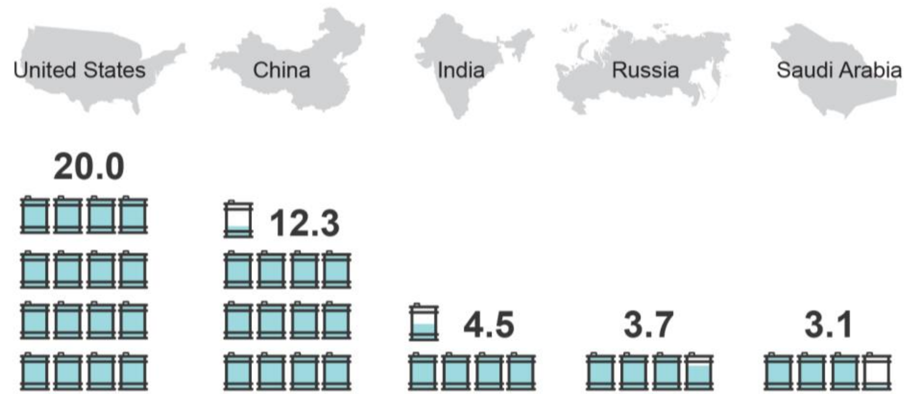
Resources and Energy Quarterly June 2017

Around **70%** of Australia's crude and condensate production comes from the **Carnavon basin in WA**

Australia's production of crude and condensate peaked in **2000**, at

41,300 ML

Key crude oil consumer markets (million barrels a day)



Australia's refinery production

45% automative Gasoline

35% diesel

13% aviation turbine fuel

3% LPG

2% fuel oil

2% other

Brent crude oil prices — last five years

Highest
US$119 per barrel
8.02.2013

Lowest
US$28 per barrel
20.01.2016

Current
US$48 per barrel
30.06.2017

OPEC Revenue

In March Quarter 2017 OPEC oil revenue was **US $1.7 billion a day**

Market summary

Some unusual production dynamics appeared in the global oil market during the first half of 2017. The OPEC output agreement — aimed at rebalancing the global oil market — was largely adhered to, while US oil output rose. The OPEC output agreement has recently been extended beyond 2017, in response to persist high global stocks levels.

The value of Australia's crude oil and condensate exports is forecast to rise to $6.0 billion in 2017–18 and to $8.1 billion in 2018–19. Forecast earnings have been revised down by $2.2 billion in 2017–18 and $0.7 billion in 2018–19 from the March *Resources and Energy Quarterly* due to project delays and a more subdued outlook for oil prices.

Prices

In the first six months of 2017, Brent crude oil spot prices averaged US$53 a barrel, while West Texas Intermediate (WTI) spot prices averaged US$50 a barrel. These average prices were around 40 per cent higher than in the corresponding period last year, when the market was characterised by excess global supply.

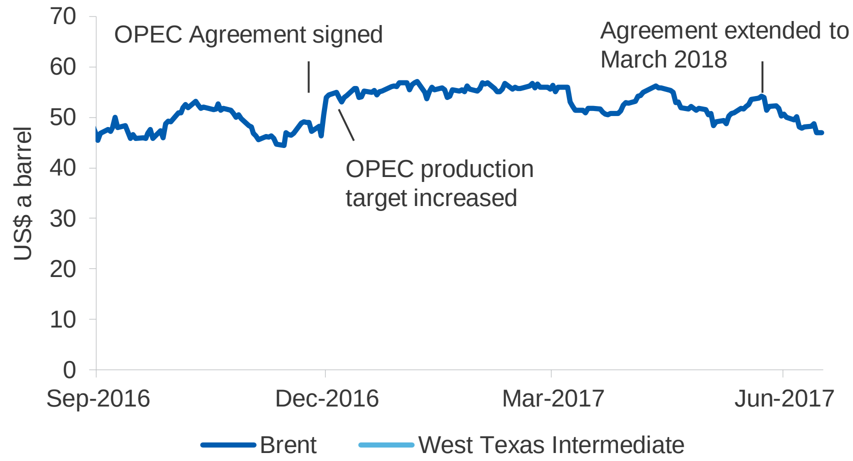
Despite price gains in the first four months of 2017, rising US oil output and speculation around persistent global over-supply prompted a drop in prices at the start of the June quarter, bringing Brent spot prices under US$50 a barrel for the first time since November 2016. A slow drawdown of global stocks has had a dampening effect on prices — OECD stocks were 292 million barrels above the five-year average in April.

Oil price forecasts for 2017 have been revised down to US$54 a barrel for Brent and US$52 a barrel for WTI, as expectations about US production continue to rise. These forecasts are contingent on OPEC agreement production restrictions being adhered to in the second half of the year.

Continued OPEC pact to support modest price growth

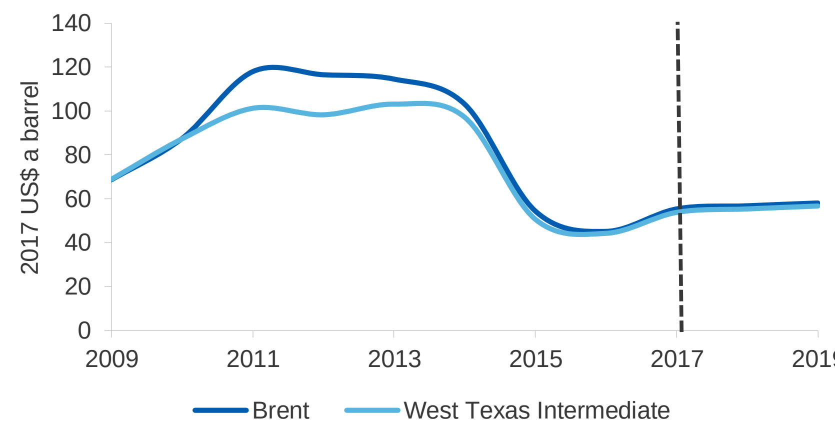
In the coming quarters, as the market tightens — with global supply coming down below global demand — stock levels are expected to go down, particularly as seasonal refinery activity picks up. Average spot prices for Brent crude are forecast to be US$58 a barrel in 2018 and US$61 a barrel in 2019. WTI crude is forecast to average US$55 a barrel in 2018 and US$57 a barrel in 2019.

Figure 8.1 Recent movement in oil prices



Source: Bloomberg (2017), Brent and West Texas Intermediate spot prices

Figure 8.2 Annual oil prices



Source: Bloomberg (2017), Brent and West Texas Intermediate spot prices; Department of Industry, Innovation and Science (2017)

World oil consumption

Oil consumption in the first half of 2017 was lower than expected in a number of countries, including in the major consuming countries of China, India and the US. Global consumption is expected to recover over the remainder of the year, to average 97.8 million barrels a day — an annual increase of 1.3 per cent in 2017. This rate of consumption growth will be the lowest since 2011, as a number of advanced economies — including the US and Japan — exhibit stagnant or falling consumption. Non-OECD consumption growth, which is forecast to average 2.8 per cent in 2018 and 2019, is expected to outweigh the impact of slowing consumption growth in OECD countries.

Strong consumption growth in China and India

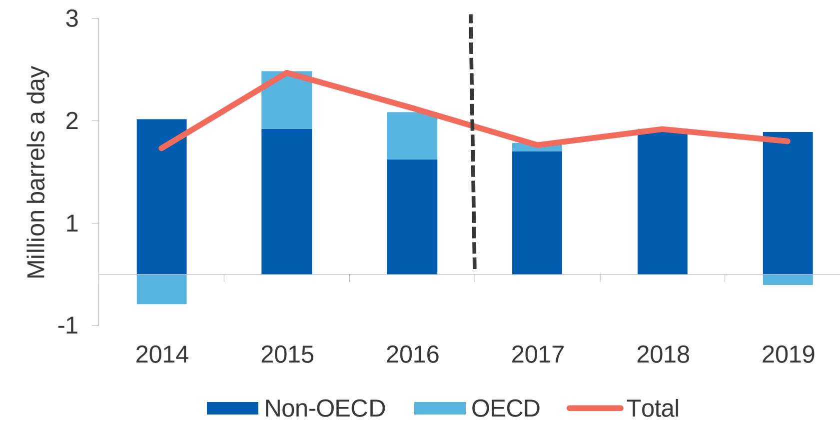
China's consumption of crude oil is forecast to increase at an average annual rate of 2.7 per cent over the outlook period, driven by firm economic activity and an expanding petrochemical sector. Tightening controls on pollution may have a dampening effect on consumption growth in the longer term.

Oil consumption in India is expected to increase substantially over the outlook period, albeit from a low base. The impacts of India's demonetisation of high value currency notes in late 2016 lowered consumption growth in early 2017, which — at an average rate of 4.3 million barrels a day — was almost 2 per cent lower than in the same period last year. There is significant capacity to increase vehicle ownership per capita, and consumption growth is forecast to be around 6 per cent in 2018 and 2019.

World oil production

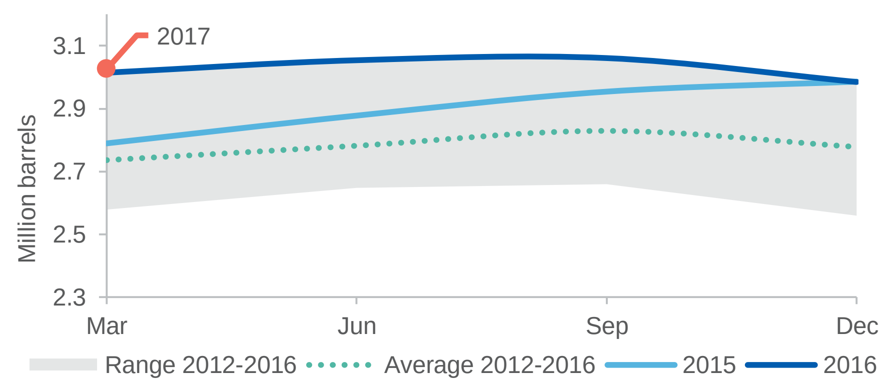
World oil production for the first five months of the year expanded by 0.2 per cent on an annual basis, as some of the world's largest producers changed their production strategy. Over this period, output from OPEC was down by 0.3 per cent, or 133,000 barrels a day, as strong compliance continued under the 2017 OPEC Production Agreement. Production from Brazil and Canada also showed strong annual growth, production for the first five months of the year was 12 per cent and 7.7 per cent higher than the same period in 2016.

Figure 8.3 Annual growth in world oil consumption



Source: International Energy Agency Monthly Oil Data Service (2017); Department of Industry, Innovation and Science (2017)

Figure 8.4 OECD Industry Petroleum Stocks



Source: International Energy Agency Monthly Oil Data Service (2017); Department of Industry, Innovation and Science (2017)

World production is forecast to increase marginally in 2017, averaging 97.2 million barrels a day, as lower OPEC production is expected to be outweighed by higher US production and new projects in Canada and Brazil.

The OPEC agreement is set to expire at the end of the March quarter 2018, and higher output is expected in the second half of 2018 and in 2019. World production is forecast to increase to 99.7 million barrels a day in 2018, and to 101.1 million barrels a day in 2019.

Risks to the extended OPEC agreement

In November 2016, a historic agreement was made between OPEC and eleven other countries to reduce 2017 production, by 1.8 million barrels a day. This agreement aimed to reduce global oil supply and bring the oil market into balance. In May 2017, OPEC extended the output reduction agreement until March 2018, to increase the rate of stock level drawdown over the next 10 months.

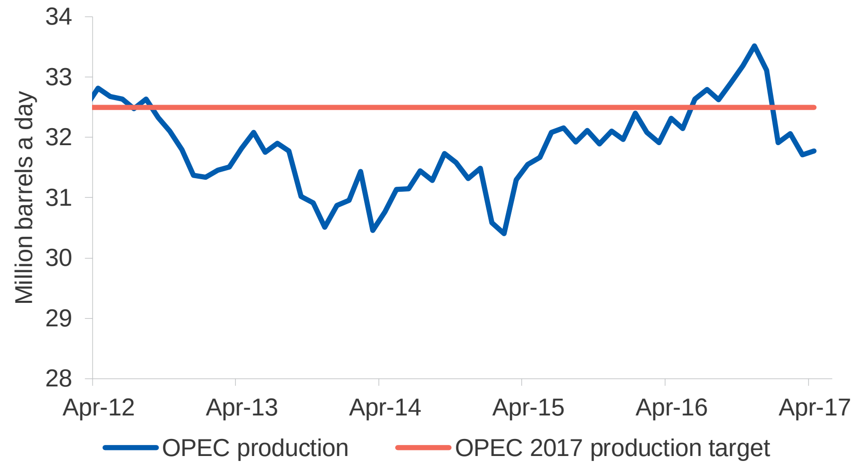
The strong compliance record to date — led by Saudi Arabia reducing output by more than the committed amount — provides some indication that compliance will continue. However, extending the timeframe of the agreement may make long-term commitment more difficult.

Other factors made lower production targets easier to comply with in the first half of the year, including seasonal production changes and planned maintenance. Despite regional diplomatic tensions, Qatar has expressed its intention to continue compliance with the OPEC agreement.

Increased production from OPEC countries excluded from the agreement — Iran, Libya and Nigeria — pose an upside risk to the supply outlook. Iran's production in the first five months of the year was 13 per cent higher than in 2016, at 4.5 million barrels a day. This partly reflects the lifting of sanctions just over a year ago.

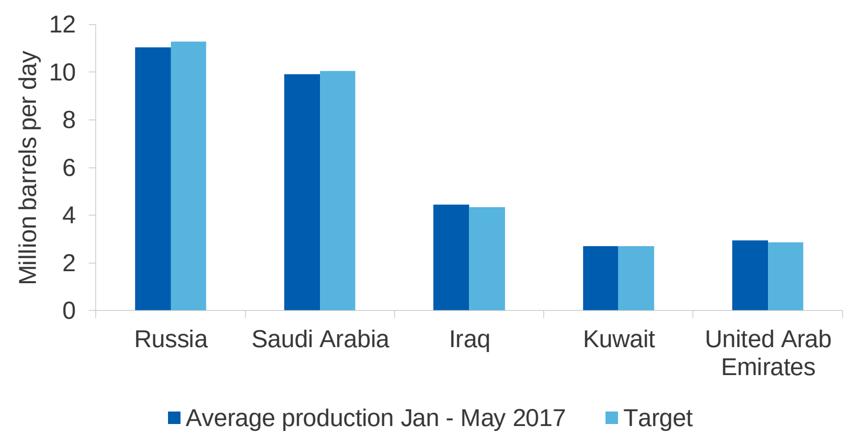
If agreeing OPEC countries continue with production restrictions, 2017 OPEC crude oil and liquid production is expected to be 38.8 million barrels a day, increasing to 39.7 million barrels a day in 2018. Looking towards the end of the outlook period, it is unclear how OPEC will transition away from the production restrictions, and whether full production will return to the market in a staged or uncontrolled manner.

Figure 8.5 OPEC production and 2017 Production Agreement



Source: International Energy Agency Oil Market Report (June 2017); Department of Industry, Innovation and Science (2017)

Figure 8.6 Production of select countries under 2017 Agreement



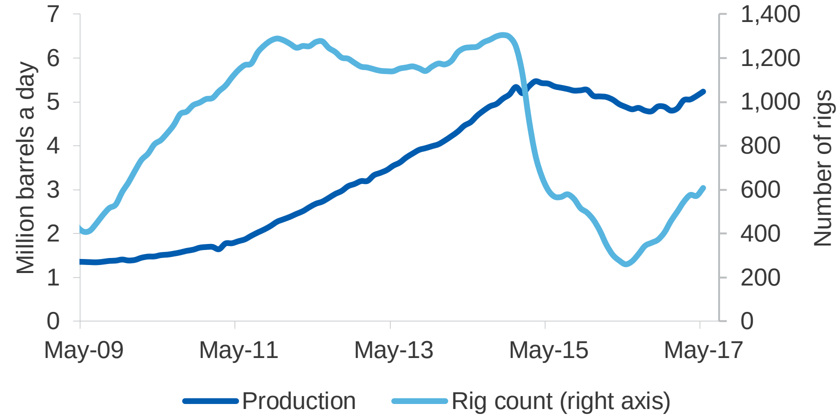
Source: International Energy Agency Oil Market Report (June 2017); Department of Industry, Innovation and Science (2017)

Higher US production lowers prices and negates OPEC agreement

Booming US oil output — both shale and conventional oil — has been the biggest surprise in the oil market in 2017. US oil production in the first five months of the year was 1 per cent higher than in the same period last year. US exports have also lifted; in February, for the first time, the US was the largest exporter to China.

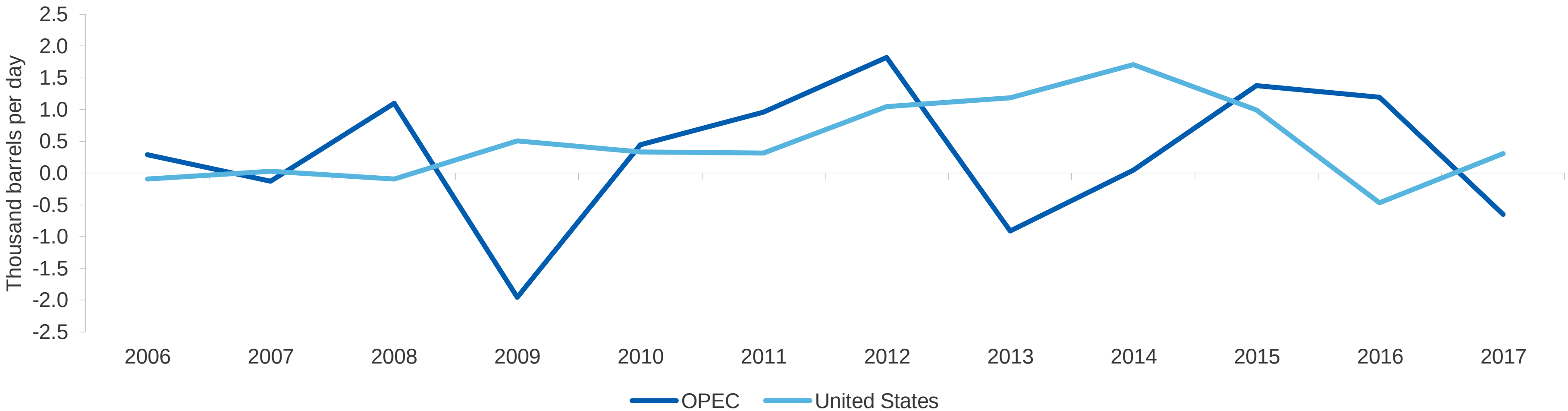
Forecasts for US production have been continually revised up, as the US rig count — an indicator of output potential — has increased on a weekly basis, and is now at its highest point in more than two years. US production is forecast to expand by 4.8 per cent in 2017 and 7.7 per cent in 2018. Significant decreases in well-head production costs, as well as technology and efficiency improvements, have allowed average shale basin operating costs to drop to $40-50 a barrel.

Figure 8.7 US shale oil production and rig count



Source: US Energy Information Administration (2017), Drilling Productivity Report

Figure 8.8 Annual change in OPEC and US petroleum production



Source: International Energy Agency Oil Market Report (June 2017); Department of Industry, Innovation and Science (2017)

Australian production and trade

Australia's crude and condensate production dropped in the first four months of 2017, averaging 343,000 barrels a day — 12 per cent lower than the same period in 2016. Severe weather-related shut-downs contributed to lower production from the North West Shelf and Pluto production fields, while industrial action resulted in lower Gippsland Basin production.

In line with lower quarterly production, exports in the first four months of the year averaged 188,000 barrels a day — 17 per cent lower than the same period last year. Higher oil prices facilitated an 11 per cent annual increase in export earnings for the first four months of the year, reaching $1.6 billion.

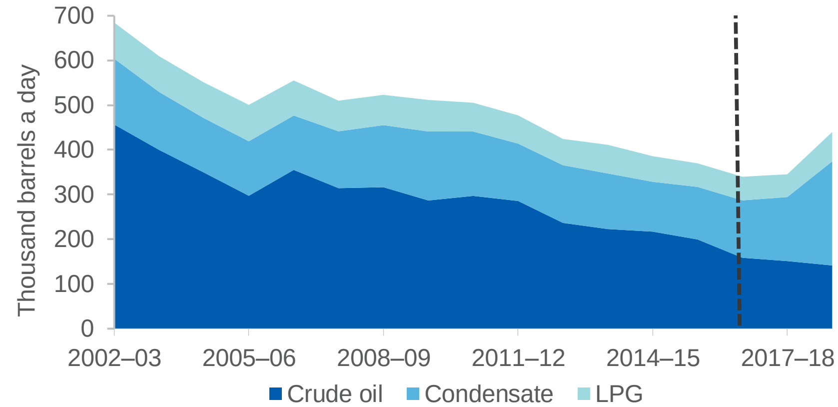
Due to sharp decreases in production at the start of 2017, the annual production forecast for 2016–17 has been revised down. For 2016–17, production is forecast to decrease by 10 per cent to average 287,000 barrels a day.

Production growth expected from new LNG projects

Over the outlook period, higher condensate production is expected to drive production increases. Condensate can occur in natural gas reserves and be simultaneously extracted. Total crude and condensate production is expected to increase in 2017–18, to average 294,000 barrels a day. Production forecasts have been revised down, as LNG development projects timelines have changed— including for the Icthys project, with condensate production capacity of 100,000 barrels day.

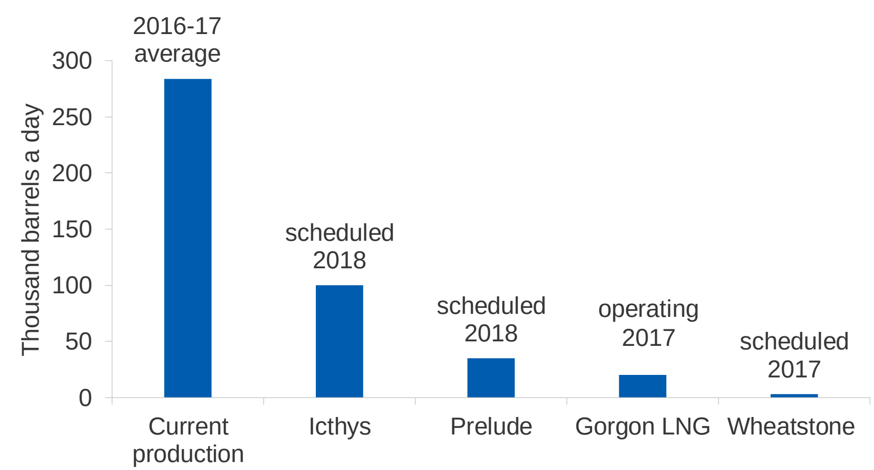
As the Prelude and Icthys projects commence in 2018, 2018–19 production is forecast to average 374,000 barrels a day. As production reaches capacity levels in these projects, their output is expected to account for more than 40 per cent of total condensate production.

Figure 8.9 Australia's petroleum production



Source: Australian Petroleum Statistics (2017); Department of Industry, Innovation and Science (2017)

Figure 8.10 Condensate capacity of development LNG projects



Source: Department of Industry, Innovation and Science (2017), Company Reports

Higher export earnings supported by positive price outlook

Australia's exports of crude oil and condensate are estimated to have decreased by almost 5 per cent in 2016–17, to an average rate of 228,000 barrels per day, due to production outages in the first half of 2017. Despite lower volumes, export earnings are estimated to have increased in this period, driven by higher oil prices. On an annual basis, 2016–17 export earnings are forecast to increase by 1 per cent to $5.6 billion.

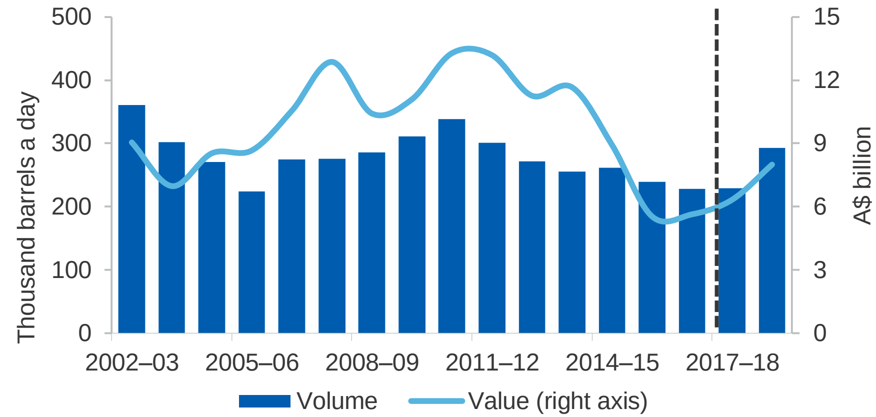
Export volumes are expected to increase over the outlook period, reaching 229,000 and 292,000 barrels per day in 2017–18 and 2018–19, respectively. In line with higher forecast production — and provided oil prices strengthen as expected — substantially higher export earnings are anticipated over the outlook period. 2017–18 export earnings are forecast to increase by 7 per cent to $6.0 billion. In 2018–19, export earnings are expected to increase substantially, reaching $8.1 billion.

Australia's refinery activity

In the March quarter, Australia's production of refined products decreased for a third consecutive quarter. Despite higher refinery output in April, annual production for 2016–17 is estimated to decrease by 5 per cent, to average 424,000 barrels a day. Production is forecast to decrease at a slower rate over the outlook period. Domestic refining capacity faces significant challenges, including cost competition from newer, larger facilities in Asia, particularly in China.

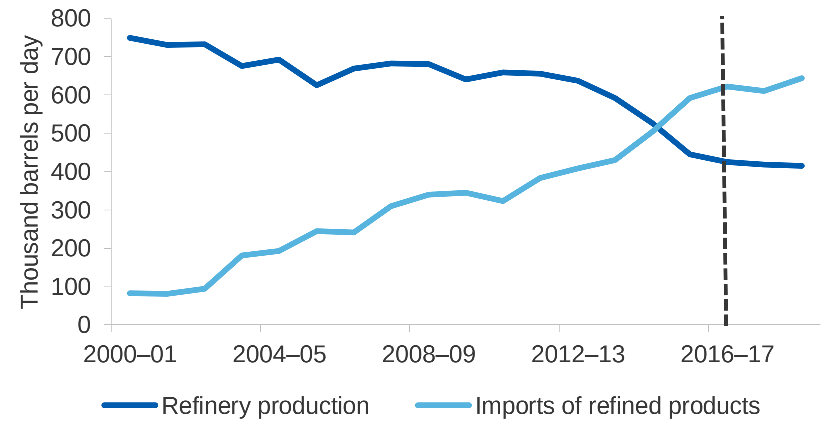
As a result of lower domestic production, a 5 per cent increase in refined product imports is estimated to have occurred in 2016–17, with imports reaching an average rate of 621,000 barrels a day. Provided domestic production stays at current levels, imports of refined products are forecast to increase slightly over the outlook period, in line with demand growth.

Figure 8:11 Australia's exports of crude oil and condensate



Source: ABS (2017) International Trade in Goods and Services, 5368.0; Department of Industry, Innovation and Science (2017)

Figure 8:12 Australia's production and imports of refined products



Source: Department of Environment and Energy (2017) Australian Petroleum Statistics, Table 2, Department of Industry, Innovation and Science (2017)

Table 8.1 Oil outlook

World	Unit	2016	2017 f	2018 f	2019 f	Annual percentage change 2017	2018	2019
Production a	mb/d	97.0	97.2	99.7	101.1	0.2	2.6	1.4
Consumption a	mb/d	96.6	97.8	99.3	100.6	1.3	1.5	1.3
WTI crude oil price								
Nominal	US$/bbl	43.2	51.9	56.2	59.6	20.0	8.2	6.2
Real b	US$/bbl	44.2	51.9	54.8	56.9	17.3	5.7	3.8
Brent crude oil price								
Nominal b	US/$bbl	44.1	53.5	57.6	61.1	21.2	7.8	6.0
Real c	US$/bbl	44.1	53.5	56.3	58.3	18.5	5.3	3.6

Australia	Unit	2015–16	2016–17 s	2017–2018 f	2018–19 f	Annual percentage change 2016–17	2017–18	2018–19
Crude and condensate								
Production a	kb/d	317	287	294	374	–9.5	2.6	27.1
Export volume a	kb/d	239	228	229	292	–4.7	0.3	27.8
Nominal value	A$m	5,444	5,601	6,144	8,505	2.9	9.7	38.4
Real value g	A$m	5,540	5,601	6,015	8,147	1.1	7.4	35.4
Imports a	kb/d	342	342	341	324	0.0	–0.2	–5.0
LPG								
Production ac	kb/d	53	53	51	66	0.1	–3.5	28.7
Export volume a	kb/d	34	38	35	45	11.0	–8.8	28.5
Refined products								
Refinery production a	kb/d	445	424	419	415	–4.6	–1.3	–1.1
Export volume ad	kb/d	10	18	12	9	73.0	–32.6	–24.1
Imports a	kb/d	593	621	611	643	4.8	–1.6	5.2
Consumption ae	kb/d	950	966	965	982	1.7	–0.1	1.8

Notes: ***a*** *Number of days in a year is assumed to be exactly 365;* ***b*** *In 2017 calendar year dollars;* ***c*** *Primary products sold as LPG;* ***d*** *Excludes LPG;* ***e*** *Domestic sales of marketable products;* ***f*** *Forecast;* ***g*** *In 2016–17 financial year Australian dollars;* ***s*** *Estimate;* ***z*** *Projection. A barrel of oil equals 158.987 litres*
Source: ABS (2017) International Trade Statistics Service, cat. no.5464.0 ; Energy Information Administration (2017); Department of Industry, Innovation and Science (2017)