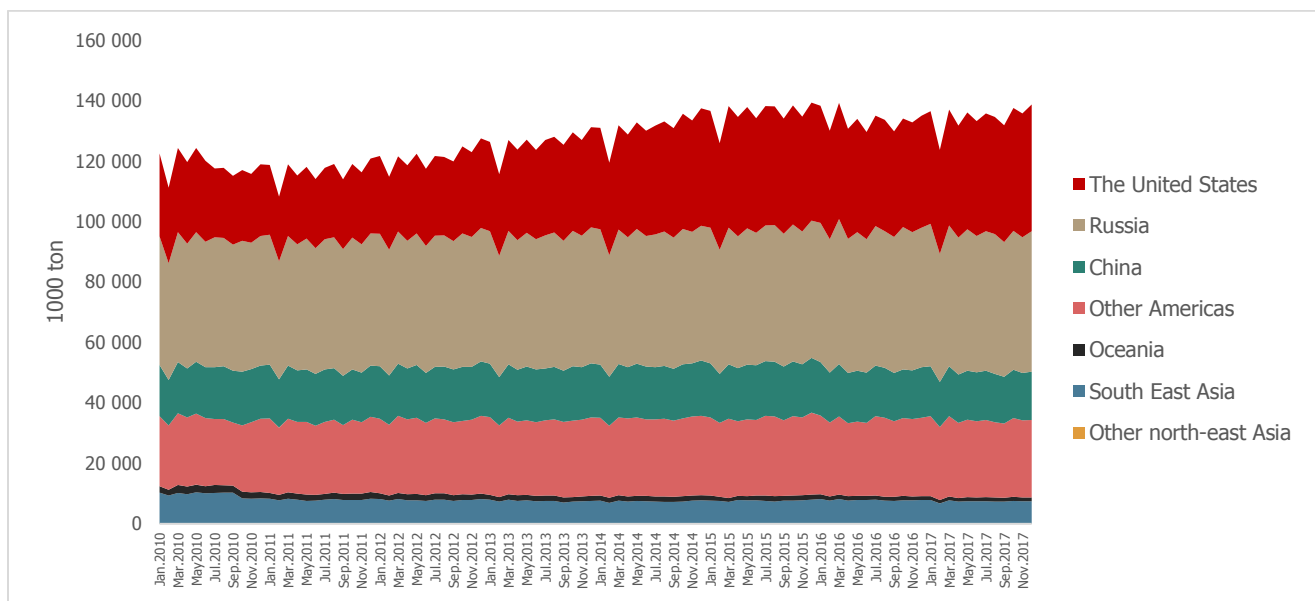


JODI Oil analysis

Crude oil production 2010-17

"The United States remained the fastest-growing producer in APEC from 2010-17"

Figure 1: Monthly crude oil production by region, 2010-17



Note: Missing data of Indonesia and Malaysia are estimated using 6 months moving average

In 2017, Russia held the largest share—about 34%—of APEC's crude oil production. This was followed by USA (29%), other Americas (19%) and China (12%). Russia's crude oil production in 2017 was 513.5 million tonnes, a reduction of 0.3% from 514.9 million tonnes in 2016. This was due to Russia's pledge to cut its oil production as part of OPEC/non-OPEC deal, which was in place since the start of 2017 to reduce global inventories and balance the oversupplied market.

The United States produced 463.5 million tonnes of crude oil in 2017, which represents a year-on-year growth of 5.3%. The economy's crude oil production reached 41.9 million tonnes in December 2017, the highest monthly production ever recorded since 1970 according to US Energy Information Administration¹.

Crude oil production in other Americas increased by 1.6% to 270 million tonnes in 2017 from 266 million tonnes of the previous year. The region's crude oil production was dominated by Canada which has

¹ <https://www.eia.gov/todayinenergy/detail.php?id=35632>

grown 69% since 2010. The economy produced 168.2 million tonnes in 2017, up by 10% from the previous year.

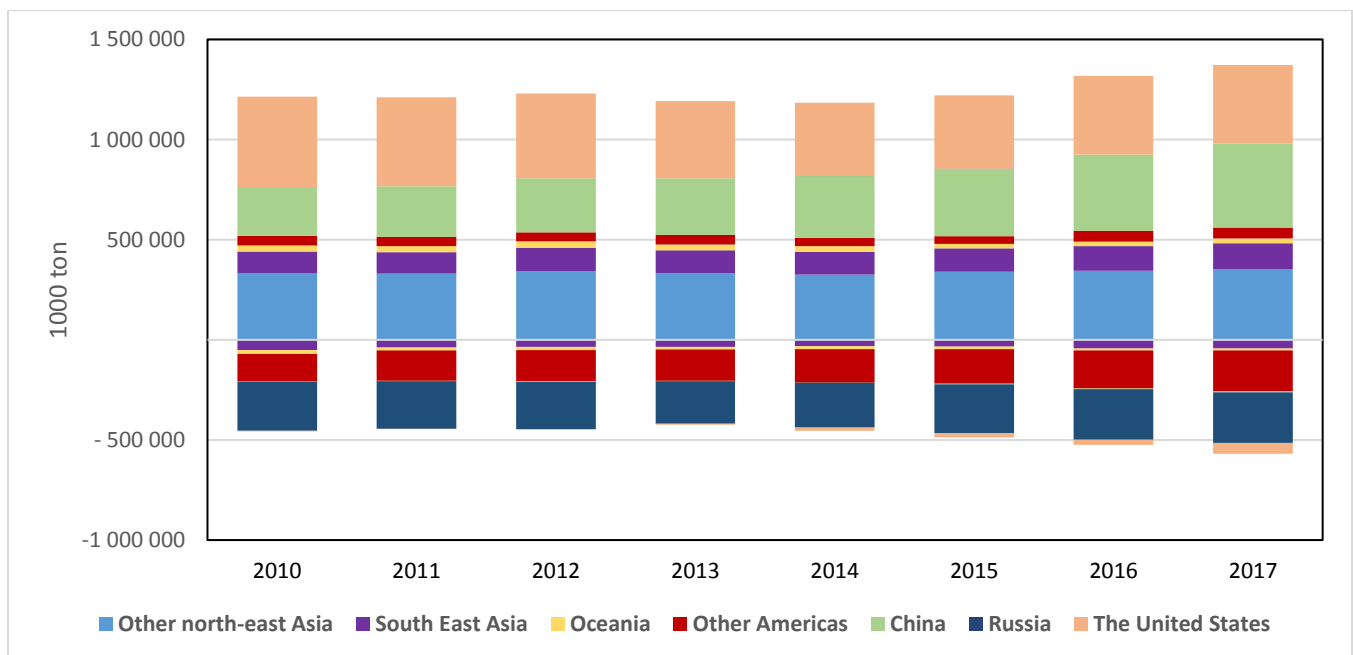
China's crude oil production, which has been declining since 2015 (-6.7%), has dropped further by 3.8% between 2016 and 2017. This was caused by the shutting down of uneconomic wells of major oil producers in the economy to cut their spending as price of oil continued to plunge down the previous years².

Drops in crude oil production were also seen in other north-east Asia, Oceania and South-East Asia in 2017. Total production in other north-east Asia fell by 4.1% to settle at 0.212 million tonnes. The production has been declining sharply since 2010—by 34%. In Oceania, crude oil production dropped to 13.7 million tonnes from 14.6 million tonnes in 2016 (-6.2%). Finally in South-East Asia, total production decreased by 4.7% to 87.4 million tonnes in 2017 mainly driven by the decline in output of mature fields, such as Brunei Darussalam. Main oil producers in this region have become net importers to meet rising demand.

Net imports

"China surpassed USA as the largest crude oil importer in 2017"

Figure 2: Crude oil trade, 2010-17



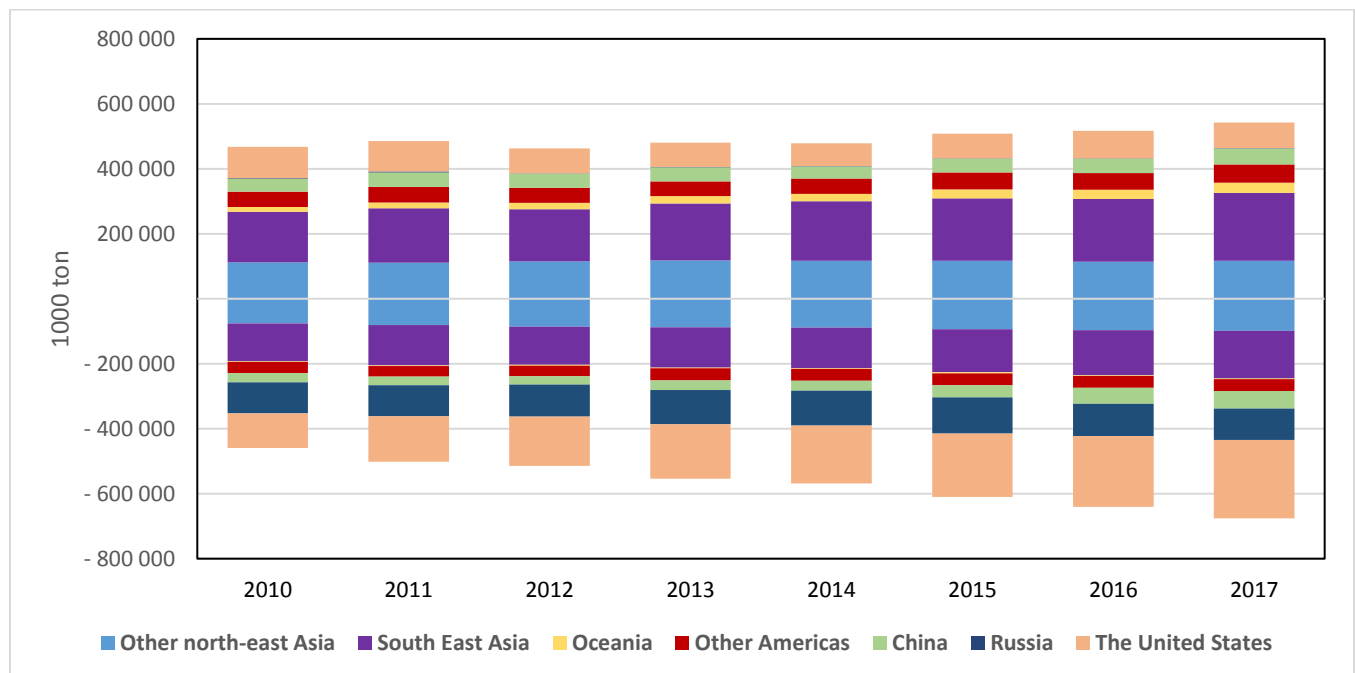
² <https://www.iea.org/oilmarketreport/>

APEC's crude oil import in 2017 rose 4.7% year-on-year to 1.4 billion tonnes. The year 2017 saw a break from historic trends as China surpassed the United States as the largest crude oil importer, importing 420 million tonnes compared to USA's import of 392 million tonnes. The lowest crude oil imports in China in 2017 was recorded in October at 31 million tonnes, reflecting less purchases from independent refineries. Other region such as South-East Asia, Oceania and other north-east Asia also contributed to the increase in oil import volume, at 12.3%, 8.4% and 2.1% respectively.

Crude oil export in APEC also had a significant growth at 7.4% in 2017 to reach 548 million tonnes. This could be attributed to USA's export which surged to 55 million tonnes in 2017 representing a sharp increase of 114% from 2016. China as well, contributed to APEC's oil export expansion as its export in 2017 grew to 4.9 million tonnes, almost twofold of the 2016 levels of 2.9 million tonnes (66%). Growth of crude oil export in other Americas was also significant, rising from 190 million tonnes in 2016 to 205 million tonnes in 2017 (7.9%).

Russia, the biggest exporter of crude oil in APEC, has seen a decline by measly 1% from the previous year. It posted an export of about 251 million tonnes in 2017 with December as the lowest export recorded at 17 million tonnes as the region continue to support the OPEC/Non-OPEC production adjustment scheme to rebalance the global oil market. Exports in South-East Asia and Oceania also posted falls by 21% and 4%, respectively.

Figure 3: Oil product trade, 2010-17



An 8% positive growth was recorded in APEC's oil product import in 2017, reaching 528 million tonnes. The top petroleum product importers in 2017 were South-East Asia, other north East Asia and USA. South-East Asia continued to comprise the bulk of APEC petroleum products imports—historically accounted for one-third of the total. The regions' import levels, which has been increasing steadily since 2013 but has declined in 2016, recovered in 2017 with a remarkable 16.9% growth. The increase in petroleum products imports in South-East Asia was due mainly by the surprising surge in imports of jet kerosene.

USA's oil products import reached 9 million tonnes in June 2017, the highest monthly level on record that year. Though the region set the highest monthly record on oil product imports in APEC, its levels were actually falling since 2010 (96 million tonnes); recovering only in 2015-16 until finally settling to 79 million tonnes in 2017 (down 7% from the 2016 levels).

Oil product export in APEC continued to grow with 7% increase from 2016 levels to reach 671 million tonnes in 2017, owing to the high year-on-year growths in South-East Asia (13%), the US (11%) and China (8%). The US continued to be the major net exporter—more than 30% of APEC exports—of refined oil products in APEC in 2017. It set a record high of exporting 241 million tonnes of refined oil products exports in 2017; an 11% year-on-year increase.

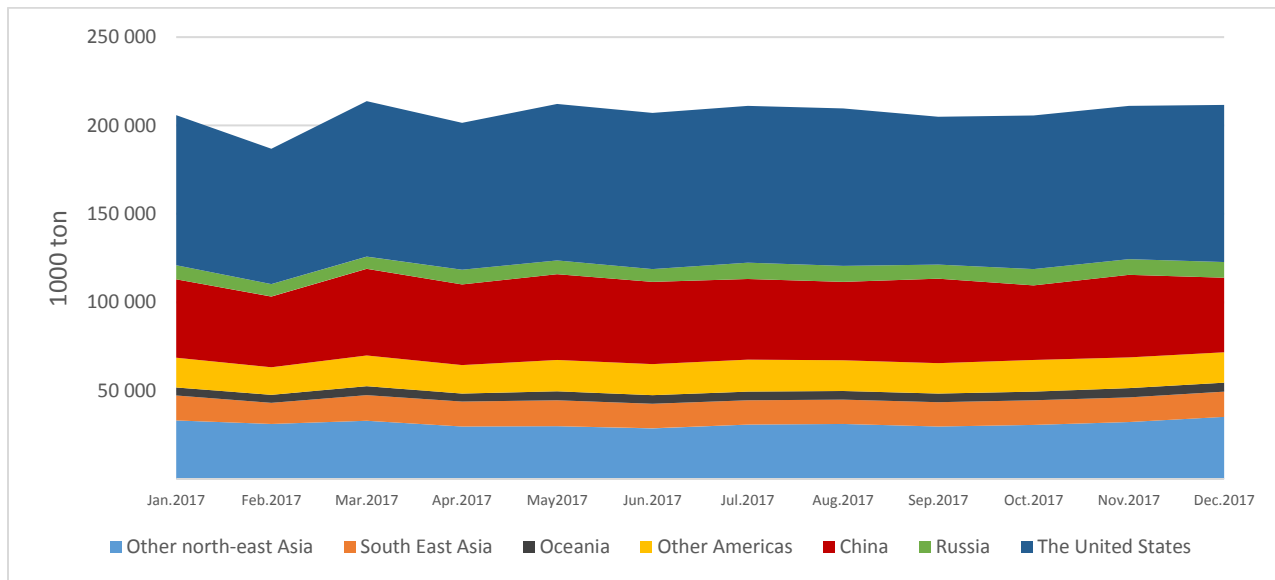
A significant trade shift can be seen in China—traditionally a net oil products importer—became a net exporter of oil products in 2016 and exported 53.7 million tonnes in 2017, representing an 8% increase from 2016. This was brought in part by the strong leap of fuel oil (12%) and gas/diesel oil (12%) exports in 2017 indicating higher requirement for transportation use in APEC. In December 2017 alone, the region exported a record volume of about 6.3 million tonnes of refined oil products (of which 32% gas/diesel oil and 20% fuel oil). This was up 6% from November's 5.9 million tonnes.

Other regions also showed improvements in 2017—2% and 1% in other north-east Asia and other Americas, respectively. Meanwhile, a reduction of 1% and 3% from 2016-17 were recorded in Oceania and Russia, respectively.

Oil demand

"APEC's oil demand grew by 8% since 2010"

Figure 4: Oil demand, 2017



Notes:

1. Total oil demand for Russia excludes Jet Kerosene and other petroleum products as these two products were not reported.
2. The totals in oil demand were not equal to the EGEDA database as some details from some economies were not available or not submitted due to confidentiality.

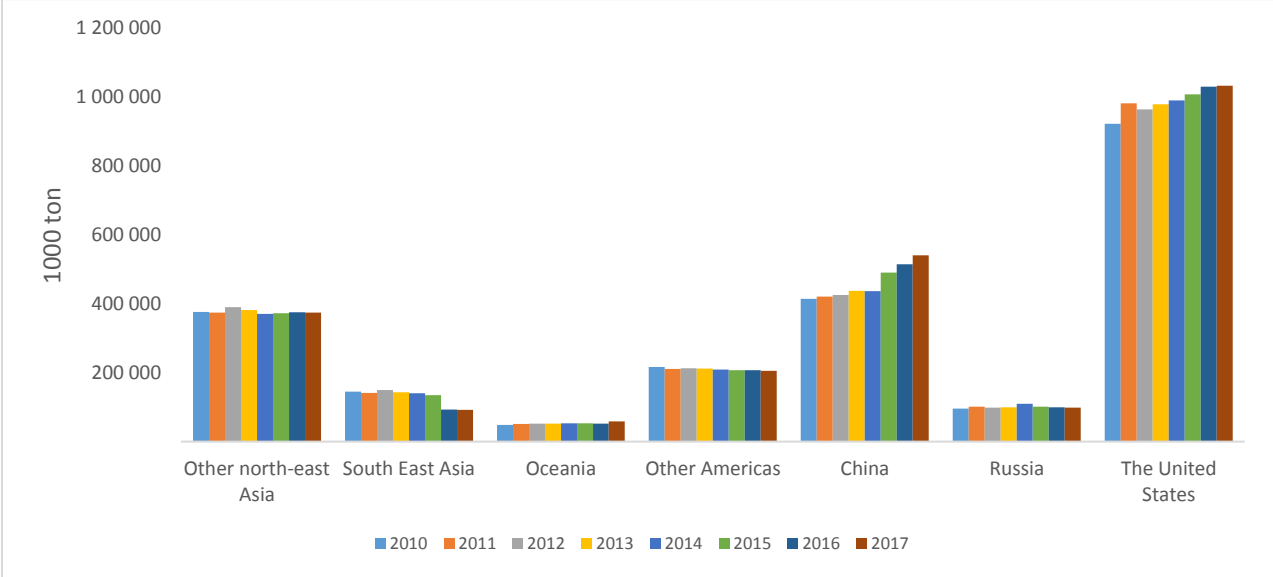
The total oil demand in APEC reached 2.4 billion tonnes in 2017, an increase of 1.3% from the 2016 levels (2.37 billion tonnes). APEC's oil demand has grown 8% from 2.2 billion tonnes in 2010.

Energy consumption in Oceania, China and the United States showed positive growths in 2017, while the rest of the regions in APEC dipped. The biggest increase in oil demand is seen in Oceania, increased by 12.7% in 2017 to 58.4 million tonnes. Oil consumption in the region has consistently shown strong momentum in 2017 with the month of November the biggest year-on-year growth of 28.4%. A significant growth is also seen in China's oil demand which grew by 5.0% in 2017 from the previous year indicating a usual robust demand by industry and transport sectors.

While other north-East Asia (16%) comprised the third largest oil user in APEC, the region experienced a continuous decline in oil consumption until 2014. After it rose sharply in 2012 by 4.2% (390 million tonnes), oil demand in 2017 was about 375.0 million tonnes, even lower than the 2010 level (376.7 million tonnes). Together with the US (43%) and China (23%)—the other major oil users in APEC—the three regions accounted for the bulk of energy demand in 2017.

Demand growth for oil products has been slowing down since 2013 for South-East Asia. Note however, that the significant drop in demand in 2014 was apparent due to unreported data from some economies. Hence, the oil demand trend for South-East Asia, may probably be an understatement for that year.

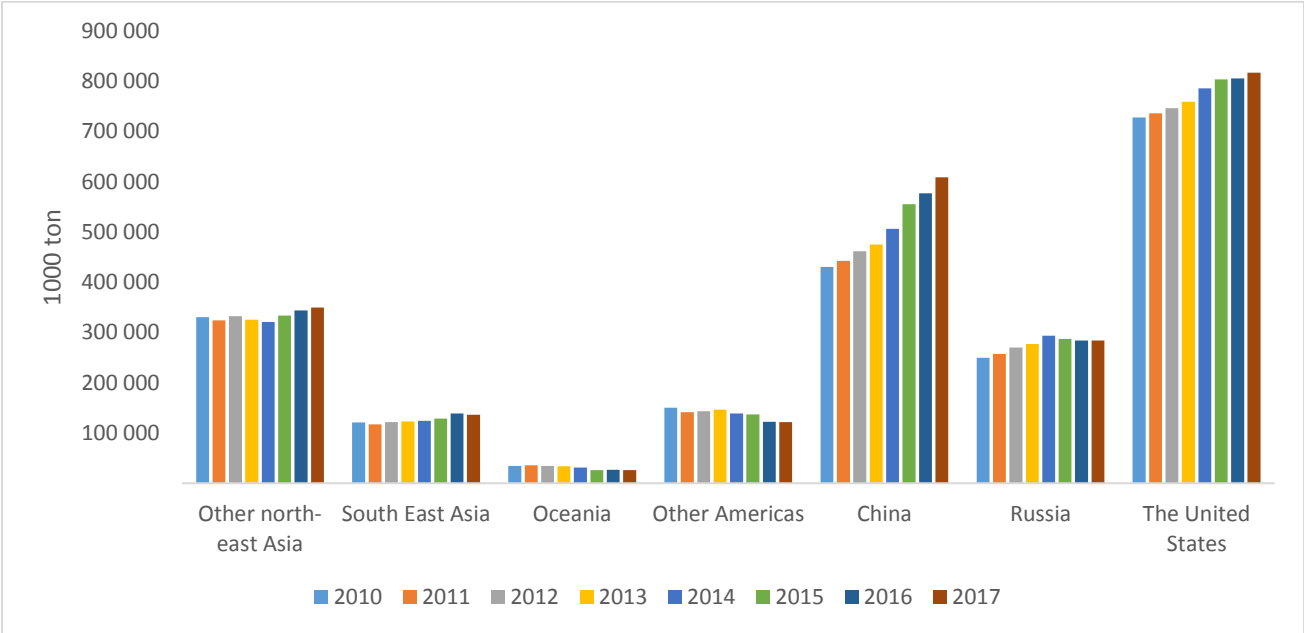
Figure 5: Trends in oil demand, 2010-17



Refinery intake/output

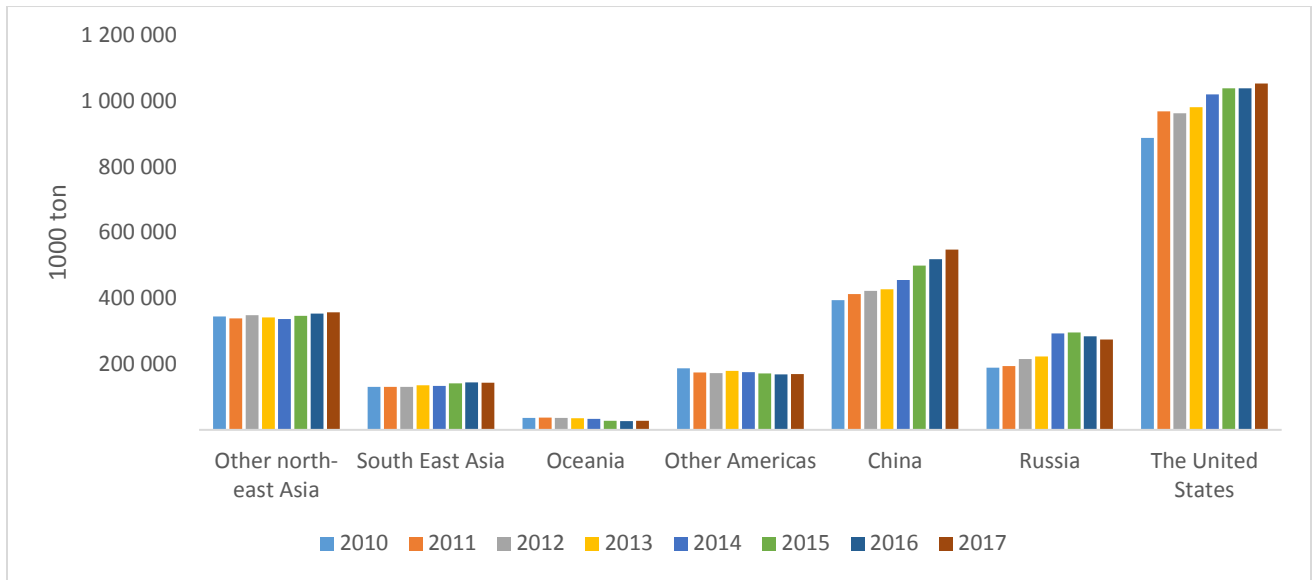
"Total refinery intake in APEC rose by 45 million tonnes"

Figure 6: Refinery intake, 2010-17



Total refinery intake in APEC rose by 45 million tonnes (2%) in 2017 from the previous year, driven by the growth in China (31.9 million tonnes), USA (11.5 million tonnes), other north--east Asia (5.3 million tonnes) and Russia (0.4 million tonnes). Whereas, refinery intakes in other Americas and Oceania were lower in 2017 than in 2010 levels and trends has been declining. South-East Asia's refinery intake has been increasing steadily since 2011, but fell by 2% in 2017. This however, does not include refinery intake in Singapore (a large oil refiner), which is not reported by the economy.

Figure 7: Refinery output, 2010-17



Refinery output in APEC increased by 39 million tonnes in 2017, which represented a 2% growth from 2016. With the exception of Russia, all other regions experienced growths in 2017 compared to the previous year. The largest growth can be seen in China (6%); and Oceania (5%) after continuous fall in output since 2012. Russia's refinery output reached its peak in 2015 but the region has been cutting its refining throughput ever since it introduced a tax change program, and has since declined by 4% and 3% in 2016 and 2017, respectively.

Output in other Americas remained almost flat in 2017, after it was down by 2% in 2016. Similarly, output stayed almost the same level in South-East Asia for 2017 when compared to the previous year at 144 million tonnes. Growth in output has slowed down in other north-east Asia, nevertheless increased modestly by 1% in 2017, compared to the previous year's 2% growth and 3% increase in 2015.