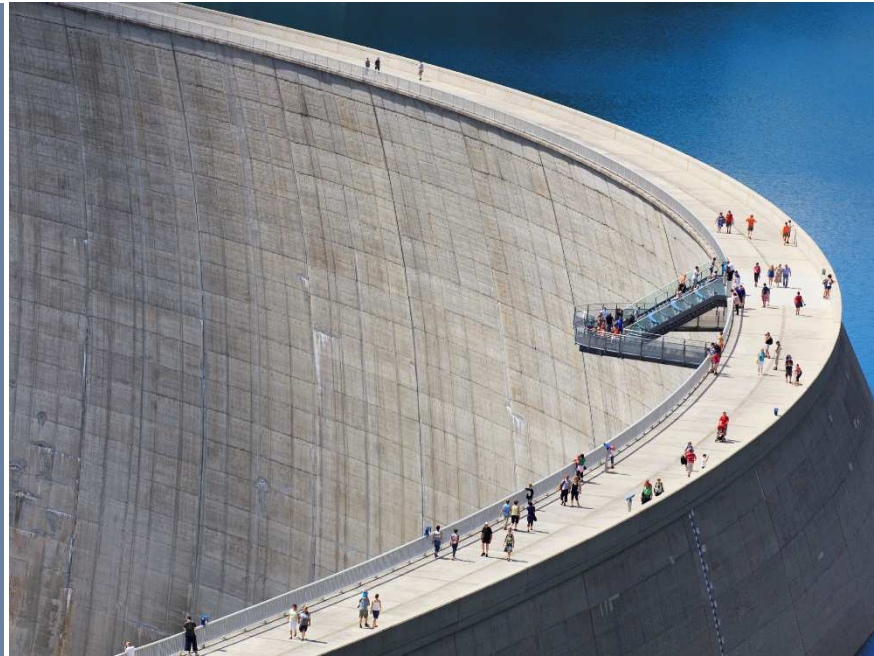


# Monthly World Energy Market Review



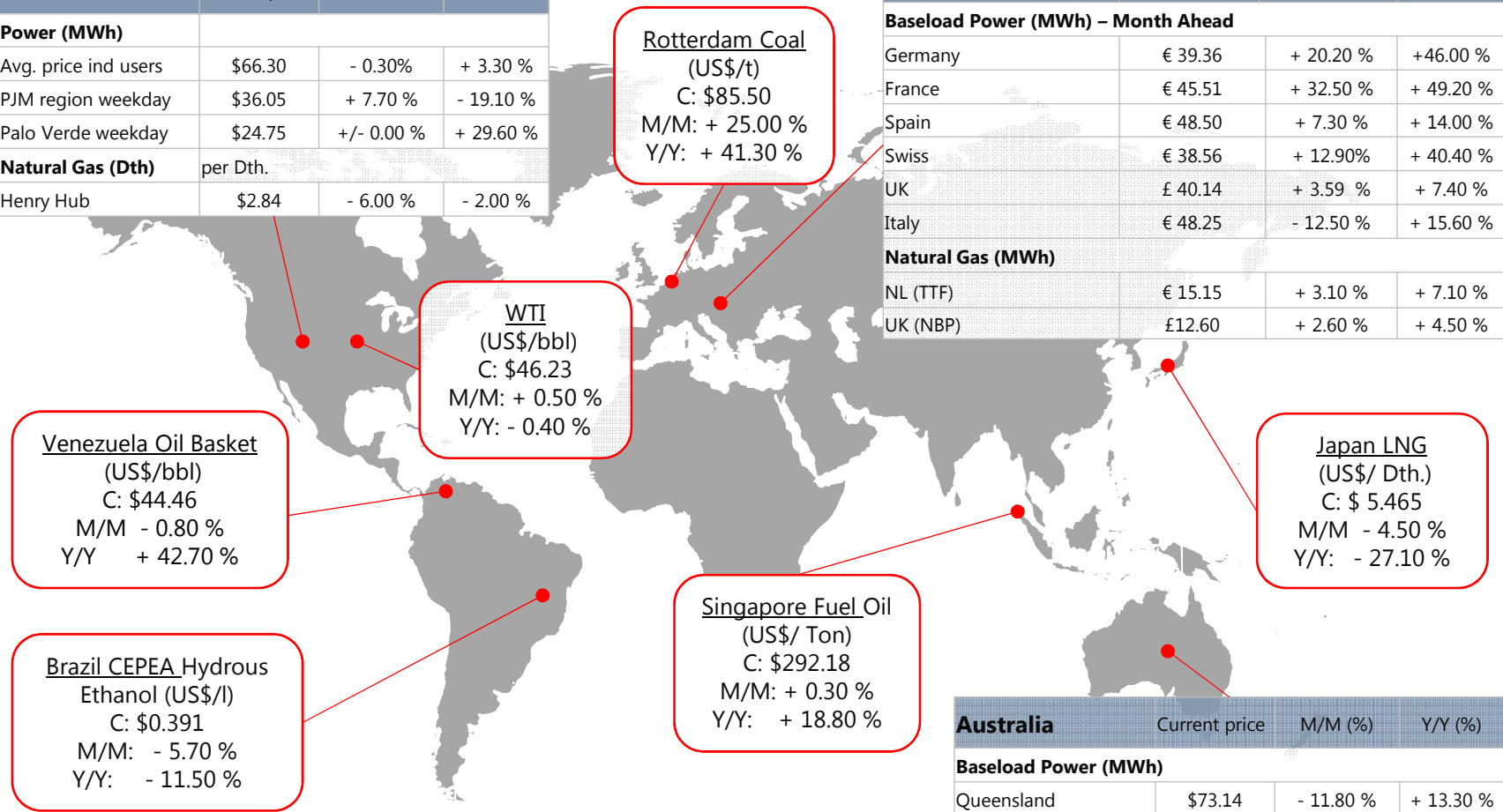
Release Date: July 7, 2017

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# International Pricing Information

US	Current price	M/M (%)	Y/Y (%)
<b>Power (MWh)</b>			
Avg. price ind users	\$66.30	- 0.30%	+ 3.30 %
PJM region weekday	\$36.05	+ 7.70 %	- 19.10 %
Palo Verde weekday	\$24.75	+/- 0.00 %	+ 29.60 %
<b>Natural Gas (Dth)</b>			
Henry Hub	\$2.84	- 6.00 %	- 2.00 %

Europe	Current price	M/M (%)	Y/Y (%)
<b>Baseload Power (MWh) – Month Ahead</b>			
Germany	€ 39.36	+ 20.20 %	+46.00 %
France	€ 45.51	+ 32.50 %	+ 49.20 %
Spain	€ 48.50	+ 7.30 %	+ 14.00 %
Swiss	€ 38.56	+ 12.90%	+ 40.40 %
UK	£ 40.14	+ 3.59 %	+ 7.40 %
Italy	€ 48.25	- 12.50 %	+ 15.60 %
<b>Natural Gas (MWh)</b>			
NL (TTF)	€ 15.15	+ 3.10 %	+ 7.10 %
UK (NBP)	£12.60	+ 2.60 %	+ 4.50 %



Australia	Current price	M/M (%)	Y/Y (%)
<b>Baseload Power (MWh)</b>			
Queensland	\$73.14	- 11.80 %	+ 13.30 %

# Global Energy Review – International Markets

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## International Energy Markets - Review

- World leaders ratcheted up pressure on U.S. President Donald Trump to compromise on climate and trade as a Group of 20 summit got underway in Germany amid clashes between police and protesters. In a joint communique as the leaders gathered in a vast convention center in Hamburg, Brazil, Russia, India and China – the so called BRICS countries – called on the G20 to push for implementation of the Paris climate deal despite Trump’s decision to pull the United States out of it.
- The West’s three biggest energy corporations are lobbying Qatar to take part in a huge expansion of its gas production, handing Doha an unintended but timely boost in its bitter dispute with Gulf Arab neighbors. The chief executives of ExxonMobil, Royal Dutch Shell and France’s Total all met the emir, Sheikh Tamim bin Hamad al-Thani, in Qatar before it announced a plan on 4 July to raise output of liquefied natural gas (LNG) by 30%. The CEOs had expressed interest in helping Qatar with its ambition to produce 100 million tonnes of LNG annually – equivalent to a third of current global supplies – in the next five to seven years. Qatar, the world’s largest LNG supplier and second biggest gas exporter after Russia, has some of the lowest production costs. The plan was seen as an opening shot in a price war as Doha tries to defend its market share, especially against supplies from US shale deposits where costs are higher.
- Mining and electric utility executives in China are preparing for a possible government intervention into coal markets after prices hit the 600 yuan (\$88.25) a tonne threshold the state planner said would trigger steps to cool prices. A prolonged heatwave across northern China, hydropower cuts in the south, a fresh crackdown on mine safety and imports curbs have triggered a weeks-long rally in the world's top buyer of the fuel. prolonged heatwave across northern China, hydropower cuts in the south, a fresh crackdown on mine safety and imports curbs have triggered a weeks-long rally in the world's top buyer of the fuel.

# Global Energy Review – US Markets

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## United States Energy Markets - Review

- Crude oil prices declined sharply in June, with prompt-month WTI futures on the New York Mercantile Exchange (NYMEX) reaching a ten-month low of \$42.05 per barrel before recovering modestly over the final week of the month. Despite agreement by the Organization of Petroleum Exporting Countries (OPEC) in May to extend oil production cuts, total OPEC supplies have been on the rise over the last two months, supporting a drop in prices to the lowest levels since August 2016. While compliance from OPEC nations participating in the production cuts has been high, output from Libya and Nigeria, two countries granted exemptions due to military conflict and political unrest, was on the rise in May and June. OPEC exported 25.9 million barrels per day last month, up 450,000 barrels per day from May and 1.9 million barrels per day above the same period last year. The August 2017 NYMEX crude oil futures contract closed on June 30 at \$46.04 per barrel, with the global Brent crude benchmark at \$47.92 per barrel.
- After breaching technical support near \$3.15 per MMBtu at the end of May, prompt-month NYMEX natural gas futures remained suppressed in June. Expectations for mild weather in key gas-consuming regions of the U.S. over the second half of the month drove prompt-month futures to an intraday low of \$2.855 per MMBtu on June 22, the lowest levels experienced since early March. However, a series of disappointing storage injections and forecasts for above-normal temperatures across much of the country in July and August buoyed pricing over the last week of June. Cumulative storage builds of 185 Bcf over the three-week period ending June 23, compared to a five-year average of 255 Bcf, left total inventories just 6.9% ahead of the historical benchmark. Still, historically-favorable storage levels and recent growth in domestic production worked to keep a lid on upside price risk. The August 2017 NYMEX natural gas futures contract closed on June 30 at \$3.035 per MMBtu, with average pricing for the balance of 2017 at \$3.102 per MMBtu.

# Global Energy Review – European Markets

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## European Energy Markets - Review

- The German 2018 baseload power contract, The contract for delivery of electricity in 2018 last traded at this level at the end of July 2015. a European benchmark, gained 1.3 percent to 31.65 euros (\$36.05) a megawatt-hour (MWh) driven by coal price gains. The contract for delivery of electricity in 2018 last traded at this level at the end of July 2015. Coal cif North Europe gained 1.1 percent to \$72.7 per tonne, driven by global market tightness caused by Chinese demand.
- Poland: A country seeking to decrease its dependence on Russian gas, yesterday (3 July) said the start of production of gas and crude oil from an offshore field near Norway, in which the Polish company PGNiG has a stake, was “very good news”. Norwegian energy company Statoil and its partners have invested a total of some NOK 31 billion (€3.2bn) in the development of the Gina Krog field. More than 600 people have been working on the site since last August, preparing the platform for production. To diversify from Russian gas exports, Poland had, in the recent past, placed its hopes in the development of shale gas. This attracted global energy majors, including Chevron, ExxonMobil and Total, but one by one they pulled back after disappointing results and a slump in oil prices. By 2022 the Norwegian, Danish and Polish transmission system operators will construct a gas pipeline system to secure direct gas imports from Norway to Poland.
- Hungary: Hungary signed a deal with Russia’s Gazprom to link the country with the Turkish Stream pipeline by end-2019 yes, a day ahead of President Donald Trump’s trip to Poland, where he is expected to promote US LNG exports. Natural gas supplies to eastern Europe have been a major area of competition between incumbent pipeline power Russia and the United States, which is touting its liquefied natural gas (LNG) potential in the region via onshore LNG terminals. Hungary, which relies on Russian imports via Ukraine for nearly all of its gas use, has sought to diversify its imports geographically as well as by supplier for years.

# Global Energy Review – Asia/Pac Markets

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## Asia-Pac Energy Markets - Review

- Australia: With electricity prices soaring and uncertainty around the future security of supply, the Federal Government tasked Alan Finkel, the chief scientist to come up with a solution. More importantly, he had to come up with a solution that would be supported by all sides of politics. Otherwise, there is little prospect of it being adopted. The key recommendations of the Finkel Report that has recently been released are as follows: A new Clean Energy Target, Three Years notice of closure required for large generators, New generators to support and maintain voltage and frequency. The Finkel Report proposes a new Clean Energy Target with the existing scheme to end in 2020.
- China: China continues to dominate nuclear new build activity globally. In 2016 new reactors were connected to the grid at Changjiang, Fangchenggang, Fuqing, Hongyanhe and Ningde, adding some 4.6 GWe, and representing about 50% of all new nuclear capacity additions worldwide, according to a report by the World Nuclear Association. The strong impetus for developing new nuclear power in China comes from the need to improve urban air quality and reduce greenhouse gas emissions.
- Singapore: Singapore has begun exploring the use of “hanging” solar panel systems similar to the one installed in the Bukit Timah penthouse as well as floating PV systems and energy storage to overcome the challenge of having a small land area that rules out the creation of large solar farms. The hope is that these innovations will increase the viability and attractiveness of solar PV projects as Singapore tries to meet its climate change commitments and become a clean energy hub in Southeast Asia.

# Global Energy Review – LATAM Markets

## LATAM Energy Markets - Review

- Mexico: Mexico has just increased its renewable energy target, aiming to generate 50 percent of its electricity from renewables by 2050. The country has seen a recent uptick in its renewable electricity deployment, thanks to recent policy reforms and the dropping price of renewable energy. As a result, the president of Mexico's Energy Regulation Commission expects that the next energy auction, later this year, will allow the country to meet its interim goal of achieving 35 percent of renewable energy by 2024.
- Brazil: Oil production from the first rig to operate in Brazil's Libra area will not start in July as previously planned due to problems installing equipment, Ibsen Flores Lima, president of state-controlled Pré-Sal Petróleo SA, on the sidelines of a conference. Libra is one of the largest oil reserves in Brazil, with recoverable volumes estimated by oil regulator ANP at between 8 and 12 billion barrels. Brazil's oil company Petróleo Brasileiro SA is the operator in a consortium that includes Royal Dutch Shell Plc , Total SA and the Chinese companies CNPC e CNOOC.
- Bolivia: Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) CEO Oscar Barriga announced that the state company will export 4,000 tons of liquefied petroleum gas (LPG) to Paraguay. The Rio Grande and Carlos Villegas liquid separation plants produce 600 thousand tons of LPG annually, of which 70 percent goes to the domestic market and 30 percent is expected to be exported.
- Brazil: Petrobras should cut the maximum amount of natural gas it buys from neighboring Bolivia in half in an effort to encourage domestic importers and distributors to enter the market. The study by a Mines and Energy Ministry research arm, recommended that Brazil's state-owned oil firm cap gas purchases from Bolivia's Yacimientos Petrolíferos Fiscales Bolivianos SA at 16 million cubic meters a day of gas.

# Appendix – Commodity Pricing Data

Brent Crude - month ahead contract (US\$ per barrel)



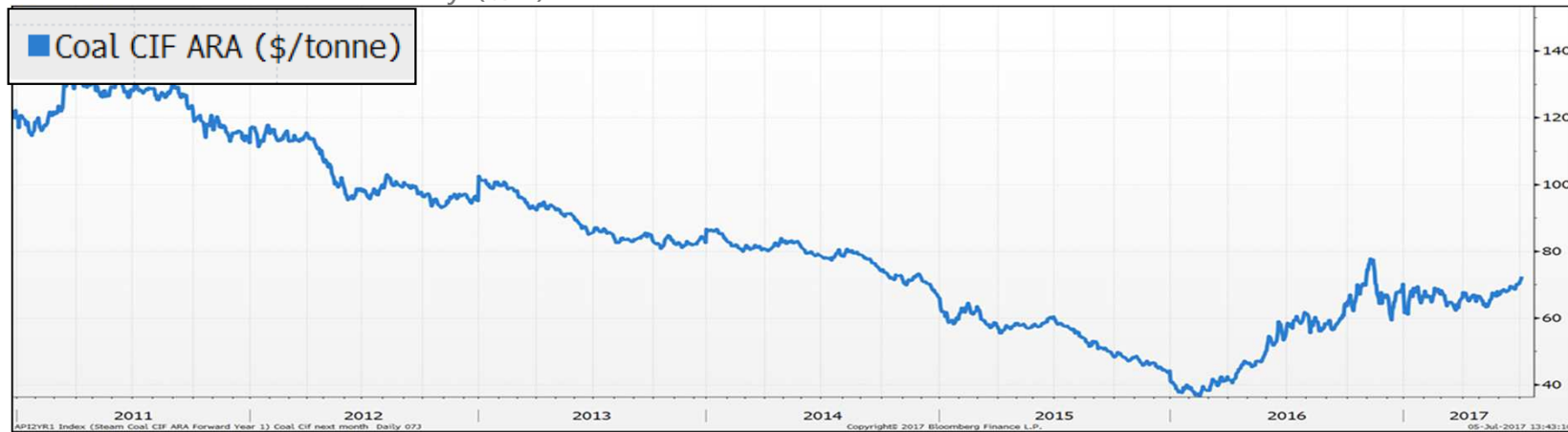
Foreign Exchange (Euro/USD)



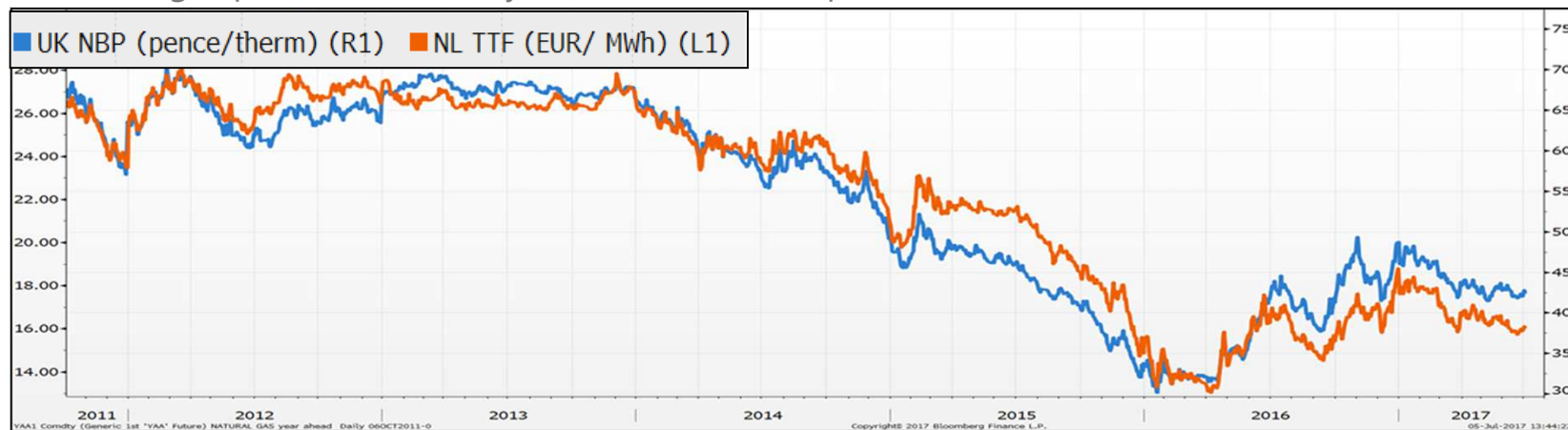


# Appendix – Commodity Pricing Data

Coal CIF ARA 2017 delivery (\$/T)

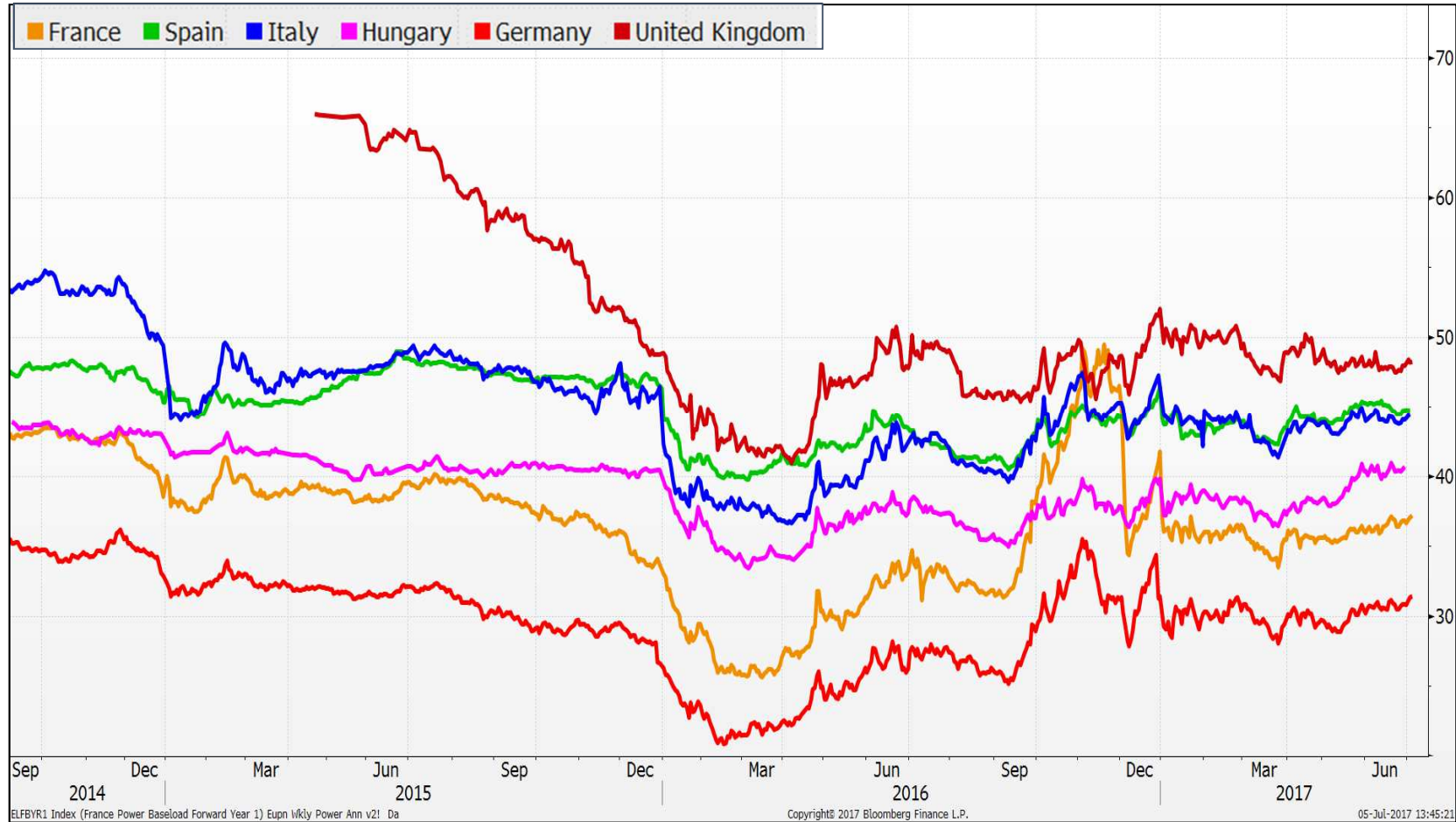


Natural gas prices, "Calendar year 2017" (NBP in £p/therm & TTF in €/MWh)



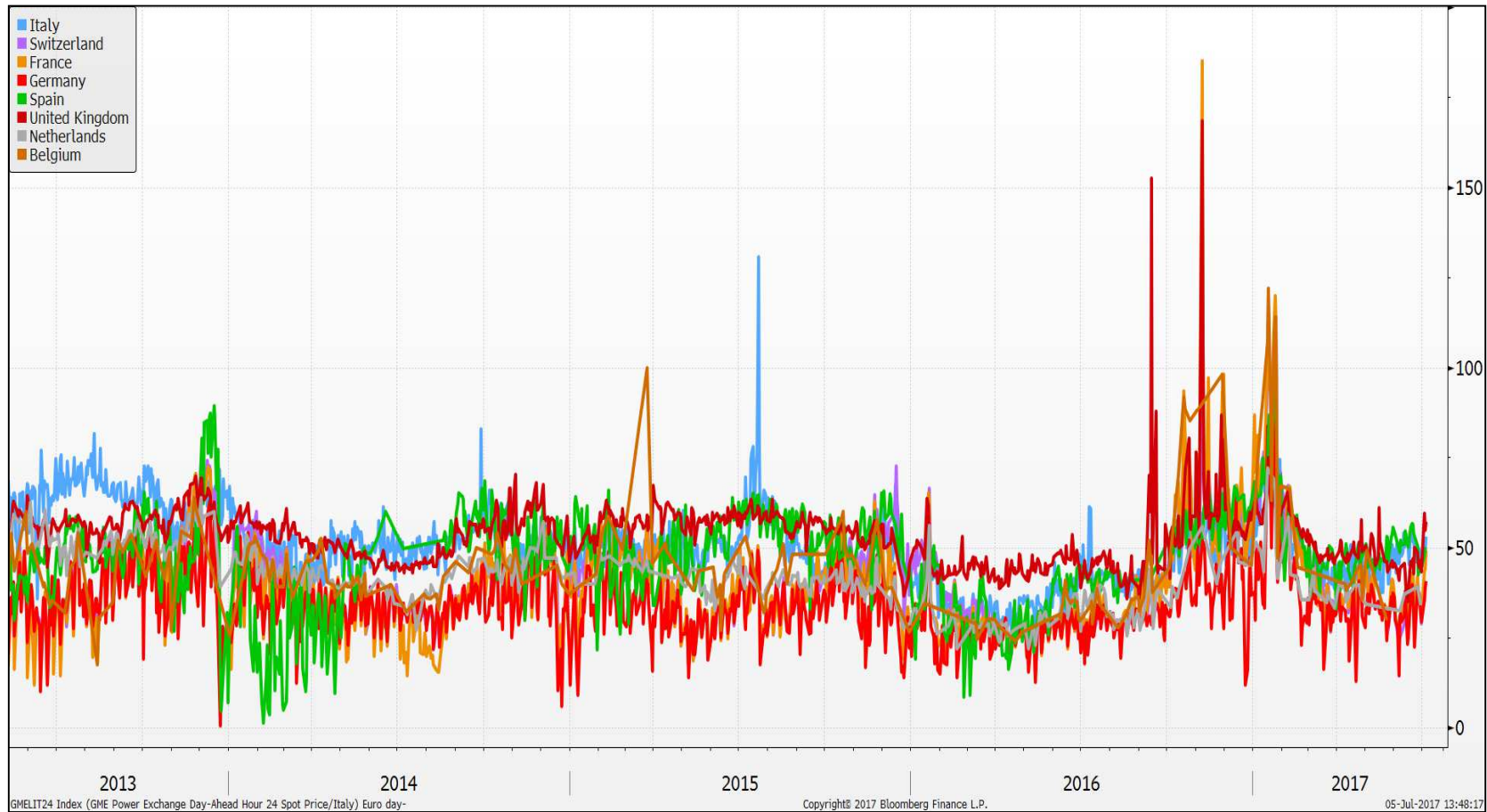
# Appendix – Commodity Pricing Data

European electricity prices for "Calendar Year 2018" (€/MWh)



# Appendix – Commodity Pricing Data

European day ahead electricity prices (€/MWh)



# Glossary

Term	Definition
Avg Price Industrial Users	Latest unit cost for electricity consumed by industrial users as reported by the U.S. Energy Information Administration (EIA). The EIA usually publishes the data 4 months after the month of consumption.
Henry Hub Natural Gas	The Henry hub in Erath, Louisiana serves as the pricing point for natural gas futures traded on the New York Mercantile Exchange (NYMEX).
WTI Crude Oil	The reported WTI light crude oil future price is the market determined value of next month's contract to either buy or sell in multiples of 1,000 barrels West Texas Intermediate or other light sweet crude oil. WTI light crude oil contracts are only executed for physical delivery in relatively few cases but nevertheless they serve as an important pricing mechanism for contracts that are actually executed for physical delivery.
PJM Region Weekday	The Pennsylvania-New Jersey-Maryland (PJM) interconnection functions as a power pool for all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. The PJM power pool is currently the largest competitive wholesale electricity market. The price reported here is the price during weekdays.
Palo Verde Weekday	The Palo Verde switchyard located in Tonopah, Arizona is a key point in the western states power grid and is used as a pricing point for electricity across the southwest United States. The price reported here is the average market price for peak electricity to be consumed on the next day. Peak hours under this contract are from Mon – Sat between 0700 – 2200 hours local time.
Brazilian Ethanol	The market price for a next month delivery of 1liter of ethanol at the mill gate in Sao Palo state as calculated by Cepea.
Rotterdam Coal	The market price for a next month delivery of coal in the Amsterdam – Rotterdam – Antwerp (ARA) port area.
Germany	The market price for one MWh of baseload electricity to be delivered next month as traded on the EPEX Spot Market <a href="http://www.epexspot.com">www.epexspot.com</a> .
France	The market price for one MWh of baseload electricity to be delivered next month as traded on the EPEX Spot Market <a href="http://www.epexspot.com">www.epexspot.com</a> .

# Glossary

Term	Definition
Spain	The market price for one MWh of baseload electricity to be delivered next month as traded on the trading platform belonging to the Operador do Mercado Iberico de Energia (OMIP).
Swiss	The market price for one MWh of baseload electricity to be delivered next month as traded on the European Energy Exchange (EEX).
UK	The market price for one MWh of baseload electricity to be delivered next EFA month as traded on the Intercontinental Exchange (ICE). EFA month stands for the specific calendar in use under the Electricity Forwards Agreement that breaks up the year in equal blocks of 4 and 5 weeks so as to simplify trading.
TTF	The Title Transfer Facility (TTF) is a virtual hub that serves as a pricing point for natural gas contracts within the Dutch gas network. The actual contracts are traded on the European Energy Derivatives Exchange (ENDEX).
NBP	The National Balancing Point (NBP) is a virtual hub that serves as a pricing point for natural gas contracts within the United Kingdom. The actual contracts are traded on the Intercontinental exchange (ICE).
Singapore Fuel Oil	The market price for Free on Board (FOB) 180 Centistoke (CST) fuel oil in Singapore port to be delivered next month.
Japan LNG	The reported price for LNG in Japan is derived from the price of West Texas Intermediate (WTI) crude oil by means of an index formula and is reported in US Dollar per decatherm.
Queensland Baseload Power	The market price for one MWh of baseload electricity to be delivered next month in Queensland as traded on the Australian Securities Exchange (ASX).
Brent Crude Oil	Brent crude oil is a combination of light crude oil from 15 different oil fields located in the North Sea. Due to the high quality of Brent crude, it is ideal for making gasoline and middle distillates. As such, Brent crude forms the pricing benchmark in Europe and Africa.

# Glossary

Term	Definition
Foreign Exchange	The blue line in the graph presents the daily exchange rates Euro to USD while the red line represents the moving average over the last 14 trading days.
Coal CIF ARA 20XX Delivery	Coal is an important input fuel for electricity generation. The coal price reported in appendix 3 is inclusive of commodity Cost, Insurance and Freight (CIF) from its origin to the ports of Amsterdam – Rotterdam – Antwerp (ARA) to be delivered next month.
Natural Gas Price for Calendar 20XX	The featured contracts in this graph are for the delivery of natural gas in the UK (NBP), Dutch (TTF) and German (EEX) markets in the next Calendar year. The benefit of the annual contract is that the buyer has an average price throughout the year rather than individual prices for each month that are priced according to market conditions and can show great variances between winter and summer prices. For further information on the specific country contracts, please refer to the glossary for the world report.
European Electricity Prices for Calendar Year 20XX	The featured contracts represent the current market price for one MWh of baseload electricity to be delivered next calendar year (except UK) as traded on each of the respective exchanges mentioned as source. The electricity market in the UK features the season contract as its longest contract. As a result, the reported market price is the average of the nearest summer and winter contracts.
European Day Ahead Electricity Prices	Next to future contracts, each electricity exchange also features a day ahead contract. The day ahead contracts are characterized by greater volatility than the monthly and longer period future contracts as they are more susceptible to actual supply and demand on the day as well as the other factors influencing the longer contract prices.

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