COVID 19 ANALYSIS

ENERGY & POWER INDUSTRY

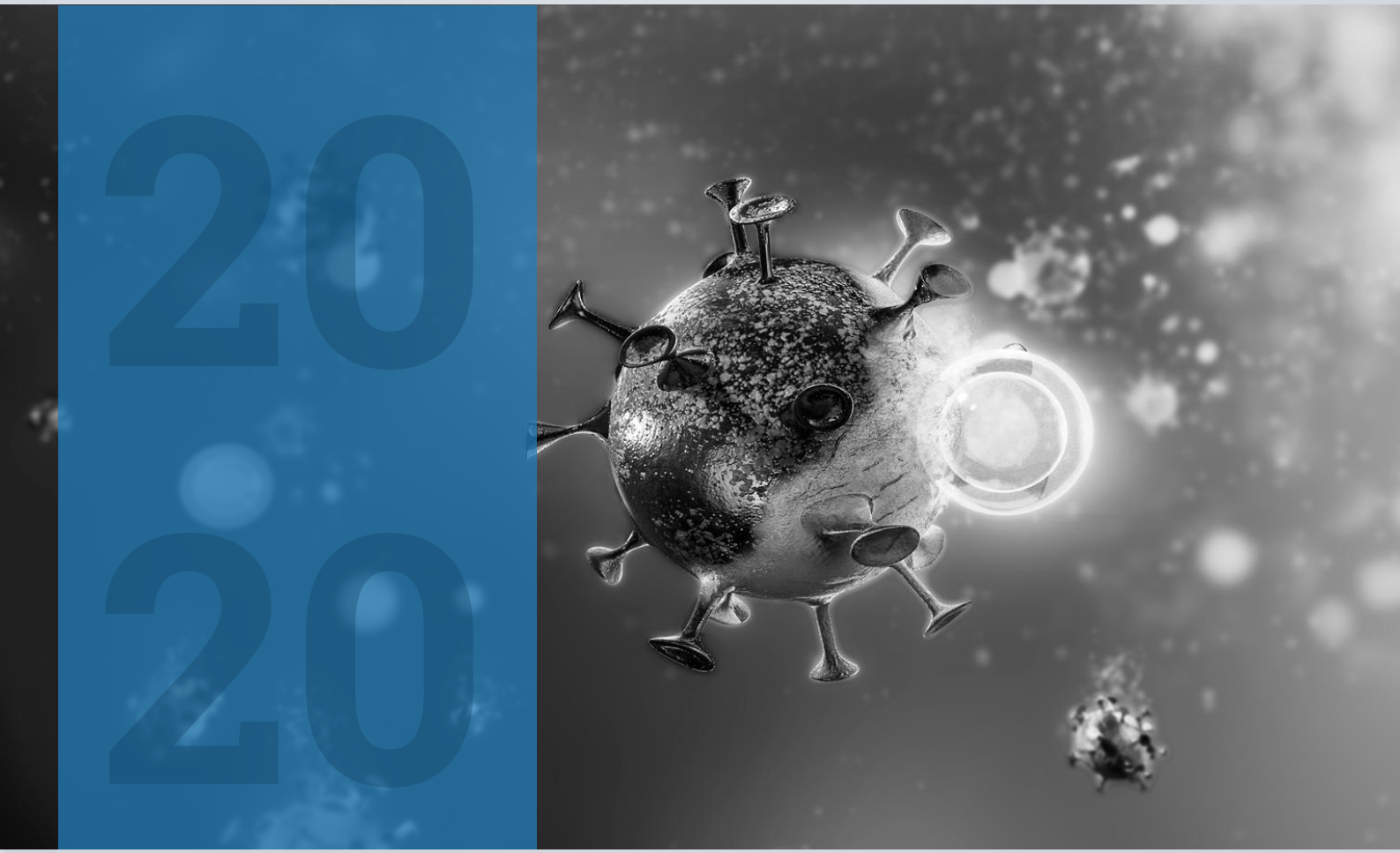
PREPARED BY

MARKET RESEARCH FUTURE

(Part of Wantstats Research & Media Pvt. Ltd.)

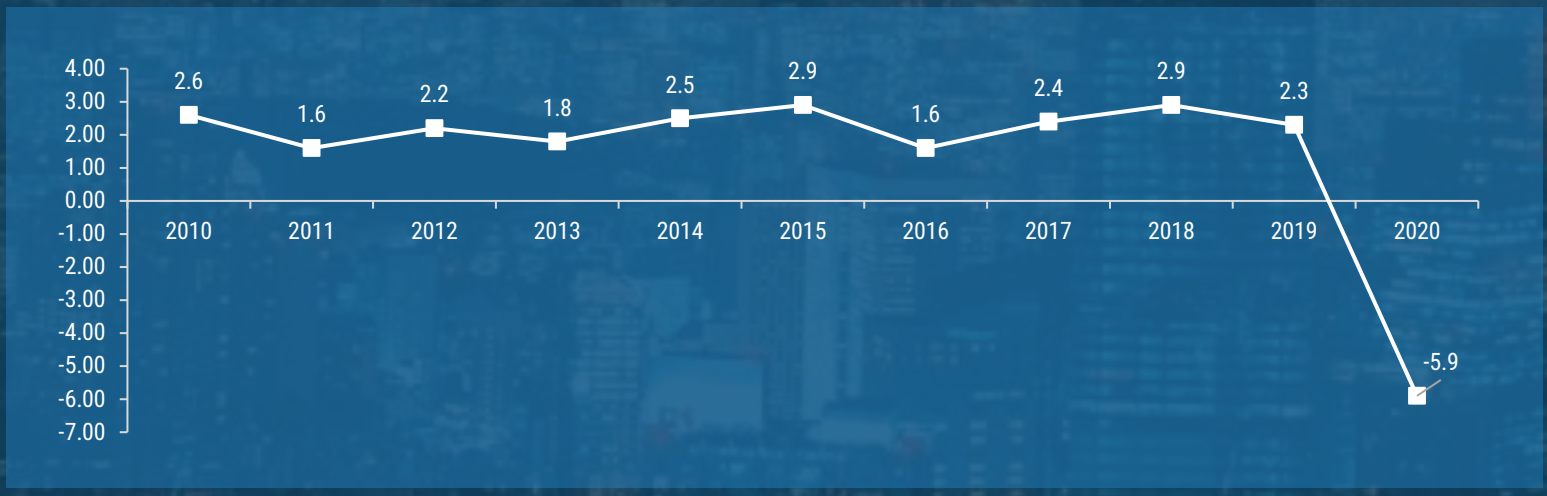
COVID 19 IMPACT ON UNITED STATES

ENERGY & POWER INDUSTRY



US-Real GDP Growth

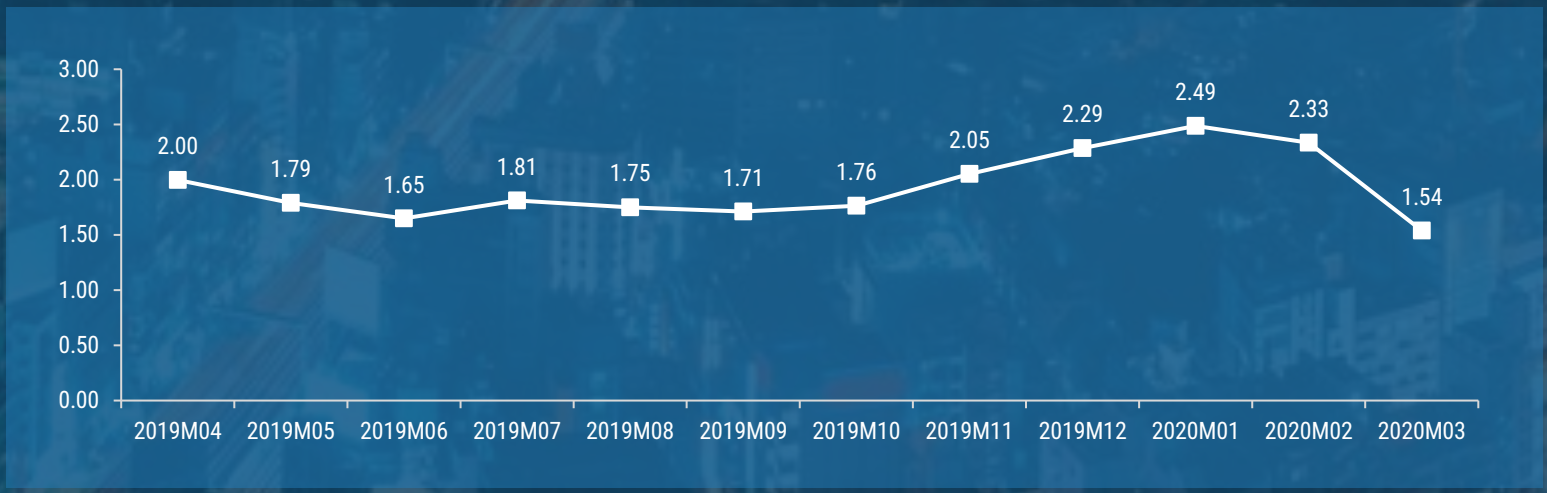
(Annual Percent Change) 2010 - 2020



- The US economy shrunk by 4.8 % in the first quarter of the 2020, It's the country's first contraction since 2014 and the biggest largest drop in over a past 10 year.
- Consumer spending declined sharply in first quarter, contributing -5.3 % points to the first quarter's contraction. Falling consumer spending has major effects on overall GDP growth in US, as it accounts for nearly 68 % of GDP.

US-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

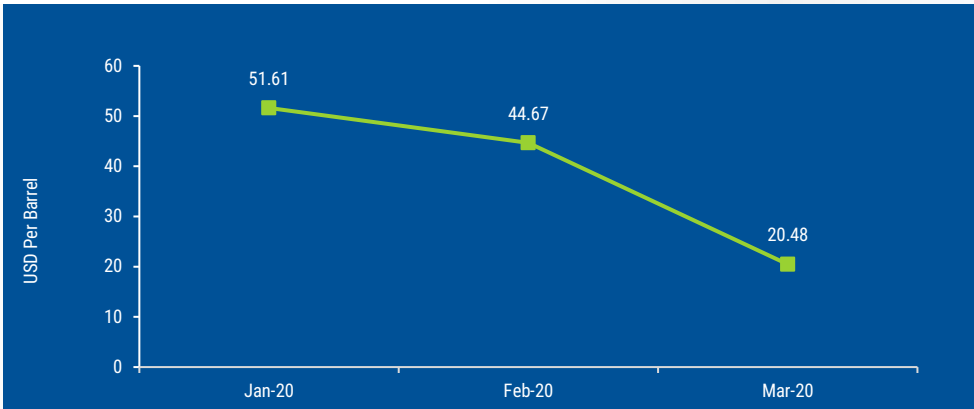


- The decline in GDP, due to the spread of COVID-19, as US governments issued 'stay-at-home' orders in March. Which led to rapid changes in demand, as businesses and schools switched to remote work or shutdown, which has affected the overall consumer spending.
- The impact of the COVID-19 pandemic on Consumer Price Index (CPI) data in US was relatively minor for March 2020

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

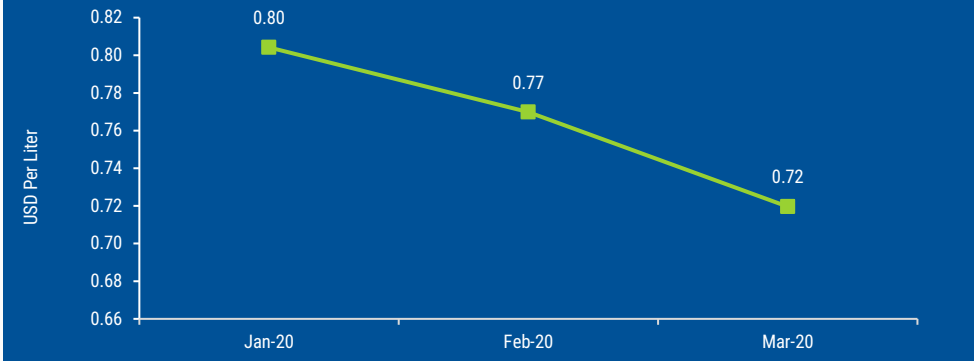
CRUDE OIL PRICE

- The price of oil sank nearly 20 per cent after Russia refused to roll back production in response to falling demand and Saudi Arabia signalled it will ramp up its own output.
- The oil price has been foreseeing lower than the previous month. Moreover, the actions by oil producer in a US to lower down the production that might encourage recovery in oil prices to some extent.
- Oil prices dropped below USD 30 due to pandemic and this price is becoming unprofitable for various oil firms to remain active and shut most of the production.



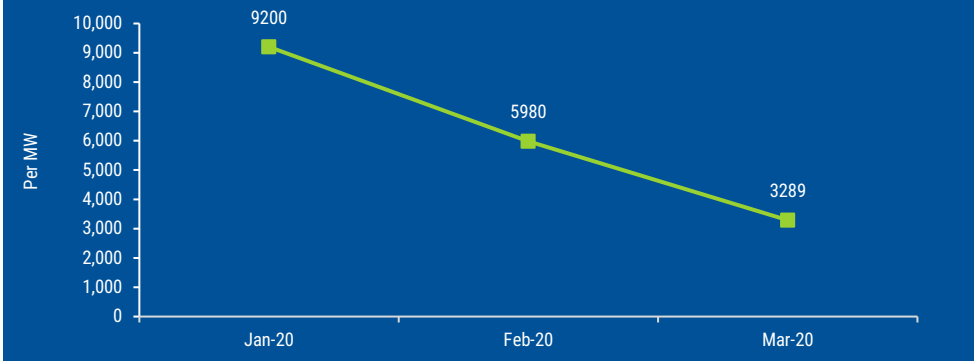
DIESEL PRICE

- Covid-19 will drive sharp reductions in liquid fuels demand during first half of 2020, which will significantly reduce the prices for diesel.
- Significant reductions in personal travel, both for normal commuting and vacation travel typical for the summer driving season, will decrease gasoline prices more dramatically than diesel fuel prices.
- Stronger refinery wholesale margins for diesel fuel will not only encourage refiners to maximize distillate production while reducing gasoline production.
- In some cases, to idle some production units, which will drive refinery utilization rates to some of their lowest levels since the 2008 recession.



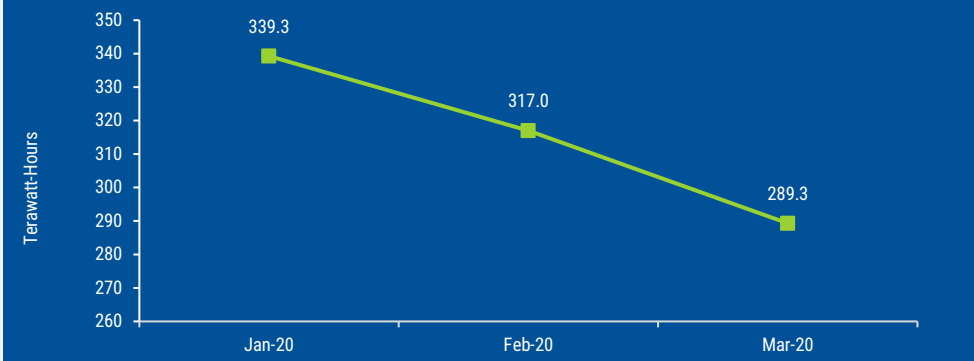
INSTALLED POWER CAPACITY (SOLAR & WIND)

- It is estimated that 3% decrease would occur in electric power sector generation in the US due to ongoing pandemic. The output of coal-fired power plants is seen to drop by 20% from 2019.
- In 2020, renewables are now expected to be US' top electricity source by 2050 as quoted by US Energy Information Administration.
- Utilities are opting to jump straight into solar and wind as the falling price of renewables (often paired with batteries) turns them into a viable alternative. Most recently, data collected by the US Federal Energy Regulatory Commission (pdf) shows 86% of new installed capacity at the start of this year came from solar and wind.
- During the first two months of 2020, 38 new units of solar totaling 987 MW were added to the United States' total energy generating capacity accompanied by four units of wind (303 MW)



ELECTRICITY GENERATION

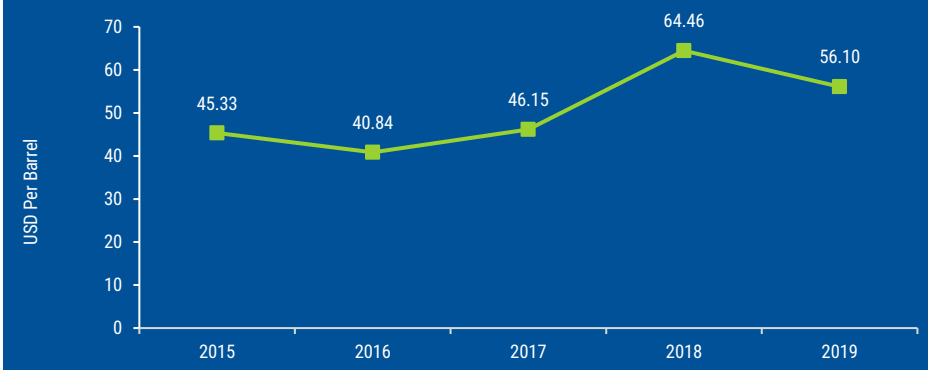
- The impacts of pandemic might affect the forecast for electricity generation in a country. For instance, in the current STEO that half of the generating capacity previously expected to enter service in the second quarter of 2020 will be postponed to sometime beyond the STEO forecast period, as will one-quarter of the capacity expected for the third quarter of 2020.
- Retail sales of electricity to the commercial sector to fall by 4.7 percent in 2020 as businesses close and industrial sales to fall by 4.2 percent as factories cut back production.
- The utilities that earn a regulated rate of return on their investments are saved as compared to utilities which are unregulated that lack long-term contracts with buyers.
- With increasing electricity generation from wind and solar and the falling capacity factors of fossil generation – it's clear that wind and solar are replacing fossil fuels, and helping to decarbonize the power grid in the US.



LONG TERM SCENARIO
(2015 - 2019)

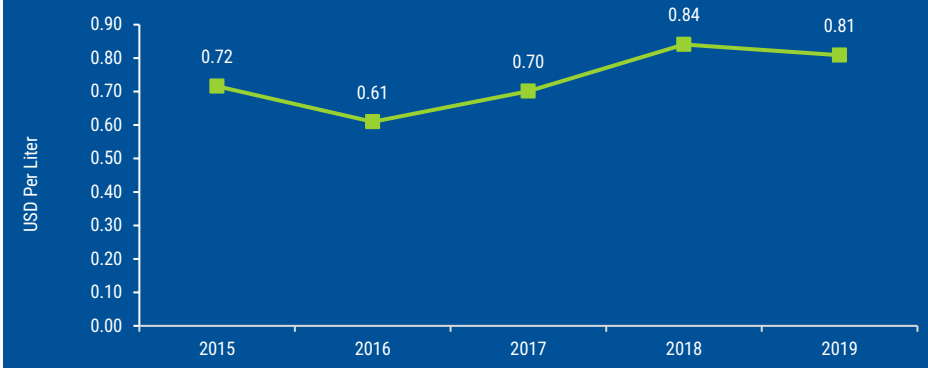
CRUDE OIL PRICE

- The strong U.S. dollar was the main driving factor for the price decline of crude oil in 2015. This had put the market under a lot of pressure. For example, the surge in the dollar in the second half of 2014 caused a sharp fall in leading commodity indexes.
- Shale producers pushed U.S. oil production to 9.4 million barrels per day in 2015. That knocked OPEC market share to 41.8 percent in 2014 from 44.5 percent in 2012. The supply bump caused oil prices to fall. That created a boom and bust in the U.S. shale oil industry.
- Factors such as a sustained onslaught of growing US production, which is holding at a weekly record high of 11.9 mbd, increase in the inventories build up and a strong dollar is facilitating development of bearish sentiments for crude.



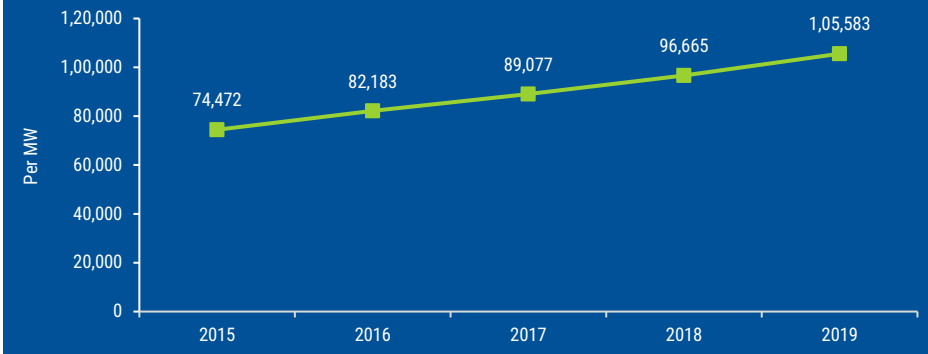
DIESEL PRICE

- US Diesel demand is driven by heavy duty applications.
- In 2018, diesel/distillate accounted for about 20% of total U.S. petroleum consumption and about 22% of total petroleum consumption by the transportation sector.
- Distillate fuels is decelerating in line with the wider slowdown in manufacturing and construction activity
- Over 1 million heavy-duty diesel engines rolled off U.S. assembly lines in 2018. That's up by 13 percent or an additional 118,000 engines as compared to 2017



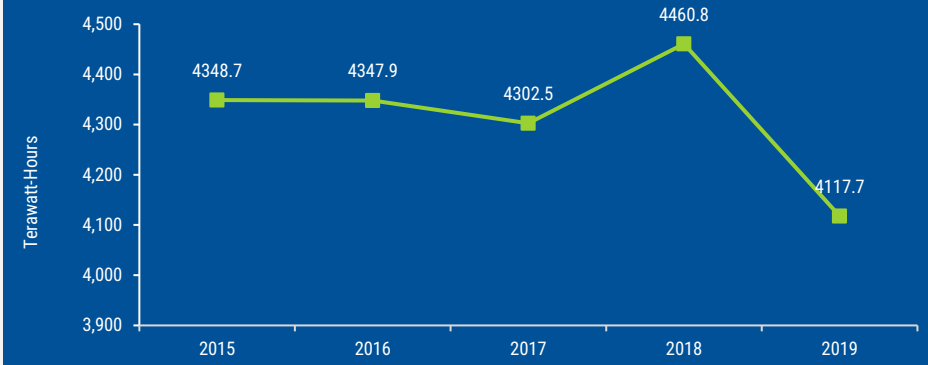
INSTALLED POWER CAPACITY (SOLAR & WIND)

- At the end of 2019, the United States had about 1,100,546 MW—or 1.1 billion kilowatts (kW)—of total utility-scale electricity generating capacity and about 23 million kW of small-scale solar photovoltaic electricity generating capacity. Since then, solar and wind has become an integral part of the energy mix of the US.
- The U.S. Department of Energy's SunShot Initiative proposes to reduce the price of solar energy 75% by 2020, which is projected to lead to 27% of U.S. electricity demand met by solar and a 28% decrease in electricity sector greenhouse gas emissions by 2050.
- In 2017, the United States provided funding for the development of a demonstration-scale facility capable of producing renewable diesel and renewable jet fuel out of gases from industrial waste.



ELECTRICITY GENERATION

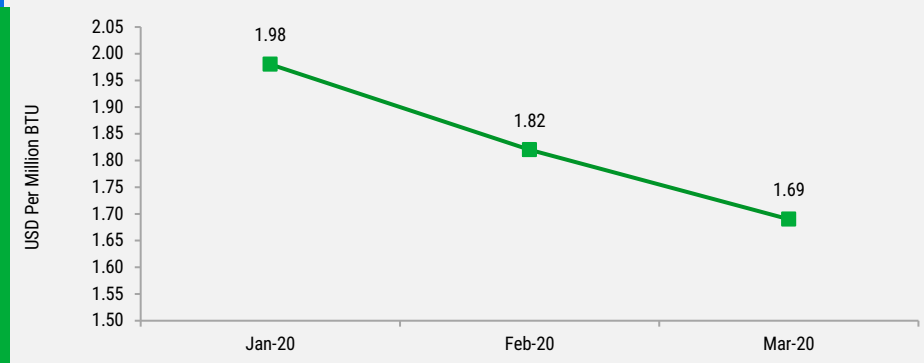
- By the end of 2019, coal's share of electricity generating capacity was at 21% and coal accounted for 23% of total utility-scale electricity generation.
- Electricity generation from hydropower, historically the largest source of total annual utility-scale renewable electricity generation (until 2019), fluctuates from year to year because of precipitation patterns.
- Many renewable energy sources are used to generate electricity and were the source of about 17% of total U.S. electricity generation in 2019.



US - NATURAL GAS PRICES
US Dollars per Million BTU

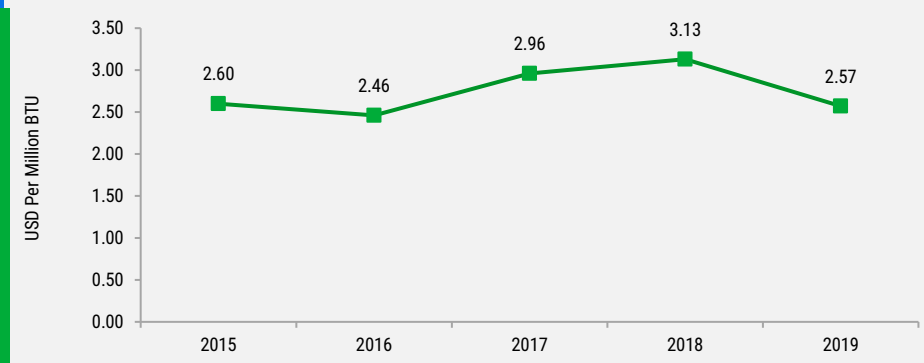
SHORT TERM SCENARIO

- The natural gas spot price will remain low as compared with historical levels in the near term due to reduced business activity and higher-than-average storage levels.
- Minor shifts has been observed in the space heating demand in March 2020 since more people stay at home rather than going to work due to COVID-19 pandemic.
- This shift has resulted in rise in residential natural gas demand and decreasing commercial natural gas demand.
- Moreover, industrial natural gas demand will decease significantly due to weakening economic outlook.



LONG TERM SCENARIO

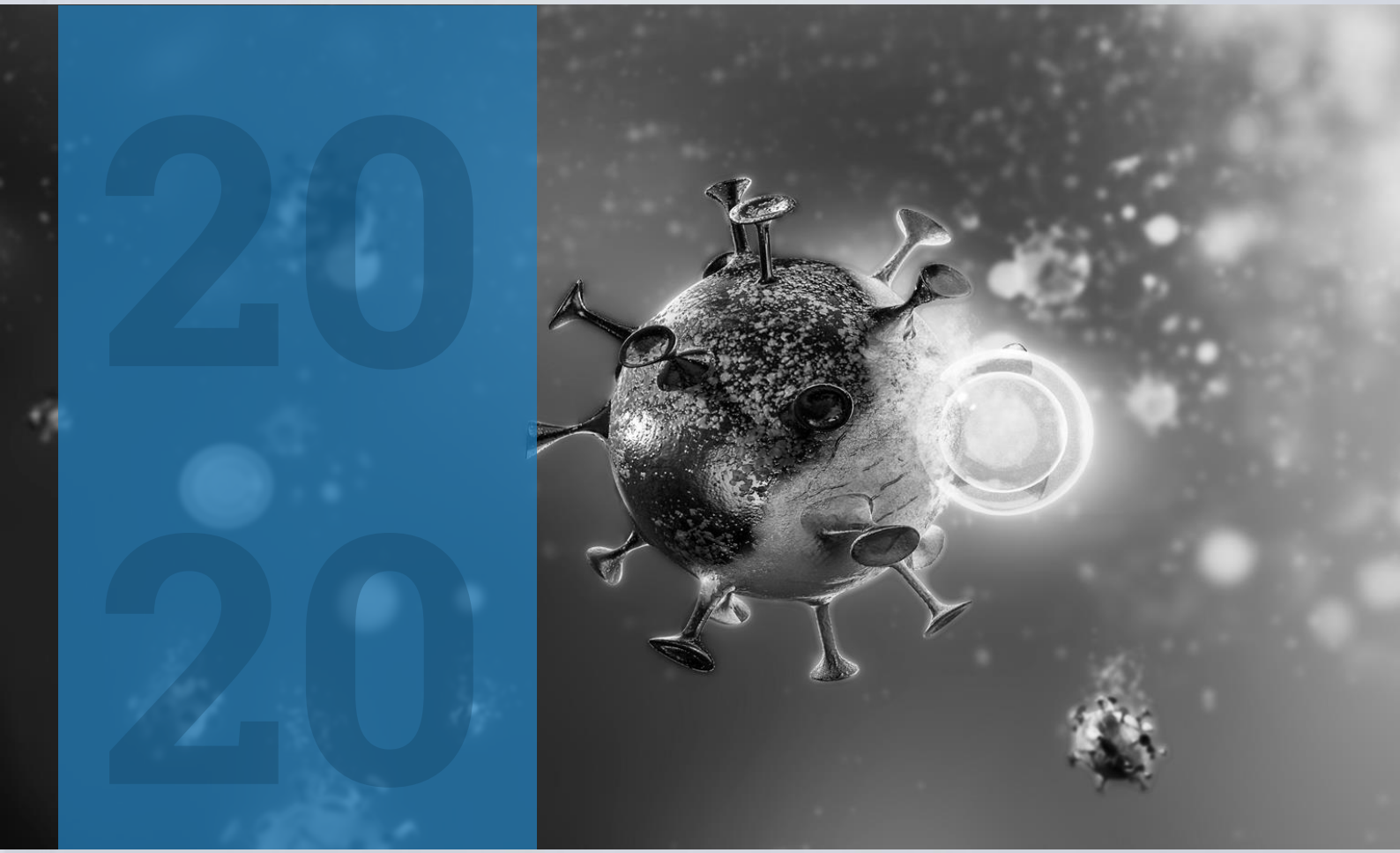
- Natural gas is traded on the New York Mercantile Exchange (NYMEX), the world's largest commodity futures exchange.
- The price of natural gas is often affected by adverse weather conditions, increased economic activity, production increases, and the availability of substitutes.
- Lower natural gas prices in 2019 supported higher consumption majorly in the electric generation sector and higher natural gas exports.
- According to US EIA, the natural gas consumption in the residential and commercial sectors increased by 2% in 2019 as compared to 2018.



COVID 19 IMPACT ON

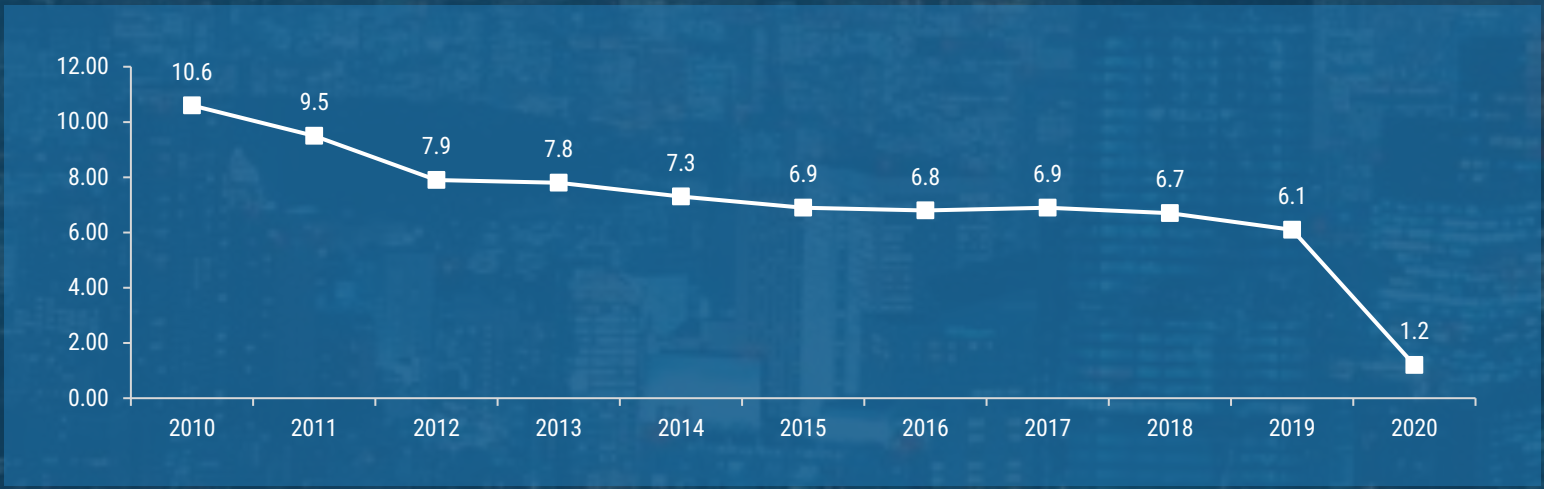
CHINA

ENERGY & POWER INDUSTRY



China-Real GDP Growth

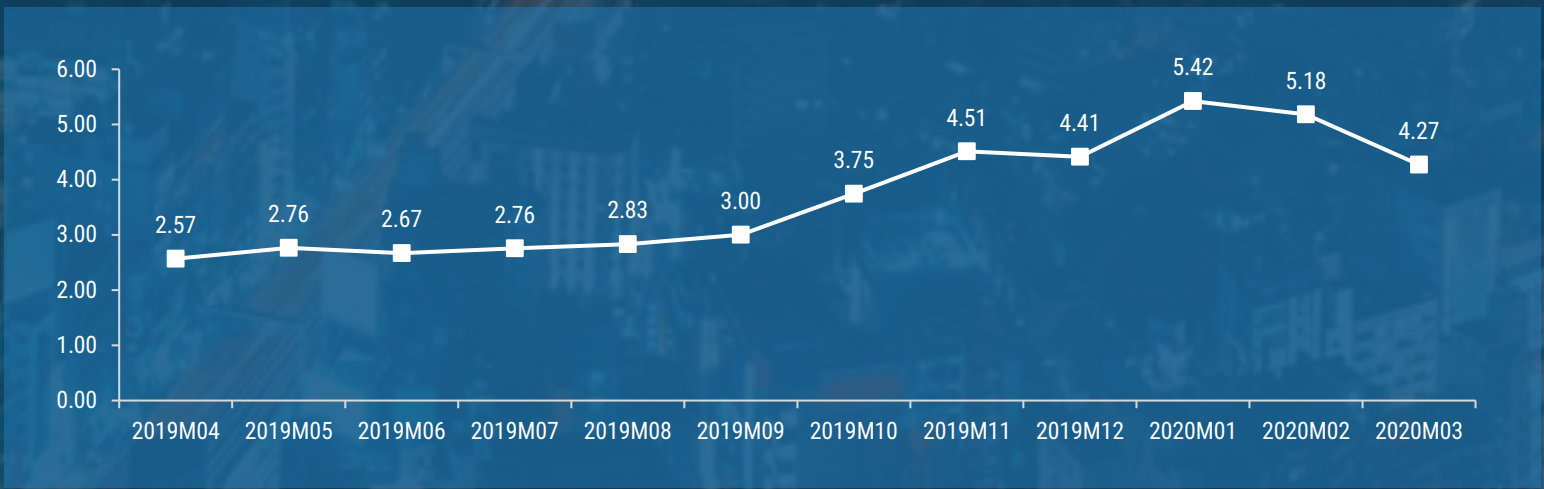
(Annual Percent Change) 2010 - 2020



The Chinese economy contracted by a seasonally adjusted 9.8 percent on quarter in the three months to March 2020, following a 1.2 percent growth in the previous quarter and compared with market estimates of a 9.9 percent decrease. This was the first quarterly contraction on record, as the coronavirus outbreak paralyzed production and activities.

China-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

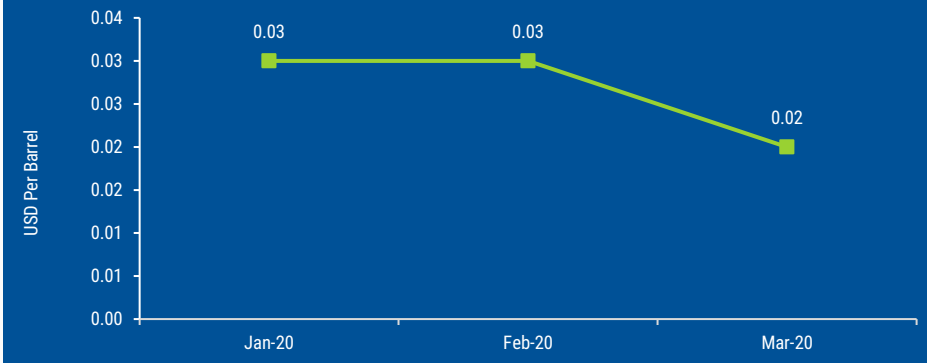


- China's Consumer Price Index (CPI) growth was measured at 4.3 % YoY in Mar 2020, compared with a rate of 5.2 % in the previous month.
- E-commerce giants Alibaba (BABA), JD.com (JD), and Meituan each announced that they would monitor prices closely and remove overpriced items or ban merchants for price-gouging.

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

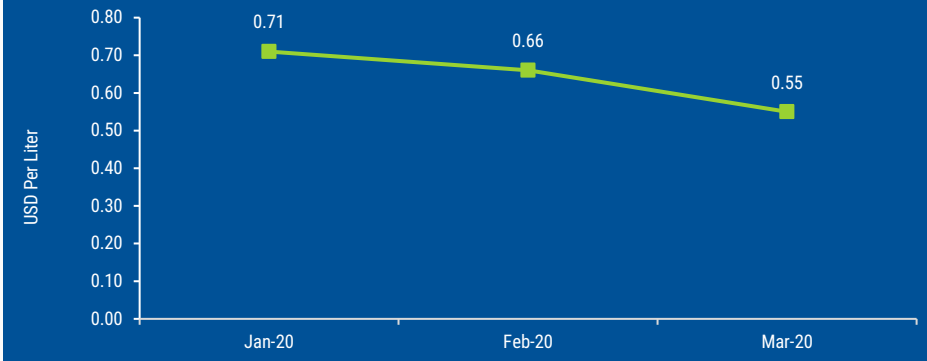
CRUDE OIL PRICE

- Crude oil price in China fell the lowest since January 2019 due to the new corona virus pandemic and due to the fear of slow economy globally and lower demand for crude.
- Crude oil prices in the country remained low due to major slowdown in oil consumption
- The impact of covid-19 is very sharp on oil prices. This is affecting the demand for crude oil in China with declining crude oil prices



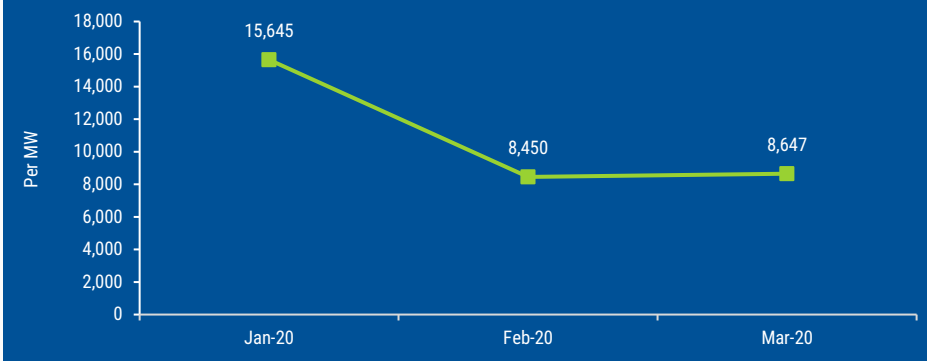
DIESEL PRICE

- The National Development and Reform Commission announced to reduce diesel prices by USD 59.24 per tonne in order to reflect the decline in global oil prices
- Fuel prices affected as China shut down cities and slowed its economy growth in a bid to control the spread of corona virus
- Diesel prices experiencing decline in first quarter of 2020 due to outbreak in China which affected oil demand due to travek restrictions.



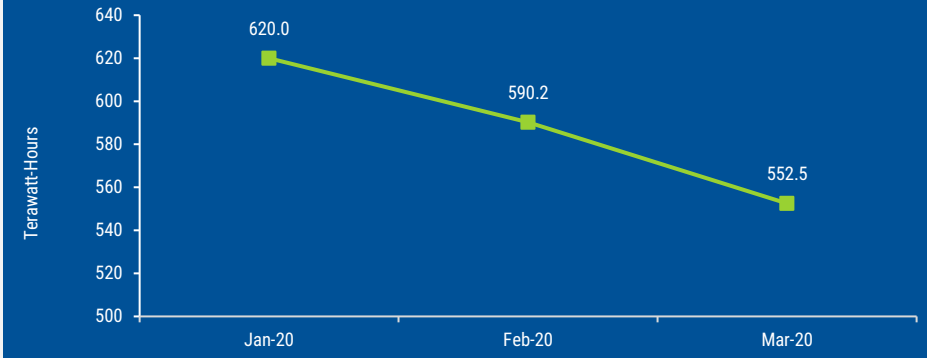
INSTALLED POWER CAPACITY (SOLAR & WIND)

- China, being one of the largest power markets in the world, it is negatively impacted to the covid-19.The virus is expected to decelerate the power demand growth in the country which has led to intensified competition among power generation technologies such as coal, nuclear, renewables, and others.
- Wind turbine companies such as Goldwind, Envision, Siemens, Vestas, and GE have resumed their production in February 2020 but the facilities are not fully operational due to quarantine period in the parts of country.
- Renewable power generation generation capacity in China has experienced a steep fall due to the tightened capacity for equipment manufacturing and construction services. There has been a significant drop in virus cases, but the situation is not stabilised in the country. Therefore, the country is expected to extend the onshore wind feed-in tariff deadline.



ELECTRICITY GENERATION

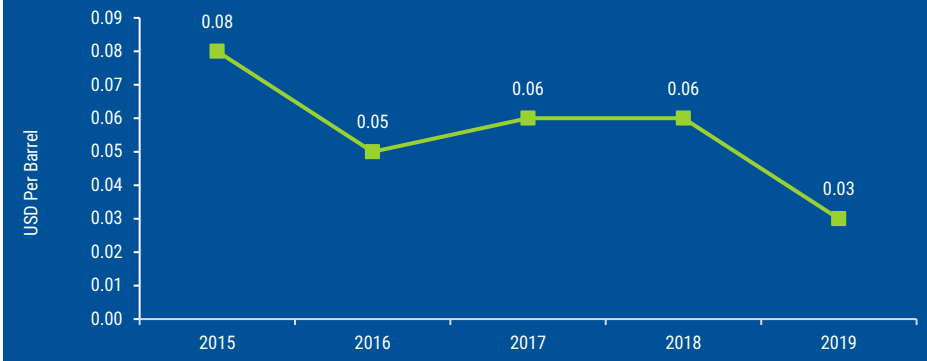
- China has experienced decline in power demand during the first two months of 2020 as a result of the stagnation of industrial and commercial activities
- The industrial sector which accounts for approximately two thirds of China's electricity consumption led the demand drop, recording a 12% decrease in electricity consumption
- According to Internation Energy Agency, electricity generation in China and other countries of the world is expected to decline by 6% in 2020



LONG TERM SCENARIO
(2015 - 2019)

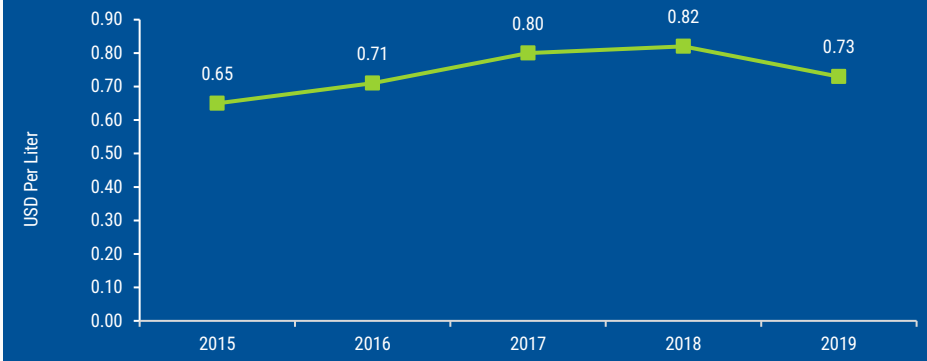
CRUDE OIL PRICE

- China showed slow growth in crude oil demand due to struggling growth in Beijing's declining economy
- Crude oil prices dropped in 2016 in China due to slowdown in economy and rising debt levels in the country
- Crude oil prices in 2017 showed positive growth as Chinese government experienced improved economy due to higher spending level
- Crude oil prices sank 3% in 2019 after disappointing economic data from China and Europe revived global demand fears and U.S. crude inventories rose unexpectedly for the second week in a row



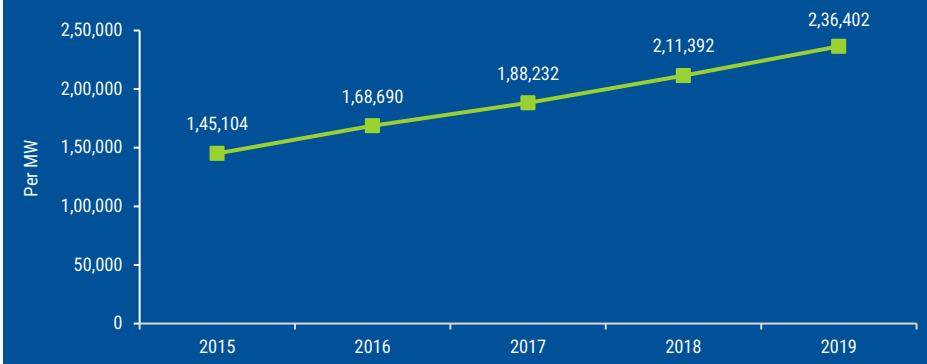
DIESEL PRICE

- China's diesel demand grew at its fastest rate in at least five years as a pick-up in diesel-intensive sectors with lower output from domestic refineries.
- Diesel accounts approximately around 30% of China's total petroleum products and is used to fuel trucks, as well as mining and construction equipment.
- As of May 2019, Chinese central agencies took steps to combat air pollution, led by the Ministry of Ecology and Environment (MEE). It launched a plan in January 2019 to substantially clean up diesel-powered transportation fleets, including on-road diesel vehicles and off-road diesel equipment.
- In 2018, around 173.8 million tons of diesel were produced in China



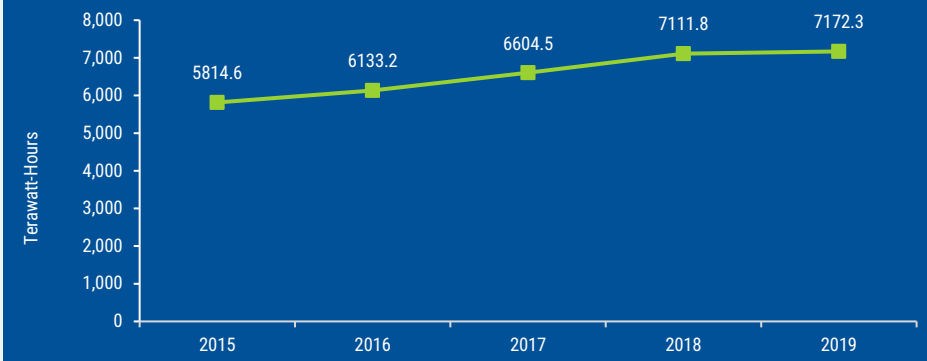
INSTALLED POWER CAPACITY (SOLAR & WIND)

- Installed power capacity in 2015 reached a new high due to policy lowering country's feed-in tariff for wind power
- The installation slowdown was experienced in 2019 after China's policy change to reduce solar installations following a massive subsidy backlog.
- Improvement in curtailment issues was the reason behind increase in renewable capacity in China. In 2018 China added a total of 65 GW of solar and wind capacity, which was around 15 GW higher than in the year 2016
- China is one of the leading countries in terms of renewable power generation. Large scale industrial applications have led to fall in the the costs of solar and wind in the country
- The country's wind power market is dominated by Chinese wind power companies and therefore helps in faster development of renewable industry in the country



ELECTRICITY GENERATION

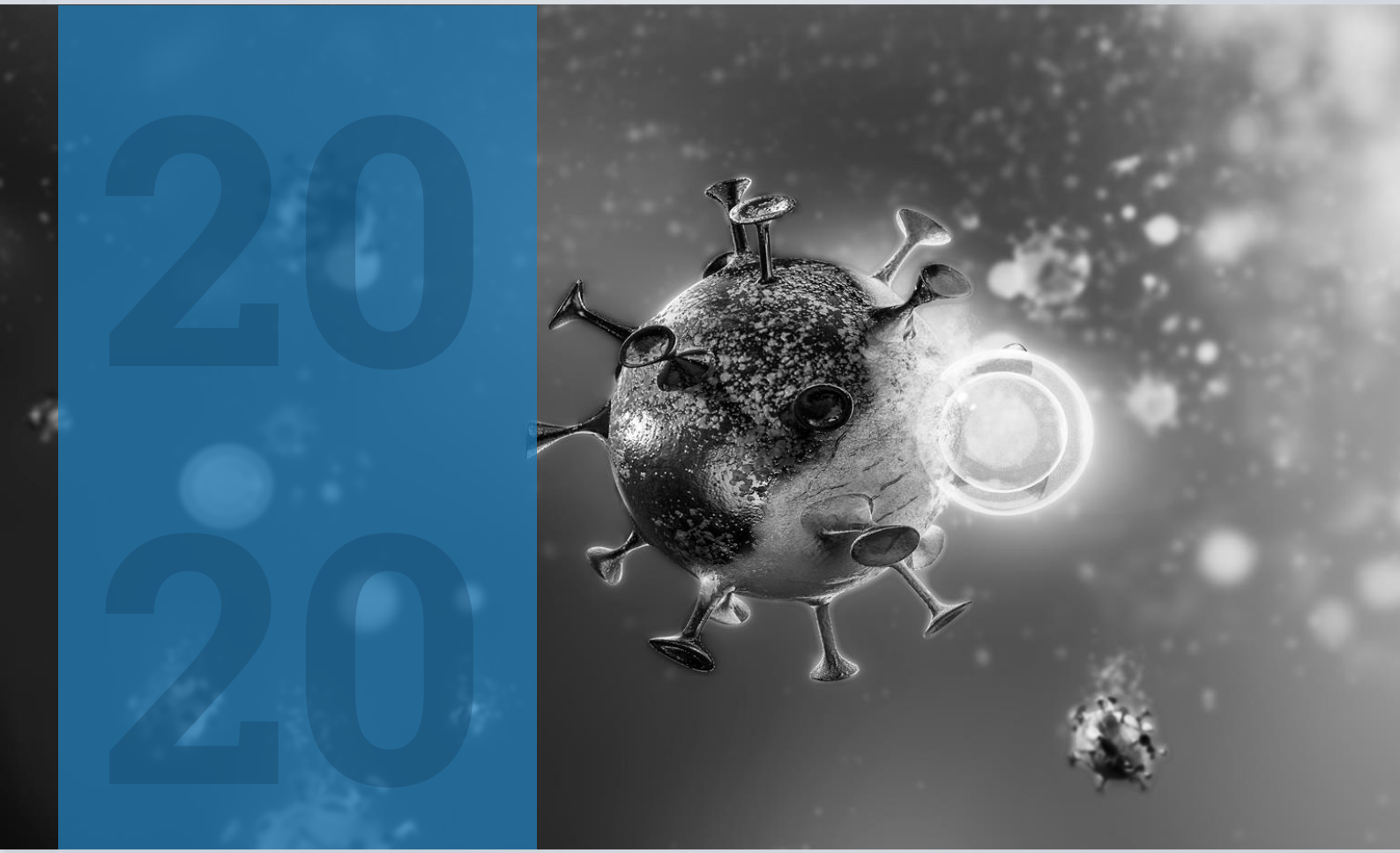
- China's coal generation has significantly contributed to the growth of industrial power generation
- Due to large-scale investments in massive infrastructure projects, hydroelectric power has become China's main source of renewable energy production
- From 2000 to 2017, China more than quintupled its generation of hydroelectricity, from 220.2 billion Kilowatt Hours (kWh) to 1,145.5 kWh.
- The electricity generation in China is also increasing due to high installation happening in solar industry
- Electricity generation in China is experiencing growth due to increasing electricity consumption in industrial sector.



COVID 19 IMPACT ON

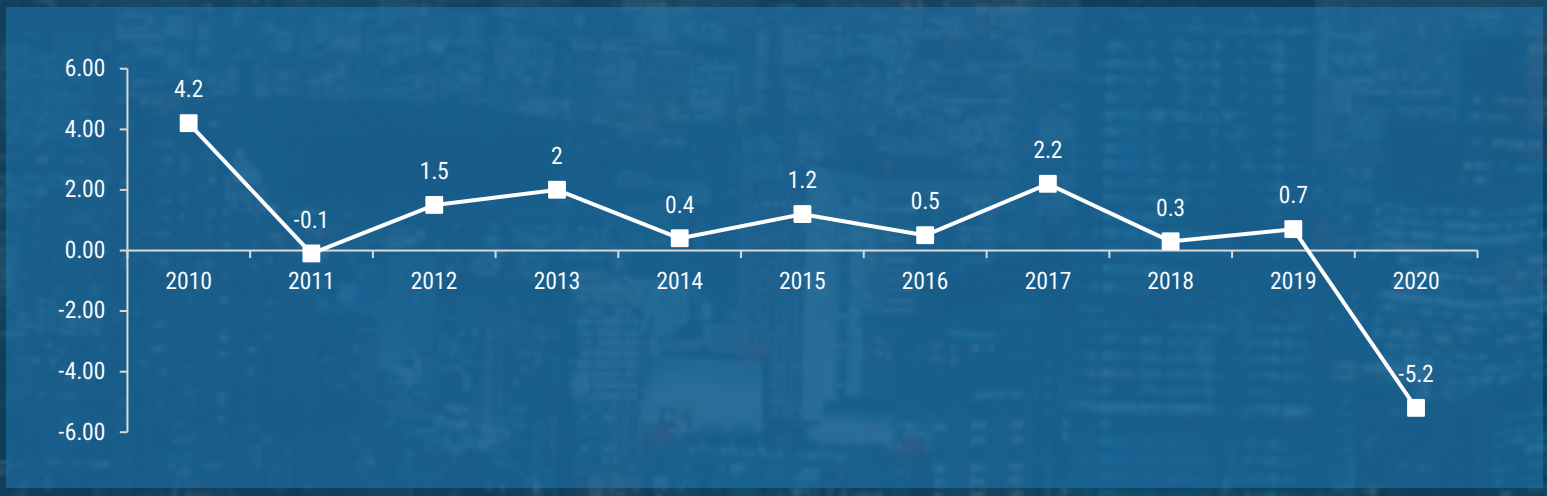
JAPAN

ENERGY & POWER INDUSTRY



Japan-Real GDP Growth

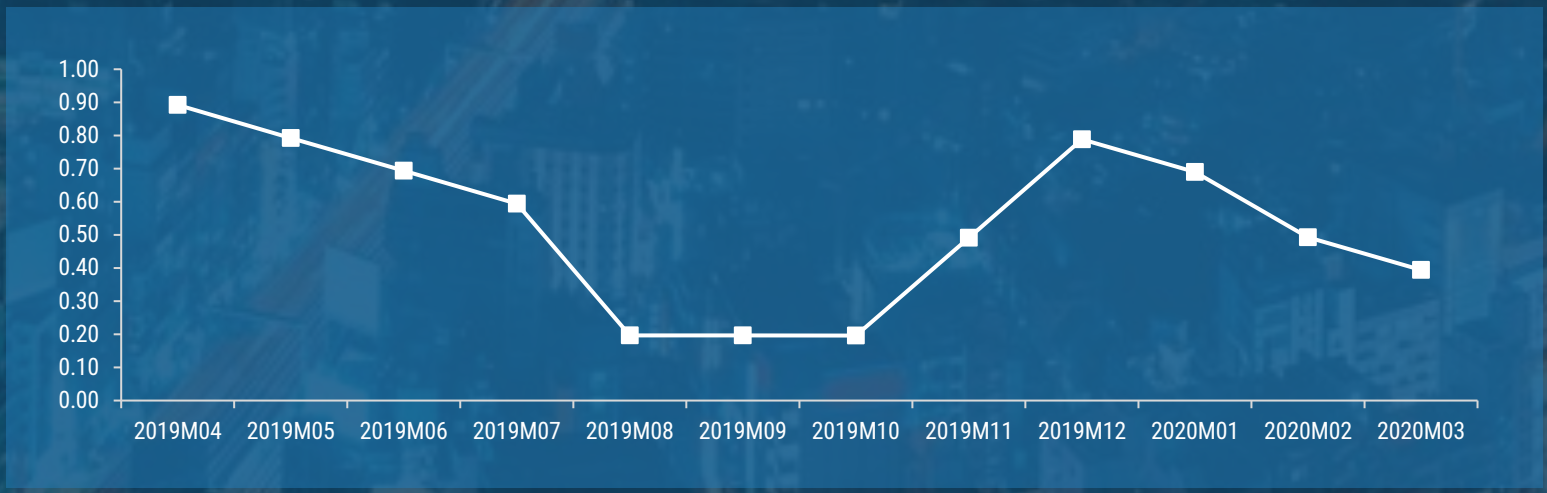
(Annual Percent Change) 2010 - 2020



- The gross domestic products (GDP) in Japan averaged USD 2,782.13 Bn from 1960 until 2019, reaching an all time high of 6,203.21 USD Billion in 2012
- As per the experts after the fallout from the coronavirus outbreak, the Japan's economy will boost by up by 3.8 % in coming year.

Japan-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

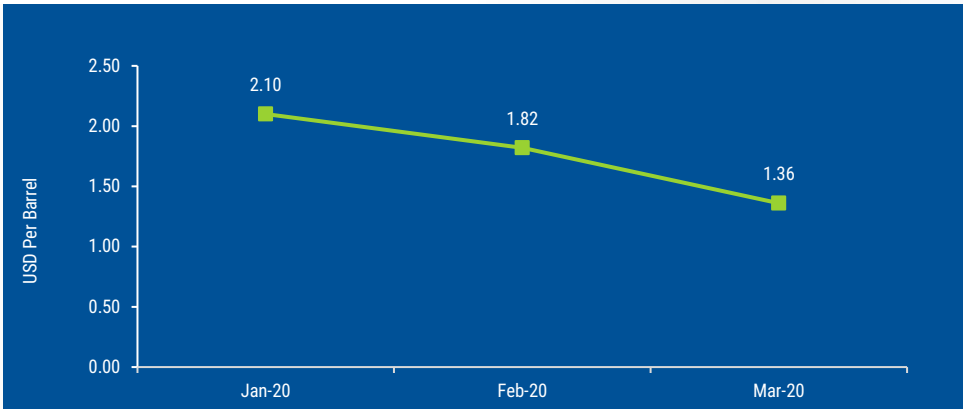


- Business sentiment among large Japanese companies in the first quarter fell to the lowest level in past five years, majorly affected by the new COVID-19 outbreak and declining exports to China
- The confidence index covering firms capitalized at USD 9.6 million, and stood at minus 10.1 % in the quarter of 2020.

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

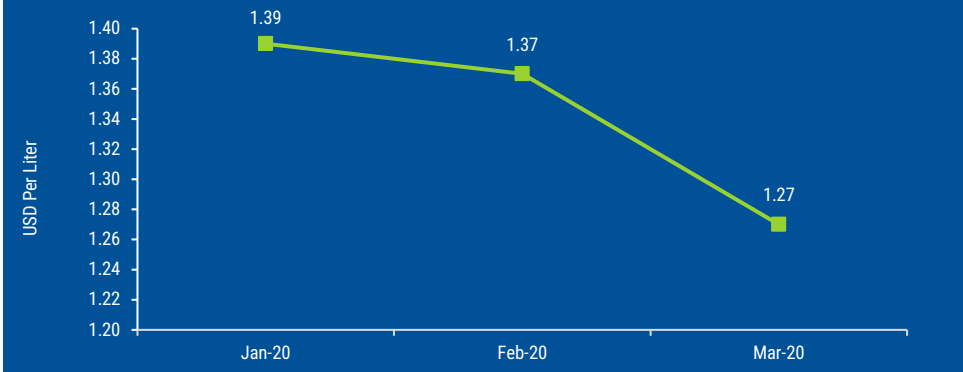
CRUDE OIL PRICE

- "Lower oil prices have proved positive to some extent for resource-poor JAPAN, with cheaper gas helping consumers hit by a crisis of confidence over the coronavirus and a damaging sales-tax hike. It also leads to lower costs for businesses as well, potentially supporting profits through a looming downturn."
- Investors are also concerned about how coronavirus outbreaks in Japan will hit one of Asia's major economies. It is also anticipated that it would blow a $211bn hole in regional economies this year, cutting Asia-Pacific's annual growth rate to the lowest level since the global financial crisis.
- Japanese refiners might have to increase the ratio of lighter crude oil it purchases in 2020 as global supply of heavy crude is expected to remain tight.



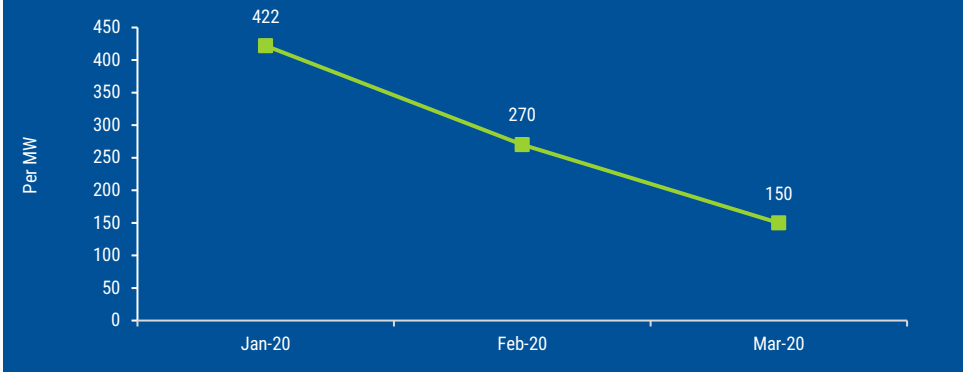
DIESEL PRICE

- The local unit of Japan's Toyota Motor, the contribution of petrol vehicles has increased 5% in the January-July period from a year earlier,
- Japan's diesel demand grew at its fastest rate in at least five years as a pick-up in diesel-intensive sectors with lower output from domestic refineries.
- Air quality concerns and taxation changes have led to a decrease in diesel sales



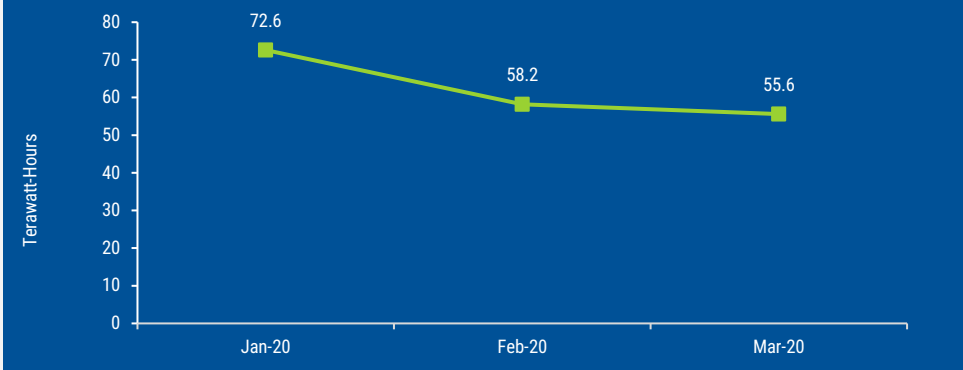
INSTALLED POWER CAPACITY (SOLAR & WIND)

- Japan plans to increase its reliance on renewable power to 24% of its energy mix by 2030, more than double its current production.
- The Japanese Ministry of Economy, Trade and Industry announced in June 2019 a gradual elimination of the FIT.
- MW-scale plants dominated the Japanese market in the past, but due to adjustments in subsidies and other policies, its percentage is falling year by year in March 2020, while distributed and rooftop projects stand out and have become centre-stage.
- The share of renewable energy in the Japanese generation mix surged from 10% in 2010 to 16% in 2017. The main contributor to this was the commissioning of around 40 GW of large-scale solar PV projects prior to 2018. A further 25 GW of solar PV capacity currently holds a FiT license, waiting to be built within a 3-year window in accordance to the additional measure the ministry (METI) introduced in 2016.



ELECTRICITY GENERATION

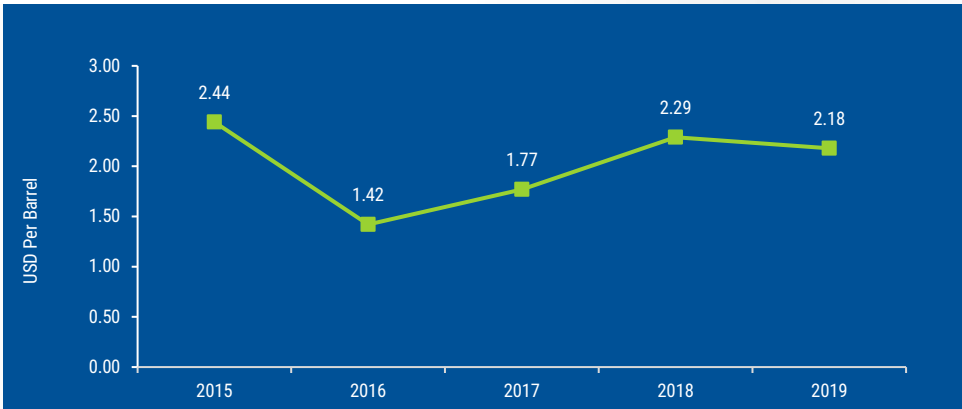
- In the span of 2015 to 2019, the decrease of oil-fired power generation will be offset by the increase of gas-fired power generation.
- Fossil Fuel's share of power generation mix will shrink, with LNG share falling to 37%
- Japan needs to import about 90% of its energy requirements.



LONG TERM SCENARIO
(2015 - 2019)

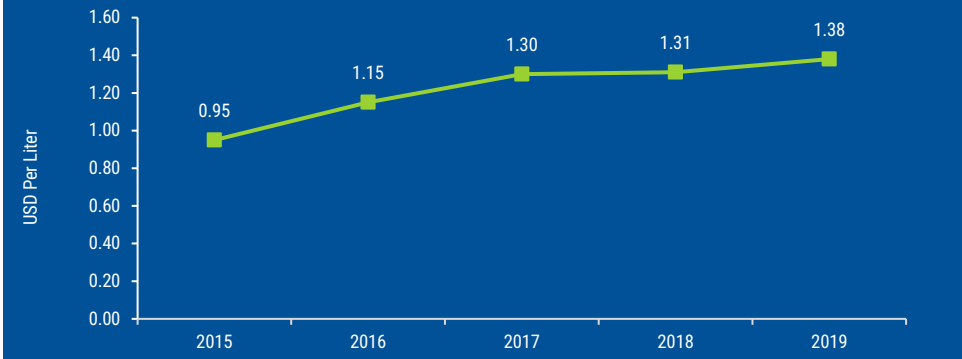
CRUDE OIL PRICE

- Japan's total energy imports as a share of its primary energy use are over 90 per cent; the only other country that comes close to this is Italy, and unlike Japan Italy is connected through a wide pipeline network
- Japanese oil demand decreased sharply by 0.25 mb/d y-o-y in December 2018 y-o-y.
- Moreover, the monthly decrease was the result of falling demand for all main petroleum product categories, particularly LPG, jet/kerosene and residual fuel oil, as well as direct burning of crude and residual fuel oil for electricity generation.



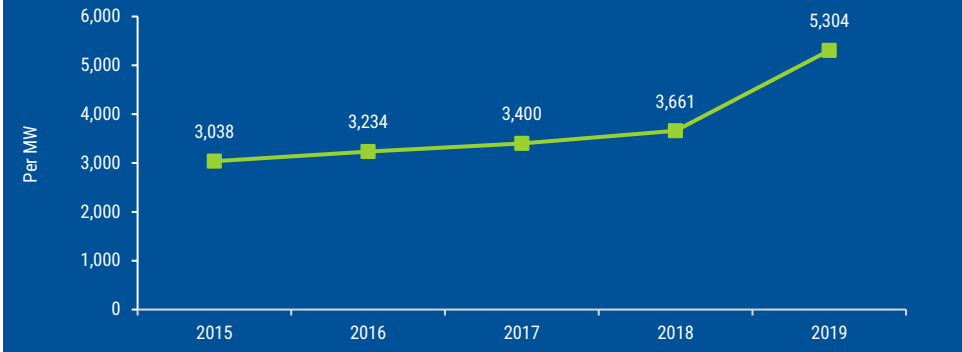
DIESEL PRICE

- In 2015, automotive shipments accounted for 18.2% of the total value of Japan's manufacturing shipments, and 40.3% of the value of the machinery industries' combined shipments.
- Automotive shipments (both domestic and export shipments, including motorcycles, auto parts, etc.) in value terms totalled 57.5 trillion yen in 2015, up 7.0% from the previous year.
- In 2017, Japan's gross exports and imports increased from the previous year, by 11.8% and 14.1% respectively.



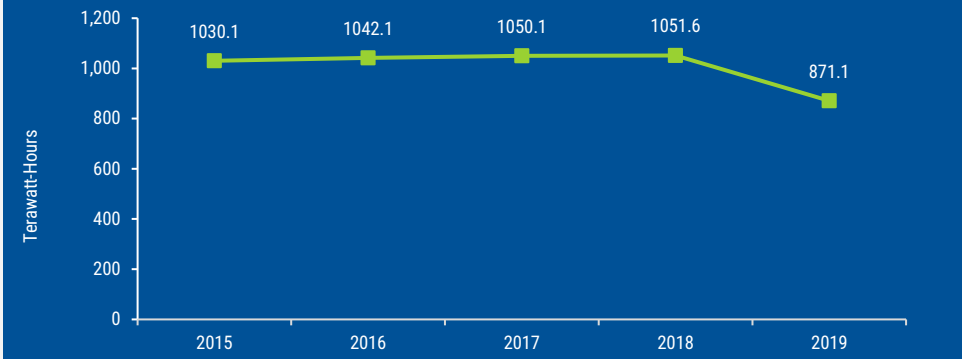
INSTALLED POWER CAPACITY (SOLAR & WIND)

- The Government of Japan (GOJ) released the Long-term Energy Supply and Demand Outlook on 16 July 2015. In the plan, the Government set a target of reducing its dependency on nuclear power to 20–22% by 2030.
- JERA Co, Japan's biggest power generation company, plans to increase its renewable energy investment to 5 gigawatts (GW) of capacity by 2025, up from 650 megawatts now and an increase over an earlier target of 3 GW
- Wind power cumulative installed capacity at the end of December 2017 was 3.4 GW, with an increase of 169 MW during 2017. This new installed capacity decreased from 192 MW in 2016 due to the delay of many projects because of the environmental impact assessment procedure.
- Over the last few years this has been growing, with Japan ending 2018 with an installed capacity of 3,584MW of wind



ELECTRICITY GENERATION

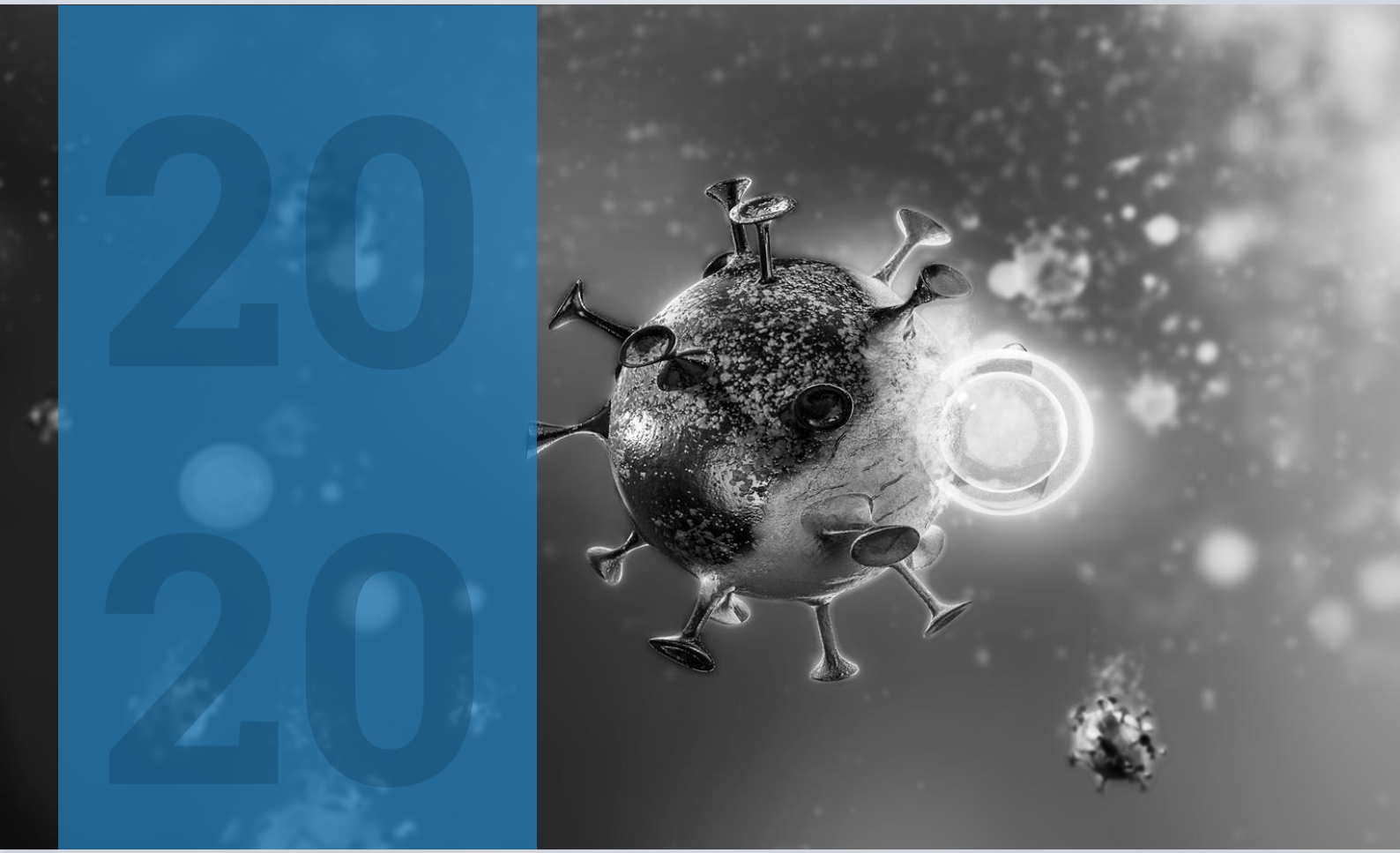
- Japan is expected to start operations of three nuclear reactors in 2020 after implementation of the safety enhancements.
- In 2015, a low energy self-sufficiency ratio resulted in dependence on other countries for resources. Because of this, it's was easy to be affected by the influence of international situations when securing resources, which raises concerns over stable energy supply.
- Japan depends on fossil fuels such as oil/coal/natural gas (LNG) imported from abroad. Before the earthquake, dependence was 81% on primary energy supply basis , but it is 89% in FY 2016 due to the generation by thermal power plants and the shutdown of nuclear power plants.



COVID 19 IMPACT ON

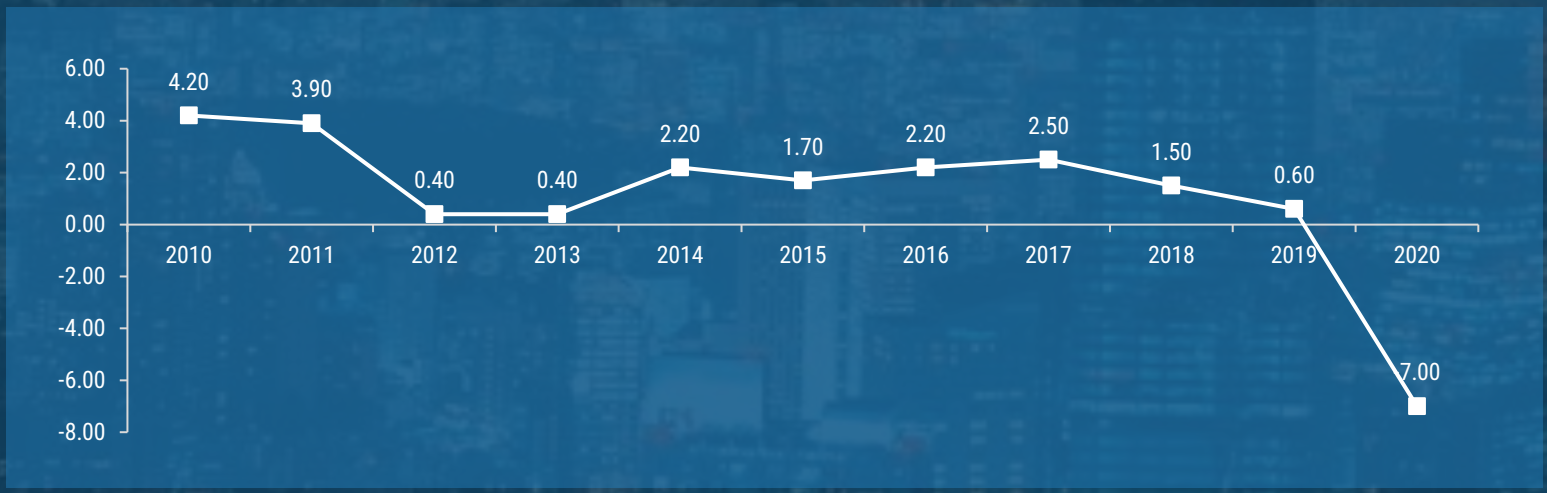
GERMANY

ENERGY & POWER INDUSTRY



Germany-Real GDP Growth

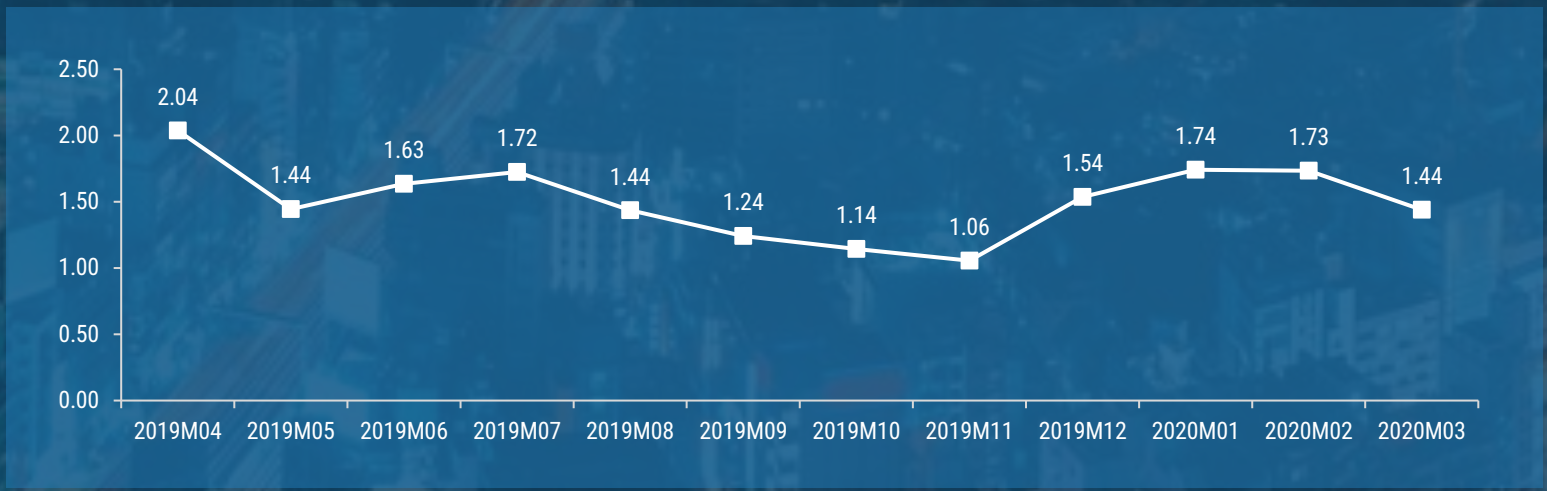
(Annual Percent Change) 2010 - 2020



Germany is the fifth largest economy in the world and the largest within the Euro Area. Germany is the second largest exporter in the world and exports account for more than one-third of national output. As such, the export of high added value products has been the main driver of growth in recent years. Composition of the GDP on the expenditure side: household consumption (55 percent), gross capital formation (20 percent, of which 10 percent in construction, 6 percent in machinery and equipment and 4 percent in other products) and government expenditure (19 percent). Exports of goods and services account for 46 percent of GDP while imports for 39 percent, adding 7 percent to total GDP.

Germany-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)



In Germany, the most important categories in the consumer price index are Housing, water, electricity, gas & other fuels (32 percent of the total weight), Transport (13 percent), Recreation, entertainment & culture (11 percent) and Food & non-alcoholic beverages (10 percent). The index also includes Miscellaneous goods & services (7 percent), Furniture, lighting equipment, appliances & other household equipment (5 percent), Restaurant & accommodation services (5 percent), Health (5 percent) and Clothing & footwear (5 percent). The remaining 7 percent of the index is composed by Alcoholic beverages & tobacco, Communication and Education.

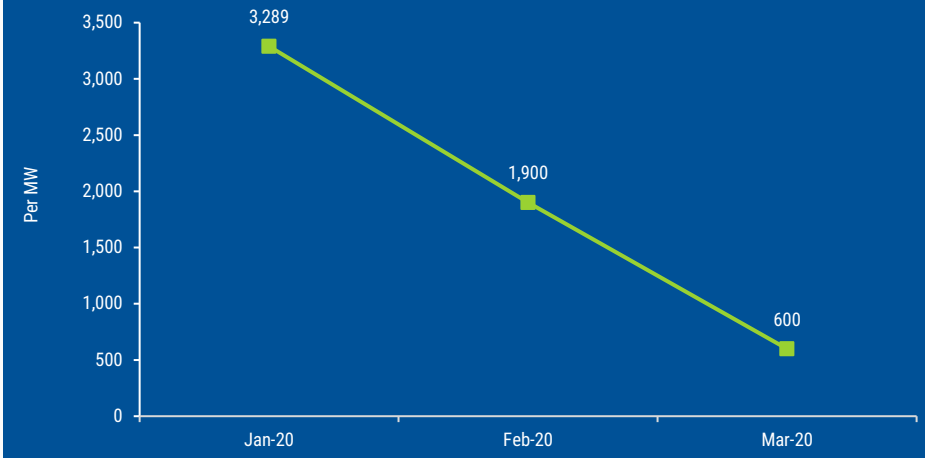
SHORT TERM SCENARIO
(Jan 20 - Mar 20)

CRUDE OIL PRICE

- Lower crude oil prices in the country is boosting incomes for families by reducing outlays for fuel and food
- Despite the covid-19 pandemic, in April 2020, Neptune Energy announced two important hydrocarbon discoveries in northwestern Germany.

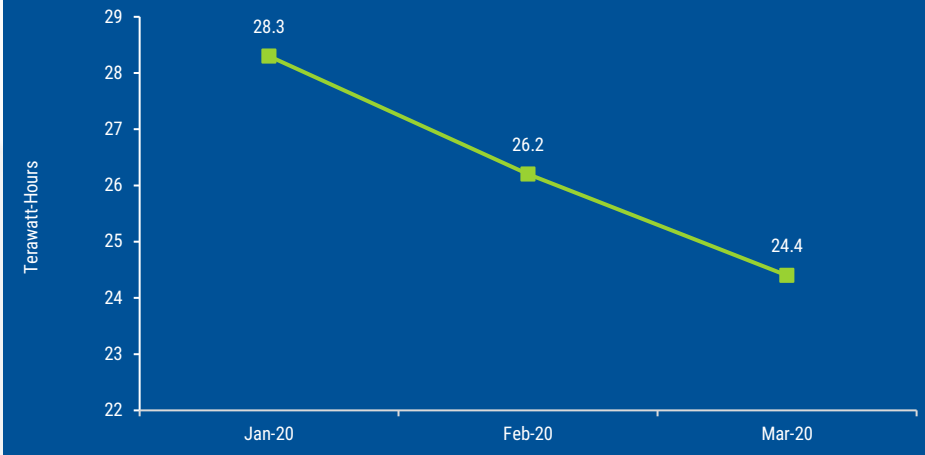
INSTALLED POWER CAPACITY (SOLAR & WIND)

- Expansion of onshore wind power in Germany has shown growth in the first quarter of 2020
- Germany is Europe's largest market for solar energy with 49.9 GW, followed by Italy at 20.9 GW, the United Kingdom with 13.3 GW, France with 10.5 GW, and Spain with 8.6 GW.
- According to German government, one million electric cars should be registered in 2020.
- 107 newly commissioned wind turbines with capacity of 348 MW has been installed from January to March 2020



ELECTRICITY GENERATION

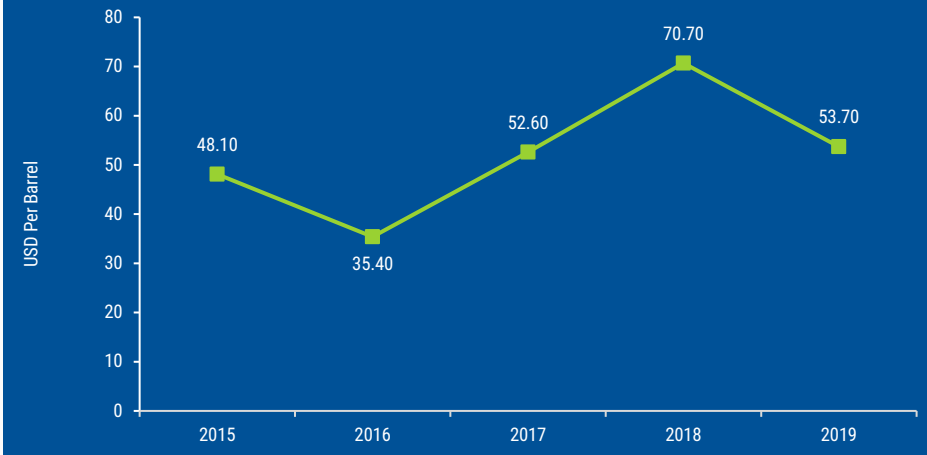
- As of January 2020, Germany generates 30% of its electricity through solar and wind, thereby, curbing carbon emissions
- The high proportion of renewable energy in February 2020 in Germany shows that the energy transition is technically feasible. Moreover, the transmission system operators are able to stabilize the network and guarantee security of supply
- Germany floods the rest of the countries in Europe with excess power from solar and wind turbine installations
- Wind power generated 45.8% of German electricity in February 2020. Solar power contributed 4.2%, while lignite usage hit a new low.



LONG TERM SCENARIO
(2015 - 2019)

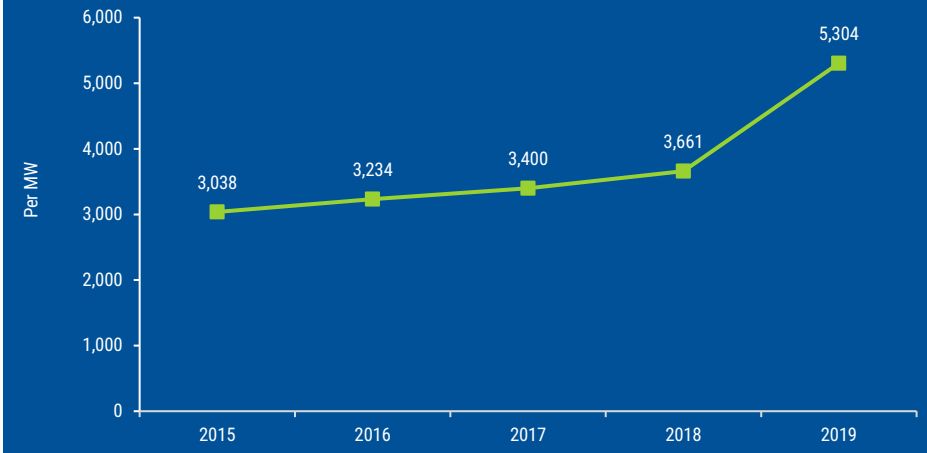
CRUDE OIL PRICE

- Approximately 98 % of Germany's primary energy consumption of mineral oil depended on imports in 2017
- Oil is Germany's important primary energy source. Mineral oil covered 34.3 percent of Germany's primary energy use in 2018.
- Russia accounted for around 31.5% of Germany's oil receipts in January-December, but at 27.1 million tonnes, the amount delivered was less than the 31 million tonnes for 2018
- Refinery throughput in Germany grew by 2% in 2017, to approximately 2 MMbpd. However, it is possible that this would significantly decline in 2018 due to the continuing recovery in oil prices and other factors



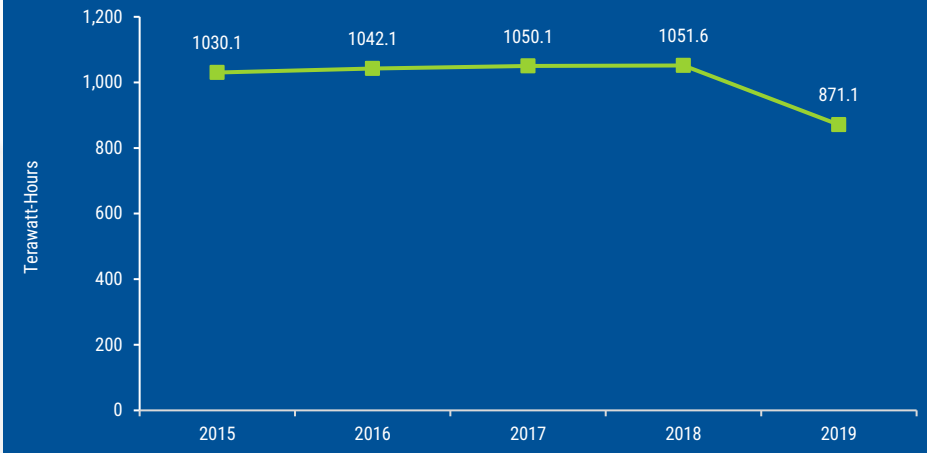
INSTALLED POWER CAPACITY
(SOLAR & WIND)

- Germany's carbon emission rose in 2015 because the country produced more electricity than it needed. The government launched a reboot energy strategy named Energiewende, to increase the share of renewable energy and an aim to reduce emission by 40% by 2020
- Germany has been among the world's top PV installer for several years, with total installed capacity amounting to 41.3 gigawatts (GW) by the end of 2016
- Germany's transmission grid operators still expect 20GW of renewable energy capacity to be built over the five years to the end of 2020, including 7GW of solar and 12GW of wind.
- Germany increased its renewable energy goal from 55 to 65 percent by 2030 to compensate for the decommissioning of aging nuclear and coal plants



ELECTRICITY GENERATION

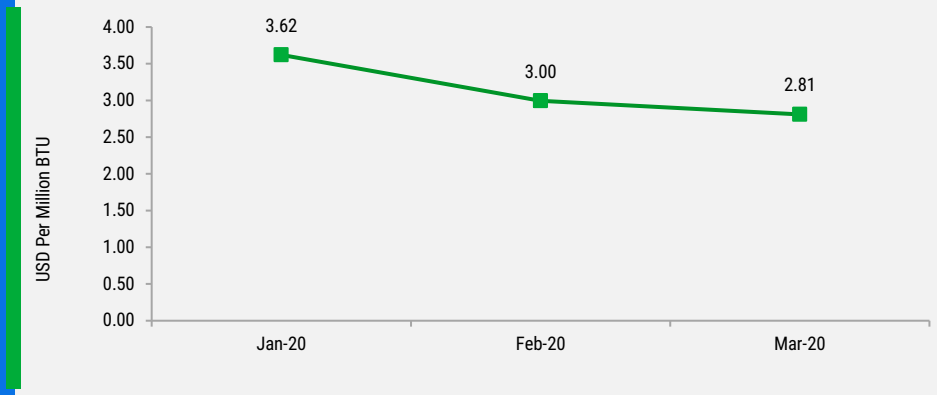
- According to AG Energiebilanzen, carbon emission rose by 1% in 2016 compared to 2015 despite a fall in coal use. This was due to an increased use of natural gas and diesel for electricity.
- Germany is under pressure to clarify how it plans to accelerate its "energy transition" away from fossil fuels and towards renewables, with a target to generate 65 percent from carbon-neutral sources by 2030.
- The decline in coal generation in 2019 has happened without any major power station closures. According to the Fraunhofer Institute for Solar Energy Systems, the installed hard coal capacity in the country is 23.7 GW, but maximum output this year has not exceeded 17.4GW (blue line) and has stayed below 11.2GW since March 2019.
- As per German Wind Energy Association (BWE), around 30,000 wind turbines installed in Germany generated 118 billion kWh of green electricity between January and mid-December in 2019
- According to the Federal Statistical Office, the volume of electricity generated in coal-fired power plants in Germany decreased by 37% to 34 billion kilowatt-hours (kWh) in the third quarter of 2019 compared to 2018



GERMANY - NATURAL GAS PRICES
US Dollars per Million BTU

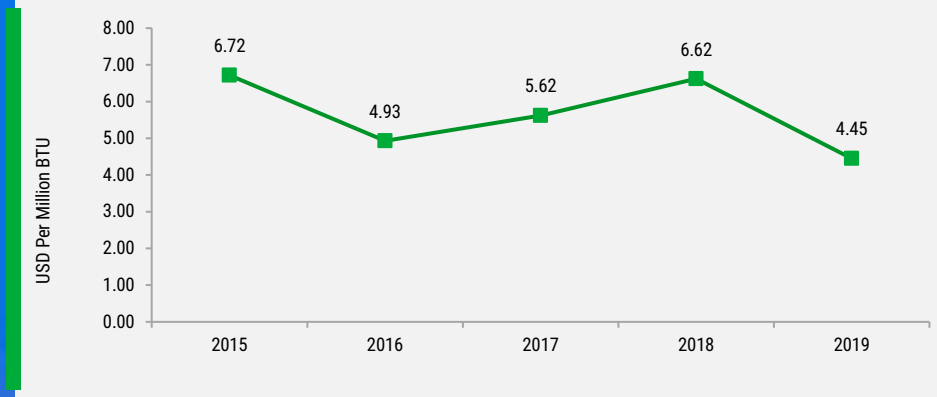
SHORT TERM SCENARIO

- According to the Germany government, new scheme would be introduced known as national emission trading scheme for heating oil, natural gas, diesel, and petrol as of 2021
- As of 2020, heating sector in Germany continues to be primarily based on fossil fuels, with 25% of homes running on oil heating systems and 44% dependent on natural gas



LONG TERM SCENARIO

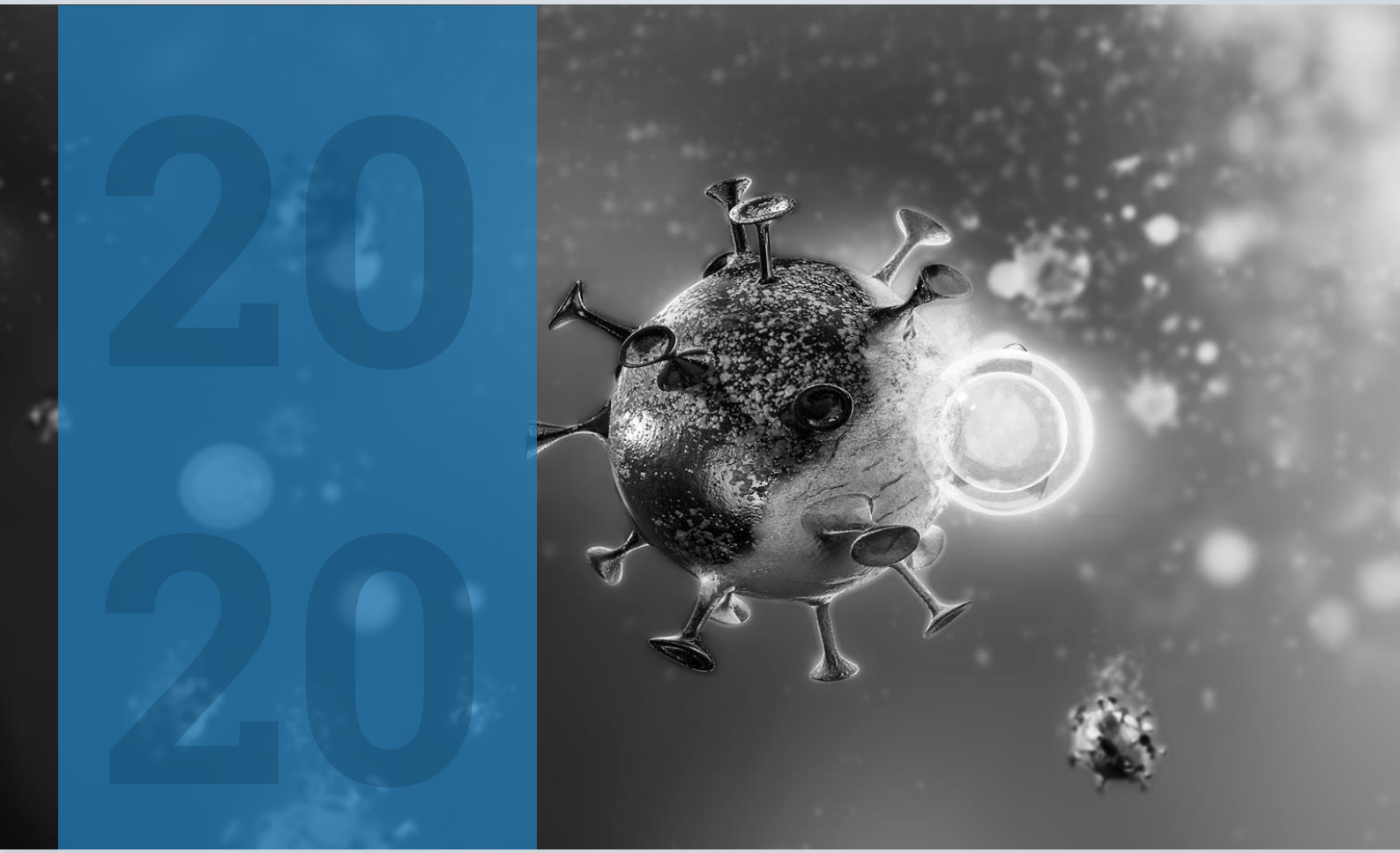
- Natural gas operators in Germany set out a plan for one or two planned LNG import terminals
- German gas transport company association, FNB Gas, has launched a public consultation on a 10-year investment plan to expand the country's gas transmission network.
- In 2018, 23.4% of total German primary energy demand was through natural gas. This makes gas the second most important source of energy, behind oil (34%) and considerably ahead of lignite, coal, nuclear power and even renewables.



COVID 19 IMPACT ON

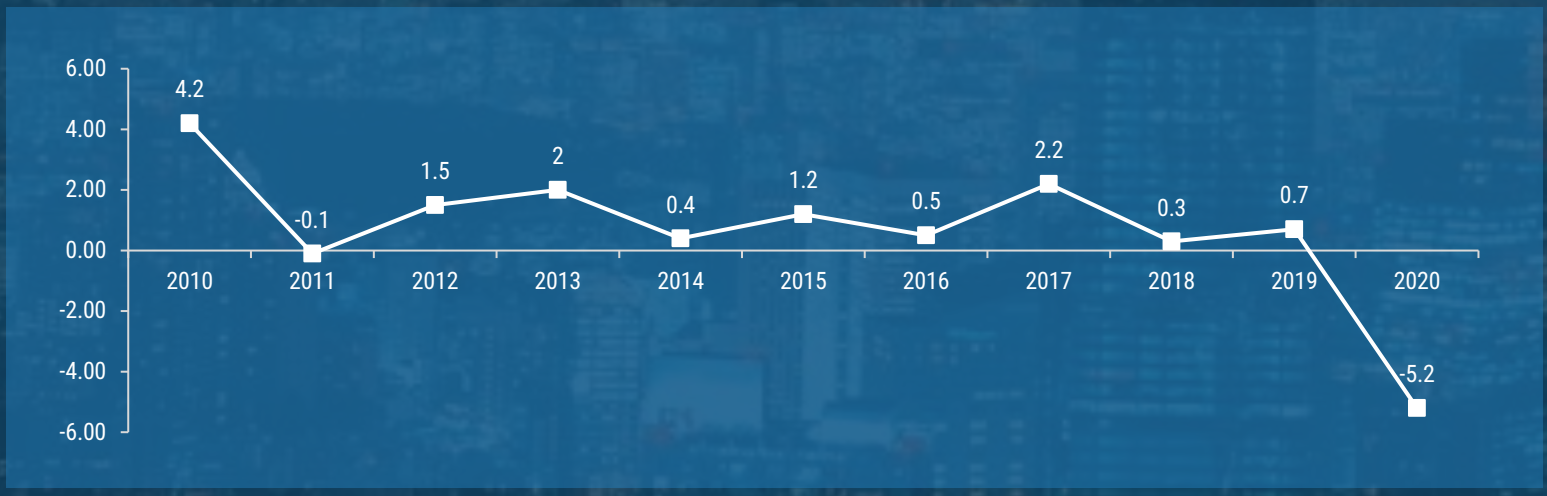
INDIA

ENERGY & POWER INDUSTRY



India-Real GDP Growth

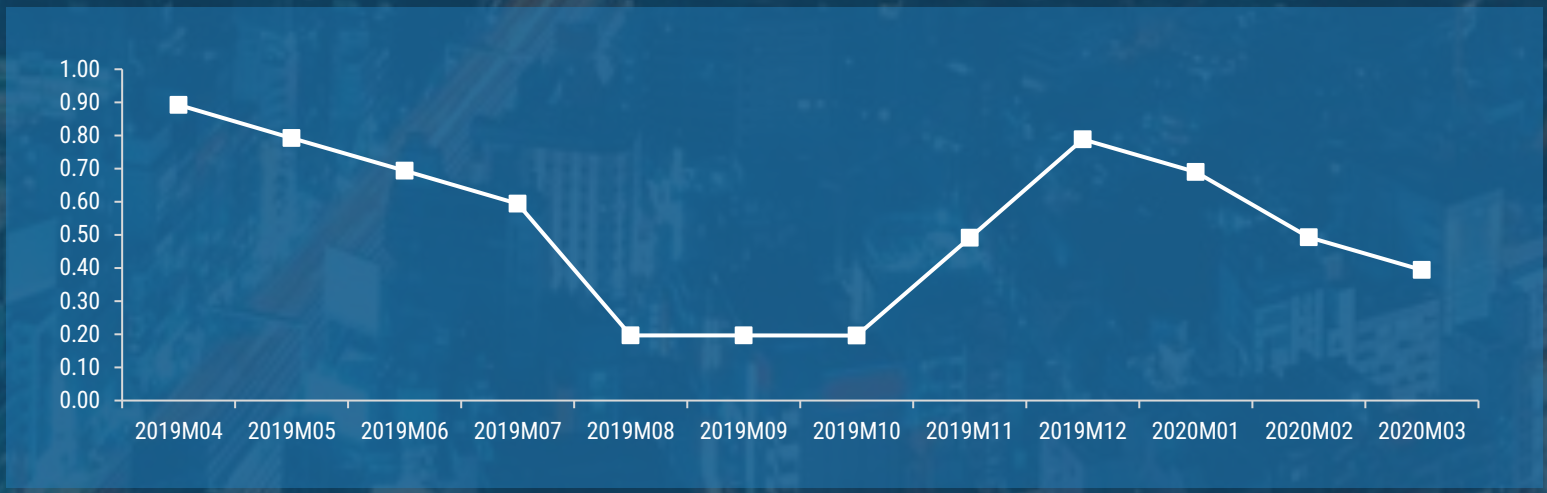
(Annual Percent Change) 2010 - 2020



- India has emerged as the fastest growing major economy in the world and is expected to be in top three economic powers of the world over in coming years, owing to its its strong democracy and partnerships.
- India's nominal GDP growth rate is estimated at 12 % in 2019-20. Due to current COVID-19 impact, the expert have estimated growth for fiscal year 2021 with the lowest figures India has seen in three decades.

India-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

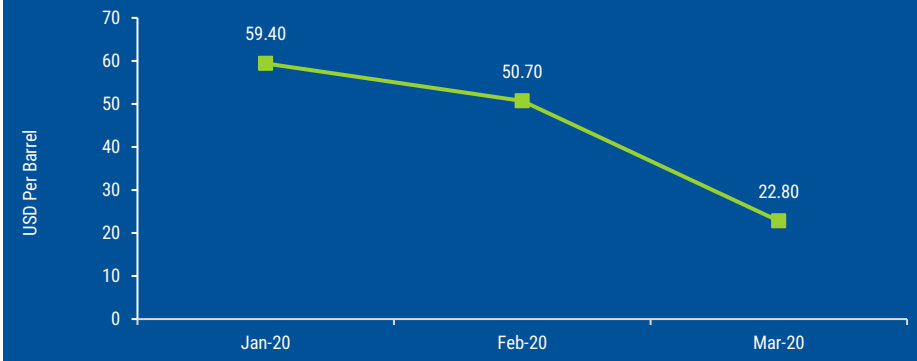


- India's consumer price index or retail inflation has shown 5.9% YoY in March 2020 amid coronavirus-induced nationwide lockdown.
- With falling crude oil prices, lower food prices, and weaker consumer demand for non-essential products due to the spread of COVID-19, The CPI is expected to show moderation in the coming months.

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

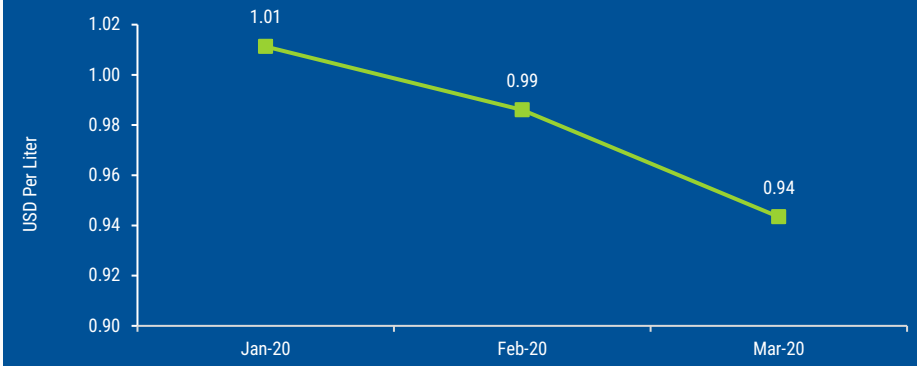
CRUDE OIL PRICE

- Tax collections from the petroleum sector have been affected due to slowdown in economic activities
- India does not benefit much from lower oil prices at the moment, especially as the entire nation has been kept under lockdown. With hardly any demand for oil, India already has its tanks full.
- The international crude oil price crash to lowest seen levels may help India significantly cut the import bill, check inflation, and boost tax revenue, if the government takes advantage of the situation.
- Low crude oil prices can help India raise oil-related taxes to offset other losses



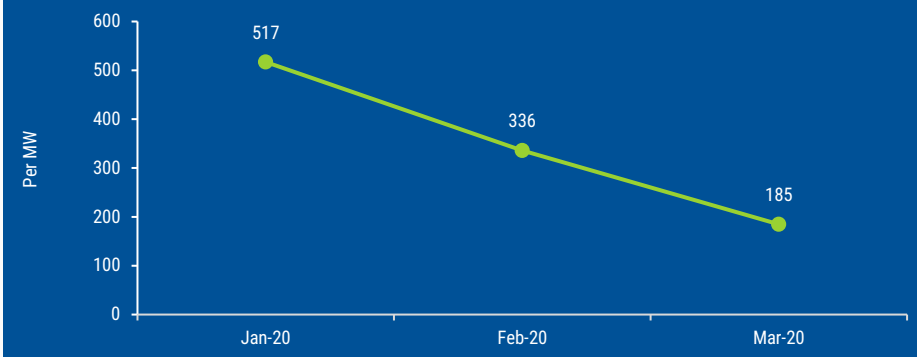
DIESEL PRICE

- The oil companies adjust the hike in tax on petrol and diesel prices against the recent fall in global crude oil prices.
- Oil companies in India have not cut petrol and diesel prices since 16 March 2020, despite global crude oil prices falling to lowest in two decades. Instead, the government has used low crude oil prices to its own advantage, by occasionally raising duties on petrol and diesel.
- The hike in duty has taken away the gains from falling global crude oil prices for the oil prices.



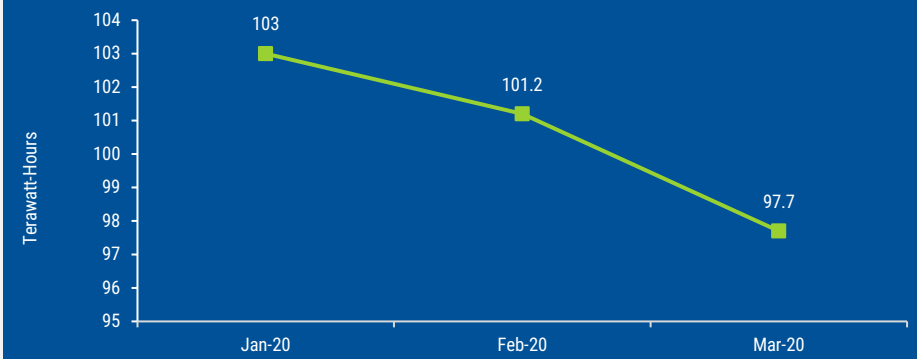
INSTALLED POWER CAPACITY (SOLAR & WIND)

- The ministry has so far spent around 53 per cent or Rs 2,788.44 crore of its total budget allocation for the current financial year.
- India is all set to cross the 100GW renewable energy capacity mark in 2020 and can make rapid strides towards the ambitious 175GW clean energy target by 2022 provided the government keeps a close eye on key issues and deals with those well in time.
- The country's renewable energy sector needs new investment in a range between $500 billion and $700 billion by 2030 to meet its target of 450 gigawatt (GW) of installed capacity
- India has set itself a target of 175 GW renewable energy capacity by 2022 including 100 GW of solar and 60 GW of wind power capacity.



ELECTRICITY GENERATION

- he electricity generation target of conventional sources for the year 2019-20 has been fixed as 1330 Billion Unit (BU). i.e. growth of around 6.46% over actual conventional generation of 1249.337 BU for the previous year (2018-19). The conventional generation during 2018-19 was 1249.337 BU as compared to 1206.306 BU generated during 2017-18, representing a growth of about 3.57%.
- The government is focusing on Structural reforms on recasting distribution, Investment outlays, and emerging demand for this quarter of the year.
- Coal production over April 2019-January 2020 was still down 3.9% y-o-y to 451.5mt, due to an extended monsoon and protests by employees in some of the mines.



LONG TERM SCENARIO
(2015 - 2019)

CRUDE OIL PRICE

- Import of crude oil during 2015-16 was 202.851 MMT valued at ` 4,16,361 crore as against import of 189.435 MMT valued at `6,87,416 crore in 2014-15. Thus notwithstanding an increase of 7.08% in quantity terms, oil imports registered a decline of 39.43% in value terms over the same period of last year mainly because of a steep decline in crude oil prices.
- At the end of 2015, oil reserve to production ratio stood at 50.7, means at current production rate oil would last about 51 years. Therefore, scientists are working overtime to explore alternate energy resources.
- In 2019, a rise in crude oil prices can increase dollar demand, hurting the rupee-dollar exchange rate. A fall in the rupee lowers dollar returns for foreign investors, and makes their India investment unattractive.

DIESEL PRICE

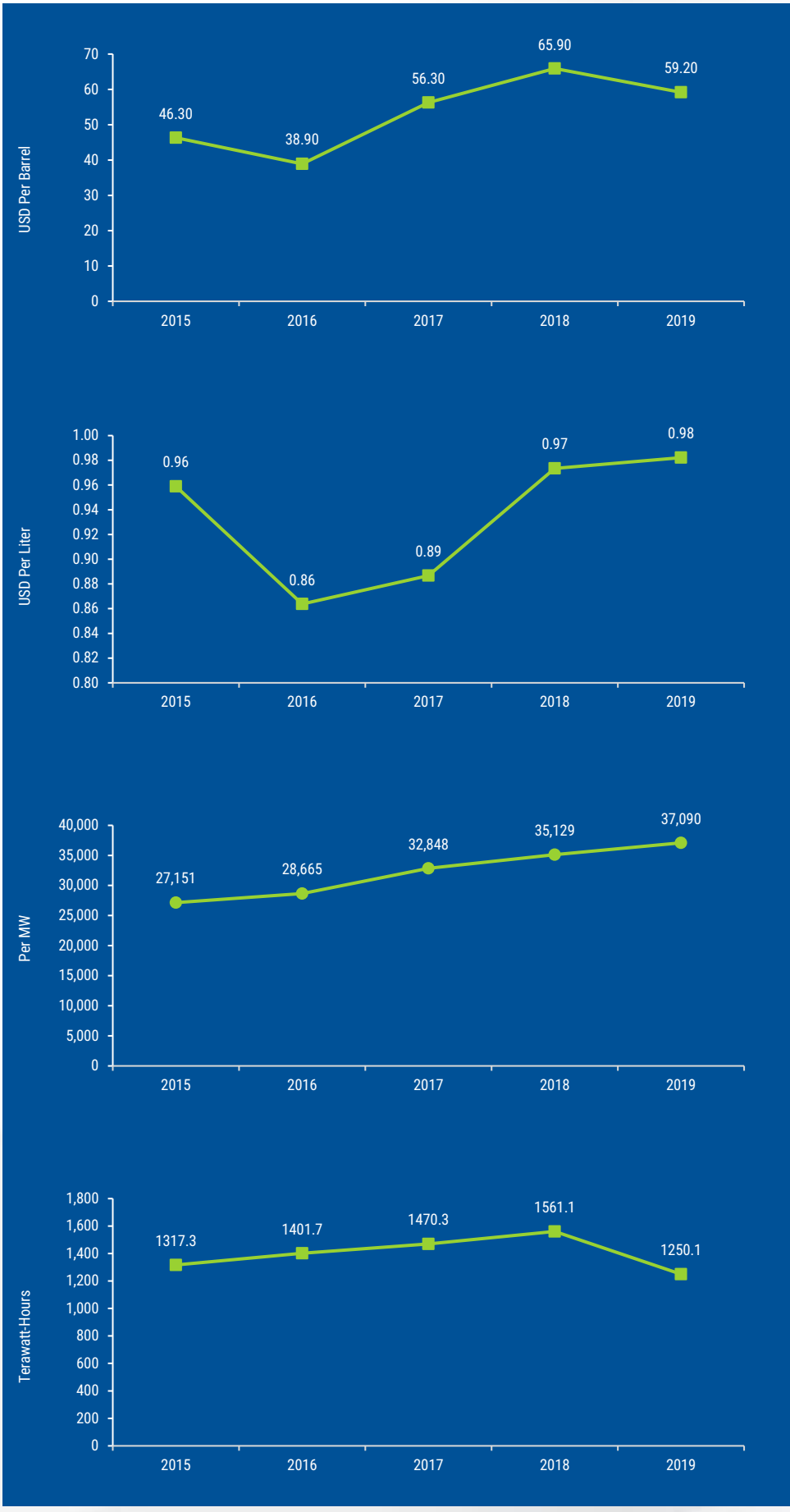
- State-owned oil companies in June 2017, dumped the 15-year old practice of revising rates on 1st and 16th of every month and instead adopted a dynamic daily price revision to instantly reflect changes in cost.
- India imported petroleum products worth over 9.8 trillion Indian rupees in fiscal year 2019. Petroleum made up a share of over 27 percent of all imports into the country that year.
- The increasing trend in recent years was reflected in the price of fuel and its impact on various industries across the south Asian country.

INSTALLED POWER CAPACITY (SOLAR & WIND)

- A total of about 73.35 GW renewable energy capacity has been installed in the country as of October, 2018, from all renewable energy sources.
- In 2017, the issues hampering growth of renewables in India are lack of interest of financial institution to fund renewable energy projects, safeguard duty on imported solar panels, ambiguity over goods and services tax (GST) on solar equipment and low investor sentiment due to delayed or non-payment by discoms to clean energy developers.
- In 2019, total solar capacity additions fell short of projections due in large part to project delays across the industry and which are now likely to be commissioned in the first half of 2020.
- In 2018, India's investment in solar PV was greater than in all fossil fuel sources of electricity generation together. Large-scale auctions have contributed to swift renewable energy development at rapidly decreasing prices. By December 2019, India had deployed a total of 84 GW of grid-connected renewable electricity capacity.

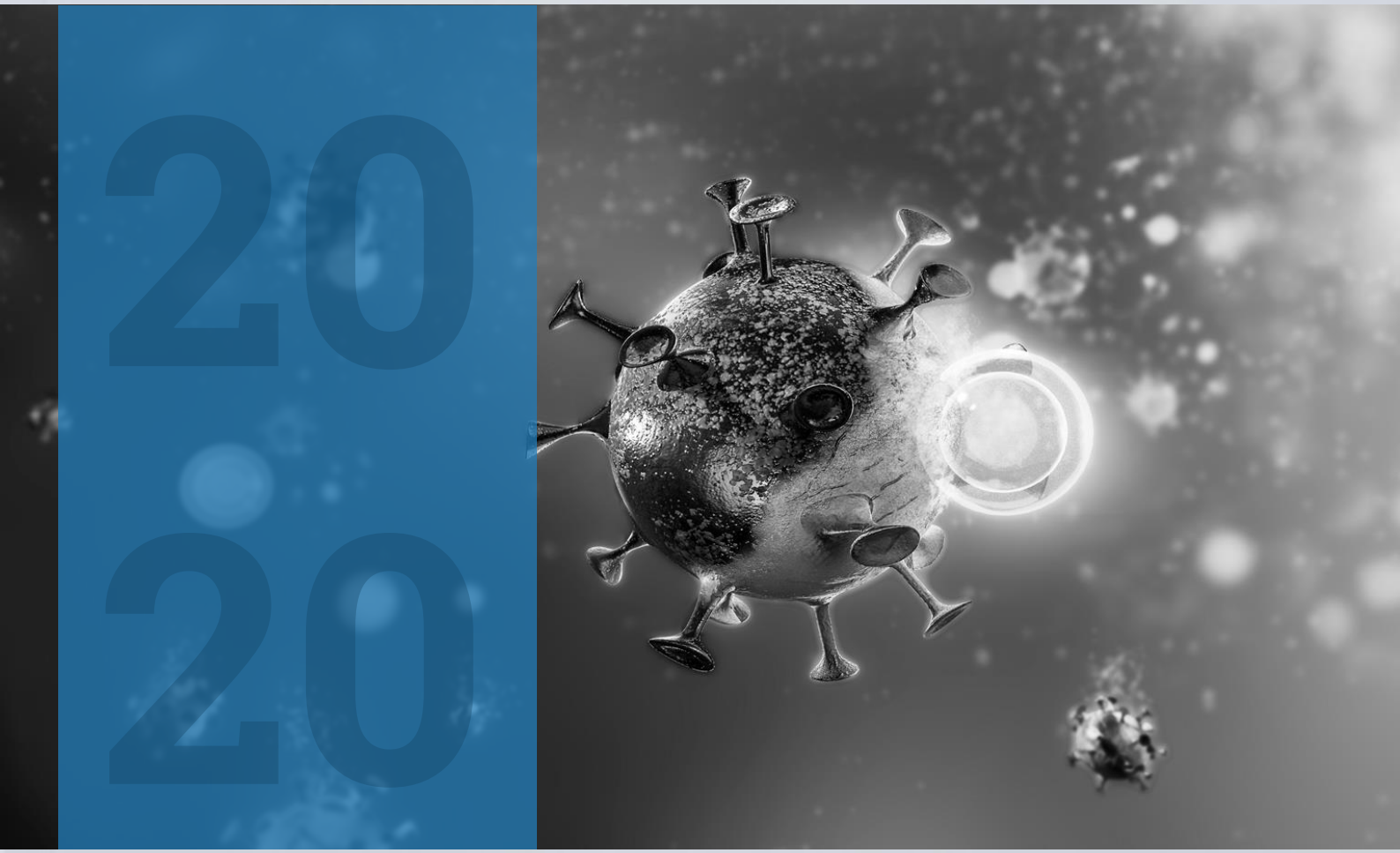
ELECTRICITY GENERATION

- The generation mix has also been witnessing a change with increasing penetration of renewables; the contribution of renewables becoming noticeable during the last five years and constituting about 5.5% of the total generation in 2015–16
- In 2016, coal-fired power plants had a share of more than 60 per cent in the country's installed capacity mix, followed by hydro and renewables constituting ~ 14.2% each. Going ahead, it is expected that the share of renewable in the generation mix will significantly increase, given the programmed capacity addition of renewables.
- India's electricity sector ambitions have been widely acknowledged as potentially transformational and have put India on the world centre stage in terms of reinvigorating the global drive towards the Paris Agreement.
- Electricity generation across India, including renewables, grew 6.8% year-on-year in the June 2019 quarter



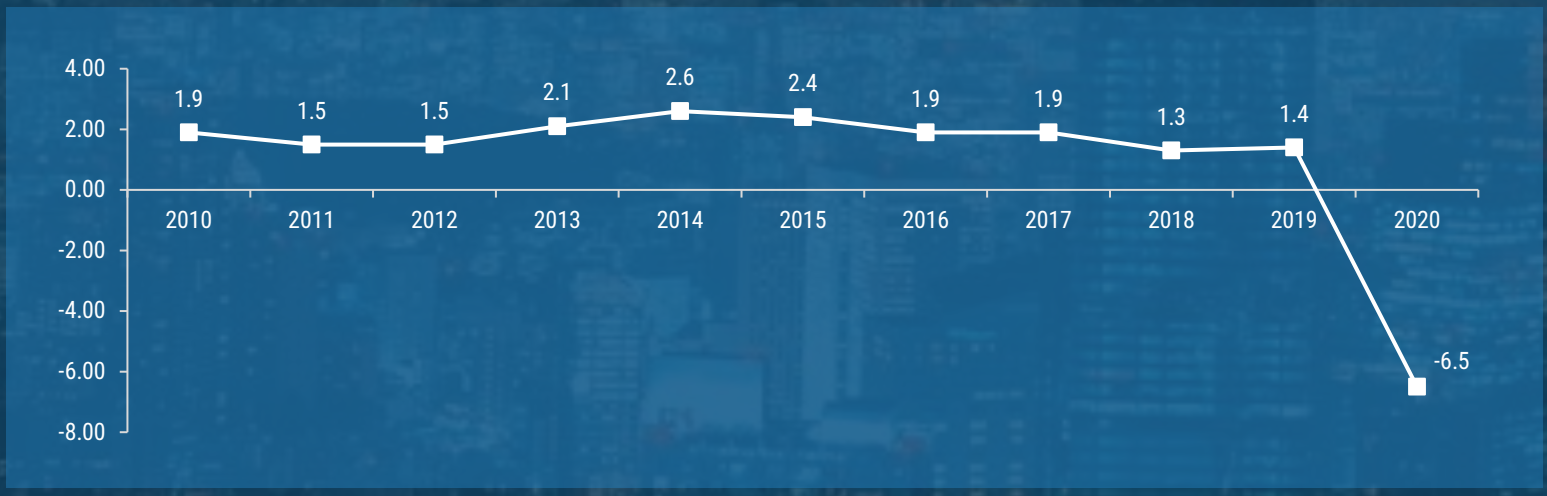
COVID 19 IMPACT ON UNITED KINGDOM

ENERGY & POWER INDUSTRY



UK-Real GDP Growth

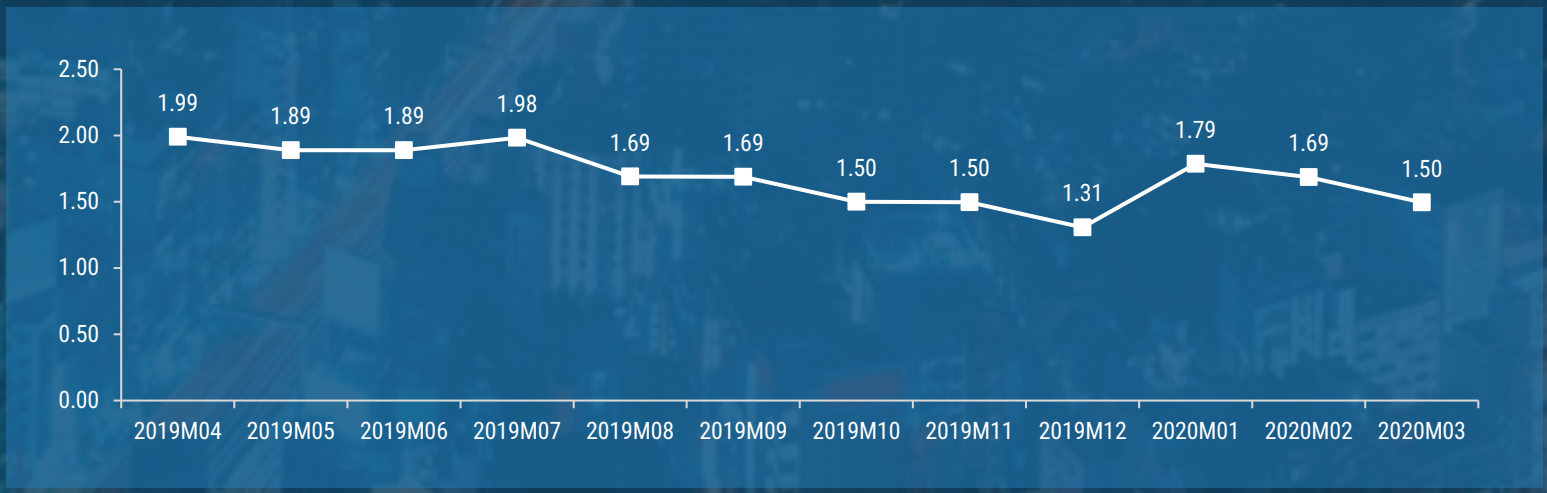
(Annual Percent Change) 2010 - 2020



- Like all other European countries, the United Kingdom is also in a state of lockdown, followed by measures of social distancing.
- As a consequence of COVID 19 pandemic, the UK economy has taken a sudden and dramatic hit, more severe than the global financial crisis of 2008.

UK-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

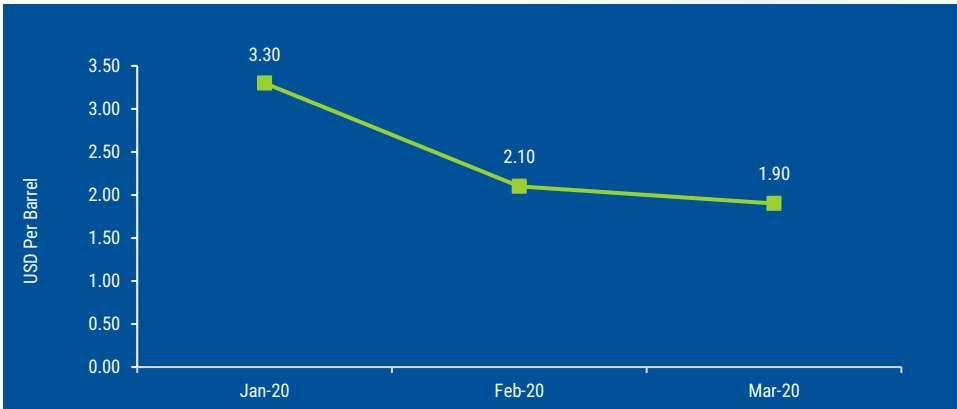


- Consumer Price Index (CPI) in the UK reached an all time high of 108.60 points in February of 2020.
- In UK, the most important categories in the CPI (consumer price index) are Transport and Recreation and Culture.

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

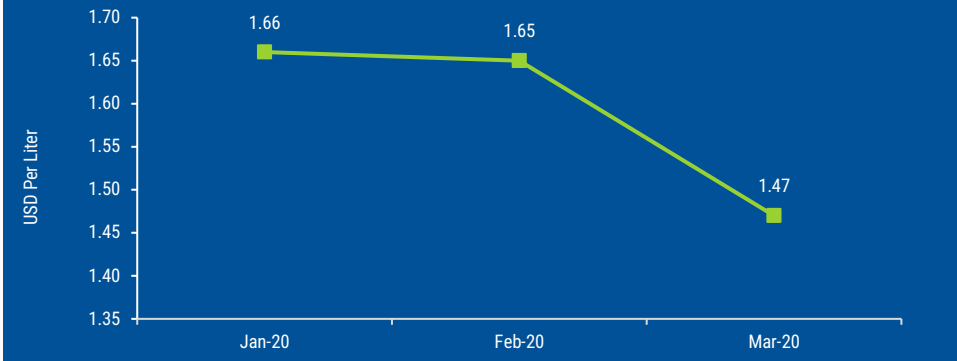
CRUDE OIL PRICE

- UK petrol prices fell by their largest margin in 12 years during the month, according to the RAC.
- The price of oil fell below $25 a barrel - the lowest level since 2002.
- The drop in fuel prices in the UK is a result of a fall in the wholesale oil market.



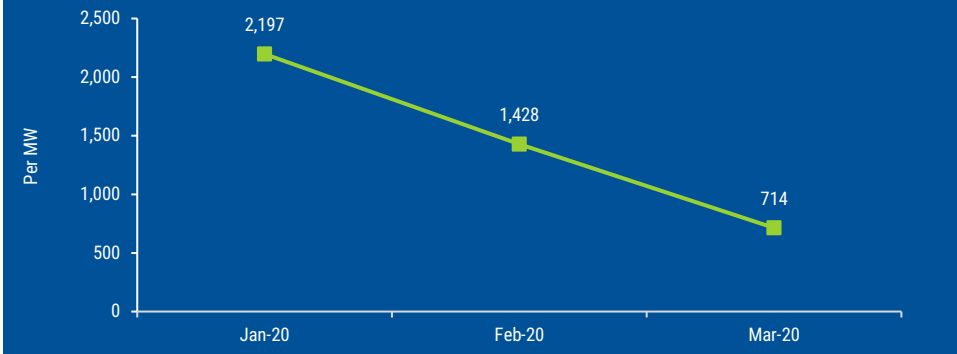
DIESEL PRICE

- Energy & Industrial Strategy survey showed that in early April showed that petrol consumption was down by 75% and diesel by 71%
- In February 2020, UK announced to ban new diesel and gas vehicles as a part of their United Nationas climate summit.
- The UK pledged to reduce greenhouse gas emissions to zero by 2050



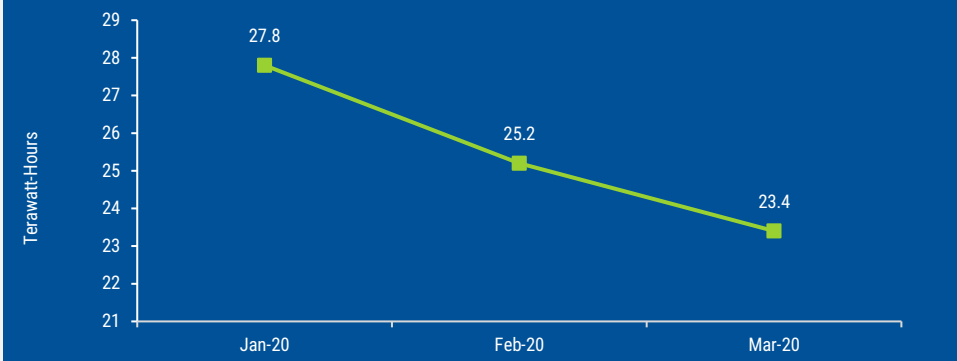
INSTALLED POWER CAPACITY (SOLAR & WIND)

- The total green energy installed to date around the world grew by 7.6%, with the UK's total rising 6.1%. The UK is now 11th in the world for installed renewables.
- Optimal conditions for solar efficiency have delivered a record coal-free period for the UK, with coal power being offline in first quarter of 2020
- National Grid asked the UK power plants operators, including some wind farms, to switch off to avoid the network being overwhelmed with electricity as the Covid-19 pandemic hits demand.



ELECTRICITY GENERATION

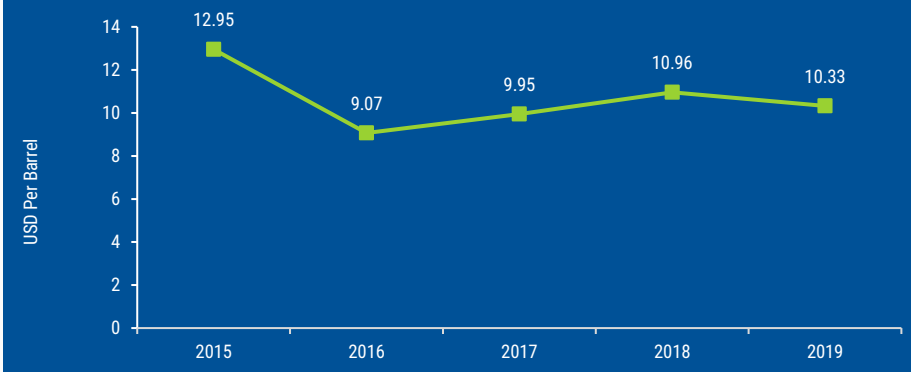
- The UK network operator confirmed that there been a 10% drop in power demand in March-April 2020 and this could rise to as much as 20% in the summer if the impact of the coronavirus continues.
- As of January 2020, the UK one of the first major economies to target net-zero greenhouse gas emissions by 2050
- As of March 2020, the output of existing wind farms had expected to significantly decrease due to the supply chain, travel bans and deferred maintenance because of pandemic situation. In addition, a shortage of engineering staff due to the lockdown could delay critical operational and maintenance (O&M) work at wind energy project sites.



LONG TERM SCENARIO
(2015 - 2019)

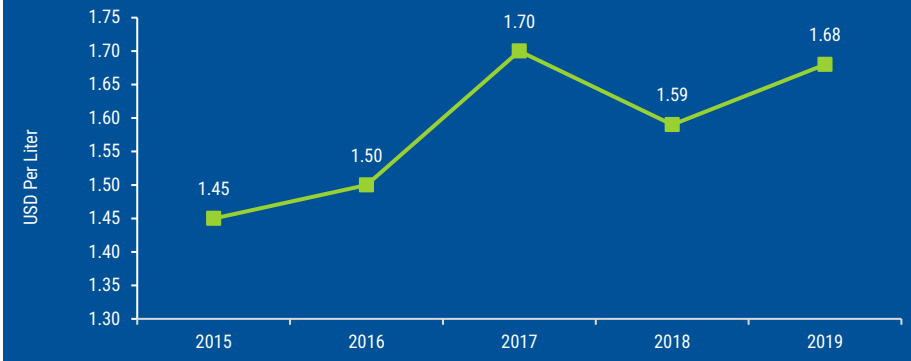
CRUDE OIL PRICE

- In 2019 the UK imported 12.7 million tonnes of petroleum products by , down from 12.9 million tonnes in 2018.
- As of January 2019, Oil & Gas company Cairn Energy announced to drill 4 exploration wells in the UK
- 5 production drilling had started in the Mariner oil field in the UK in 2016
- In 2019, final consumption of petroleum products went down by 2.1%, the second consecutive annual fall in demand. The reduction was mainly driven by a 1.5% decrease in demand for transport fuel.



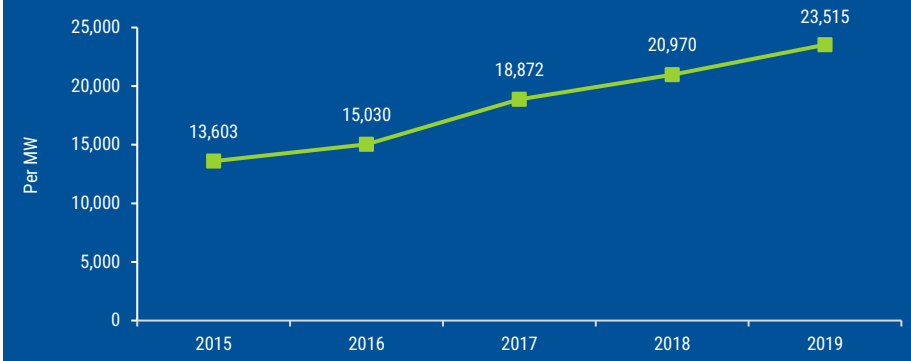
DIESEL PRICE

- Carbon emissions from new cars worsened by 3% in 2018 for the average vehicle
- Car sales in the UK declined in 2018 due to low diesel car sales and air quality concern
- Air quality concerns and taxation changes have led to a decrease in diesel sales, contributing to a 7% fall in new car registrations in the UK in 2018.
- Total deliveries of transport fuels in the UK were lower in last quarter of 2019 by 2.2%. This was driven by a decrease in demand for road diesel of 4.6%



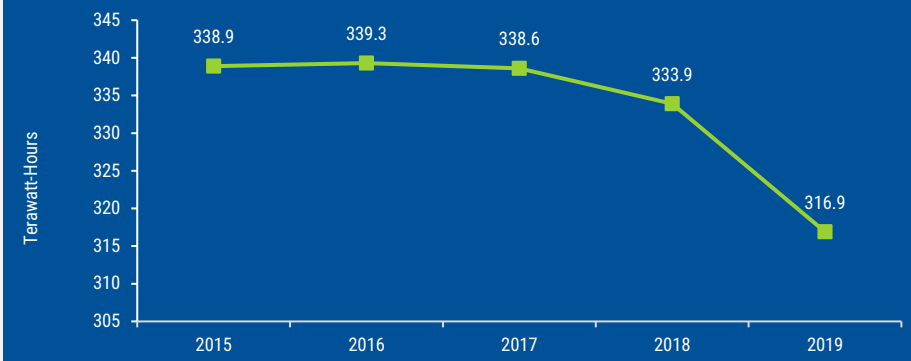
INSTALLED POWER CAPACITY (SOLAR & WIND)

- As of 2015, there were 426 solar farms located in the UK. Shotwick Solar Park is the largest solar park in the UK with a total capacity of 72.2 megawatts and each year contributes to reducing CO2 emissions by over 202,000 tonnes, powering over 11,000 homes.
- In 2017, solar accounted for 3.4% of UK's total electricity generation, up from 3.1% in 2016. Solar power is the third most generated renewable energy in the UK, after wind power and biomass
- Renewable energy production rose by 4.9% in 2019, with bioenergy outputs growing by 2.1% and wind and solar capacity experienced 11% growth. Nuclear output fell by 14% - the lowest level since 2008 – due to the summer power outages
- Global Wind Energy Council has expected year 2020 to be a record year for new wind energy projects with a growth by 20%, however, due to coronavirus pandemic, the situation shakened.



ELECTRICITY GENERATION

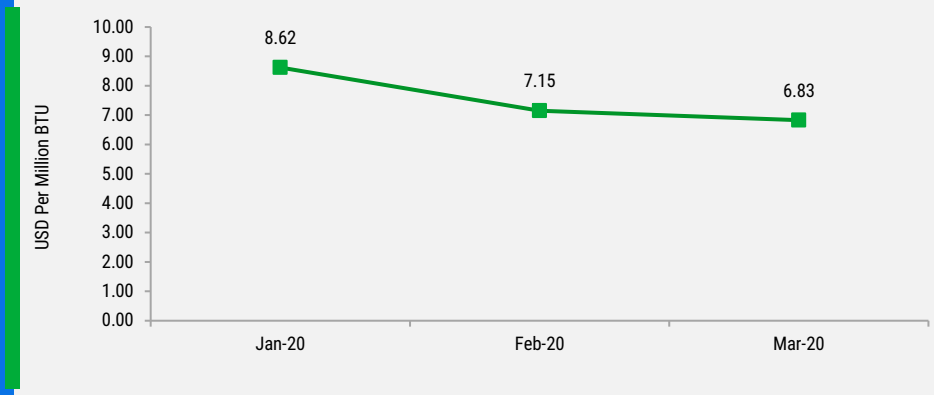
- In 2016, carbon emissions in the UK was down by 25%. The carbon content of a unit of electricity fell to 277 grams per kWh.
- Coal generation collapsed in the UK which led to higher installation of solar energy plants
- The power demand in the UK is estimated at 299 GWh for 2019
- Fall in total power demand will mainly be factored by the considerable reduction in industrial and commercial demand, which would likely be higher than the increase in domestic demand as people stay at home.



UK - NATURAL GAS PRICES
US Dollars per Million BTU

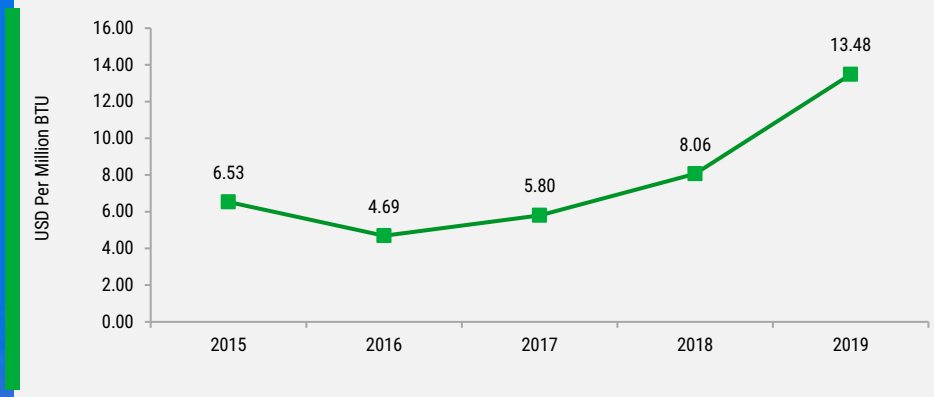
SHORT TERM SCENARIO

- According to national grid data, UK's gas system was undersupplied by 25 cubic metres with demand forecast at 274.6 mcm per day.
- Gas prices in the UK rose in February 2020 due to the high winds that prevented LNG tankers from unloading at the port.



LONG TERM SCENARIO

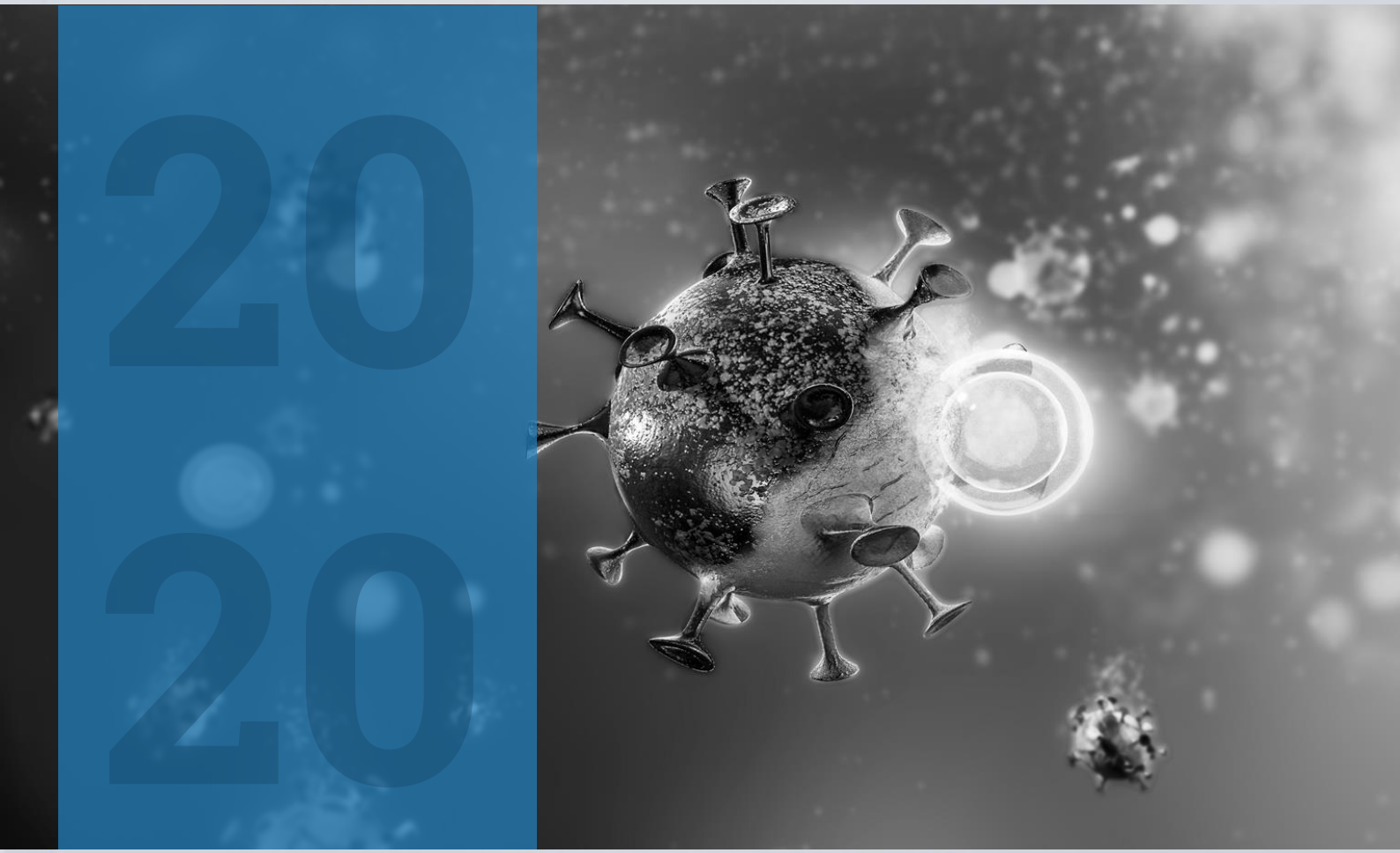
- The UK's 3 active LNG terminals had sent 17.74 Bcm in the country's natural gas grid in 2019
- Approximately two thirds of energy consumption in residential and commercial sector is met by natural gas in the UK
- UK production of crude and Natural Gas Liquids (NGLs) was up 1.8 per cent in 2019 compared with 2018



COVID 19 IMPACT ON

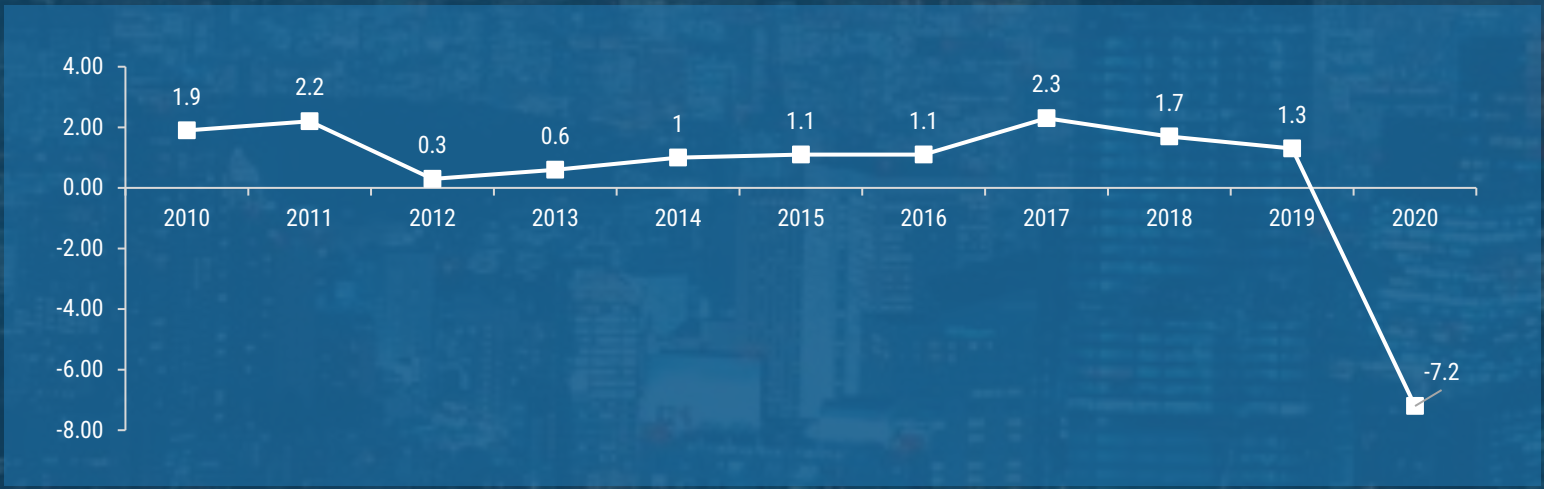
FRANCE

ENERGY & POWER INDUSTRY



France-Real GDP Growth

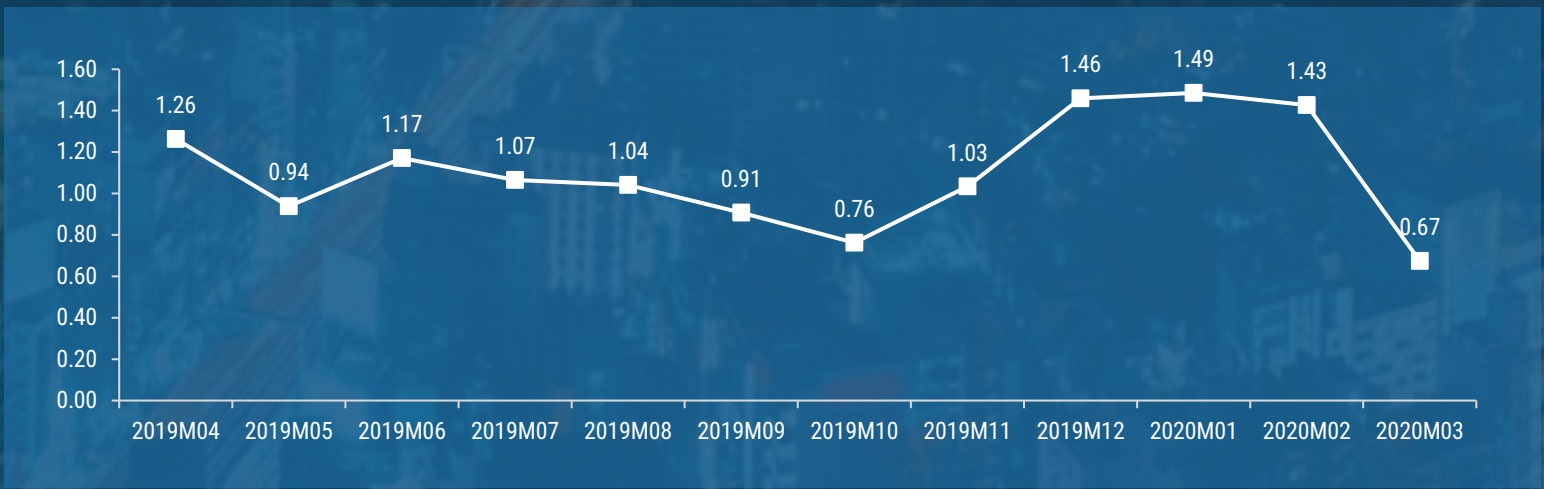
(Annual Percent Change) 2010 - 2020



France is the seventh largest economy in the world and the second largest in the Euro Area. the biggest sector of the economy is household consumption (55 percent) followed by government expenditure (24 percent) and gross fixed capital formation (22 percent). Exports of goods and services account for 29 percent of GDP while imports account for 31 percent, subtracting 2 percent from total GDP.

France-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

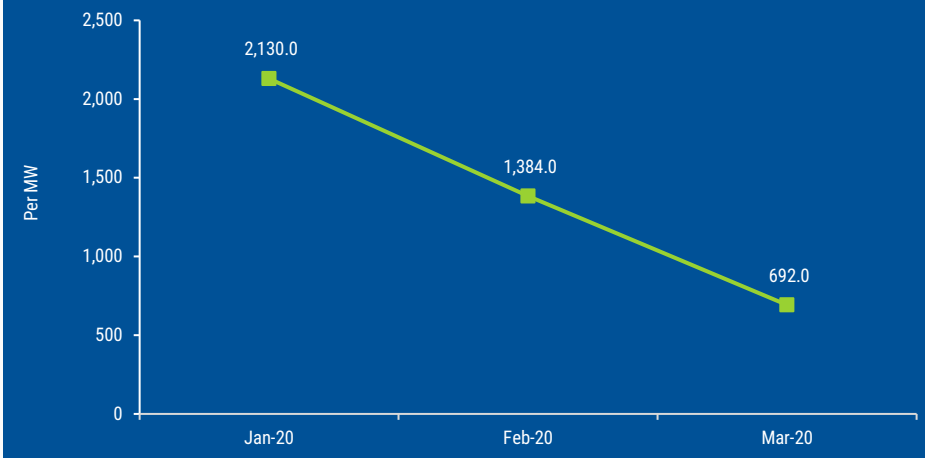


In France, the most important category in the consumer price index is services (48 percent of total weight), in particular actual rentals and services for dwellings (7 percent), health services (6 percent), transport (3 percent), and communication (2 percent). The index also includes manufactured products (26 percent) such as medical products (4 percent) and clothing and footwear (4 percent); food (16 percent); energy (8 percent) such as petroleum products (4 percent); and tobacco (2 percent).

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

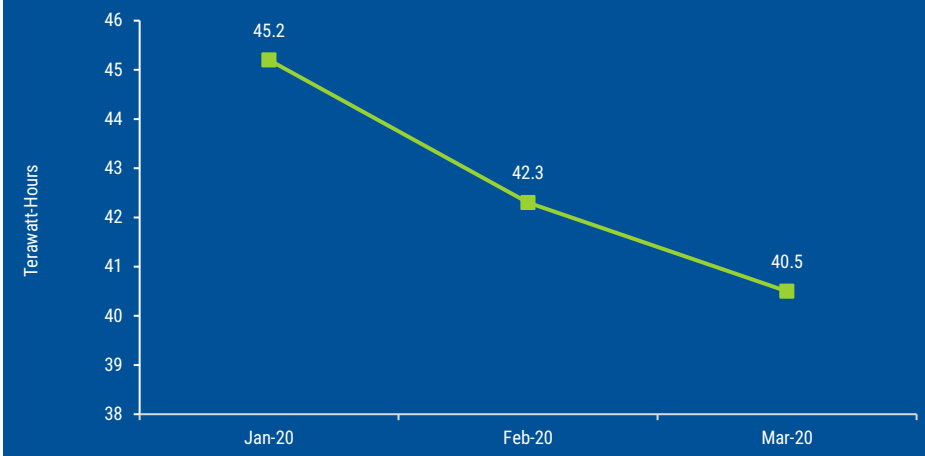
INSTALLED POWER CAPACITY
(SOLAR & WIND)

- Despite the ongoing crisis, The French ecology minister, Elisabeth Borne, has cleared nearly 300 wind and solar power projects with total installed capacity of about 1.7 gigawatts.
- According to Elisabeth Borne, the health crisis we country is going through must not in any way make us give up the country's ambitious objectives in terms of development of renewable energies.
- The wind and solar projects in France could be delayed by three to six months due to measures aimed at containing the coronavirus.
- Wind energy installations for 2020 will be down as compared to industry forecasts due to the impact of COVID-19 on construction activity.



ELECTRICITY GENERATION

- In March, Electricity consumptuon in France decreased by 15% due to new measures taken by government to fight coronavirus pandemic.
- There has been decline of economic activities such as the accomodation market in the France which has further resulted in electricity consumption in the country.
- Power demand in France grew by 2.5% from April last week as per the data indicated by Reseau de Transport Electricite SA, country's grid operator.
- The France's restrictions are set to remain in place till atleast second week of May before the start of fradual end of lockdown.
- Peaking power plants in France, mostly gas combined-cycle units, are lying idle as power demand from industries fell 26.4% due to the lockdown, extended until at least May 11, 2020.



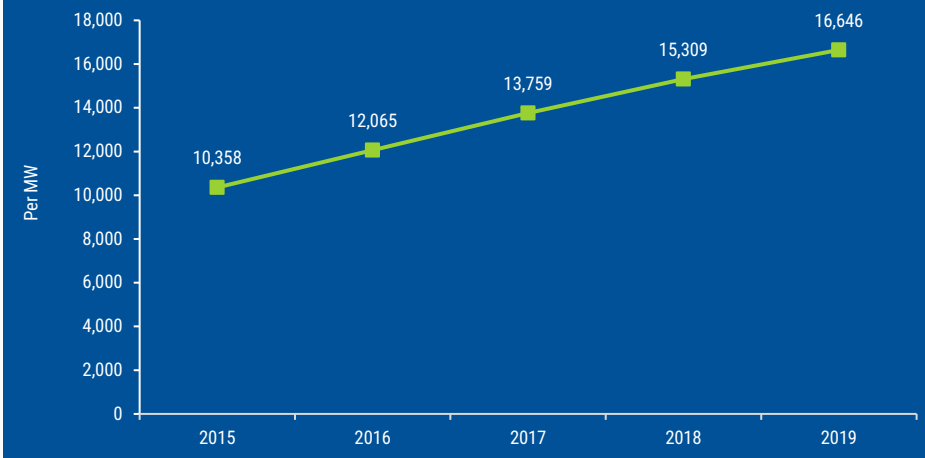
LONG TERM SCENARIO
(2015 - 2019)

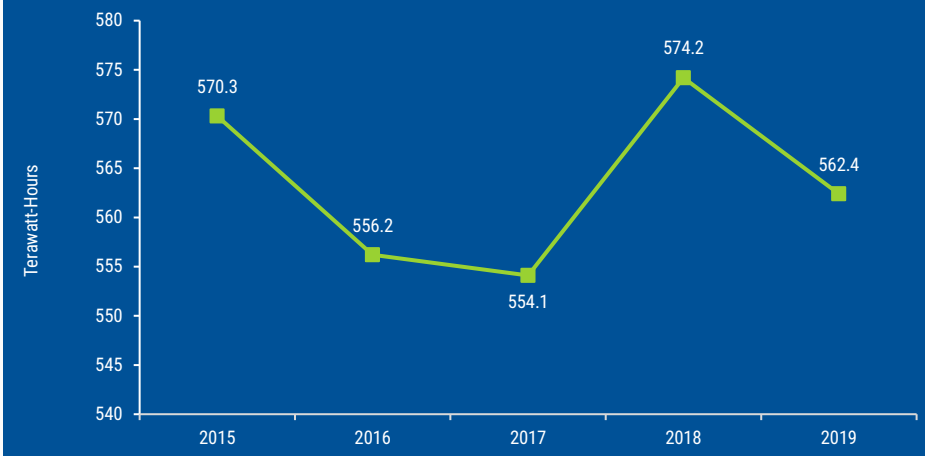
INSTALLED POWER CAPACITY
(SOLAR & WIND)

- Power generation from wind increased by 21.2 percent while solar production was up by 7.8 percent in France in 2019.
- By the end of 2019, France has 9.6 GW of onshore wind projects under development, 3 GW of offshore wind and 6.7 GW of solar.
- At the end of April, France submitted its final 2030 National Energy and Climate Plan (NECP) to the European Commission. The country will aim for 33% renewable energy in its energy mix in 2030.
- In France, electricity from renewable sources is promoted through a feed-in tariff, a premium tariff as well as through tenders for the definition of the premium tariff level.

ELECTRICITY GENERATION

- France remained Europe's leading net exporter of electricity despite a drop in output, with exports of 84 TWh and imports of 28.3 TWh in 2019.
- Gas-fired generation rose by 24 percent while coal-fired supply fell by 24 percent in France in 2019.
- In 2019, the nuclear output in France which covers around 75 per cent of France's electricity needs, fell 3.5 per cent partly due to increased outages and hydro power generation fell 12 per cent due to prolonged dry weather.
- Carbon dioxide emisisons from electricity sector fell by 6% in France in 2019 due to improved energy efficiency and less reliance on heavy industry.

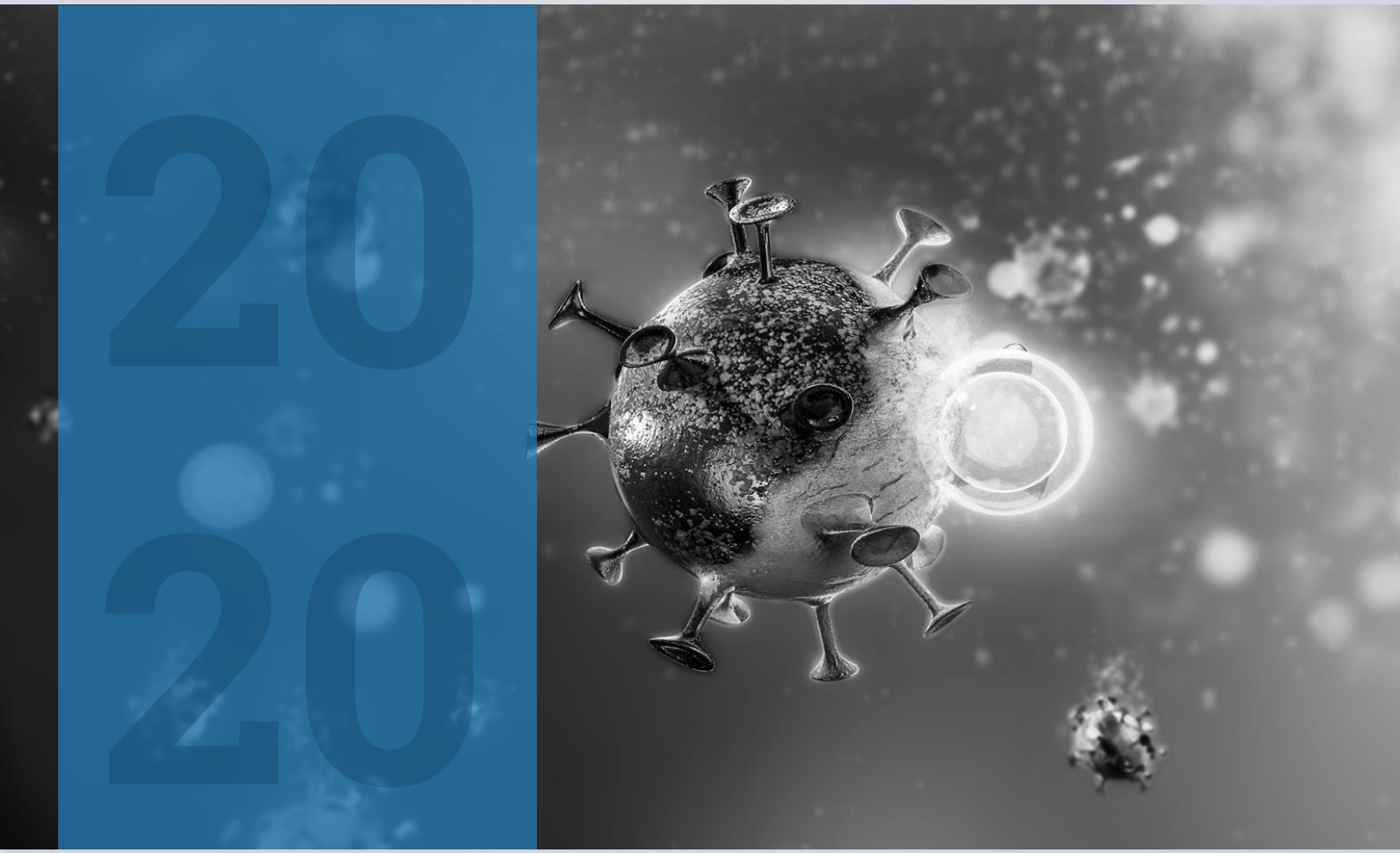




COVID 19 IMPACT ON

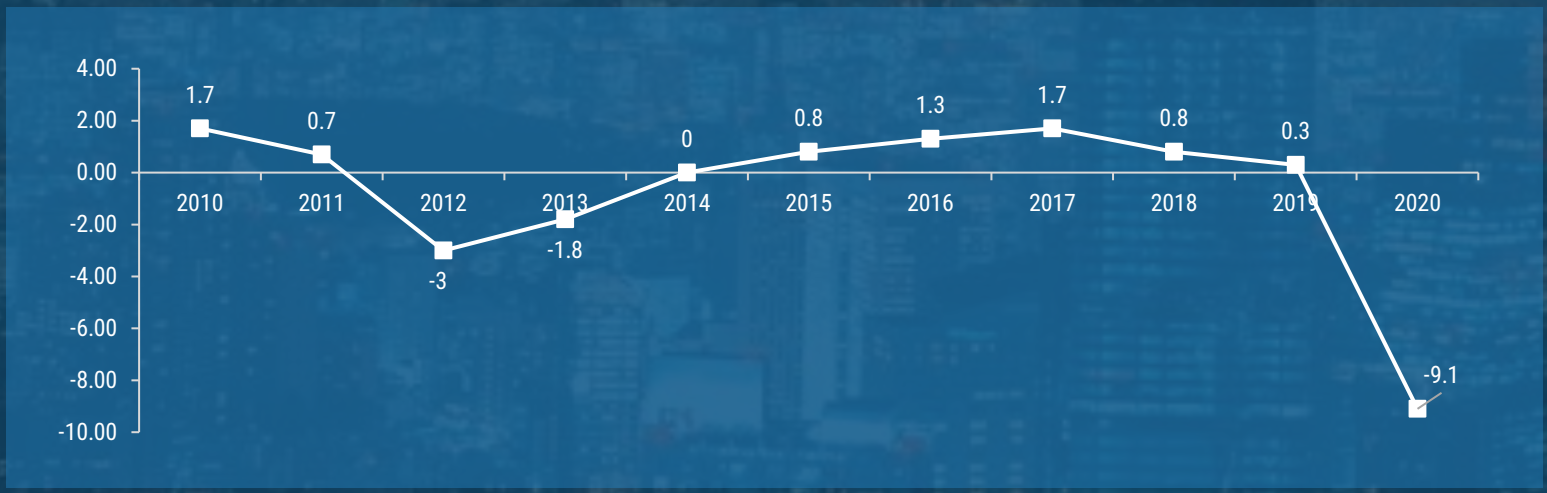
ITALY

ENERGY & POWER INDUSTRY



Italy-Real GDP Growth

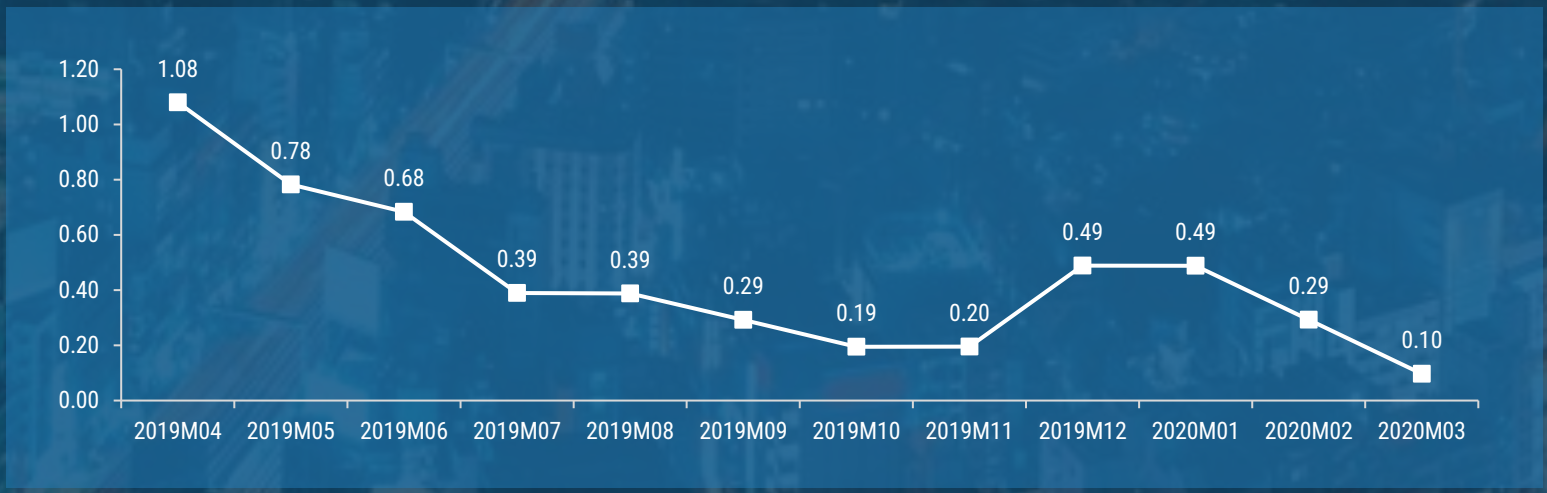
(Annual Percent Change) 2010 - 2020



- The GDP (Gross Domestic Product) in Italy was worth 2030 billion USD in 2019, Which represents 1.68 % of the world economy.
- Italy also entered into a recession in the first quarter of 2020 with GDP decreasing by 4.7% compared to the previous quarter due to the impact of COVID 19, the country's GDP had contracted for the first time since 2014.
- The Country follows contracting of 0.3 % in the last three months of 2019

Italy-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)



- Italy's Consumer Price Index (CPI) has shown a growth rate of 0.1 % YoY in March 2020, compared with a rate of 0.3 % in the February 2020.
- Consumers in Italy are unable or reluctant to purchase goods and services. Given the current environment of uncertainty and lockdown, enterprises are likely to delay investments, purchases of goods and the hiring of workers.

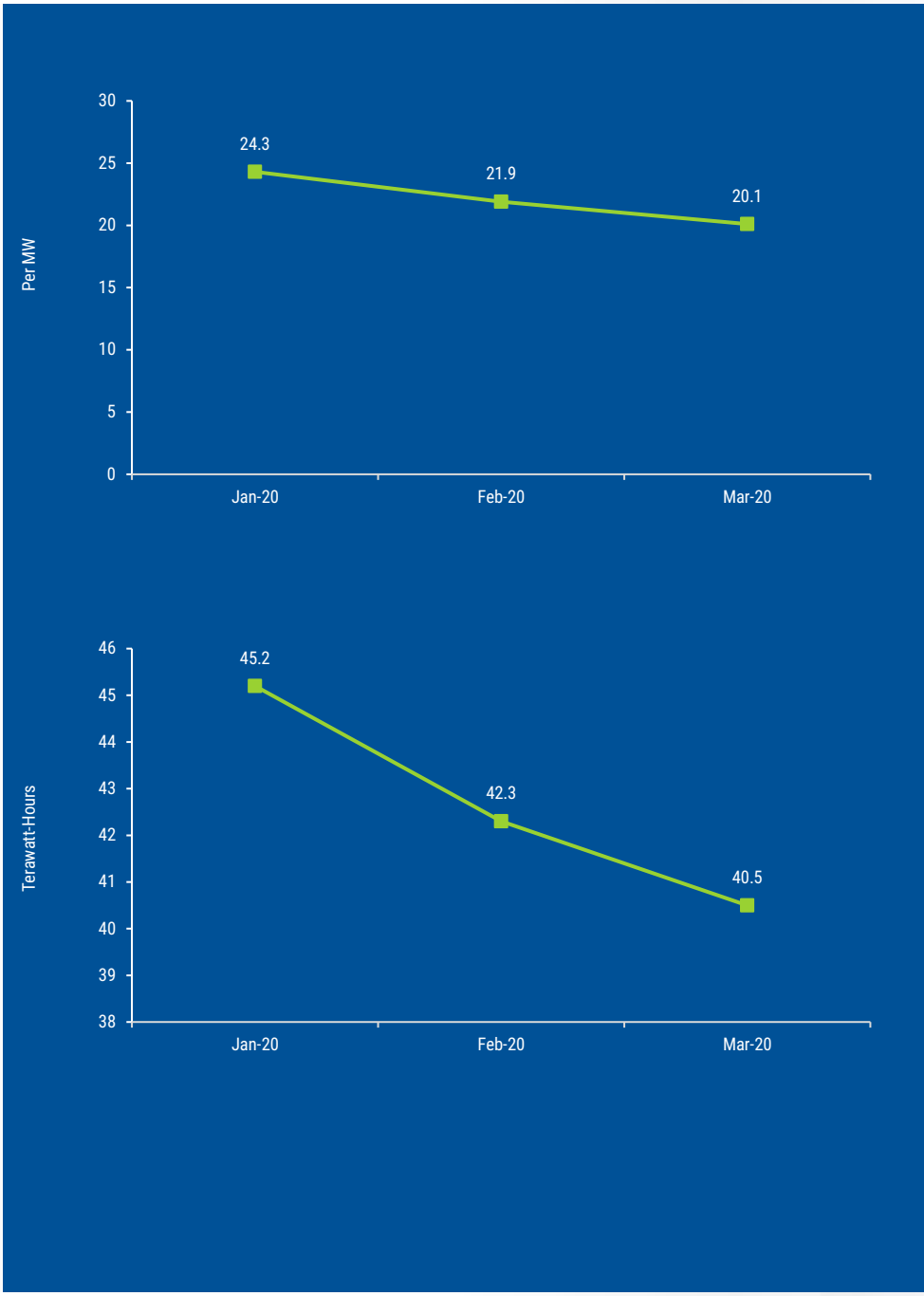
SHORT TERM SCENARIO
(Jan 20 - Mar 20)

INSTALLED POWER CAPACITY
(SOLAR & WIND)

- The emergence of subsidy-free solar in Italy has been put on hold because of decreasing energy demand and free-falling electricity spot prices in the wake of the coronavirus pandemic.
- In March, the wind generation in Italy decreased by 46% and solar power was up by 24%.
- Despite the struggle with pandemic, the Italian Lender Intesa Sa Paolo awarded Euro 55 million credit facility to Canadian Solar for portfolio of 12 unsubsidized solar projects.
- Drop in power consumption is causing problems for various grid operators in the country since output from wind or solar is high.

ELECTRICITY GENERATION

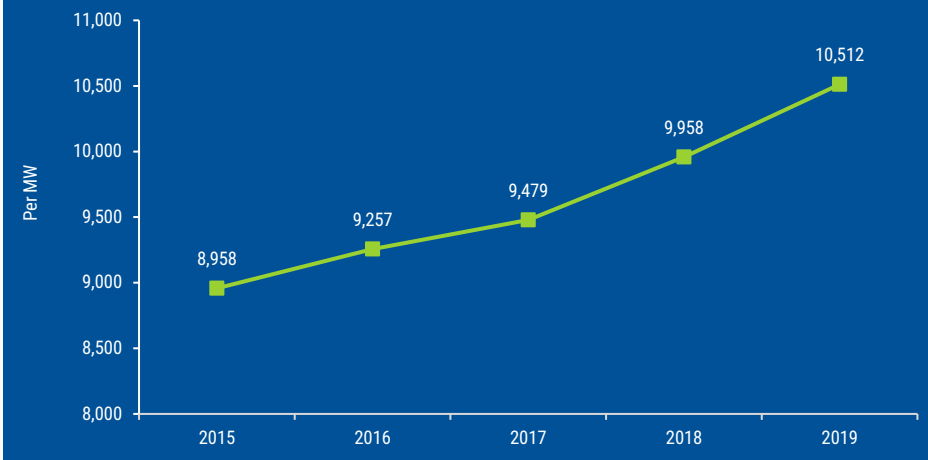
- The Italian government implemented a country-wide lockdown and more than 60 million people were ordered to stay home.
- This emergency stop has led to a sudden and significant drop in power demand.
- In the first week of nation-wide quarantine (March), power demand fell by 8% and that was a 7.3% drop compared to the same week in 2019 (Week 11) in Italy.
- Gas-fired generation saw a decrease of 5% in Italy in March and which accounts for 40% of the overall supply in the market.
- Power use in Italy jumped from April last week as the nation began to ease lockdown measures.



LONG TERM SCENARIO
(2015 - 2019)

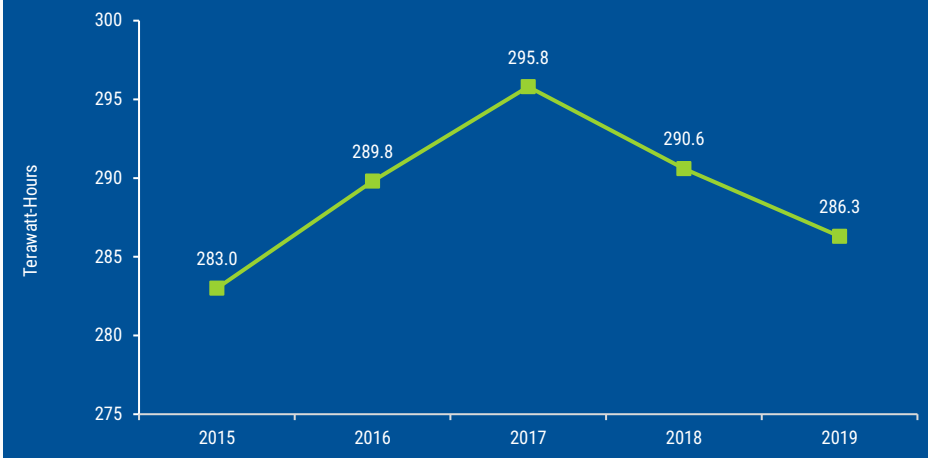
INSTALLED POWER CAPACITY
(SOLAR & WIND)

- For the five years, the Italian PV market was mainly driven by solar rooftops.
- Although the number of projects with more than 1 MW of generation capacity has shown signs of life in 2017 and 2018.
- The sustained growth of residential, commercial, and industrial rooftop solar under net metering must be attributed to sustainable building of fiscal incentives for homeowners.
- As of Decmeber 2019, Italy was the fifth country in terms of cumulative installations in Europe with 10 GW of onshore wind energy currently installed.
- Italy's wind industry is heavily concentrated in the south and on its islands.



ELECTRICITY GENERATION

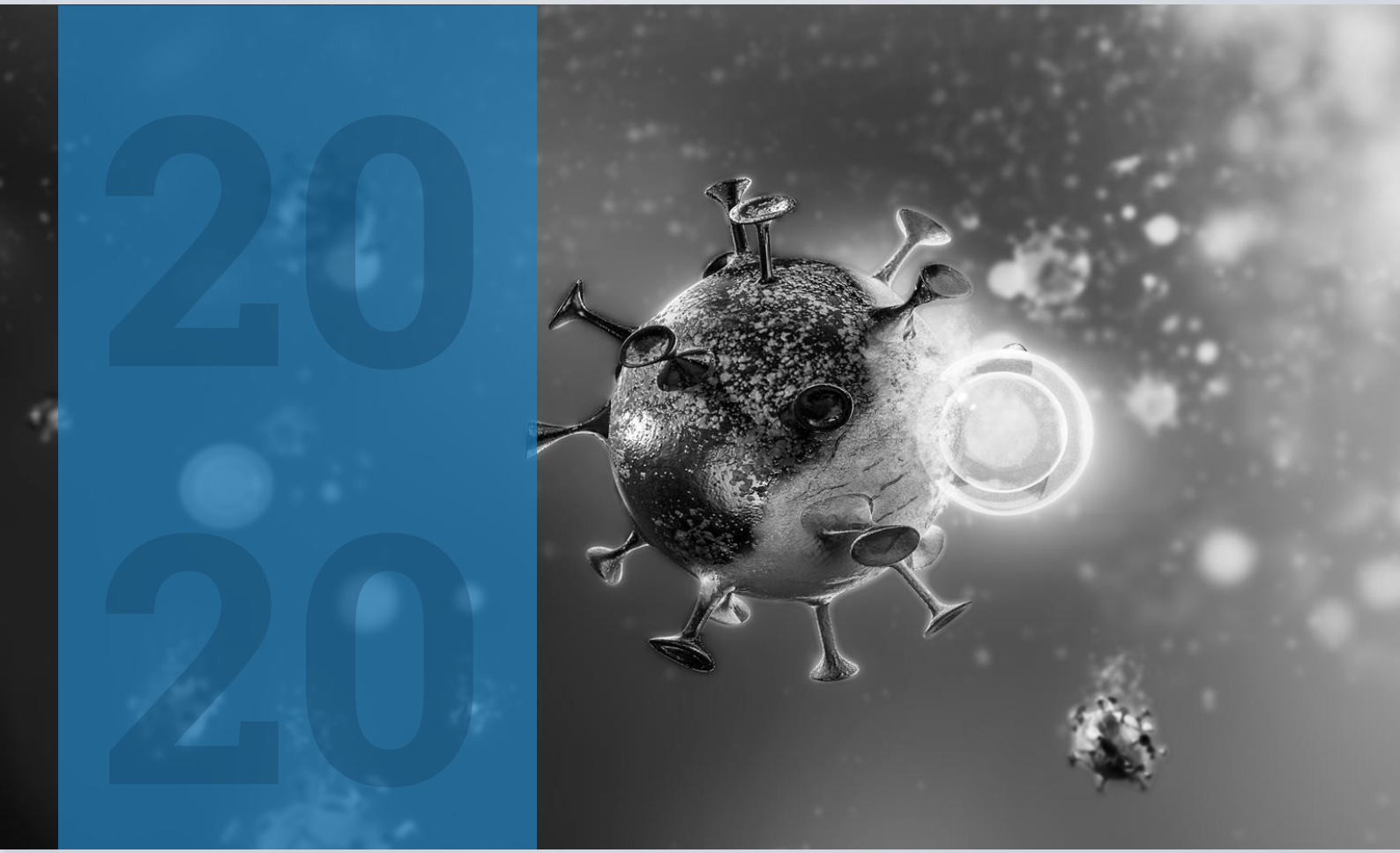
- Italy’s primary energy consumption is driven by petroleum and other liquids and natural gas, which accounted for more than over three-quarters of Italy’s total consumption in 2018.
- Italy imported about 16% of its electric power supply and about half of Italy’s imports of electricity come from France.
- In Italy, the energy consumption for heating will decrease while the energy consumption for cooling will increase in the coming years as compared to the 1961-1990 reference period levels
- Demand for domestic cooling in the summer season will affect significantly electricity consumption with increases up to 50% in Italy by 2080.



COVID 19 IMPACT ON

BRAZIL

ENERGY & POWER INDUSTRY



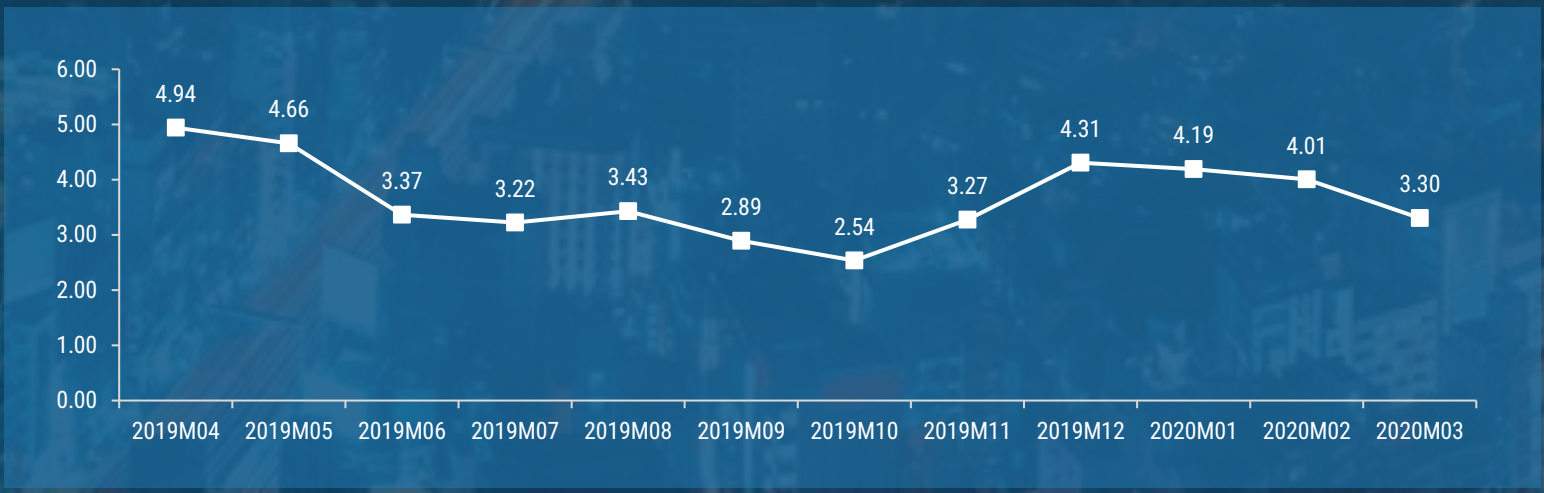
Brazil-Real GDP Growth

(Annual Percent Change) 2010 - 2020

Brazil is the tenth largest economy in the world and the biggest in Latin America. The services sector is the most important and accounts for 63 percent to total GDP. The biggest segments within services are government, defense, education and health (15 percent of total GDP); other services (15 percent); wholesale and retail trade (11 percent); real estate (8 percent); and financial services (7 percent). Also, manufacturing contributes to 18 percent of GDP, with manufacturing (11 percent) and construction (4 percent) accounting for the largest share. Exports of goods and services account for 13 percent of GDP while imports account for 12 percent, adding 1 percent of total GDP.

Brazil-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

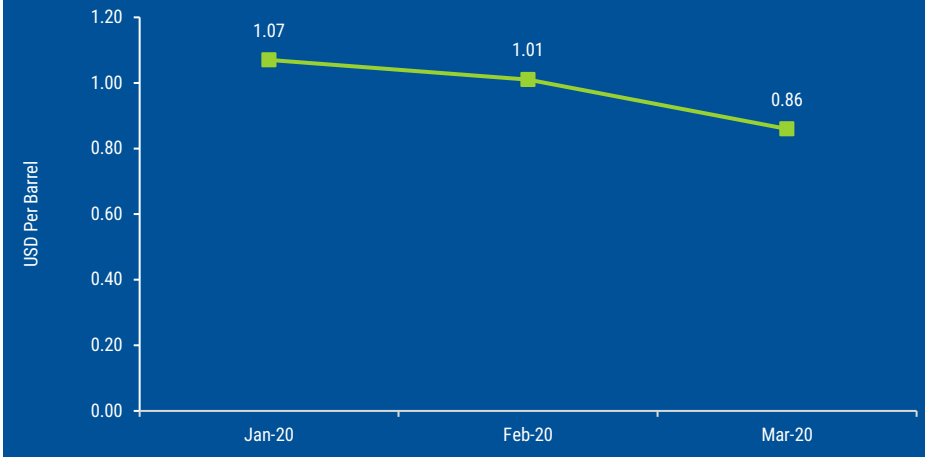


In Brazil, the inflation rate measures a broad rise or fall in prices that consumers pay for a standard basket of goods. The most important categories of the index are: Food and beverages (26 percent of the total weight); transport (18 percent); housing (15 percent); health care (12 percent); and personal expenses (11 percent). Also, clothing accounts for 6 percent; education for 5 percent; household goods for 4 percent; and communication for 4 percent.

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

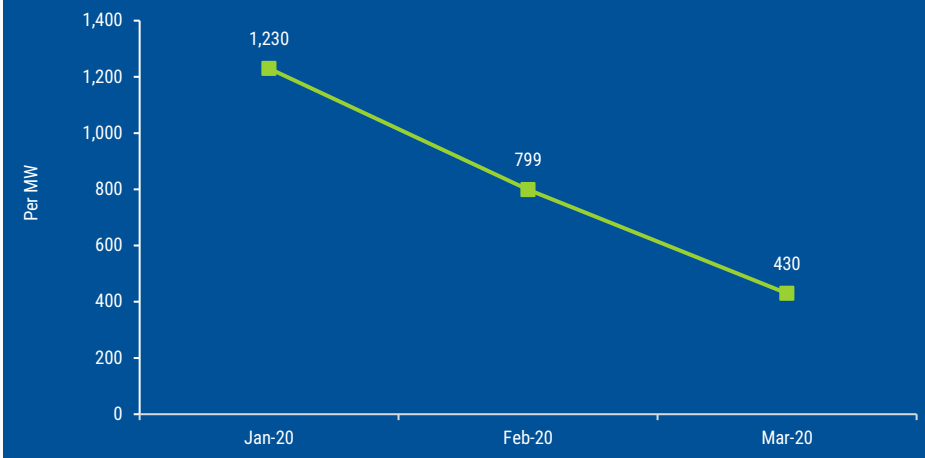
DIESEL PRICE

- As of 4th May 2020, the number of confirmed COVID-19 infections passed 100,000 in Brazil, with more than 7,000 deaths.
- Petrobras, the oil company, which has a near refining monopoly in Brazil, reduced diesel prices by 0.125 real per liter in March 2020.
- The move of Petrobras is expected to pressure ethanol prices in the country, the world's 2nd largest producer of the biofuel after the United States.
- Brazil mills are switching from ethanol to sugar due to falling fuel prices and weak curreny in the country.
- Gasoline prices are down 20% at refineries in the country, pressuring profit margins for ethanol in Brazil.



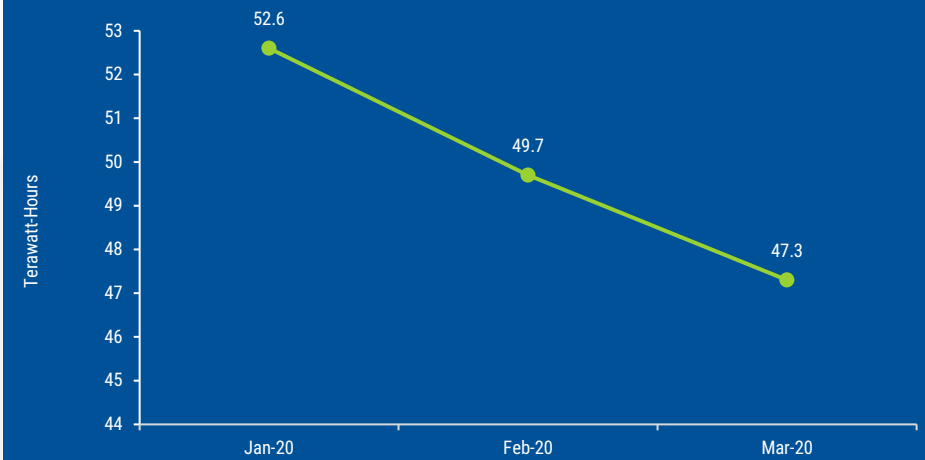
INSTALLED POWER CAPACITY (SOLAR & WIND)

- In April 2020, Brazil's largest fixed-line carrier Oi SA has kicked off a renewable energy project that will cut its operating costs by 400 million reais (USD 77.09 million) per year.
- Amid the outbreak of Covid-19, the Brazilian government has postponed the national energy generation and transmission auctions of clean energy comprising more than 51 GW which were scheduled for May 2020.
- Vestas, a wind turbine maker, closed its factoris in Brazil amind coronavirus outbreak.
- In Latin America, Mexico and Brazil have the greatest capacity of utility-solar PV projects under construction and both are experiencing steep currency declines versus the US dollar.



ELECTRICITY GENERATION

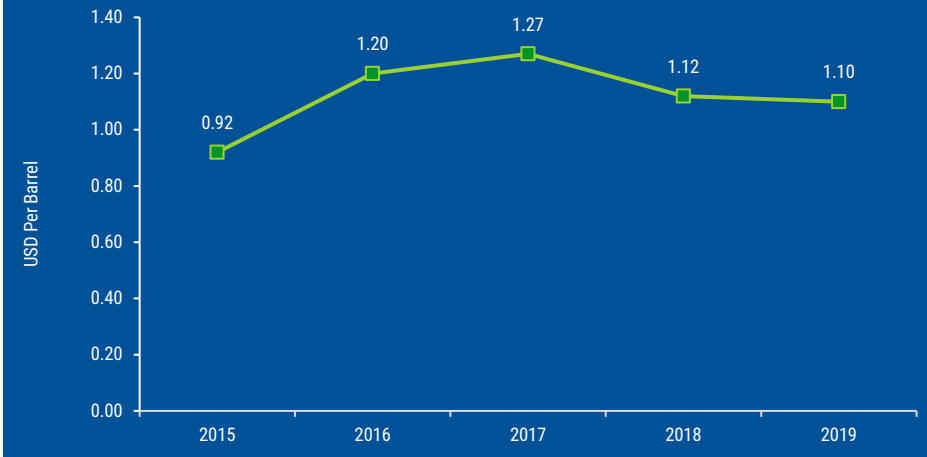
- The electricity demand in Brazil is expected to decrease by 20%percent in 2020, when compared to 2019.
- On March 25, 2020, Brazil's energy regulator, Aneel, announced that energy companies will not be allowed to shut down the electricity of residential customers who fall behind on payments for at least 90 days due to the coronavirus outbreak.
- Iberdrola group's subsidiary in Brazil and its distributors are focusing its efforts on ensuring the electricity supply in its areas of operation (Bahia, Pernambuco, Rio Grande do Norte, interior São Paulo and five towns in Mato Grosso do Sul), concentrating on customers such as hospitals, sanitation companies and prisons.
- Brazil's government is considering an emergency loan package for energy distributors struggling with lower energy use and facing lost revenues because of the coronavirus outbreak.



LONG TERM SCENARIO
(2015 - 2019)

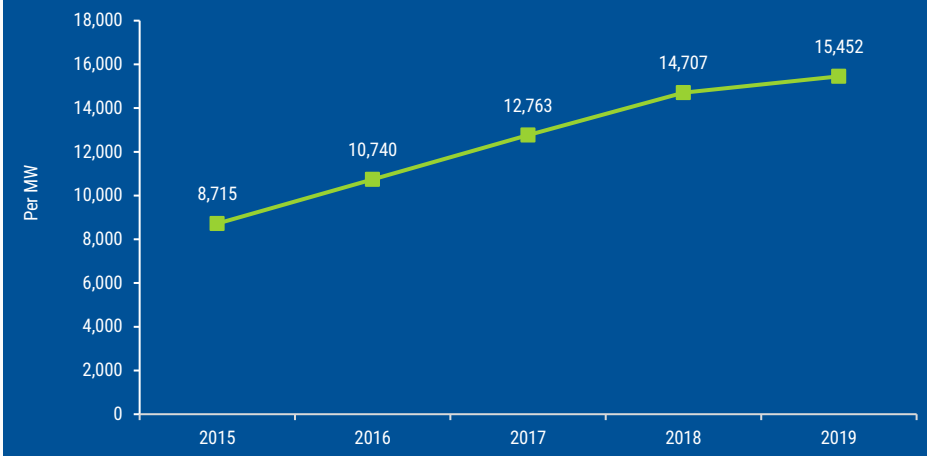
DIESEL PRICE

- Brazil is a net importer of both gasoline and diesel.
- The Brazilian diesel fuel market is currently regulated by the National Petroleum Agency (NPA) and by Federal Law 9478/97 (the Petroleum Act).
- Petrobras, the major oil company in Brazil markets the diesel fuel produced by its refineries to the distributors operating in Brazil or directly to major consumers, such as thermal power plants.
- In 2018, diesel fuel sales in Brazil amounted to 55.6 billion liters, up from 54.8 billion liters in 2017.



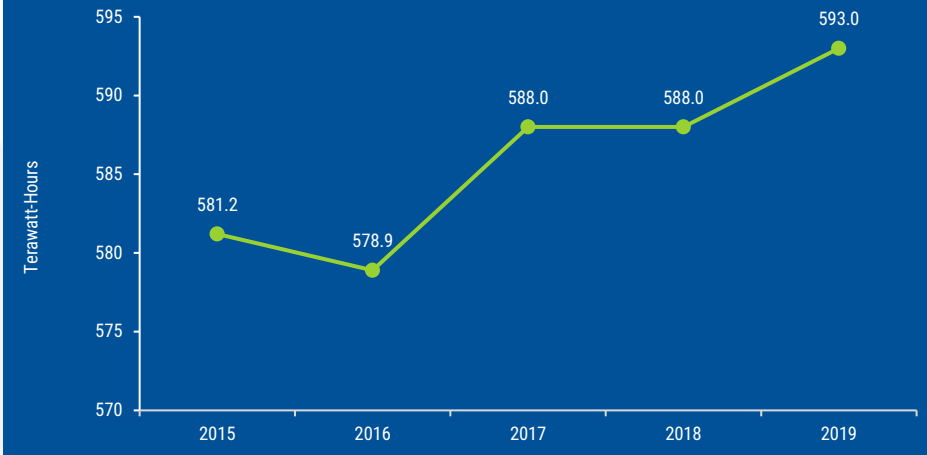
INSTALLED POWER CAPACITY
(SOLAR & WIND)

- Brazil is known worldwide for its ample share of renewable sources in its energy production.
- Brazil's latest 10-year energy plan seeks to maintain this level of hydro generation while increasing the share of non-hydro renewables, particularly solar.
- Brazil expects non-hydro renewables to grow by about 3% per year and reach up to 28% of the domestic energy mix by 2027.
- Brazil currently supports utility-scale PV development through energy auctions conducted by the National Electric Energy Agency with auctions of new and existing projects.



ELECTRICITY GENERATION

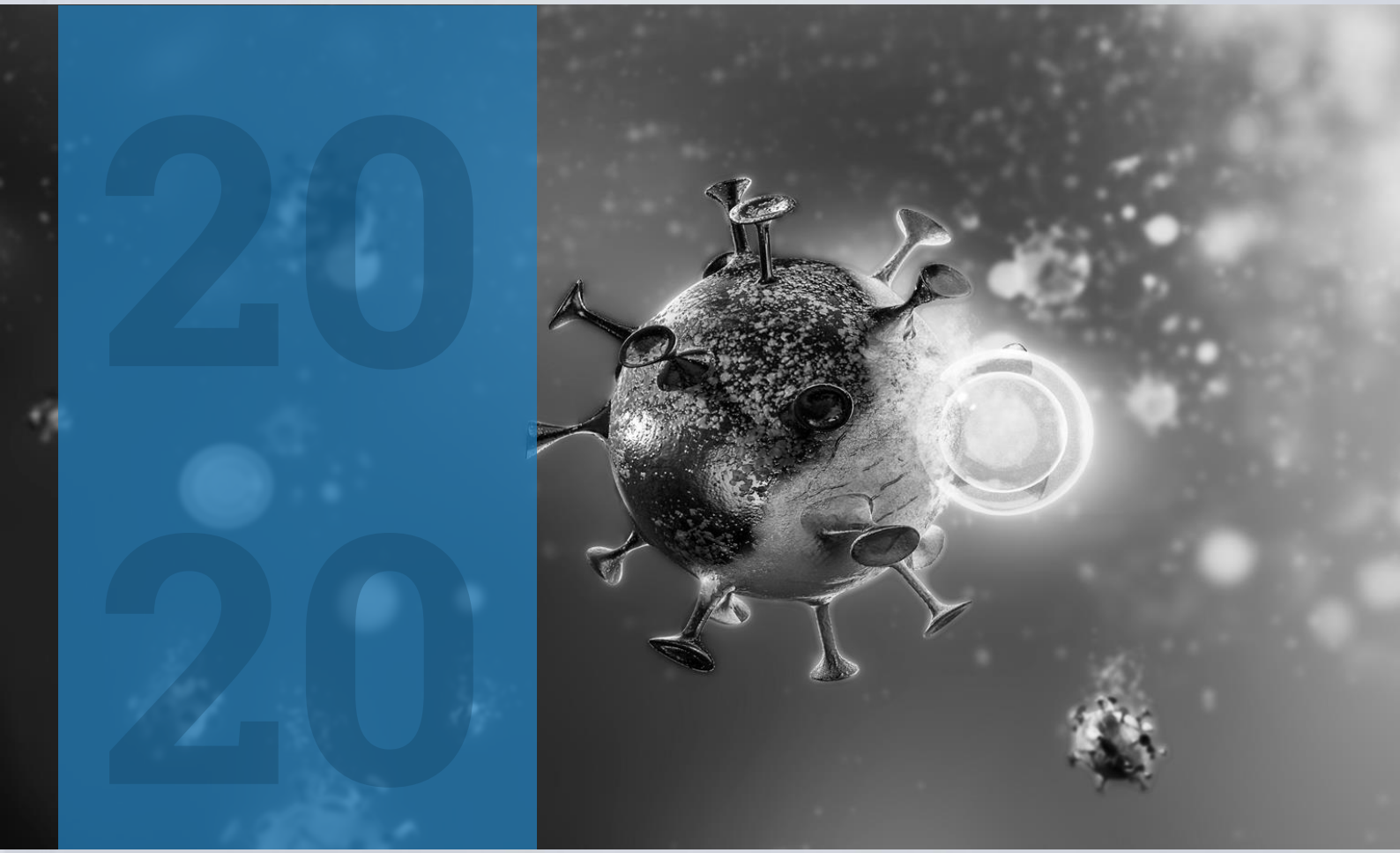
- Brazil generates the third-highest amount of electricity in the Americas, behind only the United States and Canada.
- Hydroelectricity makes up the bulk of Brazil's generating capacity, with the remainder provided by fossil fuel sources, biomass, and small amounts of wind and nuclear.
- Hydropower currently accounts for more than 70% of electricity generation in Brazil.
- In Brazil residential use per person has been stable over the last 20 years.
- During the second half of 2018, six Eletrobras-controlled energy distribution companies were sold to the private sector by public auctions due to an accumulated loss of over BRL22.1 billion in 2017.



COVID 19 IMPACT ON

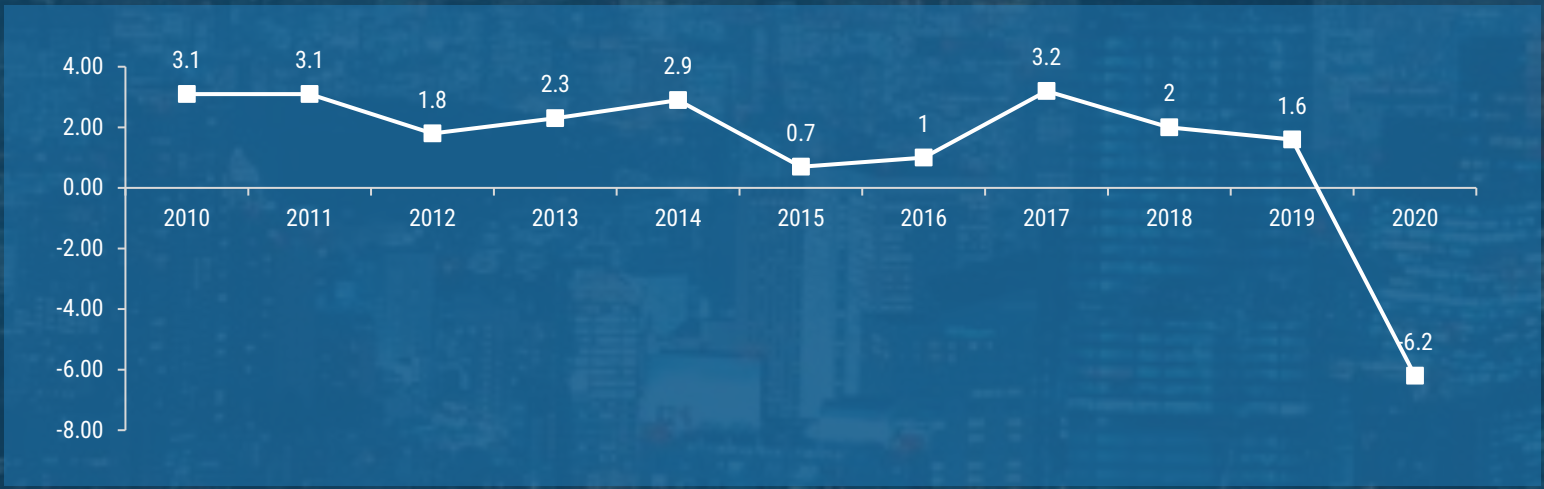
CANADA

ENERGY & POWER INDUSTRY



Canada-Real GDP Growth

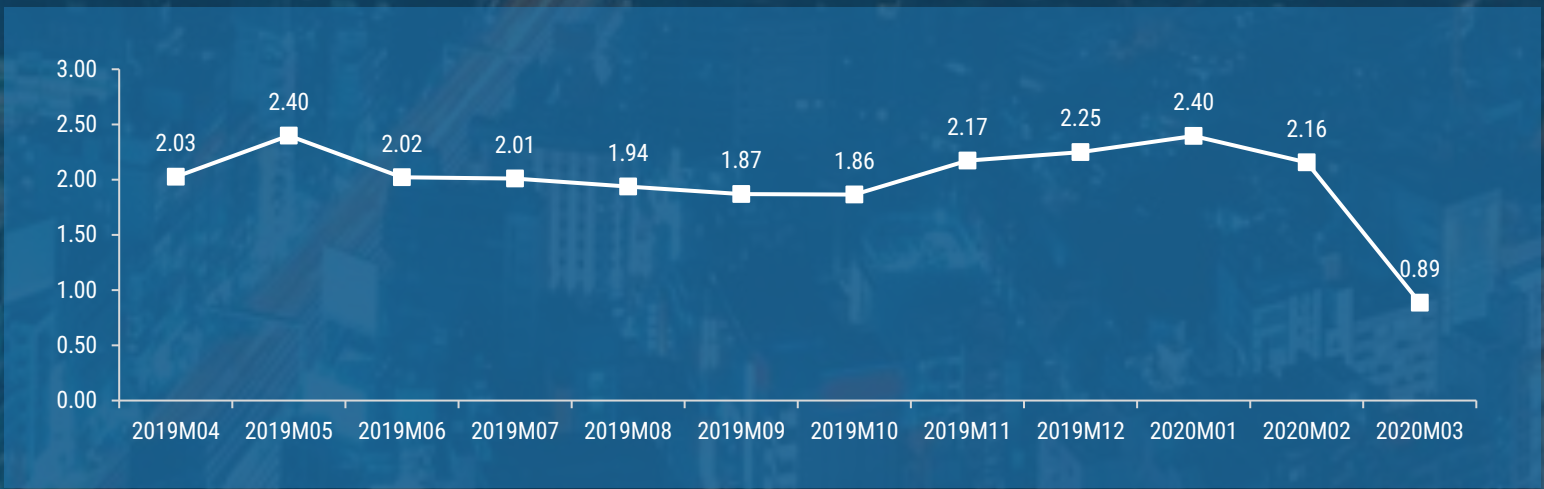
(Annual Percent Change) 2010 - 2020



The Gross Domestic Product (GDP) in Canada expanded 1.50 percent in the fourth quarter of 2019 over the same quarter of the previous year. In Canada, services account for more than 70 percent of GDP. Within services the most important are finance, insurance, real estate, rental and leasing and management of companies and enterprises (21 percent of total GDP); retail and wholesale trade (12 percent), health (8 percent) and public administration (6 percent). Manufacturing accounts for 13 percent of the output and construction for 6 percent. Mining and oil and gas extraction constitute only 4 percent of GDP, yet Canada is a net exporter of energy. Finally, agriculture, forestry, fishing and hunting account for 2 percent of output.

Canada-Consumer Price Index (CPI)

April 2019 - March 2020 (% Change)

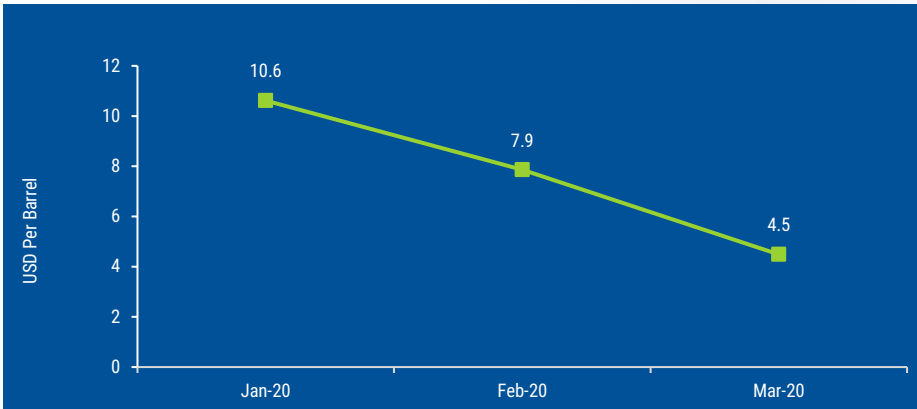


Consumer Price Index CPI in Canada decreased to 136.60 points in March from 137.40 points in February of 2020. The goods and services in the CPI basket are divided into 8 major components: Food; Shelter; Household operations, furnishings and equipment; Clothing and footwear; Transportation; Health and personal care; Recreation, education and reading, and Alcoholic beverages, tobacco products and recreational cannabis. CPI data are published at various levels of geography including Canada, the ten provinces, Whitehorse, Yellowknife and Iqaluit, and select cities.

SHORT TERM SCENARIO
(Jan 20 - Mar 20)

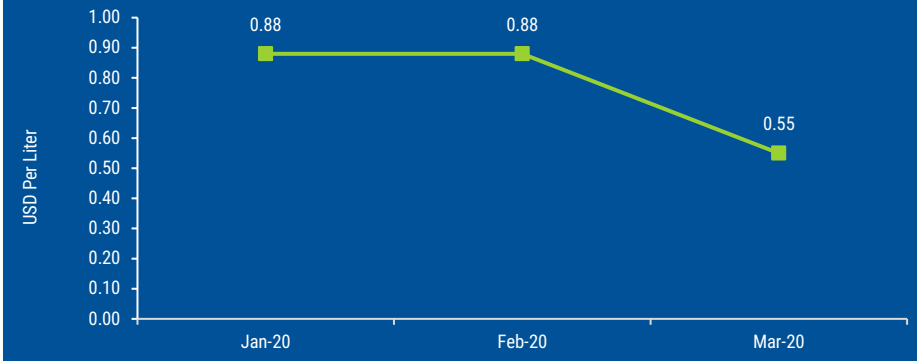
CRUDE OIL PRICE

- As of 9th March 2020, the New York Stock Exchange and the Toronto Stock Exchange temporarily paused trading after the plummeting oil prices caused stocks to plunge at the market open.
- In March 2020, the COVID-19 outbreak probably accounted for a 40% drop in the price of oil, which resulted in rise to a 15-cent per liter decrease on average in Canada.
- Canadian oil companies began shutting down steam-driven oil sands production projects as crude oil prices continue to fall.
- There is a dispute between Saudi Arabia and Russia, where they couldn't meet a resolution about cutting back the oil production.



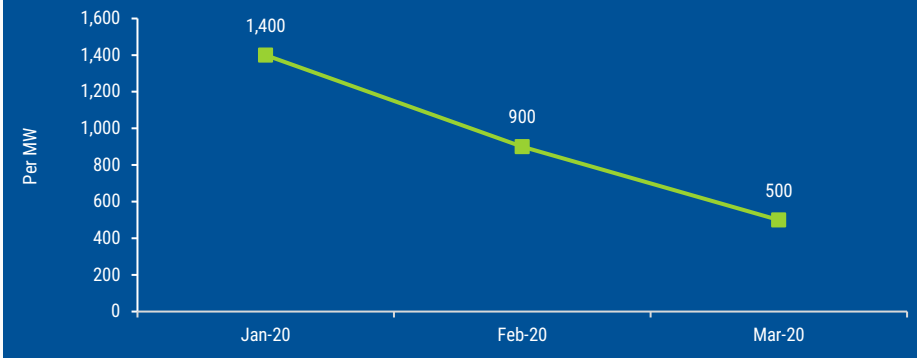
DIESEL PRICE

- The key factor affecting petrol prices is the wholesale oil market.
- In Canada, prices will continue to drop until Saudi Arabia and Russia can come to a resolution pertaining to oil production.
- The integrated companies such as Suncor Energy Inc., Husky Energy Inc., Cenovus Energy Inc. and Exxon Mobil Corp.'s Canadian subsidiary Imperial Oil Ltd. are facing a downturn in demand for gasoline, aviation fuel, and diesel amid virus-related travel restrictions.



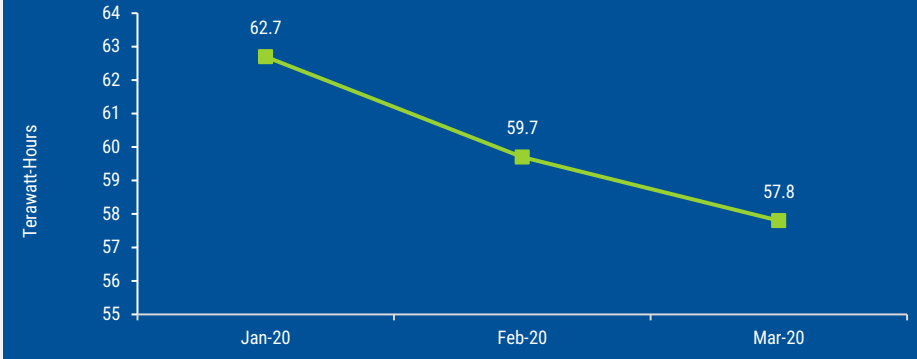
INSTALLED POWER CAPACITY (SOLAR & WIND)

- It is expected that there would not be any significant impact on the Canadian electricity sector due to Covid-19, except that some of the capacity augmentation or renovation works might get delayed.
- In total, Canada imports goods worth USD 48.5 billion from China annually. If any material required for the construction or renovation gets stuck in the supply chain, the respective project would get delayed.
- On 15 April 2020, EDP Renewables North America had set aside USD 300,000 to help mitigate COVID-19 impacts for citizens based near its green energy plants in US, Canada, and Mexico.



ELECTRICITY GENERATION

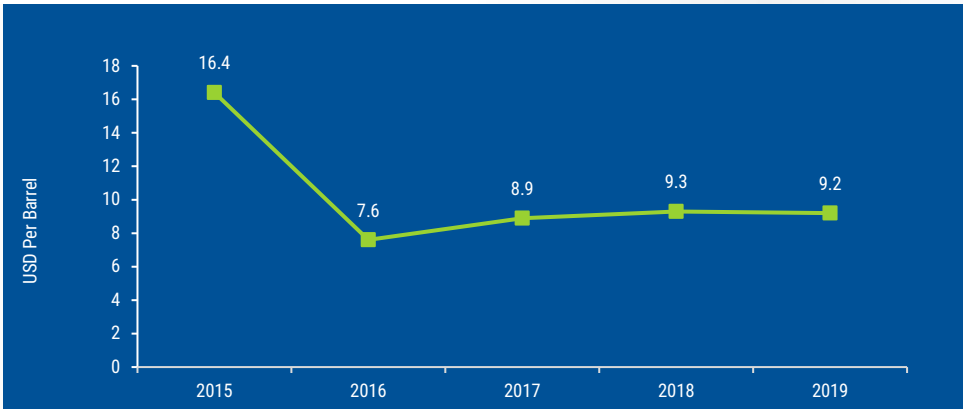
- As per Canadian Electricity Association, the electricity sector currently does not face any technical risk due to Covid-19 pandemic.
- Since, most of the population is working from home, Ontario electricity leaders are discussing options such as the suspension of time-of-use pricing.
- Also, the leaders in Canada are considering introducing tiered-pricing which can control the peak demand spikes in evening hours.
- The key idea behind this tiered pricing to discourage the unwanted usage of power during peak times, and instead try to shift that load to non-peaking times.



LONG TERM SCENARIO
(2015 - 2019)

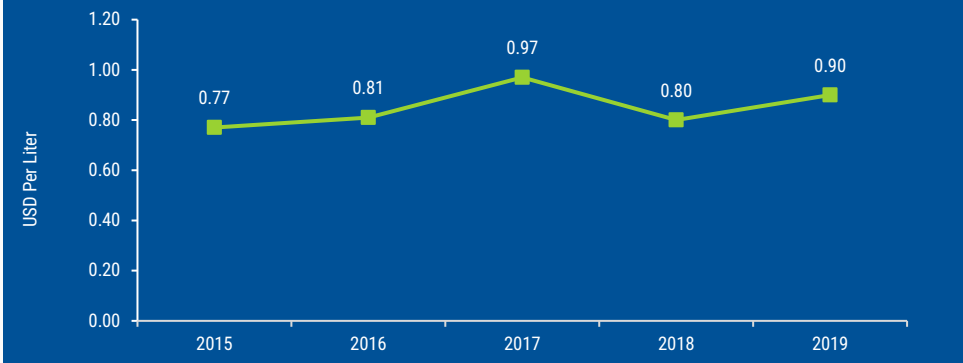
CRUDE OIL PRICE

- Canada is the world's fourth-largest oil producer, extracting around 4.9 million barrels per day.
- Canada's largest oil producing province, Alberta is the hub of Canadian crude oil pipeline systems.
- Canadian oil-sand companies have a high break-even price compared to traditional oil producers because of expensive extraction methods.
- The key oil producers in Canada are Enbridge Inc., Suncor Energy Inc., Imperial Oil Ltd., Canadian Natural Resources Ltd., Cenovus Energy Inc., Husky Energy Inc. , and Parkland Fuel Corp.



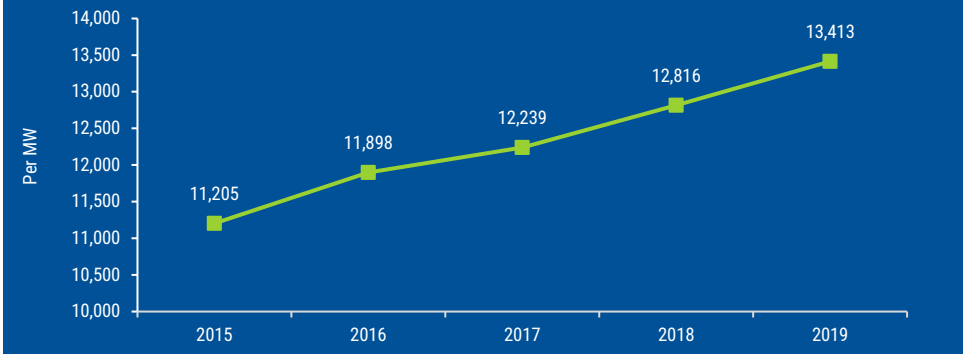
DIESEL PRICE

- Petro-Canada, a subsidiary of Suncor Energy offers diesel fuel in more than 1,100 locations across Canada.
- In April 2019, the Canadian government implemented federal carbon tax program that extended the increase in the cost of diesel fuel for all truckers, including those from the United States, doing business in all 10 Canadian provinces.
- Imperial's Esso and Mobil-branded gas stations, Suncor's Petro-Canada and Sunoco chains, along with Husky and Royal Dutch Shell PLC's self-branded stations, offer the only coast-to-coast gasoline selling networks in Canada.
- The companies in country in the past were able to keep a tight rein on gasoline prices, creating a situation where their downstream sectors made up for losses in the upstream.



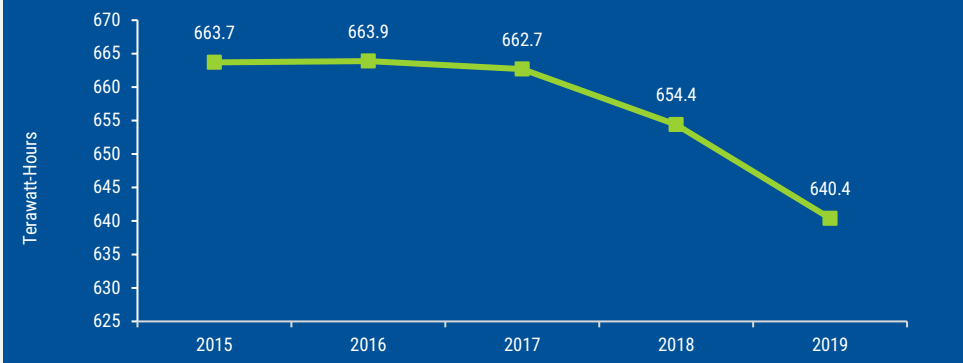
INSTALLED POWER CAPACITY (SOLAR & WIND)

- Renewable energy sources provided about 17% of Canada's total primary energy supply in 2018.
- Wind and solar energy are the fastest growing sources of electricity in Canada.
- In Canada, the renewable energy space is largely driven by provincial government procurement programs and climate policy.
- From 2000 to 2014, electricity sector greenhouse gas emissions declined 40 percent, primarily because of a decision to phase-out coal generation in Ontario.



ELECTRICITY GENERATION

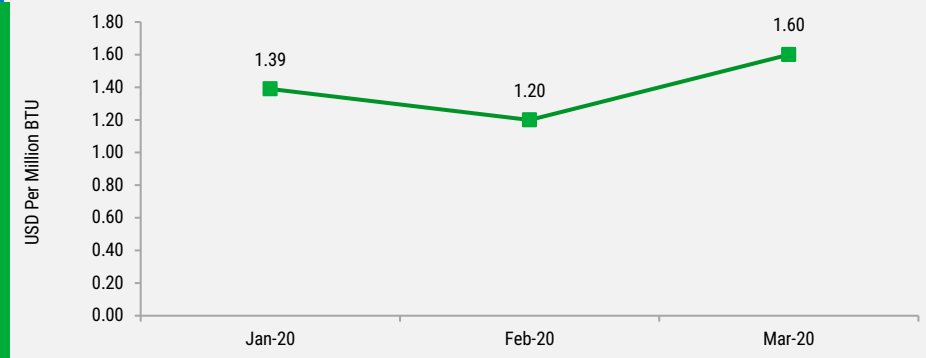
- Canada is 4th in the world for exporting the electricity the country generates as of 2018.
- In Canada, the regulatory environment is centered at the provincial level, which has full authority over local electrical system regulations, policies, and enforcement.
- All jurisdictions aim to reduce existing coal-based generation and replace it with gas and renewable energy.



CANADA - NATURAL GAS PRICES
US Dollars per Million BTU

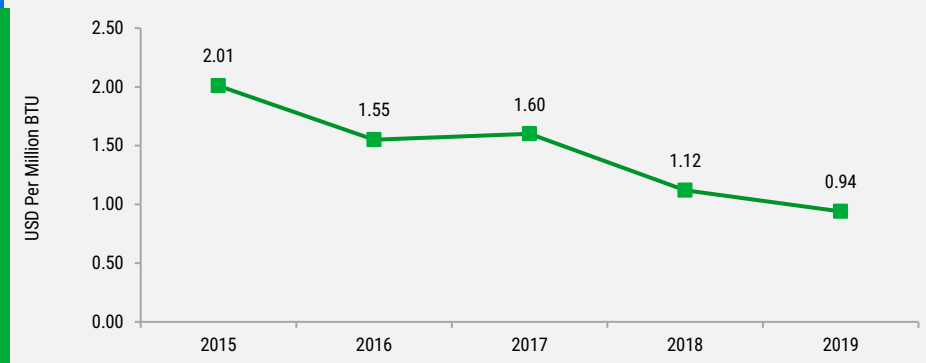
SHORT TERM SCENARIO

- In Canada, the outlook for gas prices is firming up because of reduced drilling activity for oil resulting in less production of gas which comes as a byproduct.
- The Government of Alberta is taking a number of steps to provide economic relief to Alberta's oil & gas industry.
- For example, Alberta government is offering one-year extensions for Crown petroleum and natural gas agreements, oil sands agreements, and Metallic and Industrial Mineral permits that were otherwise set to expire from March 20, 2020 up to and including December 31, 2020.
- As of 23rd April 2020, the spot natural gas traded at Alberta's AECO hub has gained 7.2% compared to March 2020.



LONG TERM SCENARIO

- Canada is the fourth largest producer and sixth largest exporter of natural gas in 2018.
- Canada's natural gas market is heavily integrated with those of the U.S. largely due to the location of supply basins, demand centres, and the availability of transportation infrastructure.
- In 2016, Canada was also particularly hurt by competition from cheap U.S. shale oil when production from those sources was at its height.
- In Canada, most public natural gas companies had a rough earnings year in 2016, followed by some recovery in 2017 and 2018.



Thank You

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