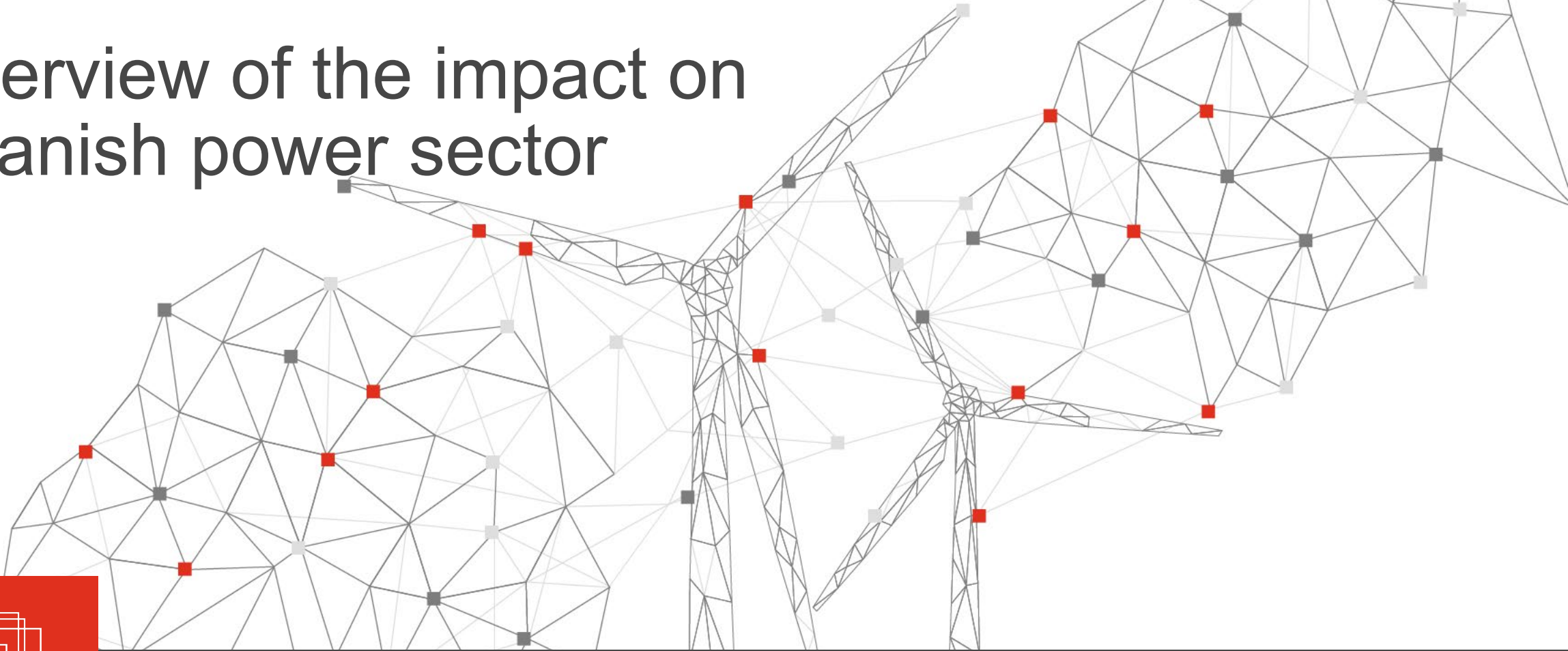


COVID-19

Overview of the impact on Spanish power sector

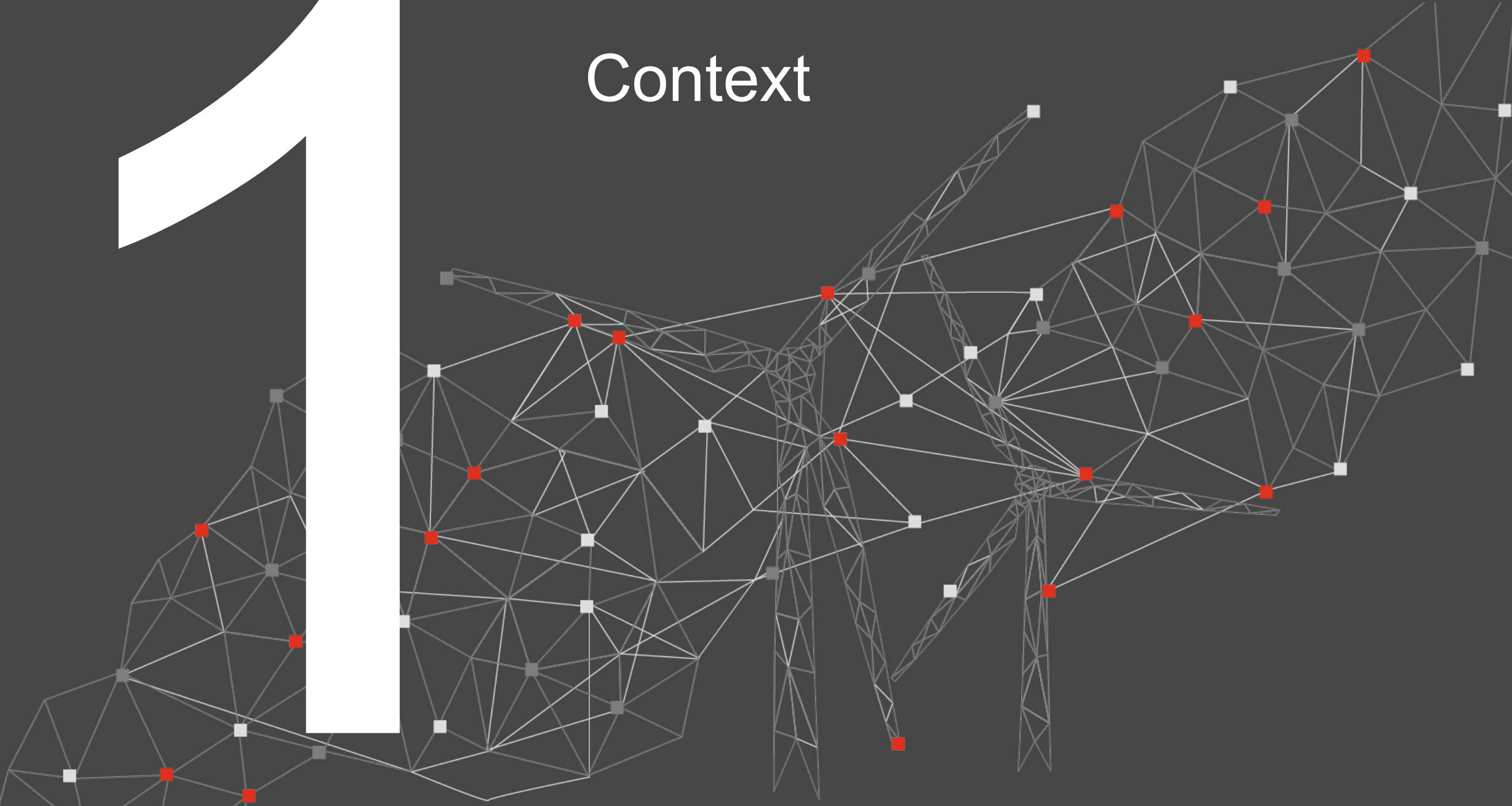


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1. Context
2. Global impact of COVID-19
3. Implications for the power sector
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Context



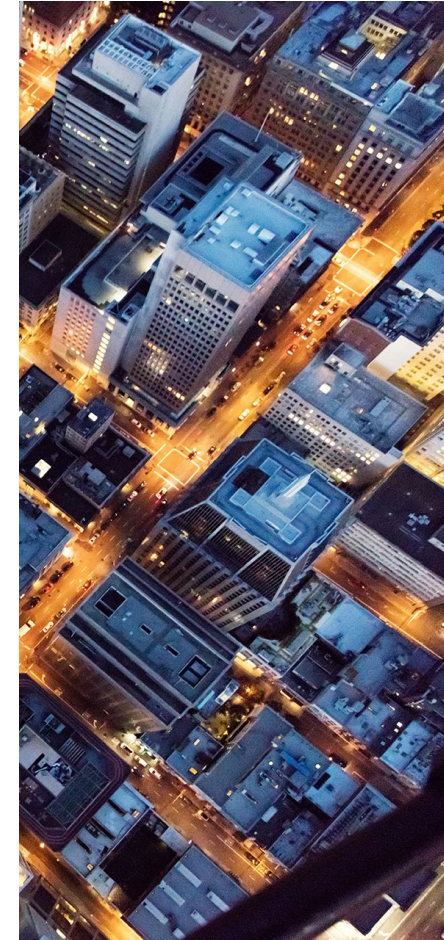
Our base case scenario considers a -10% 2020 GDP evolution in Spain

COVID-19 outbreak vs other similar crisis

- Epidemic outbreaks with a similar profile to COVID-19 have caused serious economic disruptions in the past although in this case a greater impact is expected than in other occasions
 - ✓ In 2003 SARS infected over 8000 people, while COVID has already affected more than 1 million
 - ✓ In China the outbreak was located in a region that represents less than 10% of the population. However the disease has caused a decrease in the industrial production and in the retail activity of 14% and 21% respectively in the whole country during Q1.
 - ✓ Major stock markets have decreased by 30% 2020 YTD

Impact of COVID-19 on the Spanish economy

- Latest economic consensus show GDP growth being hit hard: world GDP could contract by almost 4%, with European economies falling around 7-11%, depending on the country. The impact will be harder on economies either highly dependent on external demand, or with high GDP weight of labor-intensive sectors, like is the case of Spain
- We expect a reduction of the Spanish 2020 GDP in the range of 5%-15% depending on the duration of the lockdown (-10% in our base case scenario). The base case considers that:
 - ✓ Infections peak in late April, and the quarantine is lifted at the end of May
 - ✓ The activity begins to go up in August, partially damaged summer season
 - ✓ Our recovery will be slower than the one observed in China



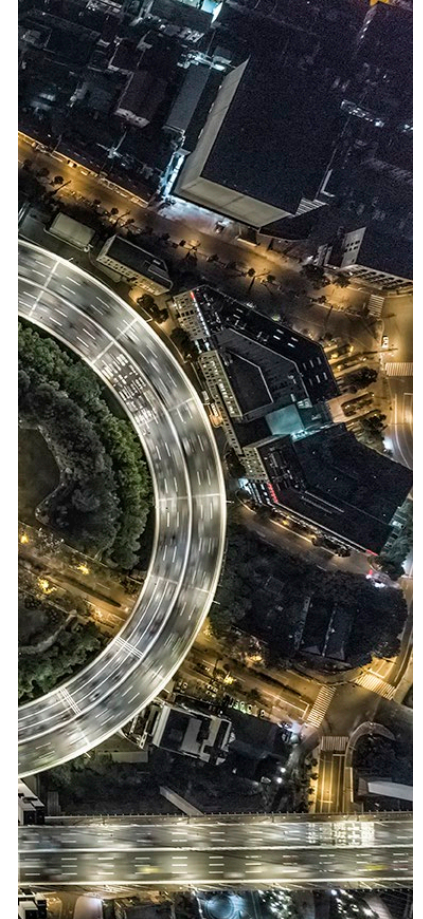
The impact of COVID-19 for the power industry is in the lower-middle range compared to other activities

Effect of COVID-19 in the power demand and pool prices during 2020

- In Spain, several large industrial players have announced the temporary closing of their manufacturing plants while almost all commercial activity has ceased; the impact can already be observed in the 10%-20% week-on-week electricity demand drop after the Government declared the state of alarm
- The combined effects of lower commodity prices and a falling demand is putting a lot of pressure on pool prices. The effect has also been exported to the futures market, with the 2021-annual base load product currently trading below 40€/MWh from the 45€/MWh levels four weeks ago

Impact of COVID-19 on tariff deficit

- The reduction of pool prices and demand also put pressure on power deficit generation. Our initial analysis suggests that the additional 2020 deficit can be almost managed with the historical surplus of the system.
 - ✓ We expect that the tariff deficit in 2020 will be in the range of €700m-€1000m depending on the duration of the crisis and the policies of the government. Considering that during 2019, €200m-€300m of additional deficit has been generated, it means a total of c.€900m-€1300m for the 2018-20 period; this amount could be almost managed with existing surplus (c.€1000m).
- However there are uncertainties that can significantly worsen the final outcome: (i) higher decrease in TPAs due to a longer duration of the crisis, and (ii) an increase in bad debt from final consumers that we have not quantified in our estimation.



The paralysis of the administration, and the difficulties in the supply will also impact the power industry

Delays of public administrations will affect different stakeholders

- Other negative consequence for the power sector is the paralysis of the public administrations. There are relevant regulatory reforms pending approval, and a delay will significantly affect different stakeholders. Some of these include: CHPs allegations on new parameters update, CCGTs expectation around a new capacity mechanism, new status for energy intensive users etc.

Specific issues for renewables

- Our view is that renewables will continue growing in the Spanish market during 2020 due to the strong fundamentals of the sector and its high competitiveness.
- However, the delays in administrative processes and the paralysis of the construction activity will make it difficult for some new renewable facilities to achieve COD this year.
- In terms of supply, the main issue is the low availability of solar panels due to the lack of activity in China. However we expect that the situation will return to normal in Q3-Q4. We also expect difficulties in the supply chain of wind manufacturers, but with a more limited outcome.
- For operating renewable projects the difference between the current pool prices and the estimations used by the government to update 2020-23 parameters can also put pressure in the working capital of companies, especially those with assets that still have a high remuneration for the investment.

Specific issues for retailers

- Commercial companies will suffer the rise of the bad debt. Independent retailers with high exposure to the SME and industrial segments are the ones most affected.
 - ✓ Large clients have suspended contracts due to the crisis, even if they have fixed volumes committed
 - ✓ The government has ruled forcing utilities to maintain the service during the state of alarm even if the domestic clients do not pay their bills

Other impacts of COVID-19 include limitations for foreign investors for M&A, and tougher financing

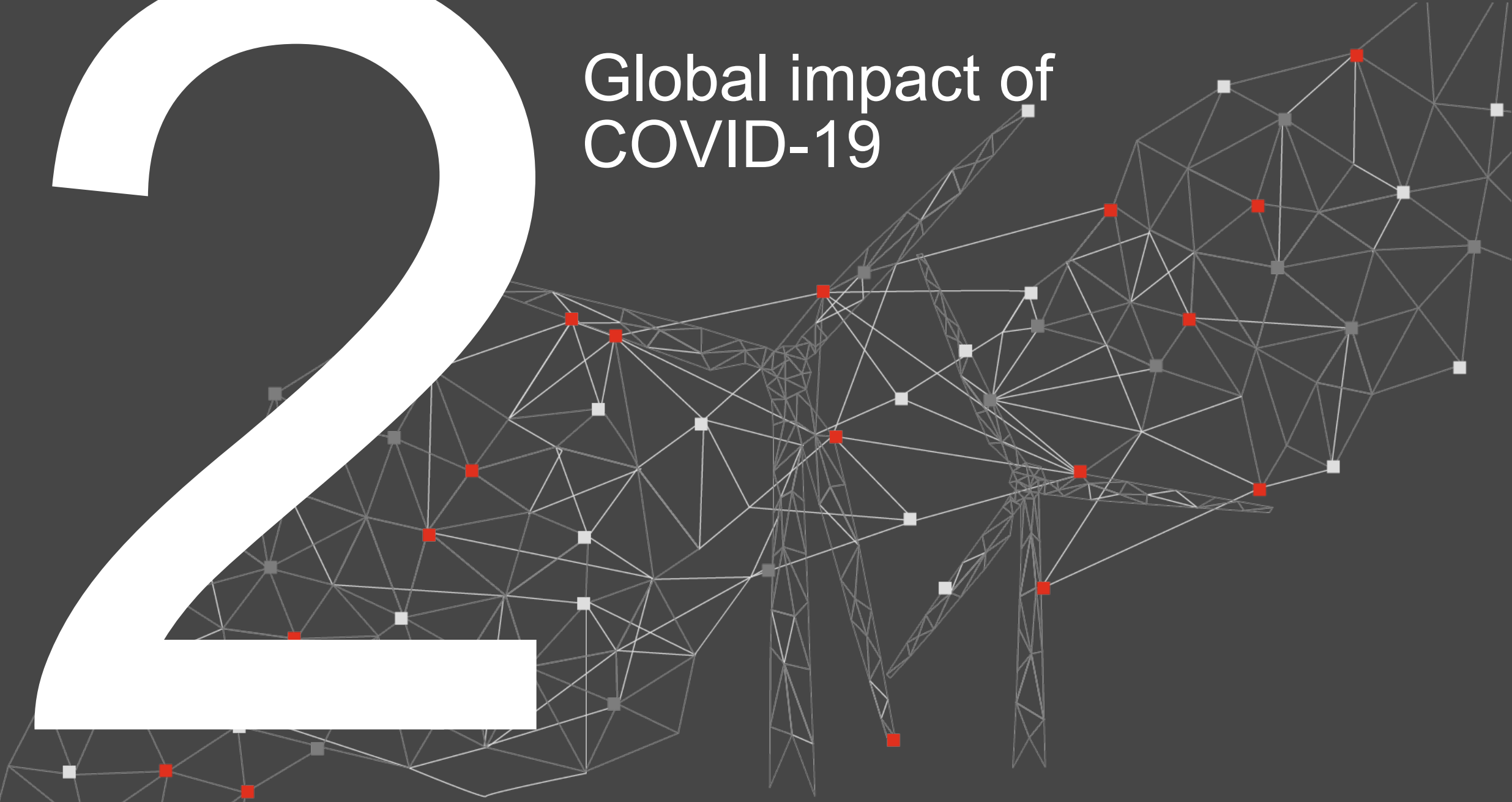
Administrative authorization for M&A in the power sector

- Foreign direct investments of 10% or more require an administrative authorization in the power sector
 - ✓ The lack of authorization or performing the investment prior to its obtention is considered a serious infraction (with fines that may be as high as the economic content of the transaction and not less than €30,000 and private or public warnings).

Financing environment for greenfield renewable assets

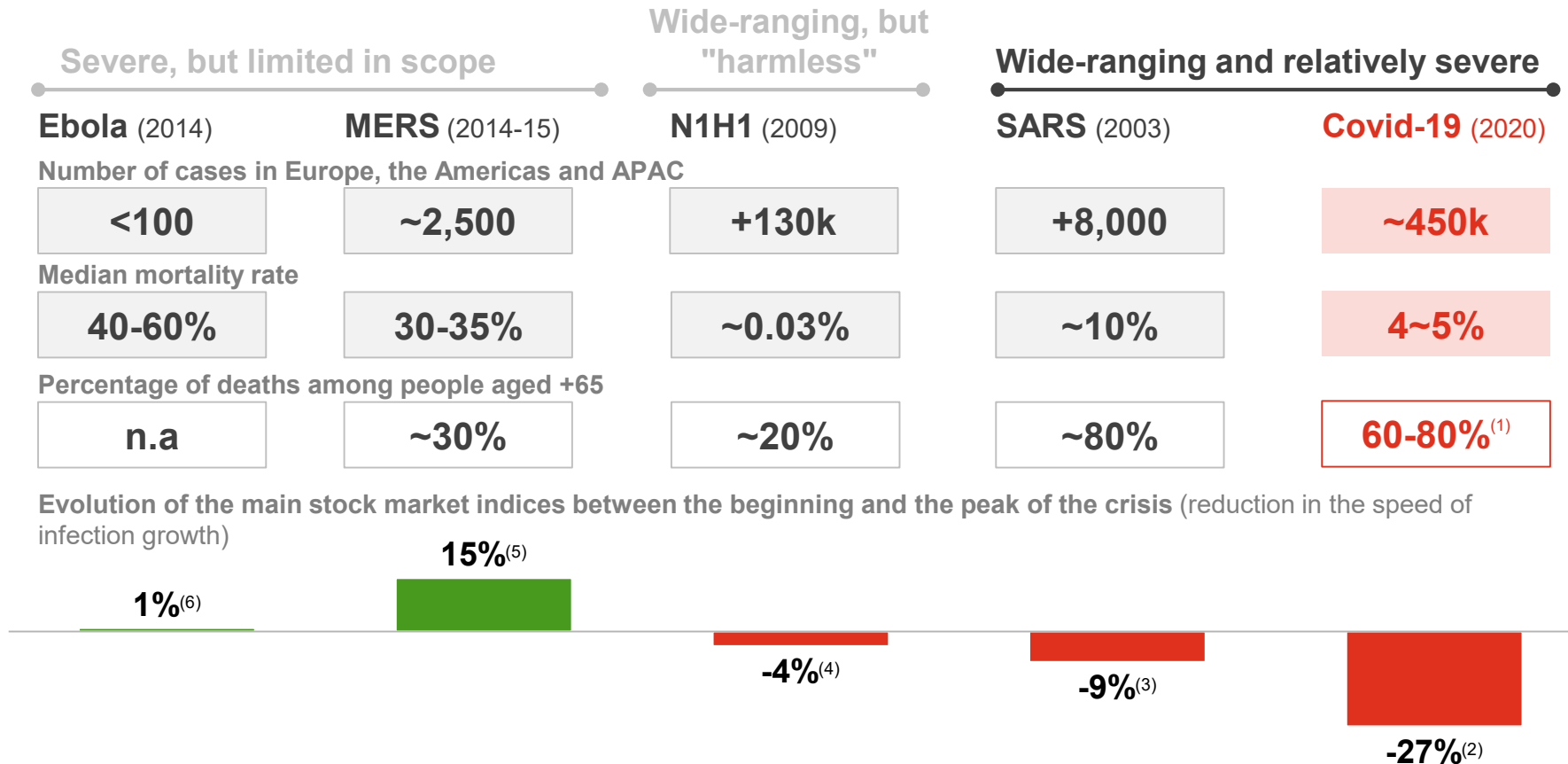
- COVID-19's effects on the financing terms result in an increase in the spreads and the guarantees
 - ✓ We are observing some delays in the financial closing, especially for those projects with a high exposure to merchant.
 - ✓ Off-takers are pushing sponsors to obtain lower prices in the PPAs (from 36€/MWh-38 €/MWh to €30 MWh)
 - ✓ Lenders are demanding higher guarantees and larger spreads for the debt

Global impact of COVID-19



Epidemic outbreaks with a similar profile to COVID-19 have caused serious economic disruptions in the past...

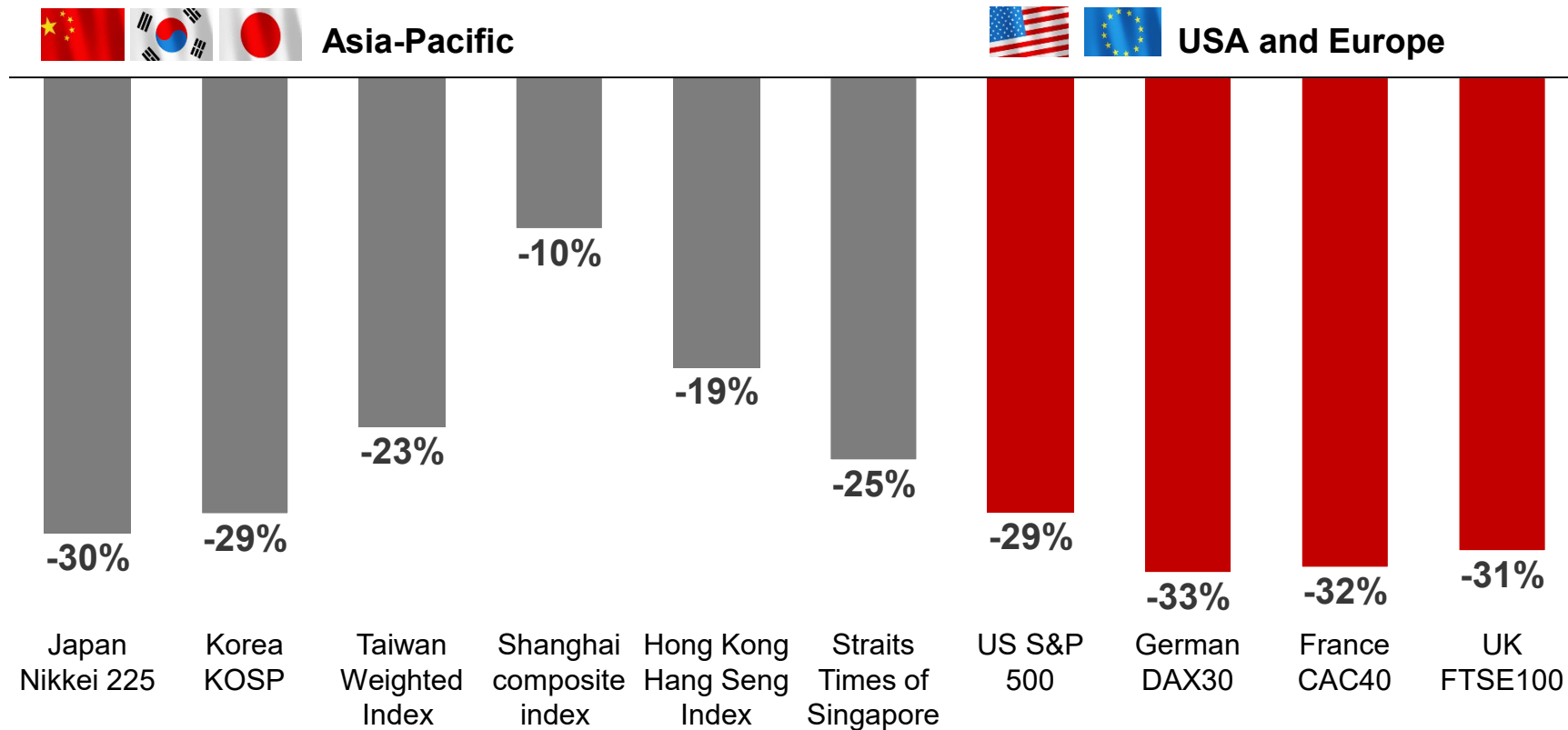
Major epidemic outbreaks



(1) Considering figures reported in Korea, Italy, Spain and China; (2) Considering the impact on the S&P500 from the first WHO report (22nd January 2020) to the current period; (3) Considering the drop in the MSCI China from the first case reported in China (10th Feb 2003) to the last day 100 new infections were reported (17th April 2003); (4) Considering the impact on the MSCI Mexico from the first case reported in Mexico (12th March 2009) to the peak of the crisis in Mexico (mid May 2009); (5) Considering the evolution of the S&P500 from the first WHO report (3rd January 2014) to the first week of slowdown of cases (19th May 2014); (6) Considering the evolution of the S&P500 between the first WHO report (24th March 2014) and the peak of infections in Africa (15th October 2014)

...although in this case a greater impact is expected than on other occasions

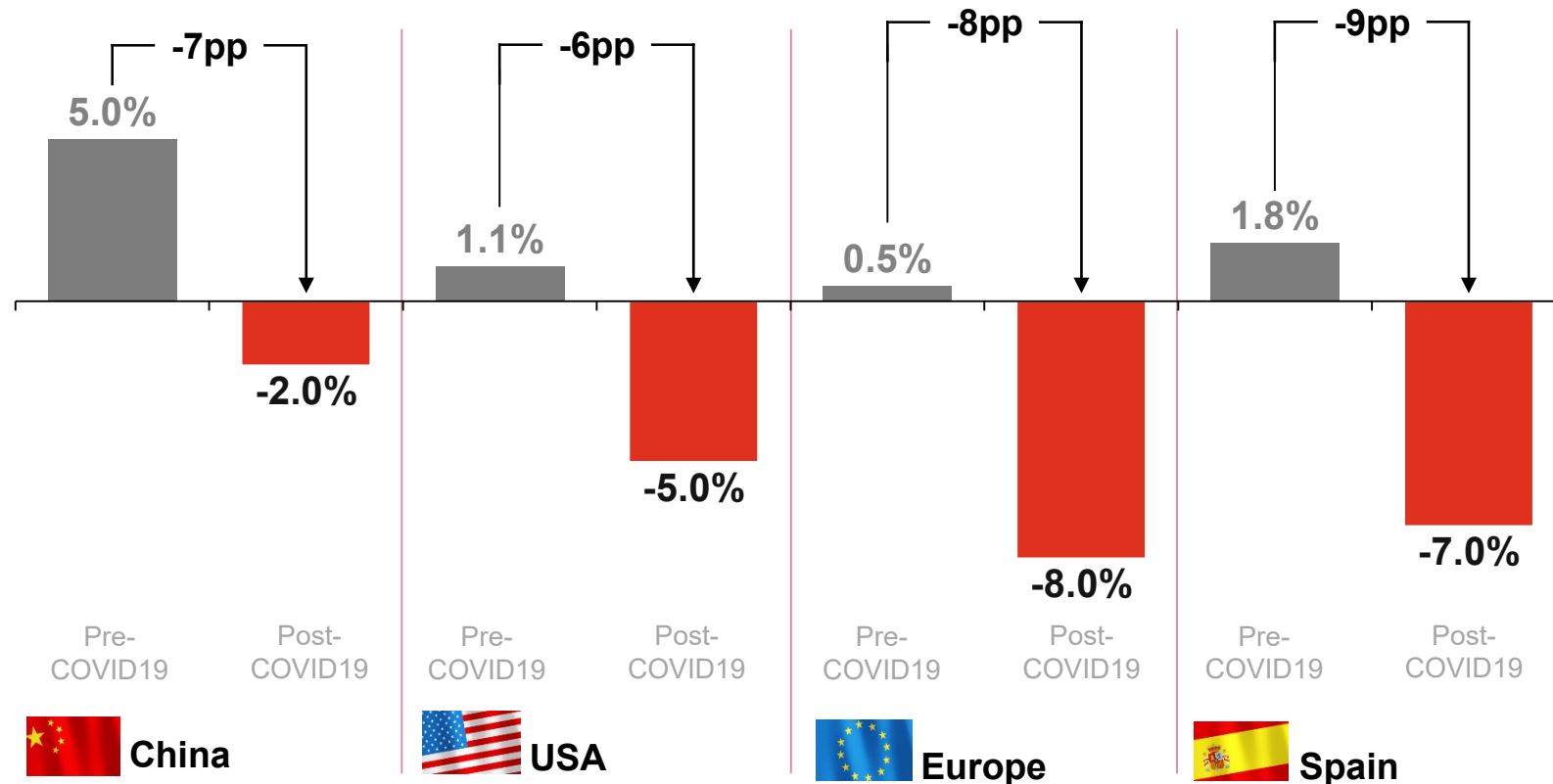
COVID-19 impact on the global economy [Major stock markets YTD performance, Jan-March 2020]



(1) Measures the evolution of a set of high-risk bonds
Source: Bloomberg, NBSC

The economic consensus is a general slowdown, with an expected decreased of 9 p.p. for Spain

Main forecasts of GDP evolution by region - pre- and post-COVID-19



Source: consensus of estimates from different analysts (Goldman Sachs, Deutsche Bank, Oxford Economics, y otras), between 15 and 18 March

PwC base case is aligned with market consensus, with a central case that considers a -10% GDP growth in 2020

Scenarios of impact on GDP – General considerations

	“Optimistic”	Base case	Crash-case
GDP decrease [vs 2019]	-4%	-10%	-15%
1 Duration of the quarantine	Peak of infections in mid-April, quarantine is lifted in early May	Peak of infections in late April, quarantine is lifted in late May	Peak of infections in mid-May, quarantine lifted in mid-late June
2 Impact during the worst month	30-35% We assume a "softer" impact, aligned with the data from China, adjusted to the Spanish economic reality	45-50% We assume a more serious impact than in China, according to "early indicators" for Europe and America by sector	45-50% We assume a more serious impact than in China, according to "early indicators" for Europe and America by sector
3 Recovery profiles	The activity begins to go up in June, although it does not "recover" until July-August	The activity begins to go up in August, partially damaged summer season	Activity begins to pick up in September, but does not normalize until 2021

Note: the impacts on GDP have been calculated with the following methodology. For each sector, its monthly weight within GDP has been estimated based on (a) the sectorial value added data provided by the INE and (b) monthly activity indicators provided by the INE and other organizations. For each month, starting in April, a series of "peak" activity reductions have been applied to each of the sectors, for each month that there is quarantine. For March we have estimated that the impact will be approximately 50-70% of the April fall. After the quarantine period, each sector recovers following a series of "type" curves, according to their activity profile, socioeconomic characteristics, and dependence on domestic and foreign demand. Activity recovers progressively, following these curves, until it reaches a run-rate growth rate, estimated as the median monthly growth for the last five years.

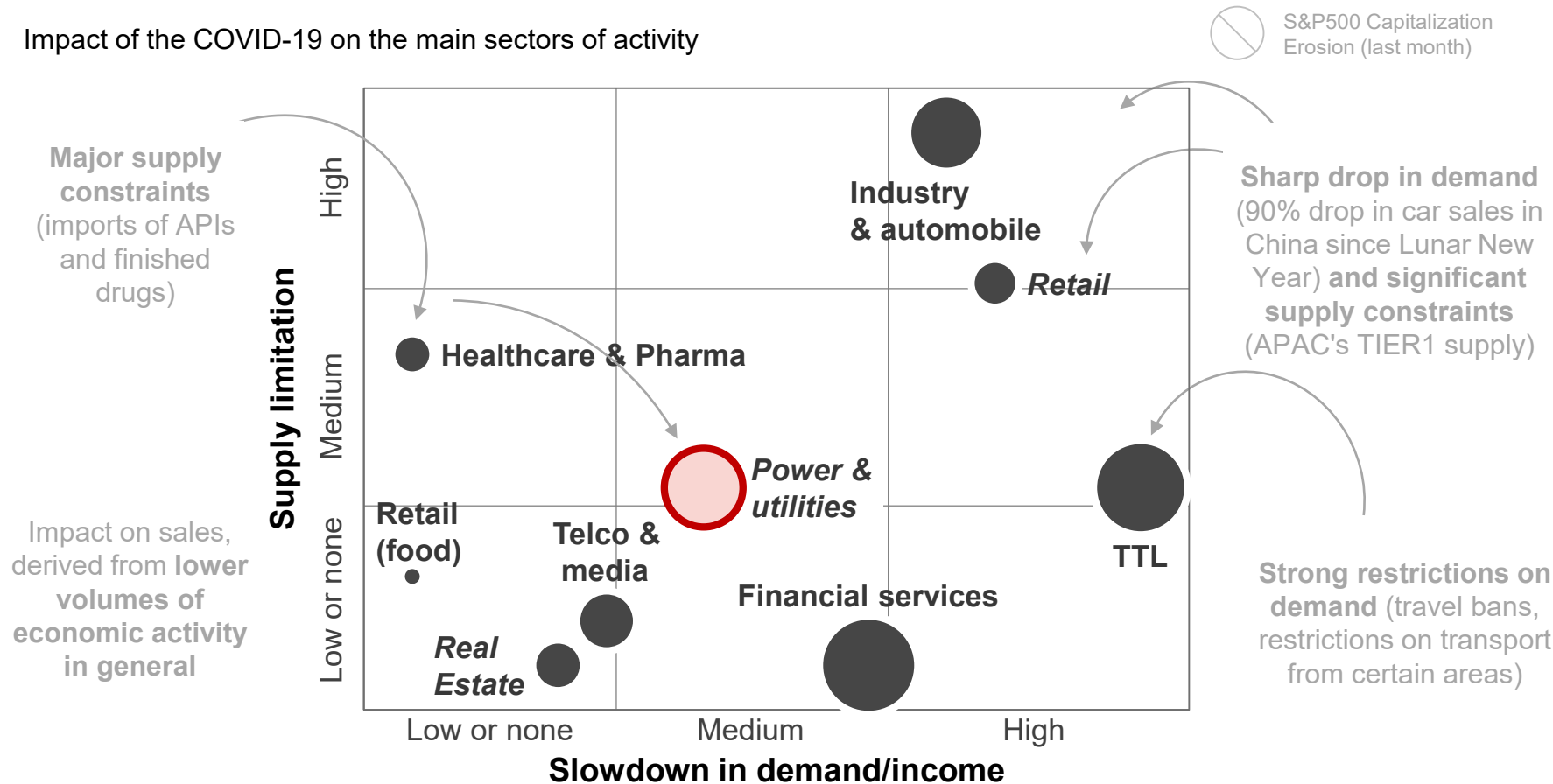
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Implications for the
power sector



The impact of COVID-19 for the power sector is in the lower-middle range...

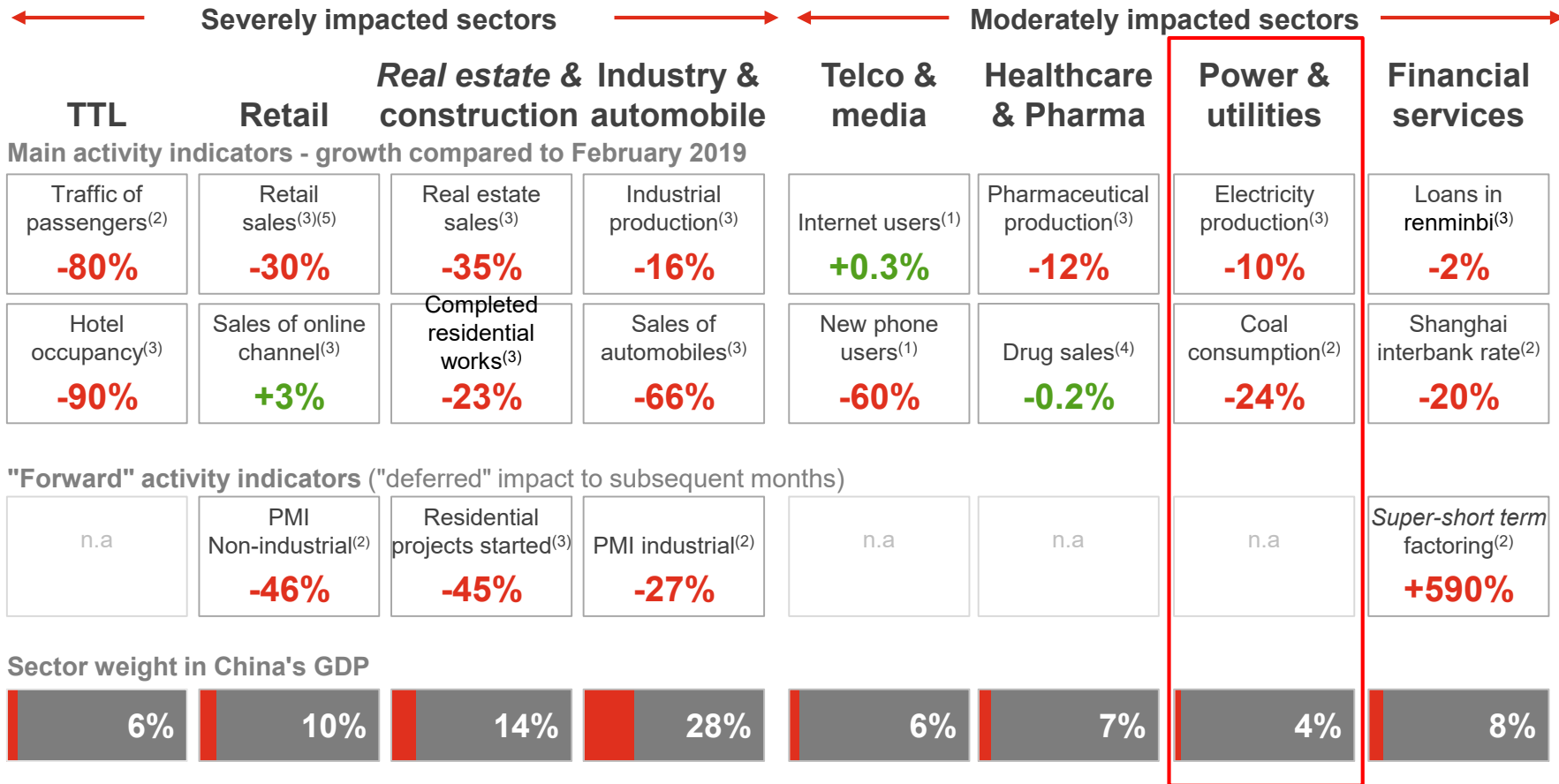
Impact of the COVID-19 on the main sectors of activity



Unfavorable market conditions can magnify cash flow stress or excess debt

...with the retail and tourism sectors being the most affected ones in China

Main activity indicators by sector in China 🇨🇳 - impact after 55 days of quarantine



(1) Data for January (2) Data for February (3) Data for January and February; (4) Includes traditional and western medicine (5) Excludes automotive, food and pharmaceuticals
Sources: National Bureau of Statistics, Transportation Ministry of China, WIND, China Telecom Corporation Ltd.

COVID-19's effects on the Spanish power sector are a demand shock of and falling pool prices...

Main energy and power variables impacted by COVID-19

Power demand

- The **strict measures** taken by multiple countries across Europe to restrain the virus spread, including lockdowns, is having a **large impact on the overall electricity demand** across the continent
- In Spain, several large industrial players have announced the temporary closure of their manufacturing plants while almost all the commercial activity has ceased; the impact can already be observed in the **10%-20% week-on-week electricity demand drop** after the Government declared the state of alarm.
- The fall of electricity demand is also affecting the demand / supply balance of other commodities, such as natural gas and carbon allowances, since CCGTs and other fuel-fired plants are experiencing lower utilization rates

Commodity prices

- Gas prices in Europe were already at record low levels prior to the COVID-19 crisis, limiting the downside risk
- Carbon allowances prices in Europe (ETS) suffered a price crash following the COVID-19 crisis, falling to c.15€/ton from 23€/ton levels at the beginning of March

Pool prices

- The combined effects of lower commodity prices and a falling demand is putting a lot of pressure on pool prices
- The effect has also been exported to the futures market, with the 2021-annual BL product currently trading below 40 €/MWh from the 45€/MWh levels four weeks ago

...under this scenario, public administrations have limited margin to implement new actions

COVID-19 impact on delaying regulatory measures highly demanded in the power sector



Update of the new parameters for the 2020-23

- CHPs have been largely affected by the update of the parameters for the period 2020-23. In this context, the claims and allegations from the sector will be delayed threatening the economic sustainability of many facilities.
- CHPs will also suffer from the downturn of the industrial activity



Regulation for energy intensive industries

- The ministry had the objective of approving a new regulatory framework for energy intensive industries in Spain.
- The delay in the approval of a new mechanisms will impact a sector highly affected by the economic downturn and the restrictions decided by the government



Capacity payments

- The ministry expected to start the definition of a new capacity mechanism coherent with the EU legislation.
- This action was key for the sustainability of the CCGTs in Spain, especially in a context of low demand



Structure of TPAs

- In this context, modifications to promote self consumption through an increase in the variable terms seems more difficult due to the impact that this measure would have on revenues of the system

1) Includes other law 15/2012 taxes; 2) Includes other TPA tolls (self-supply, generation...), capacity revenues...; 3) Includes pre-2013 deficit repayment, capacity payments...; Source: CNMC; Strategy& analysis

The limitation of 10% in investments for foreign investors could reduce M&A activity and the normal operation of the capital markets in a sector that requires large amounts of investments

For the renewables segment, ready-to-build or under construction projects could suffer delays

COVID-19 impact on the RE industry



Delays for RE projects that planned to reach COD in 2020

- All administrative procedures are expected to suffer delays, slowing down the development (permitting) process of new RE assets
- Additionally, RE assets could also suffer delays during construction (components' logistic or supply issues)



Downward pressure on PPA prices following pool prices' decrease

- The price signal provided by both pool and futures prices heavily impact on the PPA industry
- Off-takers use these price signals to calculate the implicit PPA savings, and therefore, in a low pool price context, they put downward pressure on the PPA price



Pressure on the working capital of regulated brownfield RE assets

- The 2020-2022 remuneration parameters were calculated using "overestimated" pool prices (c.50-55 €/MWh compared to the current c.35€/MWh)
- These differences will be compensated in 2023, but put pressure on the assets' current working capital



More uncertainty around the potential launch of new RE auctions

- The Spanish gov't announced in February that it planned to hold annual 3-4GW renewable auctions from 2021 onwards
- However, without the approval of the Climate Change Law it is not possible to call new auctions, leading to potential delays from the original calendar

An increase in bad debt is the main challenge for power retailers

Actions of the government in the power sector with impact on retailer companies

Domestic clients

- **Expand the scope of the social bonus** to employed workers who have lost their employment and self-employed who have ceased their activity as a result of the coronavirus. For Consumers under social bonus the **suspension of supply** in the event of non-payment of the electricity bill is prohibited.
- It is **prohibited to suspend the supply of electricity to domestic consumers** in their **habitual household** due to non-payment of the receipt, while the state of alarm in which we find ourselves is in force

SMEs and industrial clients

- Companies they may benefit from the following two easing measures:
 - They **may temporarily suspend or modify their supply contracts**, or extensions of such contracts, to contract another alternative offer with the marketer that supplies them, in order to adapt their contracts to their new consumption guidelines, **without any charge or penalty. It has a large impact in the case of clients with take or pay clauses with committed volumes**
 - They may modify their contracted power or the access toll, although these conditions would have changed in a period less than the previous twelve months.
- As soon as the state of alarm ends, these amounts owed by consumers to the marketers will be regularized in equal parts in the invoices that are issued during the period of the following six months, prohibiting the change of retailer
- As an aid to retailers whose income is reduced as a result of the application of these measures, they will be allowed to request the guarantees for financing defined in Royal Decree-Law 8/2020.

Foreign direct investments of 10% or more require an administrative authorization in the power sector

Hot topics on energy transactions and COVID-19

Royal Decree 8/2020, of March 19th, of the health crisis situation caused by COVID-19

Suspension of the regime of liberalization of certain foreign direct investments i.e. investments made by non EU investors or UK investors in certain sectors of with stakes of 10% or more or if it effectively participates in the investment's managements.

1. Change of the legal regime of capital movements and economic transactions abroad which suspends the liberalization regime of foreign direct investments in Spain made in sectors affecting public order, public safety and public health.
2. This includes among others:
 - Critical infrastructures, whether physical or virtual (including energy), as well as land and real estate that are key to the use of such infrastructures;
 - Critical technologies and dual-use items including energy storage; and
 - Supply of essential inputs, in particular energy, understood as those that are regulated by Law 24/2013 of 26 December on the electricity sector and Law 34/1998 of 7 October on the hydrocarbons sector;

Impact on project development

- This suspension subordinates the performance of such investments to obtaining the corresponding administrative authorization based on the provisions contained in Law 19/2003.
- The lack of authorization or performing the investment prior to its obtention is considered a serious infraction (with fines that may be as high as the economic content of the transaction and not less than €30,000 and private or public warnings).
- This may negatively impact on the timing of the transactions.

COVID-19's effects on the financing terms result in an increase in the spreads and the guarantees

Impact of the COVID19 on the Project Financing

Market situation:

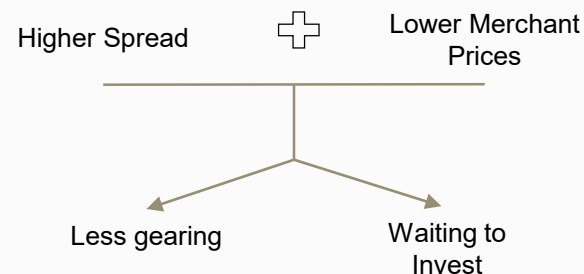
- It is mainly marked by the uncertainty and volatility of energy prices and financing conditions
- There is liquidity in the financial markets, since the Central Banks have injected more resources into the system, lowering the cost of money (partially offsetting the spread increase)
- The energy auction projects have been financed, so the efforts of the investment community are, primarily, focused on financing projects under PPA and merchant risk structures

PPA Scheme

- ☑ In this environment of uncertainty, with the pool showing low values, there is a downward pressure in the PPA prices.
 - Before COVID 19, prices were in the range of 36€/MWh-40€/MWh depending on: the technology, duration of the contract, COD etc.
 - *After COVID-19 we expect delays in new financial closings, and it is still soon to have a view of what will be the price*
- ☑ Guarantees for financing are beginning to tighten, especially, if the Offtaker does not have an investment grade credit rating
- ☑ Additionally, spreads are increasing as a result of the Offtaker's exposure to credit risk and the volatility of the financial markets

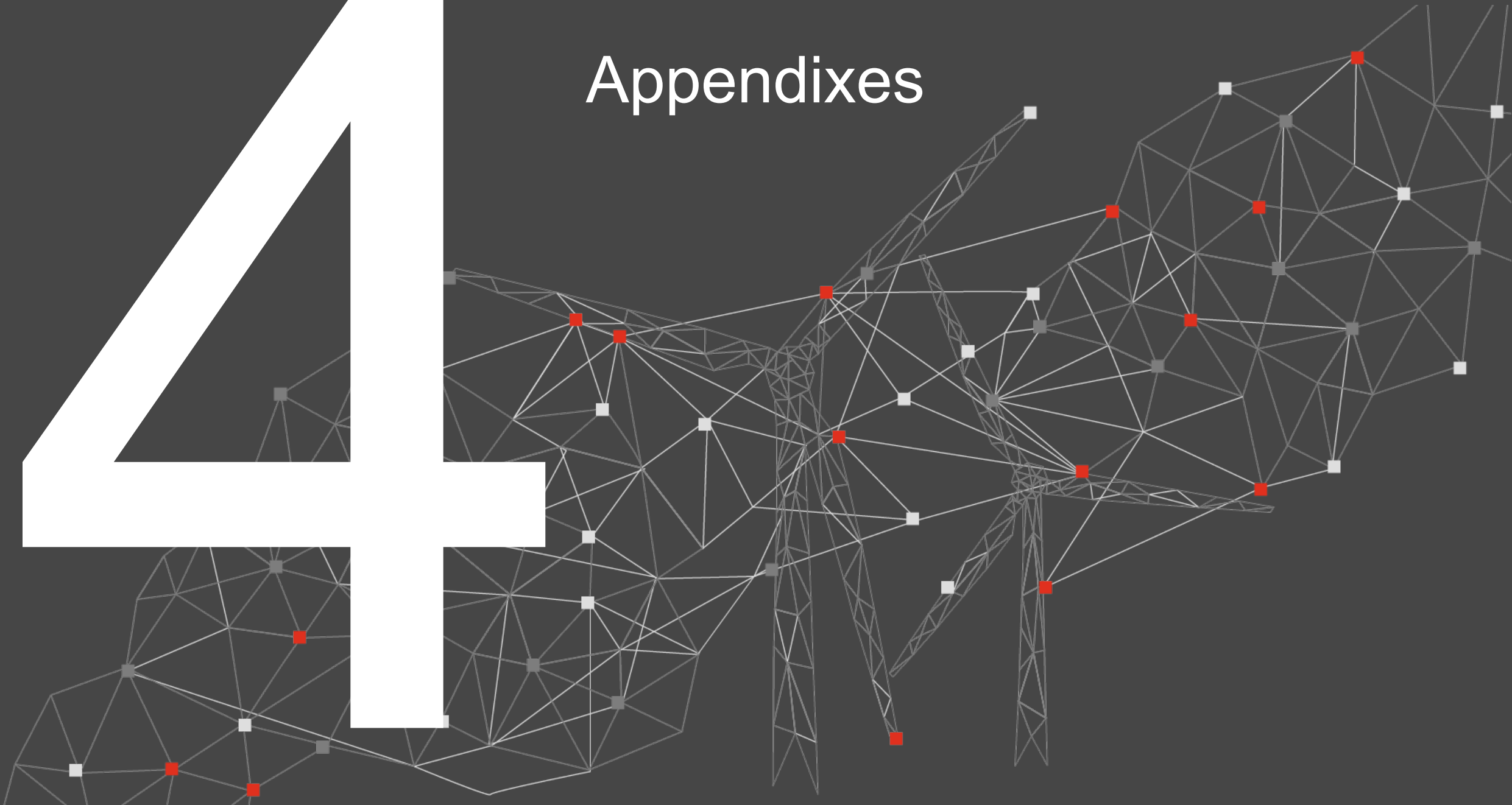
Merchant

- ☑ Projects with merchant risk are experiencing delays in obtaining finances
- ☑ Some of the entities are waiting for the situation to be regularized in order to participate in new projects
- ☑ The combination of:



Appendixes

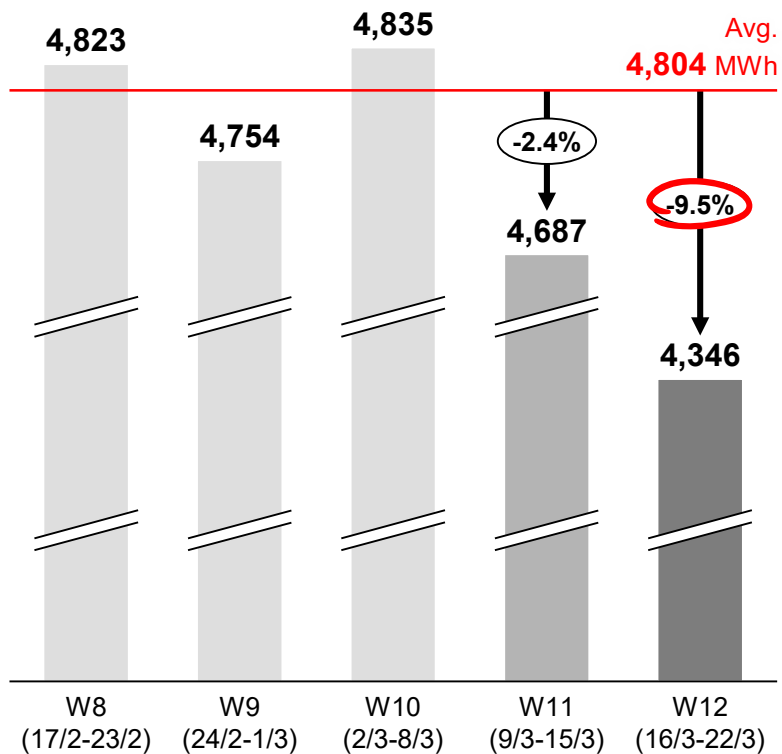
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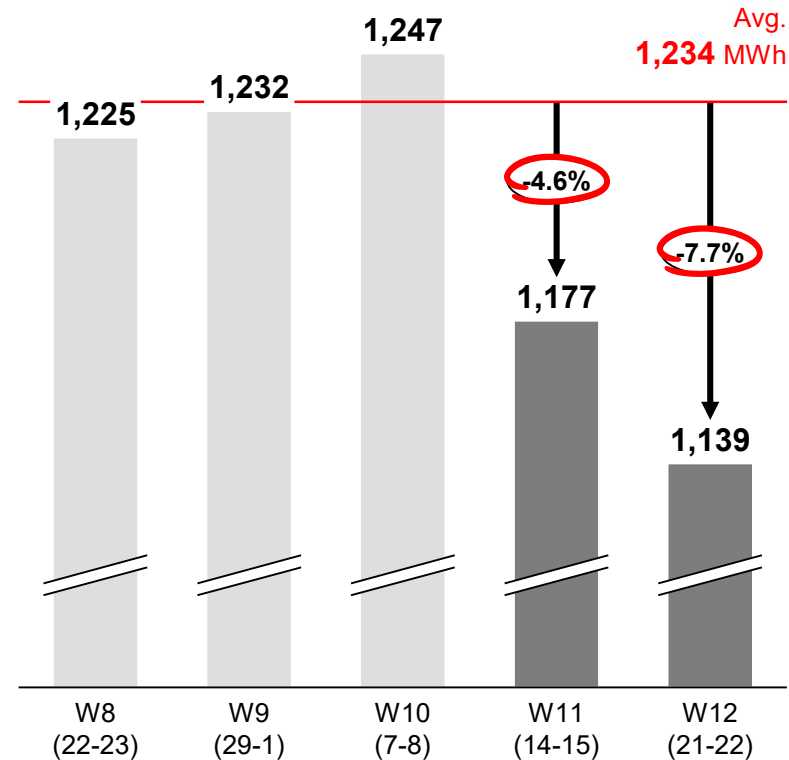
Although figures are skewed, electricity demand in Spain has decreased c.10% due to lockdown

Spanish Peninsula electricity demand, 2020 – [MWh]

Weekly-basis



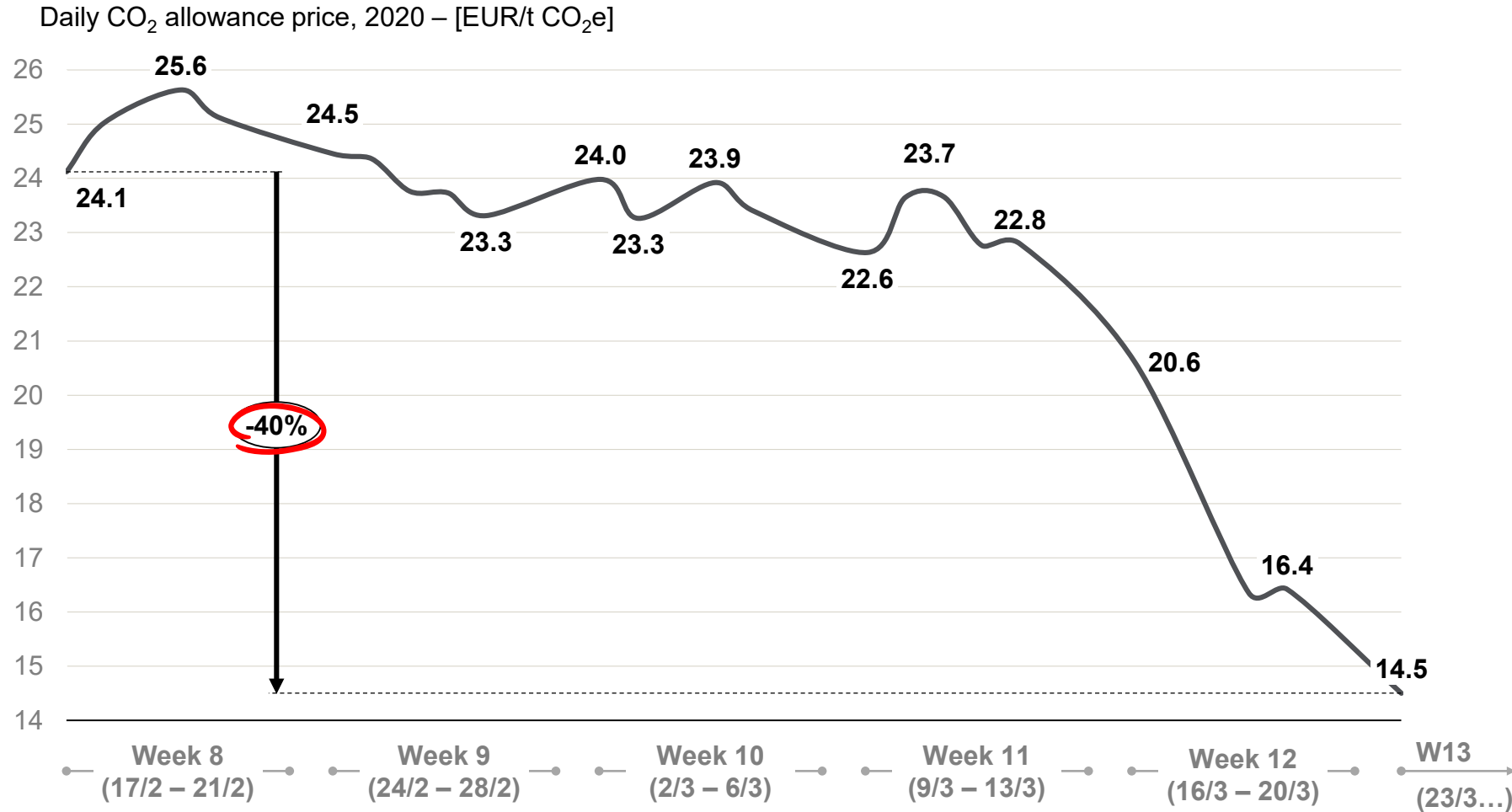
Weekend-basis



First COVID-19 lockdown weekend

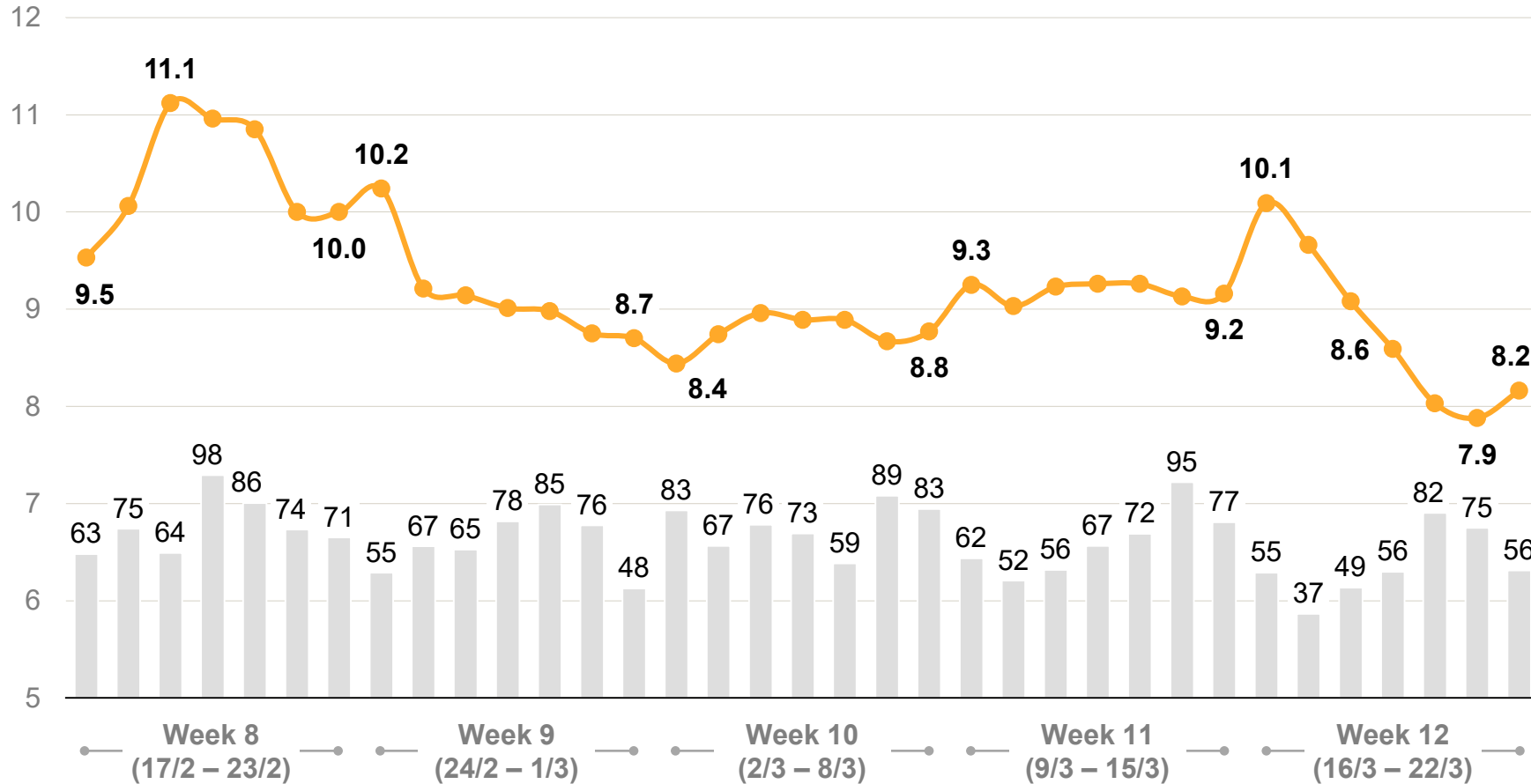
Full lockdown

The slowdown in power demand in Europe has made the CO₂ allowance price decrease by c.40%



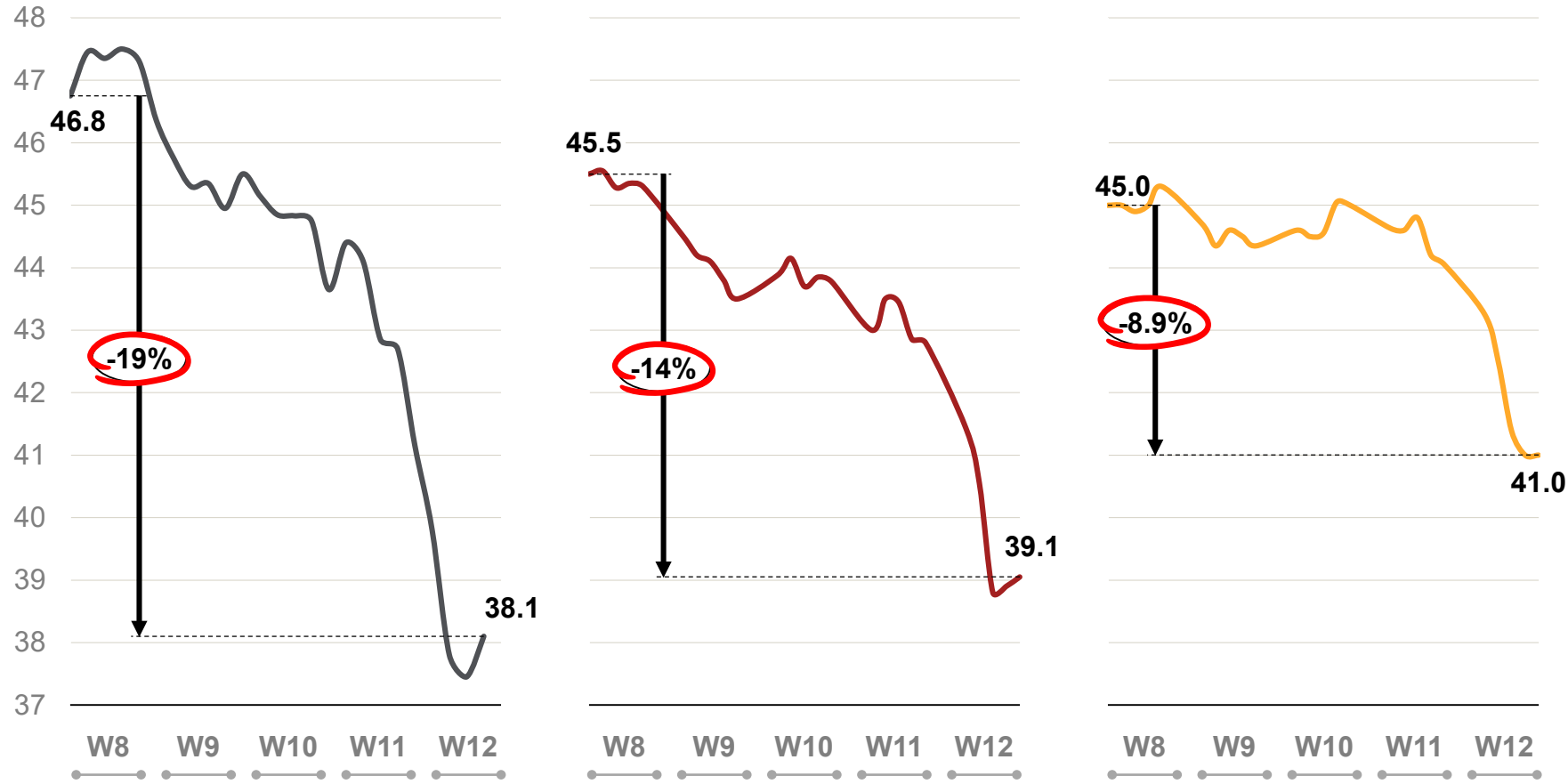
After a surge in price at the beginning of the week, Spanish MIBGAS plummeted to c.8€/MWh

Daily MIBGAS price and volume, 2020 – [EUR/MWh, MWh]

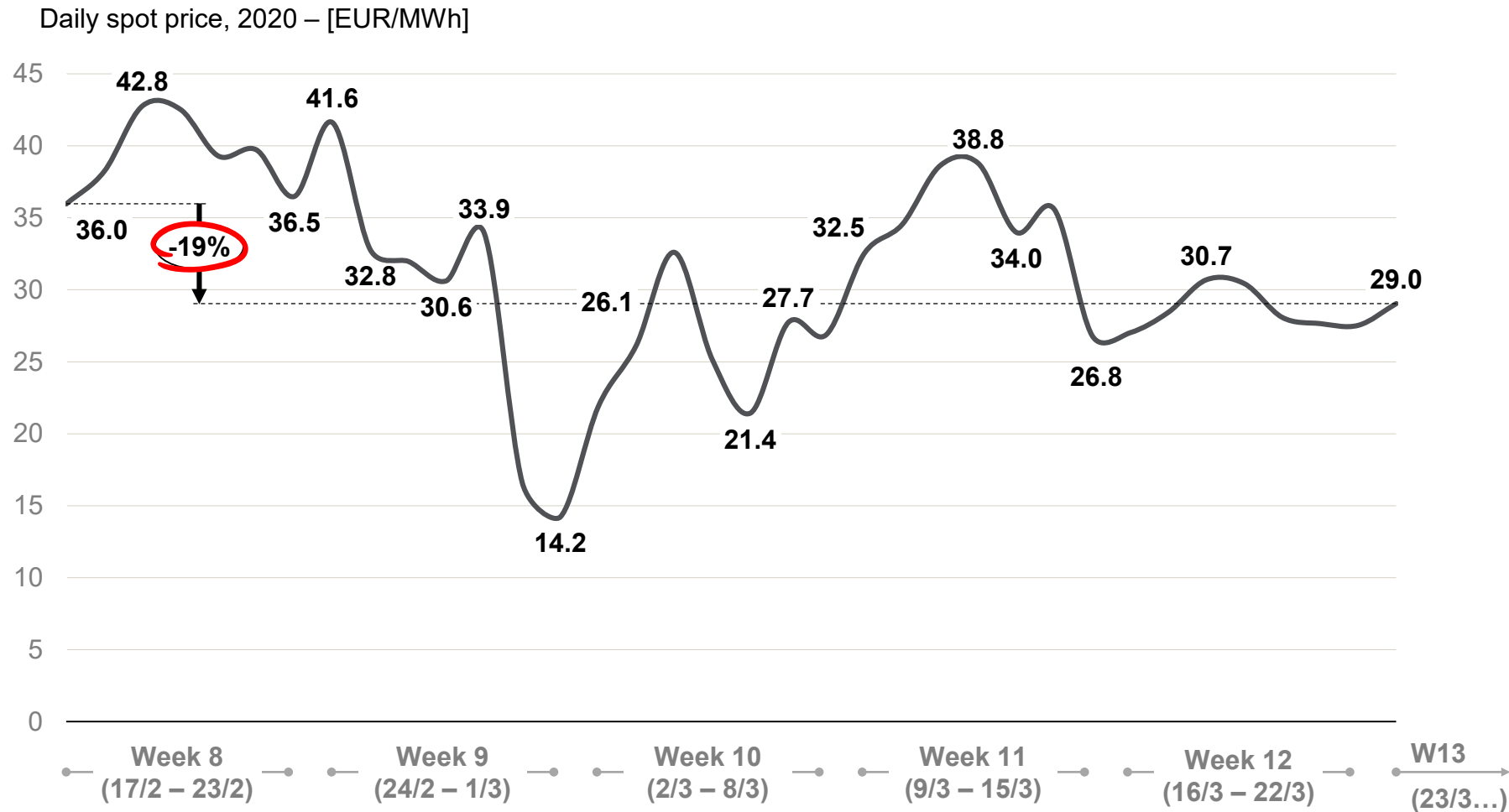


Spanish pool price futures have decreased along with commodities prices in the past four weeks

Daily future prices for pool in **Q4 2020**, **YR 2021**, **YR 2022** – [EUR/MWh]

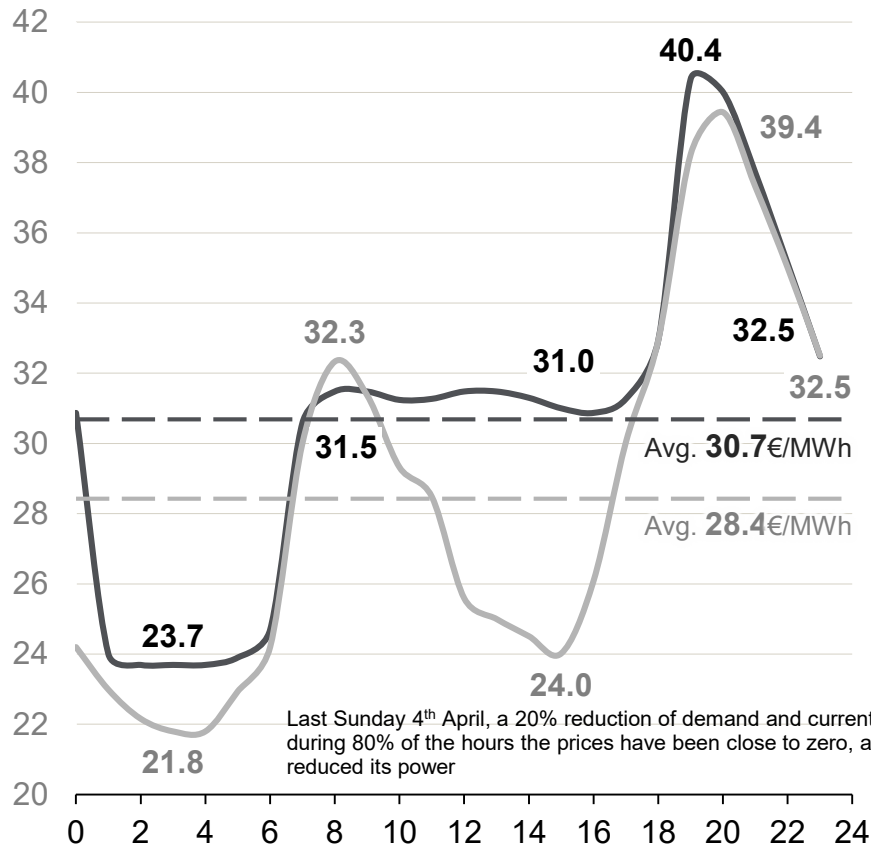


Spot pool price in Spain is volatile although it is following a downward path in the past weeks...



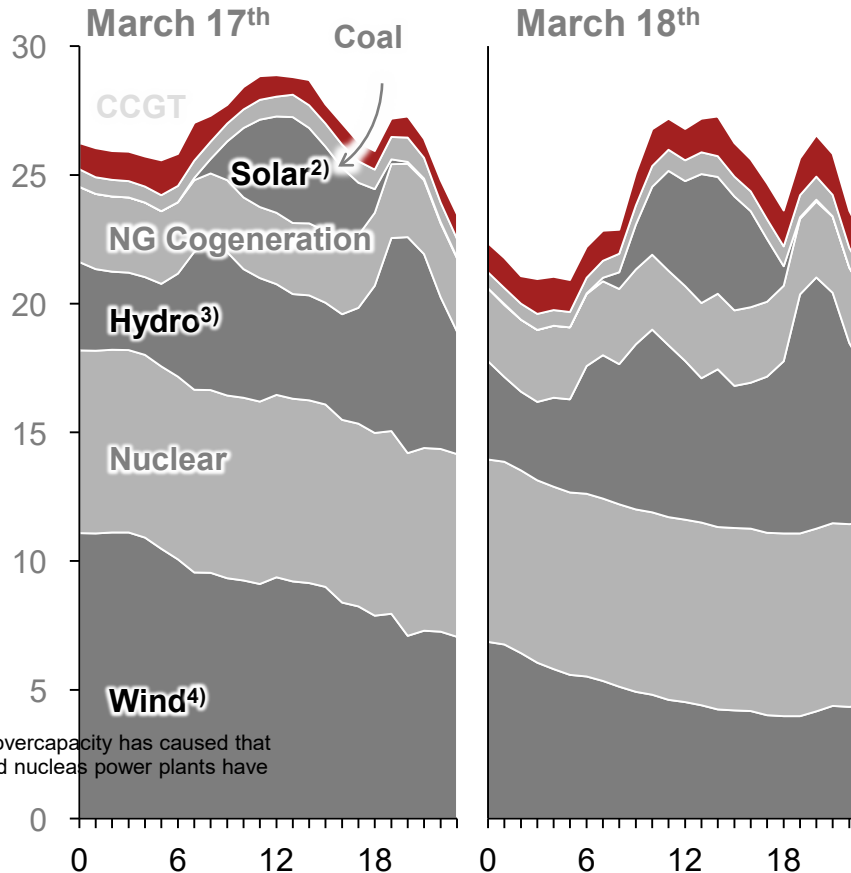
...due to lower power demand, which is being backed up mainly by renewables, hydro and nuclear

Hourly spot price for **March 17th 2020** and **March 18th 2020** – [EUR/MWh]



Last Sunday 4th April, a 20% reduction of demand and current overcapacity has caused that during 80% of the hours the prices have been close to zero, and nuclear power plants have reduced its power

Operating hourly generation¹⁾ by technology March 17th and 18th 2020 – [GWh]



1) Operating hourly program generation. Excluded biomass, fossil oil, household and similar wastes, sundry waste, biogas, mining subproducts, geothermal and ocean and residual energy (c. +-1.GWh per hour) due to visualization purposes | 2) Solar PV and Thermal (adjusted) | 3) UGH, non-UGH and turbine pumping | 4) Adjusted
Source: REE; Strategy& Analysis

Last Sunday 4th April, a 20% reduction of demand and current overcapacity caused that during 80% of the hours the prices have been close to zero, and nuclear power plants have reduced their power

Renewable permitting processes will be delayed due to the recent COVID-19 outbreak

Hot topics on project development and COVID-19

Royal Decree 463/2020, of March 14th, declaring the state of alarm for the management of the health crisis situation caused by COVID-19

Third additional provision. Suspension of administrative deadlines

1. Terms are suspended and deadlines for processing procedures of public sector entities are interrupted. The reckoning of the deadlines will be resumed at the moment when the present RD or, where appropriate, its extensions, loses its validity
2. The suspension of terms and the interruption of deadlines will apply to the entire public sector defined in Law 39/2015, of October 1st, on the Common Administrative Procedure of Public Administrations
3. Notwithstanding the foregoing, the competent body may agree, by means of a reasoned resolution, the management and instruction measures strictly necessary to avoid serious damage to the rights and interests of the interested party in the procedure and provided that the latter expresses its agreement, or when the interested party expresses its agreement that the term is not suspended
4. [...]

Impact on project development

- The RDL passed by the Spanish Government suspends administrative procedures for the next 15 days (the current length of the state of alarm), which will generate delays in all permitting processes, specially for RTB projects
- Construction activity is currently suspended by RDL 11/2020. Therefore, projects with expected COD in Q2 – Q3 2020 may be affected by the RDL.
- The expiration of access and connection to grid on March 31st 2020 that affected renewable projects whose access was granted before Electric Sector Law of 2013 has been modified. Now the new expiration term would be 2 months from termination of state of alarm.
- Without the approval of the Climate Change Law, it is not possible to call new auctions with other methodology than the one used in the 2016 and 2017 auctions, leading to potential delays in new renewable auctions

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