



Mar-2021

Italian Power Market Outlook

Osservatorio
energia

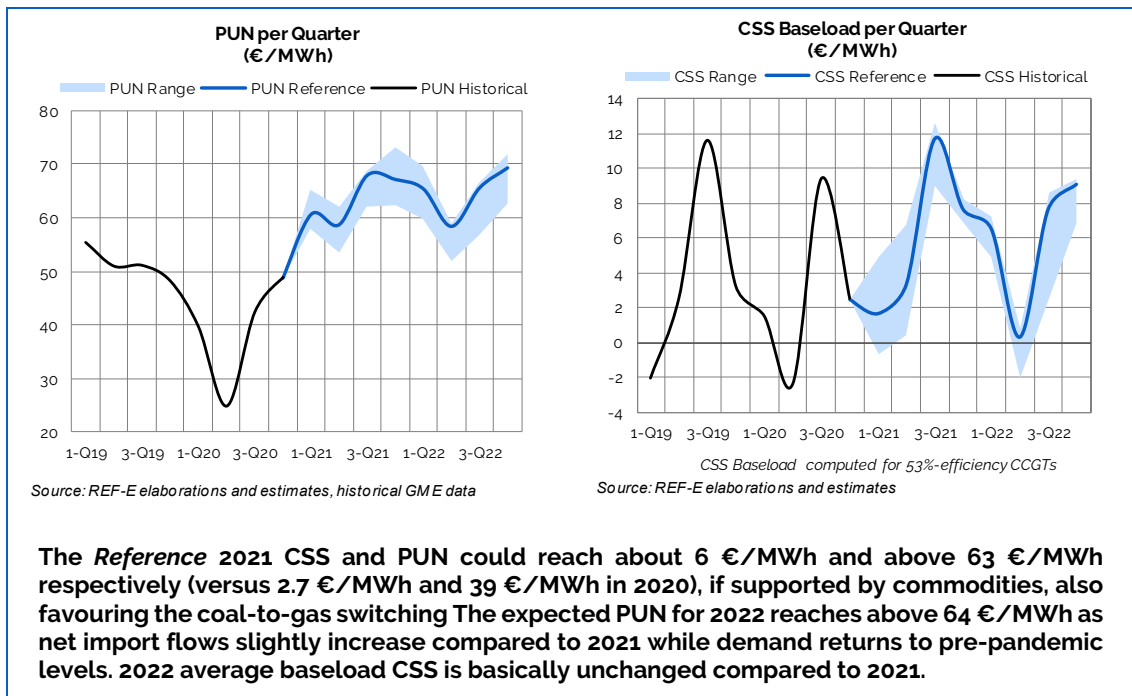
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Gas prices and net import are the key drivers for power prices in the short-term on top of the economy and demand recovery dynamics.

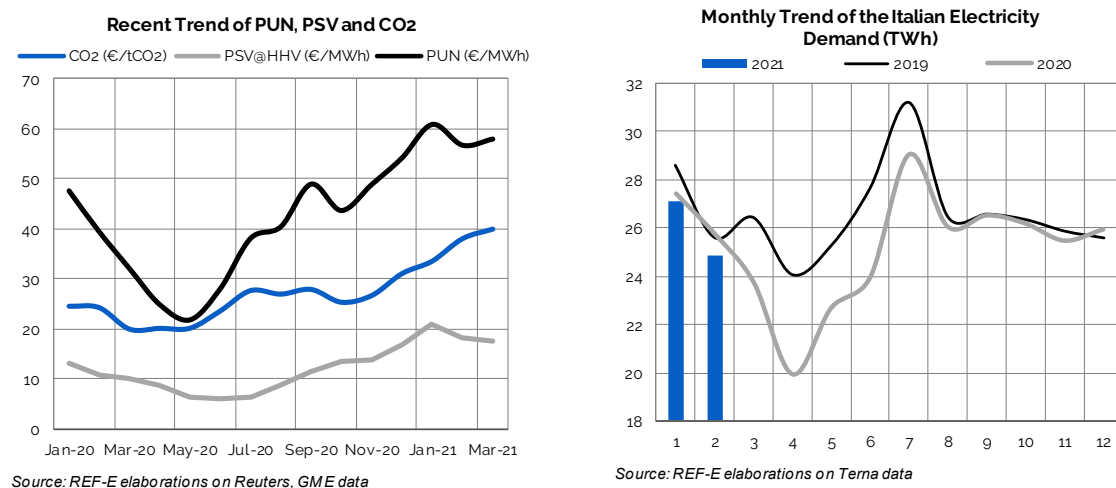
Gas-fired production and renewables will dominate the internal energy production at the expenses of coal-fired output, with favorable coal-to-gas switching conditions and import flows in line with the last 5-year historical average potentially increasing the gas-fired production on the Day-Ahead Market in the next two years.

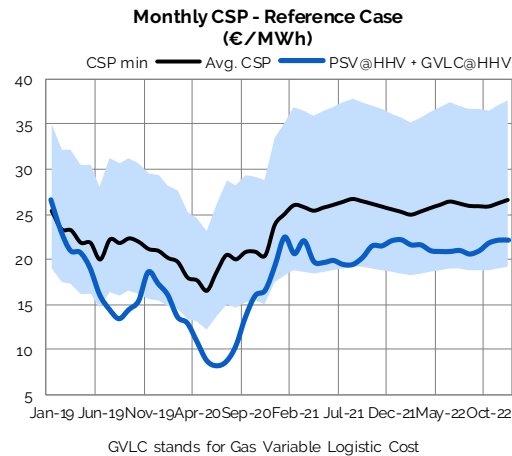
The impact of **the new market zones** framework and of New highly efficient and competitive units in the CCGT segment with the **Capacity Market** also need to be attentively monitored.

COMMODITIES SUPPORT ITALIAN POWER PRICES IN 2021-2022



Last winter temperatures fostered electricity and gas consumption, partially compensating the Covid-19 negative impact, with ongoing restrictive measures weighing on the recovery of economic activities and depressing the industrial demand. Gas prices having exceeded 20 €/MWh and CO₂ prices having reached historical highs also supported the electricity price.





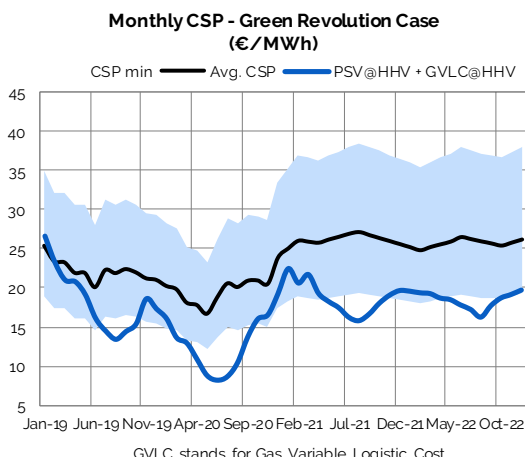
Source: REF-E elaborations and estimates, historical Reuters data

Stable Coal-to-Gas Switching Dynamics Make Decarbonisation a Short-Term Shot

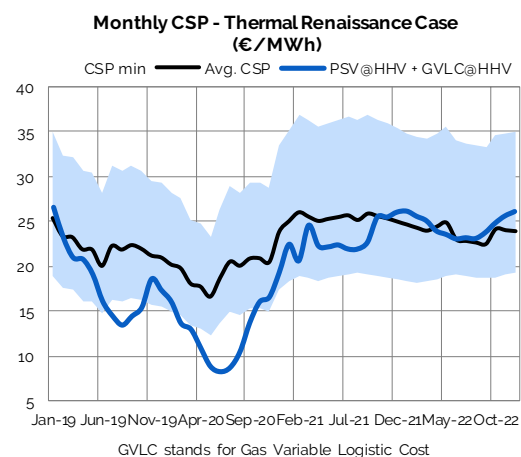
Despite the recent recovery in gas prices, the CO₂ strong upward trend that combined with the parallel recovery of coal prices sustained the switching between gas-fired and coal-fired production in the electricity sector. In our Reference scenario the CO₂ price averaging slightly below the 40 €/t threshold in the next two years guarantees the switching between average efficiency gas-fired and coal-fired production for the rest of 2021 and 2022 too, under the hypothesis of natural gas and coal prices stabilizing just above 2019 averages (*Brent Coal & CO₂ Outlook*, Mar-21).

With the EU having approved an increase to 55% of the emissions reduction target by 2030 and the CO₂ price on a stable upward path, our alternative scenarios are characterized by a strengthening or a weakening of coal-to-gas switching dynamics. The latter dynamics derive from two alternative set of hypotheses, which define a very favourable (Green Revolution) and a very unfavourable (Thermal Renaissance) decarbonization framework.

- Green Revolution scenario: stronger CO₂ prices combine with lower fuels prices. Relatively low natural gas quotations compared to coal prices intensify coal-to-gas switching dynamics. Scenario hypotheses also feature a slower electricity demand recovery and a higher wind and photovoltaic output compared to the Reference case.
- Thermal Renaissance scenario: weaker CO₂ prices combine with higher fuels prices. Relatively high natural gas quotations compared to coal prices allow coal-fired production to regain competitiveness. Scenario hypotheses also feature a faster electricity demand recovery and a lower wind and photovoltaic output compared to the Reference case.



Source: REF-E elaborations and estimates, historical Reuters data



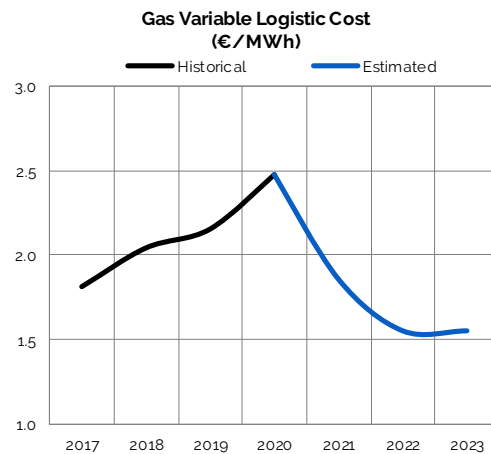
Source: REF-E elaborations and estimates, historical Reuters data

In the two alternative scenarios, different levels of demand and commodities prices lead to different competitive dynamics and market results compared to the Reference case. In the Green Revolution scenario, the greater competitiveness of gas-fired units over coal-fired competitors is counterbalanced by the lower level of demand, leading to lower CSS (-21% in 2021 and -36% in 2022) and PUN (-7% in 2021 and -11% in 2022) values. In the Thermal Renaissance scenario, less favourable coal-to-gas switching conditions erode the marginality of marginal gas-fired plants leading to lower CSS values (-11% in 2021 and -39% in 2022), but the generally higher price of the fuels determines higher market prices (+5% in 2021 and +0.5% in 2022). In both the alternative scenarios net import is assumed equal to the *Reference* case.

FOCUS. Variable Logistic Costs for Gas-fired Italian Power Plants

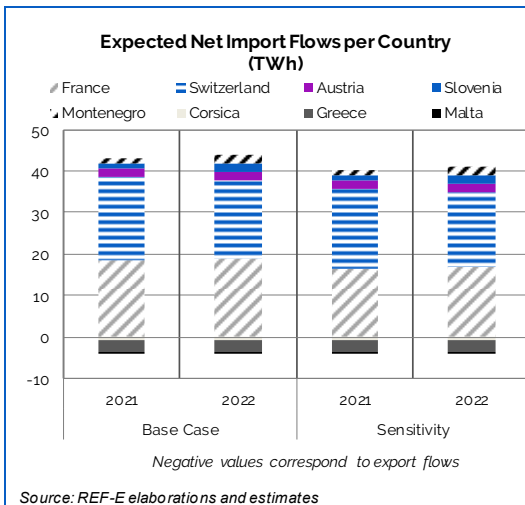
The average variable logistic costs for gas-fired plants in 2020 was just below 2.5 €/MWh@HHV. In our scenario, we assume that all thermoelectric producers apply for the RET_{TEE} refund mechanism in force from Q3-2021, aimed at removing the White Certificates mechanism costs from logistics costs for power plants, reducing the overall figure below 2 €/MWh@HHV for 2021 and close to 1.5 €/MWh@HHV for 2022.

The re-introduction of the CRV_i component (0.0065 €/Smc) starting from Q4-2021 (after almost four years at zero) to cover interruptible service costs, and the increase of other energy efficiency costs, only partially compensate the reduction of the RET_{TEE}. A reduction in the socialization costs of storage and regasification infrastructures also supports the overall cost decrease.



Source: REF-E Elaborations and estimates

Net Import Stable Despite Demand Recovery and Higher Interconnection Capacity



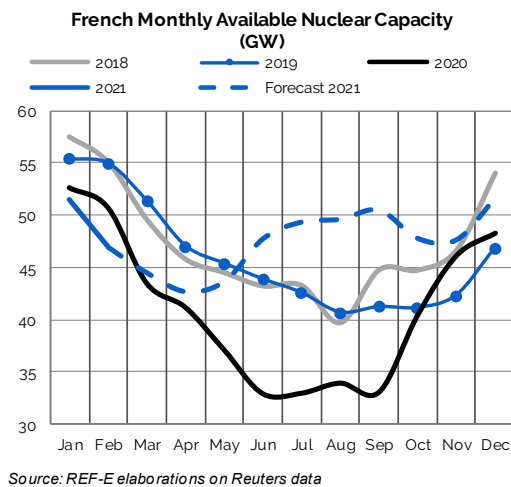
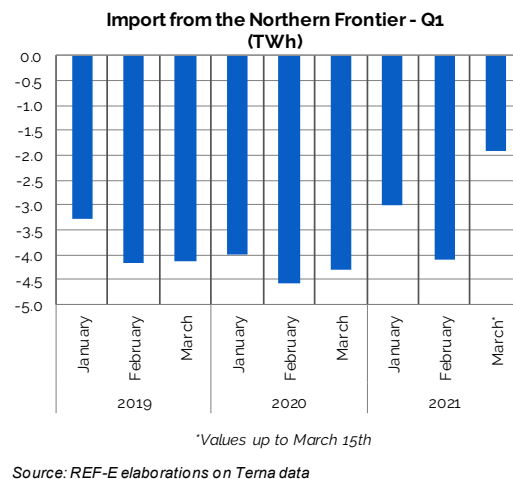
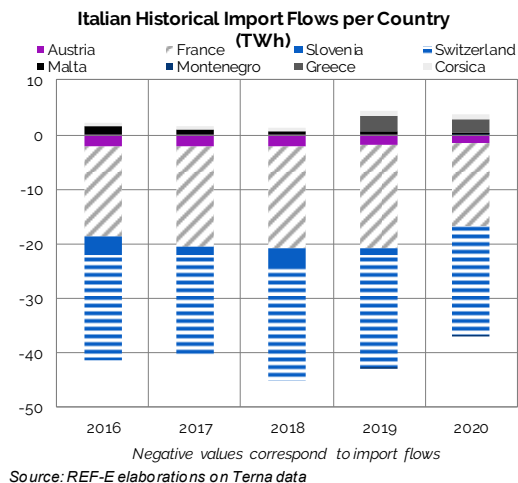
Source: REF-E elaborations and estimates

Net import flows are expected to total 38.9 TWh in 2021 and 39.9 TWh in 2022 (versus about 33 TWh in 2020). With respect to our previous base-case scenario, 2022 projections have been revised downward (- 6 TWh) as coal-to-gas switching dynamics are expected to contain the price spread between the Italian North market zone and neighbouring countries. Greater than expected unavailability of the French nuclear fleet and potential NTC reductions operated by Terna for security reasons (or more favourable coal-to-gas switching conditions) could reduce import flows by 2.8 TWh/year, leading to +10% growth in the CSS and +1% growth in the PUN in both 2021-2022.

Over the last two years the competitiveness of the Italian gas-fired fleet (supported by favourable switching conditions and some French nuclear availability reductions) increased and translated into lower than historical average import flows the northern borders (the 2014-2018 average was 22.2 TWh, while in 2019 and 2020 was 18.7 TWh). In these circumstances power prices dynamics became more closely related to the gas market ones. We **expect this to become structural over the next two years**.

Stable switching conditions combined with currently forecasted availability of the French nuclear fleet and the delay in the realization of foreign interconnection reinforcements with France and Austria with respect to the initial 2020 deadline, lead net imports to slightly less than 39 TWh in 2021, in line with the previous update and with the average result of the last 5 years.

In 2022, gas-fired production remaining more competitive than coal-fired stabilizes the level of net import despite the expected recovery of demand and the increase in NTC (following the completion of interconnection developments with France and Austria). Import flows in 2022 grow just by 1 TWh compared to 2021 and total slightly less than 40 TWh – against a previous estimate of 45.9 TWh.



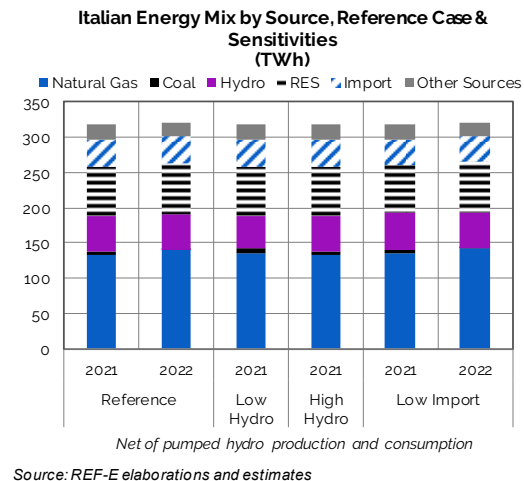
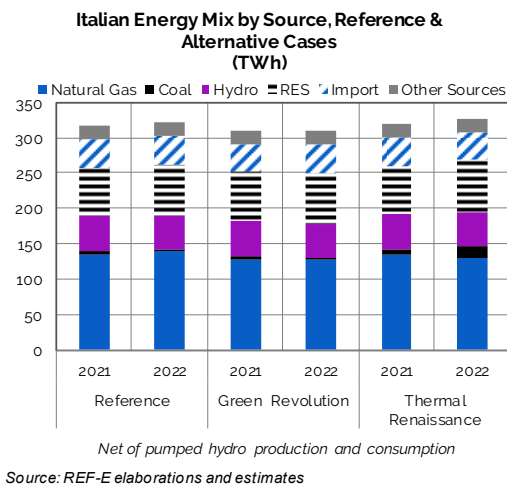
Import flows from the northern frontiers could be further limited by:

- a more severe than expected unavailability of the French nuclear fleet
- potential reductions of the NTC operated by Terna to ensure system security in case of need
- more favourable coal-to-gas switching conditions

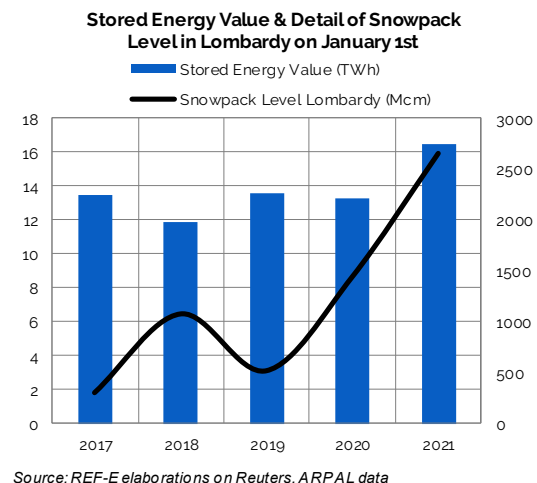
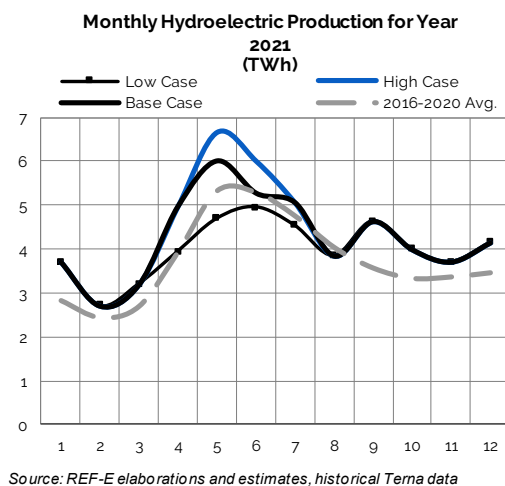
This may translate into a -2.8 TWh/year in both 2021 and 2022. Lower-than-expected import flows from the northern frontiers in the 2021-2022 period would benefit the thermoelectric Italian fleet and especially gas-fired units, potentially leading to higher baseload CSS (+10%) and PUN (+1%) in both years.

ENERGY MIX: COAL-FIRED PRODUCTION AT MINIMUM LEVELS

Gas-fired production and renewables will dominate the internal energy production at the expenses of coal-fired output, pushed to minimum levels. Favorable coal-to-gas switching conditions and import flows in line with the last 5-year historical average can increase the gas fired production on the Day-Ahead Market in the next two years. The impact on prices could be amplified by lower-than-expected import flows and reduced hydroelectric production.



Hydroelectric variability could indeed have an impact on the final energy mix composition, and hence market prices. In 2021, the so-called stored energy value of Italian hydro reservoirs detected at the beginning of the year, as well as the snowpack level in mountain regions, were sensibly higher compared to previous years. This led us to estimate an overall base case hydroelectric output of about 50.7 TWh versus the last 5-year historical average of roughly 45 TWh. With respect to the base case, two sensitivities on the hydroelectric production in the first half of the year have been performed: in the first sensitivity a lower hydroelectric output (about -3 TWh) is assumed in case of slowness in the melting of snows and little rain during the spring months; in the second sensitivity, a greater hydroelectric output (+1.4 TWh) is assumed in the event of very rainy conditions. The second semester hydroelectric production in the three cases converges to the last 10-year historical average.



In 2021, hydroelectric output variations (assuming all the other renewable sources equal) could influence the available market space for gas-fired power plants with respect to the base case, potentially leading to higher CSS (+11.5%) and PUN (+1%) levels in the 'Low Hydro' sensitivity and to lower CSS (-5%) and PUN (-0.5%) levels in the 'High Hydro' sensitivity.

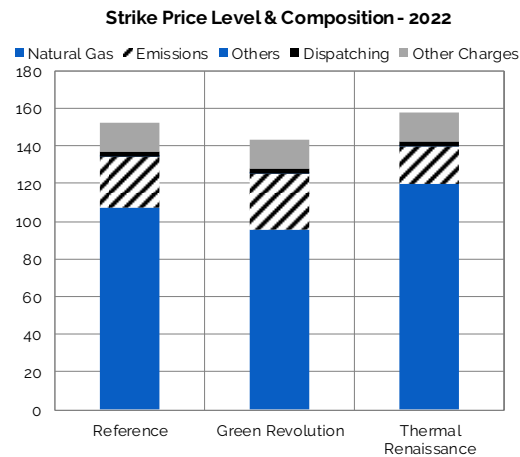
FOCUS. 2022 Will Be the First Year of Delivery of the Italian Capacity Market

January 1st, 2022 marks the beginning of the first delivery period of the Italian Capacity Market. According to the 2019 auction results, about 2.1 GW of new gas-fired capacity are expected to enter the market in 2022. Among these, 0.8 GW originate from the repowering of existing CCGT units, while 0.6 GW and 0.7 GW from new peaker and CCGT units, respectively. According to publicly available information, all the projects having taken part to the auction as non-authorized received the final authorization and are undergoing the realization phase.

The new CCGT unit located in Porto Marghera and operated by Edison (a so-called H-class, 60%-efficiency combined cycle) is due to go on online next year and will be the first of its kind on the market. The high level of efficiency should grant to this kind of plants a competitive advantage over the existing CCGT fleet (averaging 53% efficiency), allowing a baseload-like functioning deriving from the better positioning in the merit order of technologies. This kind of unit introduces a new degree of competition within the CCGT segment, expectedly eroding the residual demand for the existing fleet, their

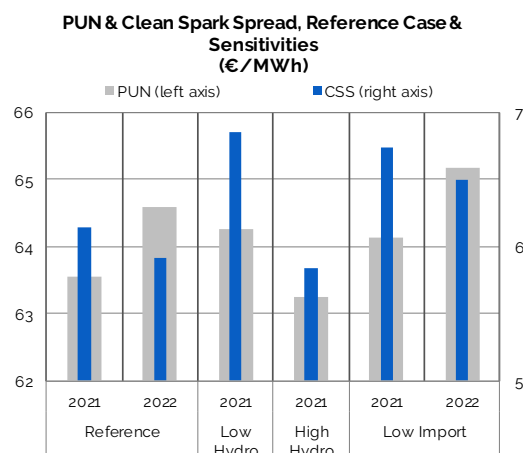
marginality and consequently the final market price. This effect will be reduced in 2022 (-3.6% in terms of CSS) but is expected to amplify as other newbuilds come online.

With the beginning of the capacity market, power plants adhering to the mechanism will be subject to the upward price limit imposed by the strike price. This reflects the production cost of a 30%-efficiency gas-fired peaker plant. The *Reference* case strike price, that will settle near 152 €/MWh, well above the 100 €/MWh threshold, is not expected to impact the Day-Ahead Market as much as it is for the Ancillary Services Market, where accepted prices are notoriously higher.

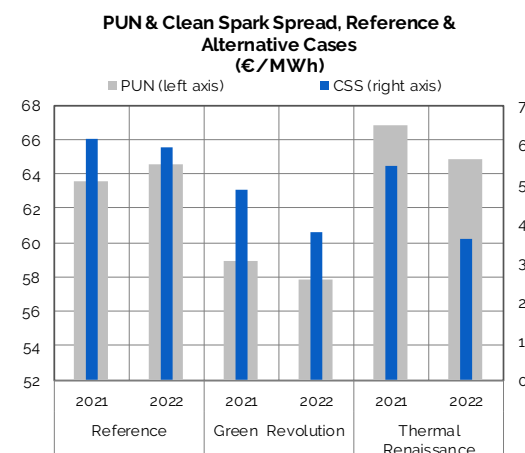


Source: REF-E elaborations and estimates

CONCLUSIONS



Source: REF-E elaborations and estimates



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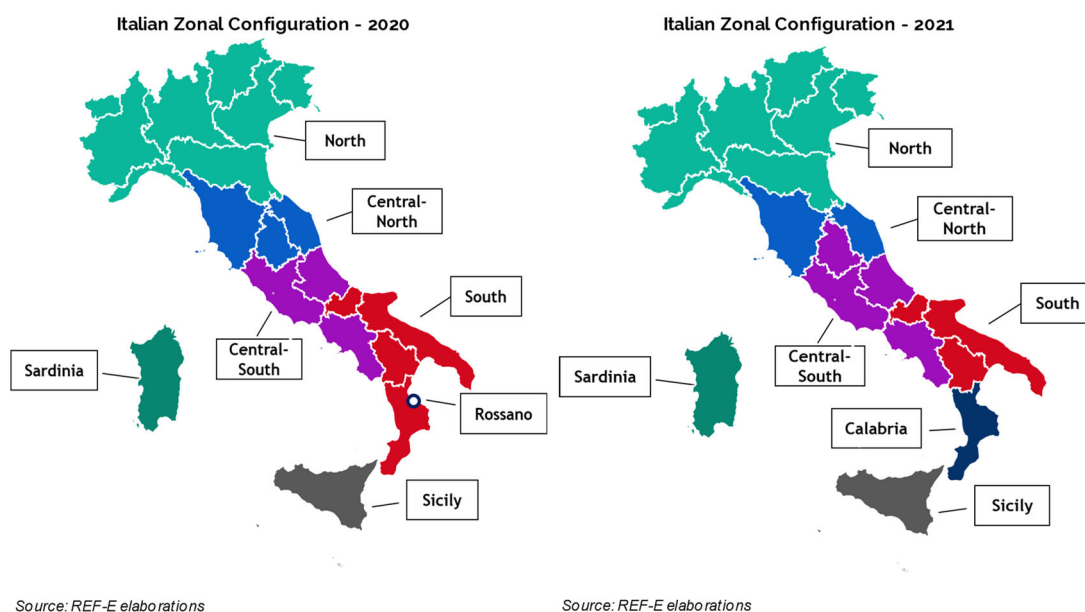
Commodities and import dynamics are the key factors determining our scenario results. Reference yearly baseload targets for PUN and CSS are 63.5 €/MWh and 6.1 €/MWh respectively for 2021, and of 64.6 €/MWh and 5.9 €/MWh respectively for 2022. Possible variations in these key factors and in the renewable production may determine prices variations compared to *Reference* view, as synthetically shown in the table below.

Summary of Main Assumptions and Results		Main Assumptions							Main Results		
		CO2 (€/tCO2)	PSV@HHV (€/MWh)	GVLC@HHV (€/MWh)	Coal API2 (\$/t)	Demand (TWh)	Hydro Output (TWh)	Net Import (TWh)	CSS (€/MWh)	PUN (€/MWh)	
Reference		2021	38.2	18.8	1.9	65.3	316.6	50.8	38.8	6.1	63.5
		2022	37.8	19.8	1.5	66.0	321.2	49.0	39.8	5.9	64.6
Sensitivities to the Reference case	Low Hydro	2021	38.2	18.8	1.9	65.3	316.6	47.7	38.8	6.8	64.3
	High Hydro	2021	38.2	18.8	1.9	65.3	316.6	52.2	38.8	5.8	63.2
	Low Import	2021	38.2	18.8	1.9	65.3	316.6	50.8	36.0	6.7	64.1
		2022	37.8	19.8	1.5	66.0	321.2	49.0	37.0	6.5	65.2
Green Revolution		2021	40.2	16.9	1.9	63.2	315.8	50.9	38.8	4.8	59.0
		2022	41.5	16.9	1.5	58.6	316.3	49.2	39.8	3.8	57.8
Thermal Renaissance		2021	35.1	21.3	1.9	67.9	317.3	50.8	38.8	5.5	66.8
		2022	27.4	22.9	1.5	72.2	322.9	49.0	39.8	3.6	64.9

Source: REF-E estimates

FOCUS. New Zonal Configuration and Expected Sicilian Price Dynamics

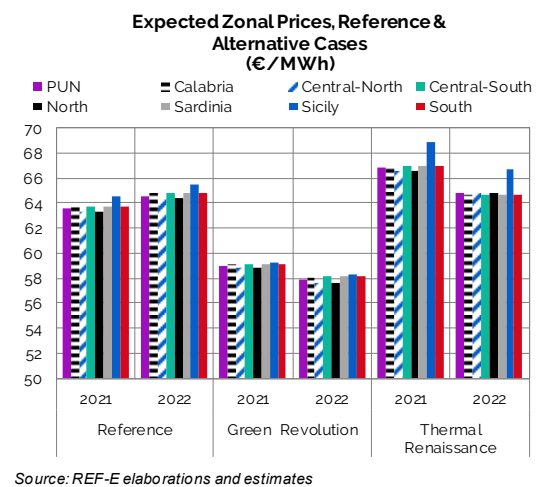
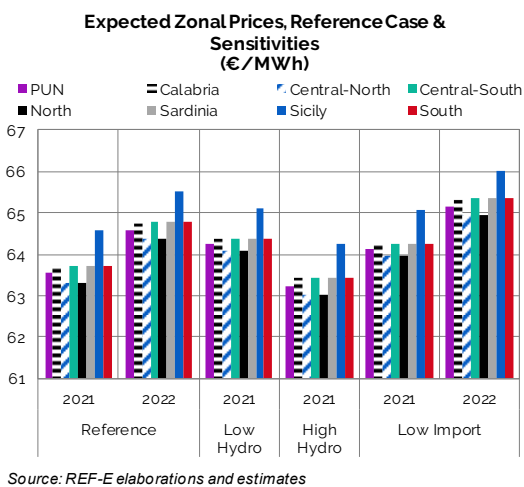
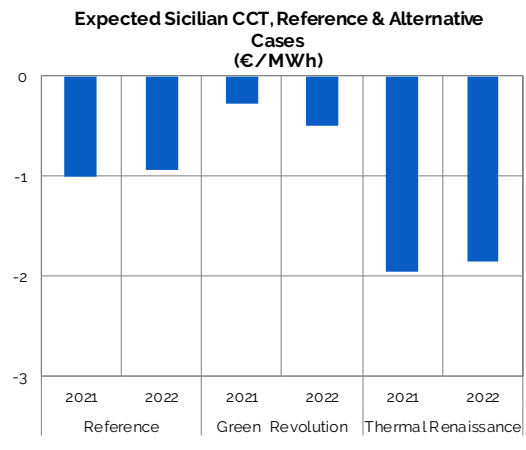
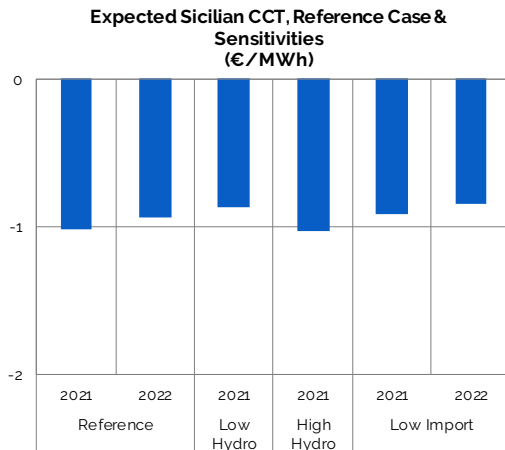
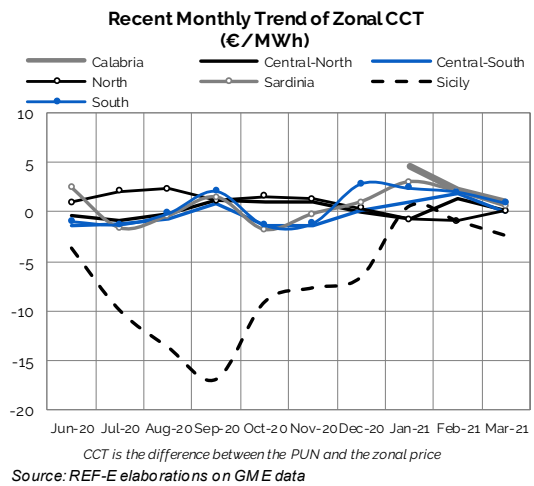
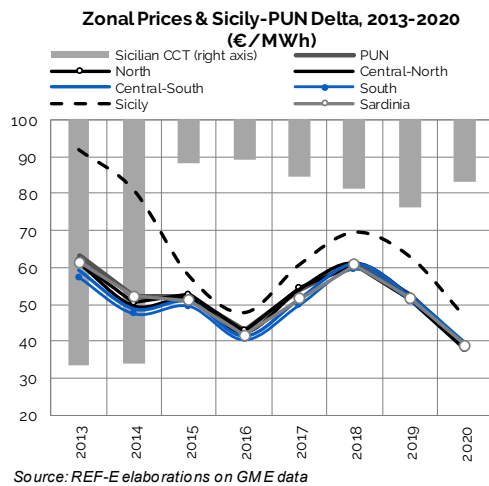
On January 1st, 2021, a new zonal configuration was introduced. The new framework should reduce interzonal congestions, improving energy exchanges among market zones. The Umbria region is now part of the Central-South market zone (previously was part of the Central-North market zone) and the Calabria region, which was previously incorporated in the South market zone, is now a market zone on its own. The Rossano pole of production is now incorporated in the Calabria zone.



The Italian TSO also updated the power exchange limits between some market zones. The most significant change is about the increase of maximum power import limit between Sicily and the continent (through the Sorgente-Rizziconi undersea cable). This was raised from 1100 MW to 1500 MW, following completion of some reinforcements on existing land infrastructure, and could entail disruptive dynamics in the Sicilian market zone. The greater capacity could reduce congestions between the two neighboring zones and reduce – at least partially – the price spread between Sicily and the southern market zones.

The Sorgente-Rizziconi cable link activated in 2016 has in fact contributed to mitigate price spreads between Sicily and the southern zones. However, the Sicilian prices maintained an average baseload yearly premium of about 7 €/MWh over the PUN. In the first quarter of 2021¹, after the 400 MW extension of the limit, Sicilian prices average baseload premium over the PUN was just 1 €/MWh, compared to 5.8 €/MWh in 2019 and 5.7 €/MWh in 2020. In our *Reference* scenario, the baseload yearly price spread between the Sicilian price and the PUN should maintain this level and average near 1 €/MWh.

¹ Up to March 15th.





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