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ENCAVIS AG: RENEWABLES ON THE RISE
UNRAVELLING THE POTENTIAL OF LONG-TERM VALUE CREATION

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Abstract

Amidst the ongoing global climate crisis and the wake of the Russia-Ukraine war, renewable energy received a major boost in importance as independent and sustainable power supply. This report provides an in-depth analysis and valuation of Encavis, a major European independent power producer (IPP). This report constitutes the second part of a joint project and seamlessly ties in on the macroeconomic analysis and the historic financial analysis of Encavis. To enable a detailed valuation, key value drivers are identified and projected into the future, such as the expansion and performance of power plants and an own projection of future market prices based on expected LCOE values. The value of these projected developments is captured in a sum-of-the-part analysis for the existing plant portfolio, the pipeline projects, the option to repower retired plants, and the asset management segment. Based on the recent stock rally of Encavis in the last weeks we find that the market more than sufficiently prices in the expected growth ambitions and is slightly overvaluing, leading us to issue a SELL recommendation.

Keywords: Renewable Energy, Repowering, Levelized Cost of Electricity, Energy Transition

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This report is part of the Encavis report "Renewables on the rise" (annexed) by Alexander Türk (44308) and Marco Weber (44923) and should be read as an integral part of it.

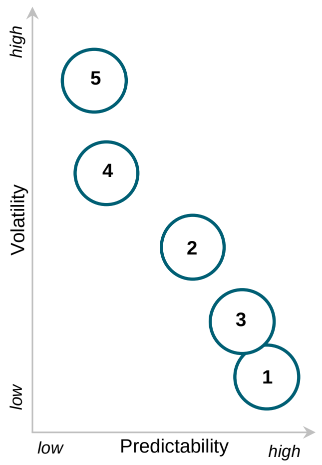
Table of Contents

Introduction

The ongoing climate crisis and the current war in the Ukraine are expected to influence the European energy policies in the short- and long-term, increasing uncertainty and calling for radical change in the way we currently produce and consume electricity. This report constitutes the second part of the joint equity research work project written by Alexander Türk and Marco Weber. The work project conducts an in-depth analysis and valuation of Encavis AG, a major European independent power producer (IPP). The first part lays the foundation for the valuation by identifying key trends and developments in the European electricity market, which serves as the key market for Encavis. Additionally, it analyses the future outlook for the planned electricity transition and the implications on several value drivers for industry players, such as future prices, the expected change of electricity sources feeding into the merit order effect, and contracted revenues in feed-in tariffs (FiT) or power purchase agreements (PPA). Additionally, it analyses the business model and historic financial performance of Encavis to determine its economic viability in the renewable industry. This second part will build on this foundation by identifying five key value drivers for Encavis that will play major roles in shaping the future of the company's operations and of the industry around it. The primary internal driver is the installed capacity, which is mainly responsible for scaling the business model of an IPP, as electricity output and therefore revenues and profits, are linked and limited to the capacity operated. Encavis plans to effectively double its portfolio size by 2026, which was incorporated into the model. The main external driver is the electricity price, that will be determined by the last energy source fed into the grid. To incorporate the mid- and long-term price developments, a LCOE model was deployed to forecast the future energy mixes and electricity prices that defines the revenue figures. We found renewable plants to have a unique venue for future long-term value creation in the option to repower retiring plants. This also yields benefits from cost and technology improvements, providing significant upside potential on existing installations which can be repeated perpetually, as long as the expected IRR of the repowering lies above the WACC. The valuation was based on a sum-of-the-parts method that includes the existing portfolio, the pipeline projects, the option to repower, and the asset management as value contributors. While the existing portfolio contributes most value, the other parts will secure long-term financial health of the company. But while we deem Encavis as a strong IPP in the industry equipped with a clear growth strategy, we find the future growth prospects to be fully priced in by the market with the most recent rally and find no further upside justifying a premium on the current price of €19.35. With a target price of €18.41 we issue a SELL rating.

Value drivers & projections

Fig. 1: Overview of value drivers of Encavis' power generation business

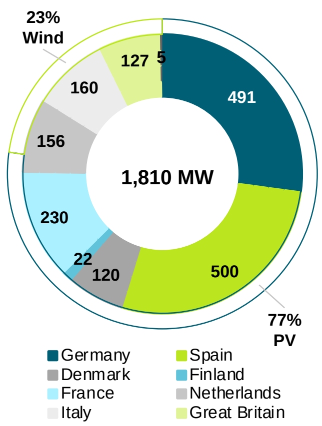


Legend:
1: Capacity
2: Capital expenditures
3: Capacity factors
4: Option to repower
5: Electricity prices

Source: Nova SBE

For the analysis of the value drivers, we differentiate between those relevant for Encavis' power generation business and those vital for the company's asset management as both businesses differ significantly in terms of capital intensity. Starting with the asset-intensive power generation business, the value drivers focus on the installations and macroeconomic factors that influence output or efficiency of the power plants. Five value drivers are critical that set the foundation for the power generation business in the long term: (1) the nominal capacity of Encavis' power plants, (2) capital expenditures for future acquisitions, (3) the capacity factors of solar and onshore wind plants, (4) the option to repower plants once they have reached the end of their technical lifetime and (5) the local market prices for electricity, which are the most volatile variables in the forecast (Fig. 1). In our forecast, we make use of the capacity data for each power plant provided by the company which allows for a more granular allocation of revenues, costs and asset value. Compared to a top-down approach based on market sizing, this method allows us to closely follow the corporate strategy and derive a more concrete forecast for both the existing power generation portfolio and future acquisitions.

Fig. 2: Capacity split of existing power generation portfolio by country (MW)



Source: Nova SBE based on company info

Capacity installed sets the playing field

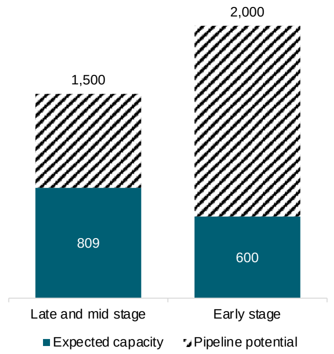
In 2021, Encavis employed 1.8 GW of installed capacity in various European countries, with 77% being solar parks and 23% onshore wind parks (Fig. 2), which we define as the existing portfolio. Based on a reported geographic split of fixed assets and the distribution of capacity by plant, PP&E and intangible assets were allocated on an installation level. As the installed capacity is the primary driver for business expansion due to the limited scalability of the business, Encavis laid out its strategy "Fast Forward 2025" intending to grow its portfolio size to 3.4 GW by 2026. Based on company info, two milestones specify Encavis' growth strategy. Firstly, Encavis aims to acquire 500 MW of additional capacity in 2022. Secondly, the company anticipates having a total of 3.0 GW connected to the grid by 2025, i.e. the remaining 400 MW are expected to follow in 2026. To achieve its target, Encavis works closely with different renewable installation developers such as Sunovis in Germany, GreenGo in Denmark or Solgrid in Sweden (Fig. 3). In total, Encavis has developed a project pipeline consisting of 3.5 GW of potential capacity additions across three stages with different success probabilities, leading to an expected realization of more than 1.4 GW of new capacity until 2026 (see Fig. 4).

Fig. 3: Selected development partners of Encavis

Partner	Technology	Planned MW
Active partnerships		
SOLGRID	Solar	100+
Sunovis	Solar	200+
greengo	Solar	500+

Source: Nova SBE based on company info

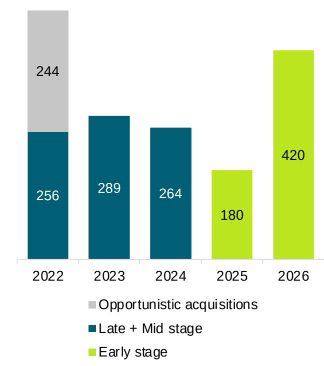
Fig. 4: Pipeline overview, by stages (MW)



Stage	Pipeline volume (MW)	Success probability	Realization
Late stage	500	60-85%	2022/23
Mid stage	1,000	40-60%	2023-25
Early stage	2,000	20-40%	2024/25

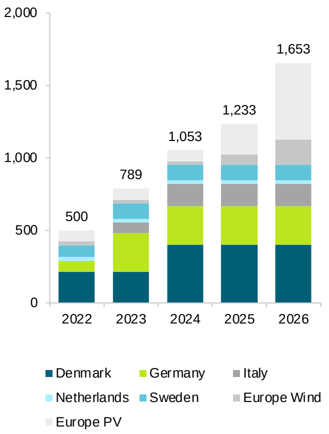
Note: For late- and mid-stage projects, success probabilities between 40 – 85% were used depending on the expected year of realization. For early-stage projects, an average success probability of 30% was assumed.
Source: Nova SBE based on company info

Fig. 5: Expected annual capacity additions, by source (MW)



Source: Nova SBE based on company info

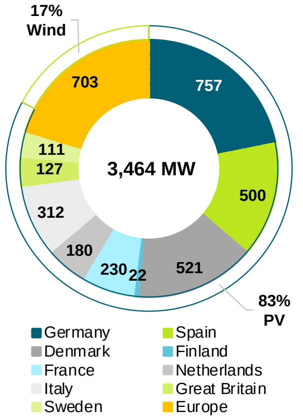
Fig. 6: Cumulative expected acquisitions (MW)



Note: Europe refers to acquisitions from opportunistic investments and early projects from the pipeline without specified location
Source: Nova SBE based on company info

For the potential 1.5 GW in capacity additions resulting from the late and mid-stage projects, Encavis provides detailed information about geographies, the total size of planned capacity in the country and the planned grid connection date. Considering Encavis' current partnerships (Fig. 3) and its power generation portfolio, we expect most of the late- and mid-stage projects to focus on solar. Encavis has already started smaller pilot projects with each developer which are expected to be finalized in 2022/23 with the majority of projects following in 2023/24. Based on predicted success probabilities, we expect around 800 MW of all mid and late stage projects to be successfully connected to the grid in the near future. From the 2 GW pipeline of early-stage projects, which still have to go through a thorough due diligence process, we anticipate realized capacity additions of 600 MW in 2025/26 (Fig. 4 + 5). For the early-stage projects no information is provided regarding technology used or geography targeted. We assume Encavis to maintain a 3:1 ratio between PV and wind projects in their expansion strategy as we expect the company to remain committed to its onshore wind parks, corroborated by the most recent opportunistic acquisition of a Finnish wind park. For projects with non-disclosed geographies, we use a European proxy based on value-weighted averages of Encavis' geographic features such as capacity factors and electricity prices. Based on Encavis' probability-weighted pipeline, we estimate total capacity additions of 1.6 GW until 2026 (Fig. 6). As the company recently announced to increase its portfolio size by 500 MW in 2022 and its pipeline only provides potential growth of around 250 MW this year, we expect opportunistic acquisitions on the market alongside the pipeline plans. Following recent company news, we estimate that Encavis already realized 140 MW in opportunistic acquisitions in Q1. In total, we expect Encavis to materialize an expansion across the 3 GW mark in 2025 and a capacity of about 3.4 GW in 2026 and onwards (Fig. 7). While it seems highly ambitious of a power producer to almost double its existing capacity in only 5 years at first glance, Encavis' strong track record of growing its portfolio in a sustainable way coupled with the expectation of significantly rising demand in solar and wind capacities across Europe supports a successful realization of its strategy. Given the low scalability potential inside the existing portfolio, this pipeline will be the most important driver to achieve further growth and lay the foundations for additional value created. We deem the reason for Encavis' strong focus on solar plants to result from higher operating profitability and less complex and therefore less costly maintenance over their lifetime. The primary benefit of newly built projects would be the lower construction period, as newly constructed wind parks can take 1 – 3 years until completion, while solar parks of similar capacity require less time. Additionally, solar plants suffer from lower degradation over their lifetime than wind plants.

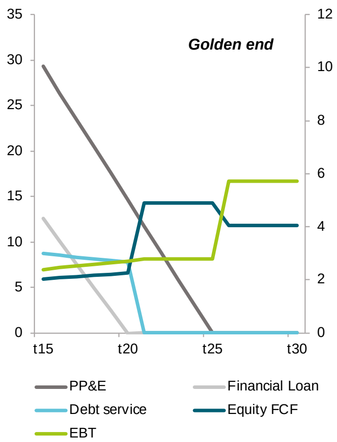
Fig. 7: Expected power generation portfolio in 2026, by region (MW)



Note: Europe refers to acquisitions from opportunistic investments and early projects from the pipeline without specified location
Source: Nova SBE based on company info

From an accounting point of view, depreciation periods can vary depending on geography, technology and accounting or taxation practices. For both existing and newly acquired assets, a depreciation and financing period of 25 years for both solar and wind installations is assumed. We hereby follow commonly used methods of accounting standards where accountants use the duration of subsidy contracts of up to 20 years and the duration of land leases of up to 30 years. These are frequently used as a proxy for the useful lifetime of the power plants due to the lack of historical data. The technical lifetime, however, can be significantly longer, as warranties for critical components such as solar modules cover periods of 30 years and technological improvements and maintenance efforts have significantly advanced. Therefore, a technical lifetime of 25 years for onshore wind parks and 30 years for solar parks is assumed. The difference between the technical lifetime and the financing period for solar plants creates the commonly observed golden end effect. Once the entire debt of a solar plant has been repaid – usually at the end of the underlying FiT or PPA – the cash flow to equity increases substantially for the remainder of the plant's useful life, ceteris paribus (Fig. 53). However, this also depends on fluctuations in the electricity market once the underlying long-term contract has expired. While some analysts use technical lifespans of up to 50 years for PV plants or more than 30 years for onshore wind plants to increase the value of the golden end, we see the actual lifespan to be primarily determined by the economics of the power plant. As the efficiency for both solar and wind plants has substantially improved in the last years, early repowering may become a highly profitable option for older power plants compared to fully squeezing out the energy.

Fig. 8: Illustration of the golden end of a fictional solar project (€m)

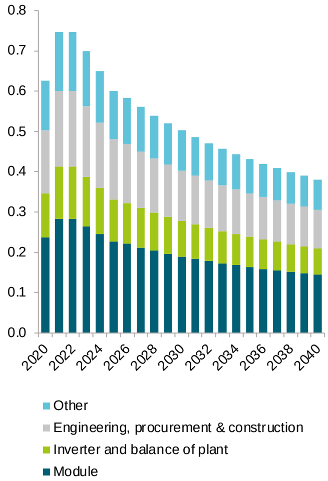


Note: Equity FCF, EBT and Debt service on the right axis
Assumptions: capacity: 100 MW, capex: €0.64m, 72% debt-financing, debt amortization: 20Y, interest rate: 2.5%, depreciation period: 25 years, load factor: 14%, constant PPA price of €60/MWh, EBITDA margin: 80%, tax rate: 29%
Source: Nova SBE

Decreasing capex will lower LCOEs

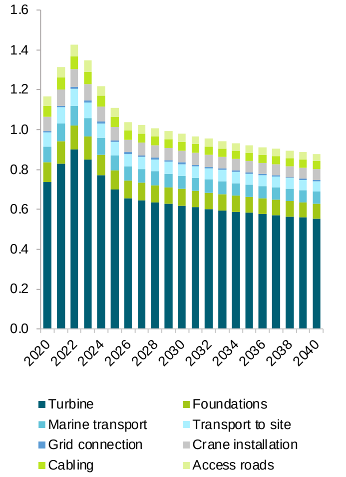
As Encavis is currently in the process of heavily expanding its capacity, capex is a major value driver for its pipeline. While high capex requirements paired with low electricity prices were the main obstacles impeding the growth of renewables and the reasons for governments to introduce FiTs, unit costs have steadily declined as the industry matured. Driven by higher market demand, learning curve effects, economies of scale in manufacturing and higher capacity density in rotor blades and solar modules, capex for solar and onshore wind decreased significantly. Since 2010, capex for solar parks has decreased

Fig. 9: Estimated capex for solar (€m/MW)



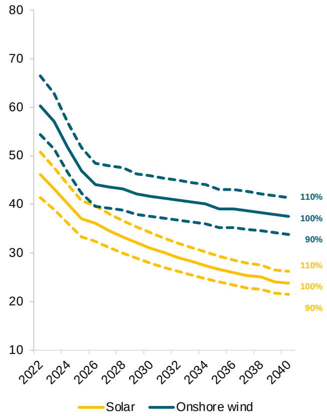
Note: Regression based on historical data provided by IRENA and BNEF (R^2=95%)
Source:Nova SBE

Fig. 10: Estimated capex for onshore wind (€m/MW)



Note: Regression of turbine prices is based on historical data (Vestas). Turbine prices are assumed to make up 63% of total investment (R^2=85%)
Source: Nova SBE

Fig. 11: The impact of capex on long-term LCOEs of solar and onshore wind (€/MWh)



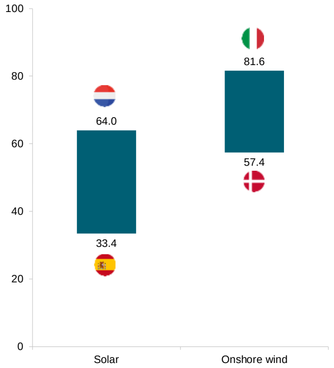
Note: For assumptions, please see Appendix.
Source: Nova SBE

by over 80% (*IRENA*), mainly driven by more efficient manufacturing of modules and the change from thin-film to silicon-based crystalline modules, while onshore wind capex decreased by only 30% over the same timeframe (*IRENA*). The lower cost benefits of onshore wind projects are mainly attributable to the higher maturity of the wind industry and the more complex technological requirements. The decline in capex has come to a halt in the last year, impacted by supply chain disruptions resulting from the aftermath of the global pandemic. Recent lockdowns in China, the world's biggest manufacturer and consumer of solar modules and wind turbines, have intensified the shortage of solar and wind components. As Europe depends on the import of power plant equipment, the expansion of renewables on the continent is likely to experience additional headwind in the short-term through longer lead times and higher prices.

Since capex will remain critical for future LCOEs of solar and onshore wind, capex requirements are estimated until 2040. We expect investment costs for 2022/23 to remain at a higher level between €0.70m/MW and €0.75m/MW as supply chains remain taut. As they are anticipated to relax afterwards, we predict capex for solar to continue its decrease. To derive long-term capex predictions for solar, a power law regression based on historical data since 2010 reported by *IRENA* and *BNEF* was used, assuming similar learning curve effects (Fig. 9). Thus, we expect capex to decrease by 50% until 2040 and remain constant afterwards, leading to unit costs of €0.38m/MW. Estimated capex for onshore wind is derived from historical turbine prices from the German turbine manufacturer Vestas. Starting from €1m/MW in 2013, turbine prices declined by 25% until 2020. Similar to solar, prices started to increase in 2021 resulting in costs of €0.8m/MW. Driven by ongoing supply chain disruptions and record-high commodity and transportation costs, we expect turbine prices to further increase to €0.9m/MW in 2022 before returning to a price decline in 2023. To estimate future prices for wind turbines, a power law regression on the historical data of turbine prices was used. As turbines have historically made up around 63% of total capex (*BNEF*), total investment costs of €1.4m/MW in 2022 were derived. By 2040, we expect capex for onshore wind plants to fall by 38% to €0.9m/MW (Fig. 10). The ongoing decline in investment costs will eventually decrease future LCOEs for both technologies strengthening their cost competitiveness over conventional energy sources (Fig. 11). Additionally, we expect the decrease in capex to serve as a booster for project IRRs in the short- and mid-term as we anticipate electricity prices to remain well above solar's and wind's LCOEs.

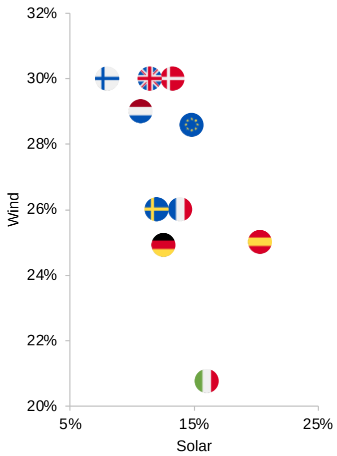
Capacity factors determine future power generation

Fig. 12: Impact of the capacity factor on the LCOE of solar and onshore wind (€/MWh)



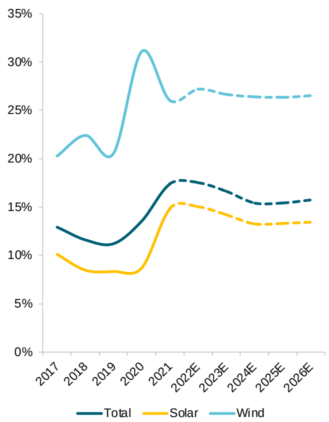
Note: LCOE estimates for 2022
Source: Nova SBE

Fig. 13: Overview of capacity factors of Encavis' markets, by technology (%)



Note: Europe represents average of relevant Encavis markets
Source: Nova SBE based on company info and IRENA

Fig. 14: Development of capacity factors of Encavis' power generation portfolio (%)



Source: Nova SBE based on company info

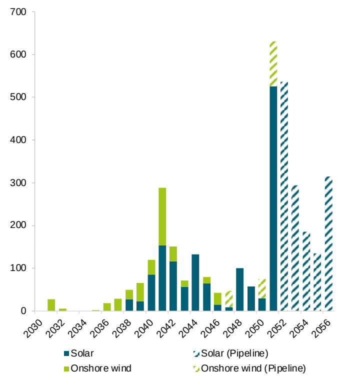
Note: (1) Defined as generated output (GWh) / potential output assuming 100% utilization (GWh); (2) ex. Spain

A major measurement of utilization and efficiency of an installation is the capacity factor[1]. It is an essential predictor of the future output of a renewable power plant and has a significant impact on the local LCOE of renewables (Fig. 12). It is influenced by four factors: (1) the technology of the plant is the most important factor, as the output of solar parks is limited by daily sun hours, while wind parks can generate power day and night. Additionally, the capacity factor highly depends on the type of solar modules (tracking vs. non-tracking or thin-film vs. crystalline silicon modules) or type of wind turbines used. (2) As renewable power plants rely on local weather conditions, the geographic location is crucial. Identical solar plants show higher capacity factors in countries with higher irradiance such as Spain or Italy, while wind parks benefit from inherently richer wind conditions in Scandinavian countries, eventually leading to lower LCOEs in those regions (Fig. 12 + 13). (3) The plant's output performance will still be subject to a certain volatility of meteorological factors during and across years, as shown previously. (4) The last factor is the age of the power plant, as every technical product under permanent utilization experiences wear and tear over its lifetime leading to decreasing output in the long term.

To forecast the capacity factors for both solar and wind parks in each geography, a combination of local historical data of existing installations for each technology was analysed and validated with external data provided by *IRENA*. Since some historical capacity factors were biased due to divestments and ramp-up periods for new installations or were not available as Encavis had not yet entered the respective market, the same data set provided by *IRENA* was used as a complementary source. After the rise in the average capacity factor of Encavis' solar portfolio to 15% in 2021, driven by its market entry in Spain, we predict the average capacity factor to decline to 13% as the majority of its pipeline projects is located in Central or Northern Europe (Fig. 14). To reflect annual degradation, an annual decline in the capacity factor of 0.5% was assumed for solar plants, in line with studies by e.g. *NREL*. As onshore wind plants suffer from even stronger efficiency declines, an annual decrease of 1% is assumed (Staffel et al, 2014). As Encavis' existing portfolio already suffered from some efficiency losses as the average grid connection year is 2015[2], newly built projects from the pipeline are expected to be slightly more efficient compared to Encavis' existing portfolio. Thus, the capacity factors of newly acquired power plants are increased by 100 bps over the capacity factors of the existing portfolio to take technological improvements into account.

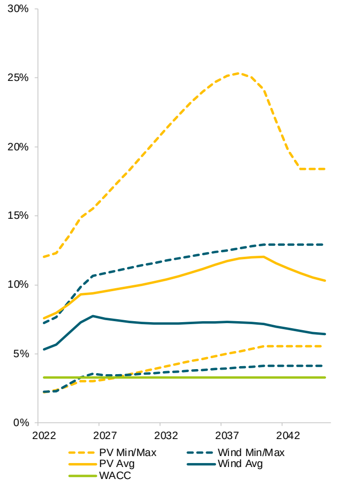
Repowering may secure continuous value creation

Fig. 15: Annual repowering schedule of the existing portfolio and pipeline projects (MW)



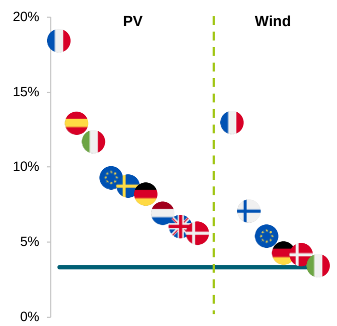
Source: Nova SBE

Fig. 16: Future project IRRs for solar and onshore wind projects (%)



Note: Please see Appendix for further assumptions.
Source: Nova SBE

Fig. 17: Expected IRRs for solar and onshore wind projects in 2050



Source: Nova SBE

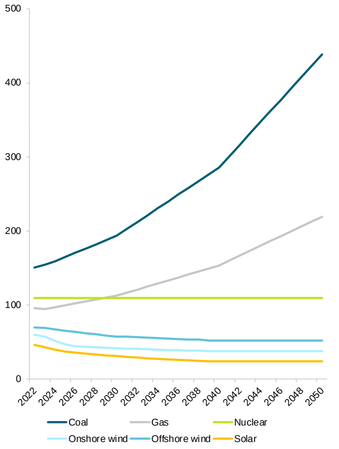
Note: (1) Assuming a technical lifetime of 30 years for solar and 25 years for onshore wind and a degradation rate of 0.5% for solar and 1% for onshore wind per year

As the success of Encavis' business model relies on the efficient operation of its power plants, Encavis will have to make a decision as power plants approach the end of their technical lifetime: Encavis could keep utilizing its power plants until the very last day, i.e. aiming to maximize the potential golden end. However, due to rising maintenance costs and significantly lower efficiency levels of around 85%[1] for solar and 75%[1] for wind plants resulting from degradation, extending a plant's technical lifetime excessively may not be considered economically optimal. In that case, repowering can make a power plant financially viable again. By repowering, the old installation is dismantled and a new installation constructed on top of the old site. This provides the opportunity to benefit from improved capacity factors or even greater capacities which eventually allows Encavis to increase the total output of its portfolio. Given the expected rise in required capacity additions of solar and wind plants in Europe and considering the dense population of the continent, repowering will become critical for the energy transition as it allows to make better use of existing land sites.

The key decision criterion to determine the viability of repowering is the expected project IRR, which should exceed the company's WACC. We expect the majority of Encavis' installations to reach the end of their lifetime between 2040 and 2050, with the first plant to retire in 2031 (Fig. 15). Based on the projected capex, expected project IRRs for each technology and geography until 2050 were determined. For simplicity, it is further assumed that dismantling costs are covered by the scrap value of each plant. Since all future repowering projects yield IRRs above the WACC in the relevant timeframe, we expect Encavis to realize a first repowering for all power plants (Fig. 16). Countries like Italy are expected to generate higher IRRs as they are likely to rely longer on conventional energies. Contrarily, nations like Denmark will lead to lower IRRs due to the already high share of renewables in the electricity mix. The current PV and wind plants have a capacity-weighted average age of 7 years, making capacity increases through repowering likely. Based on a wind study performed by *IRENA* (2019), a capacity increase of 54% for onshore wind plants is expected, while for solar plants only a minor capacity expansion of 5% is assumed (*Berkeley Lab, 2022*). In the long term, we expect Encavis to continue to repower its plants as long as the project IRRs remain above the WACC (Fig. 17). As outlined in the next subchapter, we expect electricity prices to remain slightly above the LCOE of solar and onshore wind in the long term, keeping repowering value-creating for both technologies.

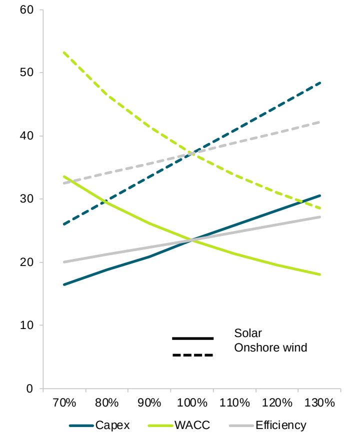
LCOEs determine electricity prices

Fig. 18: Future LCOEs of conventional and renewable energy sources (€/MWh)



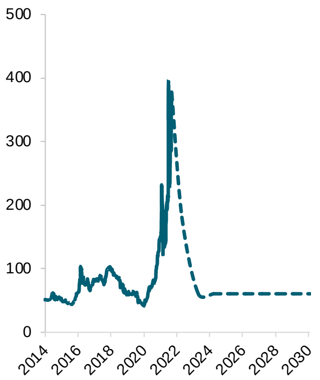
Note: For assumptions, please see Appendix.
Source: Nova SBE

Fig. 19: Sensitivity analysis of LCOEs for solar and onshore wind in 2050 (€/MWh)



Note: Efficiency includes O&M costs and capacity factor.
Source: Nova SBE

Fig. 20: Historical coal price development and future estimates of the Newcastle price benchmark (€/t)



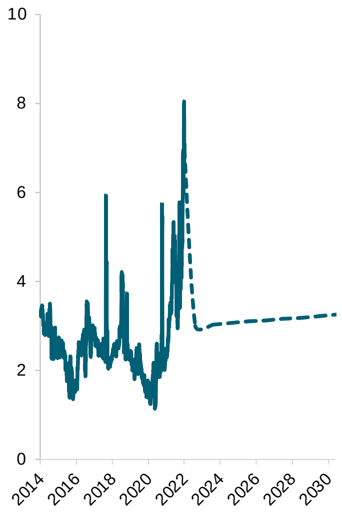
Source: Nova SBE based on Bloomberg

Note: (1) 12-month average from before June 2021

As the EU currently undergoes a complete turnaround in its energy policy, we expect the energy markets to remain volatile in the short term. The substitution of Russian energy imports and the EU's focus on its long-term climate targets to become climate neutral by 2050 will be critical for the future electricity mix and therefore electricity prices. While this has only a marginal impact on the existing portfolio in the short term as 85% of the generated electricity is contracted under FiTs or PPAs, it is more relevant for all pipeline projects, the remaining technical lifetime once a contract expires as well as the repowering. For the existing power plants contracted via FiTs, the eligible FiT premia for the respective grid connection year were used for the remaining duration of the contract. For PPAs, prices were determined using regional historical prices for 10Y PPA contracts provided by Pexapark. Similar to the pipeline projects, each installation is expected to sell energy at projected market prices upon contract completion until it reaches the end of its useful life. As explained in our Business Model section, we expect the majority of Encavis' power plants to sell their electricity on the merchant market as FiTs will phase out. Still, we anticipate Encavis to contract most of its power plants under PPAs to keep its relatively low-risk profile. To account for varying contract durations, we assume an overall discount of 10% compared to our predicted electricity prices, which was observable in historical PPA prices provided by Pexapark[1].

To predict electricity prices, an LCOE-based pricing model was developed to forecast the electricity production costs for both conventional (coal, gas, nuclear) and renewable energy sources (solar, onshore and offshore wind) until 2050. Despite the anticipated expansion of solar and wind plants to decarbonize the EU's electricity mix, we anticipate the EU to remain dependent on fossil fuels in the short- and mid term as building the necessary capacity additions takes time. As outlined in our Macroeconomic Outlook, we expect solar to remain the cheapest source of electricity, followed by on- and offshore wind (Fig. 18 + 19). Contrarily, conventional energy sources are predicted to increase their cost base relative to renewables and thus will be the relevant electricity price driver for most countries at least in the next decade. The rise in costs for coal and gas is expected to be primarily driven by the increase in CO_2 and fuel prices, while O&M costs only play a minor role. Based on a study by Pietzcker and Rodrigues (2021), the CO_2 price is expected to increase to €129/t by 2030 and €212/t by 2040 driven by the EU's ambitions to achieve net zero emissions by 2050. Following 2040, we assume an increase to €348/t in 2050. For coal, we expect fuel prices to drop again to the historical 10Y average of the Newcastle benchmark price of around €60/t in 2024 and to remain constant, after reaching an all-time high, driven by high gas prices (Fig. 20). As the replacement of Russian gas by LNG will be crucial, it is assumed that European

Fig. 21: Historical gas price development and future estimates of the Henry Hub index (€/t)

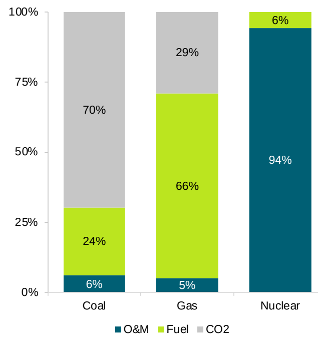


Source: Nova SBE based on Bloomberg

gas prices will converge to the US natural gas price, represented by the Henry Hub index. A recovery of the gas price is estimated in 2023 based on Henry Hub futures for the next year. After 2023, an annual price increase by 1% is assumed for the long term, since production will become increasingly expensive (Fig. 21). Additionally, a premium of 5% above the Henry Hub index is considered to account for higher costs resulting from the liquefaction for the transportation.

The primary reason for coal being significantly more expensive compared to gas and nuclear in terms of LCOE is higher CO_2 emissions per MWh. Thus, we estimate that 69% of the unit costs for coal result from today's CO_2 price, while gas produces only 41% of coal's emissions and nuclear none at all (Fig. 22). As CO_2 costs will rise significantly, coal will become increasingly uneconomic, which can also be observed in most European countries' decision to exit coal in the near future and instead rely on gas and nuclear. Taking into account the current electricity mix of each country, their long-term climate goals as well as the EU's energy strategy, electricity prices until 2050 were derived from our LCOE model and an approximated merit order of each country (Fig. 23). Once a country achieves 100% of its electricity mix to be generated by renewable energy, the average of the LCOE of onshore and offshore wind is assumed as a proxy for the highest LCOE representing all other alternative renewables entering the grid in the merit order.

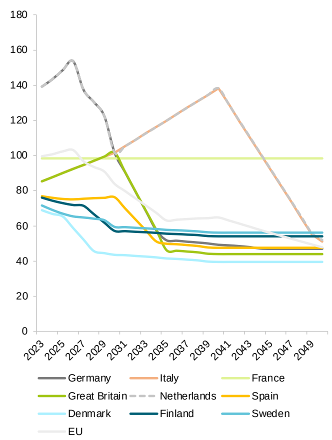
Fig. 22: Split of unit costs of conventional energy sources (2022)



Note: For assumptions, please see Appendix.
Source: Nova SBE

In the near future, we expect Germany and the Netherlands to be more attractive in terms of electricity prices as both countries still rely on coal. Once Germany shuts down its last coal plants by 2030, prices are predicted to decrease significantly as the German government aims to achieve complete renewable electricity production by 2035, whereas the Netherlands is most likely to rely on gas. As some countries, including France and Finland, have not yet declared their exit strategy from nuclear power and the EU's latest taxonomy labels this technology as a green energy source, it is assumed that those countries will rely on a mix of nuclear power and renewable energy. The Danish merchant market, however, is likely to become less attractive as 86% of its electricity is already produced by renewables and coal will be abandoned by 2028.

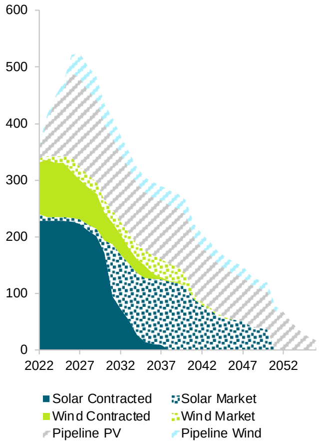
Fig. 23: Forecast of relevant electricity prices in the EU (€/MWh)



Note: For FY 2022, the last 12-month average of local electricity prices was used. EU prices reflect capacity-weighted average LCOE of Encavis' portfolio by country
Source: Nova SBE

Capacity expansion will drive cash flows

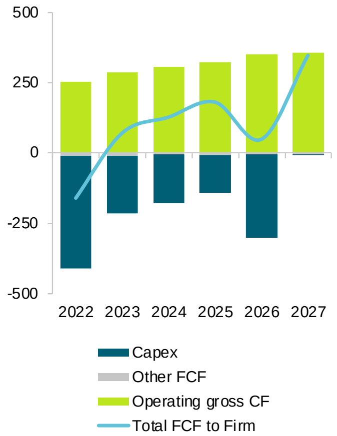
Fig. 24: Expected revenues of Encavis' power generation business (€m)



Note: A ramp-up phase of 50% for pipeline projects was assumed. Revenues do not reflect the repowering of retiring power plants.
Source: Nova SBE

Revenues of Encavis' power generation business are expected to increase in line with the capacity expansion, growing by an average of 9% p.a., peaking at €525m in 2027 (Fig. 24). Subsequently, decreasing electricity prices, particularly in Encavis' home market Germany and expiring FiTs after 2030 are expected to gradually lower revenues along the plants' lifecycles, gradually feeding capacity into the repowering schedule. In some countries, declining electricity prices will increase the importance of inherent cost drivers of the plants earlier than in other countries. Costs for maintenance and commercial management of the solar and wind plants are expected to remain the major cost drivers driven by the capacity of Encavis' portfolio. As outlined in our Financial Analysis, Encavis has managed its portfolio efficiently in terms of operational expenditures. We therefore expect Encavis to maintain its prior performance levels in the future, projecting a stable EBITDA margin of 76% until FiTs run out after 2030. Due to lower electricity prices, degradation effects and plant retirements, EBITDA margins may decrease slightly, as plants shift into the repowering phase. Total capex of around €1.2bn are expected to burden free cash flows until 2026 to realize the pipeline projects (Fig. 25). Given its solid balance sheet, Encavis is likely to use further debt to cover the negative free cash flow in 2022. Once the new projects are ramped up, both the operational cash flow and the firm's free cash flow are expected to rise to around €370m in 2027.

Fig. 25: Expected cash flow development (€m)



Note: Operating gross CF is defined as the sum of NOPLAT and D&A
Source: Nova SBE

Asset management as major value contributor

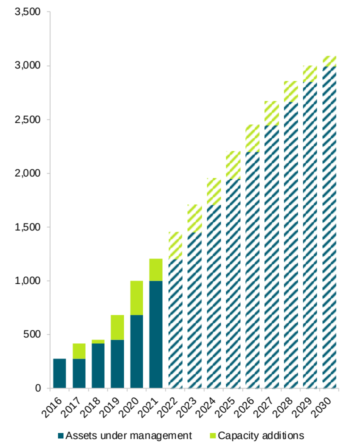
The ambitious targets of the energy transition require tremendous amounts of capital allocated to the renewables sector. Based on our Macroeconomic Outlook, we predict total capacity additions of 2.1 TW in solar and wind plants in the EU to increase their share in the electricity mix to 65% by 2050. Thus, we estimate a total required investment need of around €2tr for the next decades (Fig. 26), a more conservative result than *BNEF* (+20%). This does not include additional investments in repowering or other renewables such as hydrogen, but already indicates that investments of power producers and the governments alone may not be sufficient to cover the capital demand. Institutional investors, one of the largest capital providers in the world, have increasingly invested in renewables in the past which can also be observed in the increased funds raised by Encavis Asset Management (Fig. 27). The renewables industry has become an attractive target for institutional investors as it provides stable, predictable cash flows and the opportunity to generate attractive returns, a necessity to combat challenges in the current low-interest

Fig. 26: Estimated investment demand for solar and wind in the EU

Technology	Capacity (GW)	Investment (€bn)
Solar	913	456,713
Wind	1,167	1,525,821
Onshore (70%)	*817*	*825,368*
Offshore (30%)	*350*	*700,453*
TOTAL	**2,081**	**1,982,534**

Note: The following average capex was assumed: Solar (€0.5m/MW), Onshore wind (€1.01m/MW), Offshore wind (€2.0/MW)
Source: Nova SBE

Fig. 27: Assets under management of Encavis Asset Management (MW)



Source: Nova SBE based on company info

environment. Still, only 20% of them have already invested in renewable assets indirectly via funds and only 1% directly in renewable energy projects (*IRENA),* providing ample future potential.

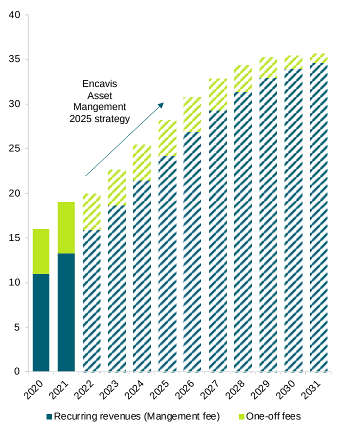
The future performance of Encavis' asset management business can be separated into two revenue streams: first, a recurring management fee on the assets operated and managed by Encavis on behalf of investors and second, an acquisition fee on each investment the fund performs as Encavis Asset Management is responsible for the deal sourcing. As mentioned in our Financial Analysis, the recurring revenues are based on the amount invested by the investors. As this figure is not publicly disclosed by the company, the total capacity of the managed portfolios was derived from past company news and is used as a proxy to determine revenues. Based on historical earnings calls, we estimate an annual management fee of an average of €11k per MW managed (Fig. 28). We consider the recurring revenues to be well predictable as the funds have a minimum investment horizon of 20 years. In the last two years, the asset management business doubled its managed portfolio size to 1.2 GW in 2021. New investments on behalf of institutional investors are expected to increase the recurring revenues even further (Fig. 29). Following Encavis' "Outlook 2025" for the asset management, we anticipate this business segment to grow its asset base managed by 250 MW annually, reaching the target of 2.2 GW in 2025. In the following six years, growth is expected to gear towards a perpetual growth rate of 2% starting in 2031 with 3.1 GW of assets under management at that time. In contrast to the power generation segment of Encavis, institutional investors have been favouring wind projects over solar. This is mainly attributable to the higher transaction size in wind projects due to higher capex with thus lower transaction costs. When looking at the assets managed by Encavis Asset Management, of which 61% are onshore wind plants, the same trend can be observed. For the acquisition of new power plants, a fee of €15.6k per MW newly acquired is charged. We expect revenues to increase by 10% p.a. until 2025 and 5% p.a. in the following five years (Fig. 29). Due to the asset-light nature of the business, a stable EBIT margin of around 44% is expected based on the last three years. In line with stable margins and low capital requirements, free cash flows are predicted to grow in parallel with revenues, making the asset management a strong value contributor. Even though free cash flows seem to be small compared to Encavis' power generation business, their operating risk exposure towards meteorological influences and fluctuations of electricity prices, both of which the power generation segment is facing, are eliminated.

Fig. 28: Illustrative fee split of a 100 MW fictional project

€m	2022	From 2022 on
One-off fee (€15.6k/MW)	1.6	-
Management fee (€11.0k/MW per year)	1.1	1.1

Source: Nova SBE based on company info

Fig. 29: Development of revenues of Encavis Asset Management (€m)

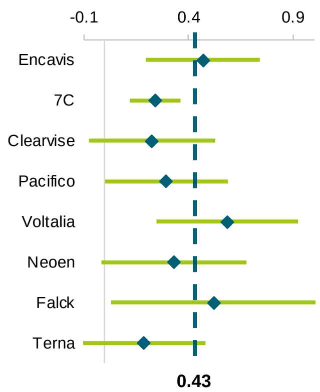


Source: Nova SBE based on company info

Valuation

To derive the fair value of Encavis, a sum of the parts (SOTP) valuation is employed based on a DCF model for (1) the existing portfolio, (2) the pipeline, (3) the option to repower the plants from (1) and (2), and (4) the asset management segment. This allows for better taking the different natures of the company's business segments into account and value the individual businesses more accurately. Finally, a relative valuation based on current trading multiples and a set of comparable transactions of solar and wind plants is used to validate the company value derived from the SOTP.

Fig. 30: Overview of unlevered betas of Encavis and comparable firms



Note: Data as of May 15, 2022
Source: Nova SBE based on Bloomberg and Berck & DeMarzio (2013)

WACC reflects low intrinsic risk

To compute the equity beta of Encavis, a peer group consisting exclusively of European IPPs with similar technology and geography focus was used as a benchmark as they are considered to be closer to Encavis than utilities. Based on a median industry beta of 0.4 from the peer group and assuming a D/E target ratio of 47% based on current market values, an equity beta of 0.6 for Encavis is derived (Fig. 30). The low beta of the company also reflects the relatively low intrinsic risk resulting from the high predictability and stability of Encavis' future cash flows as well as the low cyclicality of the business model. A beta debt based on the recently reaffirmed issuer rating of BBB- by SCOPE of 0.1 was determined (*Berck & DeMarzio, 2013*). To calculate the WACC, the yield of a 10-year German government bond of 1.1% as a proxy for the risk-free rate and the most recently reported KPMG market risk premium of 5.5% were used. Finally, we expect the company's statutory tax rate of 28.9% to remain unchanged in the future, leading to a WACC of 3.3% (Fig. 31 + 32).

Fig. 31: Derivation of Encavis' WACC

Market assumptions	
Risk-free rate[1]	1.1%
Market risk premium[2]	5.5%
Beta estimates	
Beta unlevered (industry)	0.4
Beta levered	0.6
Beta debt	0.1
WACC	
D/E ratio	60.0%
Tax rate	28.9%
WACC	**3.3%**

Note: (1) As of May 6, 2022, (2) As of March 31, 2022
Source: Nova SBE based on Bloomberg, KPMG and Berck & DeMarzio (2013)

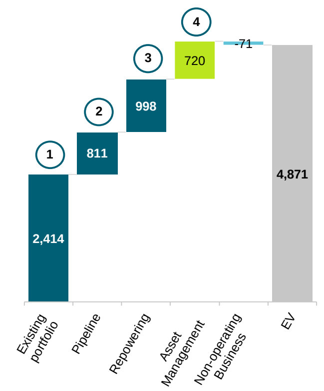
Fig. 32: Sensitivity analysis of Encavis' WACC

		Market risk premium				
		4.5%	5.0%	**5.5%**	6.0%	6.5%
Levered beta	0.52	2.6%	2.8%	3.0%	3.1%	3.3%
	0.57	2.7%	2.9%	3.1%	3.3%	3.5%
	0.62	2.9%	3.1%	**3.3%**	3.5%	3.7%
	0.67	3.0%	3.3%	3.5%	3.7%	3.9%
	0.72	3.2%	3.4%	3.7%	3.9%	4.1%

Source: Nova SBE

SOTP reveals value distribution

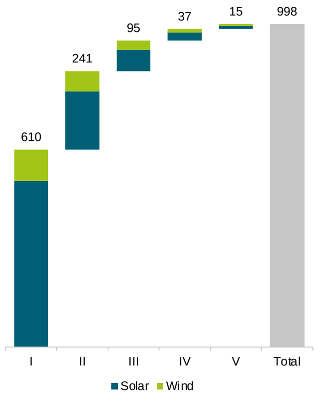
Fig. 33: Value distribution of Encavis' business segments – Derivation of EV (€m)



Source: Nova SBE

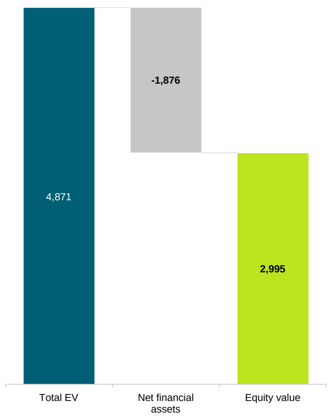
1. With 50% of the total enterprise value (EV), the existing portfolio of 1.8 GW is the major value contributor. Since the majority of future revenues are already contracted by long-term FiTs and PPAs, the uncertainty from near-term price declines is reduced. To value the existing portfolio and to account for the high visibility of its future cash flows using a DCF, the free cash flows were projected until the last installation reaches its useful lifetime in 2049. To reflect the limited lifetime of the solar and wind parks and to avoid bundling undefined value in a terminal value, the option to repower each power plant is valued separately. The DCF for the existing portfolio yields a value of €2.4bn.

Fig. 34: Value contribution of future repowering cycles (€m)



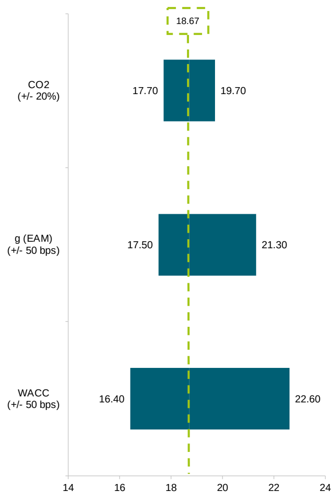
Source: Nova SBE

Fig. 35: EV – Equity bridge (€m)



Note: Net debt as of December 31, 2022
Source: Nova SBE

Fig. 36: Sensitivity analysis (€/share)



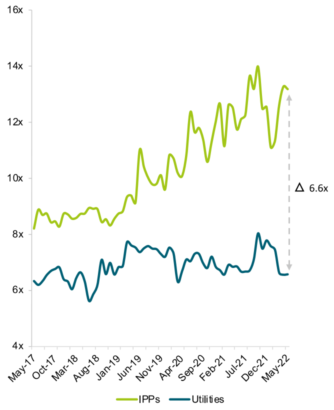
Note: EAM = Encavis Asset Management, Changes in the WACC also consider impact on respective LCOEs
Source: Nova SBE

Note: (1) Assuming 160.5m shares outstanding

2. Similar to the existing portfolio, the project pipeline was valued using a DCF covering the entire first lifecycle of each installation, with the last installation reaching the end of its technical lifetime in 2056. Contrary to the existing portfolio, the uncontracted pipeline has a significantly higher exposure to the volatility of future electricity prices and is thus more reactive to potential price changes. Our DCF yields a value for the pipeline of €0.8m, representing 17% of the EV.
3. Given the rising demand for capacity additions in solar and wind plants as well as the economic attractiveness of running renewable energy power plants in the future, the repowering of both existing and newly built power plants is assumed. Using the estimated annual IRRs for each technology as a value driver for the first repowering based on the assumptions outlined in the chapter Value Drivers & Projections, the first repowering contributes a total NPV of €0.6bn, or over 60% of the total repowering value (Fig. 34). As electricity prices are expected to decline in most countries in line with lower LCOEs for renewables, coupled with long discounting periods, the contribution of further repowering cycles diminishes. Overall, we value the option to repower at around €1bn, contributing 20% to the EV of Encavis, of which 16% stems from the solar parks.
4. The asset management segment is valued using a standard DCF model including a terminal value based on the Gordon Growth model, assuming a terminal growth rate of 2%, yielding a value of €0.7bn (15% of the EV). While 66% of the value is allocated to the terminal value, we are confident that Encavis will realize the potential of its asset management segment resulting from the energy transition and the importance of institutional investors to meet the rising investment demand.
5. Based on the previous valuation of the operational business and accounting for non-operating assets worth €-71m, an overall EV of €4.9bn for Encavis is determined, implying a target price of €18.67[1] per share as of December 31, 2022 (Fig. 35). To analyze the impact of minor deviations of assumptions from our base case, the CO2 price, the perpetual growth rate of the asset management business and the WACC were considered in a sensitivity analysis (Fig. 36).

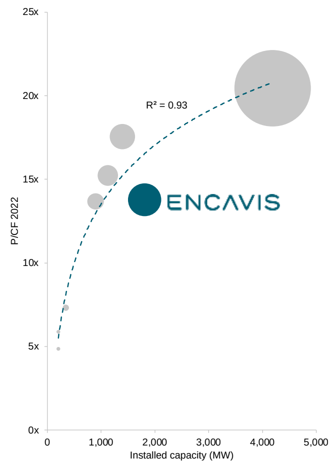
Relative valuation and transaction comparables

Fig. 37: EV/EBITDA (Fwd NTM) of European IPPs and utilities



Note: Forward multiple reflects median based on analyst consensus estimates for the next twelve months. Data as of May 12, 2022. For further information about the peer groups, please see Appendix
Source: Nova SBE based on FactSet

Fig. 38: P/CF multiple of selected European IPPs



Note: Cash flow is defined as net operating cash flow (excluding capex, including interest expenses)
Source: Nova SBE based on FactSet

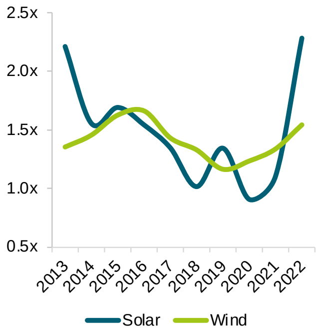
Fig. 39: Overview of current trading multiples of selected European IPPs

Company	EV/EBITDA	EV/MW	P/CF
Encavis AG	**16.2x**	**2.6x**	**14.1x**
7C Solarparken AG	10.3x	1.7x	7.3x
Clearvise AG	8.2x	1.3x	4.9x
Pacifico Renewables Yield AG	7.5x	0.9x	5.9x
Voltalia SA	14.2x	2.5x	15.2x
Neoen S.A.	17.4x	1.5x	20.4x
Falck Renewables S.p.A.	17.4x	2.9x	17.6x
Terna Energy S.A.	15.3x	2.9x	13.7x
Mean	**13.3x**	**2.0x**	**12.4x**
Median	**14.2x**	**2.0x**	**13.7x**
Mean (closest peers)	**15.8x**	**2.7x**	**15.1x**
Median (closest peers)	**15.8x**	**2.7x**	**14.6x**
Implied share price	18.40	20.33	18.76
Weight	*33.3%*	*33.3%*	*33.3%*
Final share price		**19.16**	

Note: Closest peers include Falck Renewables, Voltalia and Terna Energy. Data as of May 12, 2022.
Source: Nova SBE based on Bloomberg and FactSet

To see how Encavis is valued compared to its peers and also to challenge our SOTP valuation, a relative valuation was conducted. When looking at historical trading multiples of IPPs and utilities, one can observe that IPPs have continuously traded at a premium which increased over the last three years (Fig. 37). Given the cost competitiveness of renewables compared to the higher marginal costs of fossil fuels and the foreseeable forced shift to renewables for utility providers demanding significant investments, we deem the discrepancy in trading multiples to be fair. Therefore, only European IPPs with a strong focus on the operations of wind and solar plants were chosen as comparables. Additionally, they were only selected if Europe is their main market (>70% of total revenues) to ensure a similar operational risk profile to Encavis. First of all, it can be observed that although all IPPs operate a similar business model, they are valued differently among most multiples. As can be seen in Fig. 38, IPPs like Encavis, Falck Renewables or Neoen are trading at higher multiples compared to smaller IPPs. We deem the reason for this phenomenon to be their easier access to capital. Larger corporations not only benefit from stronger free cash flows allowing them to grow organically but also from cheaper debt financing. Contrarily, smaller companies rely more on equity raising to finance future growth. As further capital increases imply dilutions of equityholders, we conclude that investors may already reflect the expected dilution in the form of a discount of the share price which eventually leads to lower multiples. Therefore, multiples of companies of similar size to Encavis are primarily used. Using EV/EBITDA, EV/MW and the P/CF multiples leads to an average share price of Encavis of €19.16, indicating a downside to the current share price (Fig. 39). One might be tempted to conclude that the value of Encavis resulting from our SOTP valuation can be corroborated this way. However, it is important to keep in mind the limitations of the relative valuation. For instance, using the EV/MW multiple may be misleading as it is based on the assumption that Encavis has the same technology mix as its peers. Even though we aimed to anticipate this when selecting the peer group, there are not many companies being clearly committed to both technologies, as already shown in our Business Model section. Therefore, we consider the P/CF multiple the most appropriate. Still, trading multiples should only be used if there are sufficient overlaps between the peers and Encavis in terms of market capitalization and technology mix. As no listed company sufficiently similar to Encavis was identified, the result of the trading valuation is not considered in the final target price.

Fig. 40: Historical EV/MW multiple of European asset deals



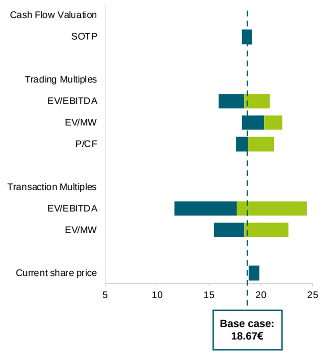
Note: adjusted by outlier
Source: Nova SBE based on MergerMarket

Fig. 42: Selected comparable transactions

Target	Acquirer	EV/EBITDA	EV/MW
Albioma	KKR	12.1x	2.6x
Falck Renewables	JP Morgan	18.7x	2.4x
Solarpack	EQT	19.1x	2.8x
Avangrid	Iberdrola	14.5x	2.9x
Eolia	ENGIE	15.4x	2.3x
Mean		**16.0x**	**2.6x**
Median		**15.4x**	**2.6x**
Implied share price		17.67	18.40
Weight		*50.0%*	*50.0%*
Final share price		**18.04**	

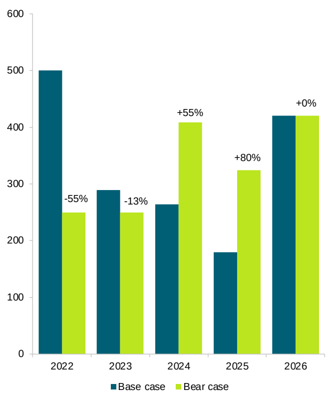
Source: Nova SBE based on Bloomberg and MergerMarket

Fig. 43: Comparison of different valuations methods (€/share)



Source: Nova SBE

Fig. 43: Assumed shift in capacity expansion (MW)



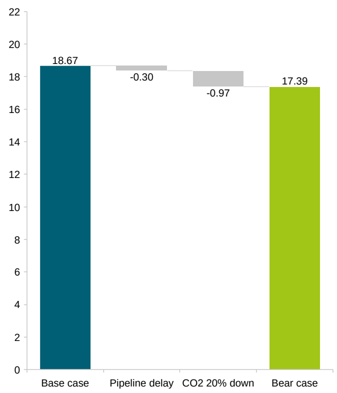
Source: Nova SBE based on company info

The secondary market of renewable power plants has recently gained momentum in the market driven by high demand among utility providers, IPPs, and other operators. Analysing 436 European asset deals of solar and wind power plants over the last ten years, historical EV/MW multiples were determined (Fig. 40). Over the last years, the multiples showed a slight downward trend until 2020 with a strong upward turn for the last two years, particularly driven by a high interest in solar plants in high-irradiation regions like Spain and Italy. Similarly, the market has seen major M&A transactions in the last two years, fuelled by high demand among institutional investors including KKR and JP Morgan as well as utilities seeking opportunities to accelerate the transition of their portfolio towards renewable assets. Five most recent acquisitions of renewable companies focusing on the operation of solar and wind plants were chosen for a comparable analysis. Using the EV/EBITDA and EV/MW multiples of 15.4x and 2.6x (Fig. 40), the transaction-based valuation yields an average share price of €18.04, indicating a downside potential as well (Fig. 42). Given the limited comparability to Encavis, the result of our SOTP valuation is exclusively used for our final recommendation.

The risk of pipeline delay and lower CO_2 prices

In addition to the threat of rising interest rates and retrospective FiT cuts, three major risks impeding the future course of Encavis' business were identified. First, given the expected economical attractiveness of operating renewables in selected countries, it is likely that more and more power producers enter the market. Eventually, this could lead to a cannibalization effect as the expansion of renewables surpasses the expectations, thus leading to an earlier decline in electricity prices. Secondly, the current supply chain shortages in the renewables technology industry drove up prices and time to market for plant developers. This could lead to a delay in the finalization of the pipeline planned until 2026. Particularly, when looking at the current status of the acquisitions planned for 2022, Encavis is short by 76%. Assuming shifts of capacity additions towards 2024/25 while holding on to the finalization date of 2026 (Fig. 43), the value of the pipeline would decrease by 23%, decreasing the share price by roughly €0.30 per share (Fig. 44). Second, as electricity prices are determined by the merit order and fossil fuels are still expected to be crucial in several EU countries in the short term, market prices will be heavily influenced by the rising CO_2 price, for which it is difficult to derive reliable future estimates. As the CO_2 price is a political instrument, it is subject to changes in political courses.

Fig. 44: Impact of a delay in the realization of the pipeline and a lower CO_2 price on the share price (€/share)



Source: Nova SBE based on company info

Especially in today's volatile environment where soaring electricity prices are the major driver of inflation and the economy is less robust, political bodies may intervene in the electricity market. Additionally, market price caps for fossil energy, as Spain and Portugal effectively decreed in May 2022, could be implemented. To reflect the effect of a slower growing CO_2 price, a reduction of our estimates by 20% was assumed, leading to a decrease of the expected share price by roughly €1 per share (Fig. 44). As we deem both scenarios to be realistic, a combination of the pipeline delay and a lower CO_2 was assumed, yielding a share price of €17.39. To factor these risks into our valuation, we weigh the bear case with 20% against the base case, resulting in an overall share price of €18.41.

Share price performance & target price

Fig. 45: Price development of Encavis' shares last 12-months (€)

Note: Data as of May 17, 2022
Source: Nova SBE, Bloomberg

Encavis' stock experienced a strong rally starting with the Ukraine War, after declining from €18.29 in November 2021 to €12.59 in February 2022. Since then, the stock has climbed by 70% to a peak of €21.30 in April, followed by a minor decline to its current price of €19.35 (Fig. 45). The current rally can be seen as the reaction to European countries becoming more self-sufficient in the energy sector. In addition to the EU's climate goals, the Ukraine Crisis has once again underlined the importance of the expansion of renewables. Encavis currently upholds a favourable position in the European power producer industry, being one of the largest IPPs that features a well-diversified energy portfolio. We see the opportunity to benefit from the political ambitions both through capacity additions from its pipeline and rising electricity prices in the near future. Long-term-wise, we expect Encavis to generate additional value through the repowering of its power plants. However, setting the necessary political frameworks and keeping up the momentum after the current crisis has passed will be essential for the long-term success. We find the recent stock rally to have more than sufficiently priced in the future potential of Encavis, indicating a slight overvaluation. The most significant risks next to rising interest rates and retrospective FiT cuts include a delay in the realization of the pipeline given the current disruption of global supply chains and a more moderate rise in CO_2 prices. Consolidating our finding, we issue a **SELL** recommendation considering a price target of €18.41 from our SOTP valuation and an expected dividend of €0.44 in 2022 (Fig. 46), resulting in an expected downside of 4.3% for investors.

Fig. 46: Expected target price and return analysis

Return analysis	
Share price (base case)	18,67
Weight	*80%*
Share price (bear case)	17,39
Weight	*20%*
Target share price (FY 22)	18,41
Dividend	0,44
Current share price[1]	19,35
Expected return[2]	**-4,3%**

Note: (1) As of May 17, 2022, (2) Annualized return as of May 2022
Source: Nova SBE, Bloomberg

MASTER IN FINANCE

ENCAVIS AG

COMPANY REPORT

RENEWABLE ENERGY

20 MAY 2022

STUDENT: ALEXANDER TÜRK & MARCO WEBER

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Renewables on the rise

- Renewables will play a critical role in the achievement of the EU's ambitious climate goals and the reduction of dependence on Russian energy imports. As electricity demand is expected to double by 2050, an additional 2,100 GW in solar and wind capacities are necessary.
- Due to their cost competitiveness, solar and onshore wind will remain the cheapest energy sources. Costs for conventional energy production will rise, driven by higher CO_2 prices, leading to a short- and mid-term increase in electricity prices.
- As FiTs are expected to expire within the next 10.5 years, Encavis will be more prone to fluctuations in the merchant market. High corporate demand for renewable energy will allow Encavis to contract parts of its power generation under PPAs.
- Repowering will become an integral part of the expansion of renewables starting in 2031. We expect the repowering of Encavis' power plants to be value-creating as electricity prices are predicted to be above the LCOE of solar and onshore wind.
- Since the start of the Ukraine War, Encavis' shares rose by 54%, driven by the EU's stronger target to expand renewables. Considering our SOTP valuation, severe risks of pipeline delays and a lower than expected CO_2 price, we issue a Sell rating.

Company description

Encavis AG is a leading German independent power producer focusing on the acquisition and operation of solar and onshore wind parks in Europe. Through its subsidiary Encavis Asset Management, the company offers attractive investment opportunities to institutional investors to invest in renewable energy projects.

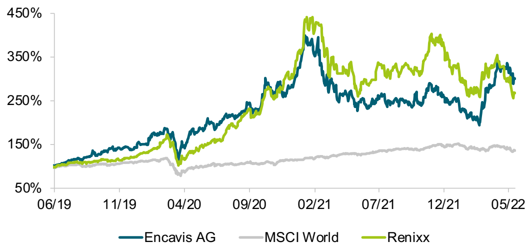
Recommendation:	**SELL**
Price Target FY22:	**18.41 €**
Price (as of 17-May-22)	**19.35 €**

Reuters: ECVG.DE, Bloomberg: ECV:GR

52-week range (€)	11.50-21.59
Outstanding Shares (m)	160.5
Market Cap (€m)	3.105.1
Net debt (€m)	1,593.9
Enterprise value (€m)	4,669.0

Source: Bloomberg, company info

Share price performance last 3Y (%)



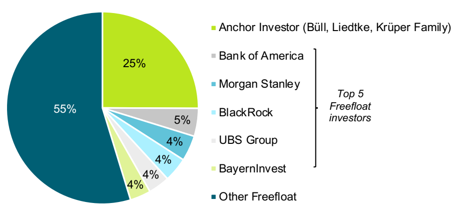
Note: Normalized to respective values from May 17, 2019 (100%)

Source: Bloomberg

(€m)	2020	2021	2022E	2023E
Revenues	292	333	385	439
y-o-y growth	7%	14%	16%	14%
adj. EBITDA	212	244	293	335
adj. EBIT	76	92	118	145
Net profit	20	85	31	54
FCF	85	18	(151)	89
Capacity (GW)	1.7	1.8	2.3	2.6

Source: Nova SBE, company info

Shareholder structure



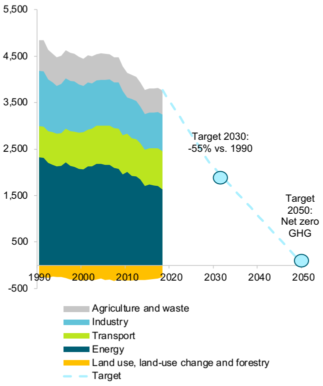
Source: Company info

Table of Contents

Macroeconomic Outlook

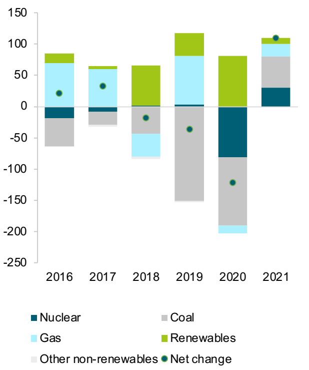
Encavis is located in an attractive growth market

Fig. 1: Energy emissions and net zero carbon target in the EU, by sector (Gt CO_2)



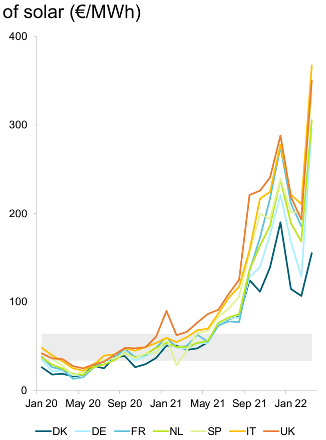
Source: Nova SBE based on EEA and European Commission

Fig. 2: Annual change in electricity generation in the EU 2016 – 2021 (TWh)



Source: Nova SBE based on Eurostat and IEA

Fig. 3: Electricity spot prices of selected European countries and LCOE of solar (€/MWh)



Note: Grey band indicates the range of lowest and highest LCOE of selected European countries in 2022. More information can be found on p. 6f.
Source: Nova SBE, Nordpool, Ember

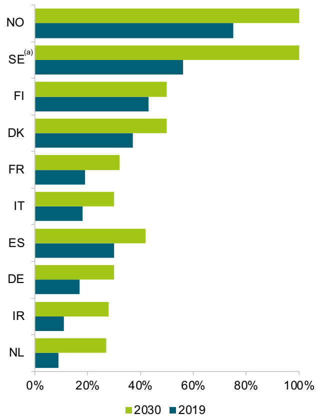
As the largest CO_2 emitter, the energy sector is in the middle of its deepest transformation. To achieve net zero emissions and thereby limit global warming to 1.5°C by 2050, the decarbonization of the energy sector and the economy by rapidly expanding renewable energies is crucial (Fig. 1). In 2021, electricity produced from renewables in the European Union (EU) reached a new all time high (*Eurostat*). Despite this expansion, the availability of renewable energies remains low and unable to fully meet the electricity demand. A strong rebound of the economy by approx. 5% in terms of GDP (*Eurostat*), driven by a gradual removal of pandemic-related restrictions and continuing expansive monetary policies of central banks, as well as more extreme weather conditions led to a rise in electricity demand by 4% in the EU (*IEA*). The increasing demand, paired with a lack of renewables installations and higher gas prices led, to a temporary gas-to-coal switch in the EU allowing coal-fired electricity generation to grow by more than 10% in 2021, after a 24% decline in 2020 (Fig. 2). This underscores the importance of changes needed in the energy sector to fulfill its critical role in the decarbonization.

The European Commission predicts the European economy to grow by 4.0% in 2022 and by 2.8% the next year. In line with the growing economy and continuing electrification, we predict the electricity demand to grow by 3.6% p.a. in the next ten years. The rapid recovery of the economy combined with shortages of natural gas and rising concerns about energy supplies resulting from the Ukraine War put electricity prices recently under pressure, boosting them significantly above the production costs of electricity of some renewables, particularly solar (Fig. 3). In order to tackle the increasing demand for electricity and get Europe back on the track of cleaner energy, renewables will play a significant role in the future. The growth of the renewable energy industry is primarily fuelled by:

1. Strong political support to expand renewable capacities to combat climate change and become more independent from Russian energy imports
2. Decarbonization by increasing electrification of the utility sector and the end-user economy, particularly transportation and housing
3. Increasing cost competitiveness of solar and onshore wind compared to conventional energy sources
4. Emergence of the PPA market of subsidy-free energy driven by high corporate demand

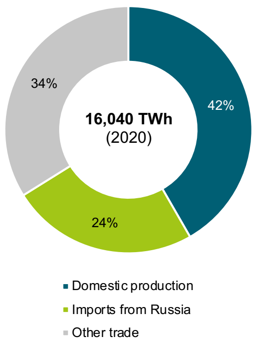
Strong political support to boost energy transition

Fig. 4: Targeted renewable share in gross final energy consumption (%)



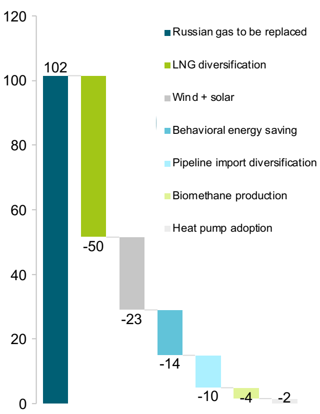
Note: (a) Target 2040
Source: European Commission (National energy and climate plans 2021 – 2030)

Fig. 5: Gross available energy in the EU and its sources in 2020



Source: Eurostat

Fig. 6: EU targets for Russian gas imports to be replaced in 2022 (Bcm)



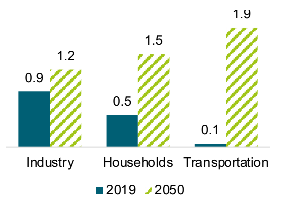
Source: Nova SBE based on European Commission

Driven by the increasing threat from global warming, the energy sector has gained increasing attention from policymakers in the past. Governments set pledges and introduced subsidy programs guaranteeing attractive premia significantly above market prices ("feed-in-tariffs" or "FiTs") to promote the expansion of renewables (Fig. 4). As part of the Paris Climate Agreement, 200 countries committed to limiting the global temperature rise to 1.5°C. The ambitious goals and the rising awareness within the population have served as a strong impetus for investments in the renewable energy sector. Still, current commitments cover less than 20% of the emissions gap that will have to be closed by 2030 to achieve the target of the Paris Agreement (*IEA*). As a result of the recent UN Climate Change Conference in Glasgow, all UN members agreed to accelerate the energy transition and to move away from coal for the first time.

The EU has been a key player in the last decades in raising international awareness and evolved into a front-runner in global renewable energy deployment. From 2005 to 2020, the EU has doubled its share of renewable energy to 12% of its energy mix (*Eurostat*). Additionally, the European climate debate recently regained new momentum. Firstly, by introducing its "Fit for 55" climate plan in 2021, the EU increased the pressure on clean power targets. The plan aims to accelerate the emission reduction target to 55% (vs. 1990) by 2030 and make Europe the first climate-neutral continent by 2050. Due to the initiated exit from coal power sources across Europe, the dismissal of nuclear power in some European countries and the relatively low penetration rate of renewables, the electricity supply is likely to face some shortages. Secondly, the ongoing Ukraine War demonstrates again that Europe's energy strategy of significantly relying on Russian energy imports is not sustainable. As a net importer of energy, only 42% of the energy needed is produced within the EU, while 42% of imports come from Russia, with natural gas and petroleum being the primary energy sources (Fig. 5). The Russian invasion of Ukraine points to the importance of Europe's energy security and self-sufficiency, a goal that is fully compatible with decarbonization. To reduce the dependence on Russian gas and to accelerate decarbonization efforts, the European Commission aims to cut Russian gas imports by two-thirds in 2022. 22% are expected to be replaced by an accelerated rollout of solar and wind already this year (Fig. 6). Expanding solar and wind capacities by 980 GW by 2030 as part of the "REPowerEU" strategy to reduce the EU's dependence on energy imports and fossil fuels underlines the increasing use of renewables.

Increasing electrification supports growth

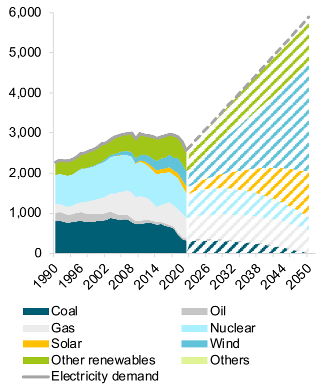
Fig. 7: EU electricity demand by sector (PWh)



Electricity (%)	2020[a]	2050[b]
Industry	33%	60%
Households	25%	50%
Transportation	2%	50%

Source: (a) Eurostat, (b) Nova SBE

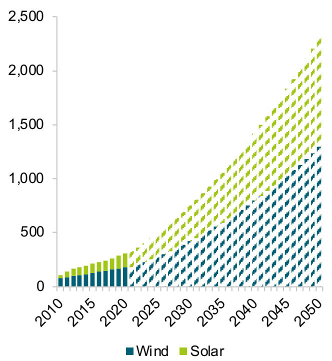
Fig. 8: Expected EU electricity demand and electricity mix by 2050 (TWh)



Energy mix (%)	2020[d]	2050[e]
Coal + oil	15%	0%
Gas	21%	10%
Nuclear	25%	5%
Wind + solar	19%	65%
Other renewables[c]	20%	20%

Note: (c) Incl. biomass, biofuel, hydropower, etc.
Source: (d) Eurostat, (e) Nova SBE

Fig. 9: Solar and wind capacity in the EU (GW)



Note: Assuming load factors of 23.6% (wind) and 13.0% (PV), wind/PV split: 70%/30% of total GWh
Source: Nova SBE based on Eurostat

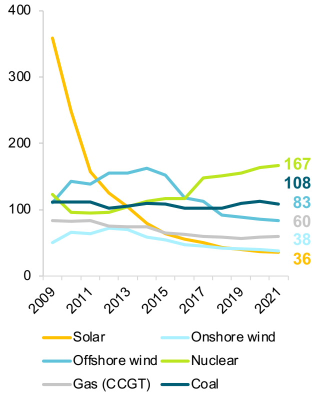
Note: (1) remaining 50% are expected to be generated by other renewables including biofuels, hydrogen and others

On the path to achieving net zero emissions, the electrification of the economy will be critical. The European energy sector itself must become more environmentally friendly as it accounts for more than 32% of CO_2 emissions in the EU (*Eurostat*). Hence, replacing fossil fuels with electricity in the end-user economy is essential for decarbonization. In total, we estimate the electricity demand in the EU to more than double to 5,900 TWh in 2050 (vs. 2020), with transportation being the major driver (Fig. 7 + 8). The latter is expected to generate increasing demand for electricity driven by significant growth in electric vehicle sales and growing demand for mobility. While 88% (*Eurostat*) of the final energy consumption of the road industry is still oil-based today, we forecast electricity to be dominating in the future, accounting for 50%[1] of the energy mix in this sector. The increased use of electric processes such as electric arc furnaces for steel production is also expected in the industry sector. Similarly, the decarbonization of the household energy consumption through switching from conventional oil- and gas-fired heating systems to electricity via e.g. heat pumps and direct electric heating will further boost the electricity demand.

The rising demand will make electricity the main energy carrier in the future, satisfying around 59% of total energy consumption by 2050, up from 23% in 2020. While conventional energy sources still account for 61% of the electricity mix in 2020 (*Eurostat*), we anticipate coal and oil to phase out by 2050, in line with the EU climate targets. By 2050, we predict renewable energy to supply 85% of electricity (Fig. 8). To accomplish the energy transition, investments in the energy infrastructure are required to elevate with capital flowing away from conventional energy sources towards cleaner power. The low-cost profiles of onshore wind and solar leave only little opportunities for alternative energy sources such as hydrogen or small modular nuclear reactors. Driven by governmental ambitions to meet climate targets and the reduction of the dependence on Russian gas, we expect Europe, as the second-largest PV market in the world, to accelerate investments in additional solar capacities to an average of 22 GW per year until 2030. Average yearly wind capacity additions of 28 GW are estimated in the EU until 2030, implying a doubling of yearly new capacities for both technologies (Fig. 9). As existing solar and wind parks are expected to retire soon, reaching the end of their technical lifetime, repowering will become necessary for the expansion of renewables. Especially in Europe, where land scarcity problems are significant, repowering allows for greater capacity increases and more efficient land use.

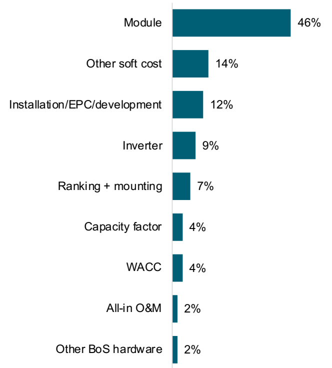
Economic superiority of solar and onshore wind

Fig. 10: Global LCOE benchmarks (€/MWh)



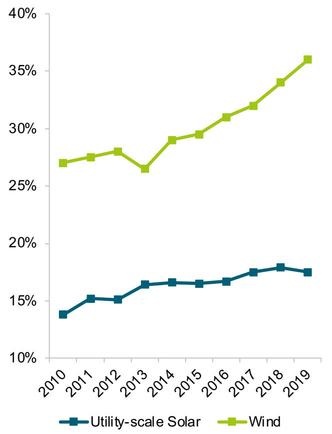
Note: Local LCOEs may vary depending on the country. For assumptions, please check out the most recent version of Lazard's LCOE report.
Source: Levelized Cost of Energy Report (Lazard)

Fig. 11: Drivers of the decline of LCOE of utility-scale PV (2010 – 2020)



Source: Power Generation Cost report 2020 (IRENA)

Fig. 12: Global capacity-weighted average load factors of onshore wind and solar (%)



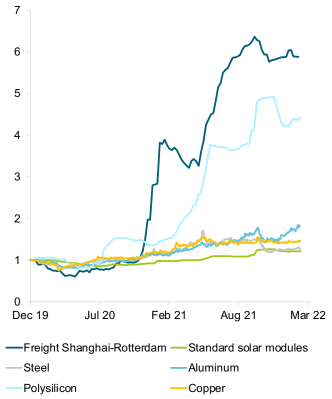
Source: Power Generation Cost report 2020 (IRENA)

Note: (1) Global PV Market Outlook (BNEF)

The cost of electricity production from renewable energy has decreased significantly in the last decade, measured by the levelized cost of electricity (LCOE). Due to the scarcity of past data, our historical analysis relies on the data provided by *Lazard*, which is roughly in line with other research institutes including *Fraunhofer Institute* or *BNEF*. Since 2009, the LCOE for onshore wind went down globally on average by ca. 24% to $38/MWh, while the LCOE of utility-scale PV even decreased by ca. 90% to $36/MWh (Fig. 10). With only one-third of the electricity production costs of coal-fired power, PV and onshore wind have become the cheapest sources of electricity generation in many countries. Offshore wind remains twice as expensive as onshore wind because of higher capex and opex per MWh and higher transmission costs to connect the offshore wind plant to the grid. The trend of rapidly declining energy production costs from renewables has been driven by a steep decline in production costs, particularly for PV modules. Solar module costs decreased rapidly in the past, contributing 46% to the LCOE reduction of utility-scale PV between 2010 and 2020 (*IRENA*, Fig. 11). Gradual improvements in production efficiency, such as more efficient use of polysilicon and innovative design improvements, supported lower production costs. Additionally, the remaining components including the inverter, mounting structure or cables, have gradually improved as the industry has climbed up the learning curve. The shift in deployment to regions with higher irradiation and the increased use of tracking devices have increased the capacity factor of utility-scale solar (Fig. 12). More projects with higher capacities and improved financing terms resulting from the ongoing maturing of technologies both have provided a strong tailwind to the ongoing global energy transition. Similarly, wind plants have benefitted from significant turbine technology improvements. Increasing turbine sizes and hub heights as well as optimizing rotor diameters to better exploit wind resources even in less windy regions have led to an improvement of the capacity factor from 27% in 2010 to 36% in 2020 (Fig. 12). Due to the law of diminishing returns, LCOEs of renewable energy sources have improved only marginally since 2018.

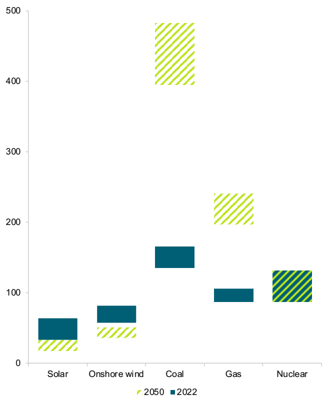
In 2021, the declining cost reduction trend has come to a temporary halt and was even reversed when the global economy rebounded and supply chains came under pressure. *BNEF* estimates that higher commodity prices and dramatically rising freight costs recently increased the price for new renewables and gas-fired power plants by 4% and 12% on an LCOE basis[1]. The costs for PV modules in particular have been impacted by high polysilicon and metals prices which also

Fig. 13: Price movements of PV components since the start of 2020 (nominal, indexed at December 31, 2019)



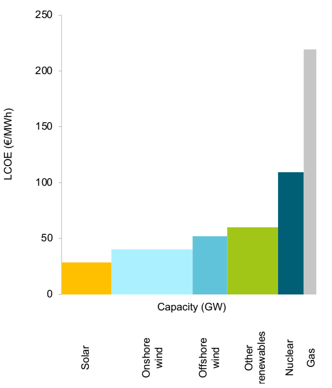
Source: Global PV Market Outlook (BNEF)

Fig. 14: LCOEs of conventional and renewable energy sources today vs. 2050 (€/MWh)



Note: Range for renewables indicates minimum and maximum of selected European countries. For conventionals, a range of +/-10% of the base case is assumed. For further assumptions, please see Appendix.
Source: Nova SBE

Fig. 15: Implied European electricity price based on merit order effect in 2050



Note: Total European electricity production (capacity) is estimated based on electricity demand. The individual country mix may vary. For LCOE assumptions, please see Fig. 14.
Source: Nova SBE

Note: (1) cf. Pietzcker et al (2021), IHS Market, BNEF

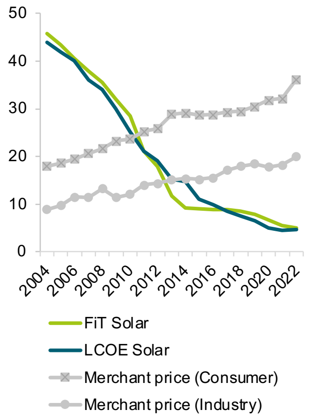
affect the costs for, cablings and transformers. The price for PV polysilicon has more than quadrupled while freight costs have risen to more than sixfold in 2021 leading to significant costs for the geographically fragmented supply chain (Fig. 13). In Europe, renewable power producers have been able to absorb the impact of high costs for raw materials and modules since they currently benefit from record-high power prices resulting from high fuel and CO_2 prices.

The cost competitiveness of solar and onshore wind compared to conventional energy sources explains their leading importance for achieving climate targets and has given the energy transition renewed momentum. We predict their cost advantage to increase even further in the following decades. While we estimate the European LCOE of solar and onshore wind to drop to an average of around €29/MWh and €40/MWh by 2050, driven by further technological improvements and higher economies of scale, we predict an opposing trend for fossil fuels (Fig. 14). Electricity production costs through coal and gas are expected to increase significantly in the future due to a higher CO_2 price. The latter has almost doubled in the last twelve months to currently €88/t, primarily due to stricter greenhouse gas reduction targets. To meet these targets, the number of emission allowances available to companies needs to be reduced further which eventually leads to further rising CO_2 prices. Driven by the rising climate ambitions, experts predict that CO_2 prices will be between €120 and €140/t CO_2 by 2030[1]. While the increase in CO_2 price has no direct impact on the LCOE of renewables as they have the lowest marginal cost of close to zero, the operating costs for fossil fuel power plants are substantially influenced by it. This can already be observed in historical data as well as in our future estimates (Fig. 10 + 14).

Since electricity prices are determined by the merit order, the sequence in which electricity is contributed to the market with the cheapest energy in terms of LCOE setting the starting point, the expansion of renewables will be crucial for the development of electricity prices. Based on our predicted electricity mix, we expect more expensive conventionals (coal, oil) to be pushed out of the merit order by 2050 since they will gradually be replaced by solar, wind and other renewables (Fig. 15). Depending on the individual efforts of European governments and their current electricity mix, the merit order may vary, i.e. conventionals may be replaced earlier or later. As we anticipate a certain proportion of the electricity mix to be comprised of gas or nuclear, those are expected to set the electricity price in the respective countries. In the long term (after 2050), other renewables may fully replace conventionals across Europe, leading to lower electricity prices.

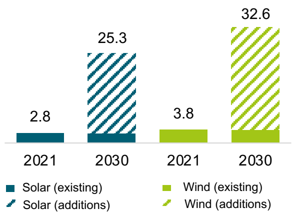
A new era of subsidy-free energy

Fig. 16: Historical FiT, LCOE of PV and merchant prices in Germany (€/MWh)



Note: FiTs for utility PV (up to 10 MW). Historical LCOE is based on average data (IRENA, BNEF)
Source: Nova SBE based on BDEW, Bundesnetzagentur, IRENA, BNEF

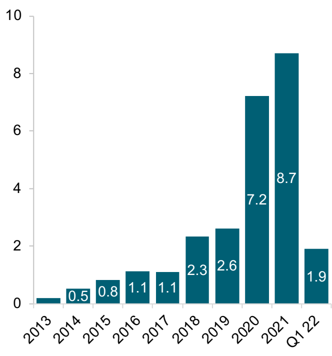
Fig. 17: Demand for solar and wind of European "RE100" members (GW)



TWh	2021	2030
Electricity demand	104.8	124.9
Thereof renewables	*65.2*	*112.4[(a)]*
Contracted wind	5.8	5.8
Contracted solar	4.3	4.3
Certificates	42.8	16.5
Shortfall	12.3	85.2
Contracted capacity (GW)		
Solar[(b)]	2.8	25.3
Wind[(c)]	3.8	32.6

Note: (a) 90% target assumed, (b) load factor: 13.0%, (c) load factor: 23.6%
Source: Nova SBE based on BNEF

Fig. 18: Corporate PPA volume in EMEA (GW)



Source: Corporate Energy Market Outlook (BNEF), Pexapark

Note: (1) Electricity demand of industry + service; (2) Corporate Energy Market Outlook (BNEF); (3) Based on IHS Market and IRENA

With the increasing cost competitiveness of solar in particular and rising electricity prices in the past, prices for FiTs have dropped significantly. German FiTs have dropped by 89% since 2004 (Fig. 16). Larger PV plants are already required to sell electricity via open markets, trends that can also be observed across Europe. While in the short term the sale of electricity in the merchant market can be highly profitable, power producers increasingly seek new opportunities in the emerging power purchase agreement (PPA) market to secure their revenue streams from subsidy-free energy for both the remaining lives of the power plants and for financing of new installations. A PPA is a contractual agreement usually signed for 10 to 20 years between an asset owner and an offtaker allowing the offtaker to purchase power at a pre-defined price.

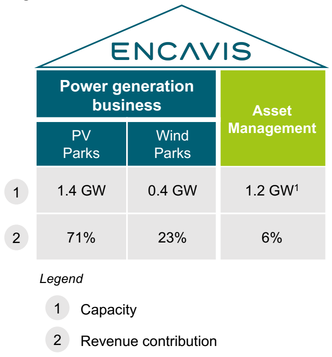
In the last years, PPAs have gained increasing popularity among corporations. Global initiatives such as "RE100" actively commit to maintaining an eco-friendly energy balance to take action on climate change. The European corporates of the 355 "RE100" members (38%) were analysed based on their 2021 electricity demand provided by *BNEF*. In line with our forecasted EU electricity demand, we expect their electricity demand to increase by 2%[1] p.a. to 125 TWh in 2030. In 2021, only around 15% of the renewable electricity demand was indeed satisfied by renewable energy. The majority of the companies relied on CO_2 certificates. Assuming a 10% annual expiration rate and the gap between the existing certificates and renewable energy demand to be met by wind and solar, we predict a renewable energy shortage of 85 TWh by 2030. With our previous renewable mix of 70% wind in the EU, we forecast additional necessary capacities of 23 GW solar and 29 GW wind to close the gap by 2030. (Fig. 17).

The increasing environmental commitments of corporations to achieve sustainability goals and to ensure long-term supply security have supported further growth of the PPA market. While the North American PPA market is more mature, accounting for 66%[2] of global PPA transactions, the European market lags behind (20%[2]). We estimate that only 6%[3] of the renewable capacities were contracted under a PPA in 2020, half of which were signed by corporates. However, European corporations have started to realize the benefits of PPAs, leading to a new record in 2021 (Fig. 18). PPAs allow corporates to meet their carbon reduction targets and offer the opportunity to hedge against increasing electricity costs. Current geopolitical uncertainties, rising commodity prices, the expected increase in CO_2 pricing and propelled market volatilities have led more and more corporations to secure renewable energy via PPAs.

Business Model

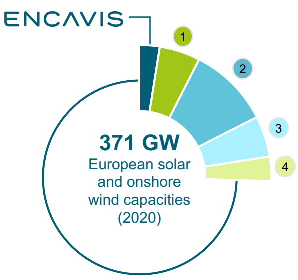
A leading IPP with a relatively low-risk profile

Fig. 19: Overview of business segments



Note: (1) Not owned, only managed by Encavis. Data as of December 31, 2021
Source: Nova SBE based on company info

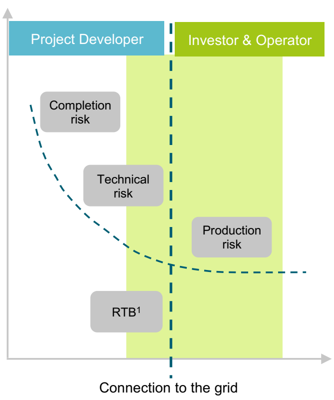
Fig. 20: Size and fragmentation of the European solar and onshore wind market



	Competitors	Examples
1	IPPs	Voltalia, Falck, Terna, aventron, 7C, Alerion, Neoen, EDPR, Blue Elephant (3.7%)[1]
2	(Inter-)national utilities	RWE, Iberdrola, Engie, Enel, Vattenfall (8.3%)[1]
3	Regional utilities	Mainova, MVV, Lechwerke, Enercity, Unión Frenosa
4	"New competitors"	Volkswagen, Tesla, Telekom, Shell, Google, Stromio

Note: (1) Sum of market shares of mentioned companies; market shares as of April 15, 2022. Graph is not drawn to scale.
Source: Nova SBE, IRENA, Company infos

Fig. 21: Risk structure of investments



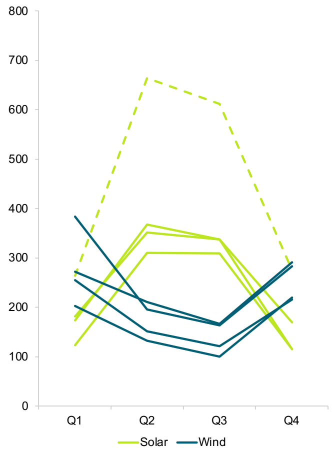
Note: (1) RTB = Ready-to build
Source: Company info

Encavis has developed into a leading independent power producer (IPP) in the European renewable sector focusing on the operation of solar and onshore wind parks. Through its subsidiary Encavis Asset Management, the company launches and structures funds allowing institutional investors to invest in renewables (Fig. 19). With a company-owned power portfolio of almost 2 GW Encavis accounts for one of the largest IPPs with an estimated market share of 0.5% in the highly fragmented renewable energy market in Europe (Fig. 20).

Encavis' management has aimed to gear its business model towards the reduction of operating risks which can be observed e.g. in the markets in which the company operates: Encavis owns power plants in nine European countries which all are characterized by relatively high political stability and similar frameworks to support the expansion of renewables. On the one hand, this allows Encavis to limit risks and leverage knowledge in terms of legislation and operations. On the other hand, it restricts Encavis' opportunities to enter relatively untouched markets with high electricity demand and few renewable energy sources. This leaves highly competitive markets posing a challenge for future long-term growth and eventually returns for its shareholders. Nations like Italy and Spain and most recently France announced to cut FiTs retrospectively, questioning the reliability of the markets. Therefore, we see the possibility that Encavis might deviate from its current geographic strategy in the future.

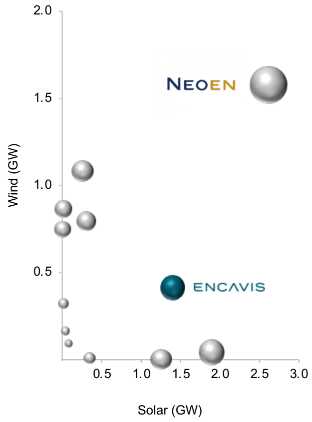
To deliver attractive returns to investors, Encavis is required to have access to new projects to grow its portfolio and ultimately optimize its cost and capital structure. The acquisition of project developers by IPPs such as Neoen or Voltalia to secure access to new projects has occurred in the past but comes at the cost of an increased risk profile. To avoid the significantly higher risks in the early stages of a project (Fig. 21), Encavis focuses on the acquisition of existing ground-mounted solar and onshore wind parks already connected to the grid or ready-to-build (RTB) projects. Its focus on partnership agreements with project developers allows the company to secure early access to new projects. As local connectivity particularly in rural areas is a prerequisite for successful project development, Encavis has closed 12 strategic development partnerships across Europe. These partnerships allow Encavis exclusively to choose from different projects without having to carry the up-front costs for the development and are

Fig. 22: Seasonal fluctuations of power generation 2018 – 2021 (GWh)



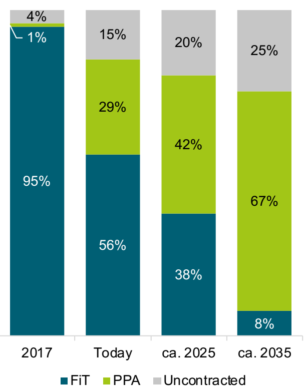
Note: Dotted line represents electricity generation of PV parks impacted by LaCabrera and Talayuela.
Source: Nova SBE based on company info

Fig. 23: Portfolio diversification of selected European IPPs



Note: Size indicates portfolio size of solar and wind (GW) as of April 25, 2022
Source: Nova SBE based on company infos

Fig. 24: Revenue streams of Encavis' power generation business (% of total TWh)



Note: Today as of December 31, 2021, estimates include expected capacity additions from pipeline
Source: Nova SBE, company info

Note: (1) "A climatological assessment of balancing effects and shortfall risks of PV and wind energy in Europe"; (2) Merchant market includes open and PPA market

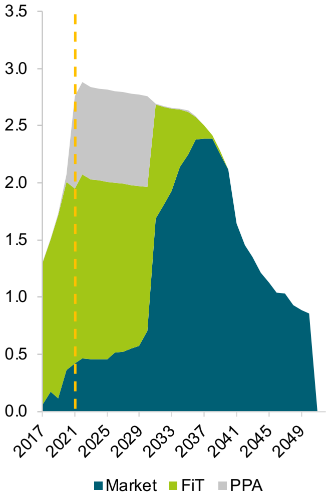
crucial for achieving the target of its "Fast Forward 2025" strategy to grow its portfolio size to 3.4 GW by 2026.

Furthermore, its diversified power plant portfolio consisting of both solar (77% of capacity) and onshore wind (23%) lowers overall volatility in the company's power generation which is characterized by seasonal and meteorological fluctuations. While the electricity generation for solar plants is highest in the second and third quarter of the year when irradiation is highest in Europe, power produced from wind plants usually peaks in the first and fourth quarter when wind yields tend to be higher (Fig. 22). Both the seasonality as well as yearly fluctuations in irradiation and wind yields have a significant impact on the company's power production and hence its earnings as we will show in the next chapter. While the seasonality is pre-determined, meteorological effects are uncertain. Wind yields in particular tend to be more volatile than solar irradiance in Europe (see e.g. *Kaspar et al., 2019*[1]). Having a diversified and complementary portfolio thus allows Encavis to balance those meteorological deviations allowing for improved accuracy of predicted cash flows. In the past, the diversification of the portfolio was even more prevalent. Onshore wind's relatively higher load factors allowed for an energy mix of 50%/50% before being shifted to about 67%/33% (solar/wind) by the acquisitions of the two solar parks LaCabrera and Talayuela in Spain (total of 500 MW). While the portfolios of many competitor IPPs such as 7C Solarparken or Falck Renewables are skewed toward one of the two technologies, Encavis is committed to both energy sources (Fig. 23).

Ramping up the PPA business

With the erosion and ongoing expiration of subsidies for renewable energy projects, Encavis has initiated a change in its income streams in the last years. While in the past FiTs were necessary and the only means to operate solar plants profitably, they have become less critical to cover operational costs because of rising electricity prices and lower LCOEs. Even though we anticipate electricity prices to decrease in the mid-term compared to today's record high, we also expect them to rise in the long term, driven by increasing CO_2 prices, making FiTs even more obsolete. Therefore, we expect Encavis' shift away from governmental subsidies toward the merchant market[2] to continue (Fig. 24). Even though we do not expect substantial increases in FiT contracted capacities, they will remain a significant revenue stream in the mid-term since around 56% of

Fig. 25: Contracted electricity generation of the existing portfolio by type of contract (GWh)



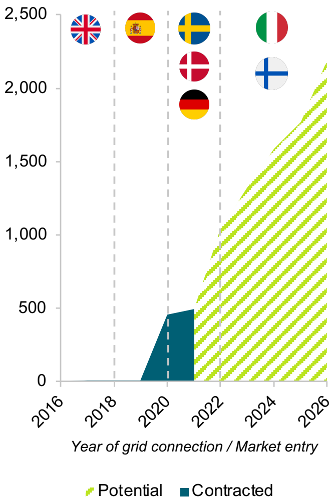
Note: Dotted line indicates last reported year. Future electricity generation is based on expected load factors for each country (see Fig. 58). Once an FiT/PPA expires, it is assumed that electricity is sold in the open market as long as the technical lifetime is not exceeded
Source: Nova SBE, company info

Fig. 26: Contracted electricity generation (December 31, 2021)

Contract type	Electricity (TWh)	Capacity (MW)	Remaining maturity (years)
FiT	56%	63%	10.5[(a)]
PPA	29%	26%	9.2[(a)]
Market	15%	11%	-

Note: (a) Capacity-weighted average
Source: Nova SBE, company info

Fig. 27: PPA market entry of Encavis and total contracted PPAs (MW)



Note: Includes existing and new expected projects only, excludes projects with expiring FiTs
Source: Nova SBE, company info

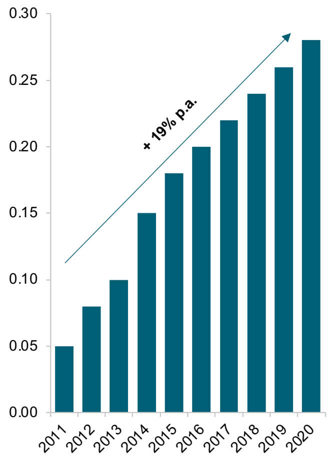
Note: (1) According to most recent earnings call

Encavis' electricity generation is currently contracted under FiTs with an average remaining capacity-weighted maturity of 11 years (Fig. 25 + 26). Once they phase out, plants can sell their power on the merchant market or be repowered, depending on the economics. The remaining 45% represent Encavis' exposure to the merchant market, of which 15% are uncontracted, i.e. sold at current market prices. However, the actual exposure is significantly lower at around 4% to 5%[1] since Encavis uses derivatives to hedge against declining electricity prices. Since fewer subsidies and higher involvement in the open markets come with higher volatility, IPPs and other electricity producers increasingly use long-term contracts such as PPAs to be less prone to the volatility in power prices. We estimate that 29% of Encavis' portfolio in terms of electricity generation is already secured by PPAs with an average remaining maturity of 9 years (Fig. 26). This enables Encavis to secure stable and relatively predictable cash flows over a long period. This is not only essential for the company's debt service, but also for future acquisitions and financing. Despite shorter contract durations compared to FiTs and limited upside potential, PPAs are an attractive substitute for FiTs since they offer higher prices and allow Encavis to become more independent from government subsidies and regulatory requirements, eventually improving the feasibility of new projects.

However, compared to FiTs the sale of energy via merchant markets under e.g. PPAs requires additional competencies since FiTs were previously given out by the government. This not only includes hedging for open market positions, but also setting PPA prices, contract negotiations, due diligence of customers' risk management and monitoring. Encavis gained its first PPA experience by entering the British PPA market in 2016 (Fig. 27). Additionally, Encavis secured access to expertise by investing in the Swiss PPA platform Pexapark in 2018. Pexapark is a provider of software and advisory services with energy trading and quantitative analysis expertise. Based on a conversation with Pexapark, the company is involved in more than one-third of all PPA transactions in Europe, providing Encavis with first-hand data on current PPA trends. To adapt to a post-subsidy renewable energy world, Encavis has also completed an organizational transformation in 2021 including the establishment of an in-house PPA Origination Department. Its track record consisting of serving major technology firms (e.g. Amazon) makes us confident that Encavis has already gained traction in the PPA market. We therefore see Encavis prepared to move its portfolio to the new era of subsidy-free energy.

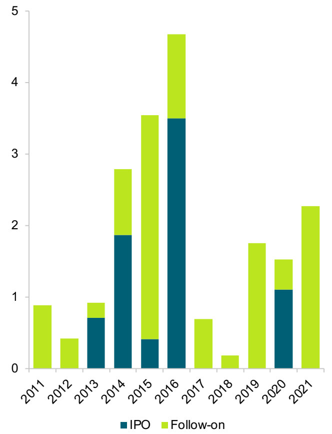
Dividend growth, but ultimately not a YieldCo

Fig. 28: Annual dividend (€/share)



Source: Company info

Fig. 29: Equity raised by YieldCos in North America and Europe (€bn)



Note: Only YieldCos with a sponsor as a main shareholder were chosen
Source: Nova SBE based on FactSet

Fig. 30: Shareholders' acceptance ratio for a scrip dividend at Encavis

Year	Acceptance ratio	Dividend year
2018	40%	2017
2019	54%	2018
2020	62%	2019
2021	43%	2020

Source: Company info

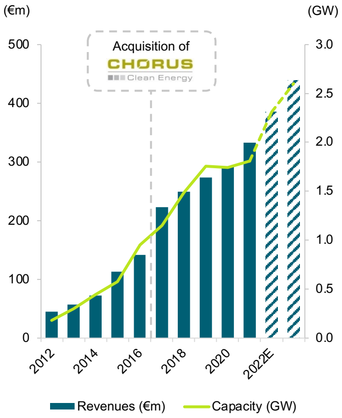
Note: (1) Average FY 2017-21; (2) Includes YieldCos such as NextEnergy, Greencoat UK Wind and Brookfield Renewable Partners

Encavis' relatively low-risk profile resulting from its focus on the operation of solar and onshore wind plants, rather than the development, as well as its predictable and stable cash flows to pay dividends let Encavis exhibit similarities to a YieldCo. Historically, YieldCos promised investors high dividend yields and fast-growing payouts sourced by the acquisition of new cash flow generating assets. Similarly, Encavis has been committed to continuously paying out dividends. Driven by new acquisitions of power plants, Encavis grew its dividend by an average of 19% p.a. since 2011 to €0.28 per share in 2020 (Fig. 28). The increase was partially pre-defined by its "Dividend strategy 2021" presented in 2017 which promised a nominal increase of 50% until 2021 based on the dividend in 2016. Rapid expansion coupled with the promise of growing dividends doomed some YieldCos, including SunEdison and Abengoa, questioning the low-risk profile of some power producers. As YieldCos promised steadily increasing dividends, equity was excessively raised in the boom of renewable stocks between 2013 to 2016 to finance new acquisitions (Fig. 29) and thus to grow dividends. Once the equity markets were no longer able to absorb the high capital demand and share prices plummeted, YieldCos were forced to either raise their payout ratio or borrow money to meet shareholders' expectations. As payout ratios were already high, some of them eventually turned to debt financing. Since renewable investors remained reluctant, leading to rising costs of capital, YieldCos like SunEdison ended up highly leveraged eventually filing for Chapter 11 bankruptcy. Despite Encavis' historical dividend policy and highly leveraged business, we do not see the same risks for the company. Firstly, its historical payout ratio of around 60%[1] is rather moderate compared to a payout ratio of 80-90%[2] among typical YieldCos. As Encavis has offered its shareholders the option to receive a cash or scrip dividend, its effective payout ratio has been even lower. The high acceptance of a scrip dividend among Encavis' investors allowed Encavis to keep cash inside the company for new acquisitions. Additionally, management recently announced that there would be no further long-term dividend plans as the company faces the next growth phase, indicating a more conservative approach. Furthermore, YieldCos often have only one sponsor, their major shareholder holding the voting rights, that provides the company with access to new projects. As previously mentioned, Encavis has 12 partnership agreements and is therefore more diversified when it comes to sourcing new projects. Thus, Encavis has some aspects in common with IPP YieldCos but has a lower risk profile and more conservative dividend policy.

Financial Analysis

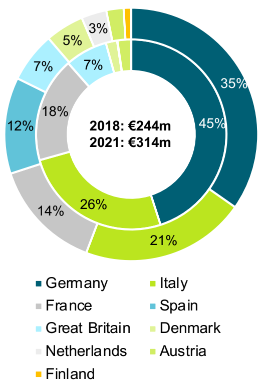
Revenue growth primarily driven by acquisitions

Fig. 31: Total revenue (€m) and capacity growth (GW) since 2012



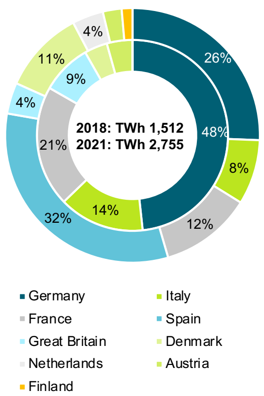
Source: Nova SBE based on company info

Fig. 32: Revenue split of power generation business by geographies



Source: Nova SBE based on company info

Fig. 33: Electricity production by geographies



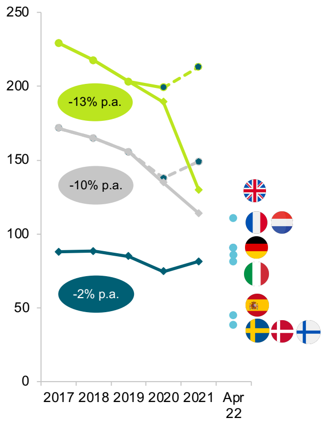
Source: Nova SBE based on company info

Note: (1) ex. Spain

Encavis generates 94% of its revenues by producing electricity powered by solar (71%) and wind (23%) plants. By continuously expanding its power generation portfolio, Encavis has increased its top line by more than sevenfold in the last decade (Fig. 31). Due to the limited scalability of the business model, Encavis is required to invest in additional power plants to grow its revenues. The increase in capacity and revenue in 2017 is the result of the acquisition of CHORUS Clean Energy AG in Germany which allowed the company to boost its installed capacities by around 300 MW at once. Since the merger, Encavis acquired both existing and newly-developed power plants to further expand its portfolio leading to an annual average rise in revenues of 11%. Particularly the recent investments in the two Spanish solar parks LaCabrera and Talayuela with a combined capacity of 500 MW supported Encavis' growth. As Encavis' home market, Germany accounted for around 45% of its revenues in 2018. Since then, Encavis has entered new markets, leading to a more diversified revenue split (Fig. 32).

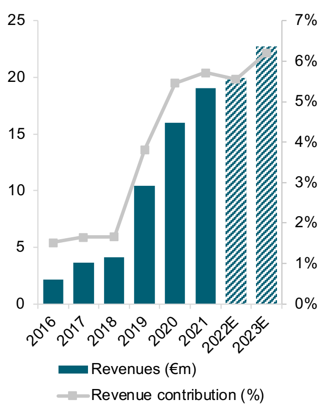
However, a significant discrepancy between revenues and electricity production evolved since the market entry in Spain. While 56% of Encavis' sales in 2021 were generated in Germany and Italy, only 34% of the total electricity produced came from those two markets (Fig. 32 + 33). This discrepancy results from higher capacity factors in Spain and different prices for historical FiTs and current PPAs. As we showed in our Macroeconomic Outlook, FiT prices were significantly higher compared to merchant prices in the past. Since the average grid connection year of the portfolio is 2015[1], Encavis' power plants – particularly solar plants for which subsidies were higher compared to onshore wind – still benefit from those high FiT prices. However, newly acquired plants in the last years have either been contracted at significantly lower FiT prices or PPAs. This can also be observed in the average price for electricity sold which steadily decreased by an average of 10% p.a. (Fig. 34). This trend was supported by the acquisition of the two Spanish parks, both contracted under a PPA at prices of around €35/MWh. While PPAs provide the benefit of securing an electricity price for a long period, they usually do not provide any upside potential. Contrarily, some FiTs allow for higher revenues if electricity prices exceed the pre-agreed market premia. Even though 63% of Encavis' power plants are still backed by FiTs agreed at times when subsidies were highest, some power plants were able to benefit from the increasing prices as they exceeded pre-agreed FiT premia.

Fig. 34: Development of average price and current PPA prices (€/MWh)



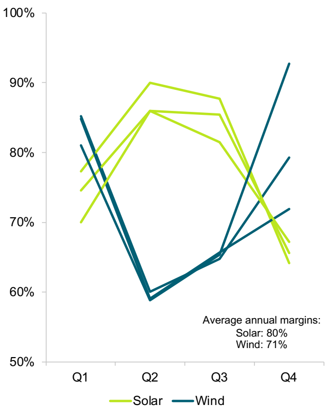
Note: All prices are adjusted by the Austrian wind portfolio due to divestments in 2021.
Source: Nova SBE, company info, Pexapark

Fig. 35: Revenues and revenue contribution of Encavis Asset Management



Source: Nova SBE based on company info

Fig. 36: Quarterly adj. EBITDA margin of the PV and wind segment (FY 2019 – 2021)



Note: Adjusted by other income resulting from divestments. Does not include any overhead costs
Source: Nova SBE based on company info

Note: (1) Avg. EBITDA margin of Q2+Q3 (FY 2019-21); (2) Avg. EBITDA margin of Q1+Q4 (FY 2019-21)

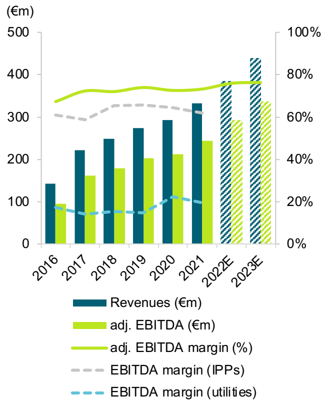
The most significant increase in average prices was observed in the British solar parks (+35%), followed by Italy (+12%) which eventually raised the average price by 8% in 2021 to €147/MWh (excl. Spain). While historical price declines in the wind portfolio were more moderate (-2% p.a.) as FiTs remained relatively stable for onshore wind plants, the wind portfolio similarly benefitted from higher electricity prices in 2021. Although 10Y PPA prices rose in the last months as well, they are still available at a discount making the sale of electricity of new projects in the open market more attractive in the short-term (Fig. 34).

In addition to its power generation business, Encavis Asset Management evolved into an important contributor in terms of revenues and earnings. The business experienced a major revenue increase, growing from €2m in 2016 to almost €19m in 2021 (Fig. 35). Due to historically low interest rates, Encavis Asset Management has benefitted from significant capital inflows from institutional investors seeking opportunities to generate stable returns from long-term cash flows and to diversify their portfolios. Once Encavis launches a new fund, it is rewarded a one-time fee for each acquisition it makes for the investors. Since Encavis also takes care of the operation and maintenance of the power plants, it receives an annual management fee based on the amount invested. These recurring revenues are very important and, compared to its power generation business, they are almost entirely independent of meteorological effects. Currently, Encavis has already more than 1.2 GW of solar and onshore wind plants of institutional investors under management and generates an EBIT margin of around 44%. According to Encavis' management, the operations of Encavis Asset Management have by far exceeded their break-even level, i.e. recurring revenues from managing the assets of the funds have reached a level which allows the asset management business to operate profitably even without further expansion of new acquisitions or funds.

Stable margins and high cash conversion

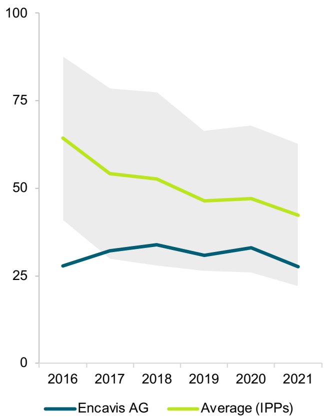
Revenues of the power generating business are highly dependent on meteorological effects. Given the high fixed costs of the business primarily resulting from maintenance, repairs, technical and commercial management, accounting for around two-thirds of the operational costs of the solar and wind parks, the business is characterized by high operating leverage. Due to the given European meteorological conditions, margins for solar plants are higher in summer, reaching an average EBITDA margin of 86%[1] (Fig. 36). Contrarily, margins can drop to 70%[2] in winter when solar irradiance in Europe is lowest.

Fig. 37: Profitability of Encavis' core business (incl. asset management)



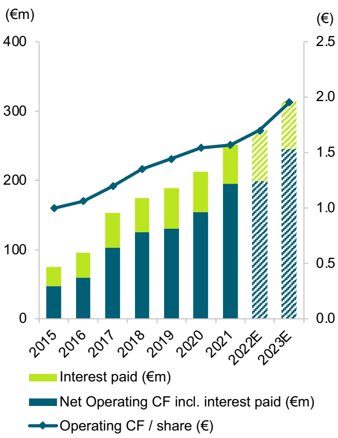
Note: For peer groups, please see Appendix.
Source: Nova SBE based on company info

Fig. 38: Comparison of opex / MW of Encavis compared to selected European peers (€k/MW)



Note: Average of European IPP peers (see Appendix). Opex includes only costs related to the operations of the power plants (excl. personnel costs). Grey band indicates 68% confidence interval.
Source: Nova SBE based on company infos

Fig. 39: Operating cash flow



Note: Operating CF / share on the right axis
Source: Nova SBE based on company info

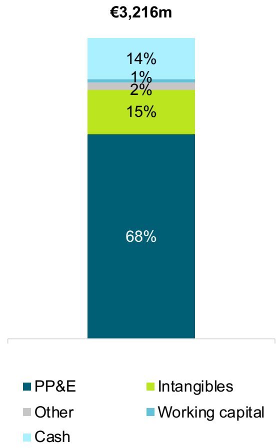
Note: (1) Avg. EBITDA margin of Q2+Q3 (FY 2019-21); (2) Avg. EBITDA margin of Q1+Q4 (FY 2019-21); (3) EBITDA/Operating cash flow (FY 2016-21)

Similarly, margins of the wind segment peak in the first and fourth quarters at approx. 82%[2] while they decline in summer, reaching only 62%[1]. As can be seen in Fig. 36, margins can even differ between peak seasons since solar irradiance and wind yields fluctuate annually while fixed costs remain relatively stable. The wind segment in particular is highly prone to fluctuations in wind yields which can be observed in the peak EBITDA margins ranging from 72% to 93% compared to the solar business, where peak margins are less volatile (81% – 90%). Investing in both technologies allowed Encavis to reduce the impact of meteorological fluctuations and to grow its business at almost stable margins of approx. 75% (adj. EBITDA), which is also above the average margin of comparable IPPs and far above the profitability of utility companies (Fig. 37). Despite their strong efforts to invest in renewables, utilities still heavily rely on thermal energy and thus face significantly higher expenses resulting from fuel costs. Additionally, some of them act as a transmission system operator which is why we consider other IPPs to be more comparable to Encavis and only include IPPs in our peer analyses. Despite the decline of the average historical prices per MWh sold (Fig. 34), Encavis was able to generate stable margins due to new acquisitions. The average capacity factor of the solar plants, where the price decline was largest, increased from 10% in 2017 to 15% in 2021 – primarily driven by the acquisition of the Spanish parks – which eventually decreased costs per MWh by 48% since 2017, keeping the margin of the solar business stable. The wind segment does not deliver the same clear picture of improved capacity factors, due to higher fluctuations in wind yields, but suffered from only a minor price decline. Furthermore, we consider Encavis' efficiency in managing its power plants to be another reason for its constant profitability. Encavis operated its plants at a cost of only €28k/MW in 2021 which is around 35% less compared to other European IPPs (Fig. 38). We trace this effect back to the fact that Encavis provides all technical services to its PV parks in-house while other competitors, particularly smaller ones, often outsource those services. Furthermore, some IPPs focus on the operations of wind plants only, which generally have higher maintenance costs than solar. However, Encavis' competitors are catching up as they decreased their operating expenses by 34% since 2016.

The relatively low volatility and high profitability of the business as well as the high cash conversion of approx. 88%[3] is reflected in Encavis' operating cash flow. Additionally, net operating cash flow improved through refinancing at more attractive conditions. In line with Encavis' portfolio growth, its operating cash flow per share steadily increased to €1.57 per share in 2021 (Fig. 39).

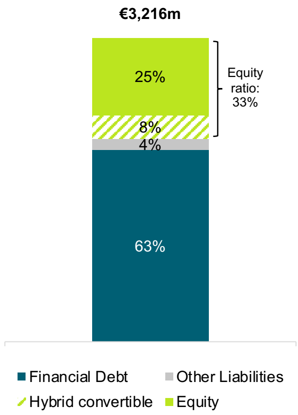
Solid balance sheet with strong firepower

Fig. 40: Total assets (FY 2021)



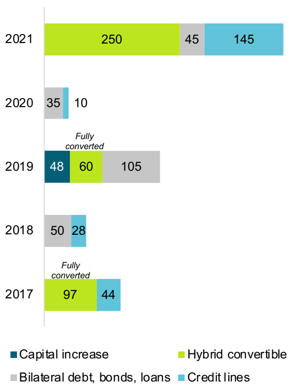
Source: Nova SBE based on company info

Fig. 41: Total equity and liabilities (FY 2021)



Source: Nova SBE based on company info

Fig. 42: Total capital raised on the corporate level since 2017 (€m)

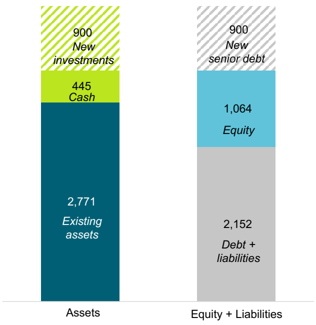


Source: Company info

The highly capital-intensive nature of the business of Encavis is reflected in its balance sheet which is dominated by its power generation portfolio. With 68% of total assets, the company's solar and wind parks represent the majority of Encavis' asset base, followed by intangible assets accounting for 15% of all assets (Fig. 40). Compared to other IPPs, the share of intangible assets is significantly higher. Intangible assets consist of goodwill (1%) and electricity feed-in contracts (14%) acquired as part of the acquisition of CHORUS Clean Energy AG in 2016. The latter are depreciated over the remaining contract duration and are expected to further decline to a minor position. We deem the risk of an impairment to be negligible since most of the electricity feed-in agreements are guaranteed by governments and goodwill would only have a small impact. With 2% of total assets, working capital only plays a minor role as the business model does not require high inventory levels apart from some spare parts and collection periods tend to be short. A more critical asset component is Encavis' current cash position of €445m, representing 14% of total assets. The record-high cash position is not only a result of an improved operating cash flow resulting from the ramp-up of new projects, but also the issuance of its new €250m hybrid convertible bond in November 2021.

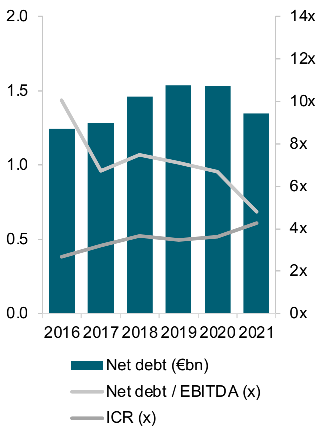
Encavis' assets are primarily debt-financed (63%) with a total volume of around €2bn (Fig. 41), with 91% being long-term debt. The majority of the financial debt consists of secured bank loans held by the SPVs of Encavis. It is structured on a non-recourse basis to finance the acquisitions of solar and wind parks and is used as a long-term financing instrument with a tenure usually based on the contractual duration of the remuneration scheme of the respective park (up to 20 years). A major source of funding for Encavis is its debt recycling. The annual repayment of the long-term debt on the SPV level of around €100m allows Encavis to raise new debt on a holding level at more favorable conditions. The new capital raised can be injected in the form of equity into new SPVs which allows for an even larger portion of debt to finance growth. Historically, Encavis has raised capital on a corporate level using different forms of financing including bilateral debt, bonds and listed notes (Fig. 42). As an investment grade issuer with BBB- rating (Scope Ratings), Encavis also issued two hybrid convertible bonds of a combined €160m in 2017 and 2019, which were converted into common equity in 2021, and a new hybrid convertible in the amount of €250m as previously mentioned. The use of hybrid convertibles by Encavis provides the company with several benefits: firstly, Encavis reduces its cost of capital since it

Fig. 43: Simple estimate of Encavis' firepower based on balance sheet figures (€m)



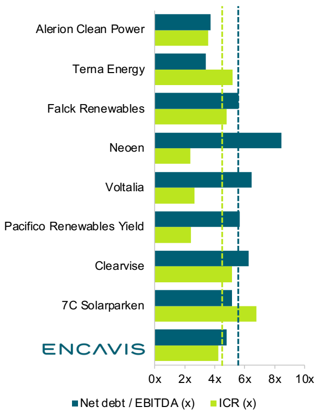
Source: Nova SBE based on company info

Fig. 44: Net debt (€m) and interest cover ratio (x) since 2016



Note: For this analysis, the hybrid convertible bonds are considered as equity. ICR = EBITDA / cash interest expenses.
Source: Nova SBE based on company info

Fig. 45: Leverage and ICR of Encavis' peers (FY 2021)



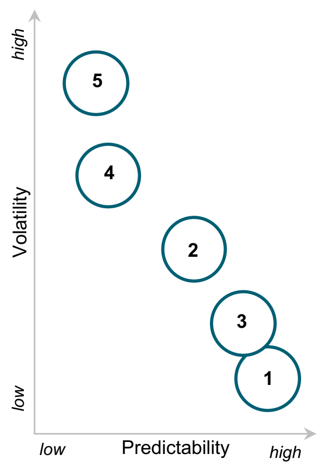
Note: Dotted lines indicate mean
Source: Nova SBE based on company infos

Note: (1) Assuming 2% operational cash

enjoys the usual tax shield resulting from the tax deductible interests of the hybrid convertible. Secondly, the company increases its investment capacity: due to the subordination of the hybrid convertible, the bonds are considered as 100% equity by IFRS definition, which eventually leads to a higher equity ratio. Since the former hybrid convertibles were converted and new hybrid convertible bonds were recently issued, Encavis currently has an equity ratio of 33%. Historically, its equity ratio was at around 26% and the company targets a long-term equity ratio of 24% or more. Given its relatively high equity ratio, Encavis would be able to increase its senior debt capacity to finance further acquisitions by approx. €900m while still keeping its equity ratio of 26%, above its target ratio (Fig. 43). Combined with its current cash position of €445m, around €1.3bn would be available for future investments. Additionally, Encavis signed its first RCF of a total amount of €125m in 2021, of which €100m serve as an additional "hunting line" for fast interim financing. Since most of the RCF has not been drawn yet, Encavis' firepower might be even higher, still allowing the company to achieve an equity ratio of 24%. The increase in financial shooting power to €1.3bn should enable Encavis to implement its ambitious "Fast Forward 2025" strategy by making opportunistic bolt-on acquisitions of already installed power plants and acquiring RTB projects. Especially in a competitive environment such as the renewable energy market, a strong balance sheet is essential to be able to react quickly when attractive opportunities arise in the market. Hence, Encavis should be well financed to implement its growth strategy without further capital raising and shareholder dilution in the near future. Taking into account an excess cash amount of €438m[1], a net financial debt of €1.3bn can be derived. Due to the increase of Encavis' renewable energy portfolio, net debt continued to increase along with the portfolio's growth (Fig. 44). Improved earnings supported strong deleveraging after 2016 and kept leverage stable at a level of 6 – 7x EBITDA, which is also broadly in line with Encavis' larger peers including Neoen and Voltalia (Fig. 45). We consider the decrease in leverage in 2021 to 4.8x only temporary since Encavis is likely to use its balance sheet to acquire new plants. Despite its ambitious growth prospects, we expect Encavis to balance both the expansion of its business and the quality of its financial risk profile. Keeping a minimum equity ratio of 24%, anchoring financial covenants, using equity-like financing instruments such as hybrid convertibles as well as the usage of a scrip dividend will support Encavis in keeping its investment grade issuer rating, which is particularly crucial for many institutional investors.

Value drivers & projections

Fig. 46: Overview of value drivers of Encavis' power generation business

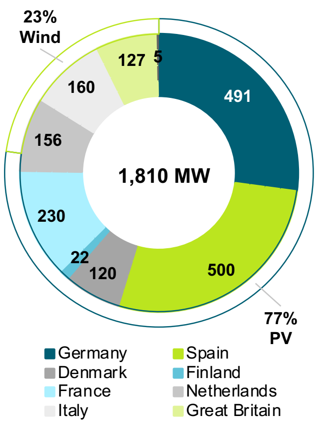


Legend:
1: Capacity
2: Capital expenditures
3: Capacity factors
4: Option to repower
5: Electricity prices

Source: Nova SBE

For the analysis of the value drivers, we differentiate between those relevant for Encavis' power generation business and those vital for the company's asset management as both businesses differ significantly in terms of capital intensity. Starting with the asset-intensive power generation business, the value drivers focus on the installations and macroeconomic factors that influence output or efficiency of the power plants. Five value drivers are critical that set the foundation for the power generation business in the long term: (1) the nominal capacity of Encavis' power plants, (2) capital expenditures for future acquisitions, (3) the capacity factors of solar and onshore wind plants, (4) the option to repower plants once they have reached the end of their technical lifetime and (5) the local market prices for electricity, which are the most volatile variables in the forecast (Fig. 46). In our forecast, we make use of the capacity data for each power plant provided by the company which allows for a more granular allocation of revenues, costs and asset value. Compared to a top-down approach based on market sizing, this method allows us to closely follow the corporate strategy and derive a more concrete forecast for both the existing power generation portfolio and future acquisitions.

Fig. 47: Capacity split of existing power generation portfolio by country (MW)



Source: Nova SBE based on company info

Capacity installed sets the playing field

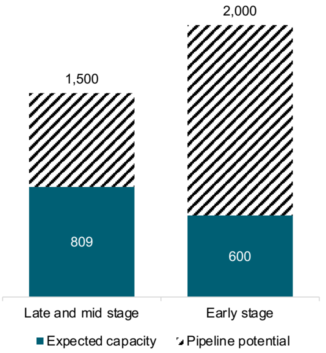
In 2021, Encavis employed 1.8 GW of installed capacity in various European countries, with 77% being solar parks and 23% onshore wind parks (Fig. 47), which we define as the existing portfolio. Based on a reported geographic split of fixed assets and the distribution of capacity by plant, PP&E and intangible assets were allocated on an installation level. As the installed capacity is the primary driver for business expansion due to the limited scalability of the business, Encavis laid out its strategy "Fast Forward 2025" intending to grow its portfolio size to 3.4 GW by 2026. Based on company info, two milestones specify Encavis' growth strategy. Firstly, Encavis aims to acquire 500 MW of additional capacity in 2022. Secondly, the company anticipates having a total of 3.0 GW connected to the grid by 2025, i.e. the remaining 400 MW are expected to follow in 2026. To achieve its target, Encavis works closely with different renewable installation developers such as Sunovis in Germany, GreenGo in Denmark or Solgrid in Sweden (Fig. 48). In total, Encavis has developed a project pipeline consisting of 3.5 GW of potential capacity additions across three stages with different success probabilities, leading to an expected realization of more than 1.4 GW of new

Fig. 48: Selected development partners of Encavis

Partner	Technology	Planned MW
Active partnerships		
SOLGRID	Solar	100+
Sunovis	Solar	200+
greengo	Solar	500+

Source: Nova SBE based on company info

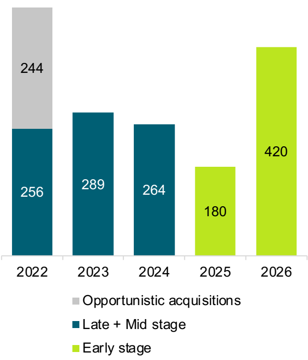
Fig. 49: Pipeline overview, by stages (MW)



Stage	Pipeline volume (MW)	Success probability	Realization
Late stage	500	60-85%	2022/23
Mid stage	1,000	40-60%	2023-25
Early stage	2,000	20-40%	2024/25

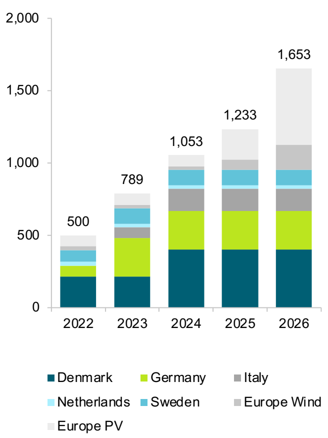
Note: For late- and mid-stage projects, success probabilities between 40 – 85% were used depending on the expected year of realization. For early-stage projects, an average success probability of 30% was assumed.
Source: Nova SBE based on company info

Fig. 50: Expected annual capacity additions, by source (MW)



Source: Nova SBE based on company info

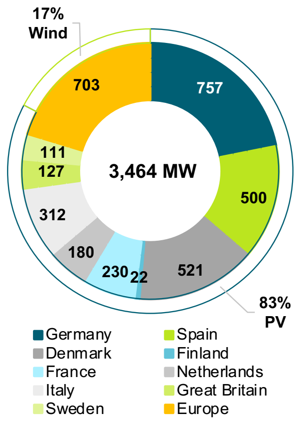
Fig. 51: Cumulative expected acquisitions (MW)



Note: Europe refers to acquisitions from opportunistic investments and early projects from the pipeline without specified location
Source: Nova SBE based on company info

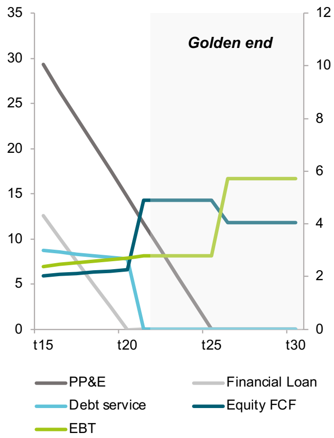
capacity until 2026 (see Fig. 49). For the potential 1.5 GW in capacity additions resulting from the late and mid-stage projects, Encavis provides detailed information about geographies, the total size of planned capacity in the country and the planned grid connection date. Considering Encavis' current partnerships (Fig. 48) and its power generation portfolio, we expect most of the late- and mid-stage projects to focus on solar. Encavis has already started smaller pilot projects with each developer which are expected to be finalized in 2022/23 with the majority of projects following in 2023/24. Based on predicted success probabilities, we expect around 800 MW of all mid and late stage projects to be successfully connected to the grid in the near future. From the 2 GW pipeline of early-stage projects, which still have to go through a thorough due diligence process, we anticipate realized capacity additions of 600 MW in 2025/26 (Fig. 49 + 50). For the early-stage projects no information is provided regarding technology used or geography targeted. We assume Encavis to maintain a 3:1 ratio between PV and wind projects in their expansion strategy as we expect the company to remain committed to its onshore wind parks, corroborated by the most recent opportunistic acquisition of a Finnish wind park. For projects with non-disclosed geographies, we use a European proxy based on value-weighted averages of Encavis' geographic features such as capacity factors and electricity prices. Based on Encavis' probability-weighted pipeline, we estimate total capacity additions of 1.6 GW until 2026 (Fig. 51). As the company recently announced to increase its portfolio size by 500 MW in 2022 and its pipeline only provides potential growth of around 250 MW this year, we expect opportunistic acquisitions on the market alongside the pipeline plans. Following recent company news, we estimate that Encavis already realized 140 MW in opportunistic acquistions in Q1. In total, we expect Encavis to materialize an expansion across the 3 GW mark in 2025 and a capacity of about 3.4 GW in 2026 and onwards (Fig. 52). While it seems highly ambitious of a power producer to almost double its existing capacity in only 5 years at first glance, Encavis' strong track record of growing its portfolio in a sustainable way coupled with the expectation of significantly rising demand in solar and wind capacities across Europe supports a successful realization of its strategy. Given the low scalability potential inside the existing portfolio, this pipeline will be the most important driver to achieve further growth and lay the foundations for additional value created. We deem the reason for Encavis' strong focus on solar plants to result from higher operating profitability and less complex and therefore less costly maintenance over their lifetime. The primary benefit of newly built projects would be the lower construction period, as newly constructed wind parks can take 1 – 3

Fig. 52: Expected power generation portfolio in 2026, by region (MW)



Note: Europe refers to acquisitions from opportunistic investments and early projects from the pipeline without specified location
Source: Nova SBE based on company info

Fig. 53: Illustration of the golden end of a fictional solar project (€m)



Note: Equity FCF, EBT and Debt service on the right axis
Assumptions: capacity: 100 MW, capex: €0.64m, 72% debt-financing, debt amortization: 20Y, interest rate: 2.5%, depreciation period: 25 years, load factor: 14%, constant PPA price of €60/MWh, EBITDA margin: 80%, tax rate: 29%
Source: Nova SBE

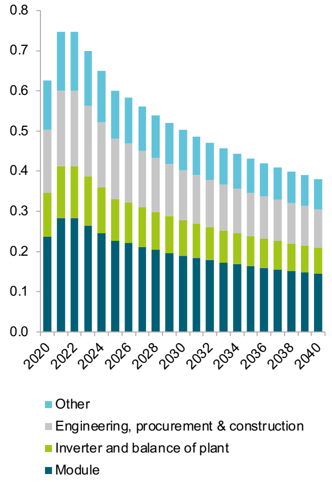
years until completion, while solar parks of similar capacity require less time. Additionally, solar plants suffer from lower degradation over their lifetime than wind plants.

From an accounting point of view, depreciation periods can vary depending on geography, technology and accounting or taxation practices. For both existing and newly acquired assets, a depreciation and financing period of 25 years for both solar and wind installations is assumed. We hereby follow commonly used methods of accounting standards where accountants use the duration of subsidy contracts of up to 20 years and the duration of land leases of up to 30 years. These are frequently used as a proxy for the useful lifetime of the power plants due to the lack of historical data. The technical lifetime, however, can be significantly longer, as warranties for critical components such as solar modules cover periods of 30 years and technological improvements and maintenance efforts have significantly advanced. Therefore, a technical lifetime of 25 years for onshore wind parks and 30 years for solar parks is assumed. The difference between the technical lifetime and the financing period for solar plants creates the commonly observed golden end effect. Once the entire debt of a solar plant has been repaid – usually at the end of the underlying FiT or PPA – the cash flow to equity increases substantially for the remainder of the plant's useful life, ceteris paribus (Fig. 53). However, this also depends on fluctuations in the electricity market once the underlying long-term contract has expired. While some analysts use technical lifespans of up to 50 years for PV plants or more than 30 years for onshore wind plants to increase the value of the golden end, we see the actual lifespan to be primarily determined by the economics of the power plant. As the efficiency for both solar and wind plants has substantially improved in the last years, early repowering may become a highly profitable option for older power plants compared to fully squeezing out the energy.

Decreasing capex will lower LCOEs

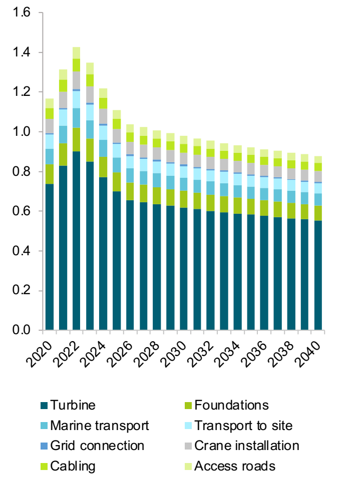
As Encavis is currently in the process of heavily expanding its capacity, capex is a major value driver for its pipeline. While high capex requirements paired with low electricity prices were the main obstacles impeding the growth of renewables and the reasons for governments to introduce FiTs, unit costs have steadily declined as the industry matured. Driven by higher market demand, learning curve effects, economies of scale in manufacturing and higher capacity density in rotor blades and solar modules, capex for solar and onshore wind decreased

Fig. 54: Estimated capex for solar (€m/MW)



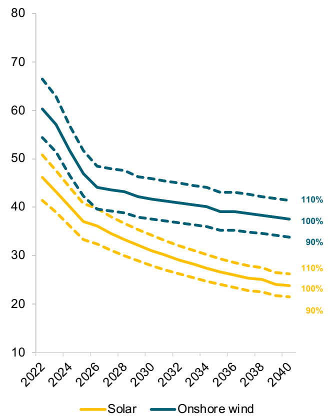
Note: Regression based on historical data provided by IRENA and BNEF (R^2=95%)
Source:Nova SBE

Fig. 55: Estimated capex for onshore wind (€m/MW)



Note: Regression of turbine prices is based on historical data (Vestas). Turbine prices are assumed to make up 63% of total investment (R^2=85%)
Source: Nova SBE

Fig. 56: The impact of capex on long-term LCOEs of solar and onshore wind (€/MWh)



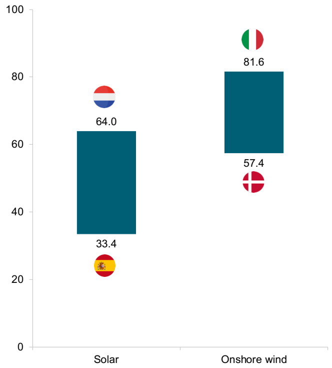
Note: For assumptions, please see Appendix.
Source: Nova SBE

significantly. Since 2010, capex for solar parks has decreased by over 80% (*IRENA*), mainly driven by more efficient manufacturing of modules and the change from thin-film to silicon-based crystalline modules, while onshore wind capex decreased by only 30% over the same timeframe (*IRENA*). The lower cost benefits of onshore wind projects are mainly attributable to the higher maturity of the wind industry and the more complex technological requirements. The decline in capex has come to a halt in the last year, impacted by supply chain disruptions resulting from the aftermath of the global pandemic. Recent lockdowns in China, the world's biggest manufacturer and consumer of solar modules and wind turbines, have intensified the shortage of solar and wind components. As Europe depends on the import of power plant equipment, the expansion of renewables on the continent is likely to experience additional headwind in the short-term through longer lead times and higher prices.

Since capex will remain critical for future LCOEs of solar and onshore wind, capex requirements are estimated until 2040. We expect investment costs for 2022/23 to remain at a higher level between €0.70m/MW and €0.75m/MW as supply chains remain taut. As they are anticipated to relax afterwards, we predict capex for solar to continue its decrease. To derive long-term capex predictions for solar, a power law regression based on historical data since 2010 reported by *IRENA* and *BNEF* was used, assuming similar learning curve effects (Fig. 54). Thus, we expect capex to decrease by 50% until 2040 and remain constant afterwards, leading to unit costs of €0.38m/MW. Estimated capex for onshore wind is derived from historical turbine prices from the German turbine manufacturer Vestas. Starting from €1m/MW in 2013, turbine prices declined by 25% until 2020. Similar to solar, prices started to increase in 2021 resulting in costs of €0.8m/MW. Driven by ongoing supply chain disruptions and record-high commodity and transportation costs, we expect turbine prices to further increase to €0.9m/MW in 2022 before returning to a price decline in 2023. To estimate future prices for wind turbines, a power law regression on the historical data of turbine prices was used. As turbines have historically made up around 63% of total capex (*BNEF*), total investment costs of €1.4m/MW in 2022 were derived. By 2040, we expect capex for onshore wind plants to fall by 38% to €0.9m/MW (Fig. 55). The ongoing decline in investment costs will eventually decrease future LCOEs for both technologies strengthening their cost competitiveness over conventional energy sources (Fig. 56). Additionally, we expect the decrease in capex to serve as a booster for project IRRs in the short- and mid-term as we anticipate electricity prices to remain well above solar's and wind's LCOEs.

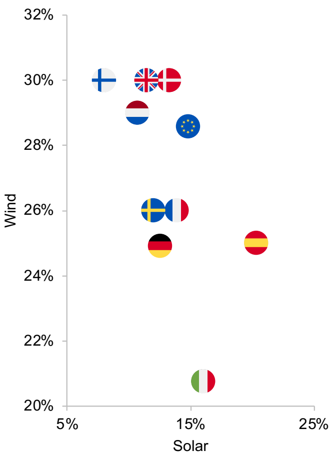
Capacity factors determine future power generation

Fig. 57: Impact of the capacity factor on the LCOE of solar and onshore wind (€/MWh)



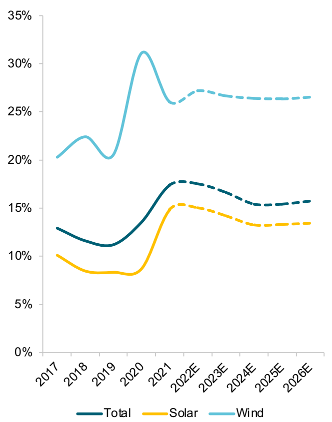
Note: LCOE estimates for 2022
Source: Nova SBE

Fig. 58: Overview of capacity factors of Encavis' markets, by technology (%)



Note: Europe represents average of relevant Encavis markets
Source: Nova SBE based on company info and IRENA

Fig. 59: Development of capacity factors of Encavis' power generation portfolio (%)



Source: Nova SBE based on company info

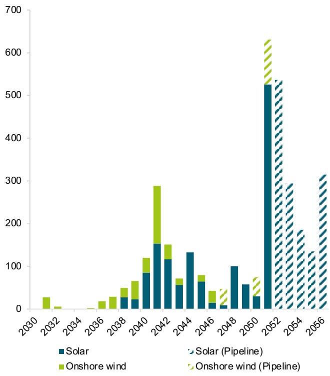
Note: (1) Defined as generated output (GWh) / potential output assuming 100% utilization (GWh); (2) ex. Spain

A major measurement of utilization and efficiency of an installation is the capacity factor[1]. It is an essential predictor of the future output of a renewable power plant and has a significant impact on the local LCOE of renewables (Fig. 57). It is influenced by four factors: (1) the technology of the plant is the most important factor, as the output of solar parks is limited by daily sun hours, while wind parks can generate power day and night. Additionally, the capacity factor highly depends on the type of solar modules (tracking vs. non-tracking or thin-film vs. crystalline silicon modules) or type of wind turbines used. (2) As renewable power plants rely on local weather conditions, the geographic location is crucial. Identical solar plants show higher capacity factors in countries with higher irradiance such as Spain or Italy, while wind parks benefit from inherently richer wind conditions in Scandinavian countries, eventually leading to lower LCOEs in those regions (Fig. 57 + 58). (3) The plant's output performance will still be subject to a certain volatility of meteorological factors during and across years, as shown previously. (4) The last factor is the age of the power plant, as every technical product under permanent utilization experiences wear and tear over its lifetime leading to decreasing output in the long term.

To forecast the capacity factors for both solar and wind parks in each geography, a combination of local historical data of existing installations for each technology was analysed and validated with external data provided by *IRENA*. Since some historical capacity factors were biased due to divestments and ramp-up periods for new installations or were not available as Encavis had not yet entered the respective market, the same data set provided by *IRENA* was used as a complementary source. After the rise in the average capacity factor of Encavis' solar portfolio to 15% in 2021, driven by its market entry in Spain, we predict the average capacity factor to decline to 13% as the majority of its pipeline projects is located in Central or Northern Europe (Fig. 59). To reflect annual degradation, an annual decline in the capacity factor of 0.5% was assumed for solar plants, in line with studies by e.g. *NREL*. As onshore wind plants suffer from even stronger efficiency declines, an annual decrease of 1% is assumed (Staffel et al, 2014). As Encavis' existing portfolio already suffered from some efficiency losses as the average grid connection year is 2015[2], newly built projects from the pipeline are expected to be slightly more efficient compared to Encavis' existing portfolio. Thus, the capacity factors of newly acquired power plants are increased by 100 bps over the capacity factors of the existing portfolio to take technological improvements into account.

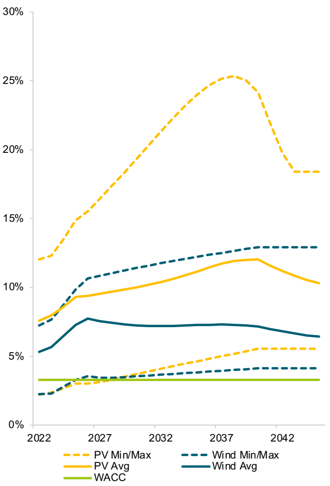
Repowering may secure continuous value creation

Fig. 60: Annual repowering schedule of the existing portfolio and pipeline projects (MW)



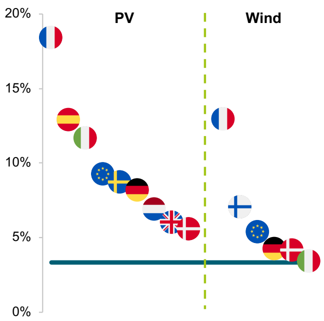
Source: Nova SBE

Fig. 61: Future project IRRs for solar and onshore wind projects (%)



Note: Please see Appendix for further assumptions.
Source: Nova SBE

Fig. 62: Expected IRRs for solar and onshore wind projects in 2050



Source: Nova SBE

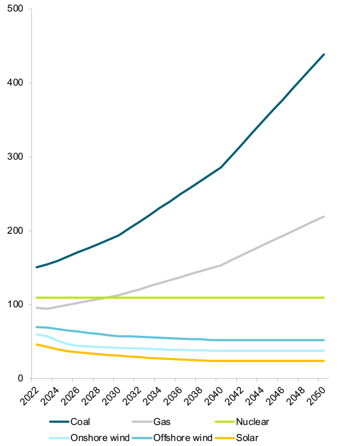
Note: (1) Assuming a technical lifetime of 30 years for solar and 25 years for onshore wind and a degradation rate of 0.5% for solar and 1% for onshore wind per year

As the success of Encavis' business model relies on the efficient operation of its power plants, Encavis will have to make a decision as power plants approach the end of their technical lifetime: Encavis could keep utilizing its power plants until the very last day, i.e. aiming to maximize the potential golden end. However, due to rising maintenance costs and significantly lower efficiency levels of around 85%[1] for solar and 75%[1] for wind plants resulting from degradation, extending a plant's technical lifetime excessively may not be considered economically optimal. In that case, repowering can make a power plant financially viable again. By repowering, the old installation is dismantled and a new installation constructed on top of the old site. This provides the opportunity to benefit from improved capacity factors or even greater capacities which eventually allows Encavis to increase the total output of its portfolio. Given the expected rise in required capacity additions of solar and wind plants in Europe and considering the dense population of the continent, repowering will become critical for the energy transition as it allows to make better use of existing land sites.

The key decision criterion to determine the viability of repowering is the expected project IRR, which should exceed the company's WACC. We expect the majority of Encavis' installations to reach the end of their lifetime between 2040 and 2050, with the first plant to retire in 2031 (Fig. 60). Based on the projected capex, expected project IRRs for each technology and geography until 2050 were determined. For simplicity, it is further assumed that dismantling costs are covered by the scrap value of each plant. Since all future repowering projects yield IRRs above the WACC in the relevant timeframe, we expect Encavis to realize a first repowering for all power plants (Fig. 61). Countries like Italy are expected to generate higher IRRs as they are likely to rely longer on conventional energies. Contrarily, nations like Denmark will lead to lower IRRs due to the already high share of renewables in the electricity mix. The current PV and wind plants have a capacity-weighted average age of 7 years, making capacity increases through repowering likely. Based on a wind study performed by *IRENA* (2019), a capacity increase of 54% for onshore wind plants is expected, while for solar plants only a minor capacity expansion of 5% is assumed (*Berkeley Lab, 2022*). In the long term, we expect Encavis to continue to repower its plants as long as the project IRRs remain above the WACC (Fig. 62). As outlined in the next subchapter, we expect electricity prices to remain slightly above the LCOE of solar and onshore wind in the long term, keeping repowering value-creating for both technologies.

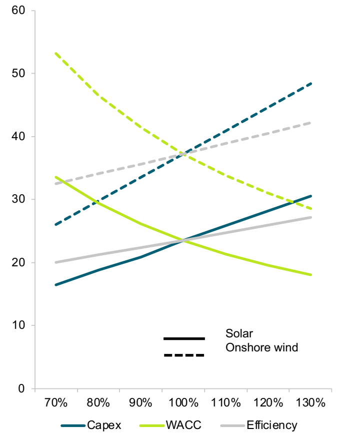
LCOEs determine electricity prices

Fig. 63: Future LCOEs of conventional and renewable energy sources (€/MWh)



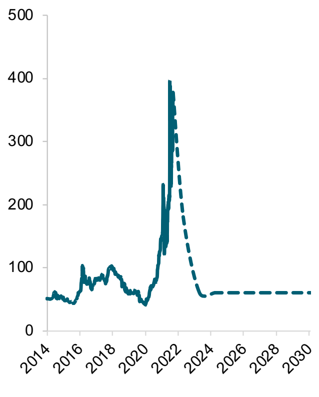
Note: For assumptions, please see Appendix.
Source: Nova SBE

Fig. 64: Sensitivity analysis of LCOEs for solar and onshore wind in 2050 (€/MWh)



Note: Efficiency includes O&M costs and capacity factor.
Source: Nova SBE

Fig. 65: Historical coal price development and future estimates of the Newcastle price benchmark (€/t)



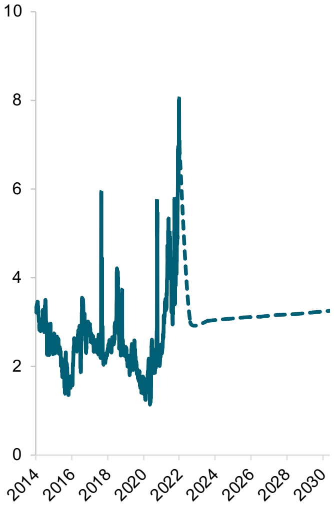
Source: Nova SBE based on Bloomberg

Note: (1) 12-month average from before June 2021

As the EU currently undergoes a complete turnaround in its energy policy, we expect the energy markets to remain volatile in the short term. The substitution of Russian energy imports and the EU's focus on its long-term climate targets to become climate neutral by 2050 will be critical for the future electricity mix and therefore electricity prices. While this has only a marginal impact on the existing portfolio in the short term as 85% of the generated electricity is contracted under FiTs or PPAs, it is more relevant for all pipeline projects, the remaining technical lifetime once a contract expires as well as the repowering. For the existing power plants contracted via FiTs, the eligible FiT premia for the respective grid connection year were used for the remaining duration of the contract. For PPAs, prices were determined using regional historical prices for 10Y PPA contracts provided by Pexapark. Similar to the pipeline projects, each installation is expected to sell energy at projected market prices upon contract completion until it reaches the end of its useful life. As explained in our Business Model section, we expect the majority of Encavis' power plants to sell their electricity on the merchant market as FiTs will phase out. Still, we anticipate Encavis to contract most of its power plants under PPAs to keep its relatively low-risk profile. To account for varying contract durations, we assume an overall discount of 10% compared to our predicted electricity prices, which was observable in historical PPA prices provided by Pexapark[1].

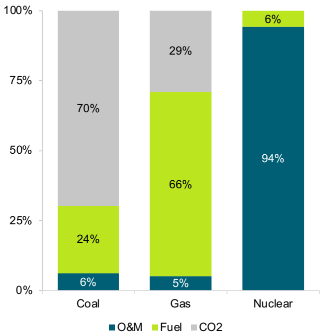
To predict electricity prices, an LCOE-based pricing model was developed to forecast the electricity production costs for both conventional (coal, gas, nuclear) and renewable energy sources (solar, onshore and offshore wind) until 2050. Despite the anticipated expansion of solar and wind plants to decarbonize the EU's electricity mix, we anticipate the EU to remain dependent on fossil fuels in the short- and mid term as building the necessary capacity additions takes time. As outlined in our Macroeconomic Outlook, we expect solar to remain the cheapest source of electricity, followed by on- and offshore wind (Fig. 63 + 64). Contrarily, conventional energy sources are predicted to increase their cost base relative to renewables and thus will be the relevant electricity price driver for most countries at least in the next decade. The rise in costs for coal and gas is expected to be primarily driven by the increase in CO_2 and fuel prices, while O&M costs only play a minor role. Based on a study by Pietzcker and Rodrigues (2021), the CO_2 price is expected to increase to €129/t by 2030 and €212/t by 2040 driven by the EU's ambitions to achieve net zero emissions by 2050. Following 2040, we assume an increase to €348/t in 2050. For coal, we expect

Fig. 66: Historical gas price development and future estimates of the Henry Hub index (€/t)



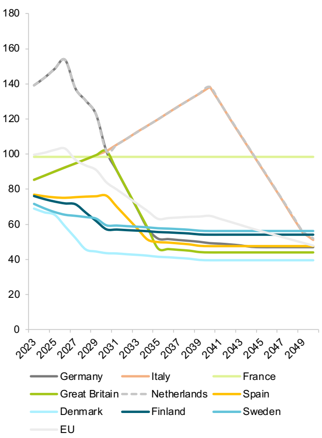
Source: Nova SBE based on Bloomberg

Fig. 67: Split of unit costs of conventional energy sources (2022)



Note: For assumptions, please see Appendix.
Source: Nova SBE

Fig. 68: Forecast of relevant electricity prices in the EU (€/MWh)



Note: For FY 2022, the last 12-month average of local electricity prices was used. EU prices reflect capacity-weighted average LCOE of Encavis' portfolio by country
Source: Nova SBE

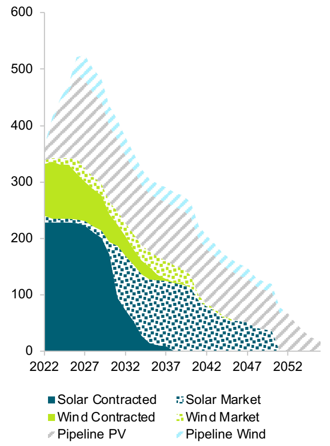
fuel prices to drop again to the historical 10Y average of the Newcastle benchmark price of around €60/t in 2024 and to remain constant, after reaching an all time high, driven by high gas prices (Fig. 65). As the replacement of Russian gas by LNG will be crucial, it is assumed that European gas prices will converge to the US natural gas price, represented by the Henry Hub index. A recovery of the gas price is estimated in 2023 based on Henry Hub futures for the next year. After 2023, an annual price increase by 1% is assumed for the long term, since production will become increasingly expensive (Fig. 66). Additionally, a premium of 5% above the Henry Hub index is considered to account for higher costs resulting from the liquefaction for the transportation.

The primary reason for coal being significantly more expensive compared to gas and nuclear in terms of LCOE is higher CO_2 emissions per MWh. Thus, we estimate that 69% of the unit costs for coal result from today's CO_2 price, while gas produces only 41% of coal's emissions and nuclear none at all (Fig. 67). As CO_2 costs will rise significantly, coal will become increasingly uneconomic, which can also be observed in most European countries' decision to exit coal in the near future and instead rely on gas and nuclear. Taking into account the current electricity mix of each country, their long-term climate goals as well as the EU's energy strategy, electricity prices until 2050 were derived from our LCOE model and an approximated merit order of each country (Fig. 68). Once a country achieves 100% of its electricity mix to be generated by renewable energy, the average of the LCOE of onshore and offshore wind is assumed as a proxy for the highest LCOE representing all other alternative renewables entering the grid in the merit order.

In the near future, we expect Germany and the Netherlands to be more attractive in terms of electricity prices as both countries still rely on coal. Once Germany shuts down its last coal plants by 2030, prices are predicted to decrease significantly as the German government aims to achieve complete renewable electricity production by 2035, whereas the Netherlands is most likely to rely on gas. As some countries, including France and Finland, have not yet declared their exit strategy from nuclear power and the EU's latest taxonomy labels this technology as a green energy source, it is assumed that those countries will rely on a mix of nuclear power and renewable energy. The Danish merchant market, however, is likely to become less attractive as 86% of its electricity is already produced by renewables and coal will be abandoned by 2028.

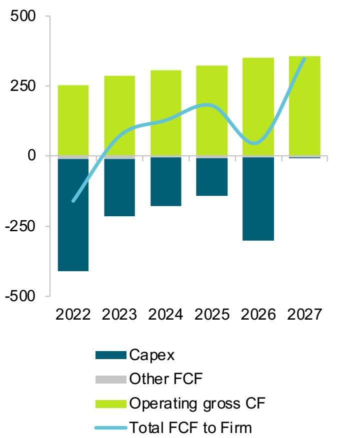
Capacity expansion will drive cash flows

Fig. 69: Expected revenues of Encavis' power generation business (€m)



Note: A ramp-up phase of 50% for pipeline projects was assumed. Revenues do not reflect the repowering of retiring power plants.
Source: Nova SBE

Fig. 70: Expected cash flow development (€m)



Note: Operating gross CF is defined as the sum of NOPLAT and D&A
Source: Nova SBE

Fig. 71: Estimated investment demand for solar and wind in the EU

Technology	Capacity (GW)	Investment (€bn)
Solar	913	456,713
Wind	1,167	1,525,821
Onshore (70%)	*817*	*825,368*
Offshore (30%)	*350*	*700,453*
TOTAL	**2,081**	**1,982,534**

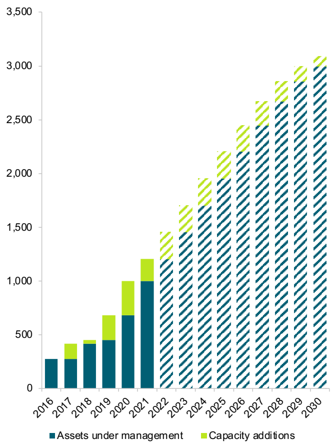
Note: The following average capex was assumed: Solar (€0.5m/MW), Onshore wind (€1.01m/MW), Offshore wind (€2.0/MW)
Source: Nova SBE

Revenues of Encavis' power generation business are expected to increase in line with the capacity expansion, growing by an average of 9% p.a., peaking at €525m in 2027 (Fig. 69). Subsequently, decreasing electricity prices, particularly in Encavis' home market Germany and expiring FiTs after 2030 are expected to gradually lower revenues along the plants' lifecycles, gradually feeding capacity into the repowering schedule. In some countries, declining electricity prices will increase the importance of inherent cost drivers of the plants earlier than in other countries. Costs for maintenance and commercial management of the solar and wind plants are expected to remain the major cost drivers driven by the capacity of Encavis' portfolio. As outlined in our Financial Analysis, Encavis has managed its portfolio efficiently in terms of operational expenditures. We therefore expect Encavis to maintain its prior performance levels in the future, projecting a stable EBITDA margin of 76% until FiTs run out after 2030. Due to lower electricity prices, degradation effects and plant retirements, EBITDA margins may decrease slightly, as plants shift into the repowering phase. Total capex of around €1.2bn are expected to burden free cash flows until 2026 to realize the pipeline projects (Fig. 70). Given its solid balance sheet, Encavis is likely to use further debt to cover the negative free cash flow in 2022. Once the new projects are ramped up, both the operational cash flow and the firm's free cash flow are expected to rise to around €370m in 2027.

Asset management as major value contributor

The ambitious targets of the energy transition require tremendous amounts of capital allocated to the renewables sector. Based on our Macroeconomic Outlook, we predict total capacity additions of 2.1 TW in solar and wind plants in the EU to increase their share in the electricity mix to 65% by 2050. Thus, we estimate a total required investment need of around €2tr for the next decades (Fig. 71), a more conservative result than *BNEF* (+20%). This does not include additional investments in repowering or other renewables such as hydrogen, but already indicates that investments of power producers and the governments alone may not be sufficient to cover the capital demand. Institutional investors, one of the largest capital providers in the world, have increasingly invested in renewables in the past which can also be observed in the increased funds raised by Encavis Asset Management (Fig. 72). The renewables industry has become an attractive target for institutional investors as it provides stable, predictable

Fig. 72: Assets under management of Encavis Asset Management (MW)



Source: Nova SBE based on company info

cash flows and the opportunity to generate attractive returns, a necessity to combat challenges in the current low-interest environment. Still, only 20% of them have already invested in renewable assets indirectly via funds and only 1% directly in renewable energy projects (*IRENA)*, providing ample future potential.

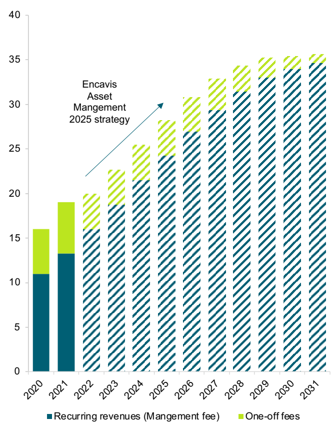
The future performance of Encavis' asset management business can be separated into two revenue streams: first, a recurring management fee on the assets operated and managed by Encavis on behalf of investors and second, an acquisition fee on each investment the fund performs as Encavis Asset Management is responsible for the deal sourcing. As mentioned in our Financial Analysis, the recurring revenues are based on the amount invested by the investors. As this figure is not publicly disclosed by the company, the total capacity of the managed portfolios was derived from past company news and is used as a proxy to determine revenues. Based on historical earnings calls, we estimate an annual management fee of an average of €11k per MW managed (Fig. 73). We consider the recurring revenues to be well predictable as the funds have a minimum investment horizon of 20 years. In the last two years, the asset management business doubled its managed portfolio size to 1.2 GW in 2021. New investments on behalf of institutional investors are expected to increase the recurruing revenues even further (Fig. 74). Following Encavis' "Outlook 2025" for the asset management, we anticipate this business segment to grow its asset base managed by 250 MW annually, reaching the target of 2.2 GW in 2025. In the following six years, growth is expected to gear towards a perpetual growth rate of 2% starting in 2031 with 3.1 GW of assets under management at that time. In contrast to the power generation segment of Encavis, institutional investors have been favouring wind projects over solar. This is mainly attributable to the higher transaction size in wind projects due to higher capex with thus lower transaction costs. When looking at the assets managed by Encavis Asset Management, of which 61% are onshore wind plants, the same trend can be observed. For the acquisition of new power plants, a fee of €15.6k per MW newly acquired is charged. We expect revenues to increase by 10% p.a. until 2025 and 5% p.a. in the following five years (Fig. 74). Due to the asset-light nature of the business, a stable EBIT margin of around 44% is expected based on the last three years. In line with stable margins and low capital requirements, free cash flows are predicted to grow in parallel with revenues, making the asset management a strong value contributor. Even though free cash flows seem to be small compared to Encavis' power generation business, their operating risk exposure towards meteorological influences and fluctuations of electricity prices, both of which the power generation segment is facing, are eliminated.

Fig. 73: Illustrative fee split of a 100 MW fictional project

€m	2022	From 2022 on
One-off fee (€15.6k/MW)	1.6	-
Management fee (€11.0k/MW per year)	1.1	1.1

Source: Nova SBE based on company info

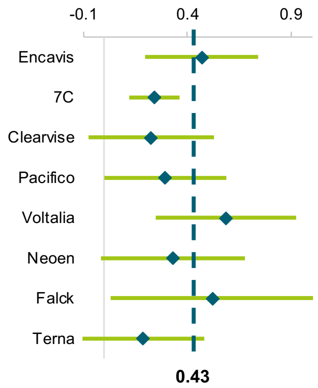
Fig. 74: Development of revenues of Encavis Asset Management (€m)



Source: Nova SBE based on company info

Valuation

Fig. 75: Overview of unlevered betas of Encavis and comparable firms



Note: Data as of May 15, 2022
Source: Nova SBE based on Bloomberg and Berck & DeMarzio (2013)

Fig. 76: Derivation of Encavis' WACC

Market assumptions	
Risk-free rate[1]	1.1%
Market risk premium[2]	5.5%
Beta estimates	
Beta unlevered (industry)	0.4
Beta levered	0.6
Beta debt	0.1
WACC	
D/E ratio	60.0%
Tax rate	28.9%
WACC	**3.3%**

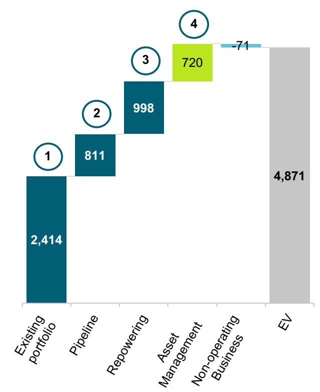
Note: (1) As of May 6, 2022, (2) As of March 31, 2022
Source: Nova SBE based on Bloomberg, KPMG and Berck & DeMarzio (2013)

Fig. 77: Sensitivity analysis of Encavis' WACC

		Market risk premium				
		4.5%	5.0%	5.5%	6.0%	6.5%
Levered beta	0.52	2.6%	2.8%	3.0%	3.1%	3.3%
	0.57	2.7%	2.9%	3.1%	3.3%	3.5%
	0.62	2.9%	3.1%	3.3%	3.5%	3.7%
	0.67	3.0%	3.3%	3.5%	3.7%	3.9%
	0.72	3.2%	3.4%	3.7%	3.9%	4.1%

Source: Nova SBE

Fig. 78: Value distribution of Encavis' business segments – Derivation of EV (€m)



Source: Nova SBE

To derive the fair value of Encavis, a sum of the parts (SOTP) valuation is employed based on a DCF model for (1) the existing portfolio, (2) the pipeline, (3) the option to repower the plants from (1) and (2), and (4) the asset management segment. This allows for better taking the different natures of the company's business segments into account and value the individual businesses more accurately. Finally, a relative valuation based on current trading multiples and a set of comparable transactions of solar and wind plants is used to validate the company value derived from the SOTP.

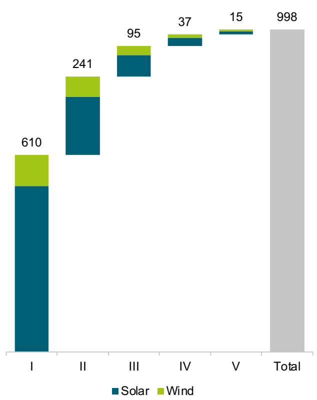
WACC reflects low intrinsic risk

To compute the equity beta of Encavis, a peer group consisting exclusively of European IPPs with similar technology and geography focus was used as a benchmark as they are considered to be closer to Encavis than utilities. Based on a median industry beta of 0.4 from the peer group and assuming a D/E target ratio of 47% based on current market values, an equity beta of 0.6 for Encavis is derived (Fig. 75). The low beta of the company also reflects the relatively low intrinsic risk resulting from the high predictability and stability of Encavis' future cash flows as well as the low cyclicality of the business model. A beta debt based on the recently reaffirmed issuer rating of BBB- by SCOPE of 0.1 was determined (*Berck & DeMarzio, 2013*). To calculate the WACC, the yield of a 10-year German government bond of 1.1% as a proxy for the risk-free rate and the most recently reported KPMG market risk premium of 5.5% were used. Finally, we expect the company's statutory tax rate of 28.9% to remain unchanged in the future, leading to a WACC of 3.3% (Fig. 76 + 77).

SOTP reveals value distribution

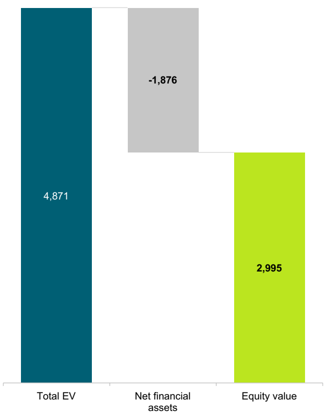
1. With 50% of the total enterprise value (EV), the existing portfolio of 1.8 GW is the major value contributor. Since the majority of future revenues are already contracted by long-term FiTs and PPAs, the uncertainty from near-term price declines is reduced. To value the existing portfolio and to account for the high visibility of its future cash flows using a DCF, the free cash flows were projected until the last installation reaches its useful lifetime in 2049. To reflect the limited lifetime of the solar and wind parks and to avoid bundling

Fig. 79: Value contribution of future repowering cycles (€m)



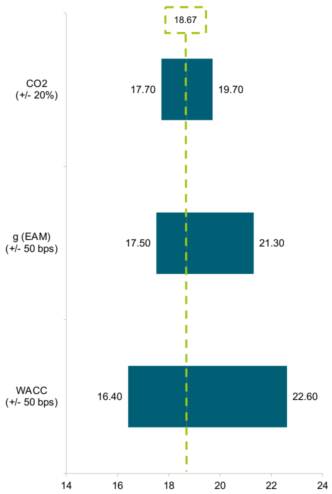
Source: Nova SBE

Fig. 80: EV – Equity bridge (€m)



Note: Net debt as of December 31, 2022
Source: Nova SBE

Fig. 81: Sensitivity analysis (€/share)



Note: EAM = Encavis Asset Management, Changes in the WACC also consider impact on respective LCOEs
Source: Nova SBE

Note: (1) Assuming 160.5m shares outstanding

undefined value in a terminal value, the option to repower each power plant is valued separately. The DCF for the existing portfolio yields a value of €2.4bn.

2. Similar to the existing portfolio, the project pipeline was valued using a DCF covering the entire first lifecycle of each installation, with the last installation reaching the end of its technical lifetime in 2056. Contrary to the existing portfolio, the uncontracted pipeline has a significantly higher exposure to the volatility of future electricity prices and is thus more reactive to potential price changes. Our DCF yields a value for the pipeline of €0.8m, representing 17% of the EV.

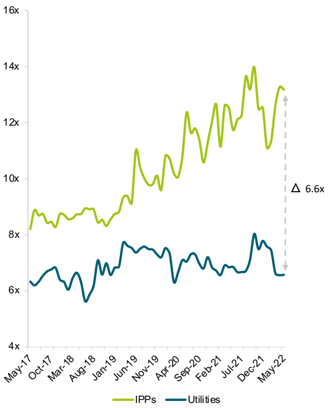
3. Given the rising demand for capacity additions in solar and wind plants as well as the economic attractiveness of running renewable energy power plants in the future, the repowering of both existing and newly built power plants is assumed. Using the estimated annual IRRs for each technology as a value driver for the first repowering based on the assumptions outlined in the chapter Value Drivers & Projections, the first repowering contributes a total NPV of €0.6bn, or over 60% of the total repowering value (Fig. 79). As electricity prices are expected to decline in most countries in line with lower LCOEs for renewables, coupled with long discounting periods, the contribution of further repowering cycles diminishes. Overall, we value the option to repower at around €1bn, contributing 20% to the EV of Encavis, of which 16% stems from the solar parks.

4. The asset management segment is valued using a standard DCF model including a terminal value based on the Gordon Growth model, assuming a terminal growth rate of 2%, yielding a value of €0.7bn (15% of the EV). While 66% of the value is allocated to the terminal value, we are confident that Encavis will realize the potential of its asset management segment resulting from the energy transition and the importance of institutional investors to meet the rising investment demand.

5. Based on the previous valuation of the operational business and accounting for non-operating assets worth €-71m, an overall EV of €4.9bn for Encavis is determined, implying a target price of €18.67[1] per share as of December 31, 2022 (Fig. 80). To analyze the impact of minor deviations of assumptions from our base case, the CO_2 price, the perpetual growth rate of the asset management business and the WACC were considered in a sensitivity analysis (Fig. 81).

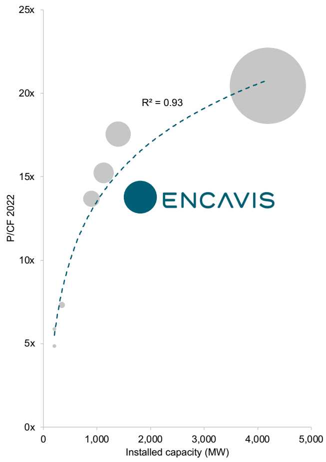
Relative valuation and transaction comparables

Fig. 82: EV/EBITDA (Fwd NTM) of European IPPs and utilities



Note: Forward multiple reflects median based on analyst consensus estimates for the next twelve months. Data as of May 12, 2022. For further information about the peer groups, please see Appendix
Source: Nova SBE based on FactSet

Fig. 83: P/CF multiple of selected European IPPs



Note: Cash flow is defined as net operating cash flow (excluding capex, including interest expenses)
Source: Nova SBE based on FactSet

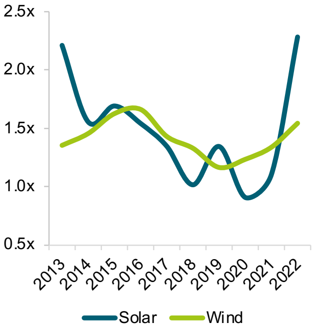
Fig. 84: Overview of current trading multiples of selected European IPPs

Company	EV/EBITDA	EV/MW	P/CF
Encavis AG	**16.2x**	**2.6x**	**14.1x**
7C Solarparken AG	10.3x	1.7x	7.3x
Clearvise AG	8.2x	1.3x	4.9x
Pacifico Renewables Yield AG	7.5x	0.9x	5.9x
Voltalia SA	14.2x	2.5x	15.2x
Neoen S.A.	17.4x	1.5x	20.4x
Falck Renewables S.p.A.	17.4x	2.9x	17.6x
Terna Energy S.A.	15.3x	2.9x	13.7x
Mean	**13.3x**	**2.0x**	**12.4x**
Median	**14.2x**	**2.0x**	**13.7x**
Mean (closest peers)	**15.8x**	**2.7x**	**15.1x**
Median (closest peers)	**15.8x**	**2.7x**	**14.6x**
Implied share price	18.40	20.33	18.76
Weight	*33.3%*	*33.3%*	*33.3%*
Final share price		**19.16**	

Note: Closest peers include Falck Renewables, Voltalia and Terna Energy. Data as of May 12, 2022.
Source: Nova SBE based on Bloomberg and FactSet

To see how Encavis is valued compared to its peers and also to challenge our SOTP valuation, a relative valuation was conducted. When looking at historical trading multiples of IPPs and utilities, one can observe that IPPs have continuously traded at a premium which increased over the last three years (Fig. 82). Given the cost competitiveness of renewables compared to the higher marginal costs of fossil fuels and the foreseeable forced shift to renewables for utility providers demanding significant investments, we deem the discrepancy in trading multiples to be fair. Therefore, only European IPPs with a strong focus on the operations of wind and solar plants were chosen as comparables. Additionally, they were only selected if Europe is their main market (>70% of total revenues) to ensure a similar operational risk profile to Encavis. First of all, it can be observed that although all IPPs operate a similar business model, they are valued differently among most multiples. As can be seen in Fig. 83, IPPs like Encavis, Falck Renewables or Neoen are trading at higher multiples compared to smaller IPPs. We deem the reason for this phenomenon to be their easier access to capital. Larger corporations not only benefit from stronger free cash flows allowing them to grow organically but also from cheaper debt financing. Contrarily, smaller companies rely more on equity raising to finance future growth. As further capital increases imply dilutions of equityholders, we conclude that investors may already reflect the expected dilution in the form of a discount of the share price which eventually leads to lower multiples. Therefore, multiples of companies of similar size to Encavis are primarily used. Using EV/EBITDA, EV/MW and the P/CF multiples leads to an average share price of Encavis of €19.16, indicating a downside to the current share price (Fig. 84). One might be tempted to conclude that the value of Encavis resulting from our SOTP valuation can be corroborated this way. However, it is important to keep in mind the limitations of the relative valuation. For instance, using the EV/MW multiple may be misleading as it is based on the assumption that Encavis has the same technology mix as its peers. Even though we aimed to anticipate this when selecting the peer group, there are not many companies being clearly committed to both technologies, as already shown in our Business Model section. Therefore, we consider the P/CF multiple the most appropriate. Still, trading multiples should only be used if there are sufficient overlaps between the peers and Encavis in terms of market capitalization and technology mix. As no listed company sufficiently similar to Encavis was identified, the result of the trading valuation is not considered in the final target price.

Fig. 85: Historical EV/MW multiple of European asset deals



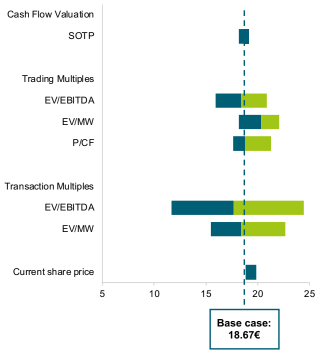
Note: adjusted by outlier
Source: Nova SBE based on MergerMarket

Fig. 86: Selected comaparable transactions

Target	Acquirer	EV/EBITDA	EV/MW
Albioma	KKR	12.1x	2.6x
Falck Renewables	JP Morgan	18.7x	2.4x
Solarpack	EQT	19.1x	2.8x
Avangrid	Iberdrola	14.5x	2.9x
Eolia	ENGIE	15.4x	2.3x
Mean		**16.0x**	**2.6x**
Median		**15.4x**	**2.6x**
Implied share price		17.67	18.40
Weight		*50.0%*	*50.0%*
Final share price		**18.04**	

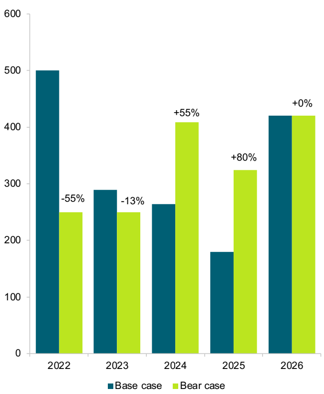
Source: Nova SBE based on Bloomberg and MergerMarket

Fig. 87: Comparison of different valuations methods (€/share)



Source: Nova SBE

Fig. 88: Assumed shift in capacity expansion (MW)



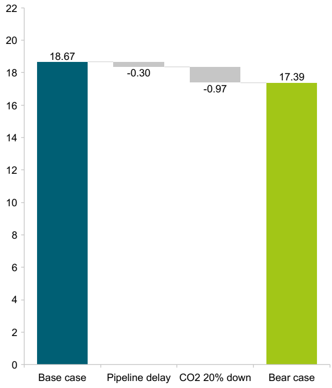
Source: Nova SBE based on company info

The secondary market of renewable power plants has recently gained momentum in the market driven by high demand among utility providers, IPPs, and other operators. Analysing 436 European asset deals of solar and wind power plants over the last ten years, historical EV/MW multiples were determined (Fig. 85). Over the last years, the multiples showed a slight downward trend until 2020 with a strong upward turn for the last two years, particularly driven by a high interest in solar plants in high-irradiation regions like Spain and Italy. Similarly, the market has seen major M&A transactions in the last two years, fuelled by high demand among institutional investors including KKR and JP Morgan as well as utilities seeking opportunities to accelerate the transition of their portfolio towards renewable assets. Five most recent acquisitions of renewable companies focusing on the operation of solar and wind plants were chosen for a comparable analysis. Using the EV/EBITDA and EV/MW multiples of 15.4x and 2.6x (Fig. 86), the transaction-based valuation yields an average share price of €18.04, indicating a downside potential as well (Fig. 87). Given the limited comparability to Encavis, the result of our SOTP valuation is exclusively used for our final recommendation.

The risk of pipeline delay and lower CO_2 prices

In addition to the threat of rising interest rates and retrospective FiT cuts, three major risks impeding the future course of Encavis' business were identified. First, given the expected economical attractiveness of operating renewables in selected countries, it is likely that more and more power producers enter the market. Eventually, this could lead to a cannibalization effect as the expansion of renewables surpasses the expectations, thus leading to an earlier decline in electricity prices. Secondly, the current supply chain shortages in the renewables technology industry drove up prices and time to market for plant developers. This could lead to a delay in the finalization of the pipeline planned until 2026. Particularly, when looking at the current status of the acquisitions planned for 2022, Encavis is short by 76%. Assuming shifts of capacity additions towards 2024/25 while holding on to the finalization date of 2026 (Fig. 88), the value of the pipeline would decrease by 23%, decreasing the share price by roughly €0.30 per share (Fig. 89). Second, as electricity prices are determined by the merit order and fossil fuels are still expected to be crucial in several EU countries in the short term, market prices will be heavily influenced by the rising CO_2 price, for which it is difficult to derive reliable future estimates. As the CO_2 price is a political instrument, it is subject to changes in political courses. Especially in

Fig. 89: Impact of a delay in the realization of the pipeline and a lower CO_2 price on the share price (€/share)



Source: Nova SBE based on company info

Fig. 90: Price development of Encavis' shares last 12-months (€)

Note: Data as of May 17, 2022
Source: Nova SBE, Bloomberg

Fig. 91: Expected target price and return analysis

Return analysis	
Share price (base case)	18.67
Weight	*80%*
Share price (bear case)	17.39
Weight	*20%*
Target share price (FY 22)	18.41
Dividend	0.44
Current share price[1]	19.35
Expected return[2]	**-4.3%**

Note: (1) As of May 17, 2022, (2) Annualized return as of May 2022
Source: Nova SBE, Bloomberg

today's volatile environment where soaring electricity prices are the major driver of inflation and the economy is less robust, political bodies may intervene in the electricity market. Additionally, market price caps for fossil energy, as Spain and Portugal effectively decreed in May 2022, could be implemented. To reflect the effect of a slower growing CO_2 price, a reduction of our estimates by 20% was assumed, leading to a decrease of the expected share price by roughly €1 per share (Fig. 89). As we deem both scenarios to be realistic, a combination of the pipeline delay and a lower CO_2 was assumed, yielding a share price of €17.39. To factor these risks into our valuation, we weigh the bear case with 20% against the base case, resulting in an overall share price of €18.41.

Share price performance & target price

Encavis' stock experienced a strong rally starting with the Ukraine War, after declining from €18.29 in November 2021 to €12.59 in February 2022. Since then, the stock has climbed by 70% to a peak of €21.30 in April, followed by a minor decline to its current price of €19.35 (Fig. 90). The current rally can be seen as the reaction to European countries becoming more self-sufficient in the energy sector. In addition to the EU's climate goals, the Ukraine Crisis has once again underlined the importance of the expansion of renewables. Encavis currently upholds a favourable position in the European power producer industry, being one of the largest IPPs that features a well-diversified energy portfolio. We see the opportunity to benefit from the political ambitions both through capacity additions from its pipeline and rising electricity prices in the near future. Long-term-wise, we expect Encavis to generate additional value through the repowering of its power plants. However, setting the necessary political frameworks and keeping up the momentum after the current crisis has passed will be essential for the long-term success. We find the recent stock rally to have more than sufficiently priced in the future potential of Encavis, indicating a slight overvaluation. The most significant risks next to rising interest rates and retrospective FiT cuts include a delay in the realization of the pipeline given the current disruption of global supply chains and a more moderate rise in CO_2 prices. Consolidating our finding, we issue a **SELL** recommendation considering a price target of €18.41 from our SOTP valuation and an expected dividend of €0.44 in 2022 (Fig. 91), resulting in an expected downside of 4.3% for investors.

Appendix

Financial Statements

Income Statement (€m)	2017A	2018A	Historical 2019A	2020A	2021A	2022E	2023E	Forecast 2024E	2025E	2026E	2027E
Operating business											
Revenue	222	249	274	292	333	385	439	474	502	553	558
PV Parks	*169*	*187*	*200*	*198*	*236*	*261*	*300*	*332*	*353*	*382*	*387*
Wind Parks	*50*	*58*	*63*	*78*	*78*	*104*	*116*	*116*	*121*	*140*	*137*
Asset Management	*4*	*4*	*10*	*16*	*19*	*20*	*23*	*25*	*28*	*31*	*33*
Cost of materials	(2)	(2)	(2)	(3)	(4)	(3)	(4)	(4)	(4)	(5)	(5)
Personnel expenses	(11)	(13)	(17)	(21)	(19)	(19)	(21)	(23)	(25)	(28)	(28)
Other operating expenses	(49)	(54)	(52)	(56)	(65)	(70)	(79)	(84)	(89)	(98)	(99)
Adj. EBITDA	**161**	**179**	**203**	**212**	**244**	**293**	**335**	**362**	**384**	**423**	**425**
D&A	(102)	(124)	(125)	(137)	(151)	(175)	(191)	(199)	(206)	(210)	(221)
Adj. EBIT	**59**	**56**	**78**	**76**	**92**	**118**	**145**	**163**	**178**	**212**	**204**
Tax + tax adjustments	(19)	(18)	(28)	(21)	(2)	(34)	(42)	(47)	(51)	(61)	(59)
NOPLAT	**40**	**38**	**50**	**55**	**91**	**84**	**103**	**116**	**127**	**151**	**145**
Non-operating business											
Non-operating result before tax and OCI	**41**	**29**	**34**	**22**	**58**	**-**	**-**	**-**	**-**	**-**	**-**
Tax & Tax adjustments	(13)	(12)	(11)	(9)	(16)	-	-	-	-	-	-
Other comprehensive income	1	1	(74)	44	25	-	-	-	-	-	-
Non-operating result	**29**	**18**	**(51)**	**58**	**67**	**-**	**-**	**-**	**-**	**-**	**-**
Financing											
Interests and other similar expenses	(59)	(65)	(61)	(71)	(68)	(74)	(69)	(62)	(54)	(47)	(43)
Tax shield	19	21	20	23	20	22	20	18	15	14	12
Financing result	**(40)**	**(44)**	**(42)**	**(48)**	**(48)**	**(53)**	**(49)**	**(44)**	**(38)**	**(33)**	**(31)**
Total comprehensive income	**29**	**12**	**(43)**	**65**	**110**	**31**	**54**	**72**	**89**	**117**	**114**
Attributable to Encavis AG shareholders	*27*	*6*	*(50)*	*57*	*103*	*24*	*47*	*65*	*82*	*110*	*107*
Attributable to hybrid investors	*2*	*6*	*7*	*8*	*7*	*7*	*7*	*7*	*7*	*7*	*7*

Source: Nova SBE, Company info

Balance Sheet (€m)	2017A	2018A	Historical 2019A	2020A	2021A	2022E	2023E	Forecast 2024E	2025E	2026E	2027E
Operating cash	4	5	5	6	6	7	8	9	9	10	11
Working capital	20	20	35	31	20	33	41	46	50	57	58
Net Working Capital	**25**	**25**	**40**	**37**	**26**	**40**	**49**	**55**	**60**	**67**	**69**
Current tax assets (net)	21	20	11	7	10	10	12	13	13	15	15
Other current receivables	11	12	12	6	9	9	10	11	12	13	13
Other current liabilities	(3)	(5)	(4)	(1)	(5)	(4)	(4)	(5)	(5)	(6)	(6)
Current provisions	(7)	(7)	(10)	(13)	(13)	(11)	(12)	(13)	(14)	(15)	(15)
Current Invested Capital	**23**	**20**	**10**	**(1)**	**1**	**5**	**6**	**6**	**7**	**7**	**7**
Property, plant and equipment	1,455	1,683	1,750	1,902	2,175	2,447	2,506	2,527	2,500	2,630	2,455
Intangible assets	609	580	547	494	446	402	359	315	271	228	185
Goodwill	32	20	27	28	27	27	27	27	27	27	27
Non-current provisions	(26)	(40)	(50)	(62)	(73)	(67)	(71)	(81)	(91)	(94)	(113)
Deferred tax assets (net)	(115)	(116)	(132)	(129)	(119)	(138)	(145)	(142)	(138)	(143)	(135)
Non-Current Operating Invested Capital	**1,956**	**2,127**	**2,141**	**2,232**	**2,456**	**2,672**	**2,676**	**2,647**	**2,569**	**2,648**	**2,419**
Operating Invested Capital	**2,004**	**2,172**	**2,191**	**2,268**	**2,483**	**2,717**	**2,731**	**2,708**	**2,635**	**2,722**	**2,495**
Non-Operating Invested Capital	**(29)**	**(34)**	**57**	**6**	**(71)**	**(71)**	**(71)**	**(71)**	**(71)**	**(71)**	**(71)**
Net Financial Assets	**(1,379)**	**(1,555)**	**(1,684)**	**(1,678)**	**(1,594)**	**(1,876)**	**(1,885)**	**(1,869)**	**(1,817)**	**(1,879)**	**(1,718)**
Equity	**597**	**582**	**564**	**596**	**818**	**770**	**774**	**768**	**746**	**772**	**706**

Source: Nova SBE, Company info

Financial Statements (continued)

Cash Flow Map (€m)	2017A	2018A	Historical 2019A	2020A	2021A	2022E	2023E	Forecast 2024E	2025E	2026E	2027E
NOPLAT	**40**	**38**	**48**	**53**	**88**	**84**	**103**	**116**	**127**	**151**	**145**
(+) Depreciation	58	65	77	85	103	130	146	154	161	166	178
(+) Amortization	44	59	47	52	48	45	45	45	45	44	43
Operating Gross Cash Flow	**142**	**162**	**173**	**189**	**240**	**258**	**293**	**315**	**332**	**361**	**366**
Investment in NWC	(14)	(0)	(15)	4	10	(14)	(9)	(6)	(5)	(8)	(2)
Investment in Capex	(181)	(293)	(144)	(237)	(376)	(402)	(205)	(175)	(134)	(296)	(3)
Other cash income and expenses	(47)	1	15	20	(1)	8	9	5	6	6	10
Unlevered FCF	**(100)**	**(130)**	**28**	**(24)**	**(127)**	**(151)**	**89**	**139**	**200**	**63**	**371**
Unlevered Non-Operating FCF	**22**	**23**	**(142)**	**109**	**145**	**-**	**-**	**-**	**-**	**-**	**-**
Total cash flow available to investors	**(78)**	**(106)**	**(114)**	**85**	**18**	**(151)**	**89**	**139**	**200**	**63**	**371**
Financial expenses	(59)	(65)	(61)	(71)	(68)	(74)	(69)	(62)	(54)	(47)	(43)
(+) Tax shield	19	21	20	23	20	22	20	18	15	14	12
(+) Changes in debt & debt like items	136	176	129	(6)	(84)	282	10	(16)	(52)	62	(161)
(-) Payouts to hybrid investors + minorities	(2)	(6)	(7)	(8)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
Debt cash flow	**94**	**126**	**81**	**(62)**	**(139)**	**222**	**(46)**	**(67)**	**(97)**	**22**	**(198)**
Net profit	(26)	(5)	(22)	(10)	(75)	(24)	(47)	(65)	(82)	(110)	(107)
(-) OCI	(1)	(1)	74	(44)	(25)	-	-	-	-	-	-
(+) Changes in equity	11	(14)	(18)	32	222	(47)	4	(7)	(21)	25	(66)
Equity cash flow	**(16)**	**(20)**	**33**	**(23)**	**121**	**(71)**	**(43)**	**(72)**	**(103)**	**(85)**	**(173)**
Implied Dividend						*(0.44)*	*(0.27)*	*(0.45)*	*(0.64)*	*(0.53)*	*(1.08)*
Total Cash flow from investors	**78**	**106**	**114**	**(85)**	**(18)**	**151**	**(89)**	**(139)**	**(200)**	**(63)**	**(371)**

Source: Nova SBE, Company info

Pipeline (Base case)

				2022				2023				2024				2025			
Country	Name	Type	Exp. Capacity (MW)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Denmark	Project 1	Solar	116																
	Project 2	Solar	116																
	Project 3	Solar	116																
	Project 4	Solar	116																
	Project 5	Solar	116																
		SUBTOTAL	**580**	0	0	116	0	0	0	0	0	116	232	116	0	0	0	0	0
Italy	Project 1	Unknown	49																
	Project 2	Unknown	49																
	Project 3	Unknown	49																
	Project 4	Unknown	49																
	Project 5	Unknown	49																
	Project 6	Unknown	49																
	Project 7	Unknown	49																
		SUBTOTAL	**345**	0	0	0	0	0	49	49	49	49	49	49	49	0	0	0	0
Germany	Project 1	Unknown	64																
	Project 2	Unknown	64																
	Project 3	Unknown	64																
	Project 4	Unknown	64																
	Project 5	Solar	64																
	Groß Behnitz	Solar	25																
	Project 7	Solar	64																
	Project 8	Solar	64																
		SUBTOTAL	**470**	0	0	25	64	0	127	64	191	0	0	0	0	0	0	0	0
Sweden	Project 1	Solar	48																
	Project 2	Solar	48																
	Project 3	Solar	48																
		SUBTOTAL	**145**	0	0	0	97	0	0	48	0	0	0	0	0	0	0	0	0
		Total	**1540**	**0**	**0**	**141**	**160**	**0**	**176**	**161**	**240**	**165**	**281**	**165**	**49**	**0**	**0**	**0**	**0**

Note: Assuming equal project sizes based on total project capacity
Source: Nova SBE, Company info

(MW)	2022	2023	2024	2025
Late / Mid Stage	256	289	264	0
Early Stage	0	0	0	180
Opportunistic investments	244	0	0	0
SUBTOTAL	**500**	**289**	**264**	**180**
TOTAL	**500**	**789**	**1,053**	**1,233**

Source: Nova SBE, Company info

Peer analysis

	Financing				Growth, margins and capacities						
	Market cap (€m)	EV (€m)	Equity ratio (%)	Net debt / EBITDA (x)	Sales growth (2Y CAGR (%))	EBITDA-margin (%)	EBIT-margin (%)	OPEX (€/MW)	Solar (MW)	Wind (MW)	Total (MW)
IPPs											
Encavis AG	3,086	4,680	33%	4.8x	9%	73%	36%	28	1,398	412	1,810
7C Solarparken AG	331	568	37%	5.1x	14%	82%	31%	23	338	6	344
Clearvise AG	135	262	25%	6.3x	-3%	65%	6%	56	36	162	199
Pacifico Renewables Yield AG	111	190	40%	5.6x	112%	62%	19%	25	74	93	167
Voltalia SA	1,966	2,825	32%	6.5x	62%	29%	13%	70	304	797	1,123
Neoen S.A.	4,052	6,417	28%	8.5x	15%	84%	51%	20	2,612	1,580	4,707
Falck Renewables S.p.A.	2,856	4,013	18%	5.6x	23%	37%	18%	73	256	1,084	1,393
Terna Energy S.A.	2,010	2,562	24%	3.4x	16%	40%	30%	44	9	866	896
Alerion Clean Power S.p.A.	1,464	1,952	23%	3.7x	46%	85%	59%	44	0	751	751
Average			**29%**	**5.5x**	**33%**	**62%**	**29%**	**43**			
Median			**28%**	**5.6x**	**16%**	**65%**	**30%**	**44**			
Utilities											
RWE AG	27,318	24,989	12%	neg.	37%	15%	5%		486	8,914	37,708
Enel SpA	60,769	138,536	6%	5.6x	4%	16%	6%		6,401	14,903	90,400
Iberdrola SA	67,114	116,262	40%	4.2x	4%	30%	19%		19,832	1,923	55,111
ENGIE SA	27,518	48,420	16%	2.0x	-2%	18%	3%		11,827	4,190	34,192
EDF SA	31,981	104,415	19%	4.0x	9%	21%	6%		7,416	2,591	123,151
Endesa SA	20,899	34,131	14%	3.8x	3%	17%	10%		2,423	709	22,465
Average			**19%**	**3.9x**	**9%**	**20%**	**8%**				
Median			**16%**	**4.0x**	**4%**	**18%**	**6%**				

Note: Data as of May 16, 2022
Source: Nova SBE, Bloomberg, FactSet, Company infos

LCOE assumptions

Conventional energy sources (€m)	**2022**	**2030**	**2040**	**2050**
Fuel costs (€/MWh)				
Coal	34.4	8.0	8.0	8.0
Gas	76.0	25.7	28.4	31.3
Nuclear	0.7	1.0	1.3	1.9
Capex (€m/MW)[1]				
Coal	1.5			
Gas	1.0			
Nuclear	8.0			
O&M costs (€m/MW)[1]				
Coal	8.8			
Gas	7.0			
Nuclear	11.0			
Capacity factor (%)[1]				
Coal	50%			
Gas	60%			
Nuclear	90%			
Economic lifetime (years)[1]				
Coal	35			
Gas	30			
Nuclear	40			
Additional assumptions[1]				
WACC	7.0%			
Debt Financing	60%			
Interest Rate	5.0%			
Debt Repayment Period	*equal to economic lifetime*			
CO_2 emission (t/MWh)[1]				
Coal	1.1			
Gas	0.5			
Nuclear	0.0			
CO_2 emission price (€/t)				
EU-wide	88.0	129.0	212.0	348.4

Renewable energy sources (€m)	**2022**	**2030**	**2040**	**2050**
Fuel costs (€/MWh)				
Solar				
Onshore Wind	*not applicable for renewables*			
Offshore Wind				
Capex (€m/MW)				
Solar	0.7	0.5	0.4	0.4
Onshore Wind	1.4	1.0	0.9	0.9
Offshore Wind	2.8	2.3	2.0	2.0
EBITDA margin (%)[1]				
Solar	80%			
Onshore Wind	71%			
Offhshore Wind	75%			
Capacity factor (%)[1]				
Solar[2]	11% - 20%			
Onshore Wind[2]	25% - 20%			
Offshore Wind	45%			
Economic lifetime (years)[1]				
Solar	30			
Onshore Wind	25			
Offshore Wind	25			
Additional assumptions[1]				
WACC	3.3%			
Debt Financing	71%			
Interest Rate	2.5%			
Debt Repayment Period	20			
Annual degradation (%)[1]				
Solar	0.5%			
Onshore Wind	1.0%			
Offshore Wind	1.0%			

[1] Assumed to remain constant until 2050
[2] Country-specific capacity factors can be found in Fig. 58

Source: Nova SBE, Lazard, Fraunhofer Institute, World Nuclear Association, IEA, EIA, IRENA, Pietzcker and Rodrigues (2021)

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Report Recommendations

Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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