EDISON

Mytilineos

The future is bright

Update on energy transition

Industrials

Mytilineos has been investing heavily to benefit from the energy transition (as humanity seeks to limit global warming to c 1.5°C). We estimate earnings (EBITDA) derived from energy transition activities will increase from 25% in 2020 to 60% in 2025, which will help drive EPS growth of 16% pa over the period, with Mytilineos continuing to achieve superior returns (c 11% ROCE). In our bull case, we forecast EPS increases by 185% by 2025, implying a 23% CAGR in 2020–25e. Our scenario-based analysis suggests the risk-reward balance is heavily skewed to the upside.

Year end	EBITDA (€m)	EPS (€)	DPS* (€)	P/E (x)	Dividend yield (%)
12/19	313	1.0	0.36	10.8	3.3
12/20	315	0.9	0.38	15.9	2.6
12/21e	353	1.2	0.43	13.0	2.7
12/22e	491	1.9	0.68	8.3	4.2
12/23e	544	2.1	0.75	7.5	4.7

Note: *Final distributed dividend per share.

Earnings benefit from investment in energy transition

Mytilineos has been investing heavily to benefit from the energy transition (c €1bn over five years) and we expect high returns (ROCE averaging 11% over our 10-year forecast period). We estimate earnings (EBITDA) from energy transition activities will increase from 25% in 2020 to 60% in 2025, delivering EPS growth of 16% pa (over 2020–25). This will be driven by strong growth in renewable development projects (mostly solar), some of which we estimate will be kept internally (1.5GW pipeline in Greece) and some will be sold to third parties (4.3GW international pipeline), as well as energy transition-related EPC contracts, and an increase in production of recycled aluminium and 'green' primary aluminium. Mytilineos has a strong balance sheet with financial flexibility of over €1.5bn, having recently raised €500m in 'green' bonds.

ESG measures to enhance profitability

Mytilineos is a leader in environmental, social and governance (ESG) among Greek companies; it is one of the first companies to set net zero carbon emissions targets. It is undertaking a number of initiatives across its businesses, which should improve efficiencies, reduce costs and enhance profitability. A prime example is in Metallurgy (aluminium) where it is targeting a 65% reduction in CO_2 emissions by 2030. This will be achieved through increased sourcing of electricity from renewable energy (we estimate 70% of electricity consumption by 2024) and expansion of recycled aluminium production (from 25% in 2021 to an estimated 40% by 2030), which will significantly reduce energy costs and rank Mytilineos among the lower carbon footprint producers in the market.

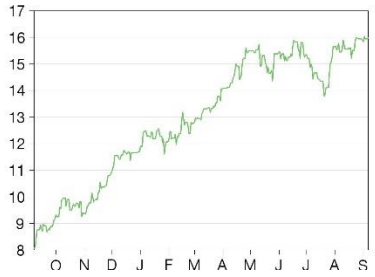
Valuation: Risk-reward skewed heavily to the upside

Our per-share valuation of €24.0 (c 50% above the current share price) is based on a 10-year discounted cash flow (DCF) methodology, which better reflects Mytilineos's growth prospects under the energy transition. We cross-check with a SOTP peer valuation (c €24/share). In addition, we formulate a bear and bull case that indicates the risk-reward balance is heavily skewed to the upside (c -20%/+130%).

7 September 2021

Price	**€16.05**
Market cap	**€2,293m**
Net debt (€m) at end H121	652
Number of shares (excluding buybacks)	135.8m
Free float	73.5%
Code	MYTIL
Primary exchange	ASE
Secondary exchange	N/A

Share price performance



%	1m	3m	12m
Abs	3.4	3.8	102.0
Rel (local)	0.9	2.2	41.1
52-week high/low		€16.2	€8.0

Business description

Mytilineos is a leading industrial company with an international presence in all five continents. The company is active in Metallurgy, Power and Gas, Sustainable Engineering Solutions and renewables & storage development, operating via a unique synergistic business model.

Next events

9M trading update	26 October 2021

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Edison profile page

Mytilineos is a research client of Edison Investment Research Limited

Investment summary

Significant investment in energy transition-related growth

Mytilineos is a diversified industrial company operating in four main business areas: power generation/supply (Power & Gas division, or P&G); alumina/aluminium production (Metallurgy division); engineering, procurement and construction (EPC) of power and sustainability projects (Sustainable Engineering Solutions division, or SES); and renewables/energy storage development (Renewables & Storage Development division, or RSD). It has been investing heavily to benefit from the energy transition. It has invested c €1bn over five years (2017–21), including our estimated capex for 2021 of c €0.5bn equating to 5x depreciation. Investments have been made in renewables, including 211MW owned renewable generation assets, mostly wind farms, and we expect a further 1.5GW of solar plants to be developed and kept (in P&G); renewable development assets (mostly solar photovoltaic, PV) of over 4.3GW at various stages of development and construction (in RSD); improving aluminium production efficiency; expanding its recycled aluminium capacity; and a high efficiency 826MW combined cycle gas turbine (CCGT) plant, which is on track for completion by end-2021.

Over the years, Mytilineos has leveraged the synergies between the divisions to build a portfolio of assets that have in common a low-cost, competitive positioning. In the Metallurgy division, the company is first quartile on the global cost curve for both alumina and aluminium production; the gas-fired power plants are some of the most efficient in Greece (or the world, in the case of the new 826MW CCGT plant) and are among the lowest-cost thermal producers in the country. Mytilineos has built a track record of diverse infrastructure development internationally and is leveraging its competencies to benefit from growth in sustainable development projects, which are seeing a significant increase in government funding globally. Since the start of the pandemic, governments globally have announced over $12tn in stimulus packages, including the United States with c $2tn and Europe with c $1tn (its €800m recovery fund). A sizeable portion of these funds are being allocated to sustainability projects. McKinsey estimates there are $1tn of unassigned energy and environmental projects for 2020–22.

Its new RSD division, which focuses on solar and energy storage developments, also leverages competencies in EPC and infrastructure and will benefit from strong long-term growth rates as renewables displace fossil fuels as the main source of energy globally. We estimate that annual solar installations could grow at 10% pa over the next 10 years. The RSD division undertakes full development projects, using its own development pipeline, which are either sold to third parties (currently assumed) or potentially kept internally (in its P&G division), as well as EPC contracts for third parties.

We forecast that Mytilineos increases its earnings (EBITDA) from energy transition activities from 25% in 2020 to 60% in 2025 (and 65% in 2030). This translates into a five-year EBITDA CAGR of 32% in energy transition-related activities (from c €80m in 2020 to c €325m in 2025), and a five-year group EPS CAGR of 16%. Annual growth rates are even higher over 2020–23, as by 2025 we taper down our pricing assumption for aluminium (LME price + premium) to more normalised long-term levels.

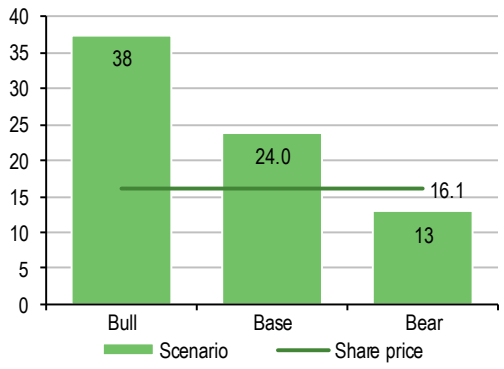
Valuation: Risk-reward skewed heavily to the upside

Our valuation is based on a 10-year DCF for each division. We update our DCF methodology to better reflect the longer-term energy transition; we adopt a 10-year cash flow forecast period followed by a terminal value, and formulate a bear, base and bull case to better understand the risk-reward balance for the shares. We believe we have been conservative in applying 1% terminal

growth across Metallurgy, P&G and SES; and 2% for RSD. We discuss our modelling assumptions in the following sections.

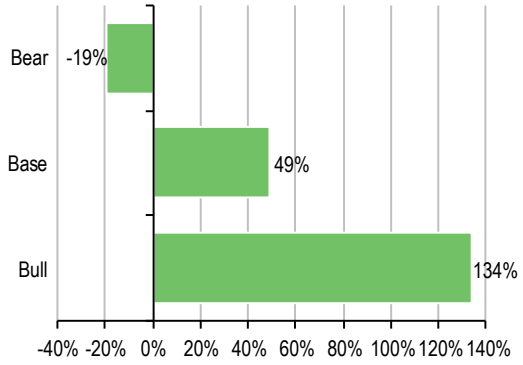
Our bull case gives a per-share valuation of €38, which is more than double (c 130%) the current share price, compared to our bear case of €13, which is just c 20% below the share price, implying an attractive risk-reward balance. Our base case of €24.0 per share implies c 50% upside. For the develop and keep solar plants, we estimate value accretion of c €7m for every 100MW, based on a €40/MWh electricity price and a WACC of 7.0%; however, if we were to assume a nominal 70% project finance, then this would increase to €14m. For 1.5GW of solar projects this would increase our share valuation by a further c €100m (as the valuation of the solar projects, assuming project finance, equates to €210m) or a further 5pp of upside.

Exhibit 1: Share valuation for each scenario (€)



Source: Edison Investment Research

Exhibit 2: % upside/(downside) versus current share price for each scenario



Source: Edison Investment Research

We use peer valuation as a cross-check, rather than driving our valuation, as we believe near-term earnings multiples do not accurately reflect Mytilineos's long-term growth prospects. We take a sum-of-the-parts (SOTP) divisional based approach, which best reflects the uniqueness of the Mytilineos business. Adopting EV/EBITDA multiples of comparable peers on a divisional basis suggests an SOTP valuation of, on first impression, c €19.9/share, which when adjusted to adequately reflect the competitive strengths and growth prospects of Mytilineos's divisions relative to their peers (we assume a 20% premium to the median peer multiples) increases by c €4,0/share to c €24/share. This agrees with our DCF-based share valuation.

Strong earnings growth and sustained long-term FCF generation

We forecast that net income (after minorities) will increase by 103% over 2020–22 (which is in line with management's informal guidance of doubling earnings between 2020 and 2022), and EPS increases by 112% (reflecting the ongoing share buyback program). We expect strong growth across Metallurgy, SES and RSD, as these businesses recover following a downturn during the pandemic. We expect EBITDA for P&G will be down by just over a quarter in 2021 after an exceptionally strong year in 2020; however, by 2023 it should increase above the 2020 level, driven by the new CCGT plant (and with the Korinthos Power CCGT plant back at full capacity).

We expect Mytilineos's return on capital employed (ROCE) to average 11% over the next 10 years. This suggests the company is putting capital to good use. Free cash flow (FCF) is negative in 2021 due to large capex (new 826MW CCGT) and working capital investments (increase in renewable energy systems (RES) development). It will remain suppressed in the coming years as Mytilineos invests in 1.5GW of solar plants it plans to keep (we estimate capex of €0.8bn over 2021–26). Once it starts to see a return on this investment, FCF yield rises to c 7% in 2024–25 (despite the ongoing investment in solar projects) then to 13–17% from 2026. Assuming Mytilineos continues its current dividend pay-out ratio of c 35%, we estimate its dividend yield will increase to 4–5% from 2022 and

this is in addition to its ongoing share buyback programme (we estimate c €70m of shares have been repurchased so far over 2020–21).

Mytilineos has a strong balance sheet with our forecast net debt to EBITDA ratio peaking at 2.8x in 2021, decreasing to 0x by 2028. Furthermore, it successfully raised €500m in 'green' bonds in April at an interest rate of 2.25%, demonstrating investor confidence in Mytilineos's ability to deploy capital into value accretive renewable and sustainability projects. Including the bond issue, it has financial flexibility of over €1.5bn (€0.6bn cash and €0.9bn credit facility).

H121 results are solid despite the pandemic

EPS increased by 17% to €0.57 per share (in H121) from €0.49 per share in H120. H121 results showed a significant turnaround in the SES (EBITDA of €25m from a loss of €6m in H120) and Metallurgy businesses (EBITDA of €77m up from €66m in H220). RSD showed some promise with the EBITDA margin improving to 6.4% from 2.5% in H220; however, revenue will be heavily skewed to H2 due to order deliveries. The P&G division was affected by a scheduled three months of maintenance for the Korinthos Power CCGT plant. FY20 was a record-high performance for P&G due to higher spark spreads benefiting Mytilineos's market-leading generation business.

Russian export tax is further enhancing aluminium price and premiums

Aluminium prices and premiums have been on an upward trajectory since Q420. The aluminium price has increased from an average of c $2,000/t in January to $2,400/t in June and premiums from an average of c $400/t in January to c $1,000/t in June. They have recently been given a further push upwards from the announcement, in June, that Russia is planning an export duty on aluminium, nickel, steel and copper to help keep domestic inflation under control. An export duty of 15% applies from 1 August to 31 December. The aluminium price has since risen above $2,600/t in August and the premium to $1,150/t. In addition, there have been suggestions on some newswires that Russia might replace the export duty with a more permanent mineral extraction tax from 2022. We note that our base case valuation, which assumes a price of $2,350/t for 2021 then $2,300/t for 2022–24 followed by $2,200/t from 2025 and premiums peaking at c 30% in 2022 (lag effect) before reducing to c 15% from 2025, appears conservative on this backdrop.

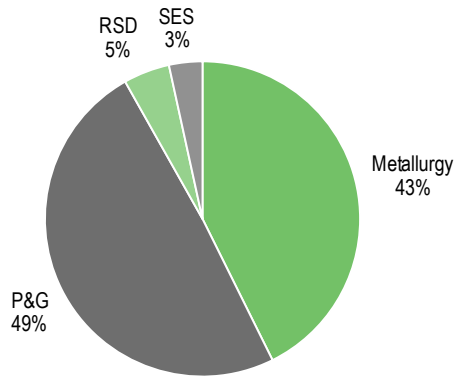
Management's focus on ESG measures to enhance profitability

It has been long accepted that companies that embrace good ESG practices are likely to be well run, have better cost efficiencies and profitability, and therefore achieve superior returns to similar companies that do not. Mytilineos is a good example of a company where good ESG practices, particularly in relation to the emissions reduction and the energy transition (the 'E' of ESG) should have a positive impact on earnings. The management team has positioned Mytilineos as a leader among Greek companies in ESG practices. It is among the first companies to set net zero carbon emissions targets (by 2030 for SES and RSD and by 2050 for the entire group). It held a successful ESG summit in February with participants from government, industry, finance and NGOs. It is targeting a 65% reduction in emissions in its Metallurgy business by 2030, which due to the energy intensive nature of aluminium smelting, means decarbonising its electricity supply. In the most recent (May) RES auction in Greece, winning tariffs ranged from c €33/MWh to €51/MWh. This provides a significant opportunity for Mytilineos to reduce its cost of electricity in Metallurgy. Indeed, it recently announced a 200MW 10-year solar PPA signed with Egnatia at €33/MWh. Mytilineos is implementing a whole range of ESG measures, including adopting the UK Corporate Governance Code 2018, and has been scoring well with ESG ratings providers (including improving its score in seven out of eight ratings in 2020).

Business mix

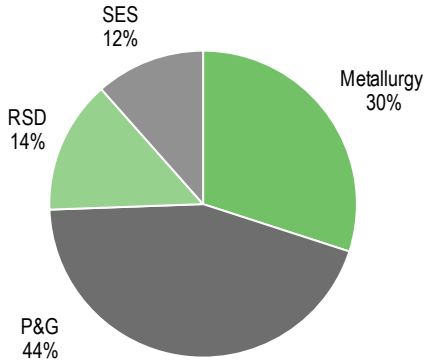
Mytilineos is a diversified industrial company operating in four main business areas: power generation/supply (P&G); alumina/aluminium production (Metallurgy); EPC of power and sustainability projects (SES); and renewables/energy storage development (RSD). A majority of its operations are in Greece; however, it has been increasing international exposure, particularly through its SES and RSD businesses. EBITDA from SES and RSD increases from a combined 8% in 2020 to 25% by 2030. We discuss each division's activities in more detail, including proportions of earnings from energy transition-related activities in the following sections.

Exhibit 3: Mytilineos – 2020 EBITDA split by division



Source: Mytilineos

Exhibit 4: Mytilineos – 2030 EBITDA split by division



Source: Mytilineos

Scenario analysis

We have undertaken detailed scenario-based modelling of Mytilineos, which comprises:

- Bottom-up analysis of costs, margins, realised prices and project pipelines, where applicable.
- Top-down analysis of long-term energy transition-related trends, growth rates and competitive landscapes for the industries relevant to Mytilineos's businesses.
- 10-year explicit forecasts by division, which better represent the longer-term energy transition-related trends Mytilineos is experiencing.
- Bear, base and bull forecast and valuation scenarios, which give an indication of sensitivities and the risk-reward profile for investors.

We discuss the trends, Mytilineos's strategic activities and our assumptions for each of the four divisions in separate sections below. We summarise our detailed assumptions and financial forecasts by division in the financials section.

Exhibits 5, 6 and 7 below present our EBITDA forecasts for each scenario, along with the percentage of EBITDA that is derived from the energy transition (RES and sustainability) activities. The areas we model that relate to energy transition include:

- **RSD:** all earnings.
- **SES:** the proportion of earnings that relate to environmental and sustainability projects, such as solid and liquid waste treatment (including waste to power), hybrid and off-grid power projects, and energy efficiency projects.
- **Metallurgy:** secondary aluminium production, and the portion of primary aluminium production that is produced using green electricity.
- **P&G:** electricity generated from RES. We do not classify earnings from the new high efficiency CCGT plant as energy transition; however, arguably it could be included, as it is key to helping

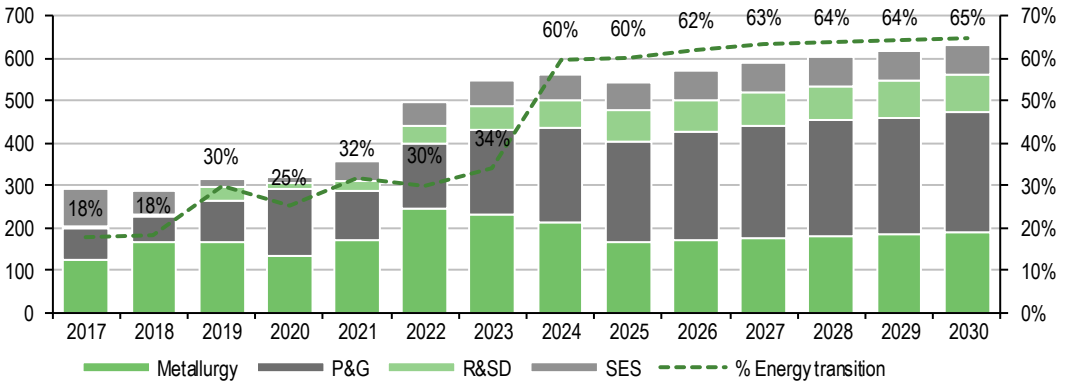
Greece transition away from lignite by 2023; just a few years ago lignite accounted for c 30% of Greece's electricity production.

Strategically, as outlined in a corporate presentation dated September 2020, Mytilineos targets >40% of 2025 EBITDA from energy transition activities and expects this will help to double group earnings by 2025. However, we believe this guidance has now been superseded (due to significant positive developments in the aluminium market, among other things) by informal guidance given since the AGM in June, when it was suggested that earnings could double by 2022. In addition, on a group level, it has committed to reducing direct and indirect CO_2 emissions by at least 30% by 2030 compared to 2019 and to achieve zero emissions by 2050.

Base case: Used in our valuation

In our base case, EBITDA increases by 69% over 2020–25e, implying a CAGR of 11%. EPS increases by 112% or a 16% CAGR. We forecast an increase in EBITDA from energy transition activities from 25% in 2020 to 60% in 2025, above Mytilineos's strategic target of >40% (in 2025).

Exhibit 5: Base case – EBITDA (LHS, €m) and % RES and sustainability (RHS)

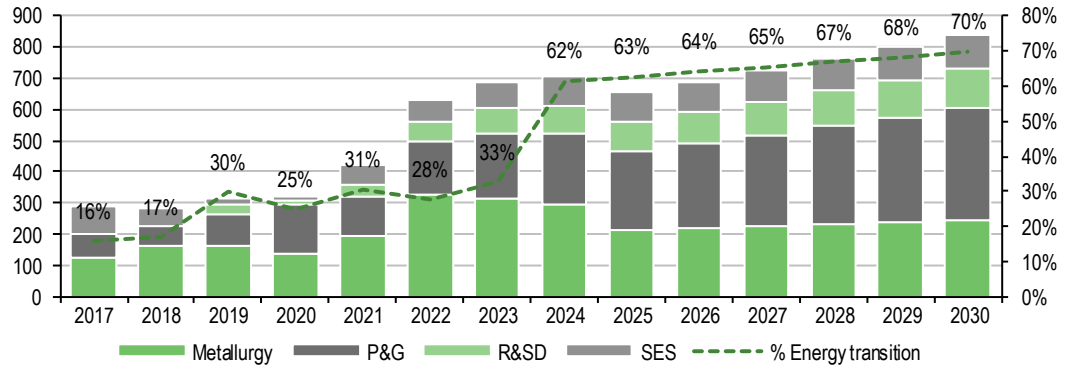


Source: Mytilineos accounts, Edison Investment Research

Bear and bull case: Used in our risk/reward spread

In our bull case, we forecast energy transition-related activities to increase to 63% of EBITDA in 2025. EBITDA increases by c 105% over 2020–25, implying a CAGR of 15%, and EPS increases by c 185% or a 23% CAGR, which is significantly above Mytilineos's strategic target.

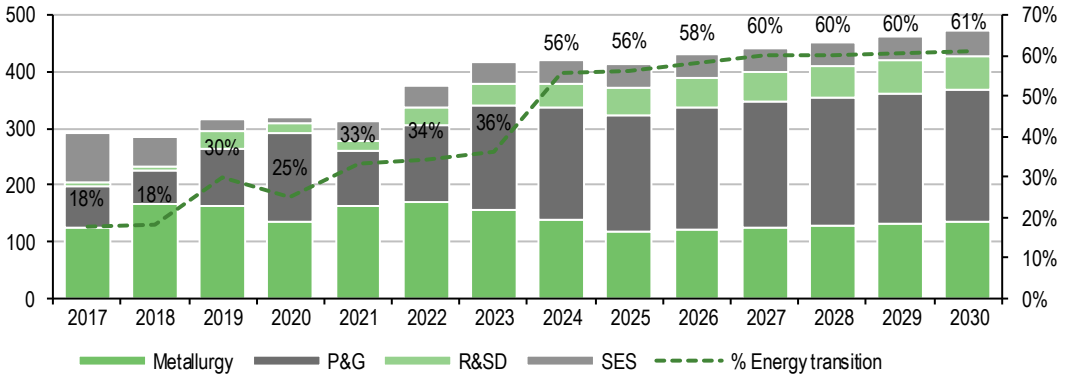
Exhibit 6: Bull case – EBITDA (LHS, €m) and % RES & sustainability (RHS)



Source: Mytilineos accounts, Edison Investment Research

In our bear case, we forecast energy transition-related activities to increase to 56% of EBITDA in 2025, again above Mytilineos's strategic target. EBITDA increases by 29% over 2020–25, implying a CAGR of 5%, and EPS increases by 28% or a 5% CAGR.

Exhibit 7: Bear case – EBITDA (LHS, €m) and % RES & sustainability (RHS)



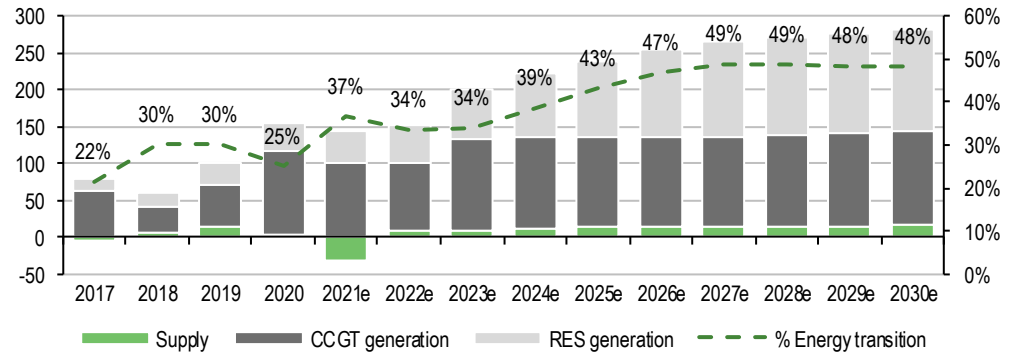
Source: Mytilineos accounts, Edison Investment Research

Power & Gas

Mytilineos has been gradually increasing its share in domestic electricity production through adding RES generation capacity totalling 222MW by end-2020, 205MW of which are wind farms. As the wind farms were built before end-2020, they benefit from favourable tariffs of €98/MWh. Assuming total installed costs of €1.2m/MW and operation and maintenance (O&M) costs of €33/kW equates to a project internal rate of return (IRR) of 16%, or an equity IRR of 34% (assuming notional project finance leverage of 70%). From 2021, Greece moved to a new system for RES; tariffs are determined on an auction basis. Even at €51/MWh, which is the top end of successful bids in the May auction, we estimate project IRRs for wind at below 7.5% (ie barely above our estimated weighted average cost of capital (WACC) for Mytilineos of 7%) and equity IRRs below 9% based on the same assumptions. Based on this, we believe Mytilineos will switch its focus from investing in wind farms to investing in solar plants, where the economics are more favourable. We estimate that Mytilineos will add 300MW pa of solar capacity over 2022–26, as it develops and keeps (build to keep) its mature pipeline of 1.5GW (mostly) solar projects in Greece (acquired in February). At €40/MWh, we estimate that solar projects can achieve project IRRs of 9% and equity IRRs of 16%, based on total installed costs of €0.55m/MW and O&M costs of €10/kW. We note that in the recent renewable auction (in May) in Greece, the average tariff for successful bids was €38/MWh (with a range from €33/MWh to €51/MWh).

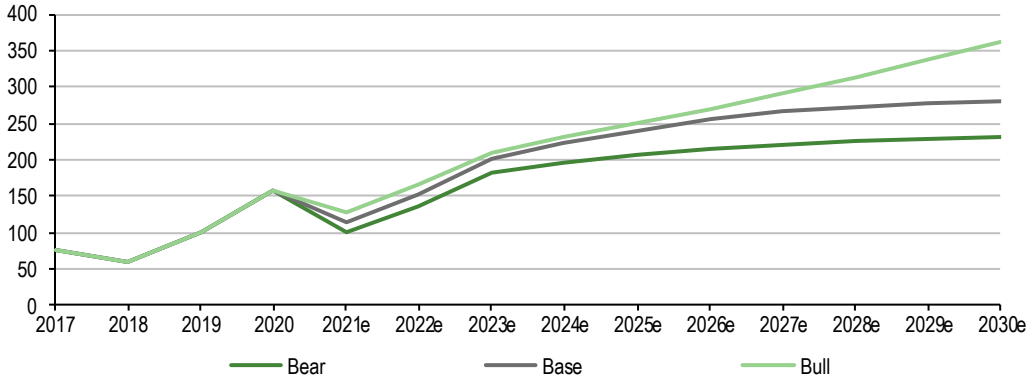
Mytilineos is on track to complete construction of its new 826MW CCGT by end-2021 (total investment cost of c €330m) and will commence operation following a test period in H122. Assuming it reaches full capacity in 2023, Mytilineos will, we estimate, achieve a 20% share of domestic production.

Exhibit 8: P&G – EBITDA by segment (for base case) (LHS, €m) and percentage earnings from energy transition (RHS)



Source: Mytilineos, Edison Investment Research estimates

Exhibit 9: P&G – EBITDA by scenario (€m)



Source: Mytilineos, Edison Investment Research estimates

Energy transition trends

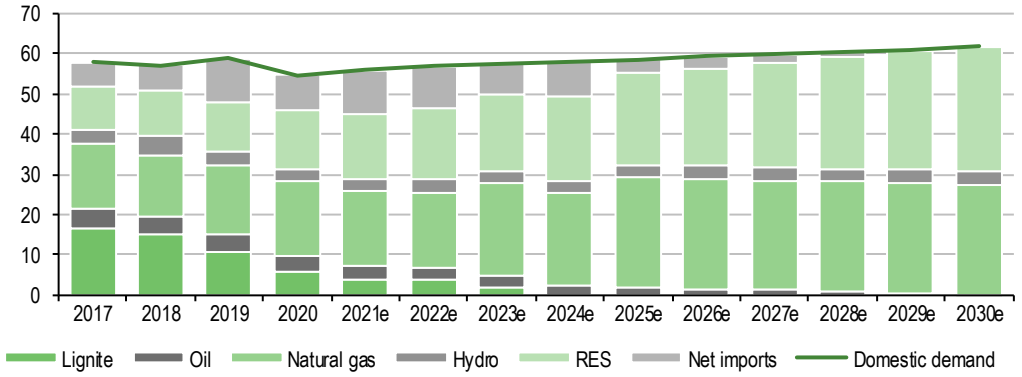
On 1 November 2020, Greece implemented the European Union's Target Model for electricity, which is the cornerstone for the development of a single electricity market in Europe. Greece's electricity market is primarily coupling with the Italian and Bulgarian markets, where there are plans to increase the capacity of existing interconnecting infrastructure. It is anticipated that the new markets will lead to increased competition, greater transparency and an integrated market for the benefit of participants and end-consumers alike, as the EU transitions to low-carbon electricity. Greece, which had been slow to implement the scheme, has among the highest wholesale prices in Europe.

Greece's state-owned power utility PPC has committed to cease operating all its existing lignite-fired power plants (c 2.6GW) by 2023. As the lignite plants have been running on significantly reduced load factors (<20%), due to a strong increase in carbon prices (to c €50/tonne), this will remove approximately 4TWh from energy supply. Mytilineos's new 826MW CCGT plant, which is scheduled to commence operation next year, will replace this by adding 4.4TWh from 2023. In addition, PPC plans to convert a coal-fired thermal plant under construction to a 1GW gas power plant 2025. Assuming a load factor of 50%, this could add another 4TWh.

At end-2020, Greece's energy mix comprised c 20% renewables and its electricity mix c 30%. Greece has a legally binding target of 35% renewables in final energy consumption by end-2030. Of this, RES is set to account for 61% of electricity consumption by 2030. Greece's national energy plan mandates 7.7GW of solar PV capacity by end-2030 (up from 3.2GW end-2020) and 7GW of onshore wind (up from an estimated 3.5GW end-2020). This increased capacity could reduce Greece's reliance on imported electricity; in recent years, it has met more than 15% of its electricity demand -by net imports. We assume electricity demand growth of 3% in 2021, 2% in 2022 and

2023 then 1% thereafter, with electricity demand returning to pre-pandemic levels (c 58.7TWh) during 2023. We assume oil generation capacity is withdrawn by end-2030.

Exhibit 10: Greece's power generation mix (TWh)



Source: PPC, Edison Investment Research

Summary of assumptions

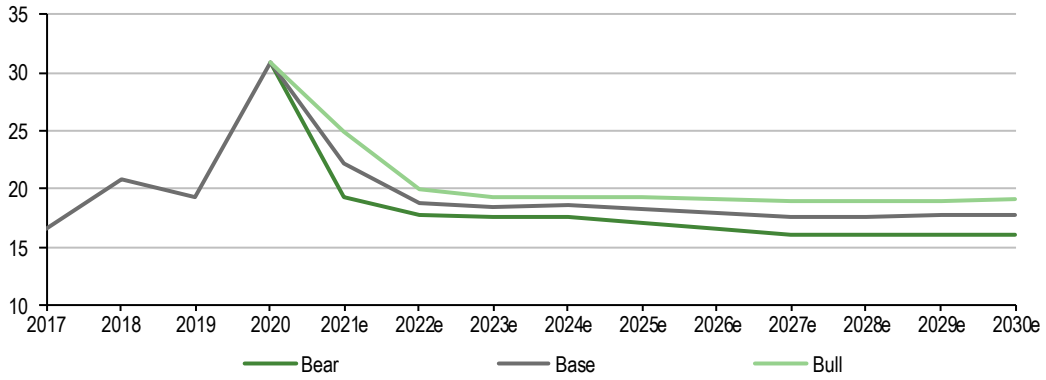
We summarise our modelling assumptions in Exhibits 11 and 12 and discuss them in detail in the Appendix.

Exhibit 11: Summary of assumptions for P&G

	Assumption			Difference versus base case		
	Bear	Base	Bull	Bear	Base	Bull
Carbon price (€/t)						
2020	25	25	25			
2021e	46	48	50	-2	0	2
2022e	55	55	55	0	0	0
2025e	70	70	70	0	0	0
2030e	85	85	85	0	0	0
Carbon cost pass-through	60%	80%	100%	-20%	0%	20%
Wholesale electricity price (€/MWh):						
2020	45	45	45	0.0	0.0	0.0
2021e	72	77	81	-4.5	0.0	4.5
% increase 2021 v 2020	60%	70%	80%	-10%	0%	10%
% increase 2022 onwards (real)	0%	0%	0%			
Wholesale gas price (€/MWh):						
2020	9	9	9	0.0	0.0	0.0
2021e (adjusted) (i)	23	23	23	0.0	0.0	0.0
% increase 2021 v 2020	150%	150%	150%	0%	0%	0%
2022e	27	29	32	-2.3	0.0	2.3
% increase 2022 v 2021	15%	25%	35%	-10%	0%	10%
% increase 2022 onwards (real)	0%	0%	0%	0%	0%	0%
Load factors						
Korinthos Power (2021)	41%	43%	45%	-2%	0%	2%
Korinthos Power (2022 onwards)	55%	57%	59%	-2%	0%	2%
Ag. Nikolaos CCGT (2021 onwards)	53%	54%	55%	-1%	0%	1%
New CCGT (2022)	25%	30%	35%	-5%	0%	5%
New CCGT (2023 onwards)	60%	60%	60%	0%	0%	0%
Solar	21%	21%	21%	0%	0%	0%
Wind	28%	28%	28%	0%	0%	0%
Clean spark spread (€/MWh)		See Exhibit 12				
Solar plants added pa (MW)						
2022–26e	200	300	300	-100	0	0
2027 onwards	0	0	300	0	0	300
Total added	1,000	1,500	2,700	-500	0	1,200
Auction price for solar (€/MWh)						
2021 onwards	40	40	40	0	0	0

Source: Edison Investment Research estimates

Exhibit 12: Clean spark spread (€/MWh, real)

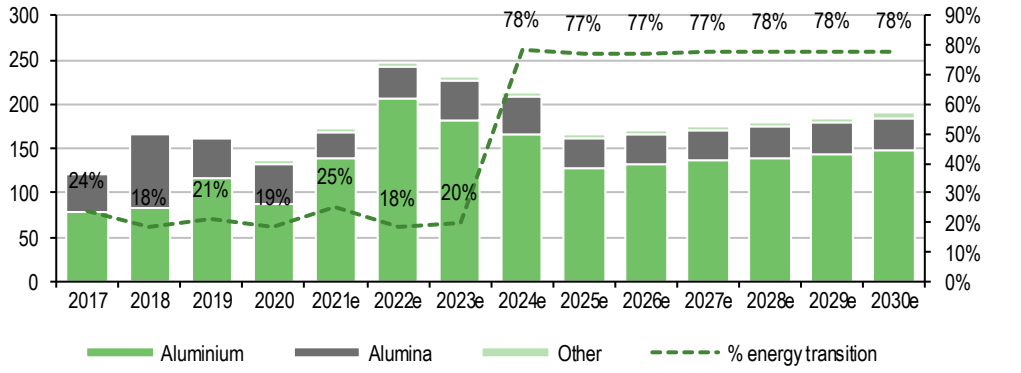


Source: Edison Investment Research. Note: Netted with profit/(loss) from the electricity supply business unit (in €/MWh).

Metallurgy

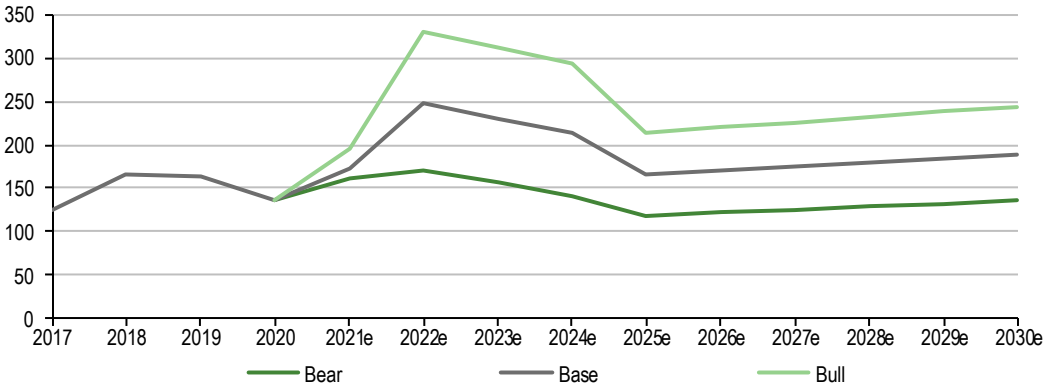
Mytilineos owns Europe's only integrated aluminium production facility, with aluminium capacity of 250kt (including primary aluminium capacity of 190kt), alumina capacity of 875kt and bauxite capacity of 650kt. It has proactively set emissions reduction targets to reduce total CO_2 (scope 1 and 2) emissions in the Metallurgy division by 65% and reduce specific emissions by 75%, per tonne of aluminium produced by 2030 (relative to 2019 emission levels). Its strategy for meeting these targets includes sourcing cleaner electricity and increasing its recycling capabilities. From 2024, we estimate that c 80% of Metallurgy's earnings will be derived from energy transition activities. This is due to an increasing portion of recycled aluminium (roughly a third of production by 2024) and 70% of electricity sourced from renewables, which results in less than four tonnes of CO_2 per tonne of aluminium produced, allowing all primary aluminium to be classified as green aluminium. Pre-2024, the main contributor to energy transition earnings for Metallurgy comprises earnings from efficient CHP production, which we estimate at c €35m.

Exhibit 13: Metallurgy – EBITDA by segment (for base case) (LHS, €m) and percentage earnings from energy transition (RHS)



Source: Mytilineos, Edison Investment Research estimates

Exhibit 14: Metallurgy – EBITDA by scenario (€m)



Source: Mytilineos, Edison Investment Research estimates

Energy transition trends

Aluminium production is one of the most carbon-intensive industries, due to high levels of electricity required for aluminium smelting. It emits nearly 1.1bn tonnes of CO_2 globally and is not helped by China accounting for c 55% of global production. To put it into context, China used 485TWh of electricity in aluminium production in 2019, of which 90% (430TWh) was from coal-fired plants, and a majority of these are subcritical (low efficiency). This resulted in 667Mt of CO_2 emissions from Chinese aluminium production, which is almost double the entire UK's CO_2 emissions (c 370Mt) and higher than all but the top seven CO_2 emitting countries globally.

The aluminium industry must reduce its emissions by 77% by 2050 to meet global climate targets. This will largely be met through shifting to green electricity and assisted by increasing recycling capacity and efficiency (recycled aluminium uses c 5% of the electricity required for primary aluminium production). The International Energy Agency has called for a shutting of all subcritical coal plants by 2030; this equates to the removal of c 60% of China's aluminium production (c 30% of global supply) in under 10 years. China has put caps on production but will need to take drastic measures to comply with global climate targets.

This enormous challenge for the supply-side, which the International Aluminium Institute (IAI) estimates could cost $0.5–1.5tn, is exacerbated by strong demand for aluminium due to the energy transition. It is a light-weight material used in electric vehicles, for 'green buildings' and power cabling. Based on the IAI's projections, demand could increase by 80% to 171mt by 2050 (from 95mt in 2018). The IAI suggests secondary aluminium production will increase its share from a third in 2018 (31mt) to nearly 50% (81mt) by 2050, which implies growth in primary aluminium production is still required (from 64mt in 2018 to 90mt in 2050), albeit produced using green electricity sources.

Summary of assumptions

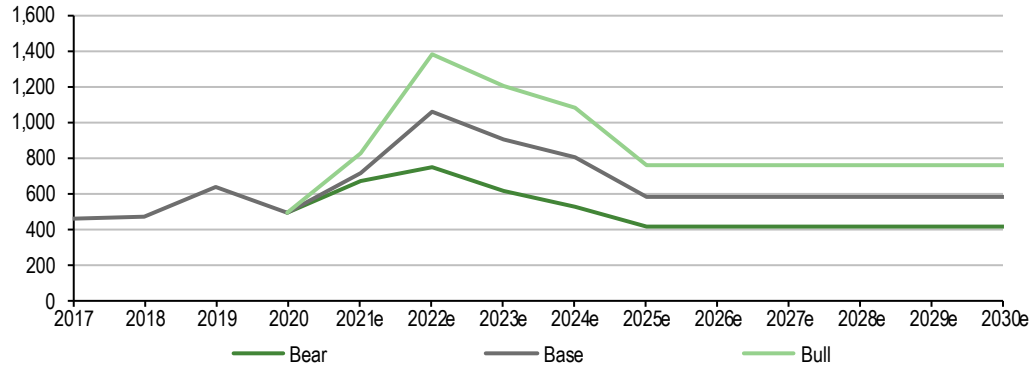
We summarise our modelling assumptions in Exhibits 15 and 16 and discuss them in detail in the Appendix.

Exhibit 15: Summary of assumptions for Metallurgy

	Assumption			Difference versus base case		
	Bear	Base	Bull	Bear	Base	Bull
Aluminium price (€/t)						
2021	2,300	2,350	2,400	-50	0	50
2022-24	2,000	2,300	2,600	-300	0	300
2025 onwards	2,000	2,200	2,400	-200	0	200
% increase 2025 onwards (real)	0%	0%	0%	0%	0%	0%
Aluminium premium (%)						
2022	30%	30%	30%	0%	0%	0%
2025 onwards	15%	15%	15%	0%	0%	0%
Alumina price (€/t) *						
2021	300	305	310	-5	0	5
2022	280	322	364	-42	0	42
2023-24	300	345	390	-45	0	45
2025 onwards	300	330	360	-30	0	30
% increase 2022 onwards (real)	0%	0%	0%	0%	0%	0%
Electricity cost (€/MWh) (real)						
2021–22	40	40	40	0	0	0
2023	41	41	40	0	0	0
2024 onwards	39	39	39	0	0	0
Electricity % from RES						
2023	15%	15%	15%	0%	0%	0%
2024 onwards	70%	70%	70%	0%	0%	0%
Margin per tonne (€/t)	See Exhibit 16					
Sales (kt pa)						
Alumina (2021)	475	475	475	0	0	0
Alumina (2022 onwards)	495	495	495	0	0	0
Primary aluminium (2021 onwards)	180	180	180	0	0	0
Recycled aluminium (2021)	60	60	60	0	0	0
Recycled aluminium (2030)	100	120	140	-20	0	20
Recycled % total aluminium (2021)	25%	25%	25%	0%	0%	0%
Recycled % total aluminium (2030)	35%	40%	45%	-5%	0%	5%

Source: Edison Investment Research estimates. Note: *From 2023 onwards, the alumina price is assumed to be 15% of the aluminium price.

Exhibit 16: Primary aluminium production margins (€/tonne, real)



Source: Edison Investment Research

Renewables & Storage Development

Mytilineos set up the RSD division in 2020 after its acquisition of the remaining 50% in subsidiary Metka. It has built up a track record in solar PV and energy storage EPC projects since 2015 and

has more recently started developing its own pipeline of projects. For EPC contracts, it has won repeat business from Total Eren, a global renewable developer in which oil major Total Energies holds a stake and also PPC Renewables, which is building a pipeline of renewable assets and tendering >500MW of projects. Total Eren has 3.5GW of RES under construction or operation and is targeting 5GW by 2022. Data from the International Renewable Energy Agency (IRENA) suggest that annual solar installations could grow at a 10% CAGR to 2030, suggesting very strong long-term growth potential for Mytilineos.

Exhibit 17: BOT development pipeline (MW) at end-H121

	Total
Construction	389
Ready to build	553
Advanced development	739
Intermediate/early stage	2,619
Total	**4,300**

Source: Mytilineos

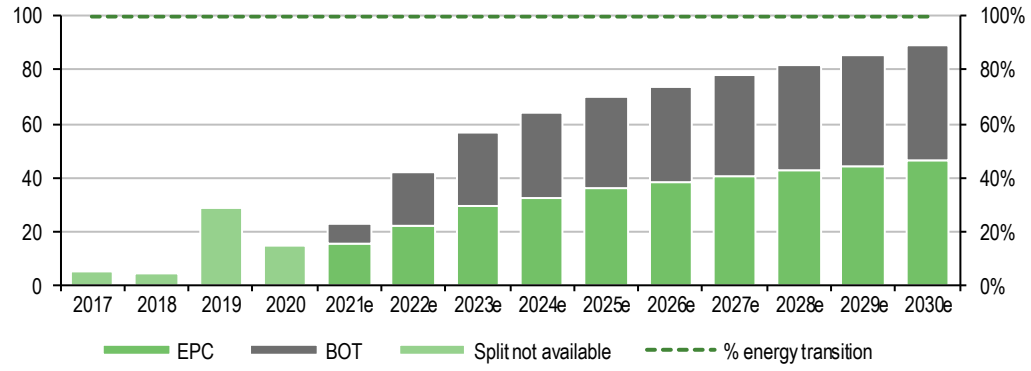
Exhibit 18: EPC contracted orders (MW) at end-H121

	Contracted	of which won in H121
Spain	168	168
Greece	295	260
Chile	401	160
Uzbekistan	130	130
United Kingdom	75	
Total	**1,069**	**718**

Source: Mytilineos

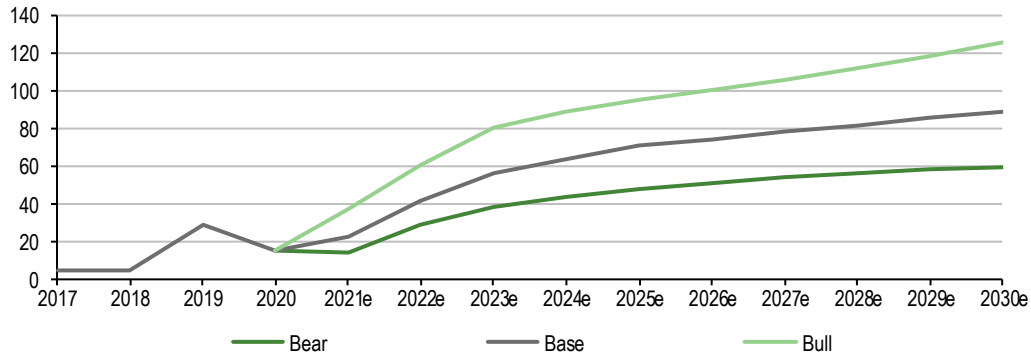
We see significant growth potential in this division, with a five-year earnings CAGR of c 35%, albeit from a low base of €15m (EBITDA) in 2020. We believe company guidance of >1.5 GW of BOT projects over 2021–25 is conservative given the maturity of projects coming through its >4.3GW pipeline (of mostly solar PV projects). In our base case, we forecast 1.7GW, which would be higher if Mytilineos were to sell some of the 1.5GW of solar plants in Greece that we are assuming it keeps.

Exhibit 19: RSD EBITDA by segment (for base case) (LHS, €m) and percentage earnings from energy transition (RHS)



Source: Mytilineos, Edison Investment Research estimates

Exhibit 20: RSD EBITDA by scenario (€m)



Source: Mytilineos, Edison Investment Research estimates

Summary of assumptions

We summarise our modelling assumptions in Exhibit 21 and discuss them in detail in the Appendix.

Exhibit 21: Summary of assumptions for RSD

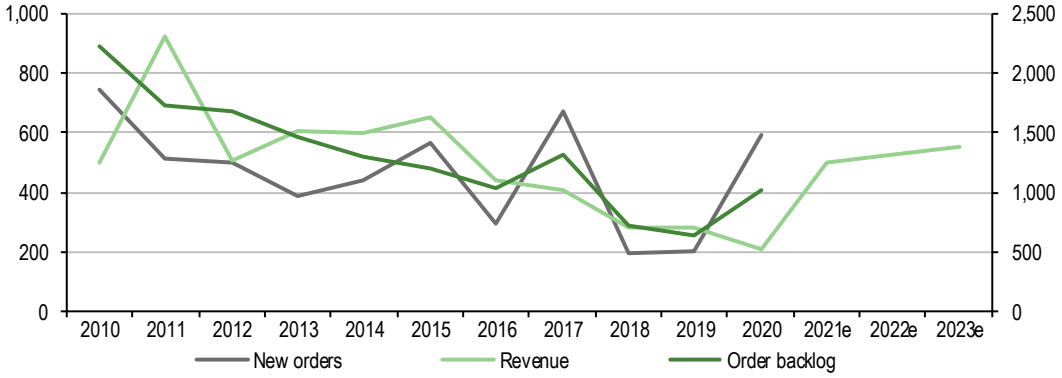
	Assumption			Difference versus base case		
	Bear	Base	Bull	Bear	Base	Bull
Additions – EPC (MW)						
2021	350	400	450	-50	0	50
2022	450	550	650	-100	0	100
2025	650	800	950	-150	0	150
Cumulative 2021–25	2,600	3,200	3,800	-600	0	600
CAGR 2025–30	4%	5%	6%	-1%	0%	1%
Additions – BOT (MW)						
2021	50	100	200	-50	0	100
2022	200	250	350	-50	0	100
2025	325	425	525	-100	0	100
Cumulative 2021–25	1,150	1,525	2,025	-375	0	500
CAGR 2025–30	4%	5%	6%	-1%	0%	1%
Cost per MW – 2021 onwards (€m)						
EPC	0.60	0.60	0.60	0%	0%	0%
BOT	0.64	0.64	0.64	0%	0%	0%
EBITDA margin – RSD						
2021	6.5%	7.5%	8.5%	-1%	0%	1%
2025 onwards	7.5%	8.5%	9.5%	-1%	0%	1%
EBITDA margin – EPC						
2021	5.0%	6.0%	7.0%	-1%	0%	1%
2025 onwards	6.0%	7.0%	8.0%	-1%	0%	1%
EBITDA margin – BOT						
2021 onwards	10%	11%	12%	-1%	0%	1%
Working capital (€m)						
2021	45	70	95	-25	0	25
2022	25	40	60	-15	0	20
2023 onwards (average)	6	9	12	-3	0	3

Source: Edison Investment Research estimates

Sustainable Engineering Solutions

In 2020, the former EPC & Infrastructure business was transformed into SES. We believe this marks a turning point for the business, which has seen orders and revenues trending downwards over the last few years. We estimate that new orders increased threefold in 2020 (c €600m versus an estimated c €200m a year earlier) and forecast increasing revenues and improving profitability in the coming years, as the business expands into sustainable development infrastructure, while continuing to pursue opportunities in the construction of thermal plants and selected construction projects. The new business unit is increasing its share of projects in areas such as solid and liquid waste management, hybrid and off-grid energy projects, energy upgrade projects and innovative first-of-a-kind energy projects (such as hydrogen projects). Sustainable development projects account for 21% of the committed order backlog of €0.9bn at end-H121, up from 19% at end-2020, and there are mature projects worth nearly €0.8bn that could potentially be converted to new orders, 50% of which are sustainable development projects.

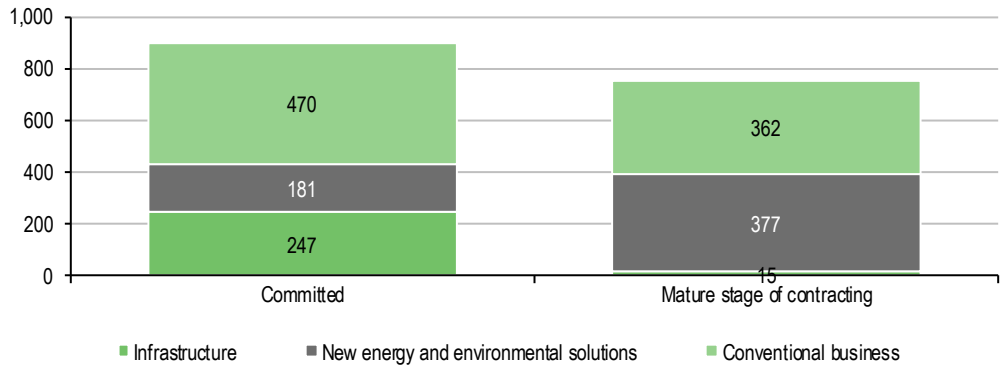
Exhibit 22: SES new orders and revenue (LHS, €m) and order backlog (RHS, €m)



Source: Mytilineos, Edison Investment Research estimates. Note: We have stripped estimated RSD orders out of new orders and order backlog from 2017.

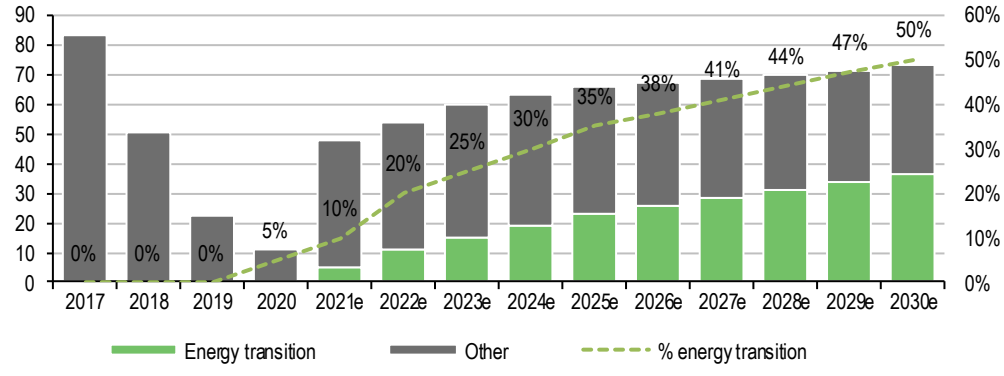
Since the start of the pandemic, governments globally have announced over $12tn in stimulus packages, including the US with c $2tn and Europe with c $1tn (its €800m recovery fund). A sizeable portion of these funds are being allocated to sustainability projects. McKinsey estimates there are $1tn of unassigned energy and environmental projects for 2020–22.

Exhibit 23: SES division order backlog at end-H121 (€m)



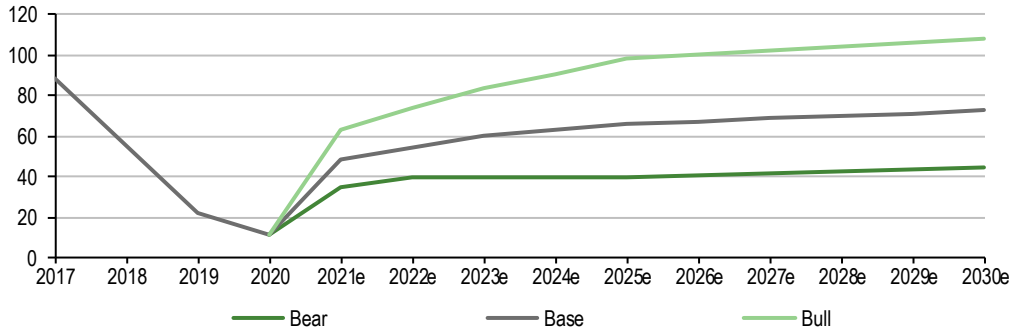
Source: Mytilineos

Exhibit 24: SES EBITDA by segment (for base case) (€m)



Source: Mytilineos, Edison Investment Research estimates

Exhibit 25: SES EBITDA by scenario (€m)



Source: Mytilineos, Edison Investment Research estimates

Summary of assumptions

We summarise our modelling assumptions in Exhibit 26 and discuss them in detail in the Appendix.

Exhibit 26: Summary of assumptions for SES

	Assumption			Difference versus base case		
	Bear	Base	Bull	Bear	Base	Bull
Revenue (€m)						
2021	350	400	450	-50	0	50
2022	400	450	525	-50	0	75
2025	400	550	700	-150	0	150
2025 onwards: % increase (real)	0%	0%	0%	0%	0%	0%
EBITDA margin						
2021 onwards	10%	12%	14%	-2%	0%	2%
% EBITDA from energy transition						
2021	10%	10%	10%	0%	0%	0%
2025	20%	35%	50%	-15%	0%	15%
2030	30%	50%	60%	-20%	0%	10%

Source: Edison Investment Research estimates

Valuation: Risk-reward balance skewed to the upside

We have enhanced our traditional valuation approach for Mytilineos by including a 10-year DCF analysis (on a SOTP basis), which, we feel, better considers the longer-term impact of the energy transition. We place less emphasis on peer valuation, using it only as a cross-check.

Our DCF approach suggests a per-share valuation of €24.0, which implies c 50% upside versus the current share price (€16.1) and is up €11/share versus our last published valuation (in October 2020) of €13/share. The uplift in valuation can be attributed mostly to increased valuations for the RSD and SES divisions (+€9.5/share), P&G (+€2.5/share), Metallurgy (+€3.0/share) and is in spite of increased net debt and other adjustments (-€4/share).

DCF

We update our DCF methodology to better reflect the longer-term energy transition; we adopt a 10-year cash flow forecast period followed by a terminal value and formulate a bear, base and bull case to better understand the risk-reward balance for the shares.

Key assumptions and drivers for our cash flow model are as follows:

- 2% pa inflation applies to forecasts made in real terms over a 10-year explicit cash flow period.

- A 1% terminal growth rate for Metallurgy, P&G and SES; and 2% for RSD, which is conservative, particularly for businesses that should benefit from strong long-term growth rates associated with the energy transition.
- A WACC of 7.0%, based on a beta of 1.0x, cost of equity of 10.7% and gross cost of debt of 2.5% (with total debt at an assumed 40% of capital).
- Terminal capex (included in the terminal cash flow) for the P&G and Metallurgy divisions of representing 1.5x depreciation.
- RSD and SES are not capex intensive businesses; however, we adopt capex assumptions equating to 2.5x and 1.5x depreciation respectively throughout our forecast periods.
- We use the number of shares excluding share repurchases (135.8m) in arriving at our value per share of €24. This is consistent with using the number of shares in issue (142.9m) but with adding Mytilineos's investment in its own shares (c 7.1m shares repurchased) to the equity valuation.

The key differences in driver between our bear, base and bull cases are summarised in the scenario analysis sections above.

Exhibit 27: DCF-based SOTP valuation base case

Components	EV (€m)	Per share (€)	EBITDA 2022 (€m)	Implied EV/EBITDA (x)
Power & generation	1,269	9.3	152	8.4x
Metallurgy	1,651	12.2	247	6.7x
RSD	901	6.6	42	21.6x
SES	540	4.0	54	10.0x
Enterprise value	**4,361**	**32.1**	**495**	**8.8x**
Net cash/(debt)*	(756)	(5.6)		
Other adjustments**	(352)	(2.6)		
Total equity value	**3,253**	**24.0**		
Number of shares (m)	135.8			
Value per share (€)	**24.0**			
Current share price (€)	16.1			
% upside/(downside)	49%			

Source: Edison Investment Research. Note: Priced at 3 September 2021. *Prorated net debt between start and end of year (adjusted for estimated dividend and share repurchase payments), as the first period of our DCF is based on prorated (for remaining days in the year) FY21 free cash flow. **Includes, associates, minority interests, employment benefits liability and an adjustment for c €14m pa of pre-tax cash flow not included in divisional forecasts.

Exhibit 28: DCF-based SOTP valuation bear and bull cases

Components	Bear case EV (€m)	Bear case per share (€)	Variance versus base case	Bull case EV (€m)	Bull case Per share (€)	Variance versus base case
Power & generation	1,053	7.8	-17%	1,513	11.1	19%
Metallurgy	987	7.3	-40%	2,331	17.2	41%
RSD	522	3.8	-42%	1,516	11.2	68%
SES	296	2.2	-45%	846	6.2	57%
Enterprise value	**2,859**	**21.1**	**-34%**	**6,206**	**45.7**	**42%**
Net cash/(debt)*	(756)	(5.6)		(756)	(5.6)	
Other adjustments**	(352)	(2.6)		(352)	(2.6)	
Total equity value	**1,751**	**12.9**		**5,098**	**37.5**	
Number of shares (m)	135.8			135.8		
Value per share (€)	**13.0**			**37.5**		
Current share price (€)	16.1			16.1		
% upside/(downside)	-19%			134%		

Source: Edison Investment Research. Note: Priced at 3 September 2021. *Prorated net debt between start and end of year (adjusted for estimated dividend and share repurchase payments), as the first period of our DCF is based on prorated (for remaining days in the year) FY21 free cashflow. **Includes, associates, minority interests, employment benefits liability and an adjustment for c €14m pa of pre-tax cash flow not included in divisional forecasts.

Our bear and bull cases suggest a favourable risk-reward balance of c -20%/+130%. We note in particular an asymmetry in our valuation of RSD, with the bull case c 70% above our base case

(versus bear case just c 40% below base case); this is because we believe the growth potential of the BOT business is notably higher than management's (formal) guidance of 1.5GW over five years, which we adopt in our base case; our bull case reflects 2.0GW.

Exhibit 29: Sensitivities of DCF valuation (base case) to WACC and terminal growth rates

Share valuation (€/share)		WACC						
		5.50%	6.00%	6.50%	7.00%	7.50%	8.00%	8.50%
Terminal growth rate	0.0%	29.0	26.0	23.5	21.3	19.5	17.8	16.4
	0.5%	31.3	27.8	24.9	22.5	20.5	18.7	17.1
	1.0%	34.2	30.1	26.7	24.0	21.6	19.6	17.9
	1.5%	37.9	32.9	28.9	25.7	23.0	20.8	18.9
	2.0%	42.9	36.5	31.6	27.7	24.6	22.1	19.9
	2.5%	49.8	41.2	35.0	30.3	26.6	23.7	21.2
	3.0%	60.3	47.9	39.6	33.6	29.1	25.6	22.7

Source: Edison Investment Research. Note: Stated terminal growth rate (TGR) applies to all divisions, expect RSD; TGR for RSD is stated TGR + 1%.

Peer valuation: Divisional SOTP

We use peer valuation as a cross-check, rather than driving our valuation, as we believe near-term earnings multiples do not accurately reflect Mytilineos's long-term growth prospects. In our approach, we use EV/EBITDA multiples (using current EV) applied to peers for each division. We use 2022 EBITDA given that we are now more than halfway through 2021.

The peer valuation suggests, on first impression, €19.9/share, which is €4.1/share below our valuation of €24.0. However, we do not believe the multiples adequately reflect the competitive strengths or the growth prospects of Mytilineos's divisions versus their peers:

- The SES division benefits from superior margins and growth compared to its peer group (EBITDA 2022 margin of 12% versus 8% for peers and EBITDA CAGR 2020-23e of 76% versus 16% for peers);
- The RSD division enjoys significantly higher growth prospects compared to its peers (EBITDA CAGR 2020–23e of 56% versus 14% for its peers);
- The Metallurgy division benefits from superior margins to its peers (EBITDA 2022 margin of 33% versus 21%) and it is an early mover in the transition to green and sustainable aluminium. Many of its peers are Asian, operating production facilities using captive coal plants; they will need to invest heavily as they come under increasing pressure to decarbonise;
- The RES business unit has significantly higher long-term growth prospects than its peers with EBITDA CAGR 2020–23e of 21% versus 14% for its peers, and we expect growth beyond 2023 will also be higher than its peers as we estimate it adds solar capacity of 300MW pa over 2022-2026. In addition, margins are higher (EBITDA 2022 margin of 75% versus 55% for its peers).

We apply a 20% premium to multiples for each of these divisions/business units. Collectively, this would increase the valuation by c €4.0/share, to an adjusted €23.9/share, which is consistent with our DCF valuation.

Exhibit 30: Peer group multiple analysis

	Implied EV (€m)	EV/EBITDA (x)	EBITDA (€m)	EBITDA (% CAGR)	EBITDA (% margin)
		2022	2022	2020–23e	2022
Comps – median metrics:					
CCGT plants		7.7	1,308	13%	19%
RES		10.3	430	7%	55%
Supply		4.5			
Power & Gas					
Metallurgy		**6.2**	**1,164**	**22%**	**21%**
RSD (i)		**12.9**	**1,091**	**14%**	**39%**
SES		**8.7**	**443**	**16%**	**8%**
Mytilineos:					
CCGT plants	710	7.7	92	3%	19%
RES	527	10.3	51	21%	75%
Supply	38	4.5	8		
Power & Gas	**1,275**	**8.4**	**152**		
Metallurgy	**1,523**	**6.2**	**247**	**19%**	**33%**
RSD	**539**	**12.9**	**42**	**56%**	**8%**
SES	**471**	**8.7**	**54**	**76%**	**12%**
	3,808				
Adjustments	-1,108				
Equity value	2,701				
Number of shares (m)	135.8				
Value per share (€)	19.9				
Adjustments to Metallurgy and SES divisions* (€)	4.0				
Adjusted value per share (€)	23.9				

Source: Edison Investment Research. Note: Priced at 3 September 2021. *Adjustments made to reflect fair value (see commentary in the paragraph above the table).

Financials

We estimate capex of c €0.5bn in 2021, which combined with an estimated €70m working capital contribution for upfront expenditure on solar plants developed for sale to third parties compares to company capex guidance of €0.6bn (which we believe may include BOT solar plants as capex rather than working capital). The investment programme has been funded partly through operating cashflow (Mytilineos is highly cash generative) and partly though net debt, which increased from €420m at end-2019 to €536m at end-2020 and we forecast an increase to c €950m by end-2021, when its net debt to EBITDA will peak at 2.8x, which is well below sector average.

We reduce the effective tax rate from 16% in 2020 to 15% in 2021 to reflect the fact that the Greek government announced in May that it would retroactively cut the corporate income tax rate from 24% to 22% for 2021 onwards. We increase the effective tax rate to 20% by 2025 and 22% by 2030.

We include €500m green bonds issued in April on the balance sheet by increasing both long-term debt and cash balances. The bonds have a maturity of 2026 and an interest rate of 2.25%.

We reduce the implied interest rate on debt from 3.6% to 2.5% for 2021 to reflect the lower interest rate received on the €500m green bonds (dated 2026), and increase back to a long-term rate of 3% from 2025 onwards.

Based on company announcements, we calculate Mytilineos repurchased 944k shares between 1 January and 9 August, with an estimated value of €13m based on an average price of €14 per share over the period. We reflect this in our cash flow statement and adjust the number of shares (excluding buybacks) from 136.8m (end-2020) to 135.8m.

EBITDA forecasts: Comparison of bear, base and bull cases

Exhibit 31: EBITDA forecasts by scenario and relative to the base case (€m)

	EBITDA forecasts by scenario			Relative to the base case		
Power & Gas	**Bear**	**Base**	**Bull**	**Bear**	**Base**	**Bull**
2020	157	157	157	0	0	0
2021e	100	113	127	-13	0	14
2022e	136	152	167	-16	0	15
2025e	206	239	250	-33	0	11
2030e	232	281	362	-49	0	81
Metallurgy	**Bear**	**Base**	**Bull**	**Bear**	**Base**	**Bull**
2020	136	136	136	0	0	0
2021e	162	173	196	-11	0	23
2022e	171	247	330	-77	0	82
2025e	119	167	214	-48	0	48
2030e	135	190	244	-54	0	55
RSD	**Bear**	**Base**	**Bull**	**Bear**	**Base**	**Bull**
2020	15	15	15	0	0	0
2021e	15	23	38	-9	0	15
2022e	29	42	61	-13	0	19
2025e	48	71	95	-23	0	25
2030e	60	89	126	-29	0	37
SES	**Bear**	**Base**	**Bull**	**Bear**	**Base**	**Bull**
2020	11	11	11	0	0	0
2021e	35	48	63	-13	0	15
2022e	40	54	74	-14	0	20
2025e	40	66	98	-26	0	32
2030e	40	73	108	-33	0	35

Source: Mytilineos, Edison Investment Research

Exhibit 32: Financial summary

€m	2017	2018	2019	2020	2021e	2022e	2023e
31 December							
PROFIT & LOSS							
Revenue	1,527	1,527	2,256	1,899	2,372	3,150	3,705
Cost of Sales	(1,209)	(1,229)	(1,922)	(1,559)	(1,990)	(2,615)	(3,111)
Gross Profit	318	297	334	339	381	535	594
EBITDA	305	283	313	315	353	491	544
Operating Profit (before except.)	232	204	219	225	259	381	426
Exceptionals	(8)						
Operating Profit	224	204	219	225	259	381	426
Other	0	0	(12)	(34)	1	1	1
Net Interest	(43)	(38)	(27)	(18)	(47)	(56)	(58)
Profit Before Tax (norm)	181	166	180	172	213	326	369
Profit Before Tax (reported)	181	166	180	172	213	326	369
Tax	(24)	(23)	(29)	(28)	(32)	(52)	(64)
Profit After Tax (norm)	157	143	150	144	181	274	305
Profit After Tax (FRS 3)	157	143	150	144	181	274	305
Minority interests	(3)	1	(3)	(14)	(11)	(10)	(13)
Discontinued activities	(0)	(4)	(3)	(1)	(1)	(1)	(1)
Average Number of Shares Outstanding (m)	142.9	142.9	142.9	141.2	136.1	135.8	135.8
EPS - normalised (€)	1.1	1.0	1.0	0.9	1.2	1.9	2.1
EPS - normalised and fully diluted (€)	1.1	1.0	1.0	0.9	1.2	1.9	2.1
EPS - reported (€)	1.1	1.0	1.0	0.9	1.2	1.9	2.1
Final distributed dividend per share (€)	0.32	0.36	0.36	0.38	0.43	0.68	0.75
Gross Margin (%)	20.8	19.5	14.8	17.9	16.1	17.0	16.0
EBITDA Margin (%)	20.0	18.5	13.9	16.6	14.9	15.6	14.7
Operating Margin (before GW and except.) (%)	15.2	13.4	9.7	11.8	10.9	12.1	11.5
BALANCE SHEET							
Fixed Assets	1,864	1,858	1,824	1,881	2,278	2,411	2,534
Intangible Assets	445	445	446	446	445	443	441
Tangible Assets	1,137	1,142	1,121	1,161	1,561	1,696	1,820
Right of use assets	0	0	48	45	45	45	45
Investments/Other	282	272	209	227	227	227	227
Current Assets	1,354	1,483	2,334	2,111	2,541	3,003	3,388
Stocks	159	184	214	290	332	409	482
Debtors	1,018	1,059	1,405	1,319	1,622	2,006	2,286
Cash	161	208	713	493	577	577	611
Other	16	32	1	9	9	9	9
Current Liabilities	(890)	(871)	(1,148)	(1,117)	(1,321)	(1,689)	(1,980)
Creditors	(760)	(806)	(1,066)	(1,042)	(1,247)	(1,574)	(1,865)
Short term borrowings	(130)	(64)	(83)	(76)	(75)	(115)	(115)
Long Term Liabilities	(897)	(909)	(1,376)	(1,302)	(1,801)	(1,801)	(1,801)
Long term borrowings	(599)	(534)	(1,051)	(955)	(1,454)	(1,454)	(1,454)
Other long term liabilities	(298)	(375)	(325)	(348)	(348)	(348)	(348)
Net Assets (ex minority)	1,431	1,561	1,634	1,572	1,696	1,924	2,141
CASH FLOW							
Operating Cash Flow	253	211	270	316	190	335	459
Net Interest	(28)	(18)	(11)	(27)	(37)	(46)	(48)
Tax	(6)	(18)	(2)	(36)	(22)	(37)	(54)
Capex	(127)	(84)	(127)	(155)	(482)	(235)	(231)
Acquisitions/disposals	1	19	(4)	(20)	0	0	0
Financing	0	0	0	(56)	(13)	0	0
Dividends	(5)	(46)	(52)	(50)	(51)	(59)	(92)
Other	(37)	114	(110)	(41)	1	0	0
Net Cash Flow	50	178	(37)	(69)	(413)	(41)	34
Opening net debt/(cash)	618	568	390	421	538	951	991
HP finance leases initiated	0	0	6	(48)	0	0	0
Other	0	(0)	(0)	0	0	0	0
Closing net debt/(cash)	568	390	421	538	951	992	958

Source: Company accounts, Edison Investment Research

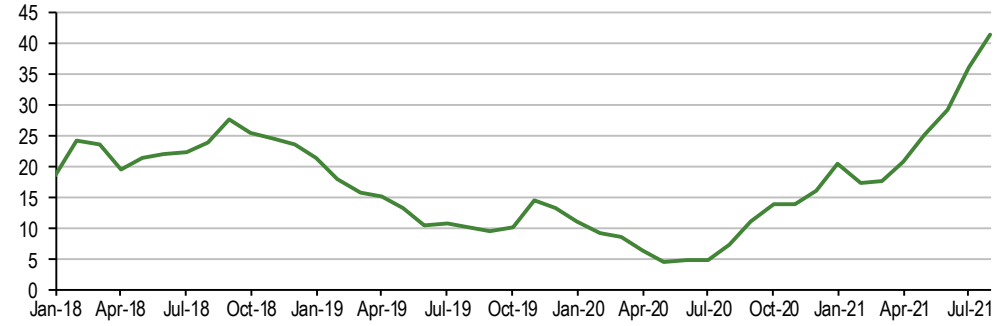
Appendix: Modelling assumptions

Power & Gas

We assume that a 43MW wind farm that started construction in 2020 is completed in 2021 and from 2021 we assume Mytilineos adds solar plants in Greece; we vary the capacity additions depending on the scenario.

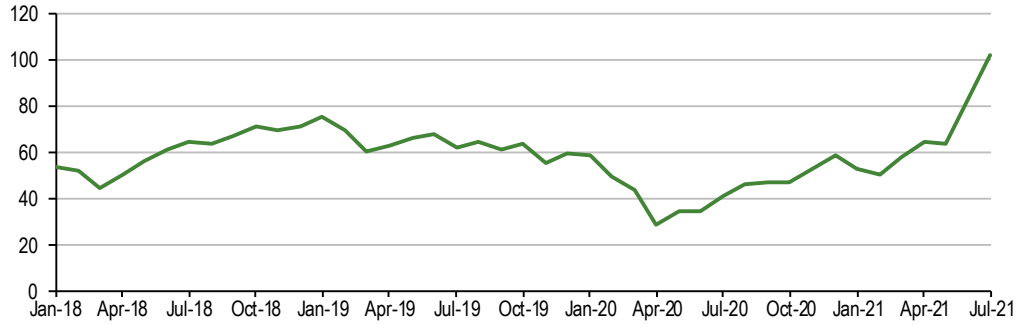
We assume the new CCGT plant is completed on schedule by the end of the year and undergoes testing in H1, before starting production in H2, ramping up to full production in 2023.

Exhibit 33: Greece wholesale gas price (€/MWh)



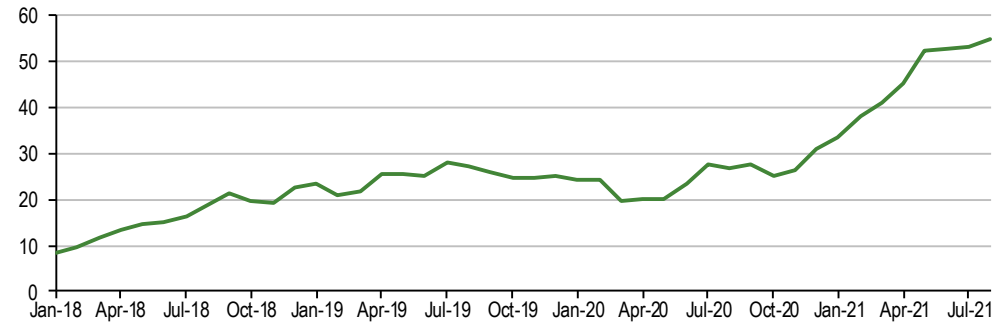
Source: Mytilineos

Exhibit 34: Greece wholesale electricity price (€/MWh)



Source: Mytilineos

Exhibit 35: European carbon price (€/t)



Source: Mytilineos

In our base case, we assume 80% of carbon costs are passed through, with 60% in our bear case and 100% in our bull case.

In 2020, the baseload wholesale electricity price averaged €45/MWh (based on data from Hellenic Energy Exchange, HEnEx) and, assuming it stays constant at May 2021 levels for the remainder of 2021, we estimate it increases to €61/MWh, an increase of 35%. We assume price increases consistent with increases in the wholesale market: 33% in our base case, 30% in bear, 36% in bull and then keep prices flat in real terms. We think this is reasonable, as although there may be some near-term upward pressure (due to the continued phase out of lignite plants), we believe that in the longer term there is more likely to be downward pressure due to the increased mix of increasingly low-cost renewables.

We make some tweaks between the scenarios to CCGT load factors in 2021–23 (see detailed assumptions in the financial section). In 2021, we adjust the capacity factor of the Korinthos Power CCGT downwards to allow for three months' scheduled maintenance over March to May.

For solar plants developed and kept within P&G, in our base case we assume 300MW pa are added over 2022–26; in our bear case, we assume 200MW pa are added over 2022–26; and in our bull case, we assume 300MW pa are added over 2022–30. Our bull case assumes that additional development pipeline is acquired to support RES development (over 2027-30) beyond the existing 1.5GW pipeline in Greece. For all scenarios, we assume that PPAs are secured for the solar projects at €40/MWh, and full development costs (including EPC) are €0.56m/MW (excluding a c 10% full development margin, as the projects are assumed to be delivered at cost by the RSD division). We note that full development costs in Greece are lower than Mytilineos's overseas markets for build-operate-transfer (BOT) projects (see RSD section).

Metallurgy

We reflect ongoing cost savings of €35m, which are guided by Mytilineos from its productivity enhancement and cost optimisation programme 'HEPHAESTUS'.

We increase Mytilineos's proportion of recycled aluminium from 19% (43kt) in 2020 to 25% (60kt) in 2021 mainly due to the planned expansion of capacity at EPALME. EPALME, the domestic aluminium scrap market leader, was acquired by Mytilineos in 2018. We estimate a margin of €150 per tonne in 2020 and keep this flat (in real terms) across our forecast period. This is consistent with anecdotal evidence we have seen suggesting secondary aluminium margins are roughly $200 per tonne.

We keep primary aluminium capacity flat at 190kt pa and alumina capacity increases to 875kt pa (from 820kt in 2020) and assume that utilisation continues at 96% and 97% respectively, which is consistent with the last few years' production. As such, we attribute €50m of capex in 2021 (which includes alumina capacity increase) then only maintenance of €25m pa from 2022.

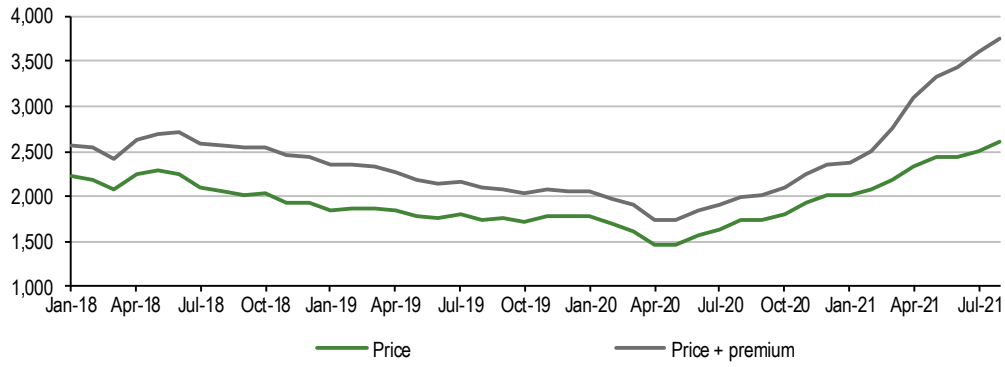
From 2024, we assume that Mytilineos will source electricity from its new CCGT (mostly overnight when gas prices are lowest) and its new solar plants and RES PPAs (such as the 200MW 10-year solar PPA signed with Egnatia at €33/MWh), which helps reduce scope 2 emissions (see targets at start of this section), decreasing the impact of rising CO_2 prices on production costs (passed through in electricity prices). PPC's generation mix still comprises c 45% from lignite and oil (although lignite plants will be shut down by end-2023); CCGT emits c 60% less emissions per unit of electricity produced than lignite and 50% less than oil.

We estimate recycled aluminium capacity doubles to 120kt by 2030 (from 60kt in 2021), which increases the proportion of recycled aluminium to 40% by 2030 (in our base case). We assume growth capex of €5m pa for the expansion in recycled aluminium capacity. This will contribute towards Mytilineos's emissions intensity target (which is more ambitious than its absolute emissions target), by reducing the emissions per tonne of aluminium sold. In our bear case, we increased the recycled aluminium proportion to 35% by 2030 and by 45% in our bull case.

We vary our aluminium and alumina price assumptions. In our base case for 2021, we adopt Bloomberg consensus for aluminium of $2,350/t in 2021 and $2,300/t over 2022–24 then decrease

it to $2,200/t in 2025. We keep prices flat in real terms from 2025. We note that Mytilineos has recently announced a 10-year supply agreement with Glencore, worth more than $1.5bn, which locks in current prices for a period of four years. $1.5bn equates to roughly a quarter of our forecast aluminium revenue over 2021–30.

Exhibit 36: Aluminium price and premium ($/t)



Source: Mytilineos

For our bear case, we adopt a London Metal Exchange (LME) based aluminium price of $2,300/t in 2021, then $2,000 for 2022–25, which is in line with the average price for the three years (2017–19) before COVID-19, but above 2020 (which was c $1,700). For our bull case, we use $2,400/tonne in 2021, then $2,600 for 2022–24 and $2,400 in 2025. Similar to our base case, we keep bear and bull cases flat in real terms over 2025–30. In all three cases, we apply a c 10% premium to our LME-based price assumptions in 2021, increasing to 30% in 2022 then tapering back to 15% from 2025 onwards to reflect increasing premiums (with a lag effect, hence only 10% premium in 2021) available at the moment.

For alumina, in our base case, we assume a price of $305 per tonne for 2021. This is based on an average of LME monthly alumina prices over January to June and LME forward monthly prices over July to December, and equates to 13% of our aluminium price forecast.. We forecast alumina prices at 14% of our aluminium price forecast in 2022 and at 15% from 2023 onwards. For bear and bull scenarios, we apply the same percentages in estimating alumina prices based on our aluminium price forecasts.

Renewables & Storage Development

We analyse cost data (from various sources, including IRENA) for solar PV development projects in the markets where Mytilineos has development pipeline or EPC projects, and estimate an average cost of development projects (excluding financing costs) of €0.64m/MW, which will be marked up by an estimated 11% margin on sale. The average estimated EPC cost is €0.60m/MW and we estimate a 6–7% margin for EPC contracts. We note the EPC cost in Greece is at the low end of the range at c €0.55m/MW.

Exhibit 21 summarises our explicit volume sales, cost per MW and margin assumptions under each scenario for 2021–25. For volume sales post 2025, in our base case, we assume a five-year CAGR (to 2030) of 5%, which is conservative compared to our estimated 10-year CAGR for annual solar installations of 10%. We are cautious until Mytilineos builds more of a track record and note its current resource allows for c 1GW pa of RES installations (EPC plus BOT). For our bear case we assume a 4% CAGR from 2025–30 and 6% for our bull case.

The RSD division reported an EBITDA margin of 5.7% in FY20, which improved to 6.8% in H121. In our base case, we forecast a margin of 7.1% in FY21, due to an increasing mix of higher margin BOT projects in H2. In our base case, we assume EPC margins increase gradually in 0.25 percentage point increments (per annum) from 6% in 2021 to 7%, then flat from 2025 and BOT margins stay flat at 11% over 2021–30, which is possibly a conservative estimate for development

margins, as we wait for Mytilineos to build up a track record; in our bull case we assume a flat margin of 12%.

We assume a nominal EPC cost of €0.6m/MW and a BOT cost of €0.64/MW over the period. As this is a nominal figure, we implicitly assume monetary inflation nets against equipment cost decreases.

As previously mentioned, we believe formal management guidance of >1.5GW of BOT projects by 2025 is conservative. In our base case, we assume 1.5GW by 2025; in our bull case, we believe 2.0GW is possible; however, note that the existing resource capacity of c 1GW pa would need to be increased to c 1.5GW by 2025 to achieve this (and this does not include an additional 0.3GW pa of resource required to deliver the solar projects kept within the P&G business). For our bear case, we assume 1.2GW, as we see only limited downside to the company's 1.5GW target.

We note that there could be upside to our margin assumptions as Mytilineos increases its exposure to energy storage projects (it has developed projects with a total capacity of 100MW in the UK and Puerto Rico), hybrid power plants and off-grid solutions (where solar plants are typically integrated with batteries or fuel-oil generators).These areas are likely to experience strong growth over the next few years (albeit from low levels) and typically enjoy higher profitability due to their complexity.

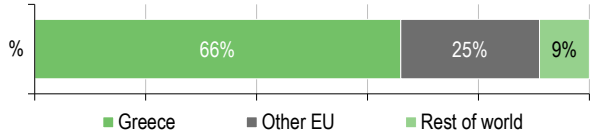
RES development projects typically take two to five years to complete (from initial site scoping to grid connection) depending on size and location of the project, with construction often taking nine to 15 months for utility-sized projects. We reflect the fact that BOT projects likely span year-ends and therefore costs are incurred in the period before the sale of the project by modelling changes in working capital requirements (rather than capex). Based on our analysis of the distribution of payments throughout an EPC project and assuming execution (and sale) of projects is spread evenly throughout the year, we estimate that on average 60% of the cost of projects are incurred in the year before sale (and 40% in the year of sale).

This results in a working capital requirement, which is highest in 2021 when the increase in new annual BOT installations is at its largest; thereafter it tapers as growth in new additions slows. In our base case, the requirement is c €70m in 2021, €40m in 2022, c €16m pa in 2023–24, and c €9m from 2025; in the bear case, c €50m in 2021, €20m in 2022, c €12m pa in 2023–24, and c €6m from 2025; and in the bull case, c €90m in 2021, €65m in 2022, c €17m pa in 2023–24, and €12m from 2025..

Sustainable Engineering Solutions

For SES, we expect revenues of €400m in 2021 (up from €209m in 2020). We note that H121 revenue was €185m and therefore expect execution of orders to be skewed to H2. We assume this grows to €500m by 2023 then modestly at €25m pa to €550m in 2025 in our base case, with 35% of revenues from energy transition related activities (in 2025). In our bear case, we expect €350m in 2021 then it remains flat at €400m over 2022–25, with 20% of revenues from energy transition related activities. In our bull case, we expect €450m in 2021 and assume this grows to €600m by 2023 then increases by €50m pa to €700m in 2025, with 50% of revenues from energy transition related activities. Even our bull case is undemanding given the potential opportunity as economic activity picks up as we emerge from the pandemic. We assume that 2025 forecasts grow at inflation over the remainder of the period, with the percentage of revenues (and EBITDA) continuing to increase to 2030, implying a decline in legacy business activities (driven by a decline in areas such as conventional fuel plants).

In our base case, we assume margins improve from lows of 5% in 2020 to 12% from 2021 onwards. This is significantly below previous long-term margins, which averaged 19% from 2010–18. We note that H121 margin was 13.5%, so consider our assumption conservative. In our bear case, we assume 10% from 2021 and 14% in our bull base, still well below historical averages.

Contact details	Revenue by geography
8 Artemidos Str. Maroussi, 15125 Athens Greece +30 210-6877300/+30 210-6877476 www.mytilineos.gr/	

Management team

CEO and chairman: Evangelos G Mytilineos

After graduating with a BSc in economics from the University of Athens and an MSc in economics from the London School of Economics, Evangelos G Mytilineos took over the family business in 1978 and in 1990 founded Mytilineos Holdings Group. By acquiring the majority shareholding of Metka (1998) and Aluminium of Greece (2005) and making sizeable investments in the energy sector (it is now the largest independent power producer in Greece), he turned the company into one of Greece's leading industrial groups.

General manager of Metallurgy: Dimitri Stefanidis

Dimitri Stefanidis has an engineering background and 35 years of experience in aluminium. He joined Aluminium of Greece in 1984, where he assumed increasing responsibilities. He has international experience at Pechiney Group (1992 to 1996) and as continuous improvement director and then as technical manager of Alcan's plant in Tomago, Australia (2002–05). In 2009 he was appointed CEO of Aluminium of Greece and oversaw several cost-cutting exercises that significantly improved the competitive position of the company.

General manager of Electric Power: Dinos A Benroubi

Dinos A Benroubi has an engineering background and studied in the US. He has 25 years' experience at the Titan Cement Group, where he reached the position of director of cement operations – Greece, and spent two years in Viohalko, where he served as general manager of the Elval Group. He joined Mytilineos in 2006 and was appointed CEO of Korinthos Power in 2009 and general manager of Protergia in 2010.

Head of the gas division: Panayotis Kanellopoulos

Panayotis Kanellopoulos is responsible for securing competitive natural gas supply for the company's own use, as well as for the broader Greek market and neighbouring countries. Panayotis joined Mytilineos in 2010 as executive director with responsibility for natural gas activities. Previously, he was CEO of the Hellenic Natural Gas Transmission System Operator (DESFA), where he initiated efforts and set up the basis for the opening of the Greek natural gas market. Earlier in his career, he held positions ranging from sales manager to supply chain director for the East Med cluster in Mobil and BP Hellas, gaining management experience in both sales and operations in the national and international energy sector.

General manager of SES and RSD: Panagiotis Gardelinos

Panagiotis Gardelinos graduated from the National Technical University Athens, with a degree in mechanical engineering. He brings 32 years' experience in the power sector, working in various positions with EPC contractors in Greece and Denmark, and joined Mytilineos in 2006.

Principal shareholders	(%)
Mytilineos family	26.5
Fidelity	3.5
Vanguard	2.4
Norges	1.7
Alpha Asset Management	1.5
BlackRock	1.0

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