MOODY'S
INVESTORS SERVICE

CREDIT OPINION
6 October 2022

Update

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RATINGS

MAHLE GmbH

Domicile	Stuttgart, Germany
Long Term Rating	Ba2
Type	LT Corporate Family Ratings
Outlook	Negative

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Matthias Heck, CFA +49.69.70730.720
VP-Sr Credit Officer
matthias.heck@moodys.com

S M Naimul Haque, CFA +49.69.86790.2108
Associate Analyst
smnaimul.haque@moodys.com

Christian Hendker, CFA +49.69.70730.735
Associate Managing Director
christian.hendker@moodys.com

MAHLE GmbH

Update, following downgrade to Ba2

Summary

On 30 September 2022, we downgraded MAHLE GmbH's ratings to Ba2 from Ba1, reflecting (1) challenges to pass-on higher raw material and energy costs and (2) ongoing challenges in the Thermal Management and Electronics and Mechatronics divisions. These resulted in weak margins and elevated leverage, which are not commensurate with the expectations for the previous higher rating level.

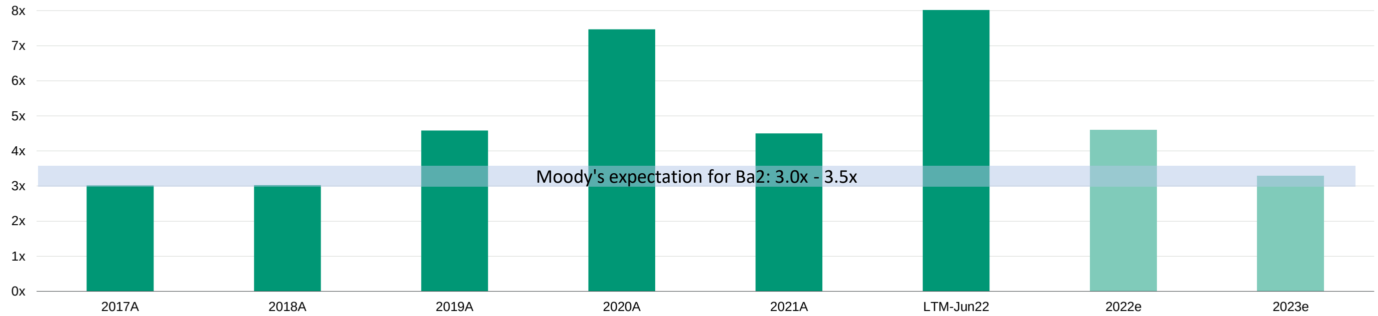
MAHLE GmbH (MAHLE)'s Ba2 Corporate Family Rating (CFR) reflects as positives the company's (1) size & scale as one of the world's 25 largest tier 1 automotive parts suppliers, with annual revenues of around €12 billion during the years 2016-19 and a well-diversified Original Equipment Manufacturer (OEM) customer base, (2) top 3 market position in its main product categories of engine systems and coolings, filtration and engine peripherals and thermal management, (3) positive strategic alignment with a dual strategy to address the disruptive automotive industry trend of electrification by using cash flow generated in the internal combustion engines (ICE) business to further broaden and grow its exposure to electric vehicle platforms and products that are not dependent on the powertrain (4) conservative financial policy, and (5) good liquidity profile, which provides a cushion to fund the currently negative free cash flow generation.

The rating reflects as negatives the company's (1) exposure to the cyclicality of automotive production, which has passed its peak in 2018 and is expected to return to previous peak levels only at around mid-decade, (2) relatively low margins, given the highly competitive sector environment and limited ability to timely and completely pass-on higher production cost, and weak free cash flow generation over the last few years, (3) high investment needs into R&D and capex to make the product portfolio more independent from ICEs, and (4) challenges related to carbon transition, given the high dependency on products for internal combustion engines, at a time where automakers have accelerated their electrification targets, (5) credit metrics which are currently below the requirements for the Ba2 rating category but expected to improve within the next 12-18 months.

The rating reflects the potential of MAHLE to further strengthen and consolidate its position in the ICE-related business. While the business faces secular demand decline, we believe that managing it to cost competitiveness will allow the group to generate significant funds that can be invested into other businesses so that the relative share of the ICE-related business will materially shrink over time. Considering the still significant challenges for a broader adoption of pure electric vehicles, related to, amongst other things, consumer preferences, charging infrastructure and range, we believe that the demand decline for such products will be in the low single digit percentages per year and hence manageable for MAHLE.

Exhibit 1

MAHLE's Moody's adjusted Debt / EBITDA is expected to be in a range of 3x - 3.5x over the next 12-18 months



Source: Company data, Moody's estimates

Credit strengths

» Leading position as one of the world's 25 largest tier 1 automotive parts supplier

» Positive strategic alignment to address the disruptive trend of electrification and strengthen the position in mature product segments

» Conservative financial policy and good liquidity

Credit challenges

» Exposure to the cyclicality of automotive production

» Low profit margins, limited ability to timely and completely pass-on higher production cost

» High investment needs to reduce historically high reliance on ICE technologies

Rating outlook

The negative outlook reflects the slow recovery of global light vehicle sales in an increasingly difficult macroeconomic environment. This might make it challenging to improve margins (Moody's adjusted EBITA) to at least 3% and to reduce debt/EBITDA (Moody's adjusted) to a maximum of 3.5x within the next 12-18 months.

Factors that could lead to an upgrade

» Debt/EBITDA (Moody's adjusted) below 3.0x,

» EBITA margins (Moody's adjusted) above 5%, and

» Retained cash flow (RCF) / net debt of more than 20%

Factors that could lead to a downgrade

» Debt/EBITDA (Moody's adjusted) failed to improve to below 3.5x

» EBITA margins remained below 3% (Moody's adjusted),

» Retained cash flow (RCF) / net debt below 15%, or

» Liquidity weakened.

Key indicators

EUR Billions	Dec-17	Dec-18	Dec-19	Dec-20	Dec-21	LTM (Jun-22)	2022e	2023e
Revenue	12.8	12.6	12.0	9.8	10.9	11.2	11.5 - 12.0	12.0 - 12.5
EBITA Margin %	4.0%	4.0%	1.6%	-0.9%	2.1%	-1.6%	1% - 1.5%	2.75% - 3.5%
Debt / EBITDA	3.0x	3.0x	4.6x	7.5x	4.5x	9.0x	4.5x - 5.0x	3.0x - 3.5x
EBITA / Interest Expense	5.5x	4.2x	1.9x	-0.9x	1.9x	-1.0x	1.25x - 1.75x	5.0x - 7.0x
RCF / Net Debt	35.9%	24.3%	16.4%	26.1%	20.3%	-0.4%	10% - 15%	15% - 25%

All ratios are based on 'Adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations
Source: Moody's Financial Metrics™

Profile

MAHLE GmbH, headquartered in Stuttgart, Germany, is one of the top 25 global automotive parts suppliers. MAHLE's three main business segments are Thermal management (37% of 2021 sales), Engine Systems and Components (24%) and Filtration and Engine Peripherals (18%). In 2021, MAHLE generated revenues of around €10.9 billion. MAHLE, which employed around 71.000 employees and produced in around 160 locations worldwide in 2021, is owned by the MAHLE Foundation.

Detailed credit considerations

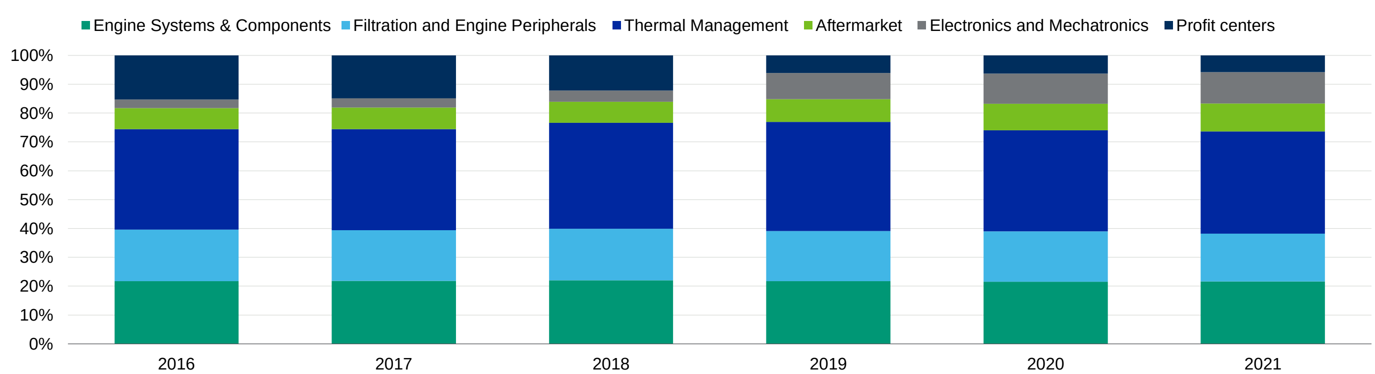
Leading position as one of the world's 25 largest tier 1 automotive parts supplier

With annual revenues of nearly €11 billion (2021), MAHLE is one of the world's 25 largest automotive parts suppliers. MAHLE's product portfolio is diversified into 29 main product categories for light vehicles and trucks. In 23 of these product categories, MAHLE ranks among the top three players, according to its own calculations.

The main business units are Engine Systems and Components (e.g., pistons, bearings and camshafts; 22% of 2021 revenues), Filtration and Engine Peripherals (e.g., oil and fuel filters, air intake modules and filters; 17% of revenues), and Thermal Management (e.g. air condition and engine cooling modules; 35% of revenues). The company also has two minor units, Electronics and Mechatronics (11% of revenues) and Aftermarket (10% of revenues).

MAHLE's main competitors are in the areas of (i) engine systems and components Tenneco Inc. (B2 stable) and Rheinmetall AG (Baa2 stable, especially pistons and bearings), (ii) filtration and engine peripherals Mann + Hummel and Denso Corporation (Denso, A2 stable) and (iii) thermal management Denso and Valeo S.A. (Baa3 stable).

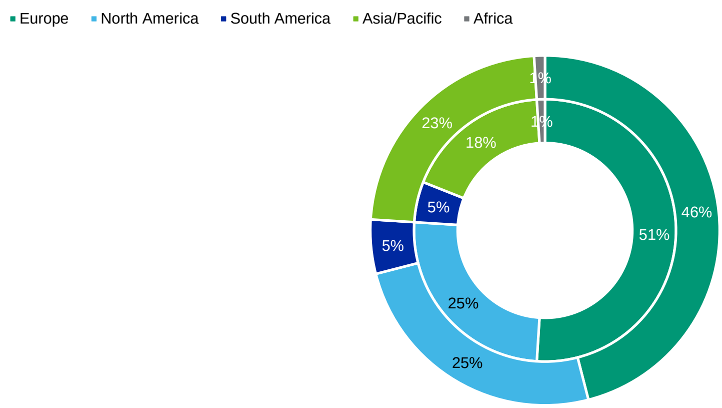
Exhibit 3
Sales by business segment from 2016 to 2021



Source: Company Annual Report

MAHLE is a global player, with 160 production facilities and 12 major R&D centers around the world. Its revenues are well diversified to all major regions of the world, with around 46% coming from Europe and 28% from North America. MAHLE also generates a sizeable part of its revenues in the APAC region (20%), which has shown a stronger volume development compared to the more mature markets in Europe and North America. Like most of its European peers, however, MAHLE's exposure to APAC lags behind the region's share in global light vehicle sales (approximately 47% in 2020, according to Moody's calculations). With the acquisition of Keihin's air conditioning business in February 2021, MAHLE's presence in Japan, Thailand and the US will be strengthened slightly.

Exhibit 4
Sales by geography 2021 (outside circle) vs. 2015 (inside circle)
Sales split by manufacturing country



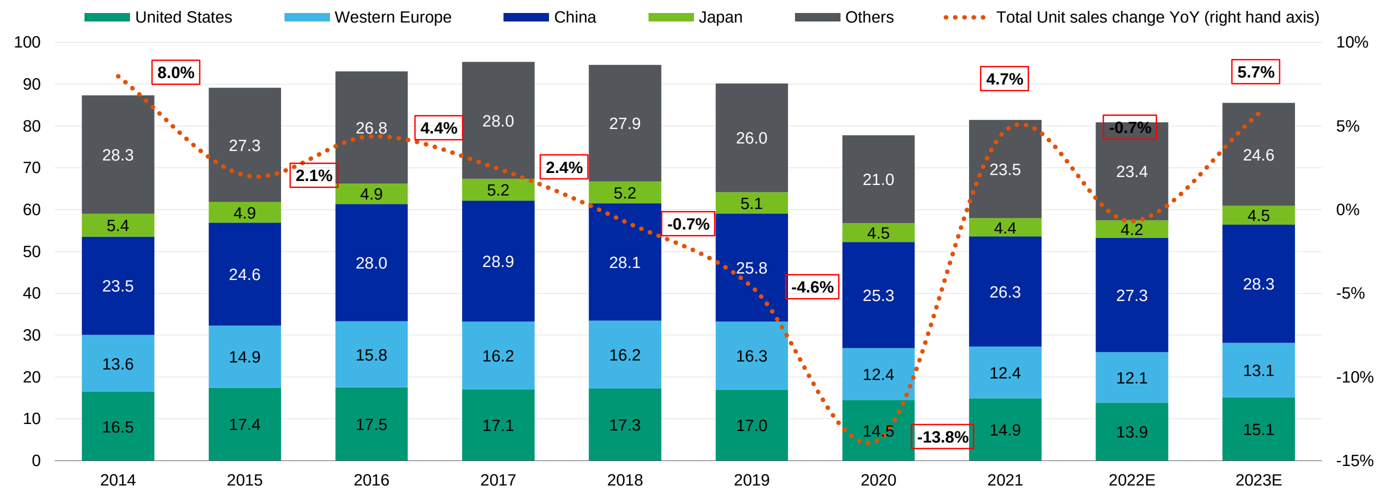
Source: Company Annual Report

MAHLE's customer base comprises of a well-diversified group of highly rated global automotive manufacturers (OEMs). The 10 largest customers account for only 50% of the group's revenues, with only one accounting for more than 10%. Moreover, MAHLE's nine largest customers are all rated investment grade at Moody's.

Exposure to the cyclicality of automotive production

MAHLE, like most global auto suppliers, has a strong reliance on the production rates of light vehicles by the various OEMs. Global light vehicle sales plummeted 14% in 2020 because of the pandemic and recovered by only around 4% in 2021, as production was constrained by a global shortage of semiconductors. We forecast 2.5% global GDP growth for 2022 and 2.1% for 2023, with growth rates suffering from restrictive monetary and financial conditions following a high inflationary scenario (see Global Macro Outlook 2022-23 [August 2022 Update]). For the auto sector, this means a more muted recovery path, with global light vehicle sales remaining flat at around -0.7% in 2022 and growing at 5.7% in 2023 (see our Global Automotive Industry Outlook, published September 2022). With this, global light vehicle sales will remain short of the 2019 sales level of 90 million units and much less than the peak of 95 million units in 2017.

Exhibit 5
Global sales are unlikely to recover to the pre-downturn levels until mid-2020s
Our projections for global light vehicle unit sales (in million units)



Source: ACEA, CAAM, LMC, and Moody's estimates

Despite this cyclicality, we expect MAHLE to nevertheless outperform the market by around 1% over time, reflecting its strong positioning in conventional combustion technologies and its growing product portfolio in the area of electric drive systems and power electronics.

Dual strategy helps address challenges of automotive industry

MAHLE is highly exposed to the automotive industry megatrend of carbon transition and electrification. Around 40% of MAHLE's revenues related to light vehicles in 2021 were dependent on internal combustion engine (ICE) related products. As a result of increasing environmental standards and stricter carbon regulation worldwide, the share of ICE in global light vehicles (71% gasoline and 17% diesel in 2019) will gradually decline over the next years, with full and plug-in hybrid electric vehicles (4%) and battery electric vehicles (BEV, 2%) gaining rapidly in market share. In 2021, the share in BEVs in the EU increased to 8.2%, from 5.9% in 2020 and 2.2% in 2019, and the share of hybrid electric vehicles increased to 25.2% in 2021, from 15.4% in 2020 and 6.6% in 2019, according to ACEA (as %ages in light vehicle sales). Trends in the bus and truck markets, where MAHLE generates approximately 20% of revenues, are similar, although the carbon transition will take longer and diesel will represent the majority of vehicle sales at least until end of decade.

In our report Automakers' move to alternative fuels will hurt returns; updated forecasts show faster adoption, we said that we forecast the share of alternative fuel vehicles (including BEVs and hybrid electric vehicles) will approach 40% in global light vehicle sales at the end if this decade, compared to only 4% in 2020. BEVs will be the most important AFV technology, with around 25% of global light vehicles. Our expectation considers that the electrification trend in regions like Europe and China will be much quicker compared to most developing countries, where the charging infrastructure is a major constraint and where environmental regulation is typically less demanding. MAHLE expects that by 2035, the share of BEVs and fuel cell electric vehicles (FCEVs) will increase further to approximately 50%, while the share of ICEs will decline to only around 30%, and plug-in and fuel cell electric vehicles forming the remaining 20%.

To address the challenge of electrification, MAHLE has established a dual strategy to (i) strengthen its position in the area of ICE-related technologies and (ii) develop future technologies, which are used in BEV, hybrid electric vehicles and also fuel cell vehicles. This strategy includes R&D spending into growing products like oil management modules, on-board chargers for BEVs and humidifiers for fuel cell vehicles. As a result of the development of these new technologies, MAHLE aims to gradually reduce its dependency on ICE-related light vehicle sales gradually towards 25% in 2030. On a divisional basis, this will lead to declining contributions of Engine Systems and Components, while Electronics and Mechatronics will compensate the gap. The latter will result in a substantially higher content per vehicle for plug-in hybrid electric vehicles and for BEVs, compared to a conventional ICE powered vehicle.

Relatively low margins, given a highly competitive sector environment

MAHLEs operating profit margins (Moody's adjusted EBITA) amounted to around 4% during 2016-18, a relatively low level, which is illustrative of the highly competitive automotive industry environment, and high investments (R&D and capex) needed to manage the automotive industry transformation, especially in terms of carbon transition. The low margin level is, however, largely in line with the overall sector.

In 2019, MAHLE's margin dropped to only 2% and turned slightly negative in 2020, as a result of the pandemic and a drop in global light vehicle production of around 15%.

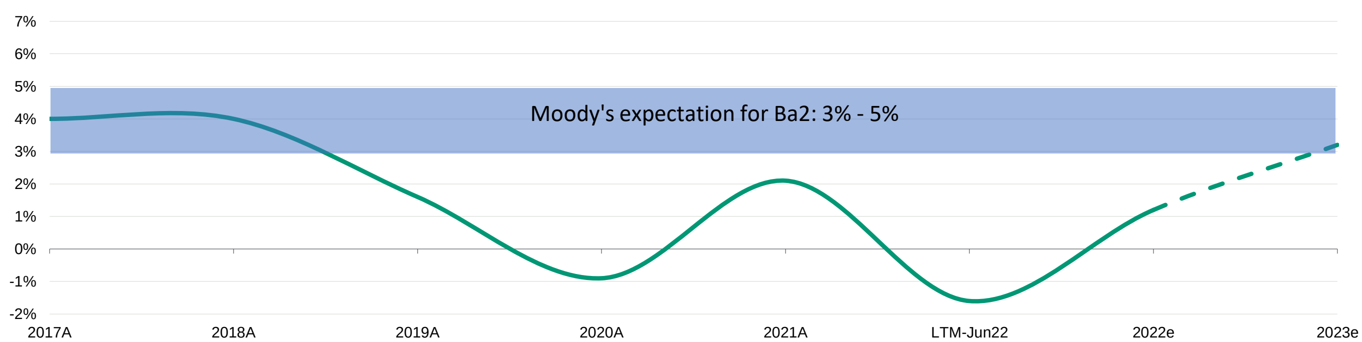
To address this challenge, MAHLE has implemented a €200 million long-term cash savings program in 2020, equivalent to around 2% of group revenues. The restructuring expenses were charged in 2020 and contributed to the negative margin. The restructuring measures contributed to the margin improvement in 2021, but headwinds such as increased cost for raw materials, logistics and energy of around €300 million (2.8% of revenues), which could not be passed on to OEM customers immediately, and overall still low volumes left margins at low levels of around 2%.

In the first half of 2022, MAHLE's revenues increased by 4.1% to €5.9 billion, outperforming global light vehicle sales (minus 9.6%) by approximately 1,370 basis points. At the same time, however, the company recorded an EBIT loss of €182 million, as higher cost for materials, freight and energy could not be passed on to customers, especially in the Thermal Management division, and upfront investments in the Electronics and Mechatronics division continued.

We expect that global light vehicle sales will recover in the second half, so 2022 sales will almost reach previous year's level. This volume recovery, and price increases (due to the pass-on of higher raw material cost) should enable MAHLE to recover the losses seen in the first half and achieve a small operating profit margin of around 1% (Moody's adjusted EBITA) this year, a considerable decline versus the 2.1% achieved in 2021. For 2023, we expect a further recovery of global light vehicle sales. Combined with cost pass through, we expect that MAHLE's margins will further recover but remain at modest levels.

Exhibit 6

MAHLE's EBITA margins have suffered from the pandemic and are expected to recover gradually



Source: Company data, Moody's estimates

Conservative financial policy, despite recent increase in leverage

MAHLE has established a track record of relatively low financial leverage metrics (below 3x during the years 2016-18), good liquidity (which was important to manage materially negative free cash flow generation in the first half of 2022) and modest shareholder distributions. At the end of December 2021, MAHLE's debt (Moody's adjusted, including pension provisions) amounted to €3.2 billion, which leads to a debt/EBITDA (Moody's adjusted) of 4.1x. In 2021, MAHLE issued €750 million of senior unsecured bonds to pre-finance a €500 million bond maturity in May 2022. Excluding the pre-financing, MAHLE's debt / EBITDA was at 3.5x.

At the end of June 2022, MAHLE's debt declined to €3.0 billion, but the weak profitability led to a significantly higher debt/EBITDA of 9x. Including the operating improvements expected in the second half of 2022, we expect debt/EBITDA to decrease to around 4.5x. In 2023, Moody's expects a further de-leveraging to a range of 3.0x-3.5x, which is commensurate with the Ba2.

We consider MAHLE's financial policy, which includes a declared net debt/EBITDA target of below 2x (company defined), as well as the very low shareholder distributions to the MAHLE Foundation as conservative. Given its ownership structure, however, the company has no access to equity capital markets and therefore limited ability to manage its leverage in line with its target at times of weak operating profitability.

Since 2014, MAHLE has made several tuck-in acquisitions, including the acquisition of Letrika (2014, €242m sales), Delphi Thermal (2015, €1,066m sales) and Keihin Air Conditioning (2021, €234m sales). All other acquisitions had sales of less than €100 million. The acquisitions were focused on expanding MAHLE’s product offering and enhance its technological expertise as well as its global footprint. MAHLE also entered into several Joint Ventures, which save investment spending. Given MAHLE’s ownership structure, all acquisitions need to be funded with cash or additional debt. During 2016-19, MAHLE spent a total of slightly less than €300 million for acquisitions. Based on the track record of relatively small acquisitions, we consider MAHLE’s M&A strategy as conservative, and the risk of larger debt-funded acquisitions being relatively small.

Structural considerations

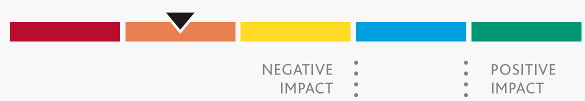
MAHLE's Ba2 senior unsecured instrument rating recognizes trade claims and pension provisions at the level of operating subsidiaries which are in aggregate material in size and have higher seniority in the debt structure of MAHLE. The debt has nonetheless not been notched as a reflection of the investment-grade debt structure of the group, and its good liquidity. We might, however, introduce a notching if MAHLE's CFR were to be downgraded below the Ba2 level.

ESG considerations

MAHLE GmbH's ESG Credit Impact Score is Highly Negative CIS-4

Exhibit 7
ESG Credit Impact Score

CIS-4
Highly Negative



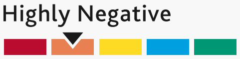
For an issuer scored CIS-4 (Highly Negative), its ESG attributes are overall considered as having a discernible negative impact on the current rating. The negative influence of the overall ESG attributes on the rating is more pronounced compared to an issuer scored CIS-3.

Source: Moody’s Investors Service

MAHLE's credit rating has been highly negatively impacted by ESG considerations. This is driven by the company's product portfolio, which is highly negatively exposed to carbon transition risks. In most other E, S and G risk categories, MAHLE is exposed to moderately negative or just neutral-to-low risks.

Exhibit 8
ESG Issuer Profile Scores

ENVIRONMENTAL
E-4
Highly Negative



SOCIAL
S-3
Moderately Negative

GOVERNANCE
G-3
Moderately Negative

Source: Moody’s Investors Service

Environmental

MAHLE is highly negatively exposed to environmental risks, given the company's high exposure to carbon transition. Around 40% of MAHLE's 2021 revenues came from ICE technologies for light vehicles. MAHLE's dual strategy addresses this risk, but we note that the carbon transition process will require high investments into R&D and capex. By contrast, the exposure of MAHLE's manufacturing processes to waste and pollution, water management, natural capital and physical climate risks is relatively low.

Social

MAHLE's social risk exposure is moderate, in line with the overall automotive parts suppliers sector. In terms of human capital, we note that around two thirds of its 42k employees (2019) are being employed in Europe and North America, where retention of skilled manufacturing workforce is typically easier than in developing countries. MAHLE is also exposed to health & safety risks. This is exemplified by the global coronavirus outbreak and its negative impact on global light vehicle production and consumer demand. Cost related to stricter health & safety requirements will also weigh somewhat on operating efficiency.

Governance

MAHLE's governance risks are moderate. The company has a prudent financial strategy and risk management in place, including the net leverage target of below 2x, a conservative M&A policy and moderate shareholder distributions. The company is owned by a foundation, which guarantees a long-term stable ownership structure. Voting rights lie with MABEG, an independent shareholders' committee comprising of external industry experts. Dividend payments to the foundation are relatively moderate, allowing MAHLE to retain most of the cash generated and invest it into future technologies. However, a negative aspect is the lack of access to equity capital markets. The company also has established an organizational structure, which is appropriate for its size and complexity. MAHLE has a highly experienced management team, with the six management board members having in excess of 15 years of industry experience on average. The company's management's credibility and track record have, however, suffered from recent fluctuation at the CEO and CFO levels. Some weaknesses also relate to MAHLE's financial reporting, which is less detailed compared to its publicly listed peers, as well as limited disclosure in terms of management compensation design.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

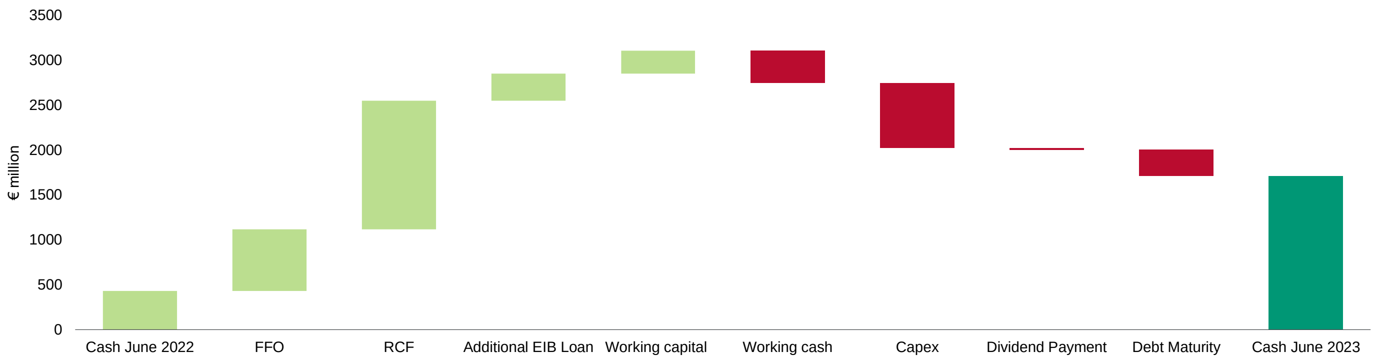
Moody's considers MAHLE's liquidity position to be good. The company's main sources of liquidity include (1) cash on the balance sheet of €431 million (as of June 2022) and (2) Moody's estimate of annual funds from operations of around €400 million. The company also has a €1.8 billion revolving credit facility (RCF) maturing in 2024 (€0.3 billion) and 2025 (€1.5 billion), of which €1.4 billion was undrawn. In addition, the company entered into a €300 million 10-year term loan with EIB in August. With this, MAHLE's liquidity sources over the next 12 months amount to approximately €2.5 billion under the stressed assumption of no access to capital markets.

These liquidity sources comfortably exceed liquidity uses of around €1.2 billion, mainly comprising of capital spending, which Moody's expects at around €600 million, and €300 million short-term debt maturities. Uses of liquidity further include Moody's working cash assumption of €300 million.

Exhibit 9

MAHLE's liquidity is good

Liquidity sources and uses over the next four quarters to December 2021, according to Moody's liquidity stress case



Source: Moody's calculation

Rating methodology and scorecard factors

The actual rating assigned of Ba2 is two notches above the scorecard-indicated outcome, based on financial metrics for the last twelve months ending June 2022. The LTM margin, leverage and coverage metrics were, however, negatively impacted by high raw materials, energy, and logistics cost burden.

We believe a significant portion of this cost burden will be passed on to the OEMs through price negotiations. Our 12-18-months forward-view leads to a two-notch higher scorecard-indicated outcome of Ba2, in line with the actual rating assigned.

Rating Factors
MAHLE GmbH

Automotive Supplier Industry Scorecard [1][2]	Current LTM 6/30/2022		Moody's 12-18 Month Forward View As of 9/30/2022 [3]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Revenue (USD Billion)	$12.6	Baa	$12 - $12.5	Baa
Factor 2 : Business Profile (15%)				
a) Business Profile	Ba	Ba	Ba	Ba
Factor 3 : Profitability and Efficiency (25%)				
a) EBITA Margin	-1.6%	Ca	2.8% - 3.5	Caa
b) Expected Free Cash Flow Stability	Ba	Ba	Ba	Ba
Factor 4 : Leverage and Coverage (30%)				
a) Debt / EBITDA	9.0x	Ca	3x - 3.5x	Ba
b) EBITA / Interest Expense	-1.0x	Ca	5.0x - 7.0x	A
c) Retained Cash Flow / Net Debt	-0.4%	Ca	15% - 25%	Ba
Factor 5 : Financial Policy (20%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Rating:				
a) Scorecard-Indicated Outcome		B1		Ba2
b) Actual Rating Assigned				Ba2

(1) All ratios are based on 'Adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-financial Corporations
(2) As of 6/30/2022, Source: Moody's Financial Metrics
(3) This represents Moody's forward view; not the view of the issuer; and unless otherwise noted in the text, does not incorporate significant acquisitions and divestitures
Source: Moody's Financial Metrics and Moody's Investors Service estimates

Ratings

Exhibit 11

Category	Moody's Rating
MAHLE GMBH	
Outlook	Negative
Corporate Family Rating	Ba2
Senior Unsecured -Dom Curr	Ba2

Source: Moody's Investors Service

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