

CREDIT OPINION

30 April 2018

Update

Rate this Research >>

RATINGS

Hera S.p.A.

Domicile	Italy
Long Term Rating	Baa1
Type	LT Issuer Rating - Dom Curr
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

Alessandra MacDonald
Analyst
alessandra.macdonald@moodys.com
+44.20.7772.1771

Paul Marty
Senior Vice President
paul.marty@moodys.com
+44.20.7772.1036

CLIENT SERVICES

Americas 1-212-553-1653
Asia Pacific 852-3551-3077
Japan 81-3-5408-4100
EMEA 44-20-7772-5454

Hera S.p.A.

Update to credit analysis

Summary

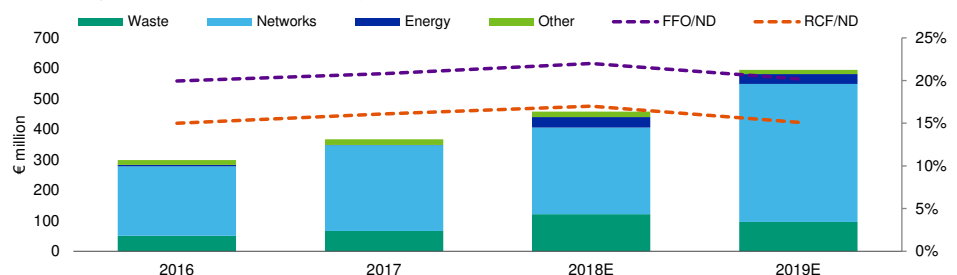
The credit profile of [Hera S.p.A.](#) (Hera) is underpinned by (1) the company's diversified business mix, which mitigates potential pressures from specific areas of business; (2) its portfolio of low-risk domestic regulated activities (gas distribution, electricity distribution and water services) which account for 43% of EBITDA (2017), with limited exposure to volumes and based on supportive and transparent regulatory frameworks; and (3) the company's credit-friendly strategy of external growth, based on small-scale acquisitions funded through the exchange of shares. These factors are balanced by (1) Hera's exposure to the macroeconomic cycle and competitive pressure through its waste management and energy supply businesses which account for 50% of EBITDA (2017); (2) the exposure, albeit limited, of its power generation business which generated around 3% of EBITDA in 2017, and its waste business to volatile power prices in Italy; and (3) the risks associated with the sovereign ([Government of Italy](#) Baa2 negative) because Hera generates all its earnings domestically.

Hera has a track record of a steady financial profile, and we expect the group to demonstrate funds from operations (FFO)/net debt of 20%-22% and retained cash flow (RCF)/net debt of 15%-17% in 2018-19¹ (vs. FFO/net debt and RCF/net debt of 20.8% and 16.1%, respectively, in 2017²). Our view is based on Hera's updated plan (2017-21) presented in January 2018, which is underpinned by €2.9 billion of investments and is sized to maintain Hera's current financial profile.

Exhibit 1

Hera's 2017-21 investment plan is tilted towards regulated activities and is designed to support the company's current financial profile

Planned capex (LHS) and evolution of key credit metrics (RHS)



(1) All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations; (2) Historical and projected ratios include an adjustment for securitisations estimated by Moody's; (3) 2018-19 metrics and ratios represent Moody's forward view and not the view of the issuer; (4) Networks mainly include electricity, gas and water distribution regulated activities in Italy; (5) FFO stands for funds from operations and ND stands for net debt.
Sources: Hera, Moody's Investors Service

Credit strengths

- » Diversified business mix
- » Portfolio of low-risk domestic regulated networks, with limited price and volume exposure
- » Investment plan sized to maintain financial flexibility
- » Credit-friendly strategy of external growth

Credit challenges

- » Country risk, because all of Hera's revenue and earnings are generated domestically, leaving the company exposed to potential changes in the credit quality of the Government of Italy
- » Exposure of unregulated businesses to the cyclical macroeconomic environment and, although to a lesser extent, to volatile power prices
- » Liberalisation of the retail electricity supply market in Italy from July 2019, which is likely to increase competition, exerting some pressure on Hera's energy business margins

Rating outlook

The negative outlook on Hera's rating is in line with the outlook on the Government of Italy's rating to reflect the company's links with the sovereign, given that all its earnings are generated in Italy.

Factors that could lead to an upgrade

- » Given the negative outlook, an upgrade of Hera is currently unlikely. However, upward rating pressure would be conditional on a continued improvement in the company's financial profile, resulting in FFO/net debt comfortably in the twenties in percentage terms and RCF/net debt at least in the high teens in percentage terms, a continued solid liquidity profile and a stable business risk profile.
- » A potential upgrade would also be conditional on an upward movement in the Italian sovereign rating.

Factors that could lead to a downgrade

- » A downward movement in the Government of Italy's rating
- » A structural weakening in Hera's financial profile, resulting in credit metrics falling permanently below our ratio guidance (for example, FFO/net debt below the upper teens in percentage terms and RCF/net debt below the low teens in percentage terms)
- » Hera's growth strategy, resulting in a deterioration in its business risk profile with no offsetting strengthening in its credit metrics

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moody's.com for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2

Hera S.p.A.

	2014	2015	2016	2017	2018E	2019E
FFO interest coverage	5.0x	5.4x	6.2x	7.0x	7.0x	6.3x
FFO / Net Debt	18.9%	18.7%	20.5%	21.7%	23.0%	21.0%
RCF / Net Debt	14.3%	13.8%	15.4%	16.8%	18.0%	16.0%

(1) All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations; (2) The ratios shown do not include any adjustment related to Hera's securitisation of receivables given the lack of publicly available data. Moody's estimates that including such adjustment the FFO/Net Debt and the RCF/Net Debt ratios would be around 20.8% and 16.1% in 2017, respectively. (2) 2018-19 metrics and ratios represent Moody's forward view and not the view of the issuer.

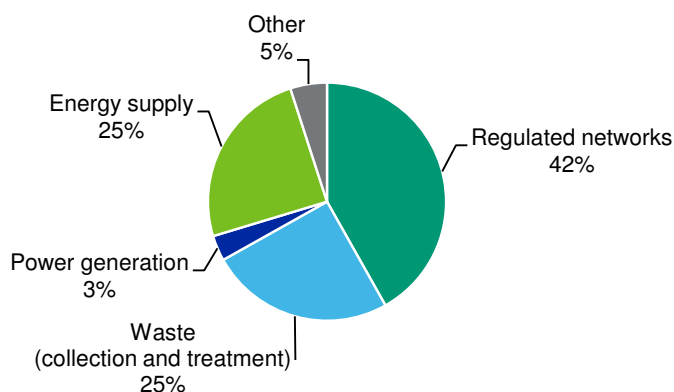
Source: Moody's Investors Service

Profile

Hera S.p.A. (Hera) is one of the largest multi-utilities in Italy. More than 50% of the company's capital is held by 118 municipalities (51.3%, public shareholders), the largest of which is the City of Bologna (around 10%). Hera has a strong territorial presence in the region of Emilia Romagna and more generally in the northeast of Italy. The company has a diversified and vertically integrated portfolio of public utility services, which includes regulated water and energy networks, waste collection, treatment and energy from waste generation activities, gas and electricity retail sales, and ancillary activities such as district heating and public lighting. In 2017, Hera reported consolidated revenue of €6,137 million and EBITDA of €985 million. The company is listed on the Milan Stock Exchange with a market capitalisation of around €4.5 billion.

Exhibit 3

Hera's EBITDA split (2017)



Sources: Hera, Moody's Investors Service

Detailed credit considerations

Sizeable and diversified portfolio of regulated activities supports stability in revenue and offers visibility into future cash flow

Hera's gas, electricity and water distribution activities accounted for 42% of its consolidated EBITDA in 2017 and are fully regulated by the Autorità di Regolazione per Energia Reti e Ambiente (ARERA) through similar capital remuneration and cost recovery mechanisms. The regulatory frameworks applicable to Italian energy and water distribution networks are stable and transparent, supporting the predictability of Hera's revenues and cash flows. The regulations also leave the company exposed to little or no volume risk.

Hera's water distribution activities accounted for 23% of its consolidated EBITDA in 2017. The second regulatory period (Metodo Tariffario Idrico, MTI-2) for water distribution activities started in January 2016 and extends over four years with two interim periods (2016-17 and 2018-19). Under the MTI-2 regulation (which is based on principles of continuity vs. MTI-1 and vs. 2012-13 transitory tariff frameworks), water tariffs are set to allow an efficient company to recover capital and operating costs. This is similar to the well-established regulations that the ARERA applies to Italy's electricity and gas networks. Notwithstanding the positive evolution of the framework for water services in Italy, it will take time for a track record to be established.

Hera's electricity and gas distribution networks accounted for almost 19% of its consolidated EBITDA in 2017. Gas distribution networks started a new six-year tariff cycle in 2014 (2014-19) based on regulatory mechanisms aligned with those applied in the previous period. The real pre-tax WACC for gas distribution activities was set at 6.1% for 2016-18. We expect the 2018 interim review to take into account the 3.5% reduction in Italian corporate tax rate, valid since January 2017, and to incorporate higher levels of regulatory gearing, in line with the regulator's proposals.

Exhibit 4

Summary of regulatory frameworks for Hera's water, electricity and gas distribution network activities

	Water distribution	Electricity distribution	Gas distribution	Comment
Regulatory body	ARERA	ARERA	ARERA	
Start of regulatory period	Jan-16	Jan-16	Jan-14	
End of regulatory period	Dec-19	Dec-23	Dec-19	
Length of regulatory period	4-year period divided in two interim periods (2016-17 and 2018-19)	8-year period divided in two interim periods (2016-19 and 2020-23)	6-year period divided in two interim periods (2014-16 and 2017-19)	
Regulatory framework	Return on RAB, price cap	Return on RAB, price cap	Return on RAB, price cap	
Incentives	Incentives on quality of service provided	Incentives on investments and quality of service provided	Quality of service incentives	
Volume exposure	No exposure. Ex post volume correction	No exposure. Ex post volume correction	No exposure. Ex post volume correction	
RAB calculation	Re-evaluated historical cost	Re-evaluated historical cost	Re-evaluated historical cost	RAB adjusted for inflation annually
Allowed return on capital	5.40%	5.60%	6.10%	real pre-tax
Next review of allowed return on capital	Dec-19	Dec-18	Dec-18	WACC interim review for gas and electricity distribution effective from 2019 respectively (update of risk free rate, inflation, regulatory gearing, tax rate and country risk premium parameters). Beta updated as part of the sector interim or full regulatory review. Option to update water distribution allowed return on capital if material changes occur.
Time lag on investments/D&A	2 years (investments and D&A)	1 year on investments, 2 years on D&A	1 year	
Time lag compensation on WACC	1%	0%	0%	

Sources: ARERA, Moody's Investors Service

In 2016, the process for the re-organisation of Italian gas distribution districts kicked off, although at a slower pace than expected. Hera intends to participate in tenders where it is already the incumbent operator, thus limiting potential execution risk. In its 2017-21 business plan, the company allocated around €470 million for gas tenders (up from the previous €330 million, although part of the increase reflects investments for tenders that were previously classified as M&A). Management anticipates this capex to translate into an additional €30 million of EBITDA, most of which is expected to materialise in 2020.

Exposure of energy supply and waste management businesses to cyclical macroeconomic conditions

Liberalisation of the Italian energy supply market in 2019 could exert some pressure on margins

We estimate that almost 25% of Hera's consolidated EBITDA in 2017 came from natural gas and electricity sales and trading businesses. We consider these activities riskier because the company is exposed to volume fluctuations owing to the cyclical macroeconomic environment and to market competition.

In the gas segment, Hera has a significant presence with approximately 2.25 bcm of gas sold (2017) to retail, industrial and commercial customers. Approximately 57% of Hera's gas sales are linked to regulated retail tariffs, which are set by ARERA and are linked to gas spot prices while the residual 43% of gas volumes are sold in the liberalised market where retail prices are also generally determined in

relation to reference market prices. In the electricity segment, the company also has a strong presence with 10.52 terawatt hour (TWh) sold in 2017 to retail, industrial and commercial customers.

We expect Hera's share of industrial customers to grow, mainly through M&A, which management anticipates will support profitability. However, the profitability of Hera's Energy division remains exposed to volatile volumes and to progressively greater competitive pressure as the Italian energy supply market is planned to be liberalised in July 2019. In its 2017-21 plan, Hera anticipates that increased competition will reduce the divisional EBITDA by around €10 million over the plan period. Management nevertheless expects this to be more than offset by a growing customer base as Hera plans to reach over 3 million of energy customers (vs. 2.3 million at 2017 YE, or +30%) by 2021. As of 2018 YE, the contracts of electricity and gas safeguarded customers (which have been contributing almost €40 million of EBITDA per annum since January 2017) will expire. In line with management's expectations, we expect greater competition for the reassignment of those contracts, potentially resulting in a lower contribution to EBITDA starting from 2019.

Waste collection business and the under-supplied nature of the domestic waste treatment market mitigate volume and price exposure

As for Hera's environment activities (25% of 2017 consolidated EBITDA), a fragmented and under-dimensioned waste treatment market increases the potential for Hera to reach its special waste volume target of 3.7 million tonnes in 2021 (from 2.5 million tonnes in 2017), increasing its market share in the northeastern regions and capturing part of the intra-regional waste flows from southern and central Italy. In line with its strategy of vertical integration and expansion, in 2017, Hera acquired two companies active in the waste management business, namely 80% of Aliplast (we expect the remaining 20% to be acquired by June 2022) and 100% of Teseco, which together brought an additional €18 million of EBITDA in 2017.

Hera's waste treatment activities expose the company to the cyclical macroeconomic environment. However, the exposure of waste treatment activities to volumes and prices (gate fees) is mitigated by the under-supplied nature of the domestic waste treatment market which could put some upward pressure on prices with potential positive impacts on Hera's margins. Hera also relies on a solid urban waste collection base which represents a natural upstream contributor to waste treatment activities. Collection activities (representing almost two-thirds of the Waste division EBITDA) reduce the overall risk of this segment as waste collection in Italy is performed under concessions assigned through tenders. By 2019, around two-thirds of Hera's concessions will be re-tendered, exposing the company to a significant risk of volume loss. However, as an incumbent operator, we expect Hera to be able to leverage its knowledge of the territory and its scale to offer increased service efficiency and confirm its existing presence. The introduction of a new regulatory framework for waste collection activities by the ARERA (which took over the responsibility to oversee the sector in January 2018) could also benefit the predictability of Hera's revenues (and potentially also collection margins) if it is implemented under principles similar to those applied to more established regulated networks (for example, gas and electricity transmission and distribution, and water services). However, there is still some uncertainty around the exact timing of its implementation.

To a lesser extent, waste treatment activities also expose Hera to volatile power prices in Italy through the electricity produced from its waste to energy (WTE) plants (around 130 MW of capacity installed and 0.7 TWh of power generated in 2017). The exposure to power prices coming from Hera's WTE fleet is mitigated by the incentives received. Notably, in 2017, around 49% of the electricity produced from WTE was incentivised although this share will decline to around 23% by 2021. Furthermore, Hera's WTE electricity production has limited exposure to changes in the company's waste volumes given the significantly smaller treatment capacity (around 1.3 million tonnes) compared with the company's total commercialised waste volumes (4.6 million tonnes in 2017).

Some exposure, albeit limited, of power generation activities to volatile power prices

Hera's power generation activities expose the company to volatile power prices in Italy, although such exposure is limited by their small weight (we estimate around 3% of 2017 EBITDA). In addition to the power generated through its WTE plants (discussed above), in 2017 Hera produced almost 0.5 TWh of electricity through cogeneration and renewable plants (together 93 MW of installed capacity). Over the past two years (2016-17) power generation activities contributed positively to the company's consolidated EBITDA, driven by a recovery in domestic power prices (in 2017 the average one year forward PUN, Italy's single national price, increased to almost €46/MWh vs. around €40/MWh in 2016) and reflecting better results achieved in the market for ancillary services (MSD).

The 2017-21 plan leaves business risk unchanged and continues to support financial flexibility

Hera's business plan, presented in January 2018, targets EBITDA of €1,135 million by 2021 (vs. €917 million in 2016 or a 4.4% compound annual growth rate), underpinned by €2.9 billion of investments between 2017 and 2021, of which over 70% are directed to regulated activities. Around 55% of the total planned capital spending is earmarked for maintenance, while the rest is split among

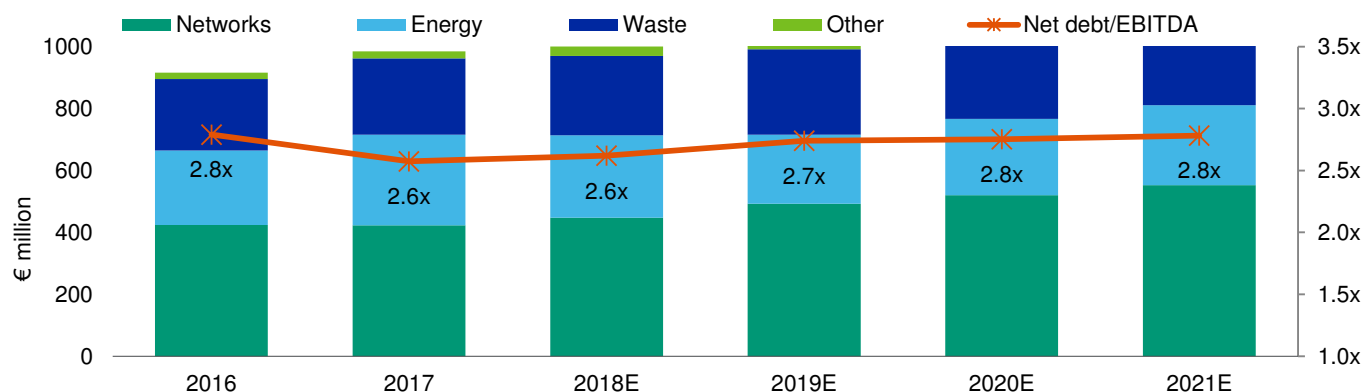
gas tenders (€470 million, included in the regulated share of investments mentioned above), organic development (€390 million) and M&A (€380 million). The company does not include in the plan investments to capture additional opportunities, potentially amounting to up to €300 million, which we think the company would have the ability to accommodate, although by absorbing essentially all its existing financial flexibility.

The plan is overall consistent with that of the previous year because the key levers that management expects to help Hera achieve EBITDA of €1,135 million by 2021 are: (1) efficiencies, amounting to €76 million between 2017 and 2021, around 65% of which will be achieved in the Networks and Waste divisions. According to management, efficiencies will be driven by a reduction in controllable costs (€53 million) and innovation (€23 million, including, for example, energy efficiency projects and increased automation in workflows). Given Hera's positive track record (between 2012 and 2016, efficiencies amounted to €69 million), we expect the company to be able to reach a similar target over the five-year plan period; (2) gas tenders, as discussed above, to add up to €30 million according to management (most of which in 2020), assuming no further delays; (3) top-line growth of over €30 million, driven by tariff increases, customer base expansion, as well as growth in the environment sector; and (4) small-scale credit-friendly M&A, contributing €107 million by 2021, of which €18 million was already achieved in 2017. Of the residual, about €50 million will come from acquisitions in the Waste and Energy divisions. Those positives will be partially offset by an anticipated reduction in incentives and other negative one-offs that will materialise over the plan period (€27 million).

Because almost 60% of the overall planned growth will come from the Networks division, we expect Hera's business risk to remain unchanged by 2021, when around 50% of the overall projected consolidated EBITDA is planned to come from low-risk regulated activities (that is, electricity, gas and water distribution networks). From a financial risk perspective, management expects leverage to increase slightly, resulting in net debt/EBITDA remaining below the 3x threshold set by the company for every year of plan.

Exhibit 5

Hera's business plan 2017-21: planned EBITDA growth (4% CAGR) and reported net debt/EBITDA evolution



Notes: [1] the Net debt/EBITDA ratio includes the full consolidation of financial debt coming from M&A targets but excludes the additional €300 million of optional investments to seize new opportunities; [2] the evolution of leverage is calculated starting from Hera's 2017 actual net debt/EBITDA (2.6x) which is lower than what originally embedded in the 2017-21 plan.

Sources: Hera, Moody's Investors Service

We expect Hera's 2017-21 plan to support the company's current credit profile as we anticipate that the company will exhibit FFO/net debt of around 20%-22% (including planned M&A) and RCF/net debt of 15%-17% in 2018-19³.

Consolidation strategy remains creditors' friendly

The high degree of voting right fragmentation, resulting from Hera's ownership by more than 200 local municipalities, has historically prevented any major shareholder interference in the company's corporate strategy. This has favoured the execution of a balanced financial policy over the years, based on growth through small-scale acquisitions financed through share exchanges, contained leverage and a stable dividend policy. Hera's strategy of external growth has created a solid track record of synergy extraction from the acquired entities (over the past four years (2013-16), for example, synergies amounted to €23 million), which positions the company well to achieve additional €20 million of synergies targeted between 2017-2021.

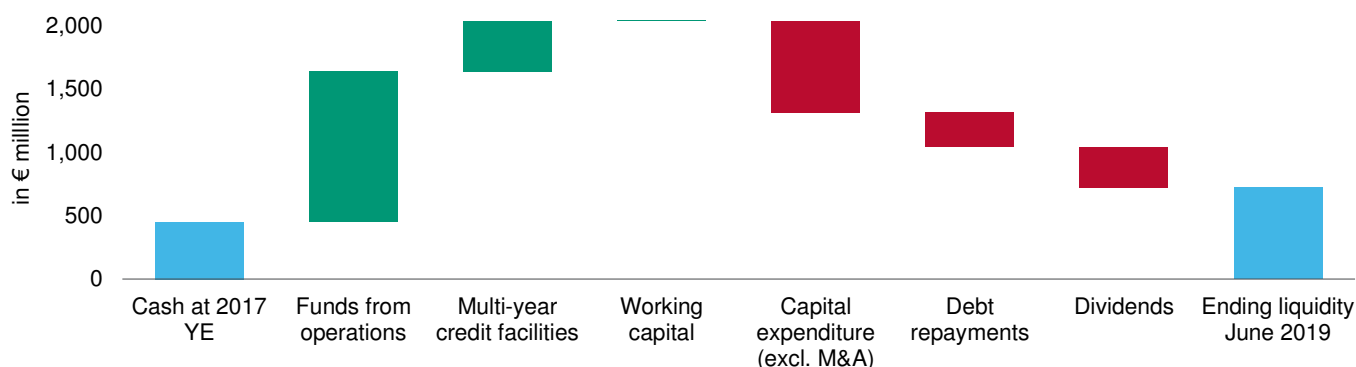
Liquidity analysis

As of December 2017, Hera had strong liquidity, backed by around €450 million of cash and cash equivalents and €300 million of committed credit lines (completely undrawn), of which €125 million will expire in Q4 2019 and the rest will expire between 2020 and 2030. All the committed lines benefit from the absence of any financial covenant and material adverse change clauses. In January 2018, Hera also secured a €110 million amortising loan from the European Investment Bank, available from January 2018 (and likely to be drawn in June 2018) and maturing in 2030. This loan will support the financing of Hera's Waste division investments and further improves its liquidity profile.

As of December 2017, Hera's reported gross debt amounted to €3.2 billion (versus €3.1 billion as of December 2016), with an average cost of debt of 3.6% and an average maturity of over 7 years. The next relevant maturity will be in 2019, when a €395 million bond will expire. We think that Hera's internal cash flow generation will be sufficient to cover the company's liquidity needs (working capital, debt repayments, investments and dividends) over the next 18 months (see Exhibit below).

Exhibit 6

We expect Hera's cash availability to cover the company's liquidity needs over the next 18 months (as of December 2017)



Source: Moody's Investors Service

Rating methodology and scorecard factors

There is no single rating methodology for Hera, given the group's diversified portfolio of businesses. We assess the creditworthiness of the company's water networks in accordance with our [Regulated Water Utilities](#) rating methodology, published in December 2015. We use our [Regulated Electric and Gas Networks](#) rating methodology, published in March 2017, for its electricity and gas networks; our [Environmental Services and Waste Management Companies](#) rating methodology, published in April 2018, for the Waste division; and our [Unregulated Utilities](#) rating methodology, published in May 2017, for the electricity and gas business.

Given its public shareholder base, Hera also falls within the scope of our [Government-Related Issuers](#) rating methodology, published in August 2017. However, given the limited capacity of its public shareholders to provide support to the company in a scenario of financial distress, the rating does not incorporate any uplift to Hera's standalone credit quality for potential government support.

Ratings

Exhibit 7

Category	Moody's Rating
HERA S.P.A.	
Outlook	Negative
Issuer Rating -Dom Curr	Baa1
Senior Unsecured	Baa1

Source: Moody's Investors Service

Appendices

Exhibit 8

Hera S.p.A.

Adjusted net debt calculation

EUR million	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17
As Reported Debt	3,647	3,671	3,428	3,115	3,172
Pension Adjustments	128	145	130	130	126
Operating Lease Adjustments	68	66	50	52	47
Other Adjustments	-16	-68	-77	-67	-33
Moody's - Adjusted Debt	3,827	3,814	3,531	3,230	3,313
Cash & Cash Equivalents	-935	-843	-548	-352	-451
Moody's - Adjusted Net Debt	2,892	2,971	2,984	2,878	2,862

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

Source: Moody's Investors Service

Exhibit 9

Hera S.p.A.

Select historical adjusted financial data

EUR million	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17
INCOME STATEMENT					
Revenue	4,457	4,189	4,487	5,131	5,612
EBITDA	716	792	782	815	860
EBIT	391	446	434	458	480
Interest Expense	136	141	126	113	103
BALANCE SHEET					
Total Debt	3,827	3,814	3,531	3,230	3,313
Cash & Cash Equivalents	935	843	548	352	451
Total Liabilities	5,970	6,085	5,839	5,809	6,223
CASH FLOW					
Funds from Operations (FFO)	467	561	558	589	621
Cash Dividends - Common	-131	-137	-145	-145	-141
Retained Cash Flow (RCF)	335	424	413	443	480
Capital Expenditures	-321	-343	-357	-395	-451
FFO / Net Debt	16.1%	18.9%	18.7%	20.5%	21.7%
RCF / Net Debt	11.6%	14.3%	13.8%	15.4%	16.8%
INTEREST COVERAGE					
FFO Interest Coverage	4.4x	5.0x	5.4x	6.2x	7.0x

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

Source: Moody's Investors Service

Exhibit 10

Hera S.p.A.

Adjusted EBITDA calculation

EUR million	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17
As Reported EBITDA	710	783	785	811	861
Pension Adjustments	0	0	1	1	0
Operating Lease Adjustments	17	17	12	13	12
Other Adjustments	-10	-7	-15	-9	-13
Moody's - Adjusted EBITDA	717	792	783	815	860

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

Source: Moody's Investors Service

Exhibit 11

Hera S.p.A.

Peer comparison table

EUR million	Hera S.p.A. Baa1 Negative				ACEA S.p.A. Baa2 Stable			A2A S.p.A. Baa3 Stable		
	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-15	FYE Dec-16	FYE Dec-17
Revenue	4,189	4,487	5,131	5,612	2,932	2,801	2,709	4,732	4,813	5,590
EBITDA	792	782	815	860	609	636	813	989	1,176	1,166
Total debt	3,814	3,531	3,230	3,313	3,638	3,299	3,364	3,945	3,971	4,139
Cash and equivalents	843	548	352	451	1,018	815	666	674	403	691
FFO	561	558	589	621	456	492	636	731	846	891
FFO / net debt	18.9%	18.7%	20.5%	21.7%	17.4%	19.8%	23.6%	22.3%	23.7%	25.8%
RCF / net debt	14.3%	13.8%	15.4%	16.8%	15.7%	15.7%	19.5%	18.7%	20.0%	21.3%
FFO interest coverage	5.0x	5.4x	6.2x	7.0x	5.0x	5.8x	7.7x	5.5x	6.5x	7.3x

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

Source: Moody's Investors Service

Endnotes

- 1 2018-19 projected ratios are calculated including an adjustment for securitisations based on Moody's estimates.
- 2 Historical ratios are calculated including an adjustment for securitisations based on Moody's estimates.
- 3 2018-19 projected ratios are calculated including an adjustment for securitisations based on Moody's estimates.

© 2018 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER. ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody's.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors. It would be reckless and inappropriate for retail investors to use MOODY'S credit ratings or publications when making an investment decision. If in doubt you should contact your financial or other professional adviser.

Additional terms for Japan only: Moody's Japan K.K. ("MJJK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJJK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJJK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJJK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJJK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJJK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from JPY200,000 to approximately JPY350,000,000.

MJJK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

Contacts

Alessandra MacDonald +44.20.7772.1771
Analyst
alessandra.macdonald@moodys.com

Paul Marty +44.20.7772.1036
Senior Vice President
paul.marty@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454