

# PAION AG

Germany / Biotechnology  
 Frankfurt Prime Standard  
 Bloomberg: PA8 GR  
 ISIN: DE000A0B65S3

H1 results

**RATING**  
**BUY**

**PRICE TARGET**  
**€ 4.20**

Return Potential 85.8%  
 Risk Rating High

## US/JAPAN APPROVALS IN 2019/20; EIB LOAN REDUCES FUTURE DILUTION

PAION filed for U.S. market approval of remimazolam in the indication procedural sedation in April - four months after having filed for market approval of remimazolam in the indication general anaesthesia in Japan. First revenues from remimazolam in the U.S. and Japan are likely in 2020. The €7.5m milestone payment in connection with the U.S. filing accounted for all of H1/19 revenue. Management has not changed full year guidance. Following discussions with the European Medicines Agency (EMA), PAION plans to submit a Marketing Authorization Application for remimazolam in procedural sedation later this year based on the existing data package from the U.S. phase III clinical development program. Meanwhile, patient recruitment for the EU phase III clinical trial with remimazolam in general anaesthesia is now expected in Q1 2020. PAION's main priority over the next few years is to gain regulatory approval for remimazolam in as many countries for as many indications as possible. PAION estimates the peak sales opportunity for remimazolam at over USD500m annually for each of the three indications: procedural sedation, general anaesthesia and intensive care unit sedation. In late June PAION announced that it had signed a €20m financing agreement with the European Investment Bank. This suggests that dilution through future equity raises will be lower than we had previously modelled and so we raise our price target from €4.10 to €4.20. We maintain our Buy recommendation.

**Remimazolam's competitive advantages** The two main incumbent products in the above-mentioned indications are midazolam which is used mainly in conscious sedation, and propofol which is used mainly in deep sedation. Remimazolam's advantage over midazolam is shorter onset/offset times and over propofol clinically meaningful lower cardiodepressive and respiratory depressant effects. The most valuable single indication/geography for remimazolam is procedural sedation in the U.S. where colonoscopies account for nearly half of the annual 43 million medical procedures in which sedation is used. (p.t.o.)

### FINANCIAL HISTORY & PROJECTIONS

	2016	2017	2018	2019E	2020E	2021E
Revenue (€m)	4.26	5.81	2.77	8.00	37.45	47.11
Y-o-y growth	n.a.	36.4%	-52.4%	189.2%	368.2%	25.8%
EBIT (€m)	-25.08	-15.87	-12.46	-10.50	17.20	17.93
EBIT margin	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%
Net income (€m)	-20.12	-12.09	-9.94	-8.48	19.23	16.14
EPS (diluted) (€)	-0.38	-0.20	-0.16	-0.13	0.30	0.25
DPS (€)	0.00	0.00	0.00	0.00	0.00	0.00
FCF (€m)	-11.78	-17.75	-12.83	-2.05	14.07	7.09
Net gearing	-120.7%	-98.5%	-82.7%	-117.0%	-90.9%	-75.3%
Liquid assets (€m)	30.11	24.84	17.23	20.18	39.25	66.34

### RISKS

Risks to our price target include but are not limited to: drug development, finding development partners on favourable terms, financial, and legal risks.

### COMPANY PROFILE

PAION is a specialty pharmaceutical company headquartered in Aachen (Germany) with operations in Cambridge (United Kingdom). PAION's lead substance, remimazolam, is an intravenous ultra-short-acting benzodiazepine anaesthetic that has completed phase III clinical development for procedural sedation.

### MARKET DATA

As of 20 Aug 2019

Closing Price	€ 2.26
Shares outstanding	63.86m
Market Capitalisation	€ 144.32m
52-week Range	€ 2.04 / 2.60
Avg. Volume (12 Months)	61,590

Multiples	2018	2019E	2020E
P/E	n.a.	n.a.	7.5
EV/Sales	45.2	15.6	3.3
EV/EBIT	n.a.	n.a.	7.3
Div. Yield	0.0%	0.0%	0.0%

### STOCK OVERVIEW



### COMPANY DATA

As of 30 Jun 2019

Liquid Assets	€ 28.73m
Current Assets	€ 35.13m
Intangible Assets	€ 2.65m
Total Assets	€ 37.58m
Current Liabilities	€ 10.21m
Shareholders' Equity	€ 27.37m

### SHAREHOLDERS

Cosmo Pharmaceuticals	9.1%
TIAA-CREF	3.0%
Free Float	87.9%



In the U.S., colonoscopies are typically carried out in large outpatient clinics. PAION's management believes that the efficiencies stemming from remimazolam's shorter onset/offset times relative to midazolam amount to several USD100s per patient. Faster time to full recovery also equates to a better experience not only for patients but also for persons (typically friends or relatives) accompanying the patients to and from the procedure.

**H1/19 results close to our expectations** H1/19 results were close to our forecasts and management has left full year guidance unchanged (see figures 1 and 2 below). H1/19 revenue of €7.5m stemmed solely from the milestone payment from licensing partner Cosmo in connection with filing for approval in the U.S. for remimazolam in the indication procedural sedation. The €0.5m in revenue expected for H2/19 corresponds to revenue from the Russian remimazolam licensee, R-Pharm, in connection with the transfer of the Japanese filing dossier translated into English or transfer of the U.S. filing dossier. H1/18 revenue resulted mainly from the license agreement with Japanese partner Mundipharma. H1/19 R&D expenses of €6.2m related mainly to the ongoing EU Phase III trial in general anaesthesia. S,G&A expenses rose mainly because of the set-up of the supply chain for remimazolam. The income tax credit of €1.2m corresponds to claims for reimbursement of R&D expenses from the British tax authorities.

**Figure 1: FY/18 results vs. our forecasts**

in EURm	H1/19A	H1/19E	Delta	H1/18A	Delta
Total revenue*	7.50	7.50	0.0%	0.52	1350.7%
R&D expenses	6.17	7.00	-11.8%	6.54	-5.7%
S,G&A expenses	2.32	2.50	-7.2%	1.76	31.9%
EBT	-0.58	-1.50	n.a.	-7.73	92.5%
Tax credit	1.17	1.00	16.6%	1.49	-21.6%
Net income	0.59	-0.50	n.a.	-6.24	n.a.
margin	7.8%	neg.	-	neg.	-
EPS (dil., in EUR)	0.01	-0.01	n.a.	-0.10	n.a.

\* including other operating income such as milestone payments

Source: PAION, First Berlin Equity Research estimates

**Figure 2: Management 2019 guidance**

in EURm	FY/19 Guidance
Total revenue*	ca. €8m
R&D expenses	ca. €13-€15m
S,G&A expenses	ca. €4-€5m
Tax credits	ca. €2m
Net result	ca. €-7 to €-10m

\* including other op. income such as milestone payments

Source: PAION

**FDA targets completion of market approval application review by 5 April 2020** The FDA informed Cosmo that it had accepted the filing for market approval in procedural sedation and set a PDUFA (Prescription Drug User Fee Act) date of 5 April 2020. This is the target date for completion of the FDA review.

**EU filing for approval in procedural sedation likely without further trials** PAION's management discussed data from the U.S. phase III clinical development programme of remimazolam for procedural sedation at a pre-submission meeting with the EMA in February. Based on this meeting, PAION now expects to be able to file for approval of remimazolam in procedural sedation in the EU later this year without carrying out any further trials. The filing will be subject to EMA approval of the Pediatric Investigation Plan (PIP).



**Accelerated approval of remimazolam for general anaesthesia in EU likely** Approval in procedural sedation in the EU and availability of the data from the ongoing EU Phase III clinical trial in general anaesthesia would allow accelerated processing of the market approval filing in the latter indication. Management now expects completion of patient recruitment for the phase III trial in general anaesthesia in Q1/20. In the Q1/19 report released in May, completion of recruitment was scheduled for the end of 2019. Over 200 out of a planned 500 patients have been treated so far and PAION has initiated the opening of additional study sites in order to accelerate recruitment. Although recruitment for the general anaesthesia trial is behind the original schedule, we continue to expect first EU revenues in this indication in 2021 due to the strong likelihood of an accelerated approval process outlined above.

**Filing for approval of remimazolam in multiple countries** PAION's licensing partners filed for approval of remimazolam for procedural sedation in China and for general anaesthesia in Japan in November and December 2018 respectively. In both countries, decisions by the local authorities on market approval are expected by the end of 2019 at the earliest.

PAION's Canadian licensing partner, Pharmascience, is expected to use the U.S. market approval dossier as the basis for filing for market approval in Canada while R-Pharm (remimazolam licensee for Turkey, the Middle East and North Africa) plans to file for market approval in Turkey based on the U.S. or Japanese dossier. In Russia, R-Pharm completed a phase III trial in general anaesthesia in November 2018 and plans to file for approval later this year.

In South Korea recruitment for a phase III trial of remimazolam in general anaesthesia was completed in October 2018. Local partner Hana Pharm expects to file for market approval by the end of 2019.

**€20m financing agreement signed with the European Investment Bank** In late June PAION signed a financing agreement with the European Investment Bank (EIB) for a loan of up to €20m. The loan is unsecured and can be drawn down over the next two years in three tranches based on certain conditions such as the achievement of operational milestones. PAION plans to draw down the first tranche of up to €5m before the end of this year. Each tranche has a term of five years and the interest rate corresponds to the market conditions for venture debt.

**Buy recommendation maintained, price target raised to €4.20 (previously: €4.10)** PAION had cash and cash equivalents of €19.2m at the end of H1/19 (FY/18: €17.2m). Management stated in the H1/19 report that the company's cash reach extends into the second half of 2020. The assumptions underlying this statement do not include milestone payments or any funds from the EIB. Potential future milestone payments from Cosmo and Mundipharma amount to €59m, an unspecified part of which relates to the marketing approvals which we expect in both the U.S. and Japan during the course of the next ten months. PAION's management has stated that a further €10m will be required until filing for approval for general anaesthesia in the EU and that this could be partially or completely covered by the EIB loan. PAION also points out that additional funds will be required in coming years for planned own commercialisation in selected European markets as well as for planned development of remimazolam for the indication ICU sedation. We expect that future revenues and milestones will cover most of these costs, but assume the issue of a €10m convertible in 2021. We have removed two €5m equity issues, previously respectively modelled in 2019 and 2020, from our projections. The resulting reduction in dilution causes us to raise our price target from €4.10 to €4.20. We maintain our Buy recommendation.



Figure 3: Pipeline valuation model

Compound	Project (1)	Present Value	Patient Pop	Treatment Cost	Market Size	Market Share	Peak Sales	PACME Margin (2)	Discount Factor	Patent Life (3)	Time to Market
Remimazolam	PS EU	€111.5M	15,144K	€14	€208.6M	25%	€69.9M	6%	15%	15	2 Years
Remimazolam	PS US	€150.6M	20,000K	€20	€400.0M	50%	€257.5M	2%	15%	13	1 Year
Remimazolam	PS CAN	€7.0M	1,056K	€20	€21.1M	50%	€13.6M	18%	15%	13	1 Year
Remimazolam	GA EU	€181.6M	15,144K	€40	€605.8M	20%	€162.3M	6%	15%	15	3 Years
Remimazolam	GA US	€71.8M	23,925K	€40	€957.0M	20%	€246.5M	2%	15%	13	4 Years
Remimazolam	GA JAP	€80.6M	10,000K	€40	€400.0M	25%	€134.0M	8%	15%	15	1 Year
Remimazolam	GA CHN	€15.8M	51,000K	€28	€1,405.0M	10%	€188.2M	10%	15%	15	4 Years
Remimazolam	PS CHN	€15.1M	33,260K	€10	€346.5M	10%	€46.4M	10%	15%	15	1 Year
Remimazolam	GA KOR	€7.6M	3,750K	€28	€103.3M	25%	€34.6M	10%	15%	15	2 Years
Remimazolam	GA CIS/MENA/TUR	€66.2M	55,247K	€28	€1,566.6M	10%	€209.9M	12%	15%	15	1 Year
Remimazolam	ICU US	€16.1M	1,561K	€250	€390.2M	25%	€125.6M	2%	15%	13	5 Years
Remimazolam	ICU EU	€66.5M	2,439K	€167	€406.5M	25%	€136.8M	6%	15%	15	4 Years
Remimazolam	ICU Japan	€4.3M	606K	€167	€101.0M	25%	€33.8M	18%	15%	15	5 Years
<b>PACME PV</b>		<b>€794.5M</b>									
<b>Costs PV (4)</b>		<b>€584.0M</b>									
<b>NPV</b>		<b>€210.5M</b>									
Milestones PV		€41.0M									
Pro forma net cash		€22.8M									
Fair Value		€274.3M									
Pro forma share count		65,047K									
<b>Price Target</b>		<b>€4.20</b>									

1) A project typically refers to a specific indication or, where necessary or relevant, a combination between indication and geographic market

PS EU = Procedural Sedation in the EU

PS US = Procedural Sedation in the US

PS CAN = Procedural Sedation in Canada

GA EU = General Anaesthesia in the EU

GA US = General Anaesthesia in the US

GA JAP = General Anaesthesia in Japan

GA CHN = General Anaesthesia in China

GA KOR = General Anaesthesia in South Korea

GA CIS/MENA/TUR = General Anaesthesia in the Commonwealth of Independent States, Middle East & North Africa, and Turkey

ICU US = General Anaesthesia in Intensive Care Units in the US

ICU EU = General Anaesthesia in Intensive Care Units in the EU

Other projects: GGF2 (HF) and Solulin (HPH)

HF = Heart Failure

HPH = Haemophilia

2) PACME (Profit After Costs and Marketing Expenses) reflects the company's profit share on future revenues.

This share may be derived in the form of royalties (outsourced marketing/manufacturing) or operating EBITDA margin (in-house model), or some mix of both (depending on the specific parameters of partnership agreements)

3) Remaining patent life after the point of approval

4) Includes company-level R&D, G&A, Financing Costs, CapEx and working capital; COGS and S&M are factored into the PACME margin for each project

Source: First Berlin Equity Research

Figure 4: Changes to pipeline valuation model

	Old	New	Delta
<b>NPV</b>	<b>€209.5M</b>	<b>€210.5M</b>	<b>0.5%</b>
Milestones PV	€41.0M	€41.0M	0.0%
Pro Forma Net Cash	€26.2M	€22.8M	-13.1%
Fair Value	€282.7M	€274.3M	-3.0%
Diluted Share Count	68.2M	65.0M	-4.6%
<b>Fair Value Per Share</b>	<b>€4.10</b>	<b>€4.20</b>	<b>2.4%</b>

Source: First Berlin Equity Research



## INCOME STATEMENT

All figures in EUR '000	2016	2017	2018	2019E	2020E	2021E
<b>Net revenues</b>	0	0	0	0	12,902	42,560
<b>Other op. inc. (including milestones)</b>	4,262	5,811	2,766	8,000	24,550	4,550
<b>Total revenue</b>	4,262	5,811	2,766	8,000	37,452	47,110
<b>Cost of goods sold</b>	0	0	0	0	0	4,407
<b>Gross profit</b>	4,262	5,811	2,766	8,000	37,452	42,703
S,G&A	5,129	3,828	3,408	4,500	5,250	9,776
R&D	23,408	17,854	12,167	14,000	15,000	15,000
Other operating income (expense)	-807	-2	354	0	0	0
<b>Operating income (EBIT)</b>	<b>-25,082</b>	<b>-15,872</b>	<b>-12,455</b>	<b>-10,500</b>	<b>17,202</b>	<b>17,927</b>
Net financial result	21	20	8	19	-374	-757
<b>Pre-tax income (EBT)</b>	<b>-25,061</b>	<b>-15,852</b>	<b>-12,447</b>	<b>-10,481</b>	<b>16,828</b>	<b>17,171</b>
Income taxes	4,944	3,759	2,510	2,000	2,400	-1,034
<b>Net income / loss</b>	<b>-20,118</b>	<b>-12,093</b>	<b>-9,937</b>	<b>-8,481</b>	<b>19,228</b>	<b>16,137</b>
<b>Diluted EPS</b>	<b>-0.38</b>	<b>-0.20</b>	<b>-0.16</b>	<b>-0.13</b>	<b>0.30</b>	<b>0.25</b>
<b>EBITDA</b>	<b>-24,758</b>	<b>-15,626</b>	<b>-12,265</b>	<b>-10,360</b>	<b>17,342</b>	<b>18,067</b>
<b>Ratios</b>						
EBIT margin	n.m.	n.m.	n.m.	n.m.	45.9%	38.1%
EBITDA margin	n.m.	n.m.	n.m.	n.m.	46.3%	38.4%
Net margin	n.m.	n.m.	n.m.	n.m.	51.3%	34.3%
<b>Cash Coverage of Expenses</b>						
Cash / G&A	5.9x	6.5x	5.1x	4.5x	7.5x	10.6x
Cash / R&D	1.3x	1.4x	1.4x	1.4x	2.6x	4.4x
<b>Y-Y Growth</b>						
Total revenue	5851.0%	36.4%	-52.4%	189.2%	368.2%	25.8%
Operating income	n.m.	n.m.	n.m.	n.m.	n.m.	4.2%
Net income/ loss	n.m.	n.m.	n.m.	n.m.	n.m.	-16.1%



## BALANCE SHEET

All figures in EUR '000	2016	2017	2018	2019E	2020E	2021E
<b>Assets</b>						
<b>Current assets, total</b>	<b>35,128</b>	<b>29,357</b>	<b>22,037</b>	<b>23,679</b>	<b>49,053</b>	<b>85,319</b>
Cash and cash equivalents	30,111	24,839	17,227	20,179	39,249	66,335
Short-Term Investments	0	0	0	0	0	0
Receivables	0	37	1,500	0	1,935	4,731
Inventories	0	0	0	0	4,119	10,502
Other current assets	5,017	4,481	3,311	3,500	3,750	3,750
<b>Non-current assets, total</b>	<b>2,855</b>	<b>2,529</b>	<b>2,286</b>	<b>2,166</b>	<b>2,046</b>	<b>1,966</b>
Property, plant & equipment	167	114	74	44	14	24
Goodwill & other intangibles	2,688	2,415	2,212	2,122	2,032	1,942
Other Assets	0	0	0	0	0	0
<b>Total assets</b>	<b>37,984</b>	<b>31,885</b>	<b>24,323</b>	<b>25,845</b>	<b>51,099</b>	<b>87,285</b>
<b>Shareholders' equity &amp; debt</b>						
<b>Current Liabilities, Total</b>	<b>13,040</b>	<b>6,656</b>	<b>3,501</b>	<b>7,875</b>	<b>8,926</b>	<b>9,035</b>
Convertible bond	0	0	0	0	0	0
Short-term debt	0	0	0	0	0	0
Accounts payable	6,353	5,921	2,218	7,000	8,000	8,000
Milestone	5,730	0	0	0	0	0
Provisions	555	391	630	0	26	85
Other current liabilities	403	344	654	875	900	950
<b>Longterm liabilities, total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>10,000</b>	<b>30,000</b>
Convertible bond	0	0	0	0	0	10,000
Long-term debt	0	0	0	5,000	10,000	20,000
Provisions	0	0	0	0	0	0
Deferred revenue	0	0	0	0	0	0
<b>Shareholders' equity</b>	<b>24,943</b>	<b>25,229</b>	<b>20,822</b>	<b>12,970</b>	<b>32,173</b>	<b>48,250</b>
<b>Total consolidated equity and debt</b>	<b>37,984</b>	<b>31,885</b>	<b>24,323</b>	<b>25,845</b>	<b>51,099</b>	<b>87,285</b>
<b>Ratios</b>						
Current ratio (x)	2.69	4.41	6.29	3.01	5.50	9.44
Quick ratio (x)	2.69	4.41	6.29	3.01	5.03	8.28
Net gearing	-120.7%	-98.5%	-82.7%	-117.0%	-90.9%	-75.3%
Book value per share (€)	0.45	0.41	0.33	0.20	0.50	0.76
Return on equity (ROE)	-66.5%	-48.2%	-43.2%	-50.2%	85.2%	40.1%



## CASH FLOW STATEMENT

All figures in EUR '000	2016	2017	2018	2019E	2020E	2021E
<b>Net result</b>	<b>-20,118</b>	<b>-12,093</b>	<b>-9,939</b>	<b>-8,481</b>	<b>19,228</b>	<b>16,137</b>
Depreciation and amortization	759	347	255	140	140	140
Changes in working capital	1,137	-911	-4,647	6,314	-5,279	-9,130
Milestone	5,730	-5,730	0	0	0	0
Net taxes received	585	838	0	0	0	0
Other items	321	-170	1,518	0	0	0
<b>Operating cash flow</b>	<b>-11,586</b>	<b>-17,720</b>	<b>-12,813</b>	<b>-2,027</b>	<b>14,089</b>	<b>7,147</b>
CAPEX	-192	-25	-13	-20	-20	-60
<b>Free cash flow</b>	<b>-11,778</b>	<b>-17,745</b>	<b>-12,826</b>	<b>-2,047</b>	<b>14,069</b>	<b>7,087</b>
<b>Debt financing, net</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>5,000</b>	<b>20,000</b>
<b>Convertible bond financing, net</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Equity financing, net</b>	<b>9,212</b>	<b>12,494</b>	<b>5,214</b>	<b>0</b>	<b>0</b>	<b>0</b>
Other changes in cash	-2	-22	0	0	0	0
<b>Net cash flows</b>	<b>-2,568</b>	<b>-5,273</b>	<b>-7,612</b>	<b>2,953</b>	<b>19,069</b>	<b>27,087</b>
Cash, start of the year	32,680	30,111	24,839	17,227	20,179	39,249
<b>Cash, end of the year</b>	<b>30,111</b>	<b>24,839</b>	<b>17,227</b>	<b>20,179</b>	<b>39,249</b>	<b>66,335</b>
<b>Y-Y Growth</b>						
Operating cash flow	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
Free cash flow	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.
EBITDA/share	n.m.	n.m.	n.m.	n.m.	n.m.	n.m.

**FIRST BERLIN RECOMMENDATION & PRICE TARGET HISTORY**

Report No.:	Date of publication	Previous day closing price	Recommendation	Price target
Initial Report	2 April 2012	€0.79	Buy	€2.00
2...36	↓	↓	↓	↓
37	10 April 2018	€2.23	Buy	€4.30
38	20 November 2018	€2.40	Buy	€4.30
39	28 March 2019	€2.17	Buy	€4.10
40	Today	€2.26	Buy	€4.20

**Authored by: Simon Scholes, Analyst**

**Company responsible for preparation:**

**First Berlin Equity Research GmbH**

Mohrenstraße 34  
10117 Berlin

Tel. +49 (0)30 - 80 93 96 94 Fax +49 (0)30 - 80 93 96 87

info@firstberlin.com

www.firstberlin.com

**Person responsible for forwarding or distributing this financial analysis: Martin Bailey**

**Copyright© 2019 First Berlin Equity Research GmbH** No part of this financial analysis may be copied, photocopied, duplicated or distributed in any form or media whatsoever without prior written permission from First Berlin Equity Research GmbH. First Berlin Equity Research GmbH shall be identified as the source in the case of quotations. Further information is available on request.

**INFORMATION PURSUANT TO SECTION 34B OF THE GERMAN SECURITIES TRADING ACT [WPHG], TO REGULATION (EU) NO 596/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF APRIL 16, 2014, ON MARKET ABUSE (MARKET ABUSE REGULATION) AND TO THE GERMAN ORDINANCE ON THE ANALYSIS OF FINANCIAL INSTRUMENTS [FINANV]**

First Berlin Equity Research GmbH (hereinafter referred to as: "First Berlin") prepares financial analyses while taking the relevant regulatory provisions, in particular the German Securities Trading Act [WpHG], Regulation (EU) No 596/2014 of the European Parliament and of the Council of April 16, 2014, on market abuse (market abuse regulation) and the German Ordinance on the Analysis of Financial Instruments [FinAnV] into consideration. In the following First Berlin provides investors with information about the statutory provisions that are to be observed in the preparation of financial analyses.

**CONFLICTS OF INTEREST**

In accordance with Section 34b Paragraph 1 of the German Securities Trading Act [WpHG] and Regulation (EU) No 596/2014 of the European Parliament and of the Council of April 16, 2014, on market abuse (market abuse regulation) financial analyses may only be passed on or publicly distributed if circumstances or relations which may cause conflicts of interest among the authors, the legal entities responsible for such preparation or companies associated with them are disclosed along with the financial analysis.

First Berlin offers a range of services that go beyond the preparation of financial analyses. Although First Berlin strives to avoid conflicts of interest wherever possible, First Berlin may maintain the following relations with the analysed company, which in particular may constitute a potential conflict of interest (further information and data may be provided on request):

- The author, First Berlin, or a company associated with First Berlin holds an interest of more than five percent in the share capital of the analysed company;
- The author, First Berlin, or a company associated with First Berlin provided investment banking or consulting services for the analysed company within the past twelve months for which remuneration was or was to be paid;
- The author, First Berlin, or a company associated with First Berlin reached an agreement with the analysed company for preparation of a financial analysis for which remuneration is owed;
- The author, First Berlin, or a company associated with First Berlin has other significant financial interests in the analysed company;

In order to avoid and, if necessary, manage possible conflicts of interest both the author of the financial analysis and First Berlin shall be obliged to neither hold nor in any way trade the securities of the company analyzed. The remuneration of the author of the financial analysis stands in no direct or indirect connection with the recommendations or opinions represented in the financial analysis. Furthermore, the remuneration of the author of the financial analysis is neither coupled directly to financial transactions nor to stock exchange trading volume or asset management fees.

If despite these measures one or more of the aforementioned conflicts of interest cannot be avoided on the part of the author or First Berlin, then reference shall be made to such conflict of interest.

**INFORMATION PURSUANT TO SECTION 64 OF THE GERMAN SECURITIES TRADING ACT [WPHG] (2ND FINANOG) OF 23 JUNE 2017, DIRECTIVE 2014/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 15 MAY 2014 ON MARKETS IN FINANCIAL INSTRUMENTS AND AMENDING DIRECTIVE 2002/92/EC AND DIRECTIVE 2011/61/EU, ACCOMPANIED BY THE MARKETS IN FINANCIAL INSTRUMENTS REGULATION (MIFIR, REG. EU NO. 600/2014)**

First Berlin notes that it has concluded a contract with the issuer to prepare financial analyses and is paid for that by the issuer. First Berlin makes the financial analysis simultaneously available for all interested security financial services companies. First Berlin thus believes that it fulfils the requirements of section 64 WpHG for minor non-monetary benefits.



### PRICE TARGET DATES

Unless otherwise indicated, current prices refer to the closing prices of the previous trading day.

### AGREEMENT WITH THE ANALYSED COMPANY AND MAINTENANCE OF OBJECTIVITY

The present financial analysis is based on the author's own knowledge and research. The author prepared this study without any direct or indirect influence exerted on the part of the analysed company. Parts of the financial analysis were possibly provided to the analysed company prior to publication in order to avoid inaccuracies in the representation of facts. However, no substantial changes were made at the request of the analysed company following any such provision.

### ASSET VALUATION SYSTEM

First Berlin's system for asset valuation is divided into an asset recommendation and a risk assessment.

#### ASSET RECOMMENDATION

The recommendations determined in accordance with the share price trend anticipated by First Berlin in the respectively indicated investment period are as follows:

Category		1	2
Current market capitalisation (in €)		0 - 2 billion	> 2 billion
Strong Buy <sup>1</sup>	An expected favourable price trend of:	> 50%	> 30%
Buy	An expected favourable price trend of:	> 25%	> 15%
Add	An expected favourable price trend of:	0% to 25%	0% to 15%
Reduce	An expected negative price trend of:	0% to -15%	0% to -10%
Sell	An expected negative price trend of:	< -15%	< -10%

<sup>1</sup> The expected price trend is in combination with sizable confidence in the quality and forecast security of management.

Our recommendation system places each company into one of two market capitalisation categories. Category 1 companies have a market capitalisation of €0 – €2 billion, and Category 2 companies have a market capitalisation of > €2 billion. The expected return thresholds underlying our recommendation system are lower for Category 2 companies than for Category 1 companies. This reflects the generally lower level of risk associated with higher market capitalisation companies.

#### RISK ASSESSMENT

The First Berlin categories for risk assessment are low, average, high and speculative. They are determined by ten factors: Corporate governance, quality of earnings, management strength, balance sheet and financial risk, competitive position, standard of financial disclosure, regulatory and political uncertainty, strength of brandname, market capitalisation and free float. These risk factors are incorporated into the First Berlin valuation models and are thus included in the target prices. First Berlin customers may request the models.

### INVESTMENT HORIZON

Unless otherwise stated in the financial analysis, the ratings refer to an investment period of twelve months.

### UPDATES

At the time of publication of this financial analysis it is not certain whether, when and on what occasion an update will be provided. In general First Berlin strives to review the financial analysis for its topicality and, if required, to update it in a very timely manner in connection with the reporting obligations of the analysed company or on the occasion of ad hoc notifications.

### SUBJECT TO CHANGE

The opinions contained in the financial analysis reflect the assessment of the author on the day of publication of the financial analysis. The author of the financial analysis reserves the right to change such opinion without prior notification.

#### Legally required information regarding

- key sources of information in the preparation of this research report
- valuation methods and principles
- sensitivity of valuation parameters

can be accessed through the following internet link: <http://firstberlin.com/disclaimer-english-link/>

**SUPERVISORY AUTHORITY: Bundesanstalt für Finanzdienstleistungsaufsicht (German Federal Financial Supervisory Authority) [BaFin], Graurheindorferstraße 108, 53117 Bonn and Lurgiallee 12, 60439 Frankfurt**

### EXCLUSION OF LIABILITY (DISCLAIMER)

#### RELIABILITY OF INFORMATION AND SOURCES OF INFORMATION

The information contained in this study is based on sources considered by the author to be reliable. Comprehensive verification of the accuracy and completeness of information and the reliability of sources of information has neither been carried out by the author nor by First Berlin. As a result no warranty of any kind whatsoever shall be assumed for the accuracy and completeness of information and the reliability of sources of information, and neither the author nor First Berlin, nor the person responsible for passing on or distributing the financial analysis shall be liable for any direct or indirect damage incurred through reliance on the accuracy and completeness of information and the reliability of sources of information.

#### RELIABILITY OF ESTIMATES AND FORECASTS

The author of the financial analysis made estimates and forecasts to the best of the author's knowledge. These estimates and forecasts reflect the author's personal opinion and judgement. The premises for estimates and forecasts as well as the author's perspective on such premises are subject to constant change. Expectations with regard to the future performance of a financial instrument are the result of a measurement at a single point in time and may change at any time. The result of a financial analysis always describes only one possible future development – the one that is most probable from the perspective of the author – of a number of possible future developments.

Any and all market values or target prices indicated for the company analysed in this financial analysis may not be achieved due to various risk factors, including but not limited to market volatility, sector volatility, the actions of the analysed company, economic climate, failure to achieve earnings and/or sales forecasts, unavailability of complete and precise information and/or a subsequently occurring event which affects the underlying assumptions of the author and/or other sources on which the author relies in this document. Past performance is not an indicator of future results; past values cannot be carried over into the future.

Consequently, no warranty of any kind whatsoever shall be assumed for the accuracy of estimates and forecasts, and neither the author nor First Berlin, nor the person responsible for passing on or distributing the financial analysis shall be liable for any direct or indirect damage incurred through reliance on the correctness of estimates and forecasts.

**INFORMATION PURPOSES, NO RECOMMENDATION, SOLICITATION, NO OFFER FOR THE PURCHASE OF SECURITIES**

The present financial analysis serves information purposes. It is intended to support institutional investors in making their own investment decisions; however in no way provide the investor with investment advice. Neither the author, nor First Berlin, nor the person responsible for passing on or distributing the financial analysis shall be considered to be acting as an investment advisor or portfolio manager vis-à-vis an investor. Each investor must form his own independent opinion with regard to the suitability of an investment in view of his own investment objectives, experience, tax situation, financial position and other circumstances.

The financial analysis does not represent a recommendation or solicitation and is not an offer for the purchase of the security specified in this financial analysis. Consequently, neither the author nor First Berlin, nor the person responsible for passing on or distributing the financial analysis shall as a result be liable for losses incurred through direct or indirect employment or use of any kind whatsoever of information or statements arising out of this financial analysis.

A decision concerning an investment in securities should take place on the basis of independent investment analyses and procedures as well as other studies including, but not limited to, information memoranda, sales or issuing prospectuses and not on the basis of this document.

**NO ESTABLISHMENT OF CONTRACTUAL OBLIGATIONS**

By taking note of this financial analysis the recipient neither becomes a customer of First Berlin, nor does First Berlin incur any contractual, quasi-contractual or pre-contractual obligations and/or responsibilities toward the recipient. In particular no information contract shall be established between First Berlin and the recipient of this information.

**NO OBLIGATION TO UPDATE**

First Berlin, the author and/or the person responsible for passing on or distributing the financial analysis shall not be obliged to update the financial analysis. Investors must keep themselves informed about the current course of business and any changes in the current course of business of the analysed company.

**DUPLICATION**

Dispatch or duplication of this document is not permitted without the prior written consent of First Berlin.

**SEVERABILITY**

Should any provision of this disclaimer prove to be illegal, invalid or unenforceable under the respectively applicable law, then such provision shall be treated as if it were not an integral component of this disclaimer; in no way shall it affect the legality, validity or enforceability of the remaining provisions.

**APPLICABLE LAW, PLACE OF JURISDICTION**

The preparation of this financial analysis shall be subject to the law obtaining in the Federal Republic of Germany. The place of jurisdiction for any disputes shall be Berlin (Germany).

**NOTICE OF DISCLAIMER**

By taking note of this financial analysis the recipient confirms the binding nature of the above explanations.

By using this document or relying on it in any manner whatsoever the recipient accepts the above restrictions as binding for the recipient.

**QUALIFIED INSTITUTIONAL INVESTORS**

First Berlin financial analyses are intended exclusively for qualified institutional investors.

**This report is not intended for distribution in the USA and/or Canada.**