PNE Wind

(CDAX, Renewables)

WARBURG RESEARCH

Buy	
EUR 3.50	(EUR 3.30)
Price	EUR 3.00
Upside	16.7 %

Value Indicators:	EUR
DCF:	3.50

Share data:	
Bloomberg:	PNE3 GR
Reuters:	PNEGn
ISIN:	DE000A0JBPG2

Description:

International wind energy project developer for onshore and offshore wind parks.

Market Snapshot:	EUR m
Market cap:	229.7
No. of shares (m):	76.6
EV:	245.8
Freefloat MC:	198.5
Ø Trad. Vol. (30d):	747.71 th

Shareholders:	
Freefloat	86.4 %
SPSW Capital GmbH	10.0 %
LRI Invest SA	3.6 %
Axxion S.A.	3.1 %

Risk Profile (WRe):	2017e
Beta:	1.8
Price / Book:	1.0 x
Equity Ratio:	51 %

Shaping up for future opportunities; New PT of EUR 3.50

PNE Wind was one of the top performing wind players in 2017 with an impressive total return of 39% (including a dividend of EUR 0.12). Following an investor roadshow with CEO Lesser to Copenhagen, we updated our model to reflect our continued upbeat view of the company. Our buoyant take is based on the assumption that **(1)** deal momentum is likely to remain strong in FY 2018, **(2)** changes to the wind tender system in Germany should reinstate investor confidence in the German wind industry and result in rational auction results, **(3)** a strong balance sheet with an equity ratio north of 50% and a net cash position should allow for a comfortable repayment of the outstanding EUR 100m bond in 2018 and translate into a EUR 4m reduction in the interest burden. We remain buyers with an updated PT of EUR 3.50.

Compelling deal momentum to continue in 2018: We expect PNE to capitalize on its well-filled deal pipeline and anticipate the sale of various projects such as the 200 MW “Chilocco” wind farm in the US, the successful sale of a number of promising projects in France (82 MW of total capacity already permitted) as well as further deals in Sweden (total capacity of advanced projects amount to 52 MW) in 2018. Moreover, should Vattenfall be awarded the right to build the offshore wind farm Atlantis 1 (WRe: probability is less than 50%), a significant double-digit million milestone payment would provide upside risk to our FY 2018 EBIT estimate of EUR 16m.

Changes to German tender system and rising electricity prices to revive onshore wind industry: Changes to the German tender system in 2018, which require all bidders to hold a planning permit, should level the playing field and result in more rational bidding prices. This would benefit PNE, which has yet to participate in its first German onshore wind auction. Furthermore, the anticipation of rising wholesale electricity prices in Germany (due to the shutdown of nuclear plants and higher CO_2 certificate prices) are likely to change the dynamics in the wind industry as subsidies will lose their prime role as the driving force for capacity additions.

Attractive returns underline value creation: Since PNE’s earnings generation has traditionally been volatile; we prefer to take a multi-year approach to determine the company’s returns. During the most recent full-market cycle (FY 2007-2016), PNE generated historical annual average ROE of 14.7% and an avg. ROCE of 12.5% p.a., highlighting the effective use of shareholders’ funds as well as the value creation in excess of the company’s WACC. The shares continue to trade below book value (EUR 3.05/ share WRe), which we deem to be unjustified.

Tempting valuation: Our updated DCF-based price target indicates a fair value of EUR 3.50. As an alternative valuation approach, we have derived the probability-weighted value of PNE’s onshore pipeline, which we estimate at c. EUR 250m (incl. offshore milestone payments of EUR 24m). This approach, however, points to an absolute floor value as it does not account for new projects being added to the pipeline.

Changes in Estimates:

FY End: 31.12. in EUR m	2017e (old)	+ / -	2018e (old)	+ / -	2019e (old)	+ / -
Sales	110.7	0.0 %	124.1	0.0 %	229.1	-47.1 %
EBIT	22.0	0.0 %	16.0	0.0 %	99.0	-79.8 %
EPS	0.17	0.0 %	0.11	45.5 %	0.97	-84.5 %

Comment on Changes:

- Our FY 2018 interest cost estimate has declined by c. EUR 4m.
- We now assume the sale of the 200 MW wind portfolio in FY 2020 rather than in FY 2019.
- We have lowered our capex estimates from an annual average of EUR 15m to around EUR 10m p.a.

Rel. Performance vs CDAX:	
1 month:	2.6 %
6 months:	8.6 %
Year to date:	1.0 %
Trailing 12 months:	24.7 %

Company events:	
28.03.18	FY 2017
09.05.18	Q1
06.06.18	AGM
09.08.18	Q2

FY End: 31.12. in EUR m	CAGR (16-19e)	2013	2014	2015	2016	2017e	2018e	2019e
Sales	-21.3 %	144.0	211.3	109.5	248.6	110.7	124.1	121.1
Change Sales yoy		70.6 %	46.7 %	-48.2 %	127.0 %	-55.5 %	12.1 %	-2.4 %
Gross profit margin		*60.5 %*	*28.3 %*	*64.5 %*	*61.6 %*	*60.5 %*	*57.2 %*	*65.2 %*
EBITDA	-33.7 %	51.2	11.2	19.7	110.0	28.0	25.0	32.0
Margin		*35.6 %*	*5.3 %*	*18.0 %*	*44.2 %*	*25.3 %*	*20.1 %*	*26.4 %*
EBIT	-40.9 %	45.0	2.7	9.8	97.0	22.0	16.0	20.0
Margin		*31.3 %*	*1.3 %*	*8.9 %*	*39.0 %*	*19.9 %*	*12.9 %*	*16.5 %*
Net income	-45.1 %	40.7	-13.0	3.5	69.0	13.3	12.4	11.4
EPS	-45.0 %	0.86	-0.22	0.05	0.90	0.17	0.16	0.15
EPS diluted	-44.6 %	0.69	-0.17	0.05	0.88	0.17	0.16	0.15
DPS	-30.7 %	0.15	0.04	0.05	0.12	0.04	0.04	0.04
Dividend Yield		5.6 %	1.5 %	2.2 %	5.9 %	1.3 %	1.3 %	1.3 %
FCFPS		-0.34	-0.27	-1.11	1.46	-0.46	-0.67	-0.75
FCF / Market cap		-12.5 %	-10.4 %	-49.9 %	71.1 %	-15.4 %	-22.3 %	-24.8 %
EV / Sales		1.8 x	1.3 x	3.1 x	0.6 x	1.7 x	2.0 x	2.5 x
EV / EBITDA		5.2 x	23.9 x	17.3 x	1.2 x	6.8 x	9.8 x	9.6 x
EV / EBIT		5.9 x	100.2 x	34.9 x	1.4 x	8.7 x	15.4 x	15.3 x
P / E		3.1 x	n.a.	44.5 x	2.3 x	17.6 x	18.8 x	20.0 x
FCF Potential Yield		17.4 %	0.0 %	4.5 %	64.0 %	9.8 %	6.4 %	7.2 %
Net Debt		136.7	115.1	174.2	-20.1	-38.1	16.1	76.2
ROCE (NOPAT)		23.4 %	1.1 %	0.9 %	29.1 %	9.8 %	6.3 %	5.6 %
Guidance:	PNE (incl. WKN): 2017 EBIT result in a range of EUR 17-23m							

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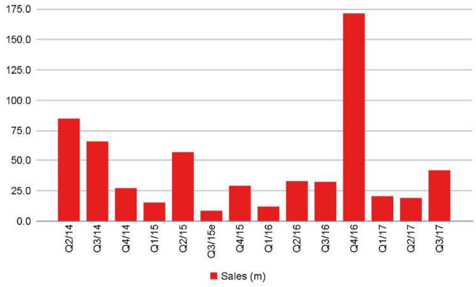
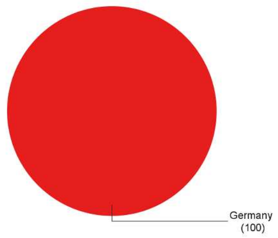
Sales development
in EUR m



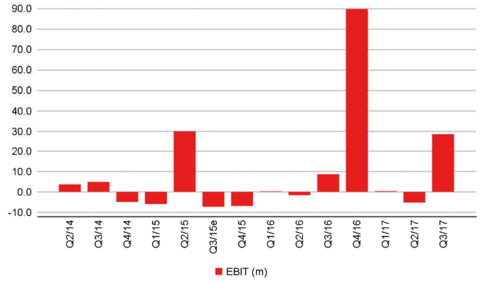
Source: Warburg Research

Sales by regions
2016; in %



Source: Warburg Research

EBIT development
in EUR m



Source: Warburg Research

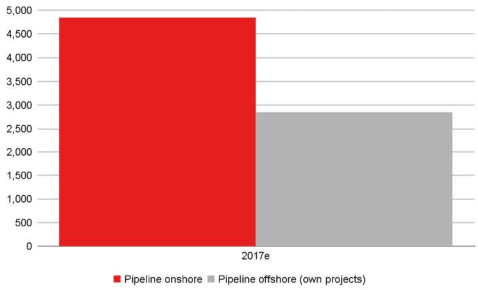
Company Background

- PNE WIND (formerly Plambeck Neue Energien) is a wind farm project developer based in Cuxhaven. It is active in both the onshore and offshore markets and to a smaller extent as an Independent Power Producer (IPP).
- In the onshore sector PNE develops, constructs and sells wind farms on a turnkey basis to utilities and infrastructure funds. PNE is not a wind turbine manufacturer (main suppliers: Siemens, Vestas, Senvion and Nordex).
- Outside of its domestic market, the PNE group is active in the UK, France, South Africa, Turkey, USA and Canada etc. In the international markets the company has over 3000 MWs in development and in Germany >1,400 MWs.
- In the offshore sector, the company develops and sells the development rights prior to construction. The company has sold eight offshore projects in total – three of which are already in operation.
- On a very selective basis, PNE remains in ownership of the wind farms. Of the 2,448 MW of onshore wind farms developed, the company owns 69.2 MW. PNE establishes a wind portfolio (c.200 MW) with a potential sale in 2019.

Competitive Quality

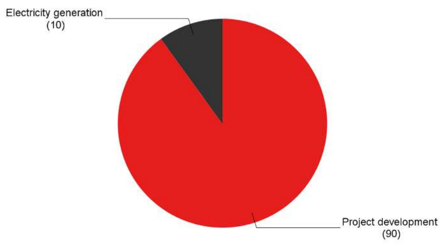
- PNE's core skills lie in the development, project management, realisation and financing of wind farms and their management, or sale with subsequent service.
- PNE's strengths lie in the development and sale of wind farms even in difficult market conditions, supported by its onshore and offshore track record.
- PNE has a competitive advantage in serving every step of the value chain. It also benefits from the cooperation with strong partners such as DONG Energy, Brookfield and STEAG.
- PNE is well managed by a very experienced team led by CEO Markus Lesser, CFO Jörg Klowat and COO Kurt Stürken.
- Over the 2011 - 2016 time period, the company achieved EUR 173.6 million in EBIT.

Pipeline
in MW



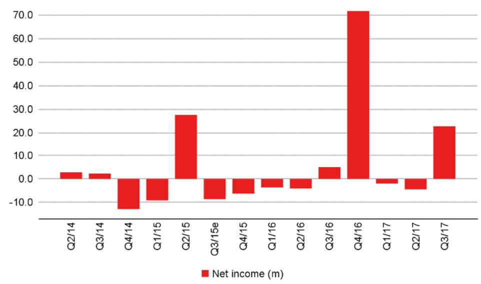
Source: Warburg Research

Sales by segments
2016; in %



Source: Warburg Research

Net income development
in EUR m



Source: Warburg Research

Summary of Investment Case

Investment triggers

- The sale of the “Chilocco” wind farm in the US with a total nominal output capacity of 200 MW is expected in FY 2018. In addition, Pattern Energy has secured an option for an expansion of the Vivaldi project, which was sold by PNE in 2017. A decision on that option is likely in H1 2018.
- In addition, a well-filled project pipeline in France with a total capacity of 82 MW is likely to materialize in 2018. These projects are already permitted and are therefore not required to participate in auctions.
- Finally, Vattenfall is expected to participate in the next German offshore auction in April 2018 with the Atlantis I project. A successful bid by Vattenfall would result in a double-digit million milestone payment for PNE as the initial developer of the project. In addition, milestone payments to the tune of EUR 24m are still outstanding from offshore projects already sold and should materialize from FY 2019 onwards (payment of EUR 4m to be triggered with the expected commissioning of Borkum Riffgrund 2 in H1 2019).

Valuation

- The shares continue to trade below book value (WRe: EUR 3.05/share) despite the company’s annual average through-the-cycle ROE of 14.7% between FY 2007 and 2016. In light of PNE’s return generation, we do not deem a discount to the book value as justified.
- Moreover, we cautiously estimate the value of PNE’s probability-weighted onshore project pipeline at EUR 225m or EUR 2.94/share. That figure, however, does not consider outstanding milestone payments to the tune of EUR 24m from sold offshore projects and can be regarded as an absolute floor value as it does not account for new projects, which will be added to the project pipeline in the coming years.
- Our price target, however, is based on absolute valuation, by way of DCF, which indicates a fair value of EUR 3.50 per share. We advise against applying relative valuation due to the company’s rather volatile profit generation, which is exacerbated by the current build-out of the European onshore wind portfolio with a targeted size of 200 MW.

Growth

- Generally, we expect annual earnings growth rates to be rather erratic, which can be attributed to the volatile business model of a project developer.
- In the period of FY 2017-2020, we expect the company to deliver its strongest result in FY 2020 with the expected sale of the 200 MW onshore wind portfolio and an estimated EBIT result of EUR 92m. The years leading up to the portfolio sale, in contrast, are likely to be characterized by deferred earnings and thus the company’s income statement won’t reflect the company’s value creation.
- We therefore prefer to determine the company’s ROCE generation in order to measure the economic value added. We estimate an annual average ROCE generation of 11.8% in 2017-2020 (vs WACC of 8.95%), mainly driven by the sale of the portfolio in FY 2020.

Competitive quality

- PNE Wind is a leading wind farm developer with a proven track record of more than 2,600 MW realized onshore projects.
- In addition, the company has sold eight offshore projects with a total capacity of 2,852 MW to renowned customers such as Ørsted (formerly known as Dong Energy) and Vattenfall and can therefore be regarded as the most experienced offshore project developer in Germany.
- Also, PNE is the second largest German wind O&M manager with a total capacity of 1,500 MW under management and is striving to expand its portfolio to at least 2,200 MW by 2023.

Warburg versus consensus

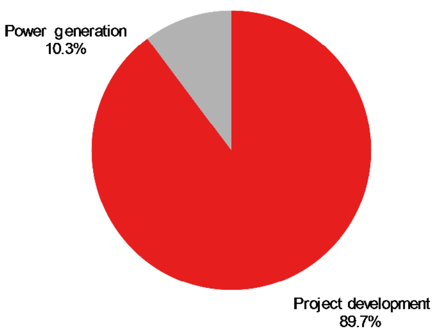
- Our FY 2018 and 2019 EBIT estimates are broadly in line with consensus expectations.

Company Overview

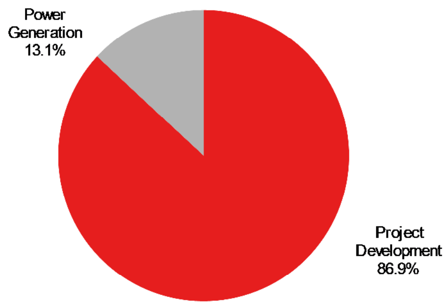
	Project Development	Power Generation
Segments		
Competitors	▪ Energiekontor ▪ ABO Wind AG ▪ juwi Holding AG ▪ wpd	▪ Capital Stage AG ▪ Prokon ▪ Energiequelle ▪ wpd
Customers	Allianz Global Investors VATTENFALL	Brookfield John laing making infrastructure happen DONG energy Ørsted
Revenue FY 16 in EUR m / %	223.1 / 89.7%	25.5 / 10.3%
EBIT FY 16 in EUR m / %	57.8 / 86.9%	8.7 / 13.1%

Group sales and EBIT

Sales contribution by segments (2016)



EBIT contribution by segments (2016)



Source: Warburg Research

Strong deal momentum to continue

- Following a strong deal track record in FY 2017 we expect the company to continue to capitalize on its promising international project pipeline.
- In FY 2018, we expect PNE to sell further onshore projects in the US, France, and Sweden.
- In the offshore space, milestone payments to the tune of EUR 24m are still outstanding.
- Finally, successful participation in the upcoming German offshore tender by Vattenfall could trigger a large double-digit million euro milestone payment for PNE.

International projects set to pay off in 2018

Monetization of international project pipeline set to kick in

Onshore business drives financial results

In the first nine months of FY 2017, PNE Wind generated a very strong EBIT result of EUR 23.7m. The strong operating result represents a true reflection of PNE's wide-ranging activities as a great variety of activities and regions contributed to the result.

The table below provides an overview of PNE Wind's recent transaction. In FY 2017, the group generated profits from the sale of an offshore wind-farm (Atlantis 1 sold to Vattenfall), the sale of an onshore wind-farm in Sweden as well as the sale the project rights of a 80 MW wind-farm project in the US to Pattern Energy. Finally, the company benefited from an additional earn-out payment from Allianz Global Investors thanks to the sale of the internally-held wind-farm portfolio back in December 2016.

Overview of recent successful transactions

Date	Project	Country	MW	Customer
29.12.2017	Longeves	France	9.0	
28.12.2017	Wind farm portfolio	Germany	142**	AREF II Renewables Investment Holding
29.09.2017	Laxaskogen	Sweden	25.2	
14.09.2017	Sommette-Eaucourt	France	21.6	John Laing
12.07.2017	Vivaldi Springtime	USA	80	Pattern Development
05.05.2017	Kirchengel	Germany	9.9	Centraplan GmbH and private investors
11.01.2017	Westerengel	Germany	23.1	CEE
09.01.2017	Atlantis I	Germany	584	Vattenfall
29.12.2016	Wind farm portfolio	Germany	142*	AREF II Renewables Investment Holding
14.11.2016	Saint Martin l´Ars	France	10.25	John Laing

* the stake sold accounts for 80% of the MW
** the stake sold accounts for the remaining 20% of the MW

Source: Warburg Research

However, looking ahead, we believe the company should continue to capitalize on its decent project pipeline, which is characterized by various late-stage projects in international markets such as France, the US and Sweden. Thus, PNE Wind is finally in a position to reap the rewards of its international development activities just as the domestic wind market starts to slow down. In this section we take a look at PNE's development activities in the international onshore markets as well as in the offshore space.

Overview of onshore project pipeline

Country	Project phase			in MW
	I-II	III	IV	Total
Germany	1,347	88	53	1,488
France	292	82	41	415
Bulgaria	121	0	0	121
Canada	555	0	0	555
Hungary	0	42	0	42
Romania	54	102	0	156
Turkey	700	0	0	700
UK	43	0	0	43
US	232	200	0	432
Sweden	99	59	0	158
South Africa	170	30	0	200
Italy	102	14	0	116
Poland	223	42	0	265
Total	**3,938**	**659**	**94**	**4,691**

Source: PNE Wind, Warburg Research

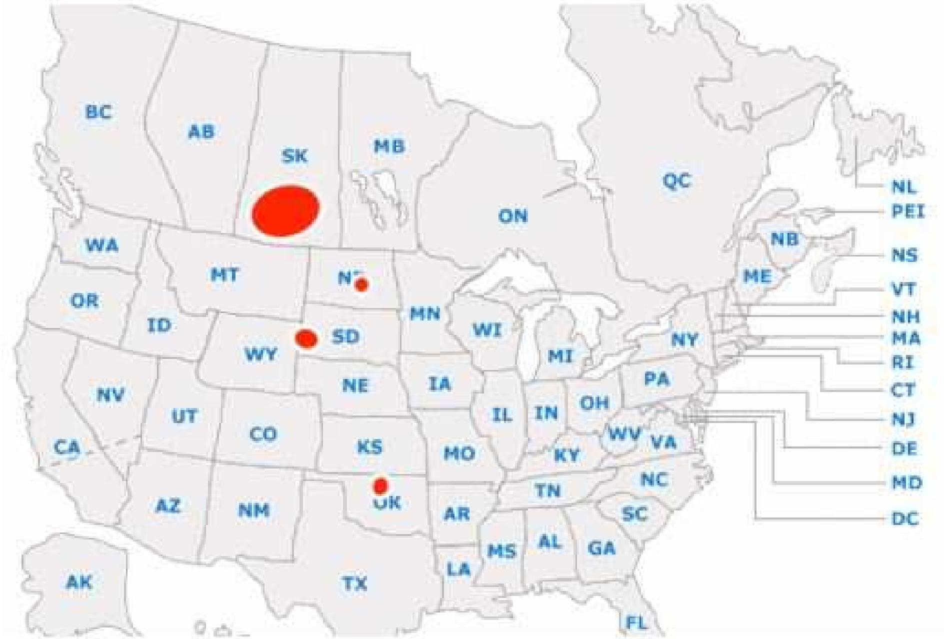
All eyes on North America

With the successful sale of the project rights of the 80 MW "Vivaldi" project to Pattern Energy in FY 2017 PNE has proved that it has a valuable project pipeline in North America. We thus expect the company to capitalize on its pipeline in the coming years and anticipate the next potential project sale as soon as in FY 2018.

We see a particularly good chance of a successful sale of the "Chilocco" wind farm project with a total nominal output capacity of 200 MW. The project is located in Kay County, Oklahoma and PNE has secured the building permission as well as all relevant subsidies for the project, such as the production tax credit, which should enhance the attractiveness of the project. According to CEO Lesser, the project is already in an advanced stage and the company is ready to start negotiations regarding a potential sale.

In addition to the Chilocco project, PNE Wind might reach an agreement with Pattern Energy regarding an expansion of the already sold Vivaldi Springtime project in Montana. Pattern Energy secured an option for an expansion and the company is likely to make a decision on that option in H1 2018. Regardless of an expansion, commissioning of the Vivaldi Springtime project is scheduled for FY 2018, which would trigger another earn-out payment of c. EUR 5m (WRe).

Potential PNE Wind projects in North America



Source: PNE Wind USA, Warburg Research

Projects in France benefiting from strong tailwind

In Europe, PNE Wind is currently ramping up development activities in France. The company already benefited from a strong start in France thanks to a framework agreement with John Laing which encompasses projects with a total volume of 50 MW, which was signed in February 2016. Clearly, that has provided PNE with a head-start in France. As of end of September 2017, the company had two projects with a total output capacity of 32 MW under construction, which are part of the framework agreement with John Laing.

Apart from the framework agreement with John Laing, PNE currently has a 9MW project in France under construction. With the timely sale of the “Longeves” wind-farm project (announced on December 29, 2017) in Q4 2017, the company is likely to attain the high end of the FY 2017 company EBIT guidance range (EUR 17-23m).

Looking ahead to FY 2018, strong deal momentum in France is set to continue as CEO Lesser expects construction of several projects to commence in France next year. Thus, the company is likely to start works on projects with a total capacity of more than 80 MW, which is likely to be shifted into new internally-held European onshore wind-farm portfolio with a targeted volume of more than 200 MW. More importantly, PNE has already secured the planning permission for the French projects and is therefore not required to participate in tenders in order to be allowed to start construction.

Sweden to provide further upside potential

In addition to the US and France, Sweden represented a promising market for PNE in FY 2017 and we expect this to continue. With a well-filled pipeline, consisting of late-stage projects with a total output capacity of 59 MW, the company is well placed to surprise investors with the announcement of new project sales in FY 2018 and 2019. Interestingly, PNE is expecting to conduct the sale of the wind-farms predominantly on the back of power purchase agreements rather than guaranteed feed-in tariffs or subsidies. For instance, the sale of the Laxaskogen wind-farm in Sweden in 2017 was solely based on the customer's expectation of higher electricity prices in the future rather than any government support programme.

Potential milestone payments from the UK to be regarded as an option value

In FY 2015, PNE Wind sold its entire UK subsidiary including its complete UK project pipeline to Brookfield for a total consideration of GBP 103m, of which approx. GBP 40m was paid up front. The pipeline had a total volume of 1.2 GW, with 117 MW already permitted. However, following the first upfront payment, no further payments materialised as the UK administration changed its view on promoting renewable energies and subsidies for onshore wind (for instance via tenders for contract for differences) were cancelled.

Nonetheless, it is our understanding that Brookfield has continued to develop the projects and some of them are currently in the planning permission phase. Hence, some of the outstanding milestone payments might still materialise although we would not expect the entire outstanding balance of GBP 63m to come through. It is also important to note that falling turbine prices raise the economic feasibility of the projects even without the support of subsidies. However, as the timing and amount of these milestone payments is uncertain, we do not consider the realisation of the payments in our estimates and thus regard potential milestone payments from the sale of the UK pipeline as an option value.

Strong footprint in offshore to trigger milestone payments going forward

PNE Wind can be regarded as one of the leading offshore wind project developers with a proven track record of eight successfully sold offshore wind-farms with a total nominal output capacity of 2,852 MW. Of the sold projects, three wind-farms have already been commissioned and are in operation.

As a result of its strong track record, PNE Wind secured milestone payments to the tune of EUR 8m from the offshore space in FY 2016 alone. A milestone payment of EUR 3m was triggered with the financial investment decision by Ørsted (formerly known as Dong Energy) to build Borkum Riffgrund 2. In addition, at the end of FY 2016 Orsted received building consent for Gode Wind 3, which triggered another EUR 5m milestone payment for PNE Wind.

In January 2017, PNE successfully sold Atlantis 1 to Vattenfall for a low double-digit million with the prospects of further milestone payments materializing. The first earn-out might materialize as soon as in FY 2018 if the project successfully participates in the upcoming German offshore tender in April 2018.

Overview of sold offshore projects

Zone	Sold projects	Phase	#WET	Total MW
1	Borkum Riffgrund 1	8	78	312
1	Borkum Riffgrund 2	6	56	448
1	Gode Wind 1 & 2	8 / 8	55 + 42	582
1	Gode Wind 3 & 4	5 / 4	14 + 42	450
2	Atlantis I	3	73	584
4	HTOD5 (Nautilus II)	2	68	476
Total			**428**	**2,852**

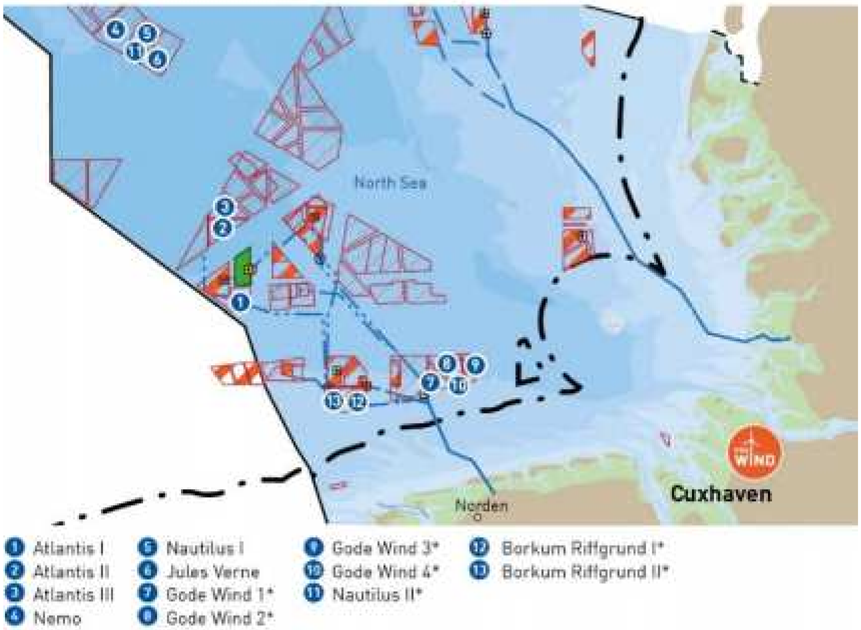
Phase 2= Application conference held, 3 = Hearing held, 4= Approval granted, 5 = Grid connection, 6 = Investment decision, 7 = Under construction, 8 = In operation

Source: PNE Wind, Warburg Research

Moreover, the offshore projects Borkum Riffgrund 2 as well as Gode Wind 3 & 4 are expected to trigger milestone payments of up to EUR 24m in total. We expect an earn-out of EUR 4m to come through already in FY 2019 with the commissioning of Borkum Riffgrund 2 in H1 2019.

Due to regulatory changes, however, projects located in the Zone 3-6 are now required to take part in tenders as part of the "Central model". Thus, the realization of projects such as Atlantis II & III as well as Nemo, Nautius I and Jules Verne looks highly unlikely. We therefore do not expect the sale of still owned offshore wind-farm projects in the foreseeable future.

Nautical chart of all offshore projects of PNE Wind



Source: PNE Wind, Warburg Research

German wind market to rebound in 2018

- Ill-considered tender design in Germany resulted in a sweeping victory for community-owned wind farm projects in FY 2017
- In 2018, citizen-owned wind farms will be required to hold a building permit to participate in German onshore tenders
- Establishment of a level playing field to enable fair competition between tender participants and result in a potential easing of price pressure
- Anticipation of higher wholesale electricity prices to make development of current feed-in tariffs irrelevant

Changes to auction design in 2018 to enable fair competition

Regulatory changes to revive onshore wind in Germany

Bumpy transition to auction model made headlines in 2017

The German onshore wind market has clearly made significant headlines as the shift towards an auction system has resulted in some unforeseen and potentially unintended consequences. Shortly before the implementation of the auction system, the German administration decided to provide citizen-owned wind-farm projects with the following advantages:

1. Citizen-owned wind-farm projects are not required to hold a building permit in order to participate in the onshore wind tender. That represents a massive advantage since receiving a building permit can be regarded as one of the biggest challenges in the development of wind projects.
2. In addition, the projects require a security deposit of a mere EUR 15/kW rather than the standard deposit of EUR 30/kW.
3. In terms of the required commissioning time, the citizen-owned projects have been allowed an additional 24 months for the installation of the wind farms. Thus, these projects have been provided with four years installation time in total rather than the usual two years commissioning time which gives the citizen-owned wind-farm projects sufficient time to bet on the launch of the next generation of turbines, which are likely to come with better energy output at a lower cost.
4. Finally, the citizen-owned wind-farm projects benefited from a crucial advantage during the actual tender. While all other participants compete in a pay-as-bid auction, only receiving the tariff they have bid for, the community-owned projects would automatically receive the highest still successful bid regardless of their actual bid, which might have been significantly lower.

As a result of the numerous privileges mentioned above, the community-owned wind projects conducted significant strategic bidding in order to win the tenders. Consequently, these projects experienced a sweeping victory and won more than 95% of the total tendered volume on average in FY 2017, leaving no chance for the conventional projects with planning approval. However, since these successful projects do not have a building permit on hand, it remains highly uncertain when or if these projects will ever be realized at the assigned tariffs.

Under the circumstances of the tenders in 2017, PNE Wind and other serious project developers struggled to identify an economically feasible case to participate with their own projects. These projects are quite valuable as they have already been granted permission and for demonstrable reasons, the developers have been reluctant to expose their projects to this ill-considered tender system. PNE thus did not participate in any of the three German onshore wind tenders which took place in FY 2017.

Sweeping victory for community-owned wind farms in Germany

	German onshore wind tenders in 2017		
	May 2017	August 2017	November 2017
Tendered volume (MW)	800	1,000	1,000
Submitted bids	265	281	210
Submitted bid volume	2,137	2,927	2,591
Accepted bids	**70**	**67**	**61**
thereof citizen-owned wind farms	**65** (93% in MW)	**60** (95% in MW)	**60** (99% in MW)
Succesful bid prices			
Average support price (EUR ct./kWh)	**5.71**	**4.28**	**3.82**
Lowest bid	4.20	3.50	2.20
Highest bid	5.78	4.29	3.82

Source: Warburg Research

Changes to German tender system to level the playing field

As a result of the disastrous results of the onshore wind tenders in 2017, the German administration decided to make much needed changes to the tender system to level the playing field for participants. Consequently, for the first two tender rounds in 2018, all participants are required to hold a building permit to participate in the auction.

In our view, these changes to the auction system should result in more sensible bidding behaviour as strategic bidding will become almost impossible. Nonetheless, we still expect the first auctions, presumably the first two rounds, to be heavily oversubscribed as we expect there is significant pent-up demand for approval of projects in the industry. Nonetheless, in the second half of the year, pricing should normalise as auction participants become more rational. Hence, PNE should be able to enter the German onshore auctions with its projects in the second half of FY 2018 at the latest.

More importantly, we expect a stabilisation of bidding prices in the upcoming tenders to improve sentiment as well as visibility in the wind industry, which could improve investors' view on the industry in general. Our view with respect to pricing is also supported by statements from the Bundesnetzagentur which has set a new, higher maximum bidding price of EUR 7.0 ct/kWh for the upcoming auction in 2018 even though the maximum bidding price is usually calculated as an average of the highest successful bids of the last three tenders. That, however, would have resulted in a maximum bidding price of a mere EUR 5.0 ct/kWh, which would not reflect the current levelised cost of wind energy, according to the regulator (i.e. would be too low).

Rising electricity prices to render subsidies worthless

Rising electricity prices to change dynamics of the renewables industry

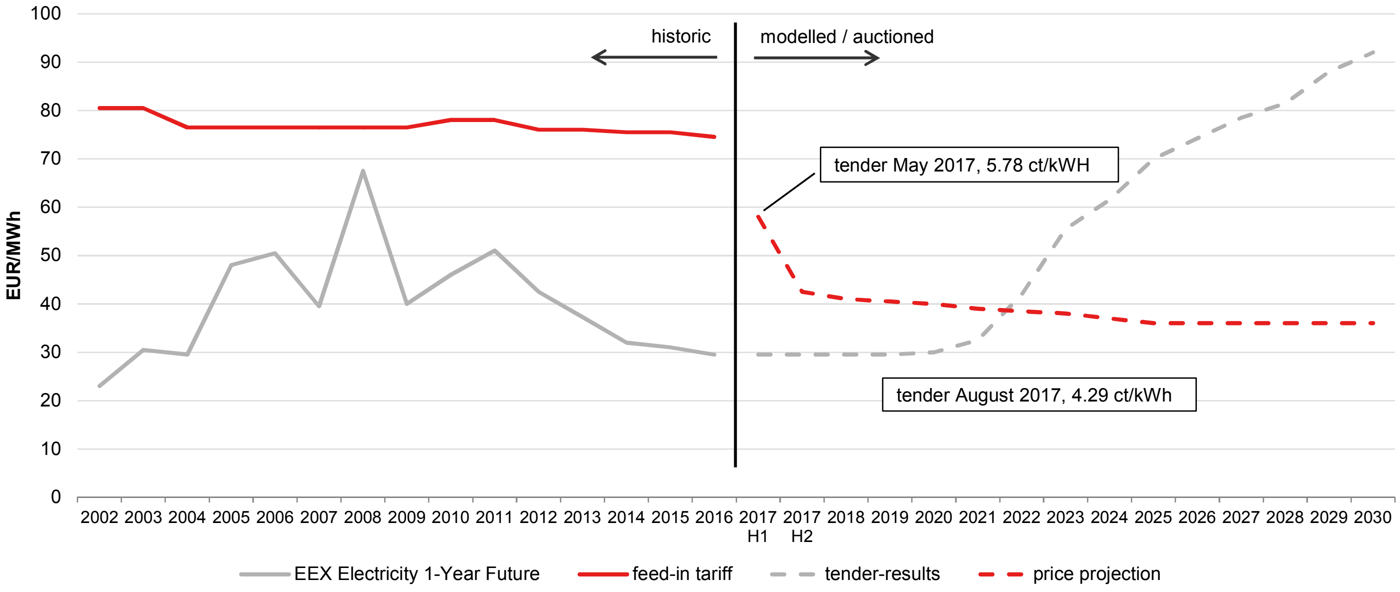
Clearly, the stark drop in auction bidding prices for onshore wind is likely to put the industry under significant pressure. On a more positive note, however, onshore wind has become the lowest cost technology when it comes to electricity production, which creates new opportunities for the industry. That is particularly true in an environment of rising electricity prices.

According to the projections of various sources such as Energy Brainpool, wholesale electricity prices in Germany are set to rise significantly. The expectations are based on the assumption that nuclear plants in Germany will be shut down in FY 2022 and that the current system of CO_2 certificates will be revised by the European Commission (net reduction of CO2 certificates is targeted) which should drive certificate prices.

The chart below illustrates the base case expectation for the price development of wholesale electricity until 2030. According to the two projections, electricity prices are set to surge from 2022 onwards when nuclear plants in Germany are shut down and demand for CO2 certificates is expected to exceed the available number of certificates in Europe for the first time.

In such a scenario, electricity prices would easily exceed guaranteed tariffs from recent onshore wind auctions in Germany. Consequently, these auction results would be rendered worthless as it would become more attractive for a wind-farm operator to sell electricity on the wholesale market rather than selling its electricity under the terms of the German renewable energy act. That would clearly change the dynamics of the entire renewables industry as the new installation of wind-farm capacity would no longer depend on subsidy levels.

Wholesale electricity prices expected to surge from 2021 onwards



Source: Warburg Research

New markets and technologies offer huge market potential

Transformation into an energy solution provider

New strategy unveiled at recent CMD

PNE Wind held its very first CMD on November 15, 2017 in Frankfurt. The company used the opportunity to provide an update on market developments and unveiled new financial targets as well as its new corporate strategy.

New financial targets

During the period FY 2011-2016, the company generated an annual average EBIT result of EUR 29.2m. PNE now aims to boost the annual average EBIT result by 30-50% to EUR 38-44m by FY 2023.

New markets

In addition to current core markets such as Germany, France, Sweden and the US, PNE plans to enter new (emerging) markets. The company targets emerging markets such as Panama and Iran. These markets are likely to experience significant growth in energy demand and therefore require new capacity additions. The company, however, also intends to increase penetration in established markets and plans, for instance, to enter the offshore business in the US or expand its O&M business in France.

New technologies

In our view, management's decision to expand its focus to new technologies such as PV solar, storage and power-to-gas can be regarded as one of the most important changes to the corporate strategy. Management's push towards power-to-gas, for instance, is an attempt to capitalize on steps in the value chain subsequent to electricity generation. The processing and refining of electricity, for instance to store it, is likely to unveil significant growth opportunities. At the same time, PV solar is becoming more and more competitive in terms of its cost structure and PNE is rightly considering benefiting from the deployment of this technology.

Service business

In addition to its new, higher financial targets, the company is striving to reduce the volatility of its annual results. Consequently, PNE aims to expand its service business by growing its operational management business from currently 1,500 MW under management to at least 2,200 MW. The company is also considering acquiring and / or investing in service providers to boost its service business.

New strategy seems sensible

While we acknowledge that some investors might feel overwhelmed by the company's new activities, we share management's view that new business fields are opening up, which should unveil significant new market potential. If the company focuses too narrowly on wind development, it could miss out on new opportunities which will doubtlessly arise. We believe that, in future, customer demands will not be limited to the mere installation of wind turbines but will become more sophisticated, requiring the offering of hybrid solutions (i.e. the combination of electricity generation and storage).

Financials and Returns

- Sale of projects in the US as well as in France and Sweden to drive earnings in FY 2018.
- Significant upside potential to our FY 2018 estimates due to a potential milestone payment if Vattenfall is awarded the right to build Atlantis I in the second German offshore auction round.
- Strong annual average ROCE generation of 12.5% over the last 10 years indicates value creation in excess of cost of capital.
- Long-term annual average ROE generation of 14.7% underlines effective use of shareholders' funds and unveils that current discount to book value is not justified.

Materialization of milestone payments in 2018 present upside risk

Deals to watch out for in 2018 and 2019

Our FY 2018 EBIT estimate of EUR 16m is based on the following assumptions:

1. Pattern Energy is expected to make a further earn-out payment for the Vivaldi project with the expected commissioning of the wind farm in 2018 (EUR 5m WRe).
2. Due to the advanced stage of the 200 MW Chilocco wind-farm in Oklahoma we would anticipate a successful sale of the project rights in 2018.
3. In addition, we expect PNE to sell about two-thirds of its stage three projects in France (total capacity of 82 MW) to third-parties. These projects are already permitted and should therefore attract a high level of interest from potential buyers.
4. A potential successful participation by Vattenfall in the German offshore auction in 2018 would trigger another double-digit million milestone payment for the already sold project Atlantis I. We, however, estimate the probability of a successful bid at below 50% due to the very competitive bidding environment and therefore a milestone payment from Vattenfall is not reflected in our FY 2018 EBIT estimate.
5. Finally, Pattern Energy has secured an option for an expansion of the Vivaldi and a decision on that option is likely in H1 2018

For FY 2019, visibility diminishes quite significantly. Nonetheless, we estimate an EBIT result of EUR 20m. Our estimate is based on the following assumption:

1. An earn-out payment of about EUR 4m from the commissioning of Borkum Riffgrund 2 in H1 2019.
2. Increased profit contribution from electricity sales as power generation surges due to the build-out of the European onshore wind-farm portfolio. We expect total portfolio capacity in FY 2019 to exceed the 100 MW mark. Hence, an EBIT contribution from electricity sales to the tune of at least EUR 5m seems reasonable, in our view.
3. Sale of projects in Italy and South Africa as well as in Poland could drive earnings further.

We expect PNE to deliver its strongest result in FY 2020 with an estimated EBIT result of EUR 92m. Our estimate is based on the following assumptions:

1. The sale of the European onshore wind portfolio in FY 2020 is likely to result in a gross profit of at least EUR 110m (assuming an enterprise value of about EUR 420m for the portfolio)
2. We anticipate further gross profits of EUR 15m to come from electricity sales

as a large portion of the wind portfolio is likely to be in operation by then.

3. Finally, we estimate a gross profit of about EUR 20m to stem from project sales.
4. In terms of costs, we assume opex of c. EUR 45m.

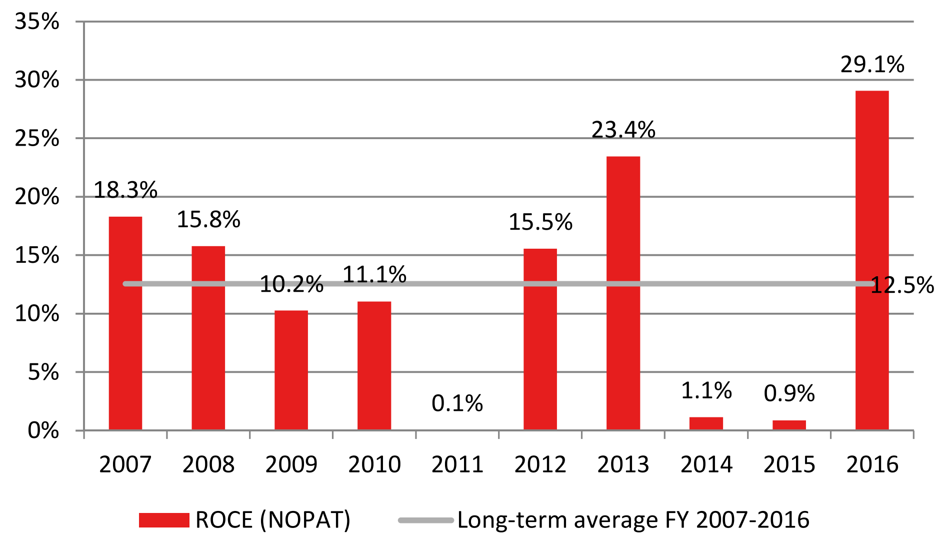
Strong ROCE generation underlines value creation

During our roadshow with CEO Lesser in Copenhagen, PNE's value creation has been an important point of discussion. Due to the lumpy profit generation, which can be attributed to the business model of a project developer, and the ever changing balance sheet, it has been rather challenging for investors to recognize PNE's value generation. We therefore prefer to take a multi-year approach in order to determine PNE's return generation.

Our analysis of PNE's ROCE generation (NOPAT approach) has unveiled an annual average return generation of 12.5% over the last 10 years. Since we estimate PNE's weighted cost of average at 8.95%, the company has clearly created value in excess of the company's cost of capital.

As stated above, the company's ROCE generation between FY 2014-2016 is a reflection of PNE's portfolio strategy. During the build-out of the portfolio, earnings were mostly deferred, which burdened ROCE generation. However, with the successful sale of the portfolio in FY 2016, the company's ROCE generation skyrocketed to almost 30%, underlining the effectiveness of the portfolio strategy.

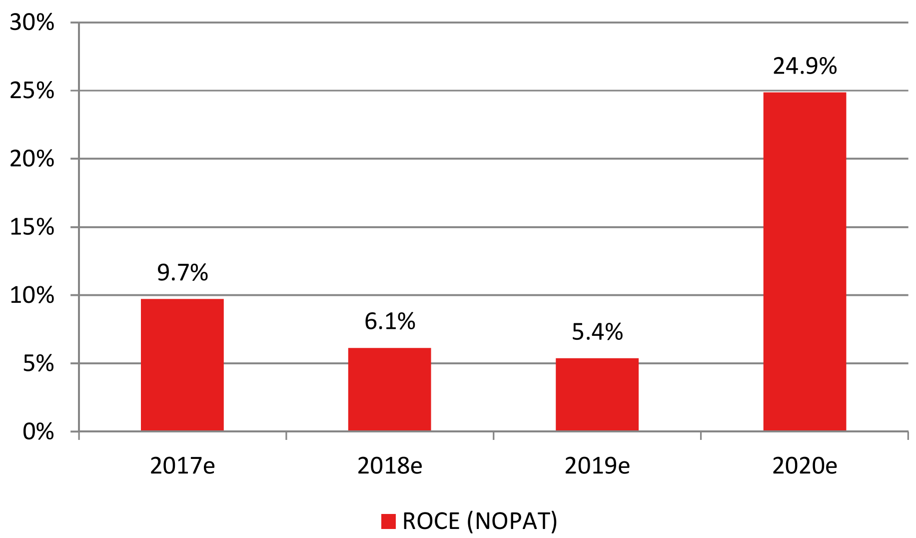
Historical ROCE generation



Source: Warburg Research

It is important to note, that we expect similar development in the years to come due to the new build-out of a 200 MW European wind portfolio. Since we currently expect the sale of the portfolio in FY 2020, PNE's ROCE generation is likely to be burdened by deferred earnings in the years FY 2017-2019. In FY 2020, we expect a stellar surge in ROCE generation to almost 25%, driven by the sale of the portfolio. With an average annual ROCE generation of 11.5% between FY 2017 and 2020, we clearly expect PNE to create value in excess of its cost of capital.

Forecast ROCE generation

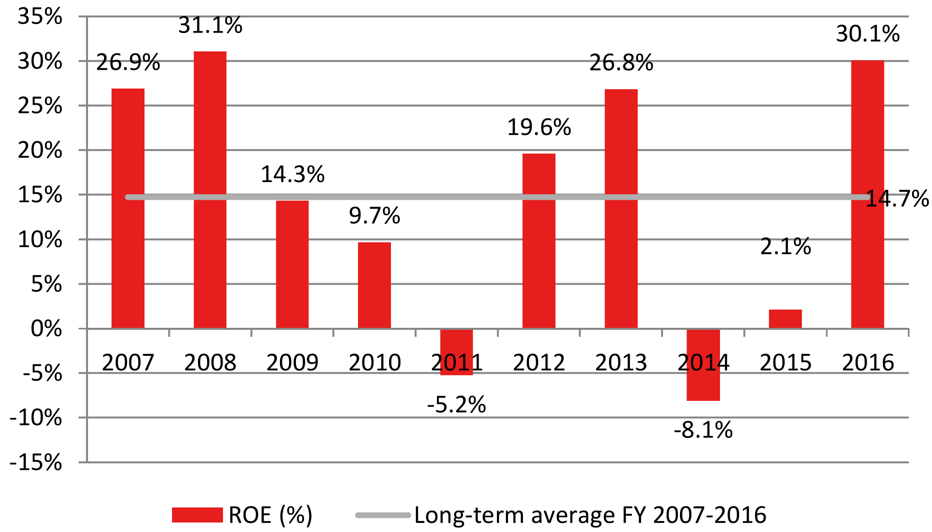


Source: Warburg Research

Shareholders' funds put to effective use

We argue that the shares are trading below book value, which we deem to be unjustified. To support our view, we illustrate PNE Wind's return on equity generation below. The long-term annual average ROE stands at 14.7%, indicating an appropriate return on shareholders' equity.

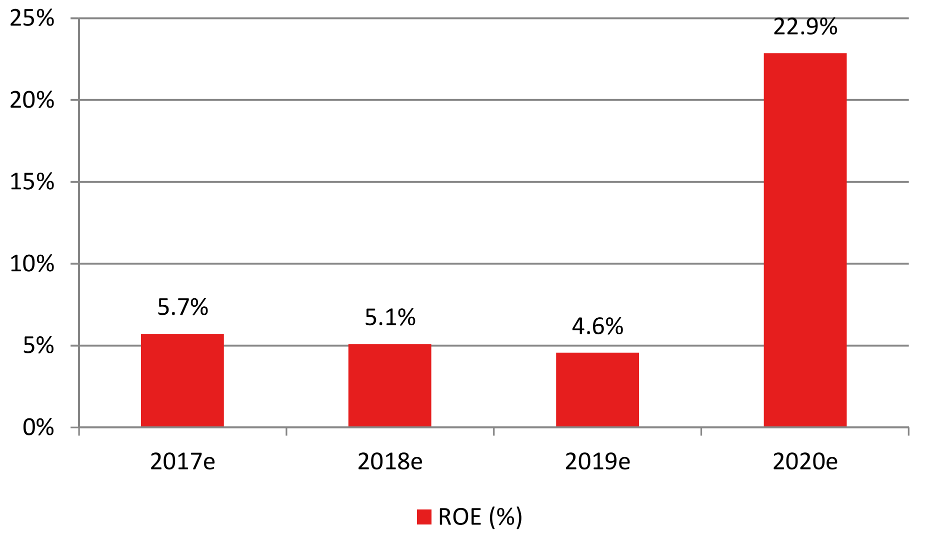
Historical ROE generation



Source: Warburg Research

Looking ahead, we expect the company to generate an annual average ROE of 10% between FY 2017 and 2020.

Forecast ROE generation until FY 2020



Source: Warburg Research

Balance Sheet

- PNE's balance sheet underwent a substantial transformation from a net debt position of EUR 174m at the end of FY 2015 to a net cash position of EUR 20m within one year solely owing to the successful sale of its wind-farm portfolio to AGI.
- Sizeable cash position of c. EUR 190m in FY 2017 (WRe) to ensure comfortable repayment of outstanding bond with a total volume of EUR 100m in June 2018.
- Build-out of internally-held wind-farm portfolio, however, is likely to put pressure on the balance sheet once again until the planned sale of the portfolio in 2020.

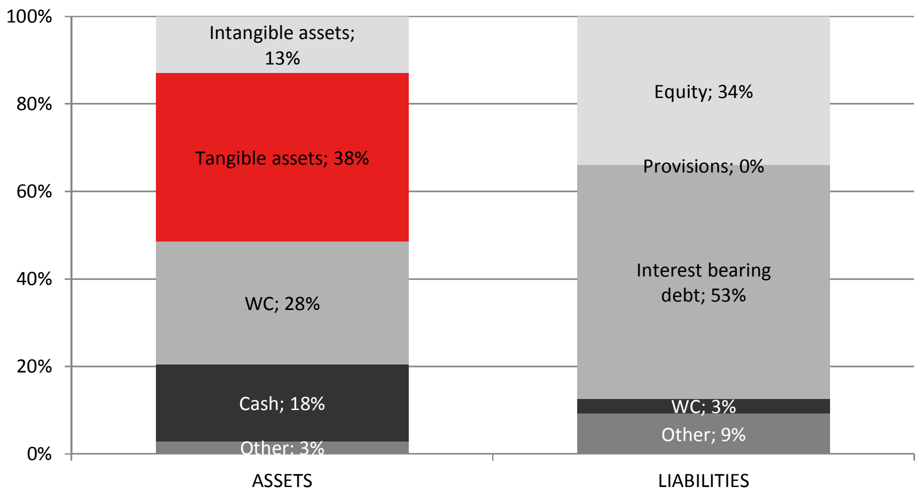
Strong balance sheet to facilitate portfolio strategy

How to read PNE's balance sheet

Before elaborating on PNE's current balance sheet structure and the upcoming repayment of the outstanding EUR 100m bond in 2018, we illustrate the recent transformation of PNE's balance sheet as this unveils the likely development of the company's balance sheet in the coming years.

At the end of FY 2015, the company's balance sheet was characterised by rather low liquidity of EUR 86m, a net debt position of EUR 174m and an equity ratio of 34%. Most of the company's assets were bundled in the property, plant & equipment line. That was attributable to the re-classification of commissioned wind-farms from inventories to fixed assets and, as a result, long-term assets increased from a mere EUR 73m in 2014 to EUR 167m at the end of FY 2015. Hence, the portfolio projects were accounted as PP&E once the construction of the portfolio projects was concluded. Remaining projects in progress were accounted for as inventories (EUR 121m). In short, the build-out of the internally-held wind-farm portfolio put the balance sheet under enormous pressure. The value generation, however, was reflected in the long-term asset line. Hence, one should not look at the liability side of the balance sheet and the corresponding net debt position and equity ratio without considering the value increase in the long-term assets.

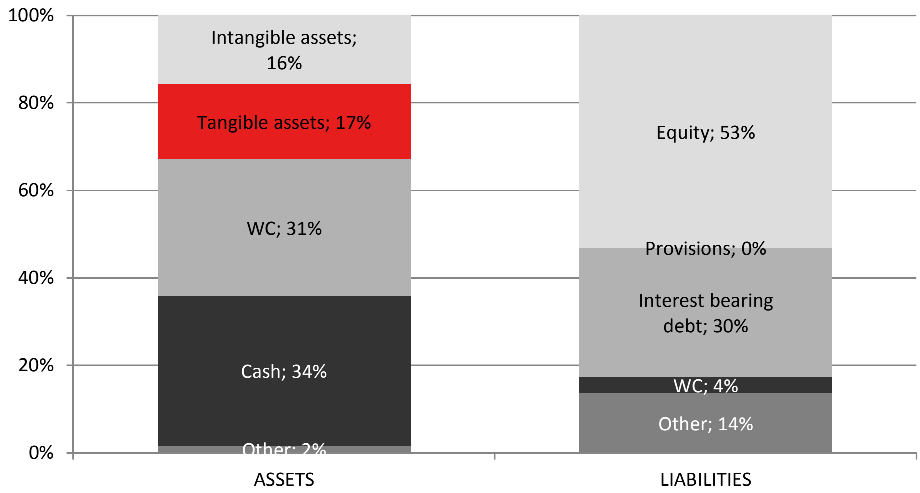
Balance sheet overview (as of December 31, 2015) before portfolio sale



Source: Warburg Research

With the successful sale of the 142.5 MW portfolio to AGI in December 2016, PNE's balance sheet structure changed dramatically for the better. An 80% stake in the portfolio was sold to AGI at an enterprise value of c. EUR 330m. PNE received a cash payment of close to EUR 100m while at the same time short-term and long-term liabilities on the balance sheet dropped significantly as AGI took ownership of the portfolio liabilities. That one single transaction led to a decline in long-term assets from previously EUR 167m to a mere EUR 39m and a stellar surge in the liquidity position from EUR 86m in 2015 to EUR 148m at the end of FY 2015. Thus, the company moved into a net cash position of EUR 20m while the equity ratio increased significantly to 53% thanks to the realized profits from the portfolio sale.

Balance sheet overview after portfolio sale (end of FY 2016)



Source: Warburg Research

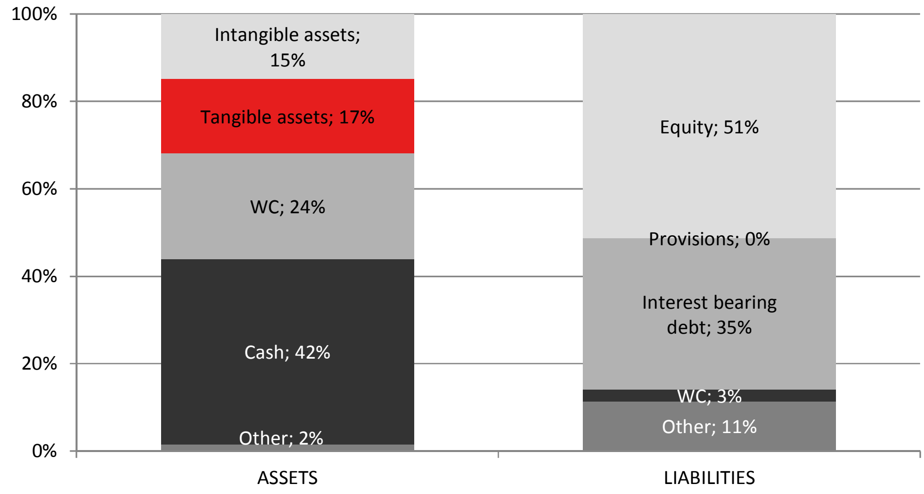
It is important to understand the development of the balance sheet throughout the build-out phase and sale of the portfolio since we expect a similar development with the current portfolio which is expected to reach a size of at least 200 MW before the expected sale in FY 2020.

Repayment of bond in 2018 should not be an issue

We expect the company to have brought FY 2017 to a close with a strong liquidity position of EUR 190m and a very comforting equity ratio of more than 50%. Our estimate is based on the successful sale of PNE's remaining 20% stake in the wind portfolio to majority owner AGI. On December 28, the company announced the conclusion of the transaction for a total consideration of EUR 23m, boosting the company's already strong liquidity situation even further.

Consequently, we expect PNE to fully repay its outstanding bond. The bond has a total nominal value of EUR 100m and is due for repayment in June 2018. The full repayment should reduce interest costs by about EUR 8m p.a. as the annual coupon amounted to 8%. At the same time we expect the company to secure a bank loan of around EUR 75m in 2018 at an interest rate of 3.5%.

Balance sheet forecast (end of FY 2017)

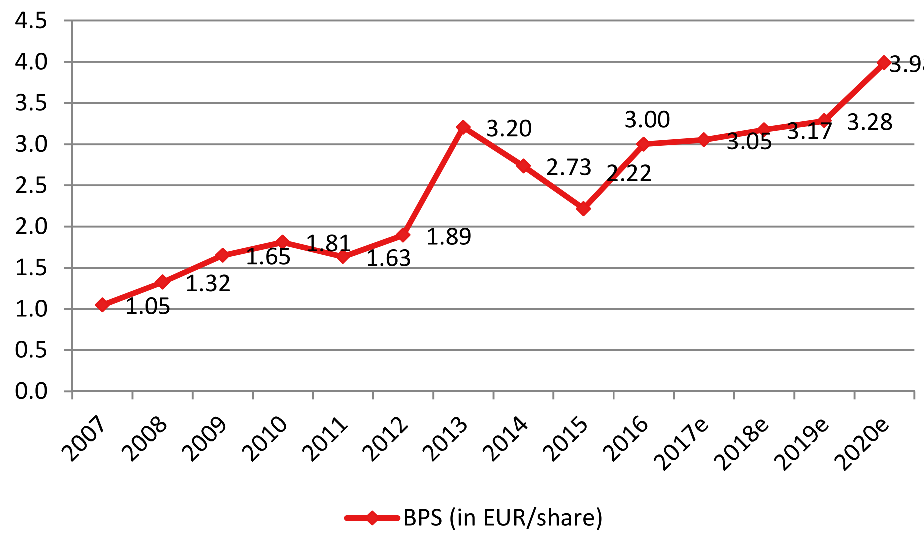


Source: Warburg Research

Book value looks reliable

Generally, we see very limited downside risk to the company's book value which we estimate at EUR 3.05 per share at the end of FY 2017. Hence, we regard the book value of the company as a reliable indicator for the value generation of the company.

Forecast development of book value per share (in EUR)



Source: Warburg Research

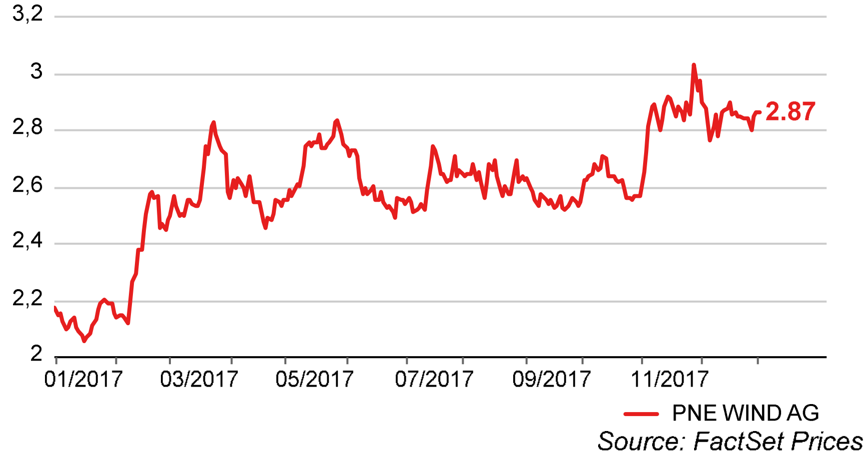
However, assuming a worst-case scenario, the company would have to impair its unfinished goods in the offshore business due to a sudden regulatory change (introduction of new Offshore Wind Energy Act in 2017). PNE has filed a constitutional complaint against the legislation and management expects the complaint might very likely, at least result, in the compensation for damages incurred by PNE Wind. Should the German constitutional court, however, decide against a reimbursement of the costs already incurred, PNE would have to write off the projects concerned. That would result in a maximum impairment of EUR 23.6m. That would still imply a risk-adjusted book value of EUR 2.81 per share, pointing to very limited downside risk from today's share price levels and a maximum drop in the company's book value of about 8%.

Share Price

Decent performance in 2017

PNE Wind represented a much welcome exception among the German wind players in 2017 with a total share price increase of c. 33%. Adding the paid out dividend of EUR 0.12 per share, the shares generated a whopping total return of 39% in FY 2017.

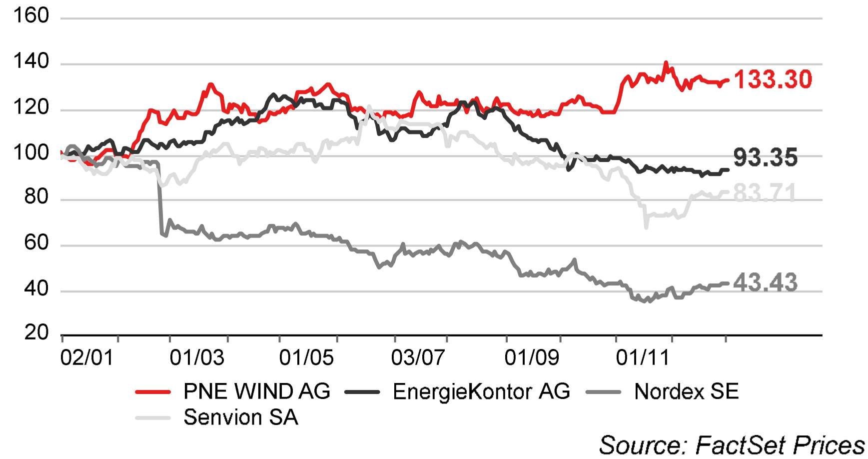
PNE Wind share price development in 2017



Source: Warburg Research

That is particularly impressive if one considers the share price development of other German wind names. Due to a lack of listed wind project developers, we compare PNE's price performance in 2017 to the track record of companies active in the wind industry such as Energiekontor (onshore wind project developer as well as operator of wind-farms) and German wind OEMs such as Nordex and Senvion. As can be seen from the chart below, all other names have suffered in 2017, mainly due to the disappointing results of the first onshore wind tenders in Germany and a general acceleration of price pressure in the equipment business due to the global shift towards auction systems across all regions.

Indexed share price development of PNE Wind vs German wind peers



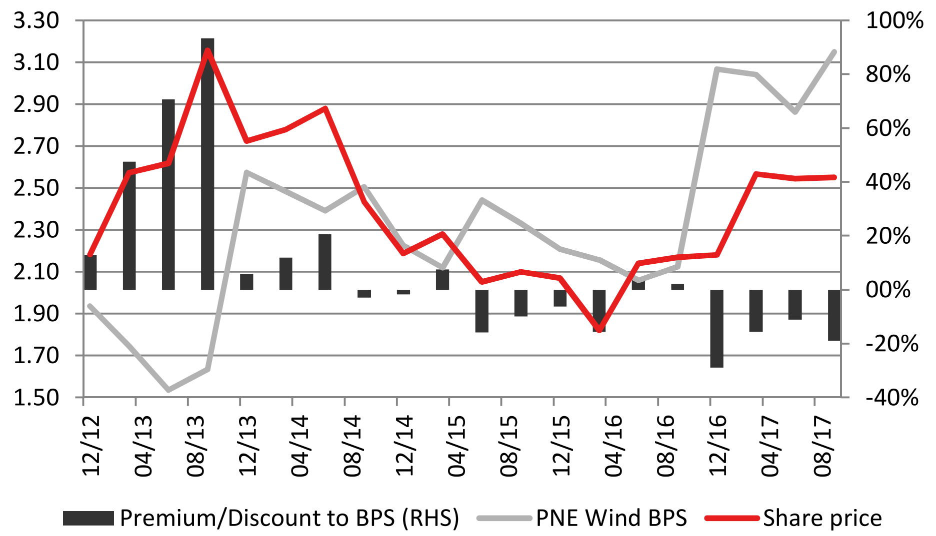
Source: Warburg Research

Discount to book value is not structural and should reverse

Despite the strong share price development in 2017, the shares continue to trade at a discount to the book value, which stood at EUR 3.15 per share at the end of September 2017 and which we estimate at c. EUR 3.12 at the end of the fiscal year. Interestingly, from a historical point of view, that was not always the case. In 2013 as well as in H1 2014 the stock traded at a significant premium to its book value. That trend, however, reversed ultimately with the disastrous AGM in June 2015, which damaged investor confidence in the company.

In our view, however, a replacement of the entire supervisory board and the appointment of Mr Lesser as CEO of PNE Wind as well as the strong deal track record in FY 2016 and 2017 are likely to translate into a convergence of the share price to the book value of the company. We do not regard the discount as a structural issue due to PNE's business model but rather as the absence of a leap of faith and this can be reversed. Moreover, as outlined earlier in this note, decent ROE generation at PNE would allow the shares to trade at least at a slight premium to the book value.

Discount to book value continues to indicate further upside potential



Source: Warburg Research

Valuation

- As an alternative method of valuation, we have derived a prudent probability-weighted value for the company's onshore project pipeline, which we estimate at EUR 223m.
- That approximation, however, does not include milestone payments of EUR 24m from the sale of offshore wind farms. Nor does it account for a new project being added to the pipeline in the coming years.
- In order to derive our price target, we use absolute valuation by way of DCF, which results in a PT of EUR 3.50.
- Due to the company's very volatile earnings generation, a characteristic of the project development business and further exacerbated by the portfolio strategy, we advise against using relative valuation.

Valuation of onshore pipeline represents floor value

Different valuation methods indicate undervaluation

Approximation of onshore project pipeline value

As a result of PNE's lumpy earnings generation and rather limited visibility due to the company's project development business, many investors struggle to come up with their own valuation of the company. Thus, as an alternative method of valuation, we have attempted to derive an approximation of the value of PNE's onshore project pipeline. In order to do that, we have defined realisation opportunities for projects in each stage. That, in turn, provides us with a probability-weighted project pipeline. We then assume that each MW is worth EUR 0.2m on average in order to estimate the value of the project pipeline.

Derivation of onshore pipeline value

Country	Project phase			in MW
	I-II	III	IV	Total
Germany	1,347	88	53	1,488
France	292	82	41	415
Bulgaria	121	0	0	121
Canada	555	0	0	555
Hungary	0	42	0	42
Romania	54	102	0	156
Turkey	700	0	0	700
UK	43	0	0	43
US	232	200	0	432
Sweden	99	59	0	158
South Africa	170	30	0	200
Italy	102	14	0	116
Poland	223	42	0	265
Total	**3,938**	**659**	**94**	**4,691**
probability (WRe):	15%	65%	100%	
MW to be realised	591	428	94	1,113
Value of pipeline (EBIT):	**223**	**EUR m (assuming an EBIT of 0.2m/MW)**		

Source: PNE Wind, Warburg Research

Brief description of the individual stages:

1. Stage I-II: Exploration & Development phase. As projects in this category are in the very early stages, the probability of realization can be regarded as quite low. On the positive side, projects at this stage require low investment and thus the size of potential sunk costs can be considered as negligible. Nonetheless, our assumption of a mere 15% chance of realization can be regarded as very conservative.

2. Stage III: Planning. Projects in stage three are clearly in an advanced stage. Some of the projects, such as the French projects, have already been permitted and therefore have a significantly higher chance of being realized. The chances of realization of projects in this stage can range from around 40% to more than 80% for projects with a building permit on hand. We estimate an average 65% chance of realization for stage-three projects.
3. Stage IV: Construction till handover. Projects in the final stage are already under construction and in the process of being realized (100% probability).

Based on the assumptions above, our valuation method points to a value of EUR 223m for PNE's project pipeline. This approach, however, has several shortcomings and we therefore regard this as an absolute floor value for PNE:

1. The probability-weighted project pipeline represents a mere snapshot and does not consider new projects likely to be added to the pipeline in the coming years. Therefore this approach does not consider a terminal value for the company either.
2. Our estimate of the value of the onshore project pipeline does not consider outstanding milestone payments. For instance, already sold offshore projects, PNE is set to receive milestone payments to the tune of EUR 24m from already sold offshore projects (e.g. Borkum Riffgrund 2, Gode Wind 3). Hence, investors are advised to consider these milestone payments in their calculations.
3. Finally, our approach does not reflect that PNE's portfolio strategy is likely to attract a higher price per MW than a separate sale of each project. For instance, PNE realized an EBIT result of more than EUR 0.5m for the sale of its 142.5 MW wind portfolio to Allianz Global Investors in 2016.

DCF valuation

We advise against using relative valuation as a valuation method for PNE Wind due to the characteristics of the project development business, which results in very volatile and lumpy earnings development. Hence, target EV/EBITDA or EV/EBIT multiples would translate into entirely different valuations from one year to another.

We prefer to use absolute valuation, by way of DCF, although modelling cash flows for a business like PNE's admittedly represents a challenge. Our DCF-based price target of EUR 3.50 is based on the following assumptions:

- We assume peak sales growth of 2% during the transitional period and a sustainable growth rate of 1.5% in perpetuity.
- In terms of profitability, we assume a peak EBIT margin of 11% during the transitional period with a steady decline to a long-term sustainable EBIT margin of 8% for our terminal growth assumption.
- Net cash of EUR 25m (as reported in FY 2016)
- WACC of 8.95%, implying a risk-free rate of 1.5%, a market premium of 5.5% and a beta of 1.76.

DCF model

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	
Sales	110.7	124.1	121.1	242.2	133.2	135.9	138.6	141.4	144.2	147.1	150.0	153.0	155.3	
Sales change	*-55.5 %*	*12.1 %*	*-2.4 %*	*100.0 %*	*-45.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*1.5 %*	*1.5 %*
EBIT	22.0	16.0	20.0	92.0	14.7	14.9	13.9	14.1	13.0	13.2	12.8	13.0	13.2	
EBIT-margin	*19.9 %*	*12.9 %*	*16.5 %*	*38.0 %*	*11.0 %*	*11.0 %*	*10.0 %*	*10.0 %*	*9.0 %*	*9.0 %*	*8.5 %*	*8.5 %*	*8.5 %*	
Tax rate (EBT)	*10.0 %*	*10.0 %*	*18.0 %*	*21.0 %*	*22.0 %*	*23.0 %*	*24.0 %*	*25.0 %*	*25.0 %*	*25.0 %*	*25.0 %*	*25.0 %*	*25.0 %*	
NOPAT	19.8	14.4	16.4	72.7	11.4	11.5	10.5	10.6	9.7	9.9	9.6	9.8	9.9	
Depreciation	6.0	9.0	12.0	12.0	12.2	12.5	12.7	13.0	13.2	13.5	13.8	14.1	14.0	
in % of Sales	*5.4 %*	*7.3 %*	*9.9 %*	*5.0 %*	*9.2 %*	*9.2 %*	*9.2 %*	*9.2 %*	*9.2 %*	*9.2 %*	*9.2 %*	*9.2 %*	*9.0 %*	
Changes in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Change in Liquidity from														
- Working Capital	-21.4	12.0	20.0	-8.9	-1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.4	
- Capex	10.5	10.5	10.5	9.7	10.0	10.2	10.4	10.6	10.1	9.6	9.8	9.2	9.3	
Capex in % of Sales	*9.5 %*	*8.5 %*	*8.7 %*	*4.0 %*	*7.5 %*	*7.5 %*	*7.5 %*	*7.5 %*	*7.0 %*	*6.5 %*	*6.5 %*	*6.0 %*	*6.0 %*	
Other	0.0	0.0	0.0	0.0	-15.0	0.0	0.0	-15.0	0.0	0.0	-15.0	0.0	-15.0	
Free Cash Flow (WACC Model)	36.7	0.9	-2.1	83.9	29.9	12.8	11.9	27.0	11.9	12.9	27.6	13.6	29.2	11
PV of FCF	36.7	0.8	-1.8	64.9	21.2	8.4	7.1	14.8	6.0	6.0	11.7	5.3	10.4	51
share of PVs	14.76 %			64.32 %										20.92 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	40.00 %	Financial Strength	1.50
Cost of debt (after tax)	5.6 %	Liquidity (share)	1.30
Market return	7.00 %	Cyclicality	2.00
Risk free rate	1.50 %	Transparency	1.80
		Others	2.20
WACC	**8.95 %**	**Beta**	**1.76**

Valuation (m)

Present values 2029e	192		
Terminal Value	51		
Financial liabilities	128		
Pension liabilities	0		
Hybrid capital	0		
Minority interest	-5		
Market val. of investments	0		
Liquidity	148	No. of shares (m)	76.6
Equity Value	**268**	**Value per share (EUR)**	**3.50**

Sensitivity Value per Share (EUR)

		Terminal Growth						
Beta	WACC	0.75 %	1.00 %	1.25 %	**1.50 %**	1.75 %	2.00 %	2.25 %
2.06	9.9 %	3.21	3.23	3.24	3.26	3.27	3.29	3.31
1.91	9.4 %	3.32	3.34	3.35	3.37	3.39	3.41	3.43
1.84	9.2 %	3.38	3.39	3.41	3.43	3.45	3.48	3.50
1.76	8.9 %	3.44	3.45	3.47	**3.50**	3.52	3.54	3.57
1.68	8.7 %	3.50	3.52	3.54	3.56	3.59	3.62	3.65
1.61	8.4 %	3.56	3.59	3.61	3.64	3.67	3.70	3.73
1.46	7.9 %	3.71	3.74	3.76	3.80	3.83	3.87	3.91

		Delta EBIT-margin						
Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	**+0.0 pp**	+0.5 pp	+1.0 pp	+1.5 pp
2.06	9.9 %	2.99	3.08	3.17	3.26	3.35	3.43	3.52
1.91	9.4 %	3.09	3.19	3.28	3.37	3.46	3.56	3.65
1.84	9.2 %	3.15	3.24	3.34	3.43	3.53	3.62	3.72
1.76	8.9 %	3.20	3.30	3.40	**3.50**	3.59	3.69	3.79
1.68	8.7 %	3.26	3.36	3.46	3.56	3.67	3.77	3.87
1.61	8.4 %	3.32	3.43	3.53	3.64	3.74	3.85	3.95
1.46	7.9 %	3.46	3.57	3.68	3.80	3.91	4.02	4.13

Valuation

	2013	2014	2015	2016	2017e	2018e	2019e
Price / Book	0.9 x	1.0 x	1.0 x	0.7 x	1.0 x	0.9 x	0.9 x
Book value per share ex intangibles	1.60	1.34	1.38	2.19	2.24	2.36	2.47
EV / Sales	1.8 x	1.3 x	3.1 x	0.6 x	1.7 x	2.0 x	2.5 x
EV / EBITDA	5.2 x	23.9 x	17.3 x	1.2 x	6.8 x	9.8 x	9.6 x
EV / EBIT	5.9 x	100.2 x	34.9 x	1.4 x	8.7 x	15.4 x	15.3 x
EV / EBIT adj.*	5.9 x	100.2 x	34.9 x	1.4 x	8.7 x	15.4 x	15.3 x
P / FCF	n.a.	n.a.	n.a.	1.4 x	n.a.	n.a.	n.a.
P / E	3.1 x	n.a.	44.5 x	2.3 x	17.6 x	18.8 x	20.0 x
P / E adj.*	3.1 x	n.a.	44.5 x	2.3 x	17.6 x	18.8 x	20.0 x
Dividend Yield	5.6 %	1.5 %	2.2 %	5.9 %	1.3 %	1.3 %	1.3 %
FCF Potential Yield (on market EV)	17.4 %	0.0 %	4.5 %	64.0 %	9.8 %	6.4 %	7.2 %

*Adjustments made for: -

Company Specific Items

	2013	2014	2015	2016	2017e	2018e	2019e
P / E diluted	4.2	n.a.	57.6	3.3	16.9	18.0	19.2
Pipeline onshore	5,872	n.a.	4,916	4,819	4,845	n.a.	n.a.
Pipeline offshore (own projects)	2,640	n.a.	2,640	0	2,852	n.a.	n.a.

Consolidated profit & loss

In EUR m	2013	2014	2015	2016	2017e	2018e	2019e
Sales	**144.0**	**211.3**	**109.5**	**248.6**	**110.7**	**124.1**	**121.1**
Change Sales yoy	70.6 %	46.7 %	-48.2 %	127.0 %	-55.5 %	12.1 %	-2.4 %
Increase / decrease in inventory	15.0	19.1	116.1	1.6	15.0	80.0	90.0
Own work capitalised	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Sales	**159.0**	**230.3**	**225.6**	**250.2**	**125.7**	**204.1**	**211.1**
Material expenses	71.9	170.5	154.9	97.0	58.7	133.1	132.1
Gross profit	**87.1**	**59.9**	**70.7**	**153.2**	**67.0**	**71.0**	**79.0**
Gross profit margin	*60.5 %*	*28.3 %*	*64.5 %*	*61.6 %*	*60.5 %*	*57.2 %*	*65.2 %*
Personnel expenses	21.6	27.0	29.3	25.4	24.0	25.5	26.5
Other operating income	3.1	3.6	7.7	9.1	9.0	4.0	5.0
Other operating expenses	17.4	25.2	29.5	26.9	24.0	24.5	25.5
Unfrequent items	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBITDA	**51.2**	**11.2**	**19.7**	**110.0**	**28.0**	**25.0**	**32.0**
Margin	*35.6 %*	*5.3 %*	*18.0 %*	*44.2 %*	*25.3 %*	*20.1 %*	*26.4 %*
Depreciation of fixed assets	6.2	8.5	9.9	12.9	6.0	9.0	12.0
EBITA	**45.0**	**2.7**	**9.8**	**97.1**	**22.0**	**16.0**	**20.0**
Amortisation of intangible assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Goodwill amortisation	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EBIT	**45.0**	**2.7**	**9.8**	**97.0**	**22.0**	**16.0**	**20.0**
Margin	*31.3 %*	*1.3 %*	*8.9 %*	*39.0 %*	*19.9 %*	*12.9 %*	*16.5 %*
EBIT adj.	**45.0**	**2.7**	**9.8**	**97.0**	**22.0**	**16.0**	**20.0**
Interest income	1.2	2.4	1.7	1.1	0.5	1.5	1.5
Interest expenses	10.6	14.9	16.4	17.3	10.5	8.0	12.0
Other financial income (loss)	0.0	5.5	0.3	0.7	0.6	2.0	2.0
EBT	**35.7**	**-15.2**	**-5.0**	**81.6**	**12.6**	**11.5**	**11.5**
Margin	*24.8 %*	*-7.2 %*	*-4.5 %*	*32.8 %*	*11.4 %*	*9.3 %*	*9.5 %*
Total taxes	-2.8	3.1	-3.6	14.5	1.3	1.2	2.1
Net income from continuing operations	**38.5**	**-18.3**	**-1.4**	**67.1**	**11.3**	**10.4**	**9.4**
Income from discontinued operations (net of tax)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income before minorities	**38.5**	**-18.3**	**-1.4**	**67.1**	**11.3**	**10.4**	**9.4**
Minority interest	-2.2	-5.3	-4.9	-1.9	-2.0	-2.0	-2.0
Net income	**40.7**	**-13.0**	**3.5**	**69.0**	**13.3**	**12.4**	**11.4**
Margin	*28.2 %*	*-6.2 %*	*3.2 %*	*27.7 %*	*12.1 %*	*10.0 %*	*9.4 %*
Number of shares, average	47.3	58.6	74.9	76.6	76.6	76.6	76.6
EPS	**0.86**	**-0.22**	**0.05**	**0.90**	**0.17**	**0.16**	**0.15**
EPS adj.	0.86	-0.22	0.05	0.91	0.17	0.16	0.15

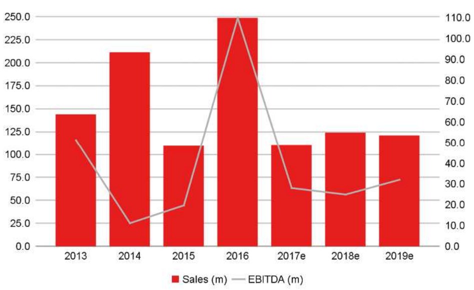
*Adjustments made for:

Guidance: PNE (incl. WKN): 2017 EBIT result in a range of EUR 17-23m

Financial Ratios

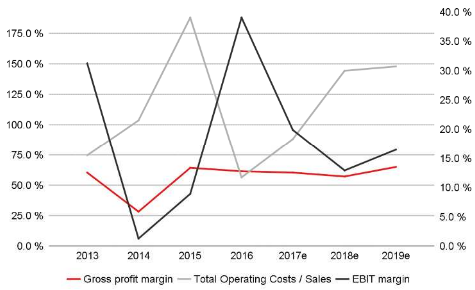
	2013	2014	2015	2016	2017e	2018e	2019e
Total Operating Costs / Sales	74.9 %	103.7 %	188.0 %	56.4 %	88.3 %	144.3 %	147.9 %
Operating Leverage	1.7 x	-2.0 x	-5.5 x	7.0 x	1.4 x	-2.3 x	-10.3 x
EBITDA / Interest expenses	4.9 x	0.8 x	1.2 x	6.3 x	2.7 x	3.1 x	2.7 x
Tax rate (EBT)	-7.9 %	-20.7 %	71.9 %	17.7 %	10.0 %	10.0 %	18.0 %
Dividend Payout Ratio	18.5 %	n.m.	n.m.	13.7 %	27.0 %	29.6 %	32.5 %
Sales per Employee	738,462	1,030,576	497,836	1,057,774	471,064	528,085	515,319

Sales, EBITDA
in EUR m



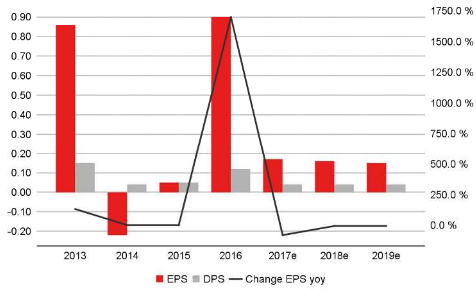
Source: Warburg Research

Operating Performance
in %



Source: Warburg Research

Performance per Share



Source: Warburg Research

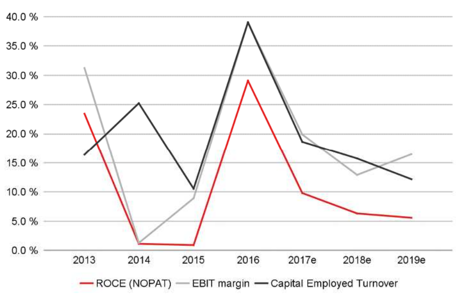
Consolidated balance sheet

In EUR m	2013	2014	2015	2016	2017e	2018e	2019e
Assets							
Goodwill and other intangible assets	56.3	63.9	63.1	67.4	67.4	67.4	67.4
thereof other intangible assets	4.0	4.0	4.0	4.0	4.0	4.0	4.0
thereof Goodwill	52.3	60.4	60.4	63.4	63.4	63.4	63.4
Property, plant and equipment	76.1	73.7	167.3	39.2	68.7	120.2	168.7
Financial assets	9.5	2.0	3.2	28.5	5.5	5.5	5.5
Other long-term assets	0.0	10.3	17.4	7.1	1.0	1.0	1.0
Fixed assets	**141.9**	**149.9**	**251.1**	**142.2**	**142.6**	**194.1**	**242.6**
Inventories	145.9	152.4	121.2	112.9	90.0	110.0	130.0
Accounts receivable	58.0	29.1	15.6	22.1	20.0	20.0	20.0
Liquid assets	77.7	72.1	86.1	147.7	195.7	133.0	72.9
Other short-term assets	10.6	13.3	14.3	7.0	7.0	7.0	7.0
Current assets	**292.1**	**266.9**	**237.2**	**289.8**	**312.7**	**270.0**	**229.9**
Total Assets	**434.0**	**416.8**	**488.3**	**432.0**	**455.3**	**464.1**	**472.5**
Liabilities and shareholders' equity							
Subscribed capital	54.3	72.0	76.6	76.6	76.6	76.6	76.6
Capital reserve	54.9	77.8	82.3	82.3	82.3	82.3	82.3
Retained earnings	35.0	10.7	11.0	76.9	81.1	90.4	98.7
Other equity components	-0.2	-0.3	-0.8	-1.0	-1.0	-1.0	-1.0
Shareholders' equity	144.0	160.2	169.0	234.8	238.9	248.2	256.6
Minority interest	7.5	0.0	-3.1	-5.4	-5.4	-5.4	-5.4
Total equity	**151.5**	**160.2**	**165.9**	**229.4**	**233.5**	**242.8**	**251.2**
Provisions	12.2	13.5	15.7	11.9	4.8	4.8	4.8
thereof provisions for pensions and similar obligations	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial liabilities (total)	214.4	187.2	260.3	127.6	157.6	149.1	149.1
thereof short-term financial liabilities	39.0	33.1	35.9	2.2	2.2	2.2	2.2
Accounts payable	12.1	21.5	16.9	15.7	12.0	20.0	20.0
Other liabilities	43.8	34.5	29.5	47.4	47.4	47.4	47.4
Liabilities	**282.5**	**256.6**	**322.3**	**202.6**	**221.8**	**221.3**	**221.3**
Total liabilities and shareholders' equity	**434.0**	**416.8**	**488.3**	**432.0**	**455.3**	**464.1**	**472.5**

Financial Ratios

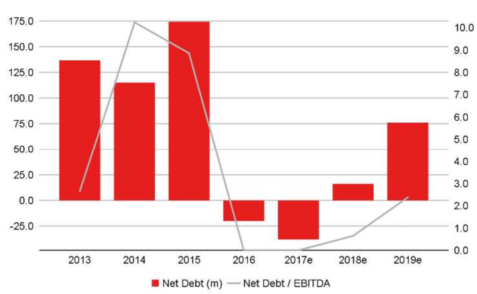
	2013	2014	2015	2016	2017e	2018e	2019e
Efficiency of Capital Employment							
Operating Assets Turnover	0.5 x	0.9 x	0.4 x	1.6 x	0.7 x	0.5 x	0.4 x
Capital Employed Turnover	0.5 x	0.8 x	0.3 x	1.2 x	0.6 x	0.5 x	0.4 x
ROA	28.7 %	-8.7 %	1.4 %	48.5 %	9.4 %	6.4 %	4.7 %
Return on Capital							
ROCE (NOPAT)	23.4 %	1.1 %	0.9 %	29.1 %	9.8 %	6.3 %	5.6 %
ROE	34.8 %	-8.5 %	2.1 %	34.2 %	5.6 %	5.1 %	4.5 %
Adj. ROE	34.8 %	-8.5 %	2.1 %	34.7 %	5.6 %	5.1 %	4.5 %
Balance sheet quality							
Net Debt	136.7	115.1	174.2	-20.1	-38.1	16.1	76.2
Net Financial Debt	136.7	115.1	174.2	-20.1	-38.1	16.1	76.2
Net Gearing	90.3 %	71.8 %	105.0 %	-8.7 %	-16.3 %	6.6 %	30.3 %
Net Fin. Debt / EBITDA	267.0 %	1024.2 %	886.0 %	n.a.	n.a.	64.4 %	238.1 %
Book Value / Share	2.6	2.2	2.2	3.1	3.1	3.2	3.4
Book value per share ex intangibles	1.6	1.3	1.4	2.2	2.2	2.4	2.5

ROCE Development



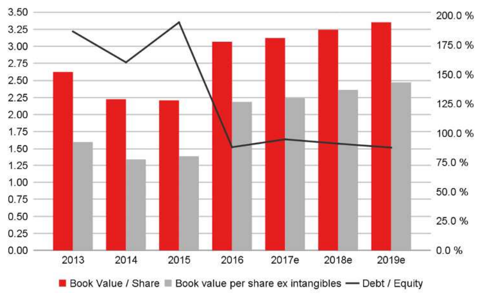
Source: Warburg Research

Net debt
in EUR m



Source: Warburg Research

Book Value per Share
in EUR



Source: Warburg Research

Consolidated cash flow statement

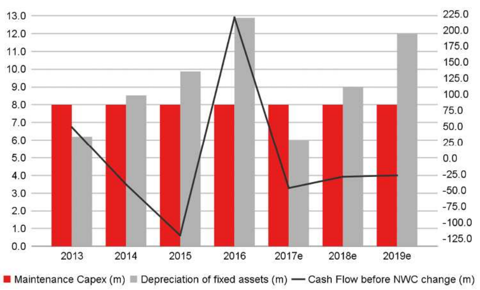
In EUR m	2013	2014	2015	2016	2017e	2018e	2019e
Net income	38.5	-18.3	-1.4	67.1	11.3	10.4	9.4
Depreciation of fixed assets	6.2	8.5	9.9	12.9	6.0	9.0	12.0
Amortisation of goodwill	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Increase/decrease in long-term provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other non-cash income and expenses	4.6	-31.1	-128.9	139.7	-63.6	-48.0	-48.0
Cash Flow before NWC change	**49.2**	**-40.8**	**-120.3**	**219.7**	**-46.2**	**-28.6**	**-26.5**
Increase / decrease in inventory	-117.9	-6.5	31.2	8.2	22.9	-20.0	-20.0
Increase / decrease in accounts receivable	-27.8	28.9	13.5	-6.5	2.1	0.0	0.0
Increase / decrease in accounts payable	9.4	7.4	-4.6	-1.2	-3.7	8.0	0.0
Increase / decrease in other working capital positions	86.0	0.0	0.0	0.0	0.0	0.0	0.0
Increase / decrease in working capital (total)	-50.2	29.7	40.1	0.6	21.4	-12.0	-20.0
Net cash provided by operating activities [1]	**-1.0**	**-11.1**	**-80.2**	**220.3**	**-24.9**	**-40.6**	**-46.5**
Investments in intangible assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investments in property, plant and equipment	-15.0	-4.8	-2.9	-108.7	-10.5	-10.5	-10.5
Payments for acquisitions	-69.0	0.0	0.0	103.3	0.0	0.0	0.0
Financial investments	0.0	0.0	0.0	-0.4	-23.0	0.0	0.0
Income from asset disposals	22.7	0.0	23.2	2.7	39.6	0.0	0.0
Net cash provided by investing activities [2]	**-61.3**	**-4.8**	**20.3**	**-2.2**	**52.1**	**-10.5**	**-10.5**
Change in financial liabilities	138.6	-27.2	73.1	-132.7	30.0	-8.5	0.0
Dividends paid	-4.7	-8.8	-3.0	-3.1	-9.2	-3.1	-3.1
Purchase of own shares	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital measures	16.7	46.4	9.5	0.0	0.0	0.0	0.0
Other	-55.0	0.0	0.0	0.0	0.0	0.0	0.0
Net cash provided by financing activities [3]	**95.5**	**10.4**	**79.6**	**-135.8**	**20.8**	**-11.6**	**-3.1**
Change in liquid funds [1]+[2]+[3]	**33.2**	**-5.5**	**19.6**	**82.3**	**48.0**	**-62.7**	**-60.1**
Effects of exchange-rate changes on cash	7.6	0.0	-5.6	-20.7	0.0	0.0	0.0
Cash and cash equivalent at end of period	**77.4**	**72.1**	**86.1**	**147.7**	**195.7**	**133.0**	**72.9**

Financial Ratios

	2013	2014	2015	2016	2017e	2018e	2019e
Cash Flow							
FCF	-16.0	-15.9	-83.2	111.6	-35.4	-51.1	-57.0
Free Cash Flow / Sales	-11.1 %	-7.5 %	-75.9 %	44.9 %	-31.9 %	-41.2 %	-47.1 %
Free Cash Flow Potential	46.0	0.1	15.2	87.5	18.7	15.9	21.9
Free Cash Flow / Net Profit	-39.4 %	122.6 %	-2396.3 %	161.7 %	-265.1 %	-413.9 %	-499.0 %
Interest Received / Avg. Cash	2.1 %	3.2 %	2.2 %	1.0 %	0.3 %	0.9 %	1.5 %
Interest Paid / Avg. Debt	7.3 %	7.4 %	7.3 %	8.9 %	7.4 %	5.2 %	8.0 %
Management of Funds							
Investment ratio	10.4 %	2.3 %	2.7 %	43.7 %	9.5 %	8.5 %	8.7 %
Maint. Capex / Sales	5.6 %	3.8 %	7.3 %	3.2 %	7.2 %	6.4 %	6.6 %
Capex / Dep	241.9 %	56.5 %	29.3 %	841.8 %	175.0 %	116.7 %	87.5 %
Avg. Working Capital / Sales	84.5 %	82.8 %	127.8 %	48.1 %	98.2 %	83.8 %	99.1 %
Trade Debtors / Trade Creditors	479.3 %	135.7 %	92.7 %	141.0 %	166.7 %	100.0 %	100.0 %
Inventory Turnover	0.5 x	1.1 x	1.3 x	0.9 x	0.7 x	1.2 x	1.0 x
Receivables collection period (days)	147	50	52	32	66	59	60
Payables payment period (days)	61	46	40	59	75	55	55
Cash conversion cycle (Days)	967	325	287	404	586	295	363

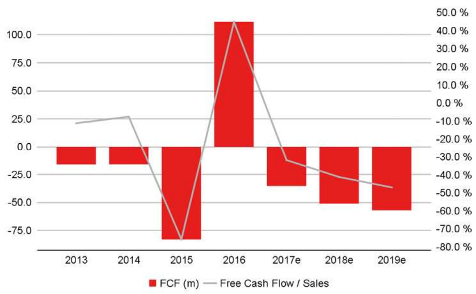
CAPEX and Cash Flow

in EUR m



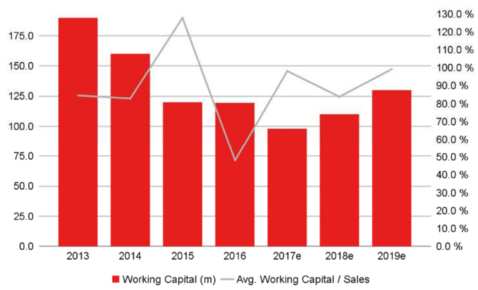
Source: Warburg Research

Free Cash Flow Generation



Source: Warburg Research

Working Capital



Source: Warburg Research

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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
PNE Wind	5, 7	http://www.mmwarburg.com/disclaimer/disclaimer_en/DE000A0JBPG2.htm

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-B-	**Buy:**	The price of the analysed financial instrument is expected to rise over the next 12 months.
-H-	**Hold:**	The price of the analysed financial instrument is expected to remain mostly flat over the next 12 months.
-S-	**Sell:**	The price of the analysed financial instrument is expected to fall over the next 12 months.
"-"	**Rating suspended:**	The available information currently does not permit an evaluation of the company.

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

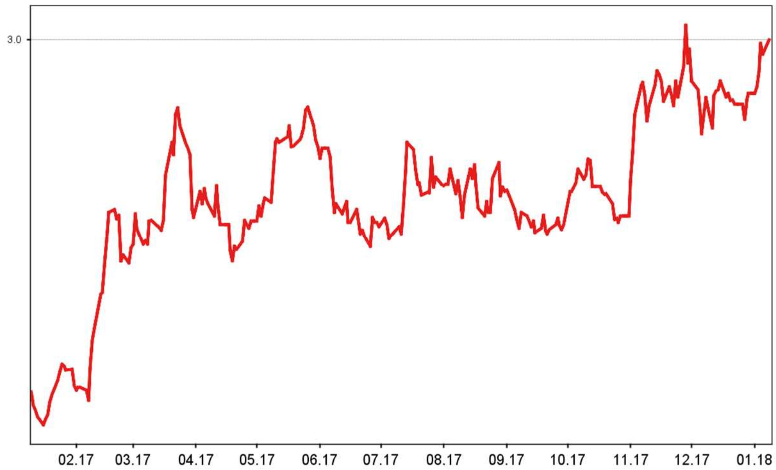
Rating	Number of stocks	% of Universe
Buy	108	53
Hold	88	43
Sell	7	3
Rating suspended	0	0
Total	**203**	**100**

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING …

… taking into account only those companies which were provided with major investment services in the last twelve months.

Rating	Number of stocks	% of Universe
Buy	34	79
Hold	8	19
Sell	1	2
Rating suspended	0	0
Total	**43**	**100**

PRICE AND RATING HISTORY PNE WIND AS OF 09.01.2018



Markings in the chart show rating changes by Warburg Research GmbH in the last 12 months. Every marking details the date and closing price on the day of the rating change.

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