

A market approach for  
valuing wind farm assets  
Global results



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# 1. Foreword

**In recent years investors all over the world have paid increasing attention to the renewable energy industry.**

This trend has translated into rapid renewable energy commercialisation and considerable industry expansion, of which the wind industry is a good example. According to Clean Energy Trends 2014, investments in new capacity of wind energy increased from approx. USD 4bn in 2000 to approx. USD 59bn in 2013. While annual investments in 2013 were down from 74bn in 2012 the compound annual growth rate (CAGR) was 23% in the period 2000-2013. Annual investments in the industry are projected to grow even further up to USD 94bn by 2023.<sup>1</sup>

With a total of 35 GW installed wind energy capacity in 2013, annual installations were down from the record-high 45 GW in 2012. Of the 35 GW, China added more than 16 GW, whereas Europe accounted for 12 GW of new capacity. In 2013 global installed wind capacity reached a total of 318 GW.<sup>2</sup>

The International Energy Agency (IEA) estimates that total onshore wind capacity is expected to have reached 546 GW by 2020 and 923 GW by 2035. Offshore wind capacity will add 175 MW to this, and the wind industry's share of global energy generation will increase significantly up to 2035. By then it is expected that wind energy will account for approx. 7% of total electricity generation, up from 1.6% in 2011<sup>3</sup>. On a longer horizon, IEA has updated the 2050-target of total global electricity originating from wind energy from 12% to 15-18%.<sup>4</sup>

Since the wind market has grown at high speed and growth is expected to continue, we have found it interesting to examine how the market values onshore and offshore wind farm assets.



<sup>1</sup> CleanEdge, "Clean Energy Trends 2014"  
<sup>2</sup> Global Wind Energy Council, "Global Wind Statistics 2013"  
<sup>3</sup> International Energy Agency, "World Energy Outlook 2012"  
<sup>4</sup> International Energy Agency, "Technology Road Map 2013"

## 2. Executive summary

In the past few years focus on renewable energy has led to high growth in investments in renewable energy assets. Especially wind and solar assets have been exposed to great interest from investors, and markets expect high growth rates in investments in these assets in the coming decades. Due to the current growth and expectations for these markets, we find it interesting to identify the structure of assets held by wind and solar farm investors and to create suitable methods to value such assets.

This paper addresses how and why multiple regression analyses on wind farm transactions are a good supplement to more comprehensive cash flow models when valuing wind farm assets. Our analyses of onshore wind farm transactions have led to the conclusion that installed capacity, capacity under construction and capacity in late stage pipeline affect the enterprise value of transactions significantly. Additionally we have concluded that investors in wind farm assets do not assign any significant value to capacity in early stage pipeline. Our analysis on offshore wind transactions leads to similar results. However, not surprisingly, we see more value in each stage in offshore projects.

We have performed a similar analysis of solar PV farm assets and refer to "A market approach for valuing solar PV farm assets" for that analysis.

Since the release of the 5th edition of this analysis in September 2013, we have added an additional 30 transactions that are suitable for our analysis of wind farm assets. The sample now totals 232 transactions, including 203 onshore and 29 offshore transactions. The explanatory power of the onshore and offshore

model is 95% and 91% respectively. The precision of our analyses increases as the dataset grows, and thus this year we have been able to reduce the uncertainty related to the installed capacity multiple for onshore wind assets by 15% compared to the last edition of this paper. The uncertainty in the installed capacity for offshore transactions has been reduced by 35%.

Due to the large size of the dataset, we have been able to perform various in-depth analyses. We have analysed whether the value of installed onshore capacity has changed over time. Our analysis shows an overall decline in installed capacity multiples of EUR 0.4m per MW between the peak in 2008 and 2012. However, we also show indications of increasing transaction multiples between 2012 and 2014. This is consistent with reports on increasing construction costs during the past year. Since 2008 the overall decline in the installed onshore capacity multiple has been approx. EUR 0.2m.

We have tested for geographical differences in prices of onshore assets. We conclude that installed capacity in the US trades at a lower price than the global multiple, while installed capacity in Europe trades at the global multiple. We also find that large variations exist among the European countries. We find that installed capacity in France and Germany trades at a discount while installed capacity in Spain and UK trades at a premium compared with the global multiple. Installed capacity in Asia also trades at a discount compared with the rest of the world.

For transaction details and details on the geographical analysis we refer to "A market approach for valuing wind farm assets – Geographical analysis and transaction details" and the order form on page 20.

# 3. Methodology

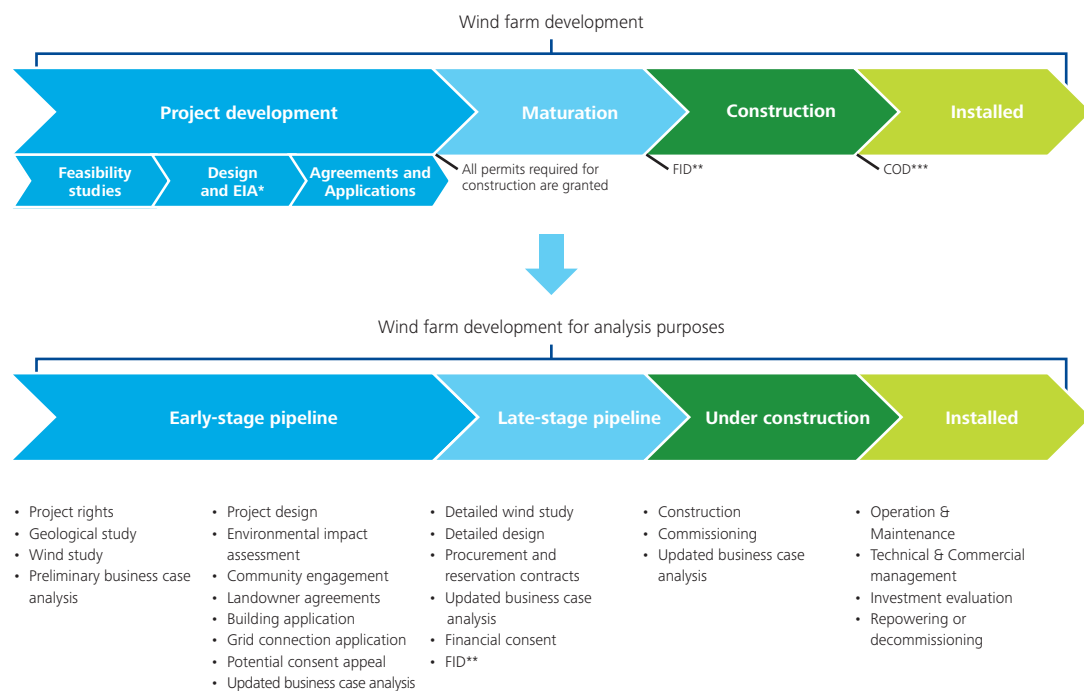
## Introduction

This paper addresses how multiple regression analysis of transaction multiples can be used as a benchmarking tool to support a more comprehensive valuation based on a cash flow model. We present the technical considerations underlying the analysis followed by practical examples

that illustrate how the results can be applied from a valuation perspective.

From our point of view, one of the main challenges is the determination of the market value of wind capacity in different stages of the project lifecycle. We define a project lifecycle for wind farms as illustrated in the figure below.

### Project lifecycle of wind farm assets



Note: \* Environment Impact Assessment, \*\* Final Investment Decision, \*\*\* Commissioning Date  
Source: Deloitte analysis

We recognise that transaction prices depend on other factors than capacity, such as the surrounding environment, local wind conditions, operating efficiency, power price agreements, local tax rules, subsidies and financing – most of which are country dependent. Therefore we also test for geographical effects and refer to “A market approach for valuing wind farm assets – Geographical analysis and transaction details” and the order form on page 20 for that analysis.

Since wind and solar farm assets have different characteristics, and since offshore wind farm assets differ from onshore wind farm assets, we perform 3 separate analyses in 2 separate papers – one paper with analyses solely based on transactions in the on- and offshore wind farm industry and one paper solely based on transactions in the solar PV farm industry. The wind analysis is divided into an onshore and an offshore analysis. The approach yields “clean” multiple estimates for the different

stages of the project, and it indirectly implies that in our analyses we assume that there is no interaction effect between holding a portfolio containing more than one kind of these assets. The multiple regression analysis is a market-based valuation approach as it is based on data from historical transactions.

In the analyses we disaggregate transactions into the different project stages as illustrated in the figure above. This disaggregation makes it possible to apply the multiple regression approach and also gives us the possibility of assigning separate multiples to each stage of the project. The reason for applying the multiple regression approach is that it allows us to estimate EV/MW multiples for the capacity in each stage of the project lifecycle.

The quality of a multiple regression analysis is critically dependent on the quality of the underlying dataset. Therefore the data collection process becomes important to ensure sufficient and reliable data. It is our experience

that collection of data is one of the main challenges when using statistical analysis. The accessibility of enterprise value and the total capacity of target's assets divided into the different project stages have been the primary criterias for including transactions in our analyses.

Below we give a more thorough introduction to the multiple regression analyses and present the underlying technical considerations of the analysis that we have performed. To exemplify the analyses performed, we use a fictive company named Renewable Energy Company (REC) throughout the paper to illustrate how a multiple regression can be applied for valuation purposes. REC has wind farm assets in different lifecycle stages as illustrated in the table below.

The following sections 4 and 5 are structured in the same way. First we present the findings of the regression analysis, followed by practical examples that illustrate how the results can be applied from a valuation perspective.

#### Renewable Energy Company (REC)

MW's	Early stage	Late stage	Under construction	Installed
Wind farms	1,600	800	400	200
<b>Total</b>	<b>1,600</b>	<b>800</b>	<b>400</b>	<b>200</b>

Source: Deloitte analysis

#### Identification of data and choice of method

Our analysis of the value of wind farm assets is based on transactions over the past 8 years to secure a sufficient dataset. We have identified 232 wind farm transactions, which we find suitable for our multiple regression analysis. Of these transactions, 203 are transactions of onshore wind assets while 29 are transactions of offshore wind assets.

The major challenge that we experienced during our data collection was the classification of transactions into project stages, especially for the early stages. Moreover not all companies report capacity in the screening stage. We have therefore merged the screening stage with the under approval stage into what we name early stage.

Our analyses derive from the following regression model (1) which we have performed on the onshore and the offshore transactions. Based on this model we find that installed capacity, capacity under construction and capacity in late stage affect the enterprise value of onshore farm assets significantly. Also, based on this model, we can conclude that early stage capacity has no meaningful effect on the enterprise value (negative multiple close to nil) in onshore wind farms. Our analysis of offshore wind transactions leads to similar results.

However, not surprisingly, we see more value in each stage in offshore projects. Therefore the early stage multiple has been excluded in the following analyses:

$$(1) EV = \alpha + \beta_1 \cdot MW_{\text{installed}} + \beta_2 \cdot MW_{\text{under construction}} + \beta_3 \cdot MW_{\text{late stage}} + \beta_4 \cdot MW_{\text{early stage}}$$

# 4. Onshore transaction analysis

By excluding early stage capacity from the model (1), we find that for onshore wind assets the EV/MW multiples for installed, under construction and late stage capacity are EUR 1.7m, EUR 0.9m and EUR 0.3m. The regression has a coefficient of determination (~ R-squared) of 0.95, which can be interpreted as the analysis having high statistical

explanatory power. In other words, 95% of the variation in enterprise value for onshore wind farm assets can be explained by the capacity in each stage of the project life-cycle. Applying these multiples on REC's assets yields a base case value of the wind farm assets of EUR 895m. The results of the analysis are summarised in the table below.

## Regression and valuation of wind assets

EURm	Early stage	Non-installed	Installed
<b>EV/MW coefficient<sup>1</sup></b>	<b>0.3x</b>	<b>0.9x</b>	<b>1.7x</b>
Significance (p-value)	0.0	0.0	0.0
Upper 95%	0.3x	1.0x	1.7x
Lower 95%	0.2x	0.7x	1.6x
<b>REC wind MWs</b>	<b>800</b>	<b>400</b>	<b>200</b>
REC wind EVs	221	341	334
<b>REC total EV</b>			<b>895</b>

<sup>1</sup> Transactions (n): 203. R-square: 0.95  
Source: Deloitte analysis

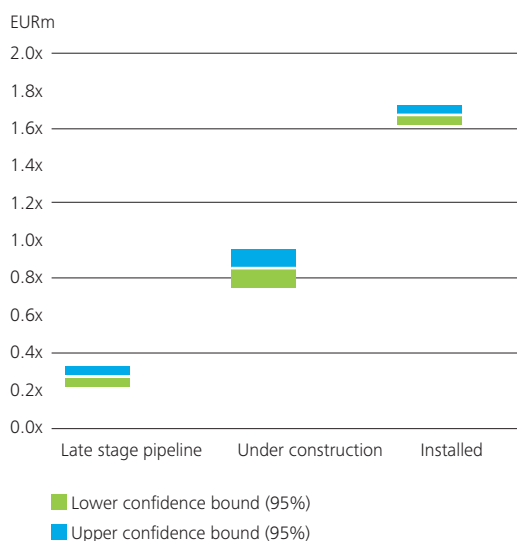
A multiple regression analysis is subject to uncertainty just like any other valuation method. One advantage of statistical models compared with other models is that the uncertainty is easier to quantify. The uncertainty can be expressed by the statistical term "standard error". The standard error is calculated for each EV/MW multiple and can be used to determine a lower and upper boundary, i.e. a value interval at a certain confidence level. Our analysis is based on a 95% confidence level. This can be interpreted as the EV/MW multiple estimate being within this interval with 95% confidence.

The lower boundaries for the EV/MW multiples on onshore wind assets are EUR 1.6m, EUR 0.7m and EUR 0.2m for installed, under construction and late stage capacity while the upper boundaries for the EV/MW multiples are EUR 1.7m, EUR 1.0m and EUR 0.3m for installed, under construction and late stage capacity.

The precision of our onshore EV/MW estimates has increased on last year's edition of our analysis, which is mainly attributed to the increasing size of the data. For instance the uncertainty of the installed capacity multiple for onshore wind farms has been reduced by 15% since

the last edition of this analysis. The uncertainty intervals of the estimated EV/ MW multiples are illustrated in the figure below.

### Uncertainty intervals for onshore stage-multiples



Source: Deloitte analysis

We apply the lower and upper boundaries in the valuation of REC's wind farm assets to determine a lower and an upper value. The table below illustrates the uncertainty of REC's capacities in different stages of development. Based on these upper and lower boundaries, our analysis

indicates that the value of REC's wind farm assets lies within the interval of approx. EUR 800-1,000m with 95% certainty. These estimates are approx. 12% lower/higher compared with the base case value.

#### Wind asset valuation uncertainty

EURm	Early stage	Non-installed	Installed
<b>Upper EV/MW multiple</b>	<b>0.3x</b>	<b>1.0x</b>	<b>1.7x</b>
REC wind MWs	800	400	200
REC wind EVs	270	386	346
<b>REC upper EV</b>			<b>1,002</b>
<b>Lower EV/MW multiple</b>	<b>0.2x</b>	<b>0.7x</b>	<b>1.6x</b>
REC wind MWs	800	400	200
REC wind EVs	172	296	321
<b>REC lower EV</b>			<b>789</b>

Source: Deloitte Analysis

The uncertainty of the EV/MW multiples consists of statistical uncertainty and general value creation uncertainty. Among other things, the statistical uncertainty relates to the size of the dataset, and as we add more transactions to the dataset, some of this uncertainty will diminish. However, the other part of the uncertainty interval will not. Value is created within the different stages of development and that creates a price interval for the EV/MW multiples. In particular, the value of a project under construction is highly dependent on the amount of project costs accrued by the developer, which is also emphasised by the relatively higher uncertainty of this multiple.

The figure below illustrates the development of the EV/MW multiple during the project lifecycle of onshore wind farm assets. The confidence intervals from the multiple regression are illustrated.

#### Early stage

During the early stage of the project the value increase is relatively low, i.e. the change in enterprise value is small. There are some costs related to wind testing, securing land, planning, etc., but they are not substantial.

However, when dealing with offshore projects, there are significantly higher capex related to these preliminary analyses.

#### Late stage

During the late stage the value of the project increases as project developers obtain project permits from local authorities and secure turbines and debt financing. As the value in this stage increases, we expect greater variation in transaction prices. The greater variation is due to greater differences between the value created for projects that have just entered the late stage and projects that are close to enter the under construction stage.

#### Under construction stage

Most of the value appears to be created in the under construction stage, presumably because the majority of project costs occur in this stage. This is also reflected in the results as this stage exhibits the widest uncertainty interval. This underpins one of the general drawbacks with relative valuation models compared with for example cash flow models. For instance, projects in which the wind turbines have been paid for will acquire a multiple near the upper bound of our construction stage interval



and vice versa. The hatched area in the figure shows how potential large differences in accrued capex in the under construction stage affect this multiple.

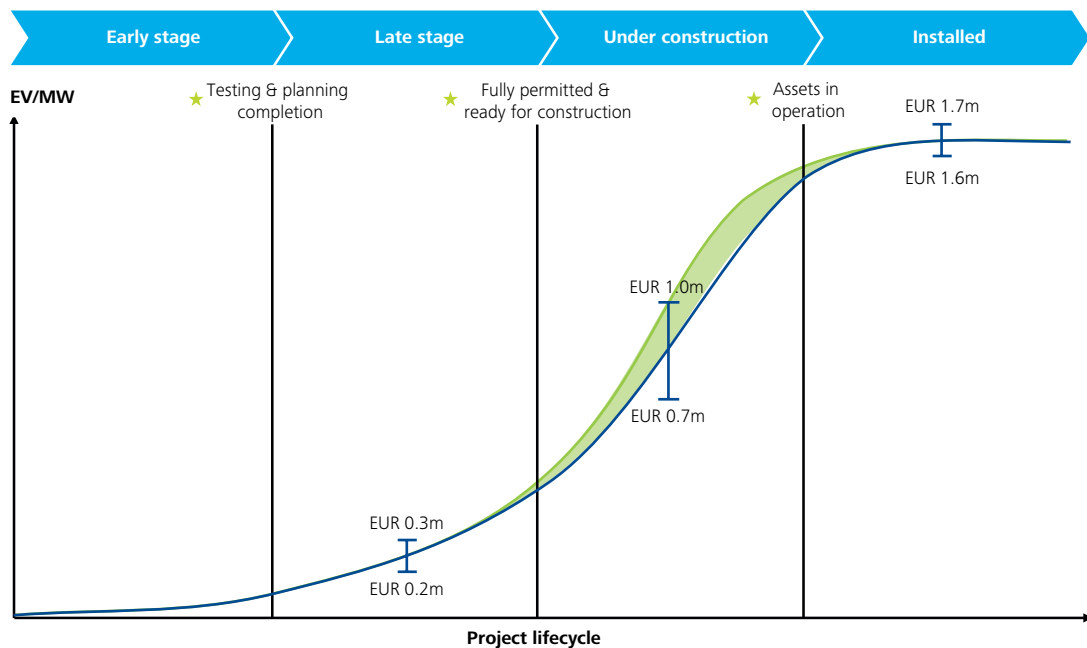
### Installed MWs

Upon completion, the project reaches its highest multiple. There are still differences in transaction prices which can be explained by other factors than capacity, such as local wind conditions, operating efficiency, power price agreements, local tax rules, subsidies and financing.

For offshore projects, sea depth and distance to shore are also significant factors. As mentioned above, the EV/MW multiple for installed capacity is subject to the least uncertainty.



### Lifecycle/value creation for onshore wind farm assets



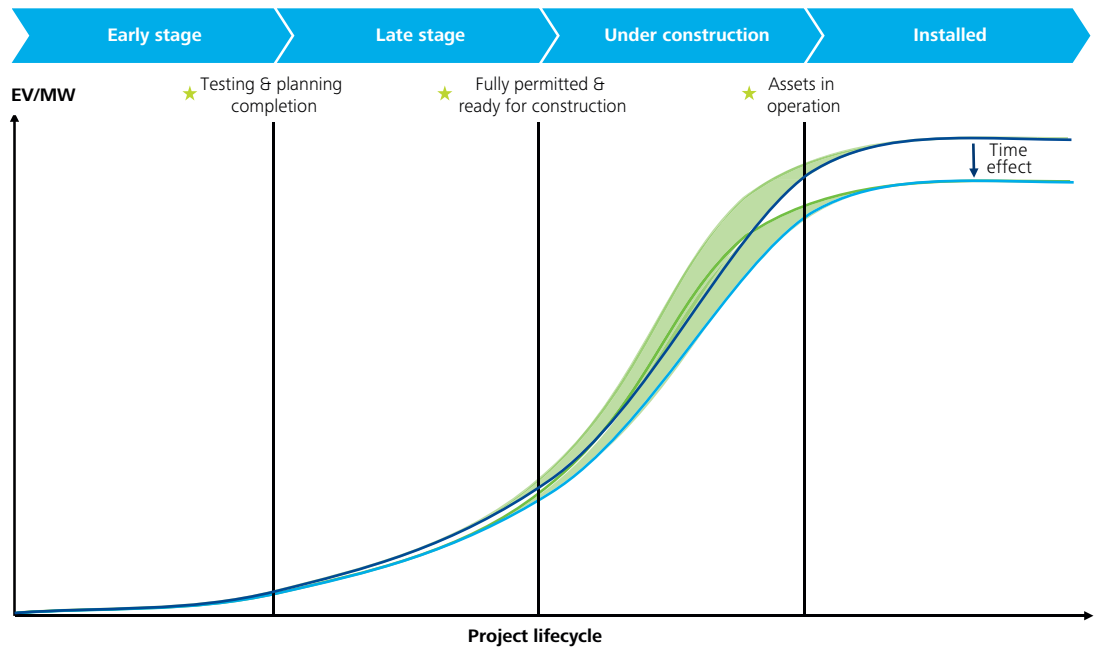
Source: Deloitte analysis

The size of the dataset on onshore wind transactions has enabled further analyses. More specifically we have analysed whether transaction prices have changed over time.

Reports on the wind farm industry show that construction costs related to onshore wind farm assets have been declining over our sample period of 8 years. However, during the past year project costs have displayed an increasing trend. We therefore find it interesting to

investigate a potential time pattern in transaction multiples. As the onshore industry matures, it seems sound that supply chain improvements and technological progress will make the lifecycle curve shift to lower levels. We believe that transaction multiples should find lower levels as the development of the market pushes down development and construction costs. The figure below illustrates this.

**Lifecycle/value creation for onshore wind farm assets**



Source: Deloitte analysis

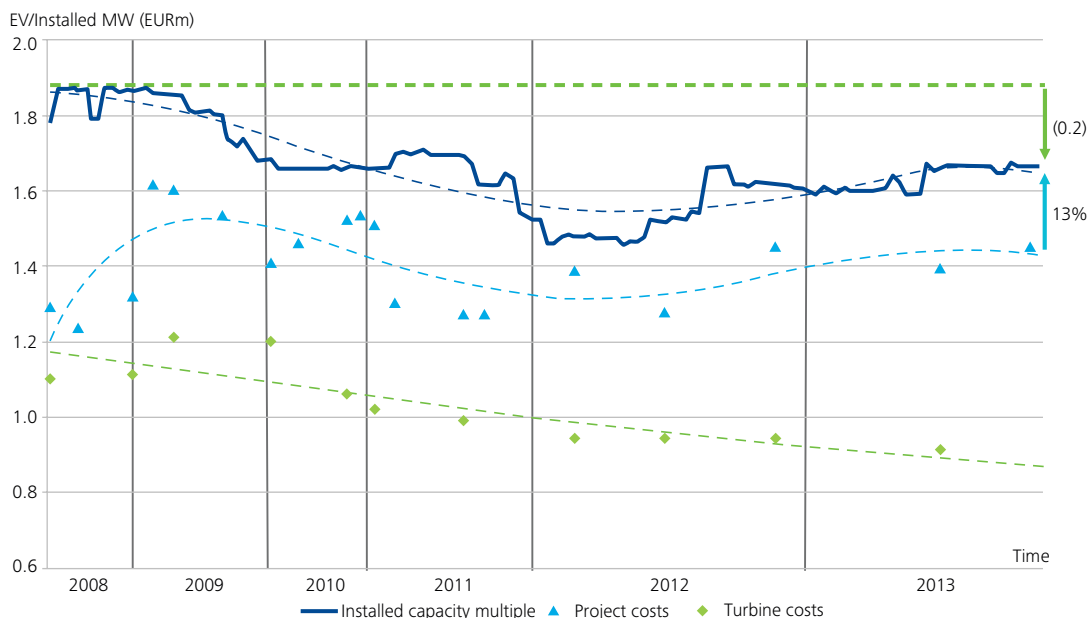
To investigate a potential time effect, we have applied a rolling regression analysis. This method uses the latest 60 transactions on forward running dates by constantly substituting the oldest transaction with a newer transaction. By running 144 regressions, each with 60 transactions, we create a picture of how the installed capacity multiple has developed since 2008. We find that the multiple for installed capacity has dropped by approx. EUR 0.2m from the highest level of EUR 1.9m per MW to the current level of EUR 1.7m per MW. This is a relative increase on last year's edition of this analysis where the installed capacity multiple was approx. EUR 1.6m per MW.

The figure below illustrates our findings. The dark blue line illustrates the trend in EV per MW installed capacity. The values on the time axis represent the announcement date of the latest of the 60 transactions included in the relevant capacity multiple. Consequently the first point

on the dark blue line represents the multiple based on 60 transactions with the most recent one occurring in August 2008. To illustrate the relation between transaction multiples and development costs, we have included average project costs per installed MW (the light blue triangles) as well as illustrated the development in turbine costs (the light green squares). The average project- and turbine cost follows the same trend as the transaction multiples. The analysis suggests that the developer premium on onshore wind farm assets lies in the range of 10-20% of project costs and that it has been declining since 2008.

While the level of the installed capacity multiple has varied during the past 8 years, the latest estimated multiple is at a level similar to that of our overall analysis, which means that the results of the initial regression analysis on the overall dataset seems to be consistent with the current level of the installed capacity multiple.

### Time effect on installed capacity multiple



Source: Deloitte analysis, Clean Energy Pipeline (CEP) and Bloomberg New Energy Finance (BNEF)

## 5. Offshore transaction analysis

By excluding early stage capacity from model (1) we find that for offshore wind assets the EV/MW multiples for installed capacity, capacity under construction and capacity in late stage are EUR 4.2m, EUR 1.6m and EUR 0.2m. The regression has a coefficient of determination (~ R-squared) of 0.91. In other words, 91% of the variation in enterprise value for offshore wind farm assets can be explained by the capacity in each stage of the project lifecycle.

Applying these multiples on REC's assets (assuming now that all REC assets are offshore wind assets) yields a base case value of the offshore wind farm assets of EUR 1,632m. The results of the analysis are summarised in the table below.

Due to a rather limited dataset of only 29 offshore transactions, our offshore regression analysis is subject to more uncertainty than our onshore analysis. In addition the relatively larger variation in the size of offshore wind farms compared to onshore wind farms will skew the regression analysis such that the large wind farms dictate the regression estimates of the multiples.

As the offshore dataset is characterised by many of the transactions concerning capacity in only 1 stage<sup>5</sup> of the project life cycle, we have calculated weighted average and median multiples for the different development stages. The valuation of REC with the weighted average and median multiples is illustrated together with the regression-based valuation in the table below.

### Regression and valuation of offshore wind farm assets

EURm	Late stage	Under construction	Installed
<b>EV/MW coefficient<sup>1</sup></b>	<b>0.2x</b>	<b>1.6x</b>	<b>4.2x</b>
Significance (p-value)	0.1	0.0	0.0
Upper 95%	0.5	2.3	4.7
<b>Lower 95%</b>	<b>0.0</b>	<b>1.0</b>	<b>3.7</b>
<b>REC wind MWs</b>	<b>800</b>	<b>400</b>	<b>200</b>
<b>EV/MW coefficient<sup>1</sup></b>	<b>0.2x</b>	<b>1.6x</b>	<b>4.2x</b>
REC wind EVs	141	647	845
<b>REC total EV</b>			<b>1,632</b>
<b>Weighted average</b>	<b>0.2x</b>	<b>1.6x</b>	<b>3.7x</b>
REC wind EVs	186	636	748
<b>REC total EV</b>			<b>1,571</b>
<b>Median</b>	<b>0.2x</b>	<b>1.5x</b>	<b>3.1x</b>
REC wind MWs	187	614	629
<b>REC total EV</b>			<b>1,431</b>

<sup>1</sup> Transactions (n): 29, R-square: 0.91  
Source: Deloitte analysis

<sup>5</sup> All transactions that involve more than 1 stage also involve early stage capacity. However, the early stage multiple can be set at nil according to our regression analysis.

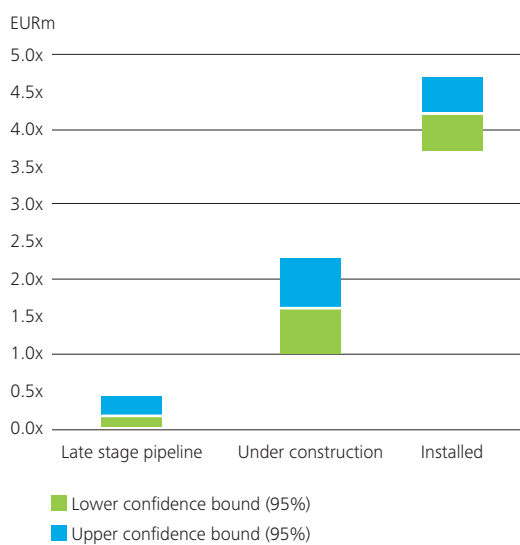
A multiple regression analysis is subject to uncertainty, just like any other valuation method. One advantage of statistical models compared with other models is that the uncertainty is easier to quantify. The uncertainty can be expressed by the statistical term "standard error". The standard error is calculated for each EV/MW multiple and can be used to determine a lower and upper boundary, i.e. a value interval at a certain confidence level. Our analysis is based on a 95% confidence level. This can be interpreted as the EV/MW multiple estimate being within this interval with 95% confidence.

The lower boundaries for the EV/MW multiples on offshore wind assets are EUR 3.7m, EUR 1.0m and EUR 0.0m for installed, under construction and late stage capacity. The upper boundaries for the EV/MW multiples are EUR 4.7m, EUR 2.3m and EUR 0.5m for installed, under construction and late stage capacity. The low significance of the late stage multiple is reflected in a wide interval for this multiple, and therefore we have set the lower boundary at nil in order to preserve the economic meaning of this multiple. To narrow down the intervals of the multiples, more transactions are needed.

The weighted average multiples are EUR 3.7m, EUR 1.6m and EUR 0.2m per MW for installed, under construction and late stage capacity, while the median multiples are EUR 3.1m, EUR 1.5m and EUR 0.2m per MW. These estimates support the late stage and under construction multiples from our regression, while they indicate a somewhat lower installed capacity multiple than our regression analysis.

The precision of our offshore EV/MW estimates has increased on last year's edition of our analysis, which is mainly attributed to the larger dataset that is now available. For instance the uncertainty of the installed capacity multiple for offshore wind farms has been reduced by 35% since the last edition of this analysis. The uncertainty intervals of the estimated EV/MW multiples from our regression are illustrated in the figure.

#### Uncertainty intervals for onshore stage-multiples



Source: Deloitte analysis

We apply these lower and upper boundaries in the valuation of REC's wind farm assets to determine a lower and an upper value. The figure below illustrates the uncertainty of REC's capacities in different stages of development. Based on these upper and lower boundaries, our analysis indicates that the value of REC's wind farm assets lies within the interval of approx. EUR 1,100-2,250m. These estimates are approx. 37% lower/higher compared with the base case value.

#### Wind asset valuation uncertainty

EURm	Late stage	Under construction	Installed
<b>Upper EV/MW multiple</b>	<b>0.5x</b>	<b>2.3x</b>	<b>4.7x</b>
REC wind MWs	800	400	200
REC wind EVs	374	912	948
<b>REC upper EV</b>			<b>2,234</b>
<b>Lower EV/MW multiple</b>	<b>0.0x</b>	<b>1.0x</b>	<b>3.7x</b>
REC wind MWs	800	400	200
REC wind EVs	0	382	741
<b>REC lower EV</b>			<b>1,122</b>

Source: Deloitte Analysis

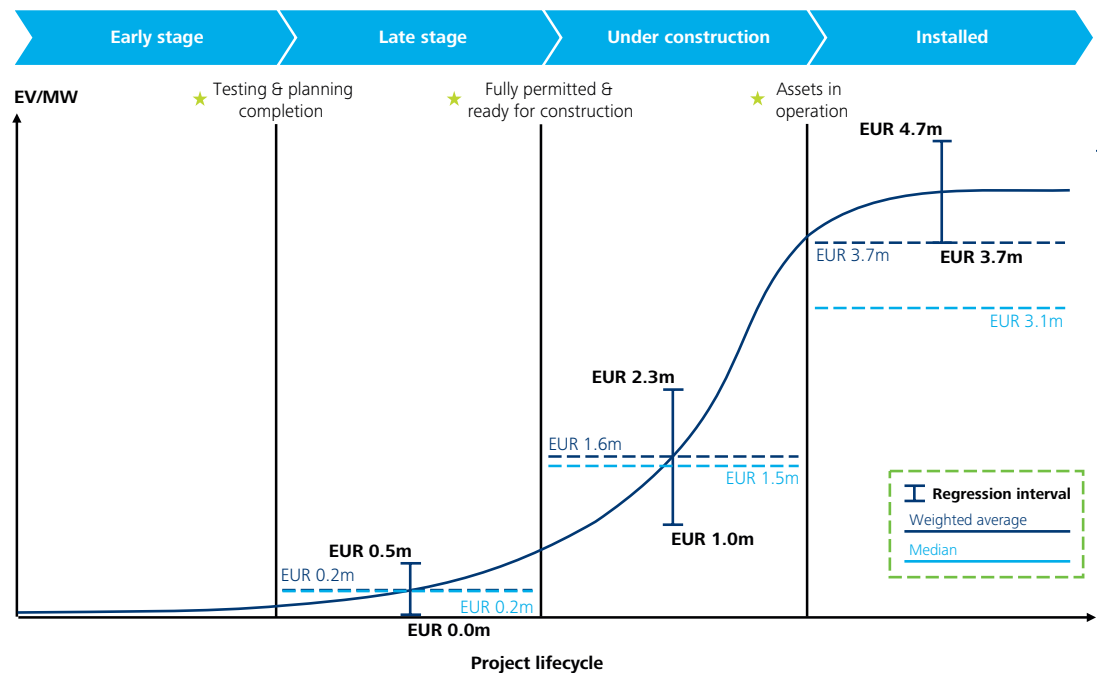
The uncertainty of the EV/MW multiples consists of statistical uncertainty and general value creation uncertainty. Among other things, the statistical uncertainty relates to the size of the dataset, and as we add more transactions to the dataset, some of this will diminish. However, the other part of the uncertainty interval will not. Value is created within the different stages of development and that creates a price interval for the EV/MW multiples. In particular, the value of a project under construction is highly dependent on the amount of project costs accrued by the developer, which is also emphasised by the relatively higher uncertainty of this multiple.

The figure below illustrates the development of the EV/MW multiple during the project lifecycle of an offshore wind farm asset. The confidence intervals from the multiple regression as well as the weighted average and median multiples for the different stages are illustrated by the dark blue and the light blue dotted lines.

Note that the estimated transaction multiples for offshore wind farms differ significantly from those found in the onshore industry. Offshore wind farms trade at higher multiples than onshore wind farms. This is due to higher offshore wind farm capex that projects need to recoup through higher tariffs and larger productions.

The higher capex in offshore wind projects relative to onshore wind project is due to a number of reasons. There are some fundamental differences between onshore and offshore wind farms. The reasons for the higher offshore wind farm capex are larger and more expensive foundations, difficult installation environment and higher transport costs, primarily driven by rentals of large vessels. Furthermore, the offshore wind industry is still maturing. This means that technological elements for harsh offshore conditions are still being tested and developed, while also the offshore supply chain is developing to match the needs of the industry.

#### Uncertainty intervals for offshore stage-multiples



Source: Deloitte analysis



# Appendix A:

## Summary of transaction data from the onshore wind farm industry

### Wind farm transactions



Note: The transactions on this map sum to 202. The missing transaction concerns several onshore wind farms in different European countries and can therefore not be assigned to a specific country.  
Source: Deloitte analysis

	Obs	EV in EURm			Installed MWs		Under constr, MWs		Late stage MWs		Early stage MWs	
		Min.	Max.	Average	Total	Average	Total	Average	Total	Average	Total	Average
<b>Overall</b>	<b>203</b>	<b>2</b>	<b>1,442</b>	<b>152</b>	<b>15,503</b>	<b>76</b>	<b>3,690</b>	<b>18</b>	<b>8,747</b>	<b>43</b>	<b>20,264</b>	<b>100</b>
<b>Geography</b>												
Europe	137	3	1,442	137	9,681	71	1,340	10	4,937	36	6,802	50
Non-Europe	66	2	1,128	183	5,822	88	2,350	36	3,810	58	13,463	204
North America	35	2	1,128	213	3,331	95	2,060	59	2,913	83	11,296	323
Asia	13	11	114	45	540	42	149	11	190	15	200	15
France	15	6	597	120	1,170	78	114	8	383	26	1,164	78
Germany	21	5	567	83	1,206	57	141	7	33	2	-	-
Spain	27	5	1,442	184	2,355	87	208	8	2,116	78	3,600	133
UK	25	4	500	128	1,407	56	65	3	672	27	540	22
<b>Year</b>												
2005	1	25	25	25	26	26	-	-	-	-	-	-
2006	10	5	1,442	241	894	89	434	43	1,752	175	5,204	520
2007	20	5	990	203	1,727	86	1,240	62	634	32	6,233	312
2008	40	5	1,150	83	1,421	36	350	9	1,751	44	2,024	51
2009	20	3	785	203	2,220	111	368	18	1,528	76	3,696	185
2010	15	5	320	84	743	50	88	6	22	1	162	11
2011	29	4	680	127	2,064	71	399	14	1,441	50	540	19
2012	29	5	1,128	176	2,377	82	420	14	569	20	1,273	44
2013	39	2	1,011	176	4,032	103	391	10	1,051	27	1,133	29



# Appendix B:

## Regression output

### – onshore wind farm analysis

#### Summary output

Regression statistics	
R Square	0.95
DF	200
Observations	203

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-	-	-	-	-	-
Installed	1.668	0.031	53.853	0.000	1.607	1.729
Under constr.	0.852	0.058	14.788	0.000	0.739	0.965
Late stage	0.276	0.031	8.822	0.000	0.215	0.337

Source: Deloitte analysis

# Appendix C:

## Summary of transaction data from the offshore wind farm industry

Offshore wind farm transactions



Source: Deloitte analysis

	Obs	EV in EURm			Installed MWs		Under constr, MWs		Late stage MWs		Early stage MWs	
		Min,	Max,	Average	Total	Average	Total	Average	Total	Average	Total	Average
<b>Overall</b>	<b>30</b>	<b>17</b>	<b>3,124</b>	<b>440</b>	<b>2,684</b>	<b>89</b>	<b>1,271</b>	<b>42</b>	<b>5,204</b>	<b>173</b>	<b>7,586</b>	<b>253</b>
<b>Geography</b>												
Denmark	3	202	1,609	760	773	258	-	-	-	-	-	-
Germany	10	17	1,384	451	565	57	400	40	1,833	183	1,816	182
UK	15	42	3,124	419	1,252	83	871	58	2,321	155	5,200	347

# Appendix D:

## regression output

### – offshore wind farm analysis

#### Summary output

Regression statistics	
R Square	0.91
DF	26
Observations	29

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-	-	-	-	-	-
Installed	4.223	0.265	15.937	0.000	3.703	4.742
Under constr.	1.616	0.338	4.783	0.000	0.954	2.279
Late stage	0.176	0.149	1.182	0.124	(0.116)	0.468

Source: Deloitte analysis

# Order form for geographical analysis and transaction details

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