Single Electricity Market

(SEM)

GENERATOR FINANCIAL PERFORMANCE IN THE SEM

2016 & 2017

Report

SEM-19-016

18 April 2019

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1. EXECUTIVE SUMMARY

This report, prepared by the Commission for the Regulation of Utilities (CRU) and the Utility Regulator (UR), together known as the Regulatory Authorities (RAs), examines the financial performance of generation companies in the Single Electricity Market (SEM), and follows the previous 2013 (SEM/13/031), 2014 (SEM/14/111) and 2016 (SEM/16/086) reports published by the SEM Committee. The report provides aggregated information on the financial performance of generators in the SEM as a whole, as well as breakdowns by generation fuel source and generation type. The report aims to enhance transparency around generator remuneration in the SEM while respecting individual generator commercial sensitivity by presenting aggregated information only.

The 2014 report focused on the period up to and including the 2013 financial year.[1]

The 2016 report focused on the period up to and including the 2015 financial year.[2]

This report provides an update to the 2016 report by analysing two additional years of data, namely the 2016 and 2017 financial years.

The main objectives of the report are to:

- Provide greater insight into the financial performance of generators in the SEM, which will inform policy decisions; and
- Improve the level of market data available to all industry stakeholders, which will assist in providing market transparency.

1.1. KEY FINDINGS

The financial performance of generators in the SEM should best be scrutinised in the context of the associated fuel prices, which are a key factor in the costs of many generators, whilst also generally determining the market price, and hence market revenues. The first half of 2016 saw a continuation of the fall in SEM electricity prices in line with declining gas and coal prices. This was followed by a rise in SEM electricity prices from Q4 2016 into 2017 in line with increasing wholesale gas prices. There is generally a strong relationship between wholesale gas prices and electricity prices in the SEM, which is expected given that electricity prices are set by the marginal generator which is typically a gas fired power plant. When the fuel cost of the marginal generator increases, the SMP is expected to rise and vice versa.

[1] Data up to December 2013 for generators with a December financial year end and up to March 2014 for generators with a March financial year end.
[2] Data up to December 2015 for generators with a December financial year end and up to March 2016 for generators with a March financial year end.

Table 1.1 below summarises the aggregated financial performance based on financial reporting templates submitted by generators operating in the SEM since 2012.

Table 1.1: Summary of generator financial performance based on financial reporting templates

€m	2012	2013	2014	2015	2016	2017
Revenue	€ 2,928	€ 2,822	€ 2,657	€ 2,706	€ 2,329	€ 2,523
Operating profit	€ 851	€ 870	€ 828	€ 906	€ 666	€ 664
Operating profit margin	29%	31%	31%	34%	29%	26%
Net profit	€ 76	€ 88	€ 303	€ 254	€ 158	(€366)
Net profit excluding large impairment charges	€ 335	€ 320	€ 303	€ 355	€190	€153
Net profit margin	3%	3%	11%	9%	7%	-15%
Net profit margin excluding large impairment charges	11%	11%	11%	13%	8%	6%

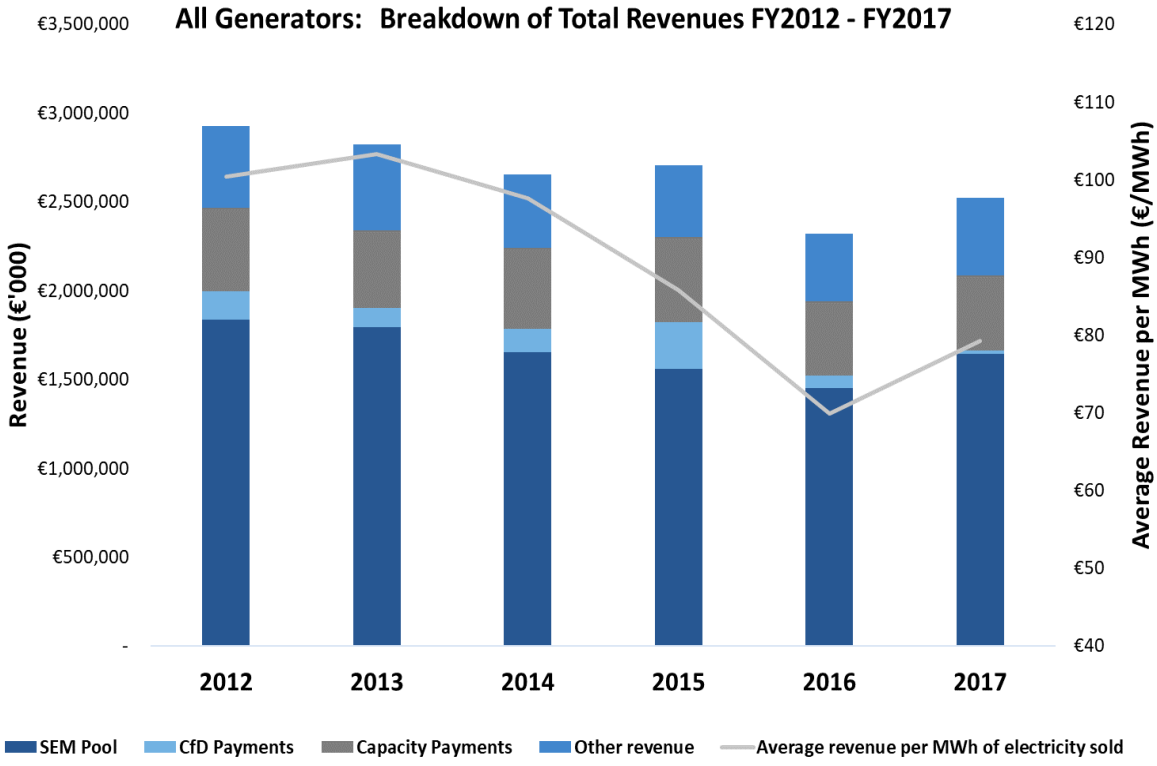
Key finding 1: Profitability margins in the SEM as a whole have declined over the last few years

As shown in Table 1.1, overall operating profit margins for the SEM generators stood at 31% and 34% in 2014 and 2015, respectively, continuing a slightly upward trend since 2012 . This can be explained by the gradually increasing share of wind generation which has very high operating margins due to low operating costs. However, the operating profit margin decreased to 29% in 2016 in line with lower SEM revenue. Despite an upturn in SEM pool revenue in 2017 fuel costs increased to a greater extent leading to a reduction in the operating profit margin to 26% in 2017.

Since 2014 net profit margins have decreased. This can be explained by the fact that, as total revenues have decreased, total costs have also fallen but to a lesser extent, as illustrated in Figure 1.1 and Figure 1.2 below. Net profit margins can be affected by large impairment charges reported in a given year. Referring to Figure 1.2, this is very evident in 2017 when extraordinary impairment resulted in a net profit margin of -15%. When excluding these impairment charges, the net profit margins have nevertheless slipped significantly from 13% in 2015 to 8% in 2016 and 6% in 2017.

As shown in Figure 1.1, generators' total revenues decreased up to 2016 mainly because of a fall in SEM pool revenues which reflects the falling SMP. In contrast, CfD payments[3], which represent a hedge against movement in SMP, have been volatile, showing a large increase in 2015, but reducing significantly in 2016 and further in 2017. The average revenue per MWh of electricity sold has decreased from over €100 in 2013 to €69 in 2016, before recovering to €82 in 2017.

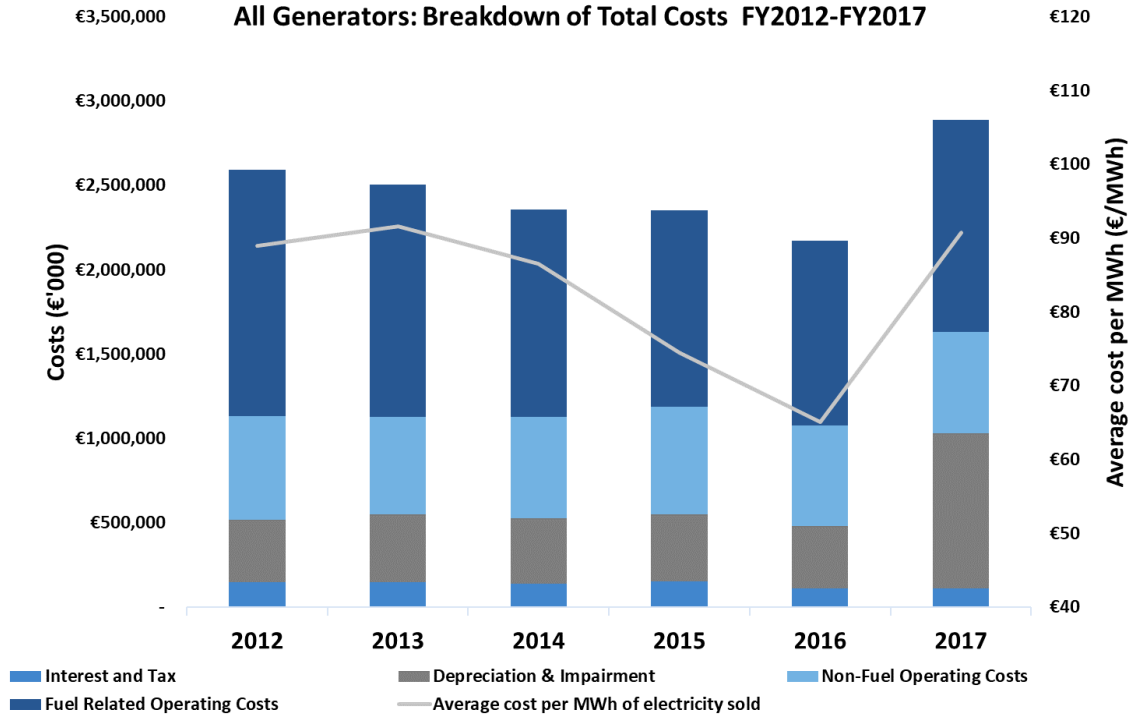
Figure 1.1: Breakdown of generator total revenues between FY2012 and FY2017



As illustrated in Figure 1.2 below, the fall in total costs has occurred primarily due to a fall in fuel related operating costs which can be explained by the fall in fuel prices up to 2016. The average cost per MWh generated has fallen from just over €90 in 2013 to around €66 in 2016. In 2017 the average cost per MWh shoots up to €91 driven by increased impairment.

[3] Revenues reported under the CfD payment category in the reporting template may include revenue from hedging arrangements in relation to the SMP as well as any differences between payments received by the generator under a Power Purchase Agreement (PPA) and the revenue earned by the intermediary for the same electricity in the SEM pool.

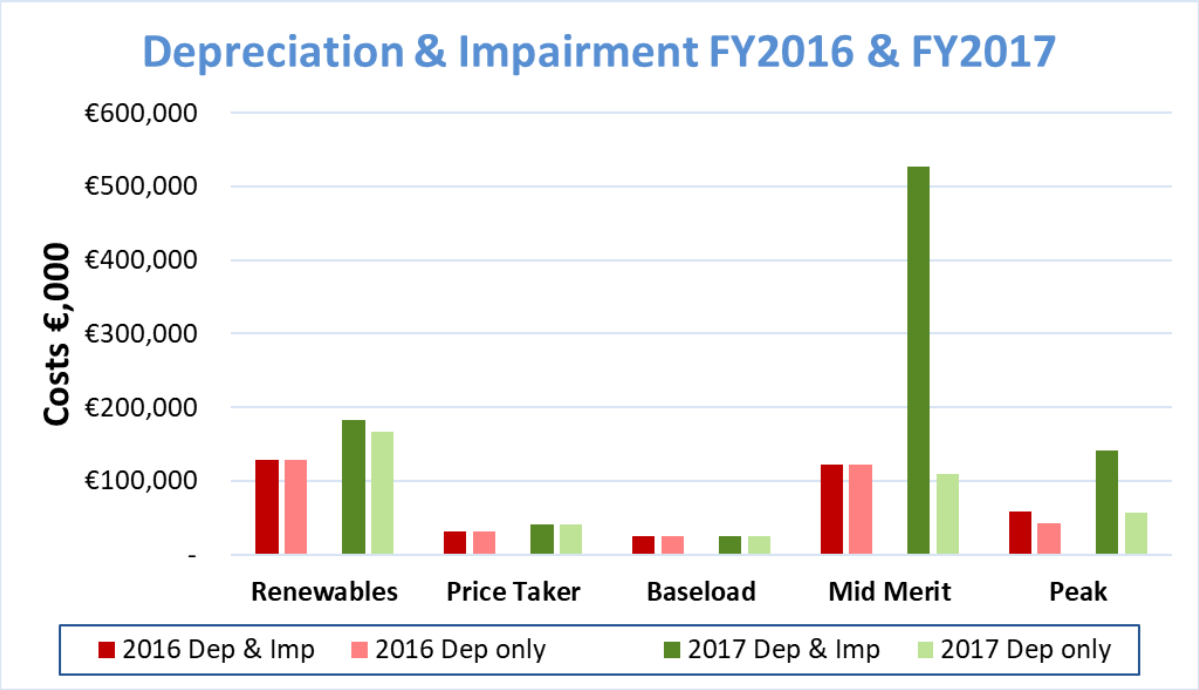
Figure 1.2: Breakdown of generator total costs between FY2012 and FY2017



Key finding 2: Very high impairment in FY2017

In FY2017 there was a marked increase in impairment reported, especially by Mid-Merit and Peaker plants. The total impairment reported by all generators in financial year FY2017 was more than €500 million. This level of impairments is unprecedented and has a very significant effect on the resulting net profitability for FY2017. When impairments are excluded Depreciation & Impairment reduce from €527 million in FY2017 to €110 million. The Mid-Merit and Peaker type plants, in particular, exhibit a very substantial drop in the Depreciation & Impairment costs, as is evident in Figure 1.3 below.

Figure 1.3: Breakdown of Mid-Merit costs between FY2012 and FY2017



Key finding 3: Higher profit margins earned by generation fuel sources with relatively small share of the market

Based on the financial reporting templates generator financial performance is assessed and compared for a number of generation fuel sources. As in previous years, gas represented the dominant fuel source for electricity generation. However, as illustrated in Figure 1.4 below, the largest net profit margins are earned by Hydro, Pump Storage and Distillate & Oil plants which represent a very small proportion of total electricity generated and total revenues earned.

Hydro, Pump Storage and Distillate & Oil plants represent around 3% of total revenues in the SEM, with Hydro earning net profit margins above 30% in both 2016 and 2017 while Distillate & Oil reported a net profit margin of 10% in 2016 and 15% in 2017. This can be explained by the fact that Distillate & Oil plants operate in relatively few but high margin periods and also earn a relatively higher proportion of their revenue from capacity payments whereas Hydro and Pump Storage have low operating costs and low financing costs due to their age.

In contrast, Gas and Coal plants together generated over 75% of all electricity in the SEM (as shown in Figure 1.5 below). Excluding impairments, the reported net profit margins for Gas was 8% in 2016 and 3% in 2017.

Excluding impairments, the net profit margins for Coal dropped markedly from 17% in 2015 to 1% in 2016 and -2% in 2017.

Figure 1.4: Breakdown of net profit margins by fuel source FY2012 to FY2017 impairments set to zero

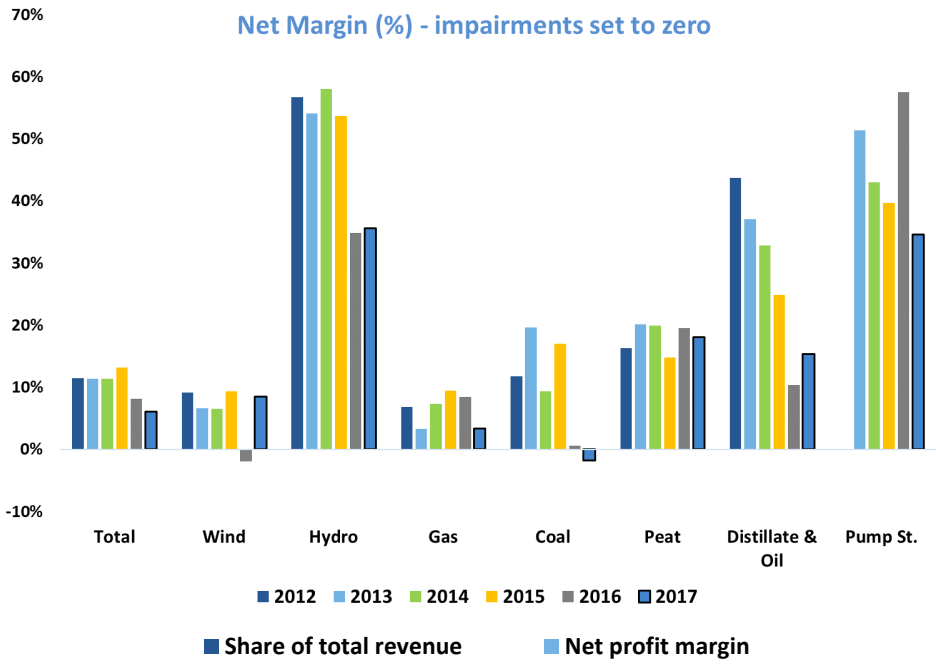
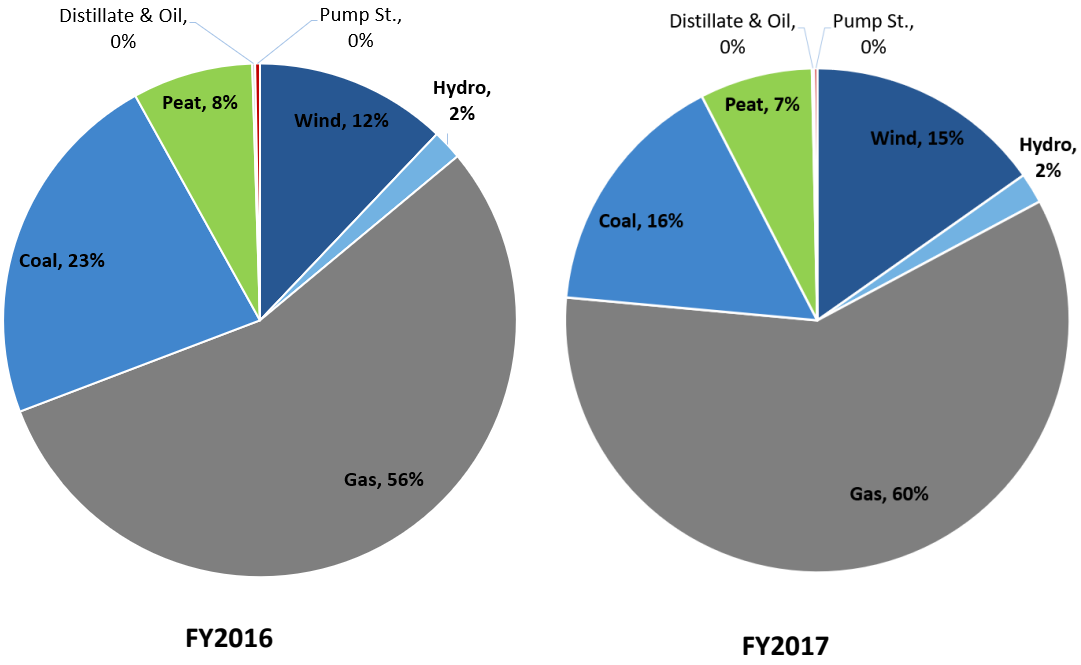


Figure 1.5: Breakdown of total volumes (MWh) by fuel source – Financial year 2016 and 2017



Key finding 4: Mid-Merit generators earn lower margins than generators both above and below them in the merit order

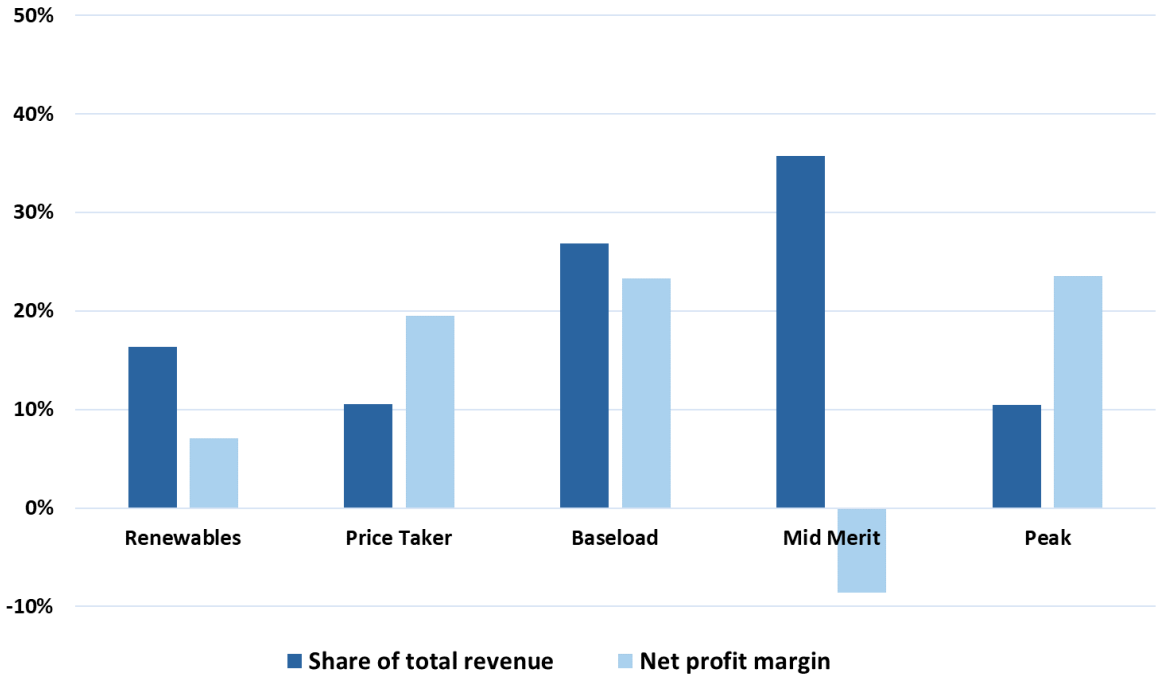
In addition to the fuel source analysis, the report also assesses the financial performance of SEM generators categorised by generation type: Renewables (Wind, Hydro and Pumped Storage), Price Takers (Peat plants), Baseload, Mid-Merit and Peakers. The allocation of plants into the last three categories has been made based on their load factor.

Mid-Merit plants provided more than one third of the electricity generated in the SEM in both 2016 and 2017. However, – excluding impairments – they have the lowest reported profit margins in 2017, as shown in Figure 1.6 below. This category includes coal and gas plants which generally report lower profit margins, as discussed in the previous key finding. Mid-Merit plants are often the marginal price setting generator in the market due to their place in the merit order, which means they tend to earn less inframarginal rent from the units of electricity sold relative to lower cost generators. Mid-Merit and Baseload plants earn most of their revenues from the SEM pool market which reflects their relatively high load factors.

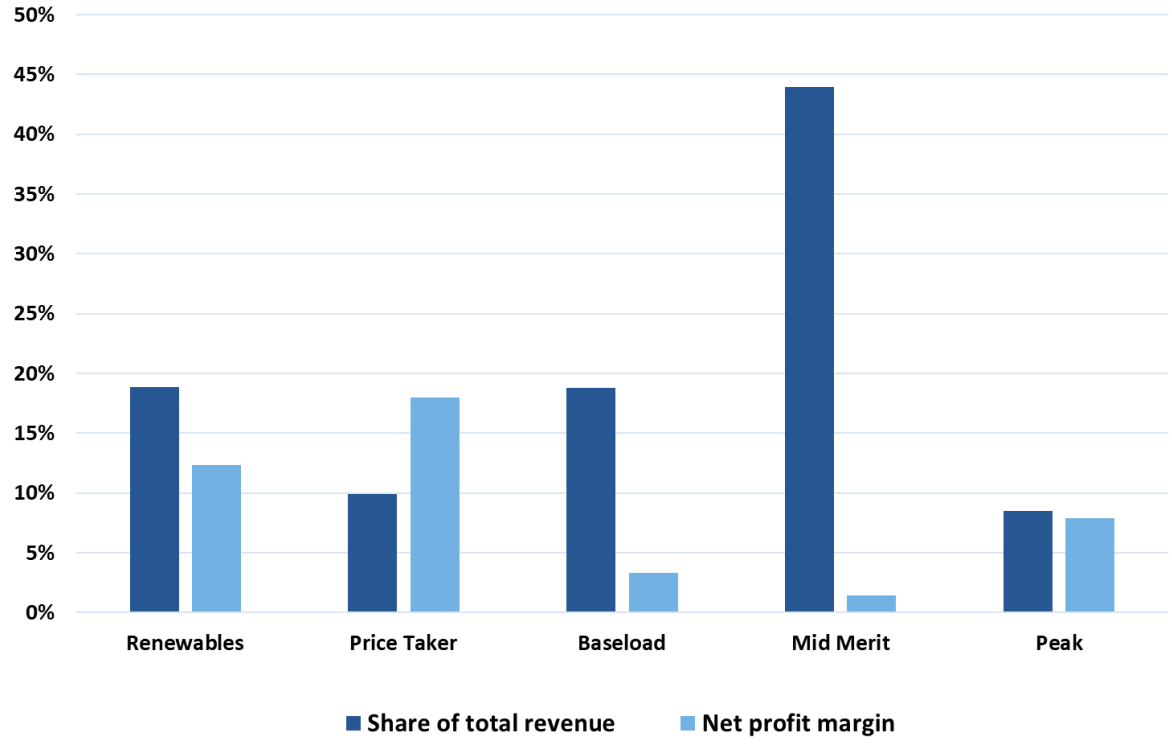
Peak plants in contrast provide only 1-2% of total electricity generated but earned around 10% of total revenues in 2016 and 8% of total revenues in 2017 with a reported net profit margin of 23% in 2016 and 7% in 2017. Peak plants earn higher margins as they operate in very few but high margin hours (i.e. the same as the pattern described for Distillate & Oil plants). Peak plants tend to earn most revenues from capacity payments.

Figure 1.6: Breakdown of total revenues and net profit margins by generation type, excluding impairments

FY2016



FY2017



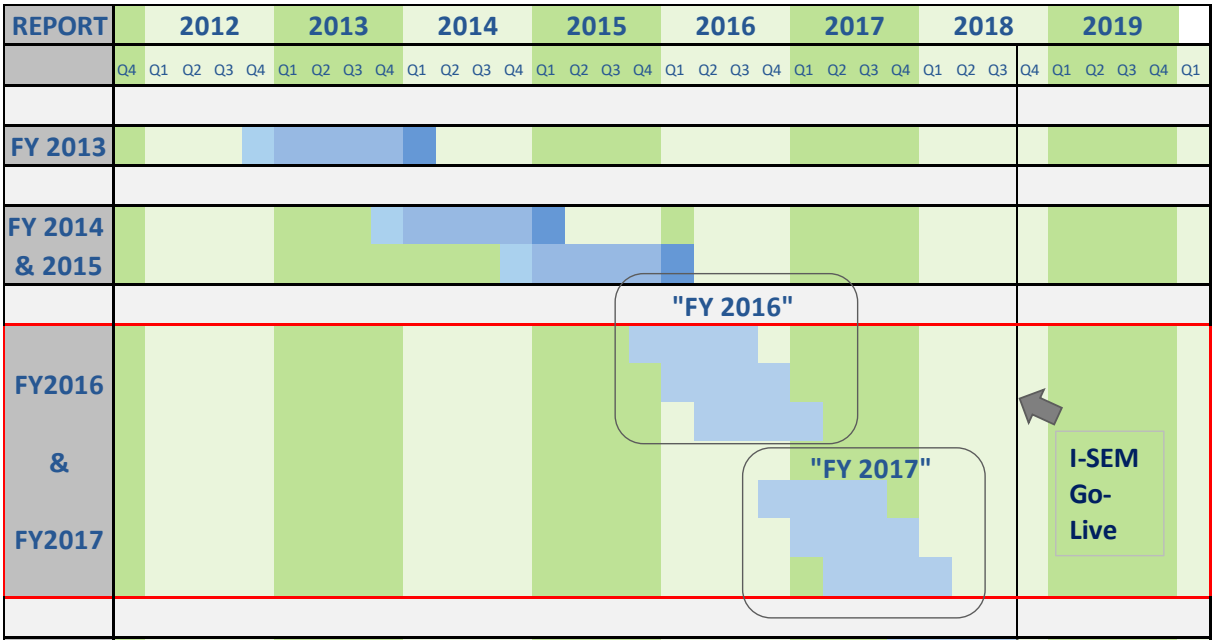
2. PURPOSE & CONTEXT

2.1. PURPOSE

This report, prepared by the Regulatory Authorities (RAs), examines the financial performance of generation companies operating in the SEM. This publication can be read in conjunction with the reports published by the Market Monitoring Unit (MMU).[4] The purpose of this report is to enhance transparency in the SEM and help understanding of the compensation received by SEM generators while respecting individual generator commercial sensitivity by presenting aggregated information only.

As depicted in Figure 2.1 below, this is the fourth report to be published following the SEM Committee's "Decision Paper on Generator Financial Reporting in the SEM" (SEM/12/027) and it follows a similar structure to the previous three reports.[5] However some changes have been made to this report to assist in the presentation of the findings.

Figure 2.1: Annual & Biennial Reports



The previous report covered the period up to March 2016. Most generators in the SEM have their financial year-end in either December or March. Hence the previous report included data up to December 2015 for generators with December financial year end and up to March 2016 for generators with March financial year end. The current report presents two years' worth of

[4] Information on the MMU can be found here while publications produced by the MMU can be accessed here.
[5] SEM/16/086 Generator Financial Performance in the SEM (November 2016), available here
SEM/14/111 Generator Financial Performance in the SEM (December 2014), available here
SEM/13/031 Generator Financial Performance in the SEM (May 2013), available here

data (2016 and 2017) – up to December 2017 for generators with December year end and up to March 2018 for generators with a March financial year end.

The report provides aggregated information on the financial performance of the generators categorised by generation fuel source and generation type and of the SEM as a whole. The report is divided into two parts:

- Analysis based on generator financial reporting templates submitted by generators to the RAs. The first year such templates were requested and submitted was 2011. The previously published report included analysis up to FY2015. This report includes analysis up to FY 2017 which is broken down as follows:
    - Breakdown by Generation Fuel Source
    - Breakdown by Generation Type
    - Revenue and Cost breakdown – FY2012 to FY2017
- Clean spark and dark green spreads in SEM. The data analysed is from 2012 to Q1 2018.

Although this report focuses on annual financial generator performance, it should be remembered that electricity generation involves significant and long-term capital investment, with upfront costs often repaid over decades. Therefore, annual variations in generator profitability (up or down) should be considered in that context.

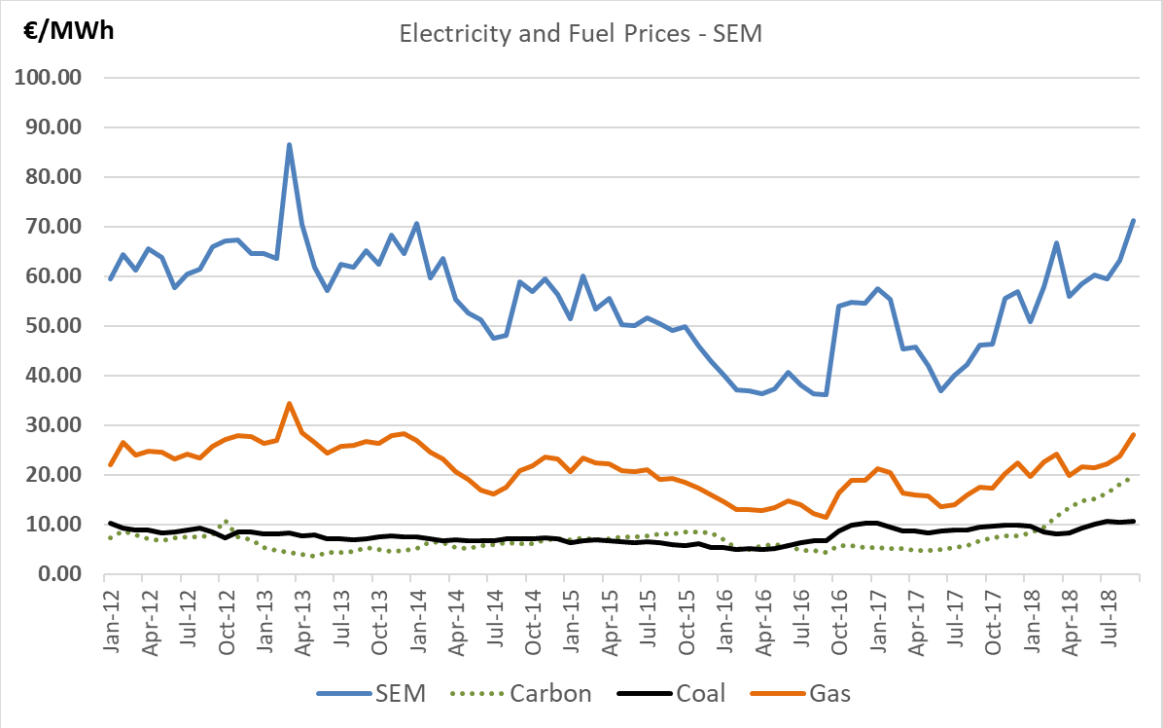
For an explanation of some of the financial terms used in the report please refer to Annex A.

2.2. CONTEXT

Figure 2.2 below shows the evolution of the average System Marginal Price (SMP) in the SEM since 2012. Following the trend since the beginning of 2013, the average SMP in the SEM continued to fall in 2016, before recovering in the latter half of 2016 and into 2017.

Gas has been the marginal fuel for much of this period and, therefore, the electricity prices often follow the shape of the gas prices as is also evident from Figure 2.2.

Figure 2.2: Electricity and Fuel prices from 2012 to Q1 2018



3. FINANCIAL REPORTING 2016 AND 2017

Following a May 2012 decision paper published by the RAs on Generator Financial Reporting in the SEM[6], generator companies with a combined capacity greater than or equal to 25 MW are required to complete an annual financial reporting template within six months of the end of their financial year. The uniformity of the template means that data can be easily aggregated across generators. An example of the template is shown below in Figure 3.1.

Note that a corresponding template applies for reporting in sterling, as appropriate.

Figure 3.1: Financial reporting template

Name of generation asset owner			
Company making this submission			
Name of Generation Site			
Name of Generation Unit			
EIC **W** Code of the generation **Unit** (Note 2)			
Capacity (MW) of the Generation Unit			
Financial Year			
Date of Generator's financial Year-End			
Financial Yr			
Volume of Electricity Sold - MWh			
Revenue	**€,000**		
Revenue from SEM Pool, made up of:			
Net Energy Payments			
Net Constrains Payments			
Revenue from Contract/Difference Payments			
Revenue from Capacity Payments			
Other Revenue, made up of:			
Revenue from Ancillary Services			
Revenue from Support Mechanisms			
Other Revenue Sources			
Total Revenue	**€,000**		
Operating Costs	**€,000**		
Fuel Related Operating Costs			
Non-fuel Operating Costs			
Total Operating Costs	**€,000**		
EBITDI	**€,000**	Gross Margin	%
Depreciation			
Impairment[1]			
EBIT	**€,000**		
Interest & Tax			
Net Profit	**€,000**	Net Margin	%

As can be seen from the financial reporting template above, generators are asked to provide details on the volume of electricity sold (MWh), revenue, operating costs, depreciation & impairment, and interest & tax.

[6] https://www.semcommittee.com/news-centre/decision-paper-generator-financial-reporting-sem

Generators are also requested to provide information to the RAs in order to uniquely identify generation units (i.e. via the EIC-W code) and to identify who is responsible for providing the requested financial information for the report. Using this data it is then possible to calculate a generator's Earnings before Interest, Tax, Depreciation & Impairment (EBITDI), Earnings before Interest & Tax (EBIT), and net profit as well as the generator's profit margins. The reporting template uses the term 'Gross Margin' to refer to the margin calculated by dividing EBITDI by total revenue. A strict definition of 'Gross Margin' would involve using gross profit rather than EBITDI.[7] For the purposes of this report we refer to this margin (EBITDI/total revenue) as the Operating Margin.

Total revenue reported in the template is made up of:

- **Revenue from SEM Pool** – All revenue earned from the sale of electricity through the SEM during the financial year, including constraint payments.
- **Revenue from Contract/ Difference Payments** – Difference payments from Contracts for Differences (CfD) hedging arrangements in relation to the SMP with a supplier or another third party. These could be positive or negative for the generator. In addition, if generators enter into a Power Purchase Agreement (PPA) with an intermediary, the difference between revenue earned in the SEM pool by the intermediary and the payment to the electricity generator under the PPA is also included in this revenue category.
- **Revenue from Capacity Payments –** All payments received through the Capacity Payments Mechanism (CPM) are included here.
- **Other Revenue** – Any other revenues, for example revenue from ancillary services, are included here. The disaggregation of Other Revenues should also include revenues under the various support mechanisms such as the Public Service Obligation (PSO) levy in the Republic of Ireland and ROCs in Northern Ireland.

Total operating costs consist of:

- **Fuel Related Operating Costs** – All fuel costs incurred during the financial year in question for the purpose of electricity generation and any associated variable fuel transportation costs.
- **Non-fuel Operating Costs** – All additional plant operating costs, including fixed fuel transport charges, transmission network use of system charges (TUoS), plant maintenance, salaries and insurance.

In this section we analyse the financial performance of all generators which have submitted financial reporting templates (companies with aggregate generation capacity equal to or greater than 25 MW).

[7] Gross profit is calculated as revenue minus the cost of goods sold, whereas EBITDI is calculated as gross profit minus fixed operating expenses.

The fact that the financial reporting templates are completed for each individual generation unit means that the data can be grouped in different ways to understand how different categories of generators perform. In this report we group generators by fuel source and generation type.

It is also worth mentioning that pumped storage generators are net users of electricity as they consume more electricity to pump water to the upper reservoir than is generated by the water down flow. It is notable that they generate most of their revenue by selling electricity during periods of peak demand when electricity prices are higher while using use lower-cost off-peak electricity to run the pumps to refill the upper reservoir.

3.1. Breakdown by Generation Fuel Source

Table 3.1 and Table 3.2 below provide a breakdown of the financial reporting template data by generation fuel source for FY2016 and FY2017 respectively.

Table 3.1: Breakdown of financial reporting template results by generation fuel source – Financial Year 2016

Financial Year 2016	Total	Wind	Hydro	Gas	Coal	Peat	Distillate & Oil	Pump St.
Volume of Electricity Sold - MWh	33,322,568	4,052,578	631,479	18,522,592	7,614,749	2,541,650	60,814	(101,295)
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€1,452,589	€224,277	€27,644	€788,755	€287,028	€107,691	€10,257	€6,936
Revenue from Contract/Difference Paymen	€71,166	€634	-	€59,716	€10,816	-	-	-
Revenue from Capacity Payments	€416,408	€9,986	€6,719	€249,818	€60,042	€17,148	€58,857	€13,838
Other Revenue	€381,926	€67,595	€1,504	€154,945	€16,545	€121,256	€5,070	€15,012
Total Revenue	€2,329,364	€309,768	€35,867	€1,253,234	€374,431	€246,094	€74,184	€35,786
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€1,090,862	€8,410	-	€742,675	€206,581	€127,242	€5,954	-
Non-fuel Operating Costs	€596,284	€105,881	€19,777	€263,800	€127,648	€39,982	€27,584	€11,612
Total Operating Costs	€1,690,897	€118,043	€19,777	€1,006,475	€334,229	€167,224	€33,537	€11,612
EBITDI	€665,915	€191,725	€16,090	€246,759	€65,821	€78,870	€42,476	€24,174
Depreciation & Impairment	€364,313	€121,825	€3,578	€113,036	€60,037	€30,616	€31,638	€3,583
EBIT	€329,210	€80,536	€12,513	€150,691	€5,784	€48,254	€10,840	€20,592
Interest & Tax	€138,972	€86,565	-	€45,419	€3,629	€198	€3,161	-
Net Profit	€190,237	(€6,029)	€12,513	€105,273	€2,155	€48,056	€7,677	€20,592
Gross Margin - %	**28.6%**	**61.9%**	**44.9%**	**19.7%**	**17.6%**	**32.0%**	**57.3%**	**67.6%**
Net Margin - %	**8.2%**	**-1.9%**	**34.9%**	**8.4%**	**0.6%**	**19.5%**	**10.3%**	**57.5%**

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Table 3.2: Breakdown of financial reporting template results by generation fuel source – Financial Year 2017

Financial Year 2017	Total	Wind	Hydro	Gas	Coal	Peat	Distillate & Oil	Pump St.
Volume of Electricity Sold - MWh	32,793,852	5,015,324	642,883	19,515,282	5,262,474	2,380,199	44,763	(67,073)
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€1,642,757	€287,853	€33,306	€917,688	€274,456	€116,482	€8,656	€4,316
Revenue from Contract/Difference Paymen	€19,678	€5,130	-	(€6,004)	€20,552	-	-	-
Revenue from Capacity Payments	€422,550	€13,536	€6,178	€249,168	€65,790	€15,568	€61,747	€10,562
Other Revenue	€438,420	€100,881	€1,506	€171,726	€27,899	€117,803	€5,822	€12,782
Total Revenue	€2,523,402	€407,398	€40,990	€1,332,579	€388,697	€249,853	€76,225	€27,660
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€1,255,201	€9,740	-	€906,260	€212,823	€119,617	€6,761	-
Non-fuel Operating Costs	€602,176	€116,736	€21,634	€246,816	€125,467	€44,710	€32,347	€14,467
Total Operating Costs	€1,859,326	€128,425	€21,634	€1,153,076	€338,290	€164,326	€39,108	€14,467
EBITDI	€664,079	€278,974	€19,356	€179,505	€50,407	€85,527	€37,118	€13,192
Depreciation & Impairment	€917,421	€175,077	€4,750	€340,981	€330,362	€40,302	€22,329	€3,621
EBIT	(€253,342)	€103,897	€14,607	(€161,476)	(€279,955)	€45,225	€14,788	€9,572
Interest & Tax	€112,435	€85,312	-	€19,466	€4,362	€198	€3,096	-
Net Profit	(€365,777)	€18,585	€14,607	(€180,941)	(€284,317)	€45,027	€11,692	€9,572
Gross Margin - %	**26.3%**	**68.5%**	**47.2%**	**13.5%**	**13.0%**	**34.2%**	**48.7%**	**47.7%**
Net Margin - %	**-14.5%**	**4.6%**	**35.6%**	**-13.6%**	**-73.1%**	**18.0%**	**15.3%**	**34.6%**

Table 3.1 and Table 3.2 above provide an overview of the financial reporting template data by fuel source for FY2016 and FY2017, respectively. The total gross margins for FY2016 and FY2017 were 29% and 26% respectively. The relatively stable gross margins reflect the fact that, in aggregate, falls in revenue as a result of lower SMP have been largely offset by lower costs driven by lower fuel prices. Likewise, in aggregate, the profits arising from increases in revenue as a result of higher SMP are generally largely offset by higher costs driven by higher fuel prices.

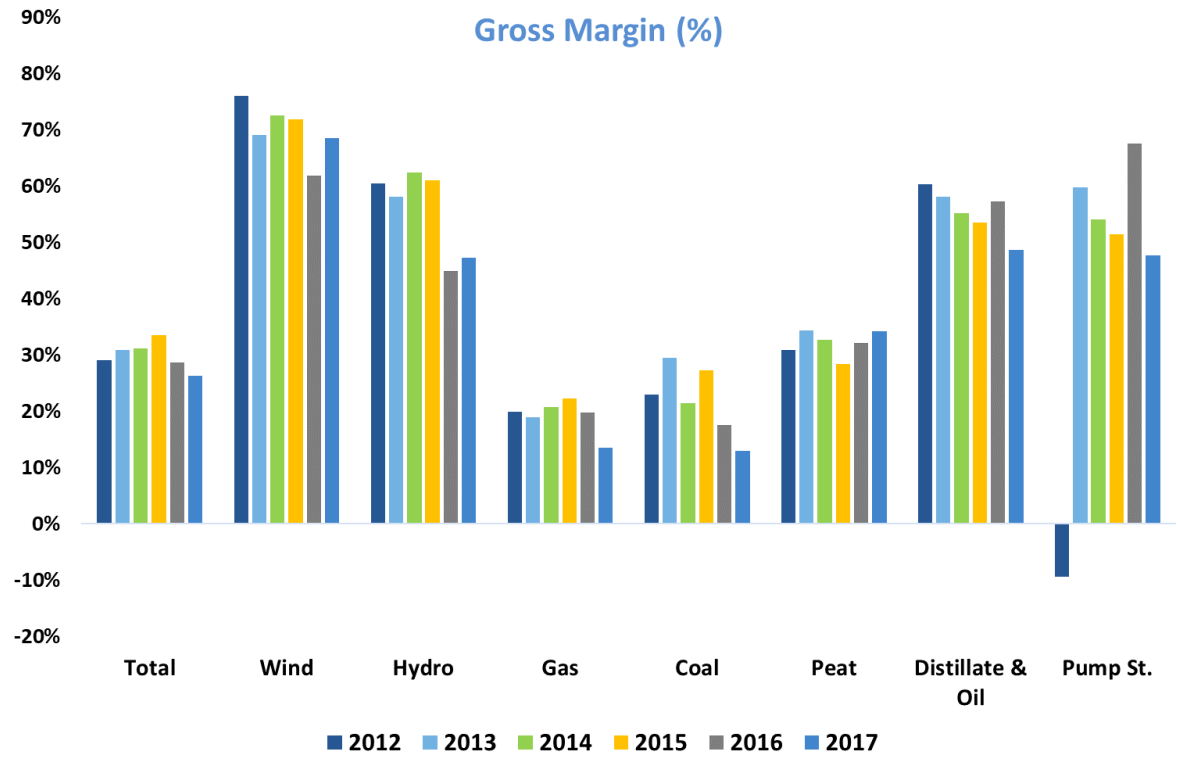
As expected, there are clear differences in gross and net margins across different fuel sources. Figure 3.2 and Figure 3.3 provide a comparison of gross and net margins by fuel source between FY2012 and FY2017. The main trends in FY2016 and FY2017 are:

- **Hydro and Pump Storage plants** had the highest net margins in FY2016 and FY2017. Hydro and Pump storage benefit from low operating costs and low financing costs due to their age. For Pumped Storage the gross margin spiked to 68% in FY2016 in line with greater volumes of electricity for that year but dropped back to 48% in FY2017. Net margin has decreased gradually from FY2013, caused by lower revenues and higher operating and depreciation and impairment costs.
- **Wind generation** had gross margin in excess of 60% in both FY2016 and FY2017. High gross margins for wind generators are driven by low operating costs. However, their net margin is significantly lower, caused by high financing and depreciation/impairment costs. In FY2016, the net margin decreased to -2% and improved in FY2017 to 5% as total revenue increased.
- **Distillate & Oil generators** have previously earned the third highest net margin due to the fact that Distillate & Oil generators are peaking plants, which mostly generate electricity when demand is high, supply is scarce and prices are high. However, the net margin declined significantly to 10% in FY2016 and 15% in 2017. This reduction in net margin was caused largely by higher impairment charges reported by some generators.
- **Gas-fired generators** The net margin of gas plants climbed from 3% in FY2013 to 9% in FY2015 as a result of higher volumes of electricity generated, lower fuel related costs and lower depreciation and 'interest and tax' costs. In FY2016 the net margin decreased slightly to 8%. In FY2017 the net margin decreased to -14%, driven by significant increases in gas prices, reductions in CfD revenue and very significant impairment. When impairment is excluded the net margin increases to 3% in FY2017 for gas plants.
- **Coal generators** experienced a significant drop in gross margins from 18% in FY2016 to 13% in FY2017. Despite increasing revenues in 2017 and stable operating costs, the net profit margin reduced dramatically from 1% to -73%, with the key driver being

impairment. When impairment is discounted the net profit margins are 1% and -2% respectively, as shown in figure 3.4. The general decreasing trend in the dark green spread from 2015 to mid-2017, as shown in Figure 4.2, is also a factor in the fall in profitability of coal generation in recent years and a marked fall in net profit in 2017 coinciding with lower volumes of electricity generated as indicated in Figure 3.5 below.

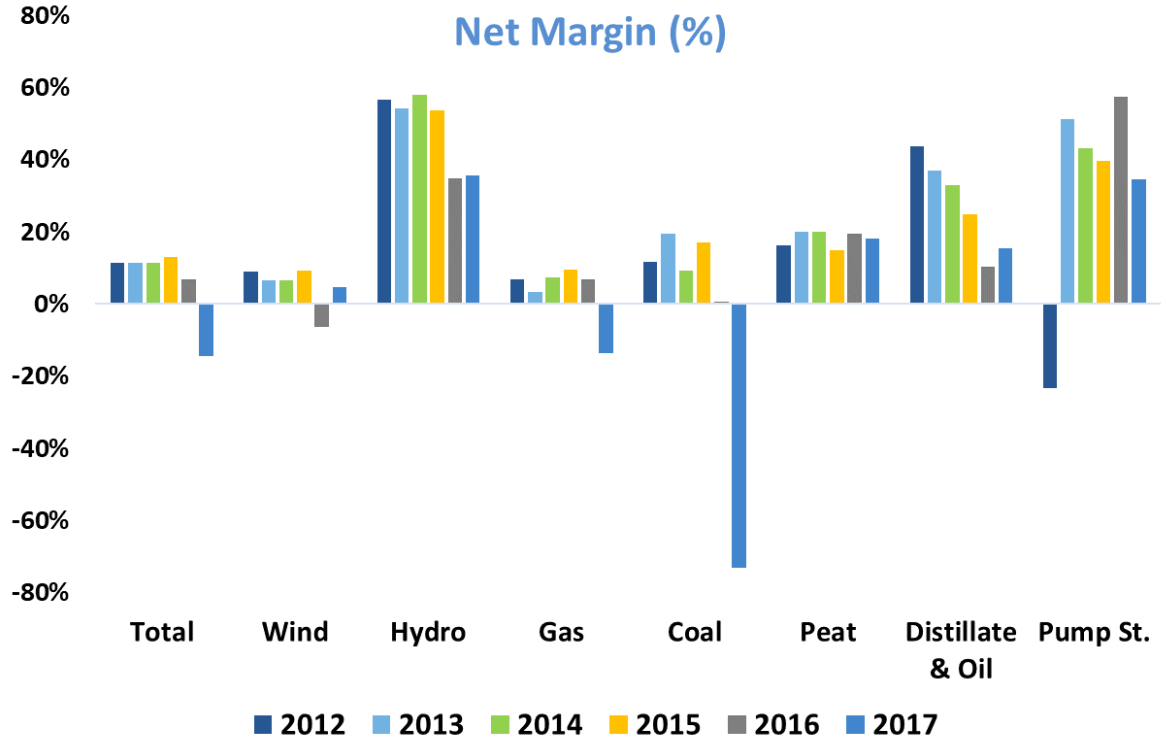
- **Peat generators** reported a gross margin of 32% and a net margin of 20%, respectively in FY2016. The gross margin increased in FY2017 to 34% and the net margin decreased to 18%, largely caused by higher non-fuel operating costs and increased depreciation and impairment charges.
- The overall **Total** net profit margins stood at 7% in FY2016 but have fallen to -15% in FY2017, as illustrated in Figure 3.3. This decline is linked to very significant impairments reported by several generators in FY2017. When the impairment charges are excluded for 2017, the overall net profit margin increases to 6%, as illustrated in Figure 3.4.

Figure 3.2: Gross margin (%) by fuel source – FY2012 - FY2017[8]



[8] The negative margin for Pumped Storage in FY2012 is associated with an extensive outage of the four pumped storage units in the first half on 2012.

Figure 3.3: Net margin (%) by fuel source – FY2012 - FY2017



The fall in average SMP in FY2016 has translated into decreased average revenues of €70/MWh of electricity sold as shown in Table 3.3 below. **Hydro** generators have experienced significant decreases in their average revenue per MWh of electricity sold since 2014, decreasing from €90/MWh in FY2014 to €72/MWh in FY2015, with a further decrease to €57/MWh and €64/MWh in FY2016 and FY2017 respectively.

Coal generators also experienced a decrease in revenue per MWh from €67/MWh in FY2015 to €49/MWh in FY2016, followed by an increase to €74/MWh in FY2017. The drop in revenue per MWh in FY2016 is consistent with a lower average SMP in 2016.

Similarly, **Gas** generators have experienced a significant fall in average revenue per MWh of electricity sold since FY2013, decreasing from €117/MWh in FY2013 to €68/MWh in FY2016 and FY2017 (42% decrease).

The very high revenue per MWh for **Distillate & Oil** generators can be explained by the fact that these plants generate a relatively small volume of electricity in higher priced hours and also earn significant revenues from capacity payments (as discussed in Section 3.1.2).

The stable revenue per MWh of electricity sold for **Peat** can be explained by the impact of contracting and support mechanisms in the Republic of Ireland which provide protection against a falling SMP.

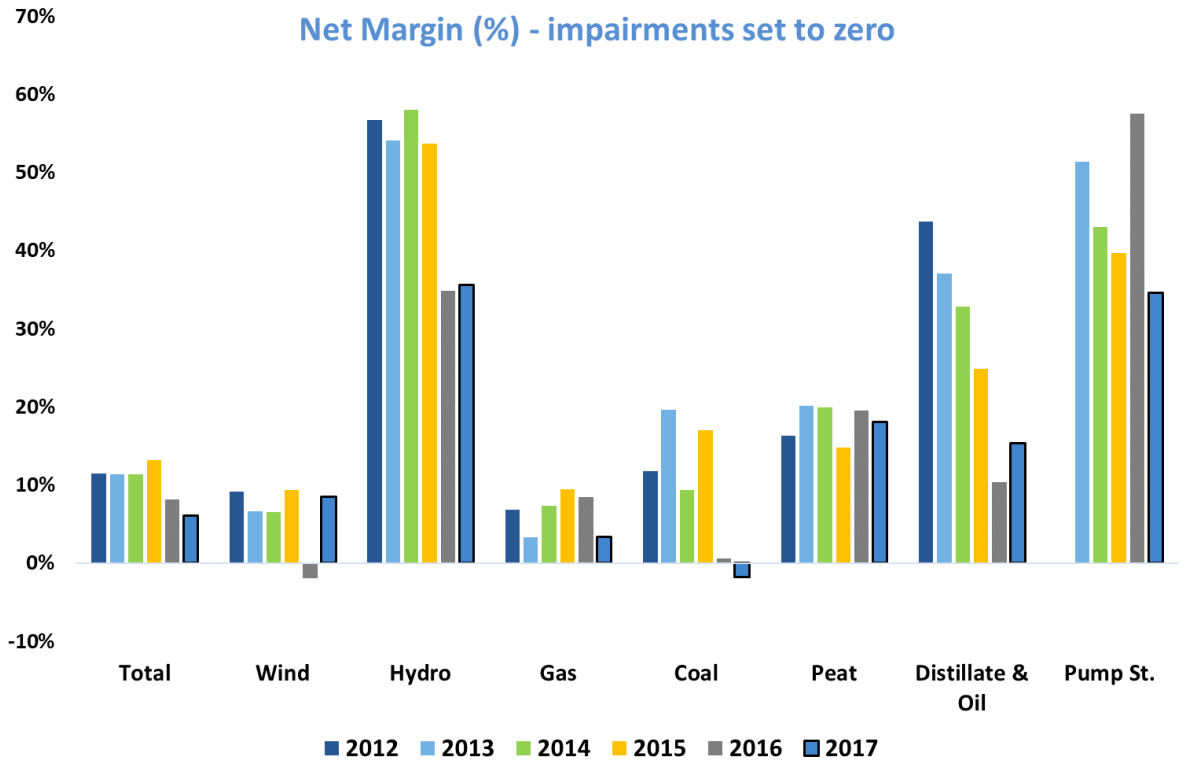
Overall, average revenue per MWh for total electricity generation has decreased steadily from €103/MWh in FY2013 to €70/MWh in FY2016. The revenue per MWh recovered to €77/MWh in FY2017, primarily driven by the corresponding increase in SMP in FY2017.

Table 3.3: Revenue per MWh of electricity sold – by fuel source[9]

Revenue per MWh of electricity sold	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
Total	€100	€103	€98	€86	€70	€77
Wind	€83	€83	€85	€73	€76	€81
Hydro	€94	€87	€90	€72	€57	€64
Gas	€105	€117	€100	€90	€68	€68
Coal	€80	€73	€78	€67	€49	€74
Peat	€101	€105	€106	€108	€97	€105
Distillate & Oil	€2,629	€3,118	€3,206	€1,384	€1,220	€1,703

Comparing with Figure 3.3 above, when impairments are excluded (for FY2016 and FY2017 only) the net margin[10] improves substantially, as is particularly evident in Figure 3.4 below for Gas and Coal.

Figure 3.4: Net margin (%) by fuel source – FY2012 - FY2017 excluding impairments



[9] Pumped storage has been omitted from this table as it reports (negative) net electricity generation figures (electricity generated minus electricity used to pump water) hence calculating revenue and costs per MWh sold is not possible.

[10] Note that the net margin for Pumped Storage in FY2012 was anomalous due to a lengthy outage. Hence, it is not shown in Figure 3.3.

3.1.1. Electricity Generation Volumes and Revenues by Fuel Source

Figure 3.5 below presents the breakdown of electricity generation volumes by each fuel type for FY2016 and FY2017, respectively. It is important to note here that this only includes figures that were reported to the RAs through the financial reporting templates. In both FY2016 and FY2017, **Gas** generators made up the largest source of electricity generation, with 56% and 60% of total electricity generation respectively. The smallest contributions to electricity generation are from **Pumped Storage** (negative contribution due to having a net usage of electricity), **Distillate & Oil**, and **Hydro** generators, which in combination provide around 2% of total electricity generation volumes. These fuel sources however earn the highest profit margins although they account for a relatively small share of the total market revenues (around 6% of total revenues). **Coal-fired** generation is the second highest contributor to electricity generation, with a 23% and 16% share of electricity generation in FY2016 and FY2017, respectively. The most significant renewable electricity source is **Wind**, which accounted for 12% and 15% share of electricity generation in FY2016 and FY2017, respectively.

Figure 3.5: Breakdown of total volumes (MWh) by fuel source – Financial year 2016 and 2017

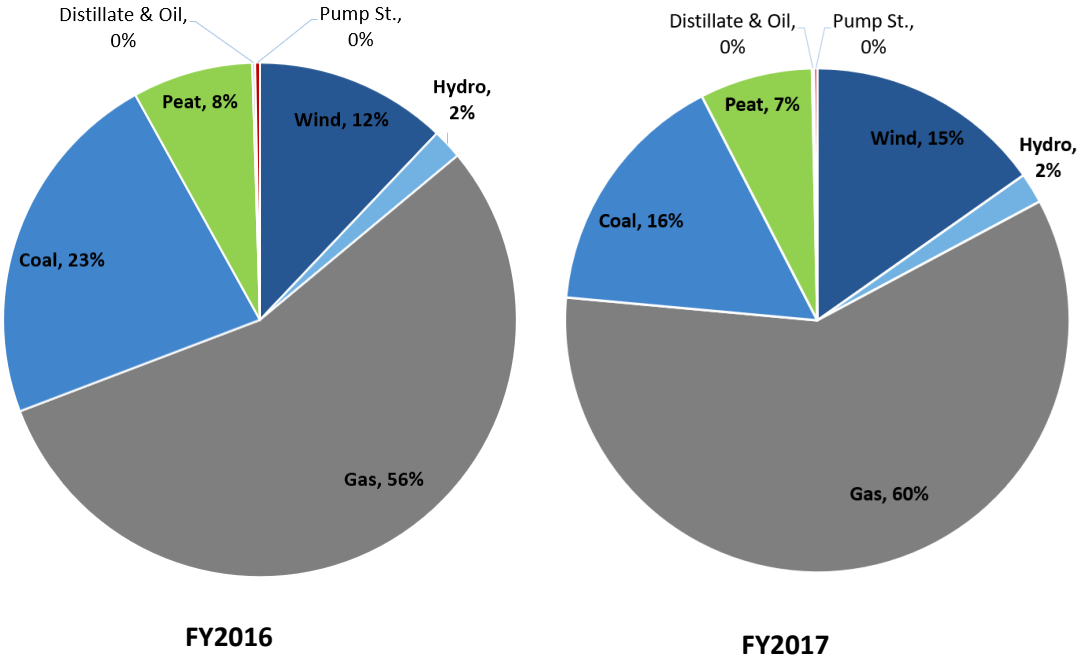
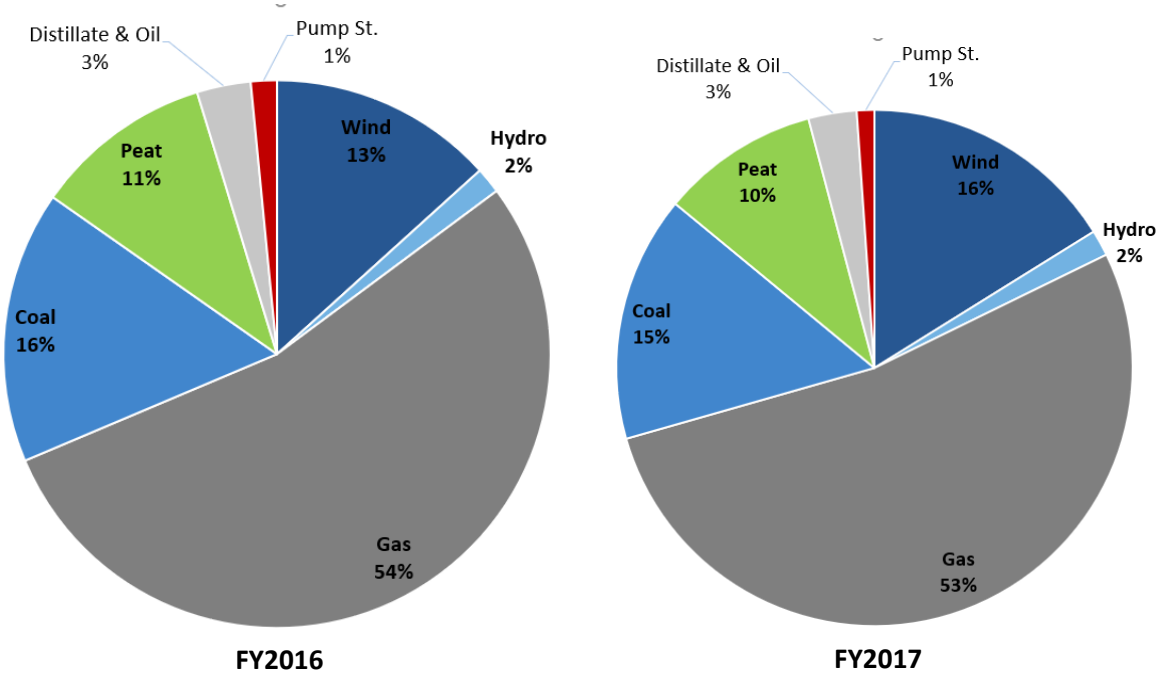


Figure 3.6 shows the breakdown of total revenues by fuel source for FY2016 and FY2017. As expected, there is generally a close correlation between the breakdown of total generation volumes by fuel source and the breakdown of total revenues by fuel source.

Figure 3.6: Breakdown of total revenues by fuel source – Financial year 2016 and 2017



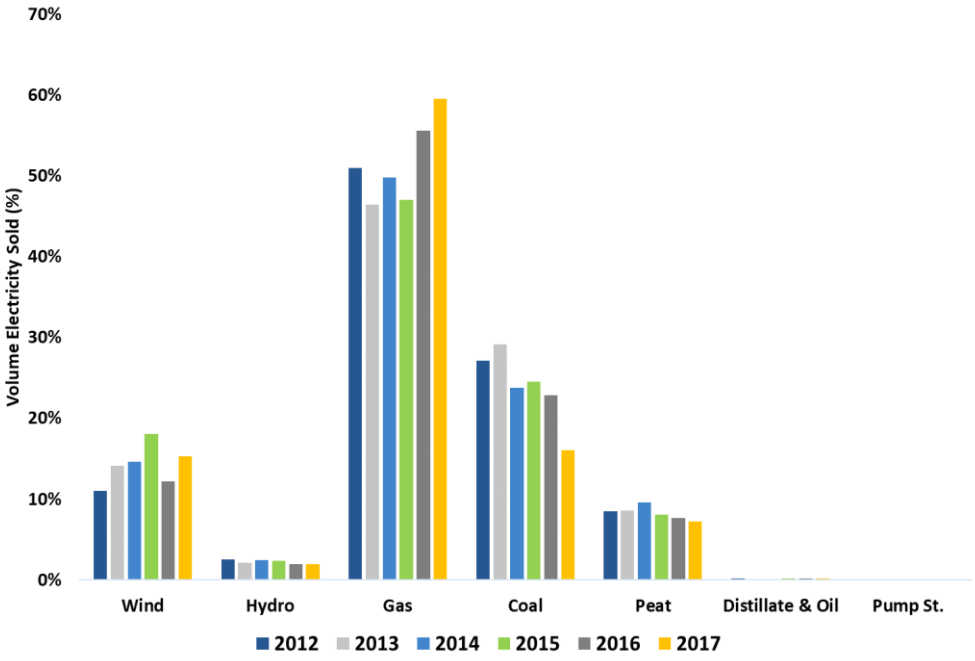
Gas fired generators earned the highest share of total revenues, with a 54% share in FY2016 and 53% in FY2017. **Coal-fired** generators earned a lower portion of total revenues than their share of total volumes accounting for 16% of total revenues in FY2016 and 15% in FY2017 compared to 23% and 16% shares of total volume. This is because the majority of coal fuelled generators are Baseload and Mid-Merit type generators (see Table 3.9 in Section 3.2), meaning a larger proportion of their electricity generation is generated during off-peak hours when electricity prices are low compared with peaking plants, and earn proportionally less revenues from capacity payments or other revenue streams (see section 3.1.2). In contrast, **Distillate & Oil** and **Pumped Storage** in combination received 4% of total revenues in FY2016 and FY2017, although their share of electricity generated was less than 1%. This is because they both primarily generate electricity during peak hours when prices are high and receive a large proportion of their revenue through capacity payments and other revenue streams. The share of total revenues for **Wind** and **Hydro** generators are similar to their share of total production output.

Figure 3.7 below shows the breakdown of total volumes and revenue by fuel source during the period FY2012 to FY2017. **Coal** generation accounted for approximately 23% of total electricity generation from 2014 to 2016, but dropped to 16% in 2017.

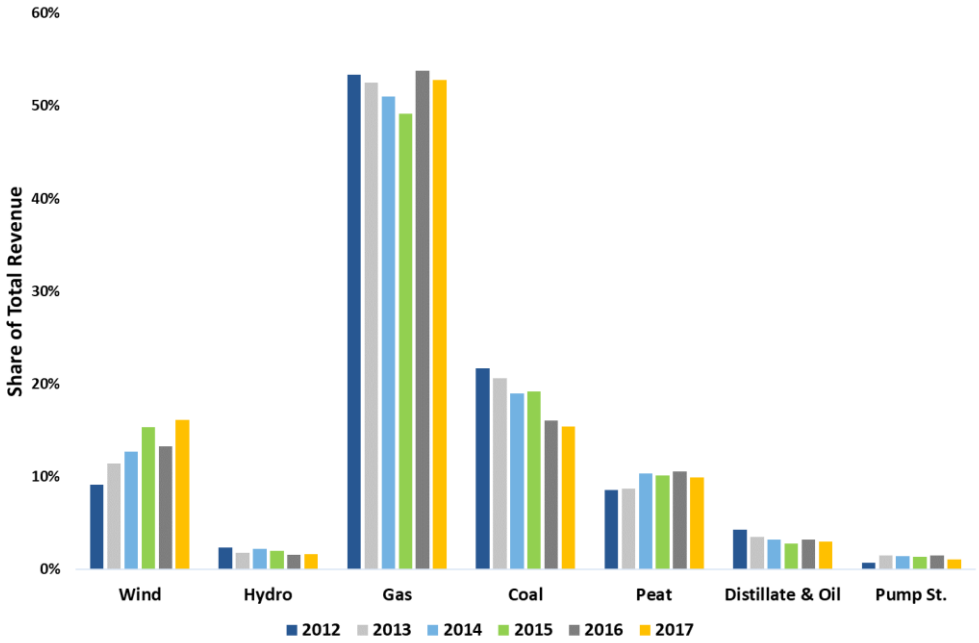
In contrast, **Gas** generation accounted for approximately 46-50% of total electricity generation from 2012 to 2015. However, the share of electricity from gas increased to 56% in 2016 and 60% in 2017. These increases in gas generation were driven by lower gas prices relative to coal and lower relative emissions costs.

Figure 3.7: Breakdown of total volumes and revenues by fuel source – FY2012 - FY2017

*Breakdown of **volumes** by fuel source – 2012 – 2017*



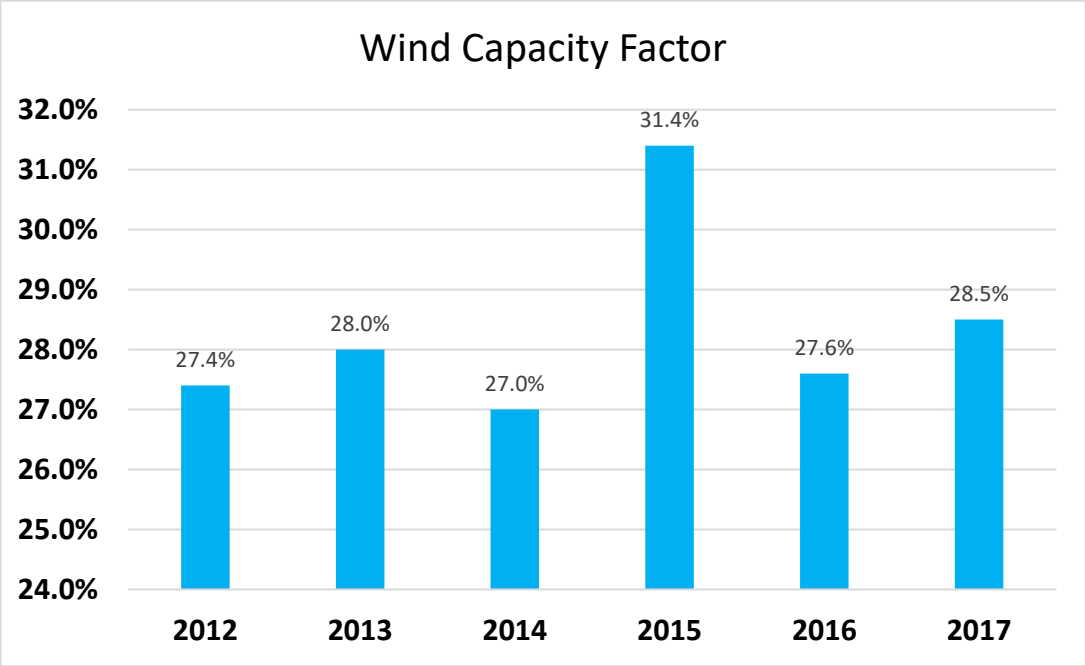
*Breakdown of **revenue** by fuel source – 2012 – 2017*



A notable trend is the gradually increasing share of **Wind** generation from FY2012 to FY2015 as installed wind capacity increases. Figure 3.8 below, based on data sourced from SEAI's Energy in Ireland report[11], shows that the average capacity factor for wind powered generation in Ireland over the period 2012 to 2017 was 28.3%. The capacity factor of 31.4% in 2015 reflects very strong wind patterns in 2015, with a return to near average capacity factors in 2016 and 2017. This partly accounts for the drop in production in wind energy volumes from 2015 to 2016.

As shown above in Figure 3.7, based on data submitted for this report, electricity generation from wind accounts for circa 12-16% of electricity generation in FY2016 and FY2017

Figure 3.8: Wind capacity factor Ireland 2012-2017



However, this contrasts with SEAI's Energy in Ireland report where wind energy accounts for 22-25% of Gross Electricity Consumption. This significant difference may be accounted for due to a number of factors:

Late Submission: A very significant producer of wind power – Brookfield Renewable Ireland Limited[12] – submitted data too late to be included for this 2016 and 2017 report.
25MW Capacity Threshold: Another factor is the aggregate 25 MW capacity threshold for the reporting of Generator Financial Performance information.
Incorrect breakdowns: In addition, a small minority of generators failed to provide the required breakdown correctly and therefore have not been included in the report.

These factors distort the 2012-2017 trend for wind energy depicted in Figure 3.7 above and contribute to the lower than expected share of electricity generation from wind.

3.1.2. Revenues and Costs by Fuel Source

Within the financial reporting template generators are asked to disaggregate revenue into four categories:

- Revenue from the SEM pool;
- Contract for Difference (CfD) payments;
- Capacity payments; and
- Other revenue.

Figure 3.9 and Figure 3.10, shown below, present the source of generator revenues by fuel source for FY2016 and FY2017. As expected, SEM pool revenue accounts for the majority of the total revenues earned by generators, with a share of 63% of total revenues in FY2016 and a share of 65% in FY2017. The 58% share reported for FY2015 was lower on account of higher total revenues for FY2015, a key driver of which was higher Contract/Difference payments. The next biggest revenue source is capacity payments, accounting for a share of 18% of total revenue in FY2016 and 17% of total revenue in FY2017. CfD payments, which accounted for 10% of total revenue in 2015, make up a relatively small proportion of total revenue in FY2016 & FY2017, with their share decreasing to 1% in FY2017 reflecting the smaller effect of hedging contracts against higher SMP. Unlike all other generators which earn the majority of their revenue through the SEM pool, **Pumped storage** and **Distillate & Oil** generators earn the majority of their revenue through capacity payments and, especially in the case of Pumped Storage, through other revenue streams (e.g. ancillary services revenue).

[11] Derived from SEAI's report: https://www.seai.ie/resources/publications/Energy-in-Ireland-2018.pdf

[12] The CRU has been in correspondence with Brookfield Renewable Ireland Limited in relation to the late submission for FY 2017 and expects that the information requested by the RAs will be submitted henceforth in a timely manner.

*Figure 3.9: Source of generator revenue as a **% of total revenue** – Financial year **2016** (by fuel source)*

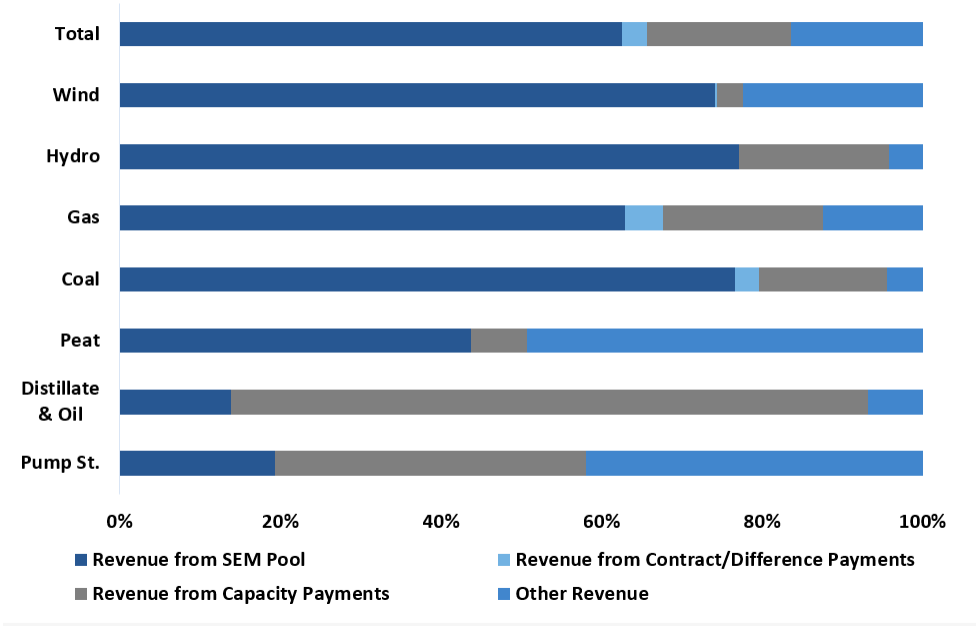
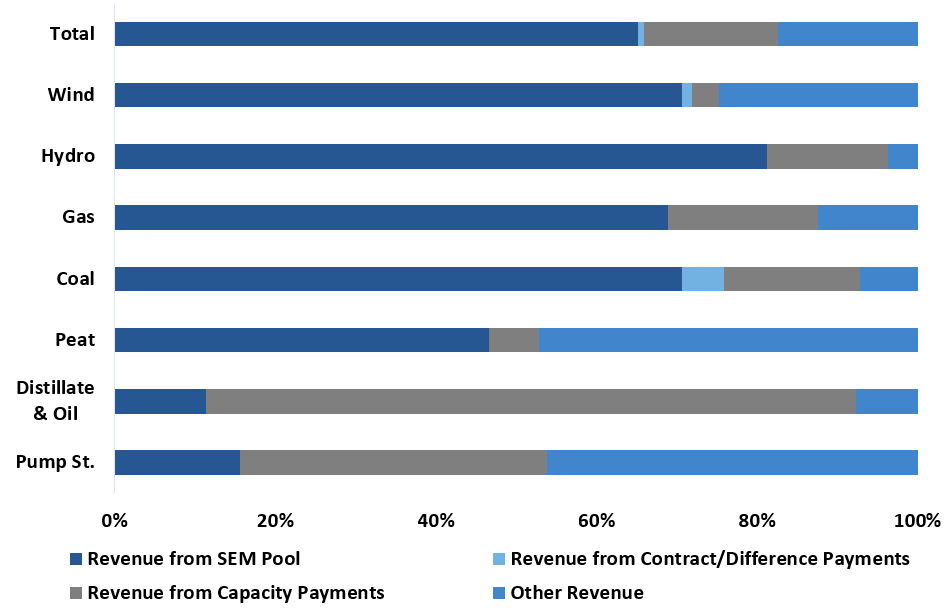


*Figure 3.10: Source of generator revenue, **% of total revenue** – Financial year **2017** (by fuel source)*



In addition, generators are also asked to allocate costs into four cost categories:

- Fuel related operating costs;
- Non-fuel operating costs;
- Depreciation & Impairment; and
- Interest & Tax.

Figure 3.11 and Figure 3.12 present the make-up of generator costs grouped under different fuel sources. Fuel related operating costs represent around half of total costs for all generators. Non-fuel operating costs are the second largest contributor to total generator costs with a share of 27% in FY2016 and 21% in FY2017.

Unlike the breakdown of revenue analysis, the source of generator costs differs substantially between generators using different fuel sources. As expected, renewable electricity sources (Wind, Hydro and Pumped storage) have minimal fuel related operating costs. **Wind** generators have relatively high capital costs, which is reflected in high proportions of 'Interest & Tax' and 'Depreciation & Impairment' costs, whereas the majority of **Pumped Storage** and **Hydro** generator costs are accounted for by non-fuel operating costs. In contrast, fuel related operating costs were the largest overall costs for **Gas**, **Coal** and **Peat** generators. Prior to 2015, non-fuel operating costs generally accounted for the largest operating costs for **Distillate & Oil** generators. However, from FY2015 until FY2017 depreciation and impairment charges for Distillate & Oil plants increased substantially due to significant impairment costs reported by some generators.

*Figure 3.11: Breakdown of generator **costs**, % of total costs – Financial year 2016 (by fuel source)*

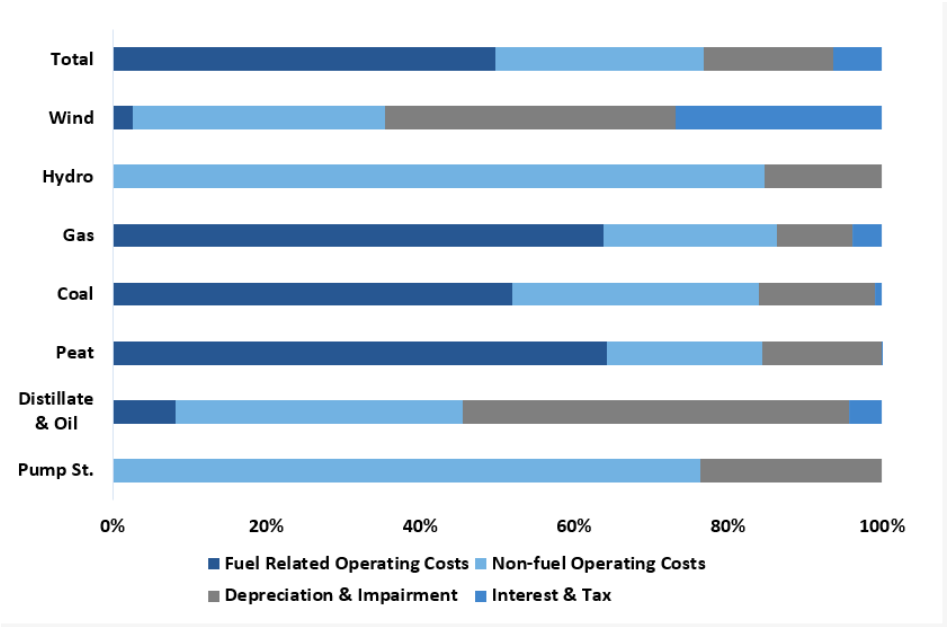
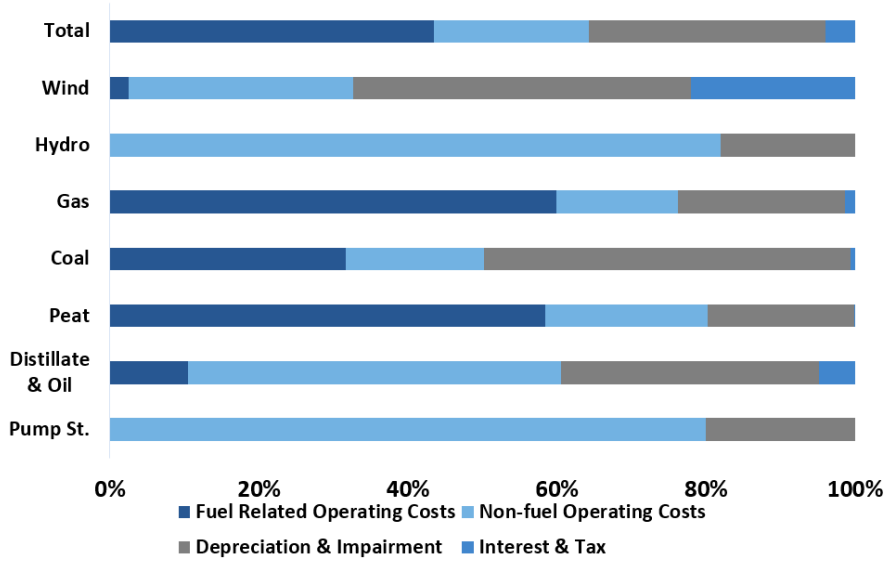


*Figure 3.12: Breakdown of generator **costs**, % of total costs – Financial year 2017 (by fuel source)*



Figures 3.13 and 3.14 below provide a percentage breakdown of generator revenue and costs by fuel source between FY2012 and FY2017. Over time it appears that the relative importance of each revenue stream fluctuates quite significantly, which is especially noticeable for CfD revenue. For example, the proportion of total revenue accounted for by CfD payments for wind generation has varied from a high of 12% in FY2012, to a low of 0% in FY2016, and to 1% in FY2017. On the other hand, the make-up of generator costs across fuel sources has remained fairly constant since FY2012, when excluding impairment charges. Despite a general trend of falling fuel prices from 2013 up until Q4 2016, relatively stable share of fuel costs have prevailed because fuel costs vary with volumes of electricity generated much more than non-fuel costs. This means that when volumes of electricity generated increase the relative proportion of fuel costs in total operating costs goes up even when fuel unit costs decline.

*Figure 3.13: Percentage breakdown of generator **revenue** by fuel source – FY2012 to FY2017*

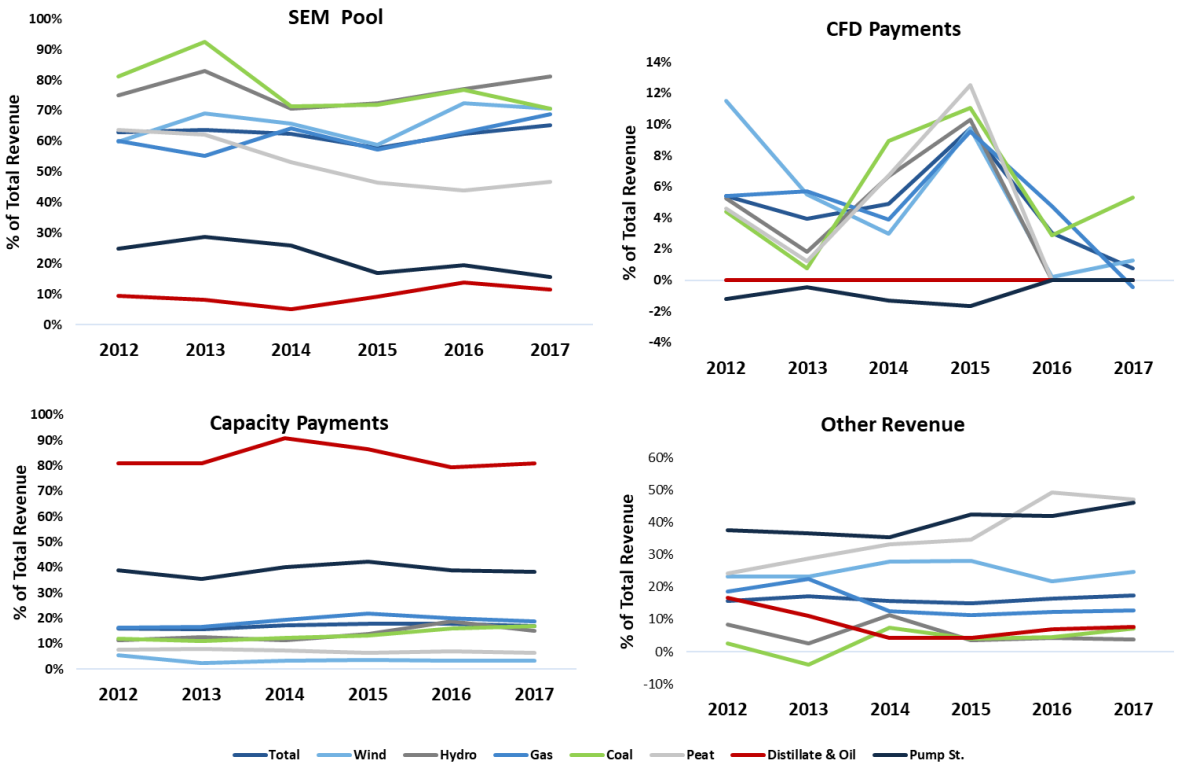
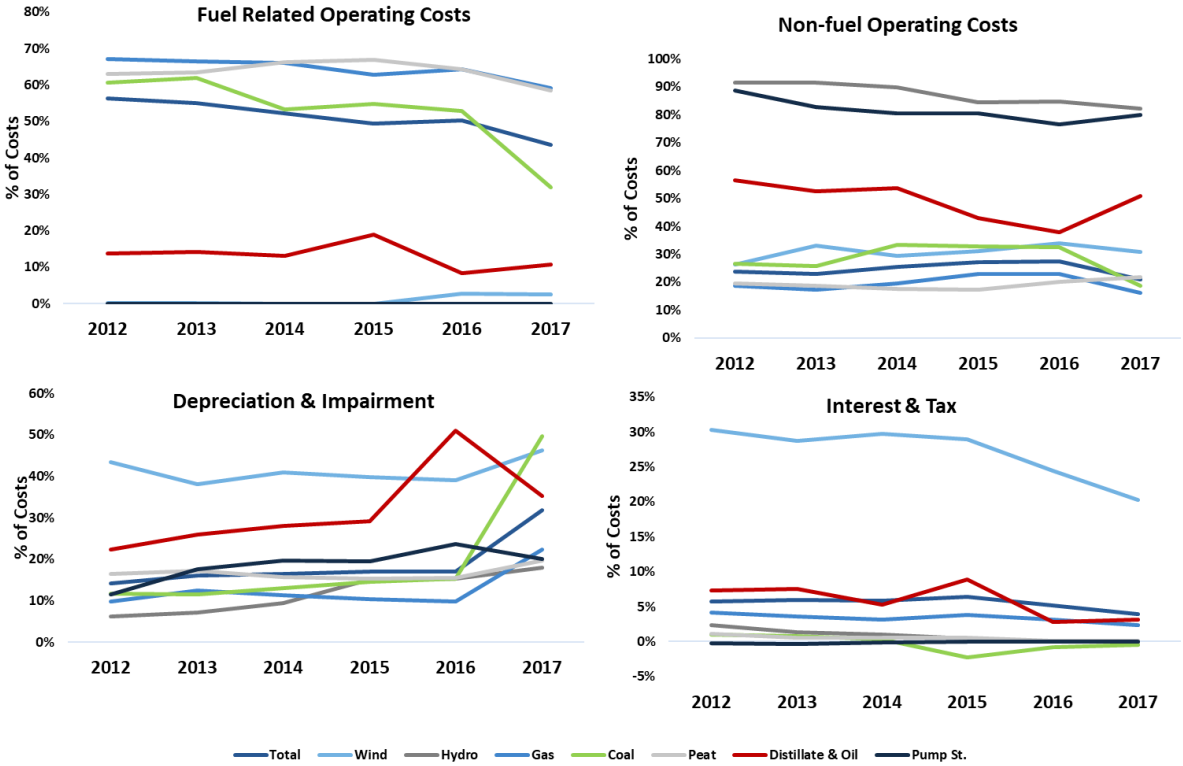


*Figure 3.14: Percentage breakdown of generator **costs** by fuel source – FY2012 to FY2017*



3.1.3. Breakdown of financial reporting template results by fuel source in MW terms

Table 3.4 and Table 3.5 below provide a breakdown of the results by generation fuel source on a per MW of installed capacity basis for FY2016 and FY2017.

A crucial factor affecting the revenue per MW of installed capacity is the utilisation or load factor of each unit. Overall, with the exception of Pumped Storage generation, total revenue per MW of installed capacity has increased for all fuel sources between FY2016 and FY2017.

*Table 3.4: Breakdown of financial reporting template results by generation **fuel source on a per MW basis** – Financial Year 2016*

Financial Year 2016	Total	Wind	Hydro	Gas	Coal	Peat	Distillate & Oil	Pump St.
Installed Capacity - MW	10,794	1,889	216	5,521	1,331	344	1,202	292
Volume of Electricity Sold - MWh per MW installed	21,238	2,146	2,924	3,355	5,721	7,389	51	(347)
Revenue (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€135	€119	€128	€143	€216	€313	€9	€24
Revenue from Contract/Difference Payments	€7	€	-	€11	€8	-	-	-
Revenue from Capacity Payments	€39	€5	€31	€45	€45	€50	€49	€47
Other Revenue	€35	€36	€7	€28	€12	€352	€4	€51
Total Revenue	€216	€164	€166	€227	€281	€715	€62	€123
Operating Costs (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€101	€4.45	-	€135	€155	€370	€5	-
Non-fuel Operating Costs	€55	€56	€92	€48	€96	€116	€23	€40
Total Operating Costs	€157	€63	€92	€182	€251	€486	€28	€40
EBITDI (€'000/MW)	€62	€102	€74	€45	€49	€229	€35	€83
Depreciation & Impairment	€34	€65	€17	€20	€45	€89	€26	€12
EBIT (€'000/MW)	€30	€43	€58	€27	€4	€140	€9	€71
Interest & Tax	€13	€46	-	€8	€3	€1	€2.63	-
Net Profit (€'000/MW)	€18	(€3)	€58	€19	€2	€140	€6	€71
Gross Margin - %	**29%**	**62%**	**45%**	**20%**	**18%**	**32%**	**57%**	**68%**
Net Margin - %	**8%**	**-2%**	**35%**	**8%**	**1%**	**20%**	**10%**	**58%**

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Table 3.5: Breakdown of financial reporting template results **by generation fuel source on a per MW basis** – Financial Year 2017

Financial Year 2017	Total	Wind	Hydro	Gas	Coal	Peat	Distillate & Oil	Pump St.
Installed Capacity - MW	11,075	2,173	217	5,514	1,331	346	1,202	292
Volume of Electricity Sold - MWh per MW installed	19,450	2,308	2,963	3,539	3,954	6,879	37	(230)
Revenue (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€148	€132	€153	€166	€206	€337	€7	€15
Revenue from Contract/Difference Payments	€2	€2	-	(€1)	€15	-	-	-
Revenue from Capacity Payments	€38	€6	€28	€45	€49	€45	€51	€36
Other Revenue	€40	€46	€7	€31	€21	€340	€5	€44
Total Revenue	€228	€187	€189	€242	€292	€722	€63	€95
Operating Costs (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€113	€4	-	€164	€160	€346	€6	-
Non-fuel Operating Costs	€54	€54	€100	€45	€94	€129	€27	€50
Total Operating Costs	€168	€59	€100	€209	€254	€475	€33	€50
EBITDI (€'000/MW)	€60	€128	€89	€33	€38	€247	€31	€45
Depreciation & Impairment	€83	€81	€22	€62	€248	€116	€19	€12
EBIT (€'000/MW)	(€23)	€48	€67	(€29)	(€210)	€131	€12	€33
Interest & Tax	€10	€39	-	€4	€3	€1	€3	-
Net Profit (€'000/MW)	(€33)	€9	€67	(€33)	(€214)	€130	€10	€33
Gross Margin - %	**26%**	**68%**	**47%**	**13%**	**13%**	**34%**	**49%**	**48%**
Net Margin - %	**-14%**	**5%**	**36%**	**-14%**	**-73%**	**18%**	**15%**	**35%**

Figures 3.13 and 3.14 below show the breakdown of costs and net profit per MW of installed capacity by fuel source. The sum of net profit and costs is equal to total revenue. As a result each bar in these two figures represents total revenue earned by each fuel source per MW of installed capacity.

Peat plants have the highest revenue for each MW of installed capacity, at approximately €715,000 per MW in FY2016 and €722,000 per MW in FY2017. However, they also continue to have the highest costs per MW out of all fuel sources. Given that all three Peat generators are price takers, typically generating whenever they are available then it follows that they also have the highest output per MW, and in turn the highest revenue and costs per MW, due to their high load factors.

Coal is in second position with regards to highest revenue per MW of installed capacity for FY2016 and FY2017 and this is also the case for costs per MW.

Apart from pumped storage, **Hydro** generators achieved the highest net profit per MW of installed capacity in FY2016 and FY2017, and have also significantly improved their performance since FY2015. In FY2015 hydro generators achieved net profit of €134,000 per MW of installed capacity. However, net profit per MW for hydro decreased to €58,000 and €67,000 per MW in FY2016 and FY2017 respectively.

These results are very much driven by the load factor achieved by each respective fuel source, as fuel sources with a high load factor/utilisation are likely to earn relatively high revenues per MW of installed capacity compared to fuel types with a low load factor. This is reflected in the results, as Peat generators frequently earn the highest revenue and profit per MW of installed capacity and they achieve an average load factor of 84%.

Figure 3.13: Costs and net profit per MW of installed capacity – Financial year 2016 (By fuel source)

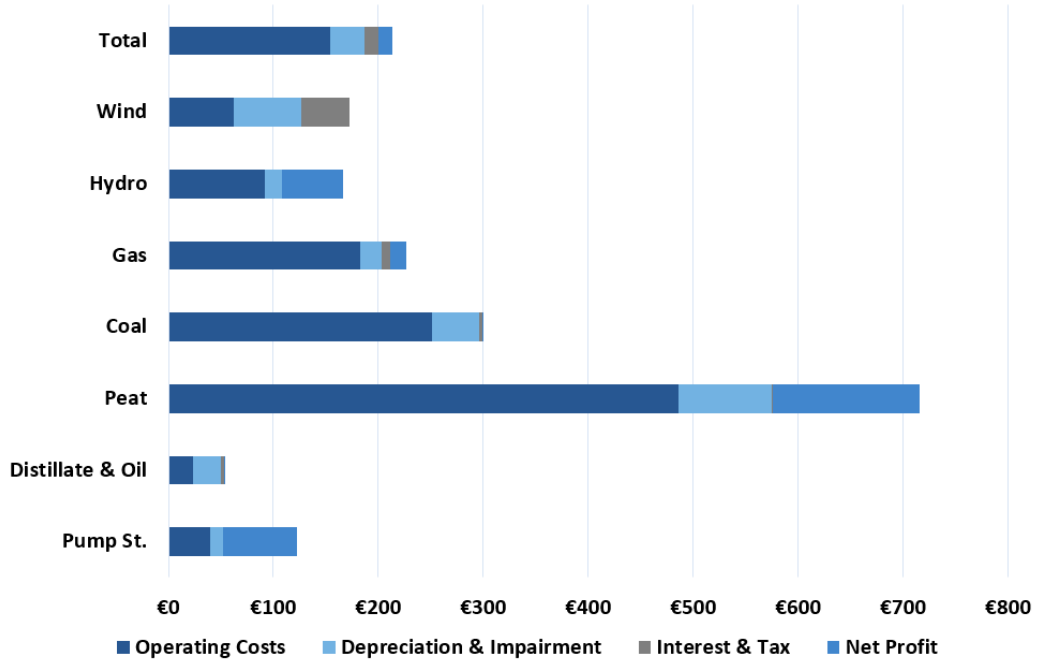
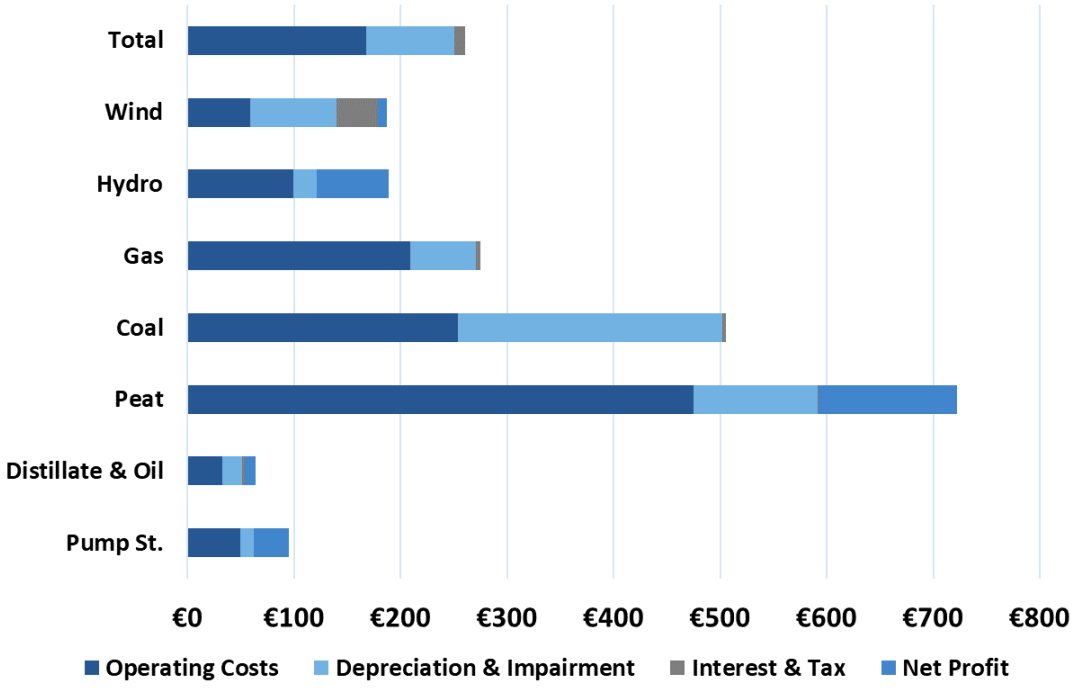


Figure 3.14: Costs and net profit per MW of installed capacity – Financial year 2017 (By fuel source)



3.1.4. Breakdown of financial reporting template data in MWh of electricity sold – by fuel source

Table 3.6 and Table 3.7 below provide a breakdown of the financial reporting template data by fuel source in MWh of electricity sold for FY2016 and FY2017. This is useful in order to understand how much net profit different generators are earning on average for every MWh of electricity generated. Although this breakdown of data is useful for the majority of fuel sources, for pumped storage generators this is not so useful given the fact that they are net consumers of electricity. As a result, pumped storage generation is omitted from the analysis, which is why the total generation figures and profit margins do not match with the previous tables. This analysis is an addition to the previous reports which have only provided a breakdown of financial reporting template data by MW of installed capacity.

In both FY2016 and FY2017 **Distillate & Oil** earned by far the highest net profit for every MWh of electricity generated due to the fact that they mostly generate electricity in peak times and earn the majority of their revenue through capacity payments. However, the net profit per MWh of electricity sold for **Distillate & Oil** generators has increased significantly in FY2017 from €27 to €261. This has been due to a number of factors including:

- Higher SEM pool revenue per MWh generated due to rise in average SMP in 2017;
- Higher capacity payments per MWh generated – as fixed capacity payments are spread over a significantly smaller volume of electricity generated;
- Higher costs per MWh generated due to higher fuel prices as well as fixed costs (depreciation, interest) being spread over a smaller numbers of MWhs generated – but this rise in costs has been proportionally smaller than for revenues due to, for example, higher depreciation and impairment costs.

Hydro generators have earned the second highest profit per MWh of electricity sold.

It can also be observed that SEM pool revenue per MWh sold has increased significantly for all fuel sources in 2017 compared to 2016. This is not surprising considering the rise in average SMP over the period. Similarly fuel related operating costs per MWh for **gas** and **coal** fired generators have also increased given lower fuel prices.

Table 3.6: Breakdown of financial reporting template data in MWh of electricity sold – by fuel source (FY2016)

Financial Year 2016 (per MWh of electricity sold)	Total	Wind	Hydro	Gas	Coal	Peat	Distillate & Oil
Volume of Electricity Sold - MWh	33,423,863	4,052,578	631,479	18,522,592	7,614,749	2,541,650	60,814
Revenue (€/MWh)	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**
Revenue from SEM Pool	€43	€55	€44	€43	€38	€42	€169
Revenue from Contract/Difference Payments	€2	€	-	€3	€1	-	-
Revenue from Capacity Payments	€12	€2	€11	€13	€8	€7	€968
Other Revenue	€11	€17	€2	€8	€2	€48	€83
Total Revenue	€69	€76	€57	€68	€49	€97	€1,220
Operating Costs (€/MWh)	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**	**€/MWh**
Fuel Related Operating Costs	€33	€2.08	-	€40	€27	€50	€100
Non-fuel Operating Costs	€17	€26	€31	€14	€17	€16	€456
Total Operating Costs	€50	€29	€31	€54	€44	€66	€557
EBITDI (€/MWh)	€19	€47	€25	€13	€9	€31	€693
Depreciation & Impairment	€11	€30	€6	€6	€8	€12	€614
EBIT (€/MWh)	€8	€17	€20	€7	€1	€19	€79
Interest & Tax	€4	€21	-	€2	€	€.08	€52
Net Profit (€/MWh)	€4	(€5)	€20	€5	€	€19	€27
Gross Margin - %	**28%**	**62%**	**45%**	**20%**	**18%**	**32%**	**57%**
Net Margin - %	**6%**	**-6%**	**35%**	**7%**	**1%**	**20%**	**2%**

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Table 3.7: Breakdown[13] of financial reporting template data in MWh of electricity sold – by fuel source (FY2017)

Financial Year 2017 (per MWh of electricity sold)	Total	Wind	Hydro	Gas	Coal	Peat	Distillate & Oil
Volume of Electricity Sold - MWh	32,860,925	5,015,324	642,883	19,515,282	5,262,474	2,380,199	44,763
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€50	€57	€52	€47	€52	€49	€193
Revenue from Contract/Difference Payments	€1	€1	-	(€)	€4	-	-
Revenue from Capacity Payments	€13	€3	€10	€13	€13	€7	€1,379
Other Revenue	€13	€20	€2	€9	€5	€49	€130
Total Revenue	€76	€81	€64	€68	€74	€105	€1,703
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€38	€1.94	-	€46	€40	€50	€151
Non-fuel Operating Costs	€18	€23	€34	€13	€24	€19	€723
Total Operating Costs	€56	€26	€34	€59	€64	€69	€874
EBITDI	€20	€56	€30	€9	€10	€36	€829
Depreciation & Impairment	€28	€35	€7	€17	€63	€17	€499
EBIT	(€8)	€21	€23	(€8)	(€53)	€19	€330
Interest & Tax	€3	€17	-	€1	€1	€.08	€69
Net Profit	(€11)	€4	€23	(€9)	(€54)	€19	€261
Gross Margin - %	**26%**	**68%**	**47%**	**13%**	**13%**	**34%**	**49%**
Net Margin - %	**-15%**	**5%**	**36%**	**-14%**	**-73%**	**18%**	**15%**

[13] "€" indicates a positive value which is in the range 0/MWh to+ 0.5/MWh
"(€)" indicates a negative value which is in the range 0/MWh to -0.5/MWh
"-" indicates that no figure was reported for this breakdown category.

3.2. BREAKDOWN BY GENERATION TYPE

In addition to organising the financial reporting template data by fuel source the report also breaks down the data by generation type, namely: Renewables, Price Takers, Baseload, Mid-Merit and Peakers. Renewables include all Wind, Hydro and Pumped Storage plants. Price takers are defined as conventional plants that operate as a price taker in the market, i.e. peat plants. For the remaining plants we have sorted them into Baseload, Mid-Merit and Peaking plants based on their load factor over the year, whilst seeking to spot any anomalies. We have used the same criteria as in the previous report to allocate plants into their respective categories, and this is shown in Table 3.8 below.

Table 3.8: Plant type and load factors

Plant type	Load factor
Baseload	75% or above
Mid-Merit	16% - 74%
Peak	15% or below

Based on these thresholds several classifications have changed from the previous report as follows.

- Moneypoint Unit 1 was previously classified as a Baseload plant, However in FY2016 and 2017 its load factors dropped to below 70% and is therefore included in the Mid-Merit classification.
- The load factors for Moneypoint Units 2 & 3 are reclassified from Baseload for 2016 – having load factors above 75% - to Mid-Merit in 2017 as their load factors reduced to less than 60%.
- Tynagh was classified as a Peaking plant in FY2015 as its load factor dropped below 15%. However, in FY2016 and FY 2017 it is reclassified as a Mid-Merit plant as its load factor returned to a circa mid-twenties load factor range.
- Aghada AD2, which was classified as Mid-Merit in FY2014 and FY2015, is reclassified as a Baseload plant in FY 2016 and FY 2017 as its load factor has increased.

The resulting classification of generation plants is shown in Table 3.9 below.

Table 3.9: Plant type categorisation and fuel source

Baseload	Mid-Merit	Peak
FY2016 and FY2017		
• Synergen *(Gas)* • Whitegate *(Gas)* • Aughinish *(Gas)* • Aghada AD2 CCGT *(Gas)*	• Ballylumford C station *(Gas)* • Coolkeeragh *(Gas)* • Moneypoint – MP1 *(Coal)* • Huntstown 1 *(Gas)* • Kilroot 1 & 2 *(Coal)* • Tynagh *(Gas)* • Great Island CCGT *(Gas)* • Huntstown 2 *(Gas)*	• Ballylumford B station *(Gas)* • Ballylumford OCGTs *(Gas)* • Kilroot (KGT1 – KGT4) *(Distillate & Oil)* • Aghada AD1 *(Gas)* • Aghada AT1, AT2 and AT4 *(Gas)* • Marina *(Gas)* • Northwall Unit 5 *(Gas)* • Poolbeg *(Gas)* • Tarbert *(Distillate & Oil)* • Rhode *(Distillate & Oil)* • Tawnahmore *(Distillate & Oil)* • Cushaling Power *(Distillate & Oil)*
FY2016 only		
• Moneypoint – MP2 *(Coal* • Moneypoint – MP3 *(Coal)*		
FY2017 only		
	• Moneypoint – MP2 *(Coal* • Moneypoint – MP3 *(Coal)*	

Table 3.10 and Table 3.11 below provide an overview of the financial reporting template data by generation type for FY2016 and FY2017. **Mid-Merit** plants account for the largest share of volumes and revenues. Moreover, renewable energy plants - recording gross margins in excess of 60% for both FY2016 and fY2017 - have by far the highest gross profit margin across all generation types, which is expected given their low operating costs. In FY2016, both **Price Taker** and **Baseload** plants had the highest net profit margin at 20%.

Price Takers outperformed all other plant types in terms of net-profit margins in FY2017 with a net-profit margin of of 18%. However, **Baseload** plants only reported a net-profit margin of 3% for FY2017, which was largely caused by the reclassification of Moneypoint MP2 and MP3 from Baseload in FY2016 to Mid-Merit in FY2017.

Mid-Merit plants recorded a net-profit margin of **-**1% in FY2015, **-**9% in FY2016 and **-**36% in FY2017. This is largely due to the reporting of high impairment charges. When these charges are excluded, the net profit margins of Mid-Merit generators were 6% in FY2015, **-**9% in FY2016 and 1% in FY2017. Mid-Merit plants are often the marginal price setting generator in the market due to their place in the merit order, which means that they tend to earn less inframarginal rent from the units of electricity sold relative to lower cost generators. In contrast to Peak plants, they also tend to earn relatively less revenue per unit of electricity generated from capacity payments.

Another factor driving changes between FY2016 and FY2017 is the re-classification – by type - of a number of plants in FY2017, as outlined earlier in this subsection.

Table 3.10: Breakdown of financial reporting template results by generation type – Financial Year 2016

Financial Year 2016	Total	Renewables	Price Taker	Baseload	Mid Merit	Peak
Volume of Electricity Sold - MWh	33,322,568	4,582,763	2,541,650	13,971,156	11,910,481	316,518
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€1,452,589	€258,858	€107,691	€499,525	€505,859	€80,656
Revenue from Contract/Difference Payments	€71,166	€634	-	€15,503	€55,029	-
Revenue from Capacity Payments	€416,408	€30,543	€17,148	€98,649	€131,294	€138,774
Other Revenue	€381,926	€84,110	€121,256	€10,919	€140,645	€24,996
Total Revenue	€2,329,364	€381,421	€246,094	€624,595	€832,828	€244,426
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€1,090,862	€8,410	€127,242	€400,827	€505,930	€48,453
Non-fuel Operating Costs	€596,284	€137,270	€39,982	€66,256	€259,144	€93,632
Total Operating Costs	€1,690,897	€149,431	€167,224	€467,082	€765,074	€142,085
EBITDI	**€665,915**	**€231,989**	**€78,870**	**€157,513**	**€93,373**	**€104,170**
Depreciation & Impairment	€364,313	€128,985	€30,616	€24,801	€121,951	€57,960
EBIT	**€297,145**	**€100,130**	**€48,254**	**€131,129**	**(€28,579)**	**€46,211**
Interest & Tax	€138,972	€86,565	€198	€4,380	€43,173	€4,656
Net Profit	**€158,173**	**€13,565**	**€48,056**	**€126,749**	**(€71,752)**	**€41,555**
Gross Margin - %	**29%**	**61%**	**32%**	**25%**	**11%**	**43%**
Net Margin - %	**7%**	**4%**	**20%**	**20%**	**-9%**	**17%**

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Table 3.11: Breakdown of financial reporting template results by generation type – Financial Year 2017

Financial Year 2017	Total	Renewables	Price Taker	Baseload	Mid Merit	Peak
Volume of Electricity Sold - MWh	32,793,852	5,591,134	2,380,199	9,981,808	14,746,107	94,604
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€1,642,757	€325,474	€116,482	€403,682	€740,699	€56,420
Revenue from Contract/Difference Payments	€19,678	€5,130	-	€	€14,548	-
Revenue from Capacity Payments	€422,550	€30,276	€15,568	€69,086	€171,444	€136,176
Other Revenue	€438,420	€115,170	€117,803	€938	€181,932	€22,577
Total Revenue	€2,523,402	€476,048	€249,853	€473,706	€1,108,623	€215,173
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€1,255,201	€9,740	€119,617	€370,592	€720,964	€34,288
Non-fuel Operating Costs	€602,176	€152,837	€44,710	€61,441	€240,974	€102,214
Total Operating Costs	€1,859,326	€164,526	€164,326	€432,033	€961,938	€136,502
EBITDI	**€664,079**	**€311,523**	**€85,527**	**€41,673**	**€146,685**	**€78,672**
Depreciation & Impairment	€917,421	€183,447	€40,302	€24,851	€527,120	€141,701
EBIT	**(€253,342)**	**€128,075**	**€45,225**	**€16,822**	**(€380,435)**	**(€63,029)**
Interest & Tax	€112,435	€85,312	€198	€1,060	€21,011	€4,853
Net Profit	**(€365,777)**	**€42,763**	**€45,027**	**€15,762**	**(€401,447)**	**(€67,882)**
Gross Margin - %	**26%**	**65%**	**34%**	**9%**	**13%**	**37%**
Net Margin - %	**-14%**	**9%**	**18%**	**3%**	**-36%**	**-32%**

Table 3.12 below presents the revenue per MWh of electricity sold, organised by generation type. As expected, **Peak** generators earn by far the most per MWh of electricity given they only generate electricity when demand is high and prices are high.

Revenue per MWh across the SEM fell gradually from 2013 until the latter end of 2016 driven by decreasing SMP. However, in FY2017 this trend changed, with Total Revenue-per-MWh increasing, reflecting an upturn in SMP.

As presented in more detail in Section 3.2.4, some revenues increase to make up for the fall in SEM pool revenue. **Price Taker** plants for example have reported increased CfD payments revenues while both **Renewables** and **Price Takers** have reported higher revenues in the 'Other revenues' category. This may reflect the fact that these plants receive support through various other mechanisms (such as the ROCs in NI or the PSO levy in Republic of Ireland).

Table 3.12: Revenue per MWh of electricity sold – by generation type

Revenue per MWh of electricity sold	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
Total	€100	€103	€98	€86	€69	€76
Renewables	€92	€95	€96	€80	€74	€79
Price Taker	€101	€105	€106	€108	€97	€105
Baseload	€78	€72	€64	€62	€45	€47
Mid Merit	€86	€83	€85	€76	€70	€75
Peak	€595	€654	€652	€757	€772	€2,274

3.2.1. Revenues by Generation Type

Figure 3.15 and 3.16 below show total generation volumes and revenues broken down into generation type for FY2016 and FY2017. It is worth noting the small share of electricity generated accounted for by **Peaking** plants despite the relatively large numbers of plants classified in this category as shown in Table 3.9. While **Peak** generators provided less than 2% of total generation in FY2016 and FY2017 they earned circa 10% of total revenues. These differences can be explained by peaking plants operating in very few but higher priced hours.

Figure 3.15: Breakdown of total volumes (MWh) by generation type – Financial year 2016 and 2017

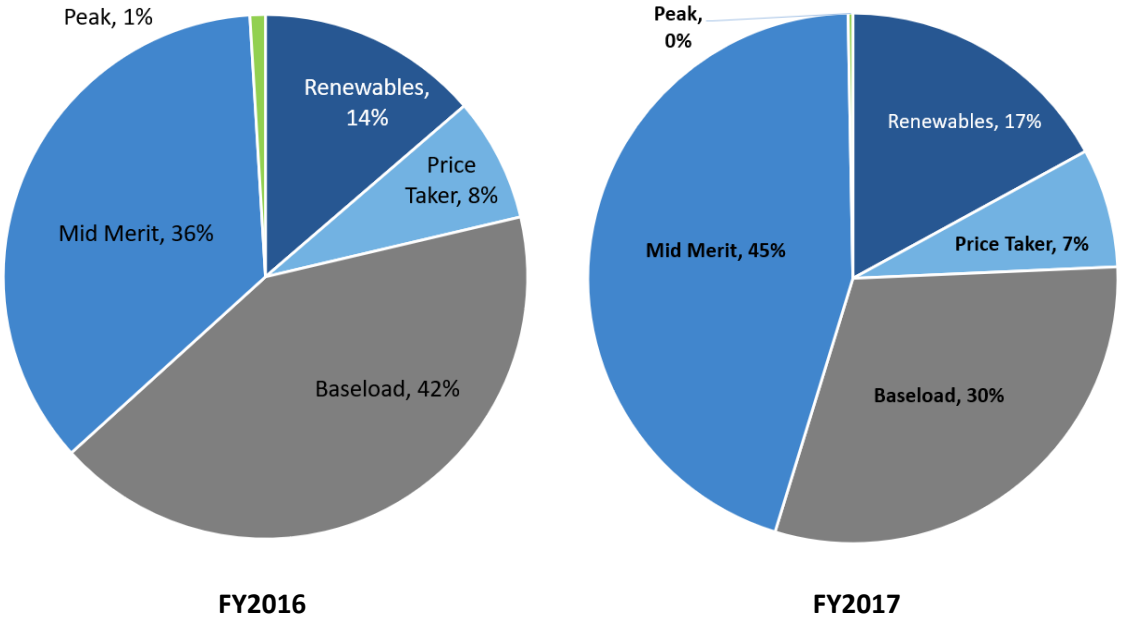
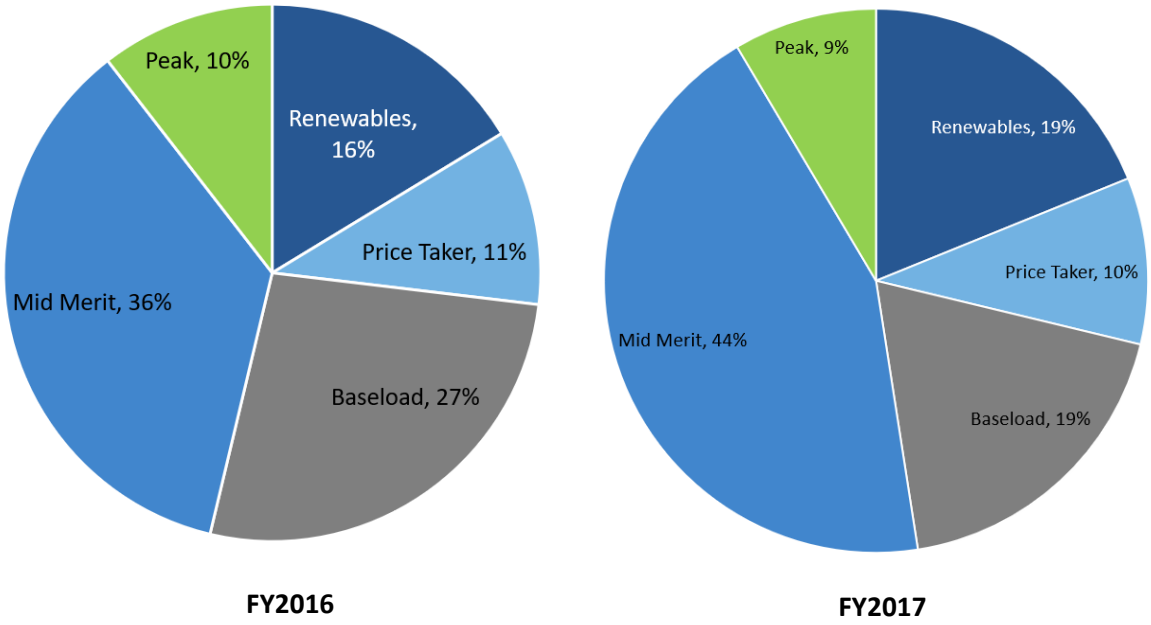


Figure 3.16: Breakdown of total revenues by generation type – Financial year 2016 and 2017



Renewables and **Price Taker** generators continue to provide approximately the same share of electricity as they earn in revenue, whereas **Baseload** and **Mid-Merit** generators receive lower shares of revenue relative to their share of volumes. This is shown in Figure 3.17 below, which provides a breakdown of total volumes and revenue by generation type between FY2012 and FY2017.

The share of total revenue received by **Mid-Merit** generators dipped from 47% of total revenue for FY2015 to 36% in FY2016 but rose to 44% in FY2017. This change was mainly driven by the reclassification of Moneypoint MP2 and MP3 plants from Baseload in FY2016 to Mid-Merit in 2017.

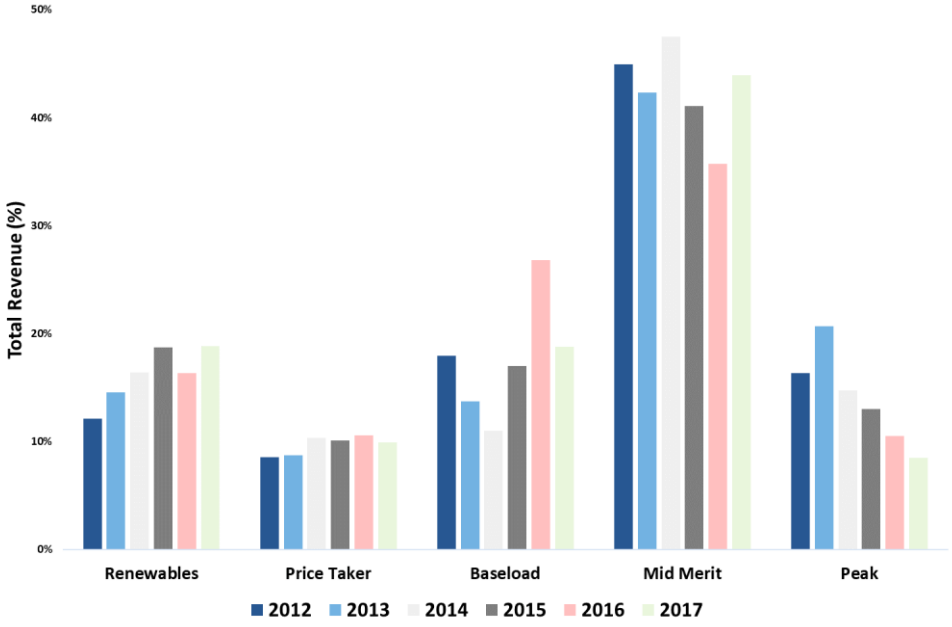
The share of electricity generated - and revenues earned - by Peaking plants continued to decline from 13% in FY2015 to 10% in FY2016 and 9% in FY2017.

In addition, the share of revenues earned by renewable generation increased every year from FY2012 to FY2015, in line with increasing volumes of electricity produced from renewable sources. In FY2016 and FY2017 the share of revenues earned by renewable generation reduced as explained in Section 3.1.1

Figure 3.17: Breakdown of total volumes and revenue by generation type – FY2012 to FY2017

Breakdown of **volumes** by generation type: 2012 – 2017

*Breakdown of **revenue** by generation type: 2012 – 2017*



3.2.2. Revenues and Costs by Generation Type

Figures 3.20 and 3.21 below show the composition of revenue received by each generation type for FY2016 and FY2017, respectively. Revenue from the SEM pool contributed 63% and 65% of generators' total revenue overall in FY2016 and FY2017, respectively. **Peaking** plants tend to receive most of their revenue from capacity payments while **Baseload** plants earn the vast majority of their revenue from the SEM revenue pool. The share of revenue earned by Peaking plants from the SEM Pool has declined from 46% in FY2014 to 33% and 26% in FY2016 and FY2017 respectively because of lower SMP and lower electricity generated. **Price Takers** and **Renewable** generators earned a large proportion of their revenue from other revenue sources largely reflecting renewables support mechanisms.

*Figure 3.20 Source of revenue as a **% of total revenue** – Financial year **2016** (by generation type)*

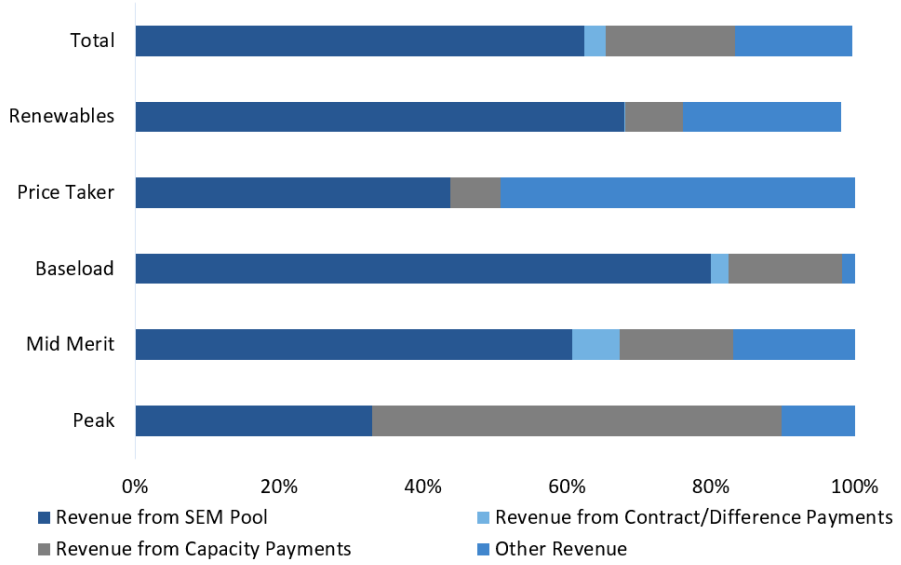
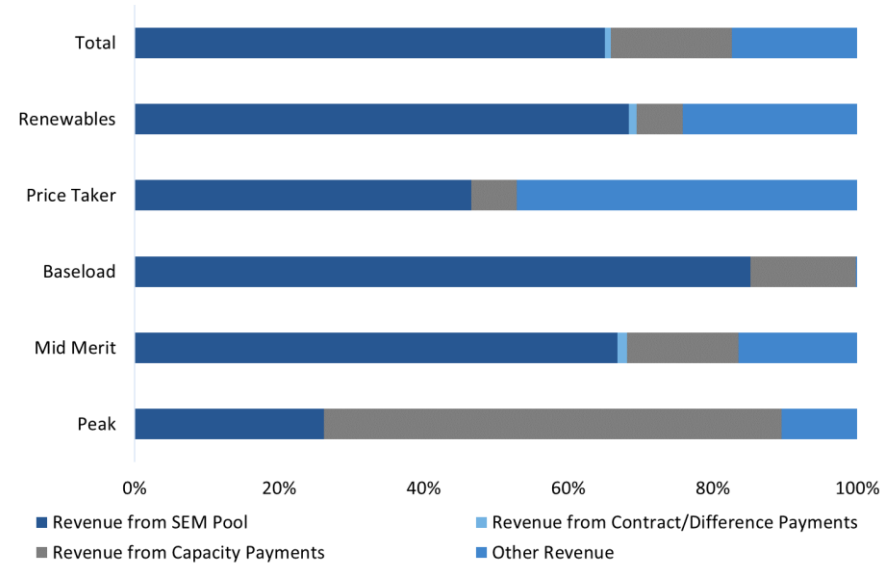


*Figure 3.21: Source of revenue as a **% of total revenue** – Financial year **2017** (by generation type)*



Figures 3.22 and 3.23 below provide a breakdown of costs by generation type for FY2016 and FY2017. Each generation type has a very different make-up of costs. As expected Renewable generators have minimal fuel related operating costs. In contrast the majority of Peak, Mid-Merit, Baseload, and Price Taker costs are fuel related. For example, 81% of **Baseload** plants' costs were fuel related in FY2016 and FY2017. **Renewable** generators have high proportions of 'Depreciation & Impairment' and 'Interest & Tax' costs out of all generation types, with the latter caused by relatively higher capital and financing costs of Wind generators. **Mid-Merit** and **Peak** plants reported a significant increase in Depreciation & Impairment for FY2017.

*Figure 3.22 Breakdown of generator costs, **% of total costs** – Financial year **2016** (by generation type)*

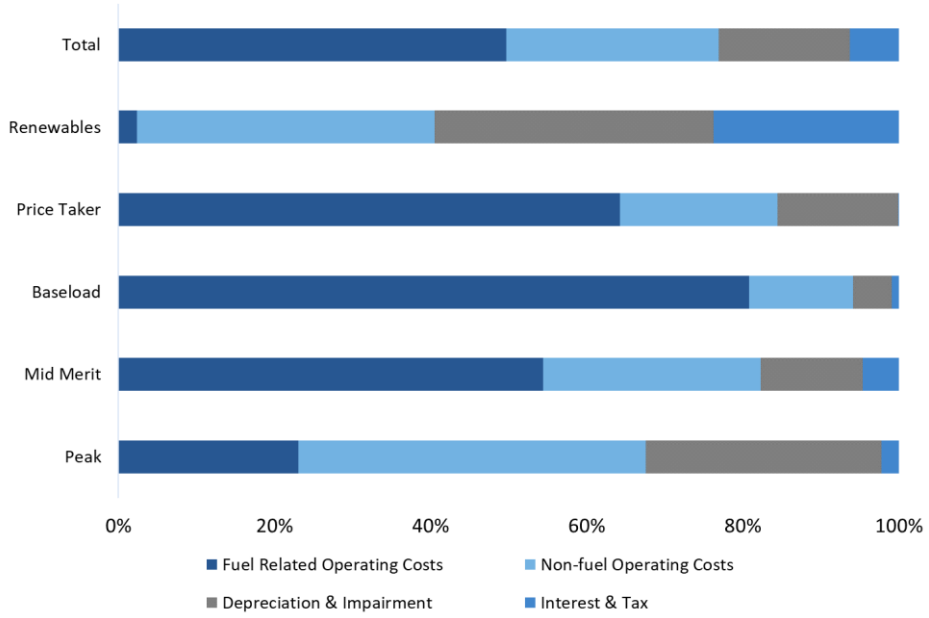


*Figure 3.23 Breakdown of generator costs, **% of total costs** – Financial year **2017** (by generation type)*

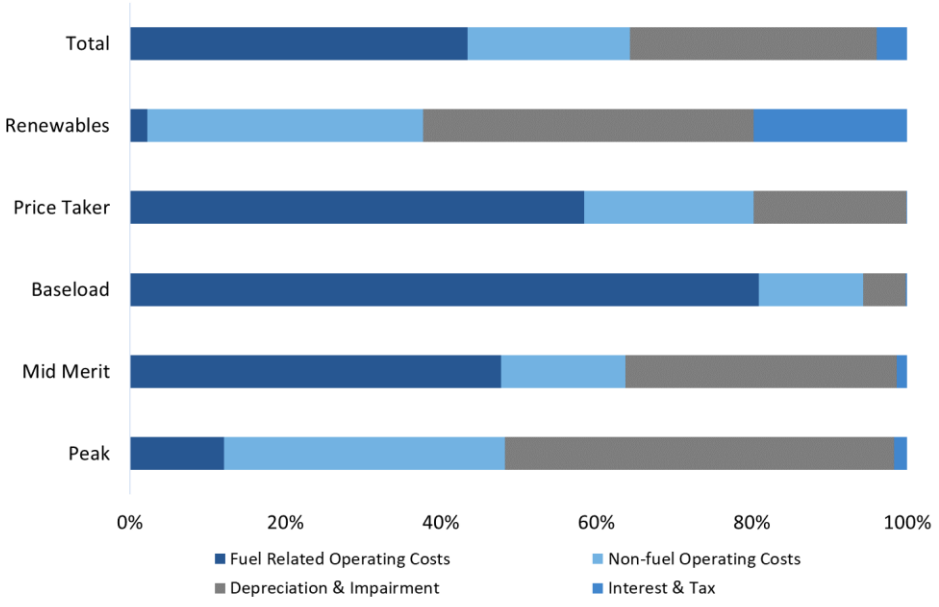


Figure 3.24 below shows the percentage breakdown of generator revenue by generation type between FY2012 and FY2017. The general increase in the share of revenues from the SEM pool in FY2016 and FY2017 ended a downward trend for the majority of generation types. The share of revenue earned by generators from CfD payments is volatile but has generally decreased in FY2016 and FY2017 as SEM electricity prices have picked up. The proportion of revenue accounted for by capacity payments has remained stable for the majority of generation types, with the exception being Peaker plants which have seen the share of capacity payments increase, although this was largely due to revenue falls in other areas. Also see Section B.2.4. for further breakdowns.

Figure 3.24 Percentage breakdown of revenue by generation type – FY2012 to FY2017

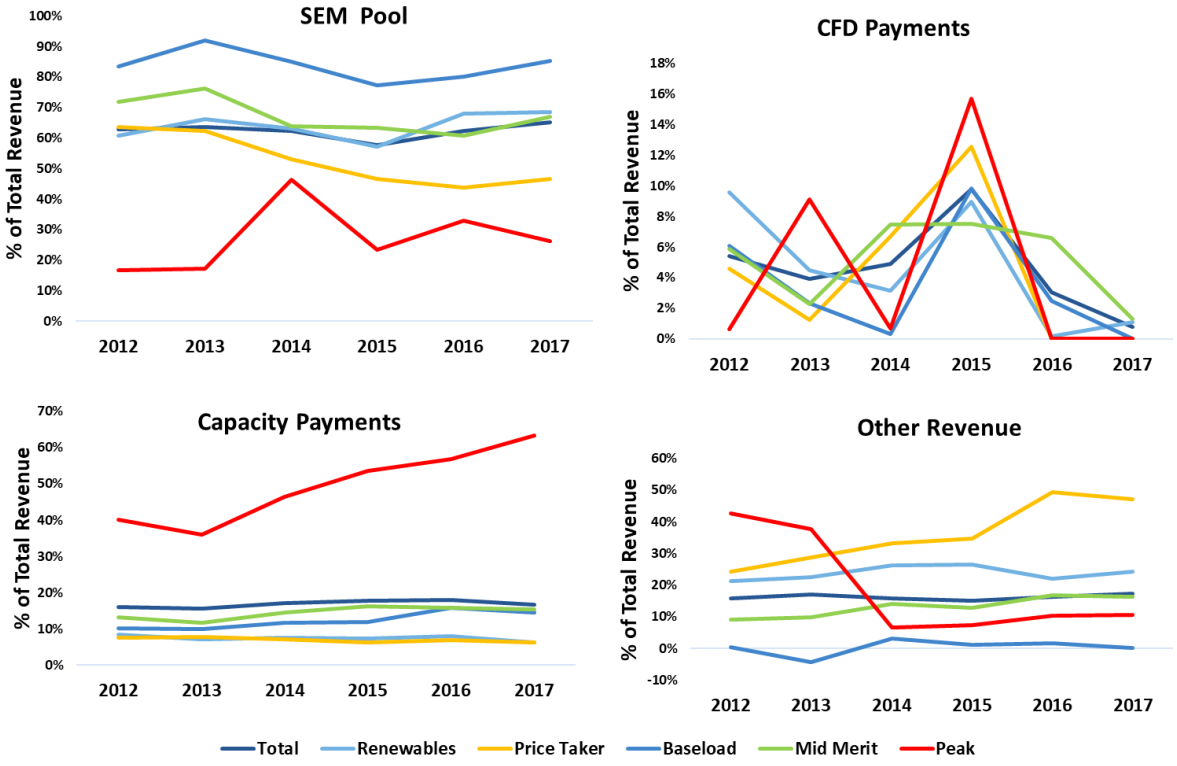
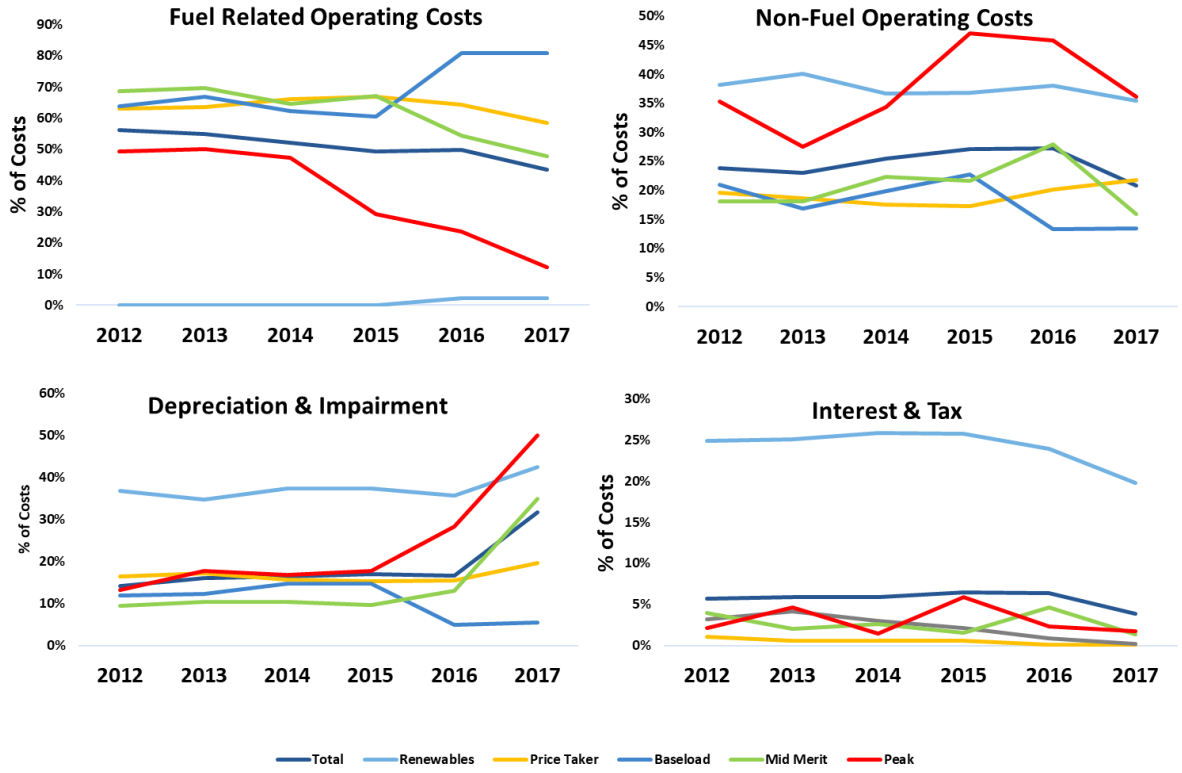


Figure 3.25 below shows the percentage breakdown of generator costs by generation type between FY2012 and FY2017. The proportion of each cost category has tended to remain reasonably stable over time, when excluding impairment charges, with only a couple of exceptions. In particular, both Peaking and Mid-Merit plants have seen a significant rise in FY2016 and FY2017 in the share of costs attributed to depreciation & impairment. Whereas depreciation & impairment accounted for circa 18% of total costs for Peaking plants in FY2013, FY2014 and FY2015 it increased substantially in FY2016 & FY2017, accounting for circa 50% of costs in FY2017. Also see Section B.2.4 and B.2.5 for further breakdowns.

Figure 3.25 Percentage breakdown of costs by generation type – FY2012 to FY2017



3.2.3. Breakdown of financial reporting template results by generation type in MW terms

Table 3.14 and Table 3.15 below provide a breakdown of the reporting template results by generation type on a per MW of installed capacity basis. Note that the Renewables installed capacity figure, mostly comprising wind generation, has been obtained by aggregating the capacity of all wind farms that have submitted financial reporting templates. The capacity of some new windfarms increases incrementally during build out. The total capacity estimated may thus not capture situations where the capacity of some of the wind farms has changed during the period covered by the reporting templates.

Table 3.13: Breakdown of financial reporting template results by generation type on a per MW basis – Financial Year 2016

Financial Year 2016	Total	Renewables	Price Taker	Baseload	Mid Merit	Peak
Installed Capacity - MW	10,794	2,397	344	1,967	3,202	2,885
Electricity Sold - MWh per MW installed	3,087	1,912	7,389	7,103	3,720	110
Revenue (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€135	€108	€313	€254	€158	€28
Revenue from Contract/Difference Paymen	€7	€	-	€8	€17	-
Revenue from Capacity Payments	€39	€13	€50	€50	€41	€48
Other Revenue	€35	€35	€352	€6	€44	€9
Total Revenue	€216	€159	€715	€318	€260	€85
Operating Costs (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€101	€3.51	€370	€204	€158	€17
Non-fuel Operating Costs	€55	€57	€116	€34	€81	€32
Total Operating Costs	€157	€62	€486	€237	€239	€49
EBITDI (€'000/MW)	**€62**	**€97**	**€229**	**€80**	**€29**	**€36**
Depreciation & Impairment	€34	€54	€89	€13	€38	€20
EBIT (€'000/MW)	**€30**	**€47**	**€140**	**€76**	**(9)**	**€16**
Interest & Tax	€13	€36	€1	€2	€13	€1.61
Net Profit (€'000/MW)	**€18**	**€11**	**€140**	**€74**	**(22)**	**€14**
Gross Margin - %	**29%**	**61%**	**32%**	**25%**	**11%**	**43%**
Net Margin - %	**8%**	**7%**	**20%**	**23%**	**-9%**	**17%**

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Table 3.14: Breakdown of financial reporting template results by generation type on a per MW basis – Financial Year 2017

Financial Year 2017	Total	Renewables	Price Taker	Baseload	Mid Merit	Peak
Installed Capacity - MW	11,075	2,682	346	1,397	3,763	2,887
Electricity Sold - MWh per MW installed	2,961	2,085	6,879	7,145	3,919	33
Revenue (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€148	€121	€337	€289	€197	€20
Revenue from Contract/Difference Paymen	€2	€2	-	€	€4	-
Revenue from Capacity Payments	€38	€11	€45	€49	€46	€47
Other Revenue	€40	€43	€340	€1	€48	€8
Total Revenue	€228	€177	€722	€339	€295	€75
Operating Costs (€'000/MW)	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€113	€3.63	€346	€265	€192	€12
Non-fuel Operating Costs	€54	€57	€129	€44	€64	€35
Total Operating Costs	€168	€61	€475	€309	€256	€47
EBITDI (€'000/MW)	**€60**	**€116**	**€247**	**€30**	**€39**	**€27**
Depreciation & Impairment	€83	€68	€116	€18	€140	€49
EBIT (€'000/MW)	**(23)**	**€48**	**€131**	**€12**	**(101)**	**(22)**
Interest & Tax	€10	€32	€1	€1	€6	€1.68
Net Profit (€'000/MW)	**(33)**	**€16**	**€130**	**€11**	**(107)**	**(24)**
Gross Margin - %	**26%**	**65%**	**34%**	**9%**	**13%**	**37%**
Net Margin - %	**-14%**	**9%**	**18%**	**3%**	**-36%**	**-32%**

A crucial factor affecting the revenue per MW of installed capacity is the utilisation or load factor of each unit. With the exception of Peaking generators, all other generator types have experienced an increase in their total revenue per MW of installed capacity in FY2017 compared to FY2016. Figures 3.26 and 3.27 provide a graphical breakdown of revenues into different costs and net profit, by generation type on a per MW of installed capacity basis for FY2016 and FY2017. **Price Taker** plants earn the highest revenue per MW of capacity, surpassing €700 per MW in FY2016 and FY2017. In turn, they also have the highest costs and net profit per MW of capacity. **Peak** generators have the lowest revenue per MW of capacity, which is a result of their low load factor.

*Figure 3.26 Costs and net profit per MW of installed capacity– **FY2016** (by generation type)*

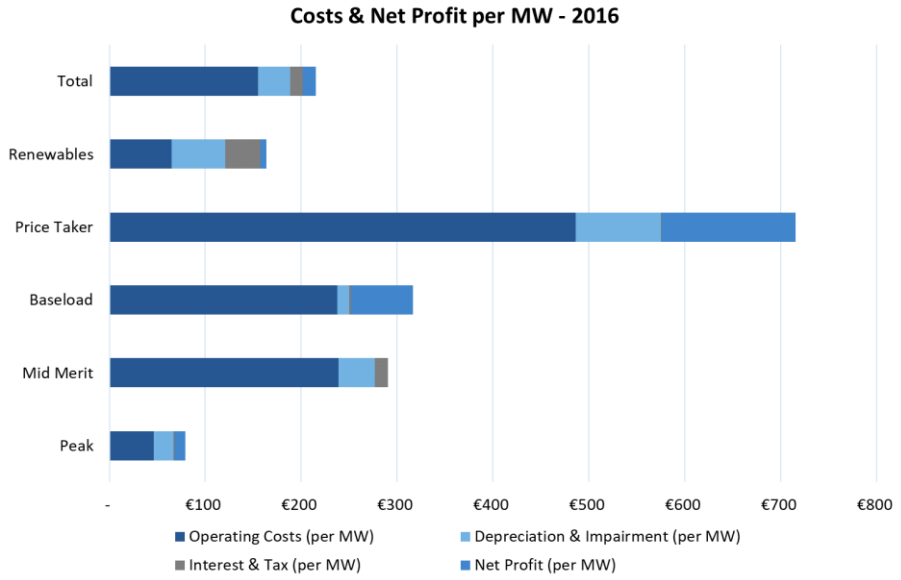
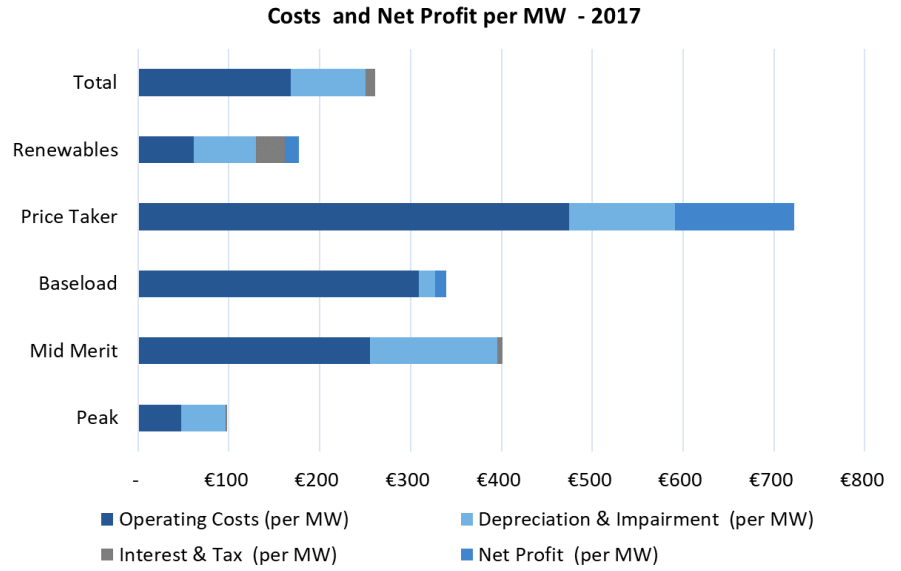


*Figure 3.27 Costs and net profit per MW of installed capacity – **FY2017** (by generation type)*



3.2.4. Breakdown of financial reporting template data in MWh of electricity sold – by generation type

Table 3.15 and Table 3.16 below provide a breakdown of financial reporting template data in MWh of electricity sold by generation type. As in section 3.1.4, pumped storage generation is omitted from the analysis given they are net users of electricity. As a result, the total generation figures and profit margins differ slightly to the previous tables in section 3.1. The highest net profit per MWh in FY2016 was achieved by **Peak** generators, which earned €131 net profit per MWh. However, in FY2017, the highest net loss per MWh was also achieved by **Peak** generators, which reported €718 net loss per MWh. A key driver of this dramatic fall in profitability is the increase in reported impairment in FY2017 for Peak and Mid-Merit generators. It is also notable that the revenues and costs in relation to Peak generators are less correlated than other generation types with the quantity of electricity sold into the market. Hence the per MWh figures tend to be very sensitive to changes in the quantity of electricity sold into the market.

Renewables showed a marginal net loss of €2/MWh in FY2016 but achieved a net profit of €7/MWh in FY2017.

As shown in section B.2.3 revenue per MWh for **Baseload** generators dipped in line with lower SMP in FY2016, whilst higher volumes and static costs resulted in lower costs per MWh. The net result is net profit of €9/MWh in FY2016. In FY2017 revenue for Baseload generators dropped significantly, reducing net profit to €2/MWh in FY2017.

In FY2014 and FY2015 all generation types achieved a net profit with the exception of **Mid-Merit** plants, which showed a marginal net loss in FY2015. In FY2016 and FY2017 **Mid-Merit** types show a net loss of €6/MWh in FY2016 and €27/MWh in 2017.

Table 3.15: Breakdown of financial reporting template data in MWh terms by generation type – FY2016

Financial Year 2016 per MWh of electricity sold	Total	Renewables	Price Taker	Baseload	Mid Merit	Peak
Volume of Electricity Sold - MWh	33,423,863	4,684,058	2,541,650	13,971,156	11,910,481	316,518
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€43	€54	€42	€36	€42	€255
Revenue from Contract/Difference Payments	€2	€	-	€1	€5	-
Revenue from Capacity Payments	€12	€4	€7	€7	€11	€438
Other Revenue	€11	€15	€48	€1	€12	€79
Total Revenue	€69	€74	€97	€45	€70	€772
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€33	€1.80	€50	€29	€42	€153
Non-fuel Operating Costs	€17	€27	€16	€5	€22	€296
Total Operating Costs	€50	€29	€66	€33	€64	€449
EBITDI	**€19**	**€44**	**€31**	**€11**	**€8**	**€329**
Depreciation & Impairment	€11	€27	€12	€2	€10	€183
EBIT	**€8**	**€17**	**€19**	**€9**	**(€2)**	**€146**
Interest & Tax	€4	€18	€.08	€	€3.62	€14.71
Net Profit	**€4**	**(€2)**	**€19**	**€9**	**(€6)**	**€131**
Gross Margin - %	**28%**	**60%**	**32%**	**25%**	**11%**	**43%**
Net Margin - %	**6%**	**-2%**	**20%**	**20%**	**-9%**	**17%**

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Table 3.16: Breakdown of financial reporting template data in MWh terms by generation type – FY2017

Financial Year 2017 per MWh of electricity sold	Total	Renewables	Price Taker	Baseload	Mid Merit	Peak
Volume of Electricity Sold - MWh	32,860,925	5,658,207	2,380,199	9,981,808	14,746,107	94,604
Revenue	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Revenue from SEM Pool	€50	€57	€49	€40	€50	€596
Revenue from Contract/Difference Payments	€1	€1	-	€	€1	-
Revenue from Capacity Payments	€13	€3	€7	€7	€12	€1,439
Other Revenue	€13	€18	€49	€	€12	€239
Total Revenue	€76	€79	€105	€47	€75	€2,274
Operating Costs	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**	**€'000**
Fuel Related Operating Costs	€38	€1.72	€50	€37	€49	€362
Non-fuel Operating Costs	€18	€24	€19	€6	€16	€1,080
Total Operating Costs	€56	€27	€69	€43	€65	€1,443
EBITDI	**€20**	**€53**	**€36**	**€4**	**€10**	**€832**
Depreciation & Impairment	€28	€32	€17	€2	€36	€1,498
EBIT	**(€8)**	**€21**	**€19**	**€2**	**(€26)**	**(€666)**
Interest & Tax	€3	€15	€.08	€	€1.42	€51.29
Net Profit	**(€11)**	**€6**	**€19**	**€2**	**(€27)**	**(€718)**
Gross Margin - %	**26%**	**67%**	**34%**	**9%**	**13%**	**37%**
Net Margin - %	**-15%**	**7%**	**18%**	**3%**	**-36%**	**-32%**

3.3. REVENUE AND COST BREAKDOWN – FY2012 TO FY2017

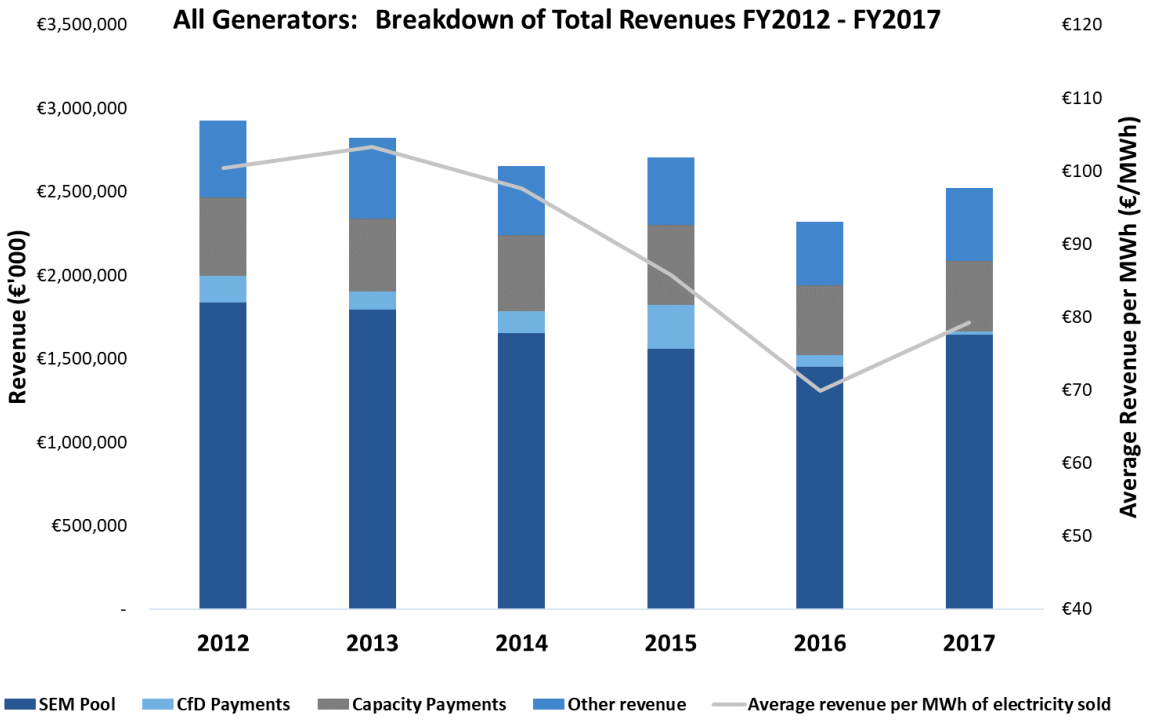
Figures 3.28 and 3.29 present a breakdown in revenues and costs across all generators between FY2012 and FY2017. Total revenues have been on a downward trend from FY2012 to FY2016 in line with decreasing SMP and wholesale gas prices over the same period. This has been matched by a decrease in costs of a similar magnitude.

In FY2017 revenues increased in line with an upturn in SMP, which in turn is consistent with an upturn in wholesale gas prices.

As can be seen from Figure 3.28 below, SEM pool revenues are the largest contributor to total generator revenues followed by capacity payments and other revenue which tend to contribute similar amounts to total revenue. Contract for Difference payments are the smallest revenue stream out of those studied, only contributing less than 4% of total revenues in FY2016 and FY2017.

The average revenue per MWh of electricity sold has likewise been on a significant downward trend, falling from €103/MWh in FY2013 to €70/MWh in FY2016, before picking up to €77/MWh in FY2017.

Figure 3.28: Breakdown of generator total revenues from FY2012 to FY2017



Turning to generator costs, total costs have also been on a downward trend from FY2013 to FY2016. Average cost per MWh of electricity sold has decreased from €92 in FY2013 to €65 in FY2016. Fuel related operating costs are the most significant cost category followed by non-fuel related operating costs. Interest & tax costs are fairly negligible, only accounting for less than 6% of total costs in FY2016 and FY2017.

A more detailed breakdown of revenues and costs by fuel source and generation type is presented in Annex B

Figure 3.29: Breakdown of generator total costs between FY2012 and FY2017

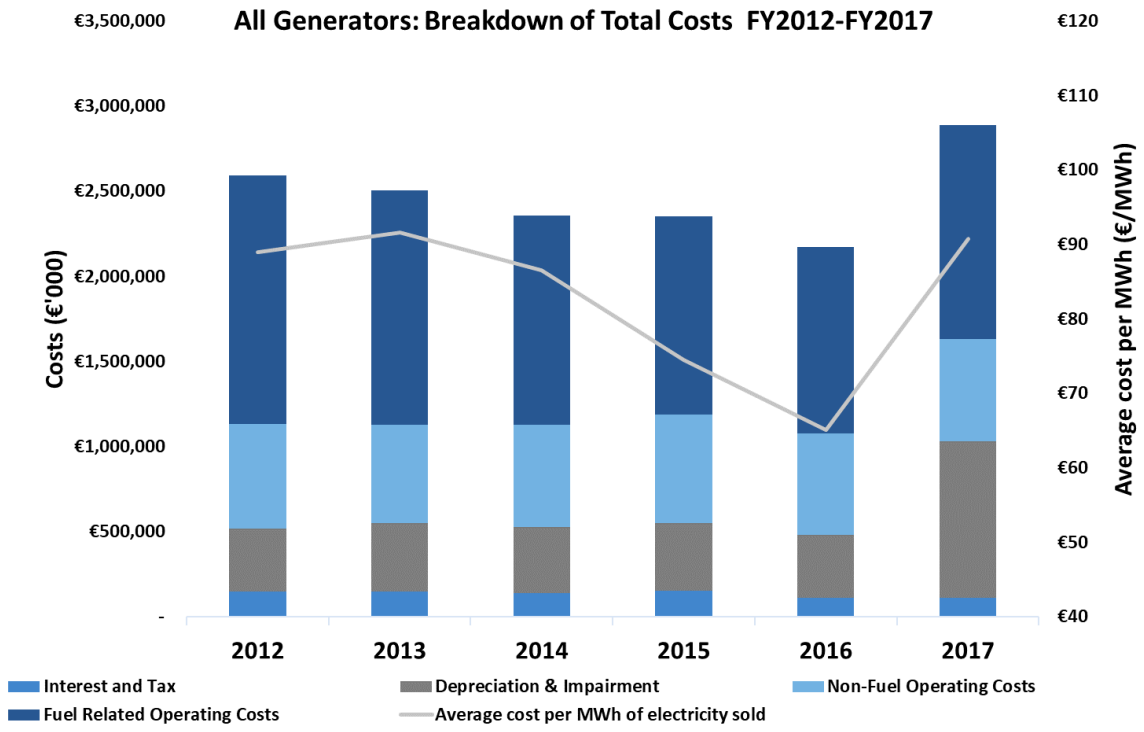
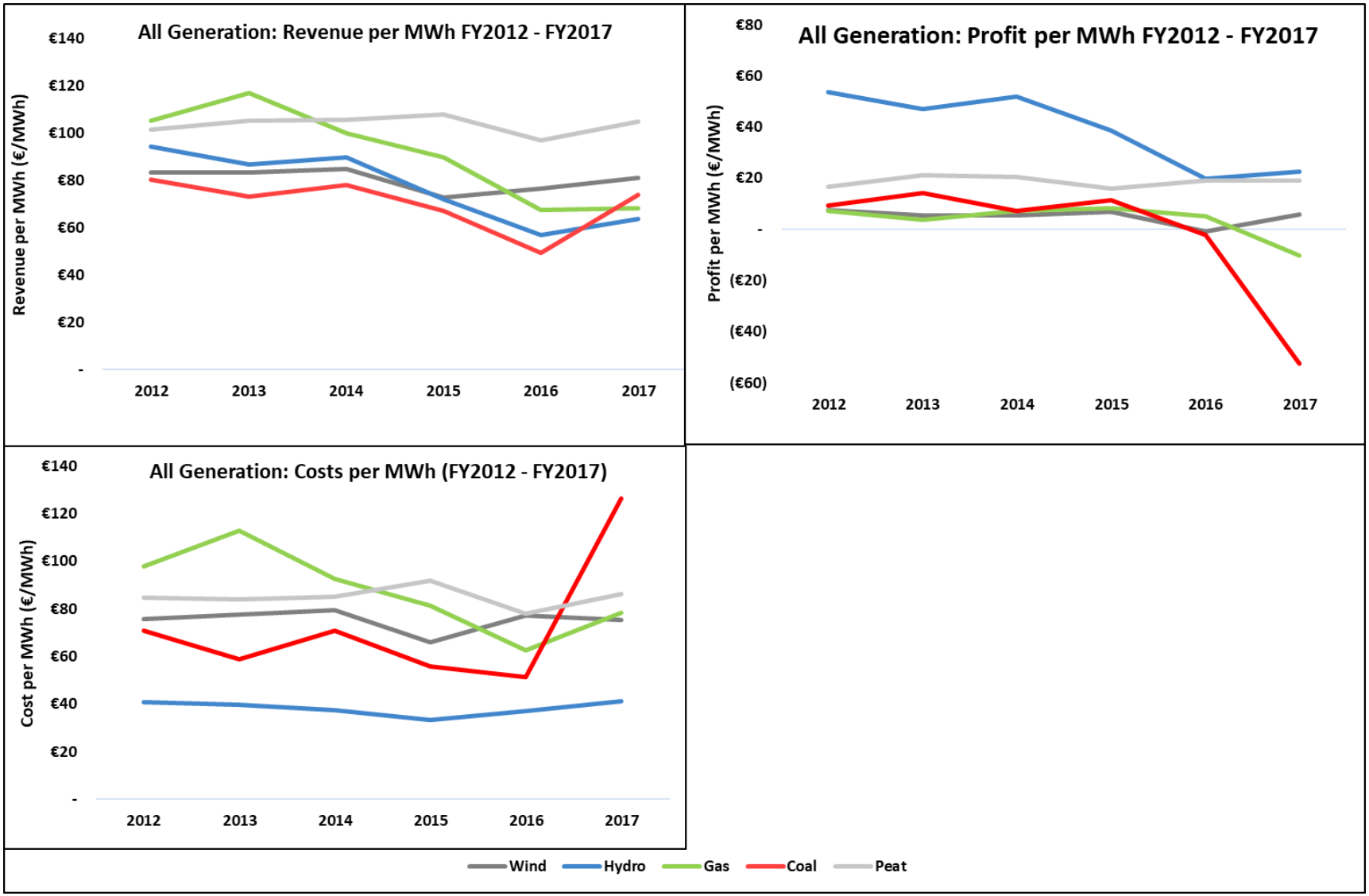


Figure 3.30 below presents the trend - by fuel type - in revenue, costs and net profit per MWh of electricity sold. The revenues per MWh and costs per MWh for Wind and Peat generators have not been volatile. However, the revenues per MWh and costs per MWh for Coal, Gas and Hydro generators have decreased to a greater extent than the corresponding costs, resulting in decreasing net profits for generators of these fuel types.

Figure 3.30: Trend in revenue, costs and profit per MWh from FY2012 to FY2017 by fuel type



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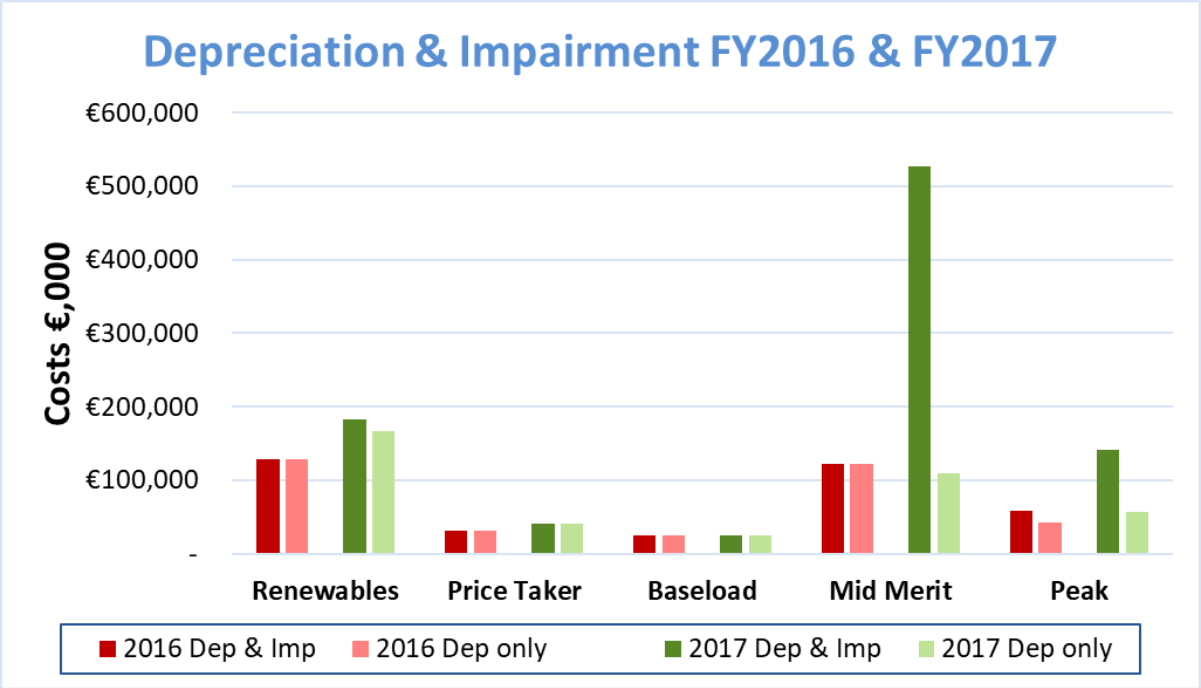
3.4. IMPAIRMENT

In FY2017 there was a marked increase in impairment reported. The total impairment reported in this financial year was €527 million. This level of impairments is unprecedented and has a very significant effect on the resulting net profitability for FY2017.

When all reported impairments figures for FY2016 and FY2017 are excluded the net profit improves. The Mid-Merit type plants in particular, exhibit a very substantial drop in the Depreciation & Impairment costs, as is evident in Figure 3.31 below. When impairments are excluded Depreciation & Impairment reduce from €527 million in FY2017 to €110 million.

Figure 3:31: Breakdown of Mid-Merit costs between FY2012 and FY2017



When impairments are included, as shown in Figure 3.32 below, there is a marked increase in cost for Mid-Merit plants from FY2016 to FY2017. When impairment costs are excluded, a more consistent and stable trend – as shown in Figure 3.33 below - is exhibited in the costs for Mid-Merit plants from FY2012 to FY2017.

Figure 3:32: Breakdown of Mid-Merit costs between FY2012 and FY2017

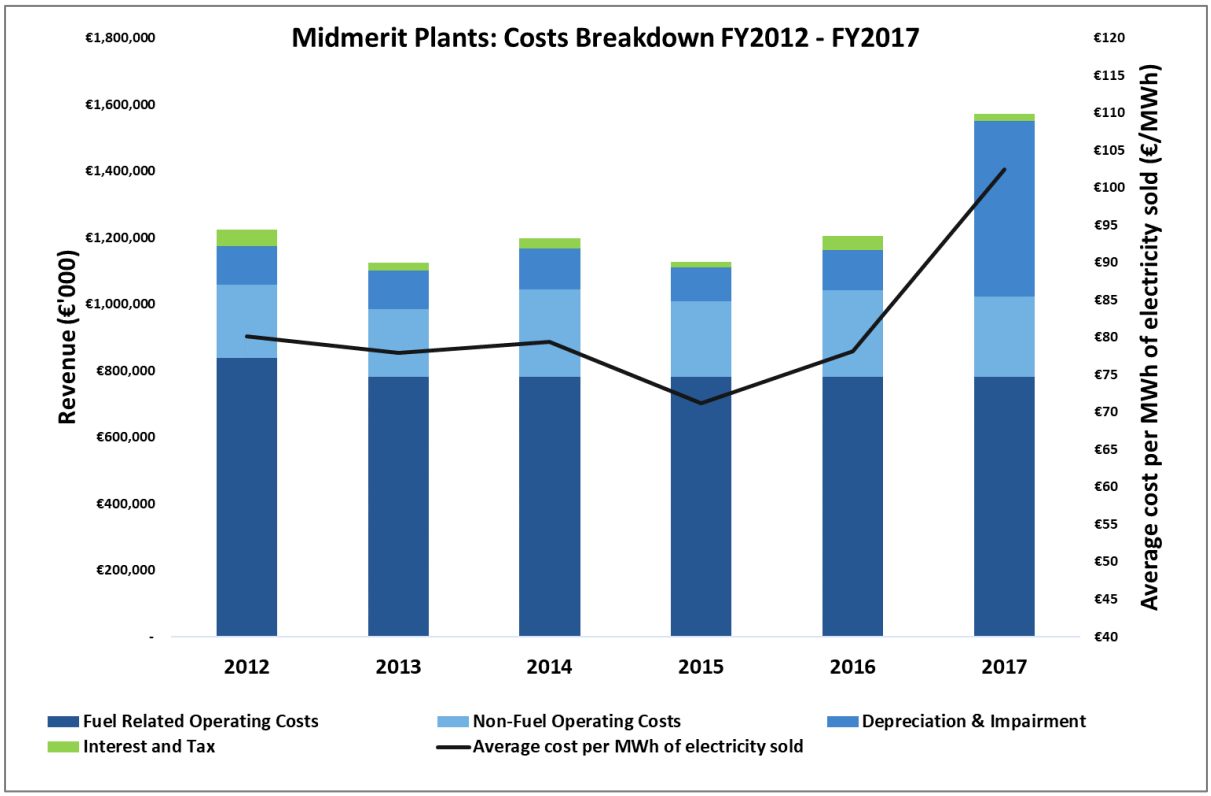
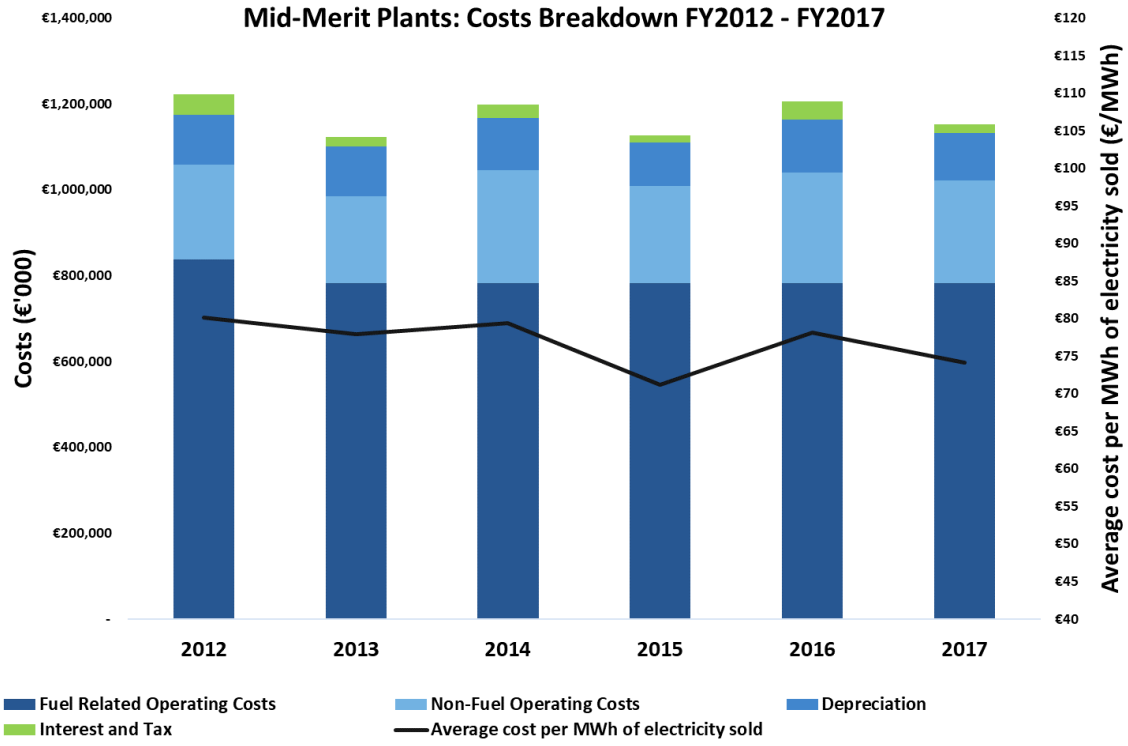


Figure 3:33: Breakdown of Mid-Merit costs between FY2012 and FY2017 – excluding impairments

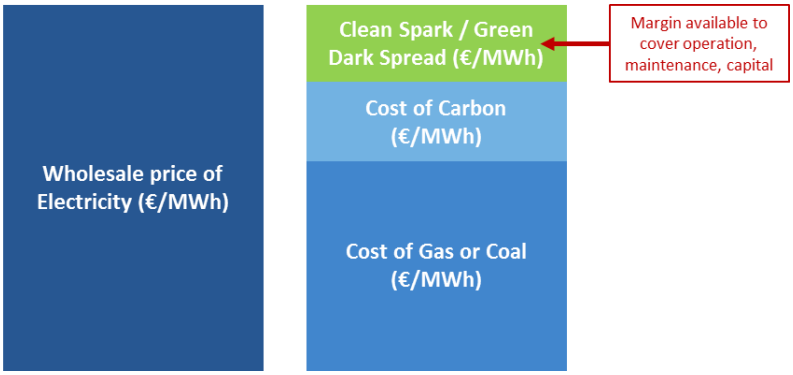


4. SPARK AND DARK SPREAD ANALYSIS

Of great significance to thermal generators are spreads between power prices and fuel/input costs. This section presents the following two spreads:

- **Clean spark spread:** The spark spread is the theoretical gross margin of a gas-fired power plant from selling a unit of electricity, having bought the fuel required to produce this unit of electricity, with an efficiency of 49.13%. The *clean spark spread* also takes account of the cost of carbon.
- **Dark green spread**: The dark spread is the gross margin of a coal plant accounting for the coal input and the assumed efficiency level of 35%; the *dark green spread* also takes account of the cost of carbon.

It is important to bear in mind that these spreads are the theoretical gross income of a plant selling a unit of electricity, and it must recover all of its additional costs (operation, maintenance, capital) from this spread to be able to break even or earn a profit.



The clean/green spreads have been estimated including the costs of carbon permits, demonstrated through spot prices of the European Carbon Emission Allowances

Figure 4.1 below presents the clean spark spread and figure 4.2 presents the dark green spread levels in SEM over the period 2012 to March 2018.

Figure 4.1: Spark spread - SEM (2012 to 2017)

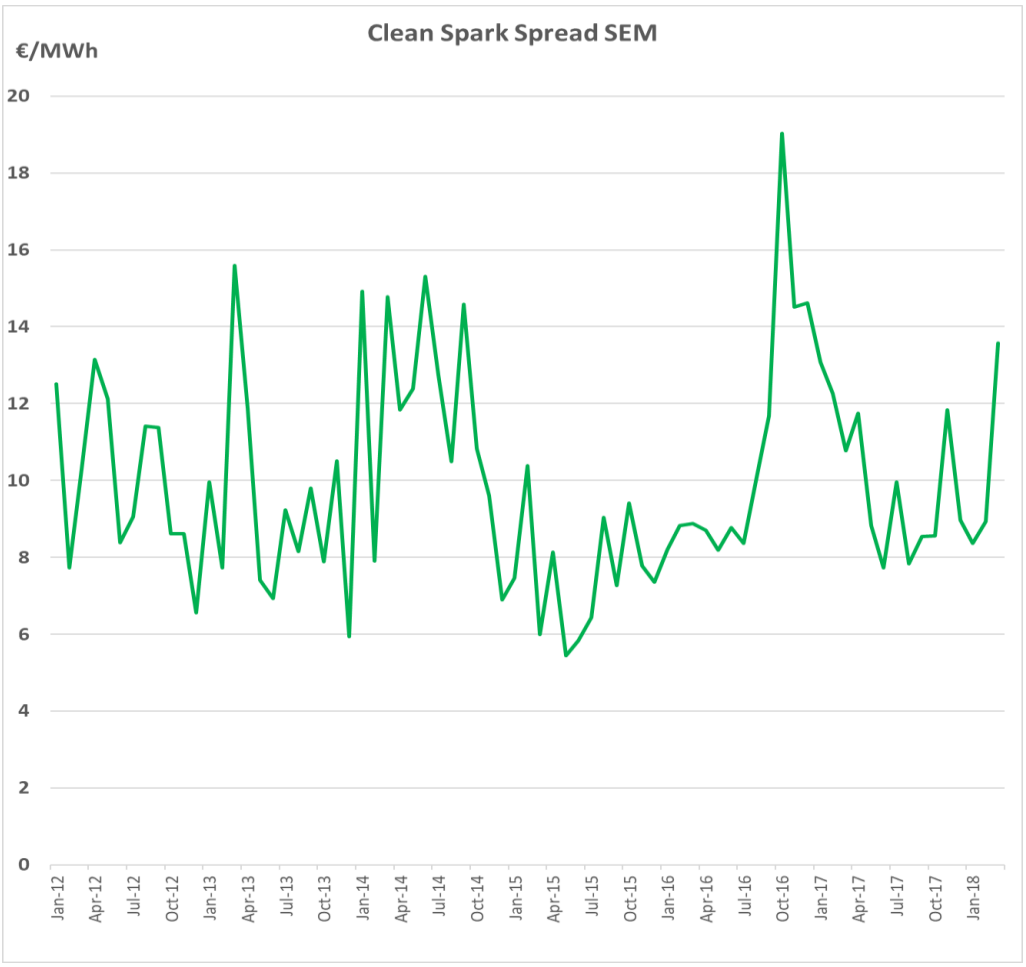
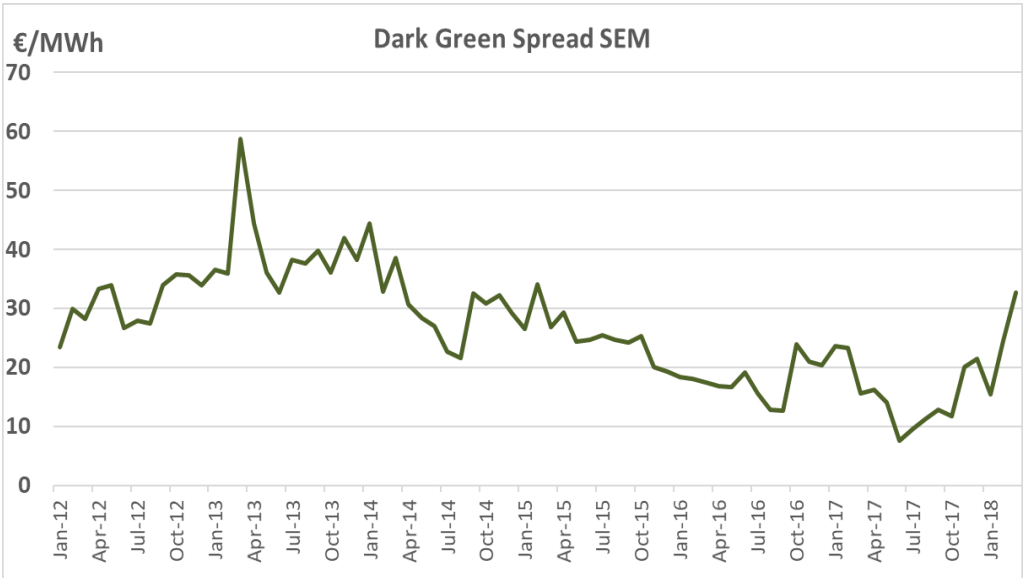


Figure 4.2: SEM Dark Green Spread (2012 to Mar 2018)



When analysing and comparing spreads it is worth considering the following points:

- Higher/lower spreads do not necessarily translate into higher/lower generator profits. This is because the total revenue earned also depends on the level of utilisation of the plant. When the utilisation level goes down, the generator is likely to require a higher spread in order to cover its fixed costs.
- The gross profit of each individual thermal generator is also related to the individual generator's specific efficiency level rather than the assumed standard mid-range generator efficiency level of 49.13% used in the aggregated analysis in this report.
- Capacity revenues in SEM have not been included in the calculation of the SEM spark spreads.
- In relation to the profitability of gas generation, the clean spark spread, as shown in Figure 4.1, increased up to €19/MWh in October 2016 and then fell back to within the range €8-€12 per MWh.
- The general decreasing trend in the dark green spread from over €40/MWh in 2014 to less than €10/MWh by mid mid-2017, as shown in Figure 4.2, is a factor in the fall in profitability of coal generation over the same period.

ANNEX A Definition of financial terms

Depreciation is a method of allocating the cost of an asset over its useful life. It reflects the decrease in the value of the asset over time due to wear and tear.

EBIT (Earnings before interest and tax): the Gross Profit minus operating costs minus depreciation.

EBITDI (Earnings before interest tax, depreciation and impairment): the Gross Profit minus operating costs minus depreciation and minus impairment.

Gross Profit: the total generator revenue received through the pool, minus the cost of the generator bids (fuel costs etc.), referred to as inframarginal rent, to which the capacity payments received by generators are then added.

Gross Margin: gross profit expressed in terms of a % of revenue.

Impairment of assets is the diminishing in quality, strength, amount, or value of an asset. It is included under expenses when the book value of a non-current asset exceeds the recoverable amount.

Operating Profit: the gross profit minus semi-fixed costs such as insurance and salaries but excluding finance costs.

Operating Margin: operating profit expressed in terms of a % of revenue.

Net Profit: the gross profit minus semi-fixed and fixed costs such as depreciation/finance.

Net Margin: net profit expressed in terms of a % of revenue.

PBT (Profit before tax): the money retained before deducting the payment of taxes. PBT is stated post interest payments. Thus, it can be calculated by subtracting the interest from EBIT.

Return on Sales and Return on Investment: For each of the profitability ratios, a higher ratio indicates greater profitability.

ROCE (return on capital employed) measures the return (before interest and tax) earned on the total capital employed (Total Assets less Current Liabilities) in the business.

ROFA (return on fixed assets) measures the return (profit after tax) earned by a company on non-current assets, including property, plant and equipment and intangible assets. Given the varying levels of current assets held by each company, this can offer a better insight into the profitability derived from a company's core assets.

ROA (return on assets) measures the return (profit after tax) earned by a company on all its assets - the higher the ratio, the more income is generated by a given level of assets.

ANNEX B Breakdown of revenue and costs – financial reporting template data

B.1 BY FUEL SOURCE

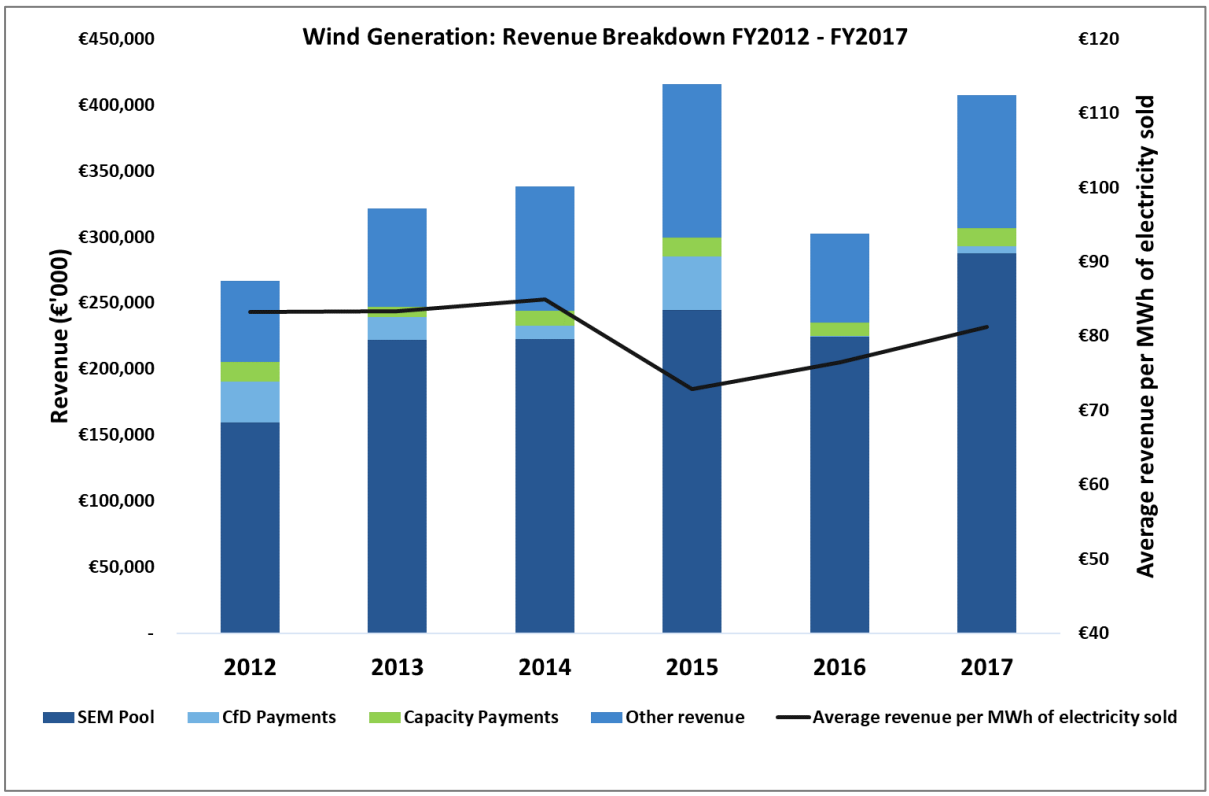
This section presents revenue and costs breakdown by fuel source from FY2012 to FY2017.

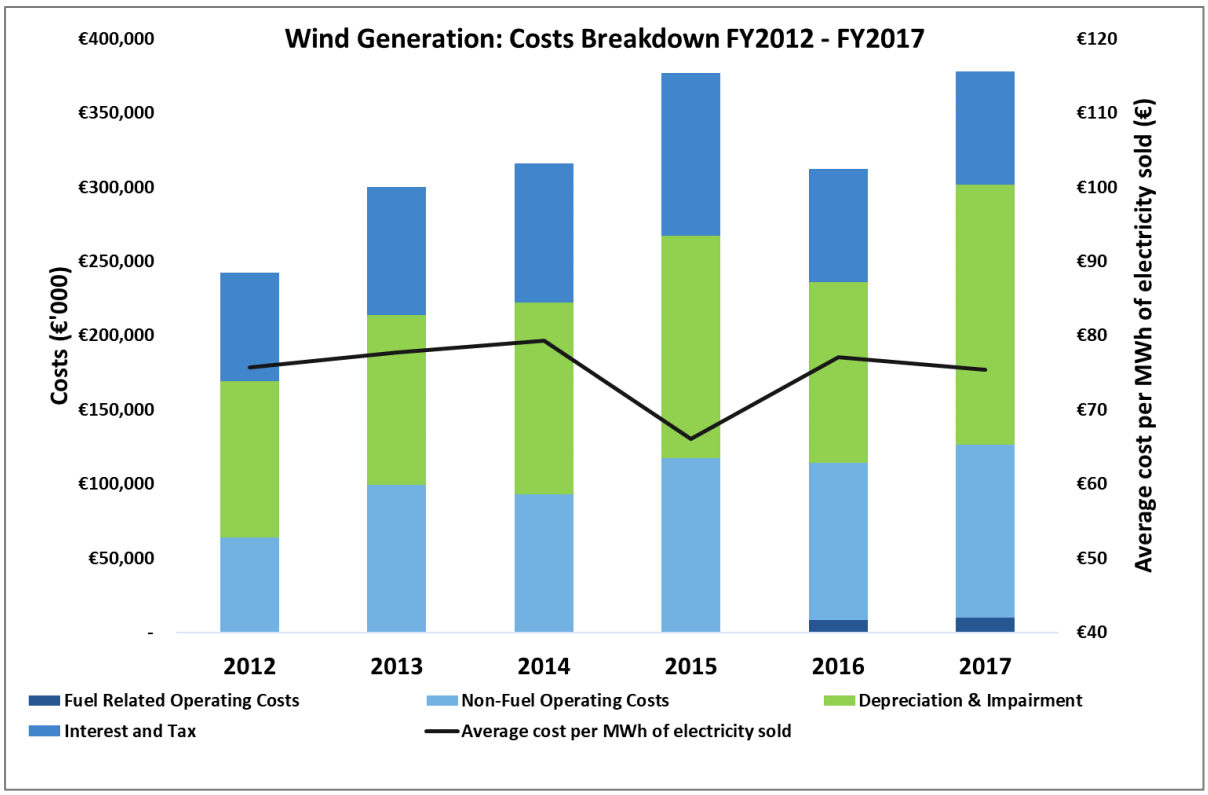
in each of the revenue breakdown charts, the average revenue for each MWh of electricity sold is plotted to give an indication of whether revenue is moving in line with the volume of electricity generation.

Similarly, In each cost breakdown chart, the average costs for each MWh of electricity sold is plotted to give an indication of whether total costs are moving in line with the volume of electricity generation.

B.1.1 Wind Generation

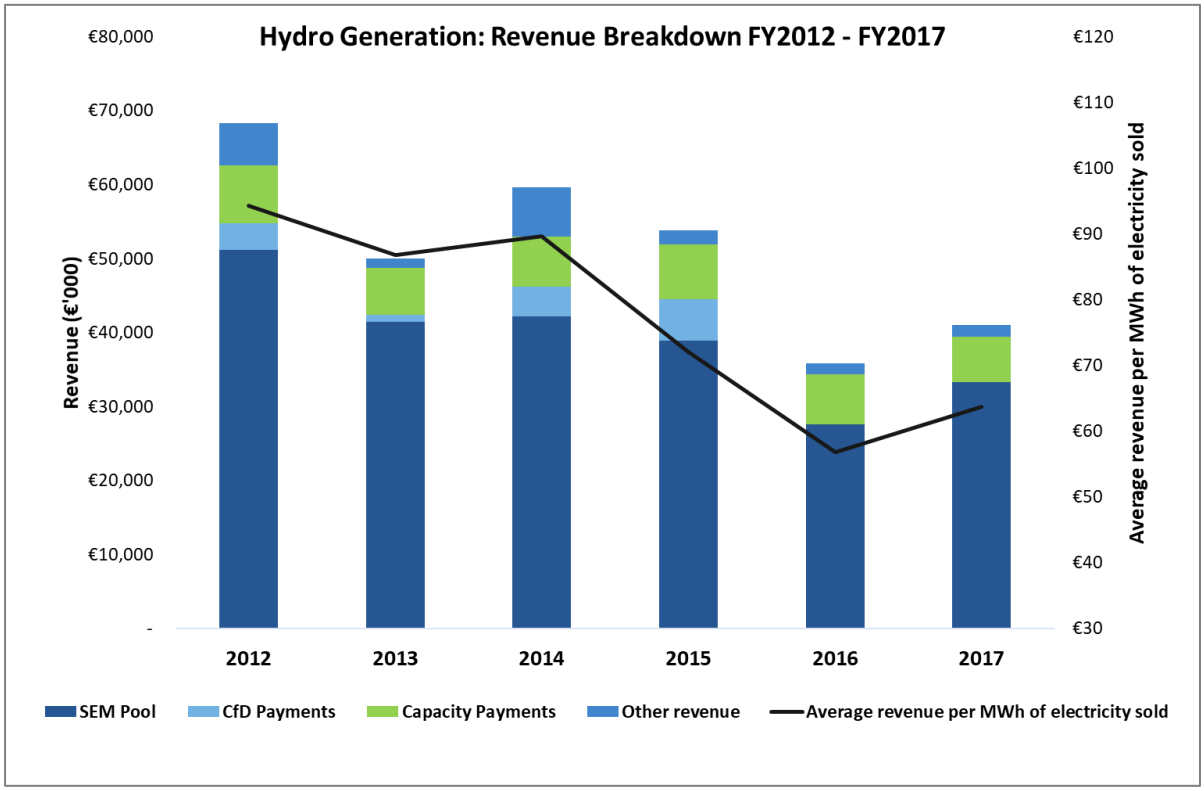
Figure B.1.1: Wind Generation – Revenue and Costs Breakdown FY2012 to FY2017

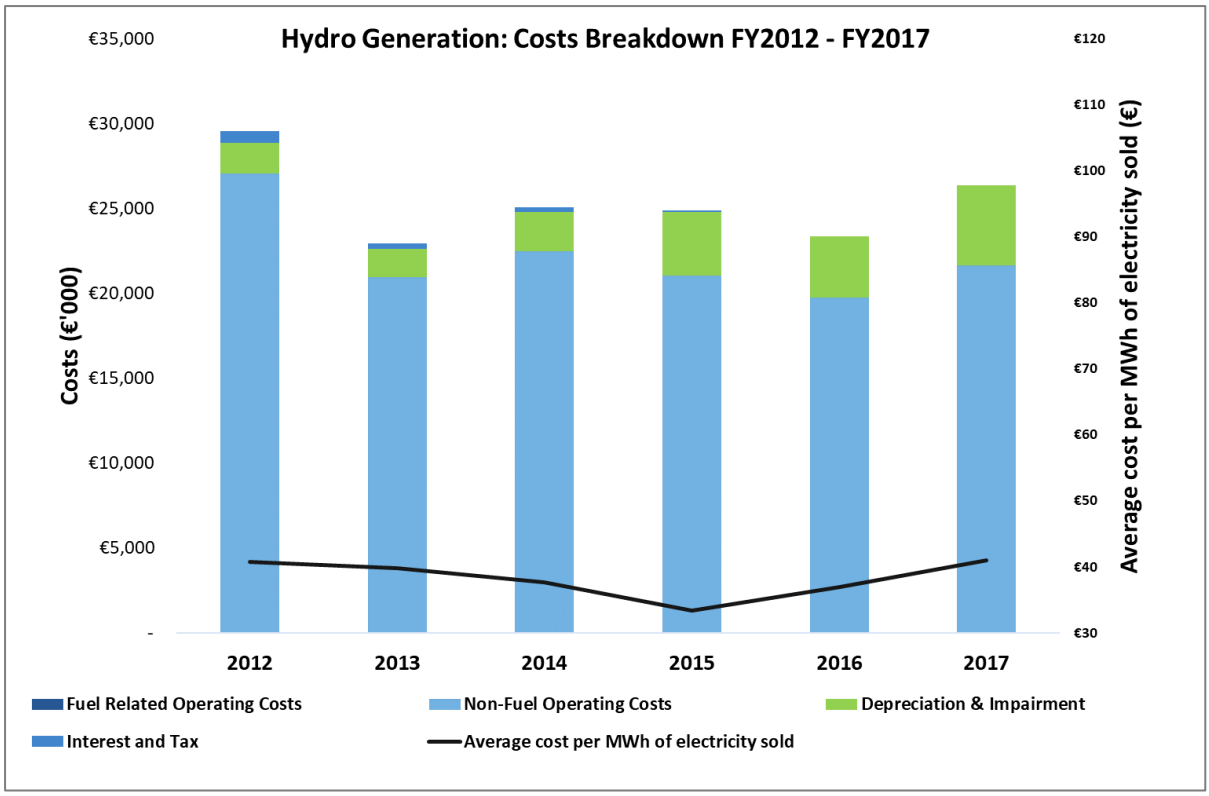




B.1.2 Hydro Generation

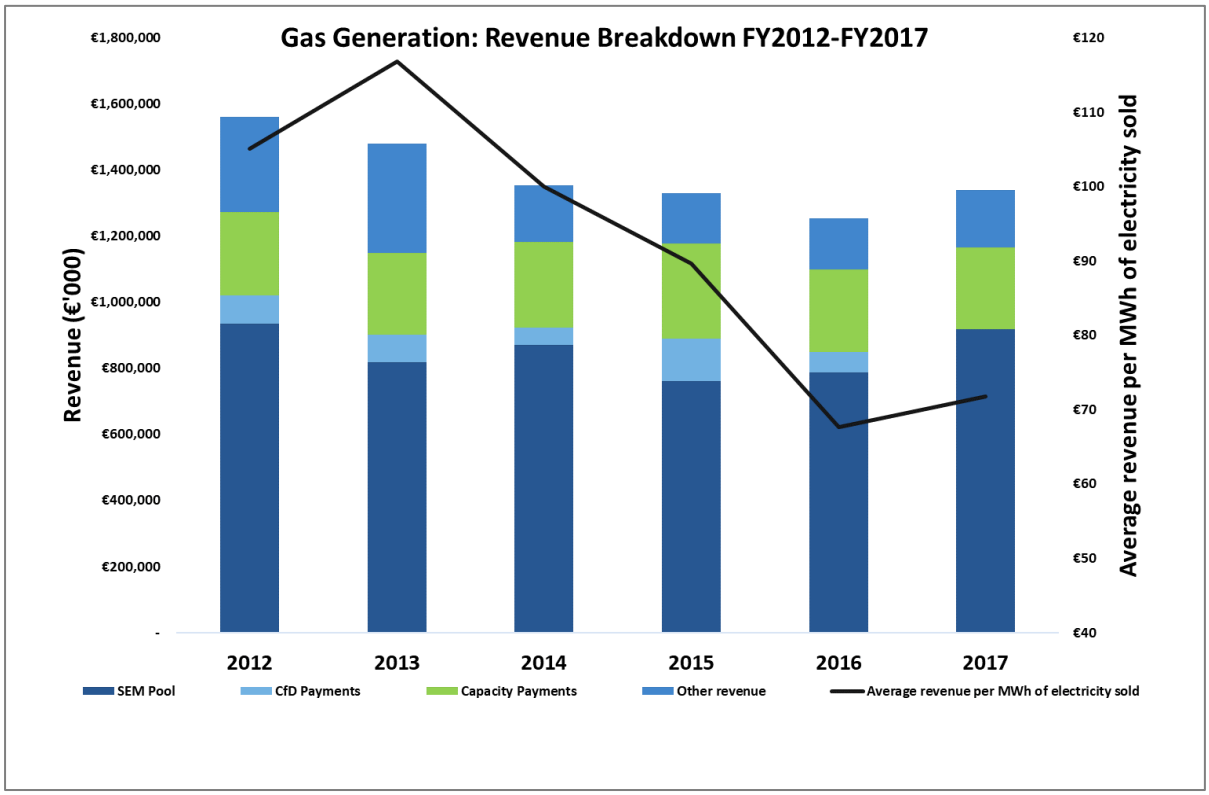
Figure B.1.2: Hydro Generation – Revenue and Costs Breakdown FY2012 to FY2017

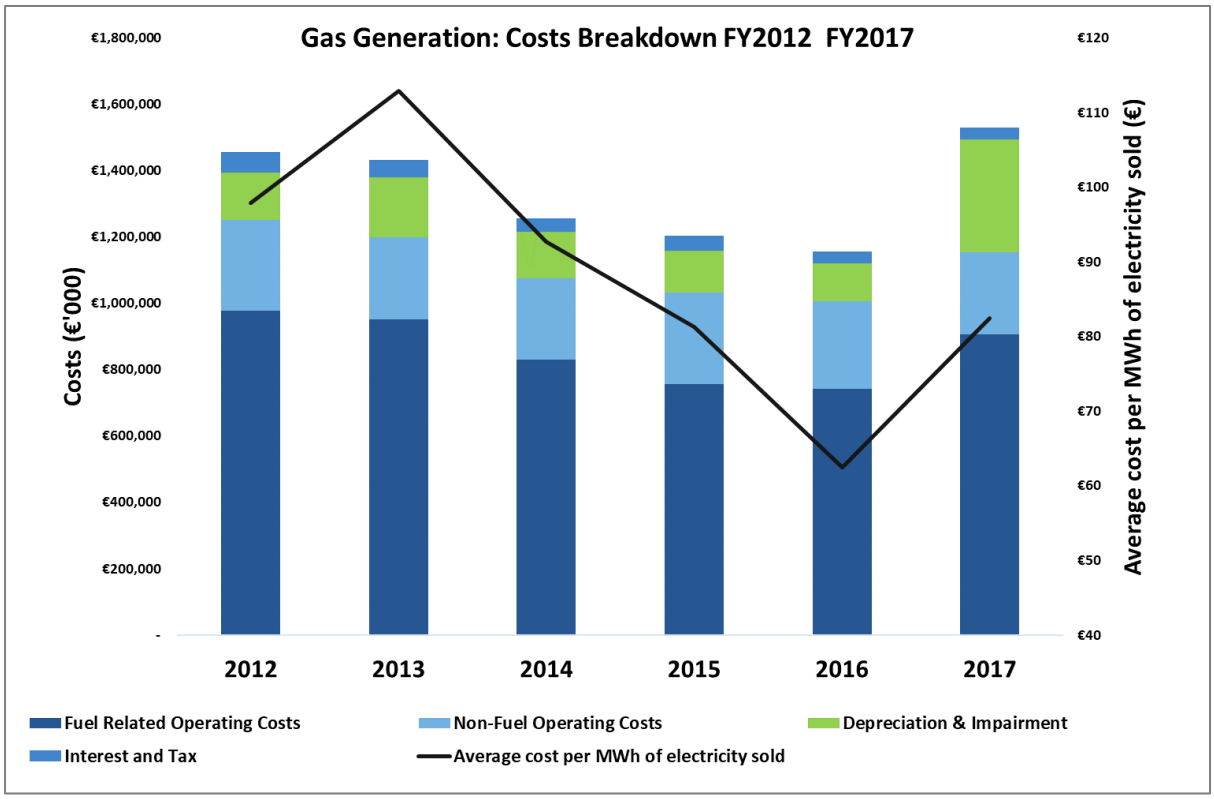




B.1.3 Gas Generation

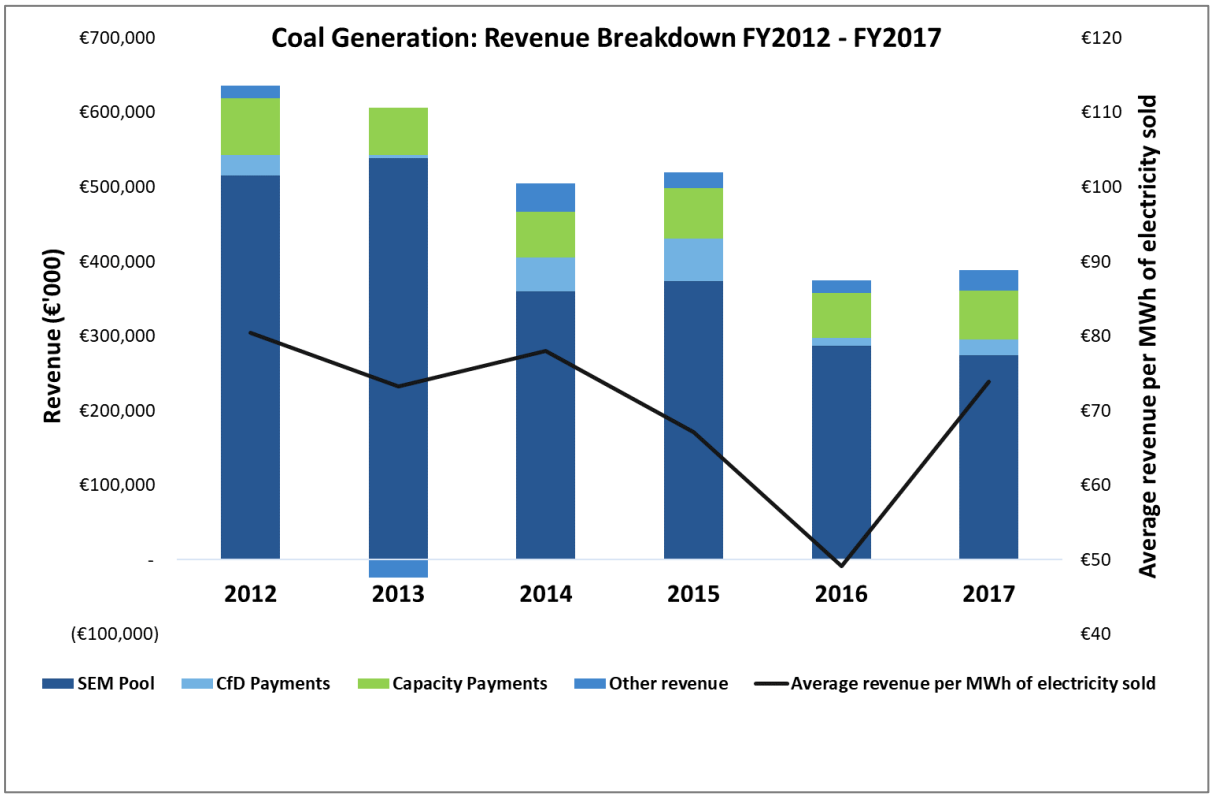
Figure B.1.3: Gas Generation – Revenue and Costs Breakdown FY2012 to FY2017

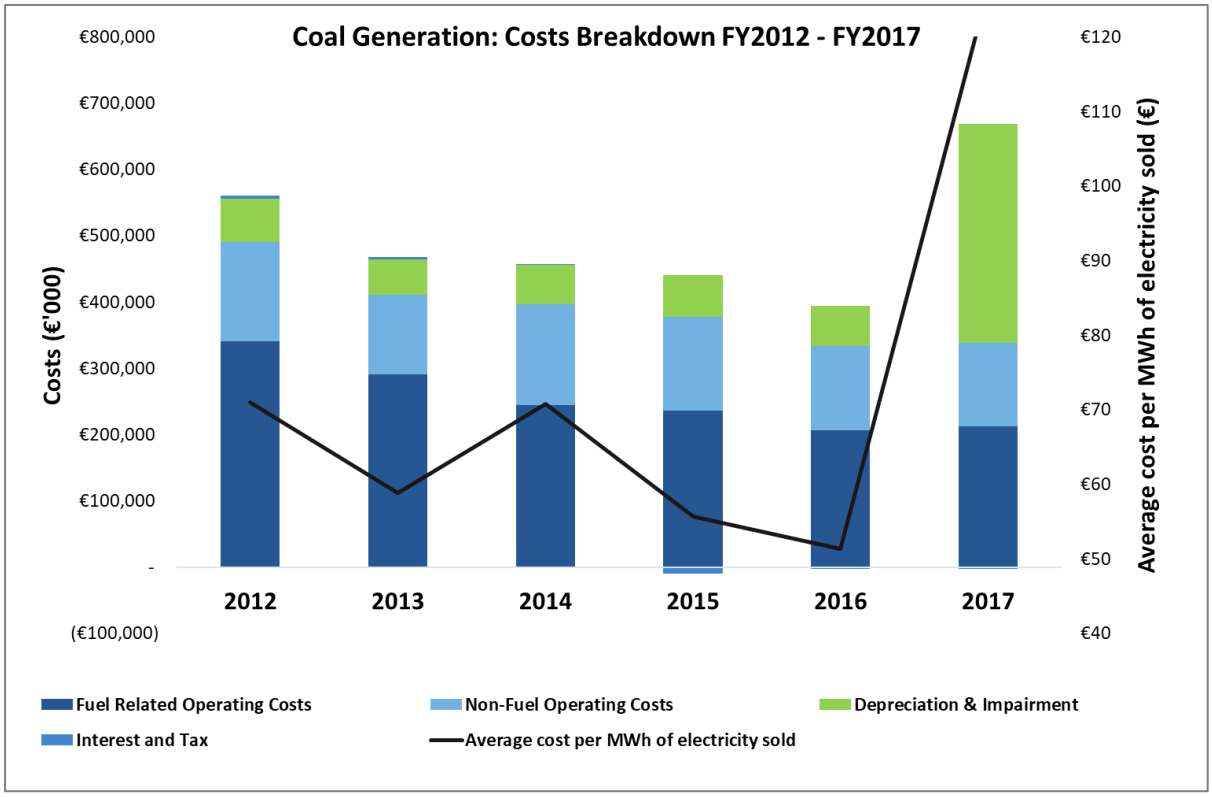




B.1.4 Coal Generation

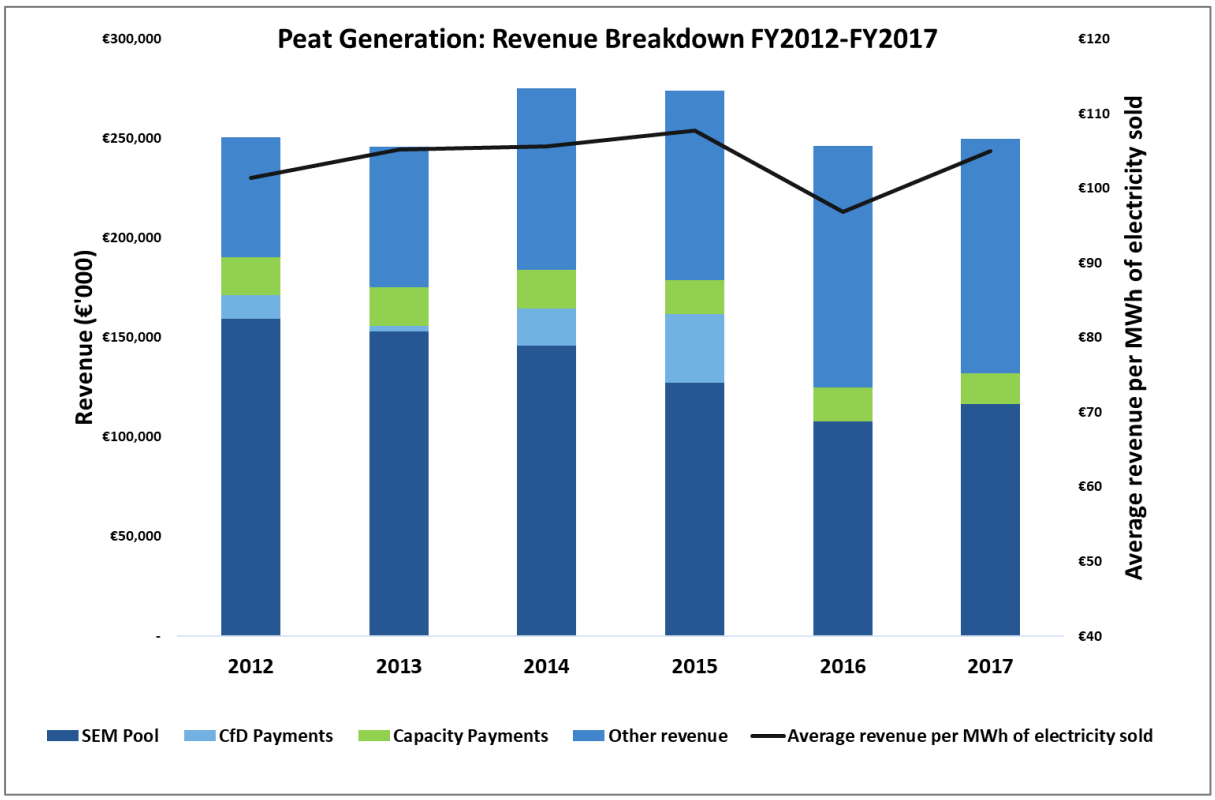
Figure B.1.4: Coal Generation – Revenue and Costs Breakdown FY2012 to FY2017

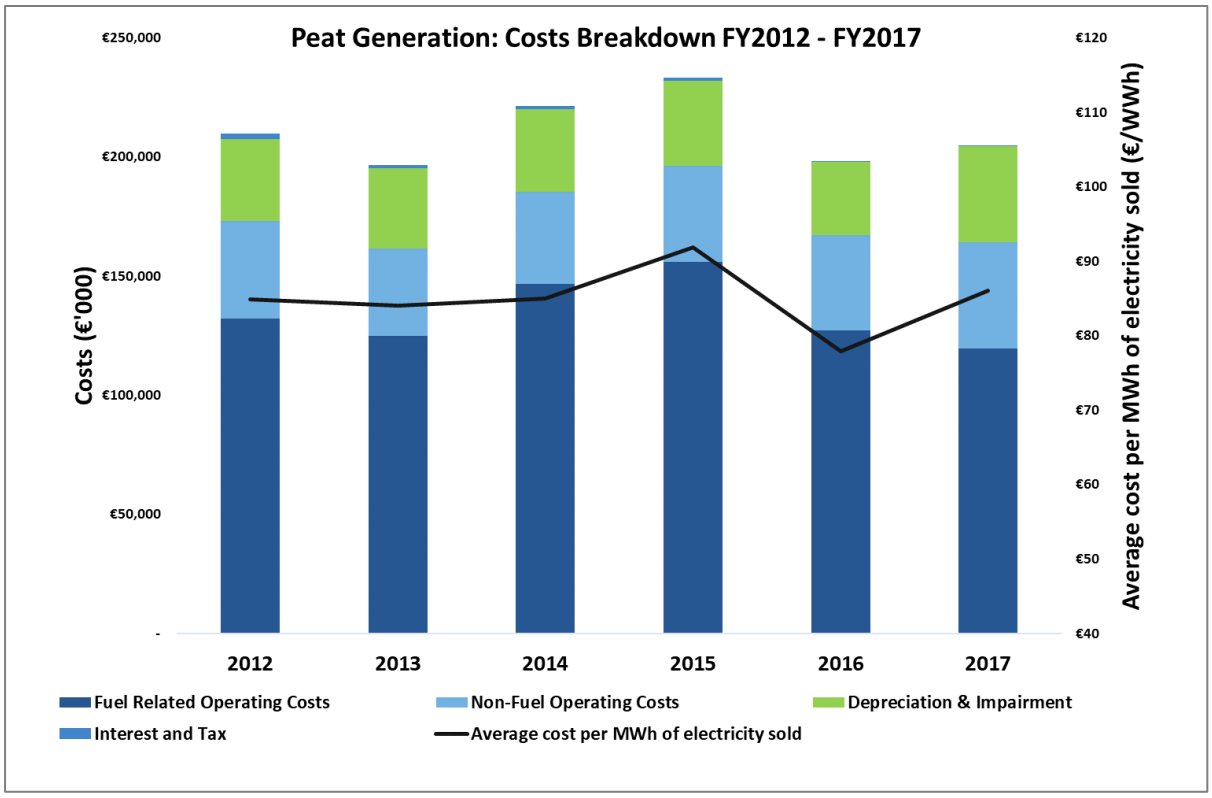




B.1.5 Peat Generation

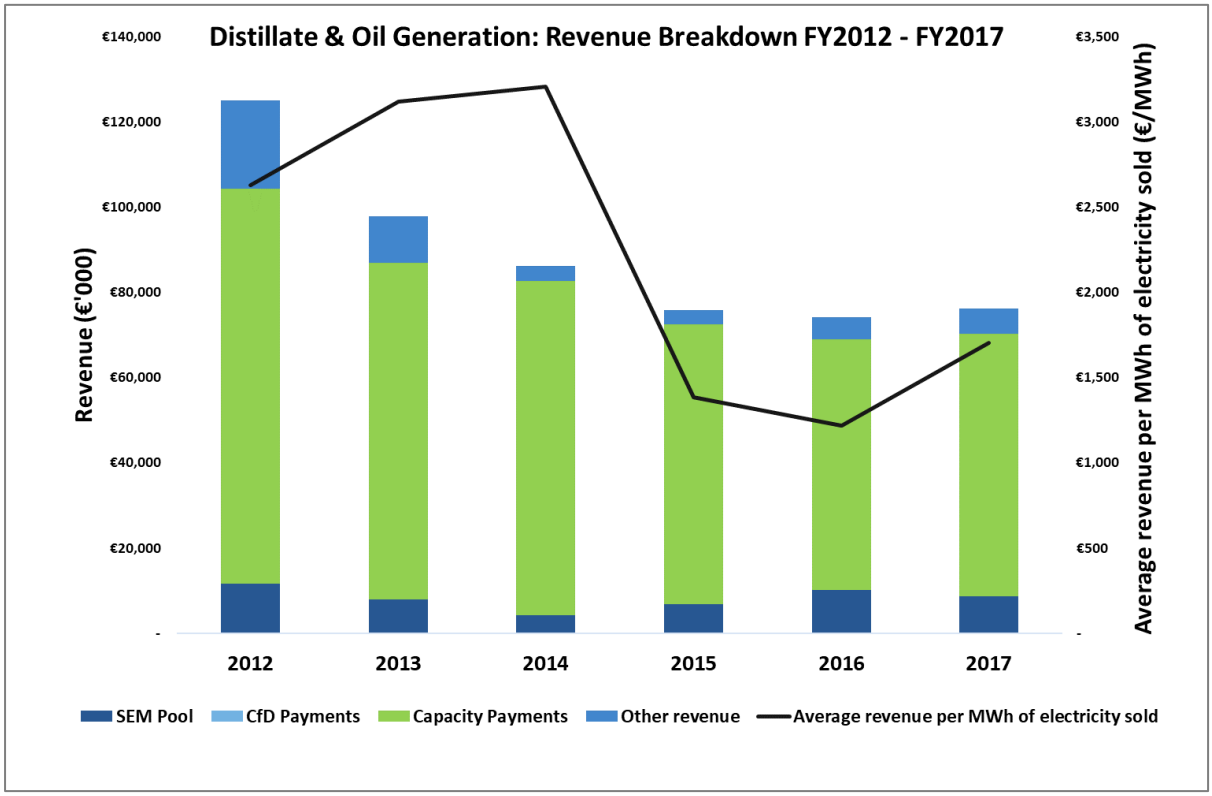
Figure B.1.5: Peat Generation – Revenue and Costs Breakdown FY2012 to FY2017

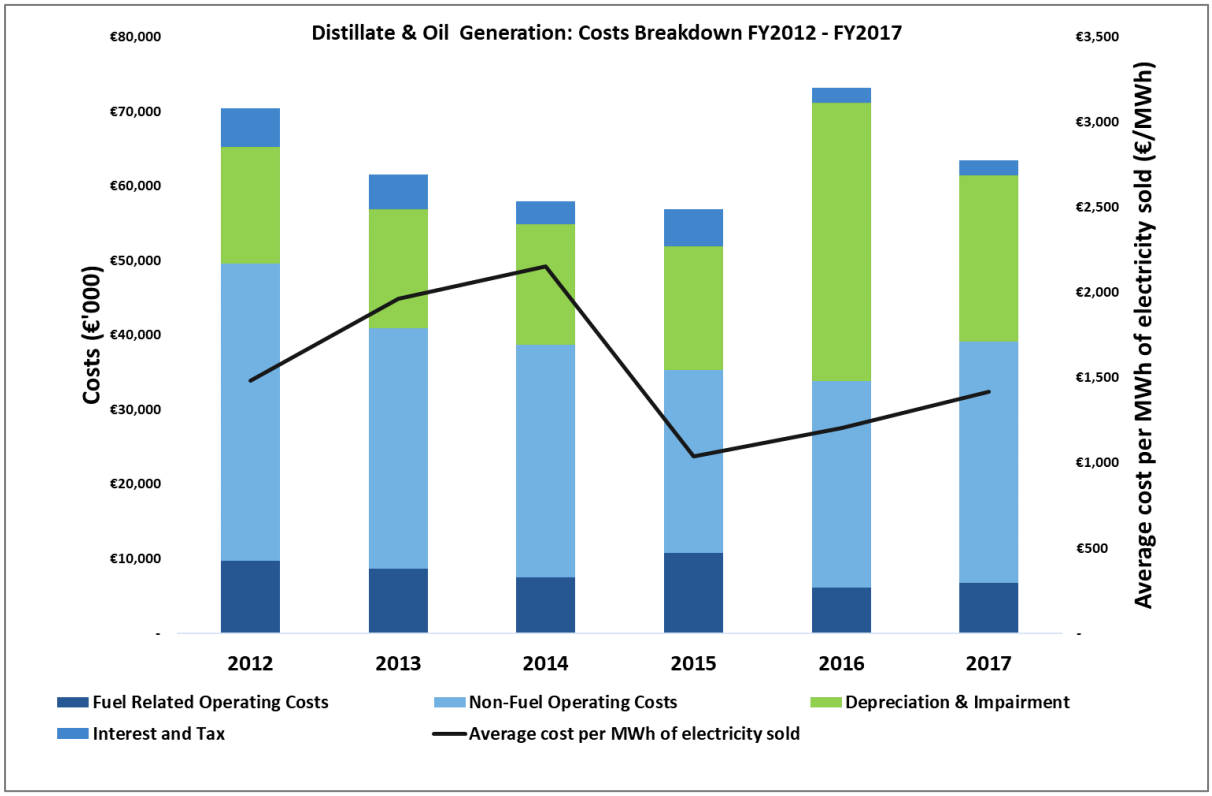




B.1.6 Distillate & Oil Generation

Figure B.1.6: Distillate & Oil Generation – Revenue and Costs Breakdown FY2012 to FY2017





B.2 BY GENERATION TYPE

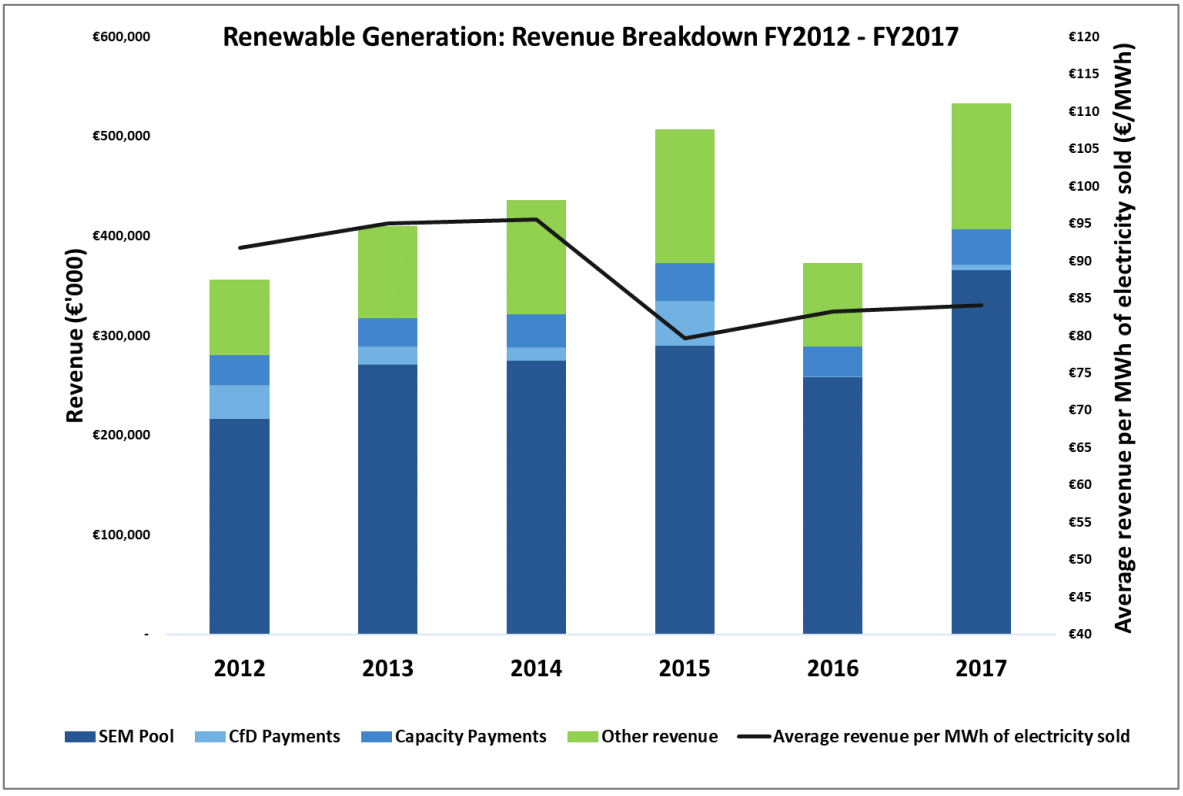
This section presents revenue and costs breakdown, by generation type, from FY2012 to FY2017.

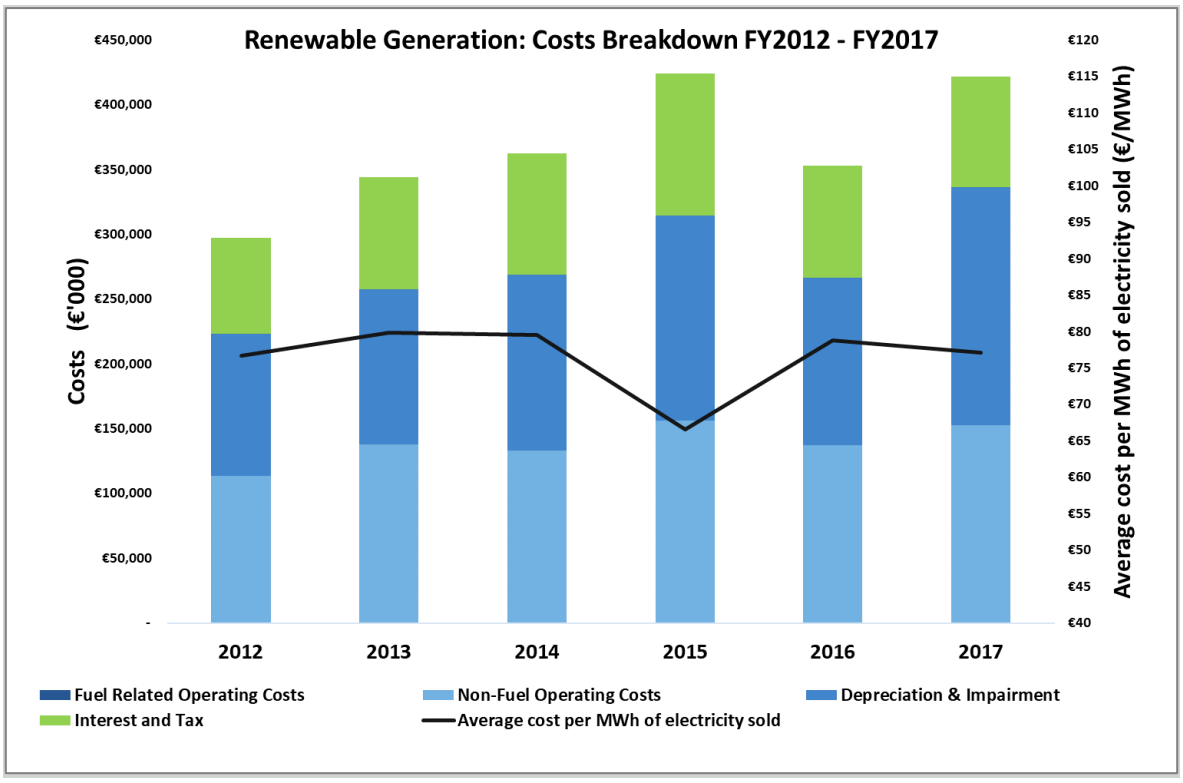
in each of the revenue breakdown charts, the average revenue for each MWh of electricity sold is plotted to give an indication of whether revenue is moving in line with the volume of electricity generation.

Similarly, In each cost breakdown chart, the average costs for each MWh of electricity sold is plotted to give an indication of whether total costs are moving in line with the volume of electricity generation.

B.2.1 Renewable Generation Plants

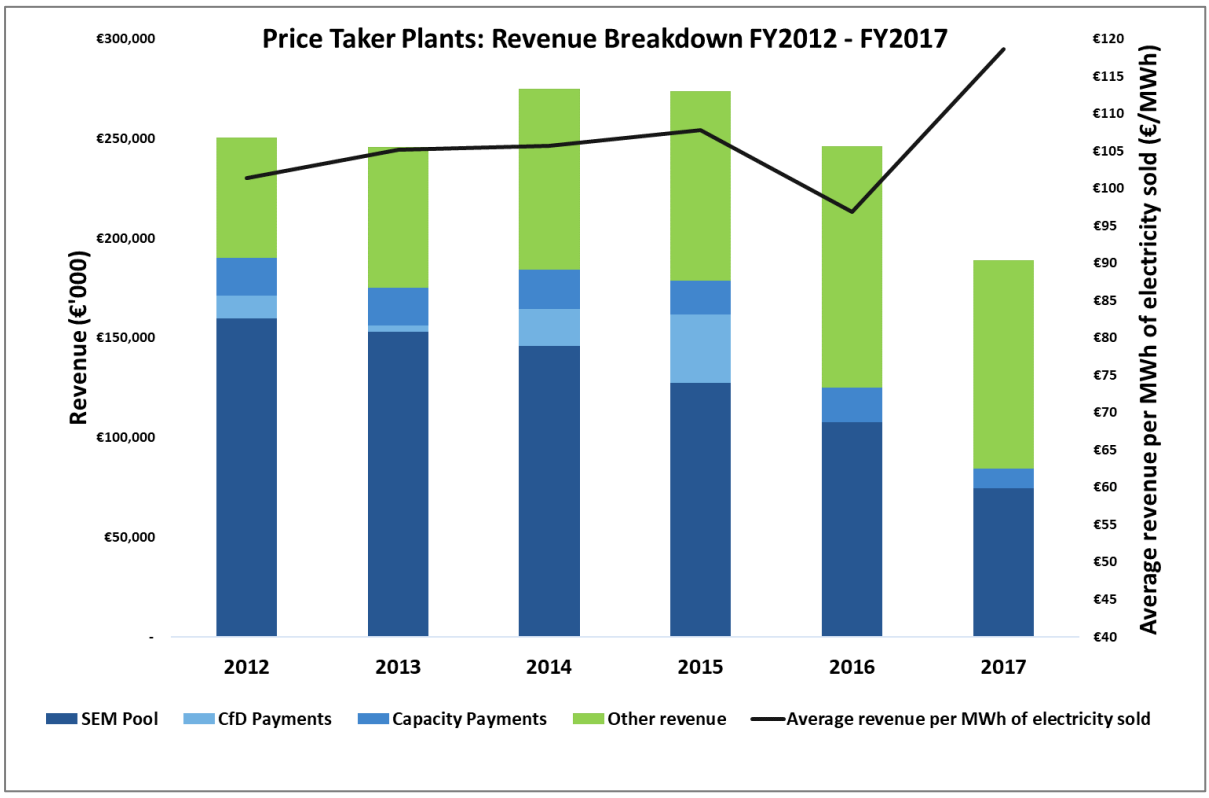
Figure B.2.1: Renewable Plants – Revenue and Costs Breakdown FY2012 to FY2017

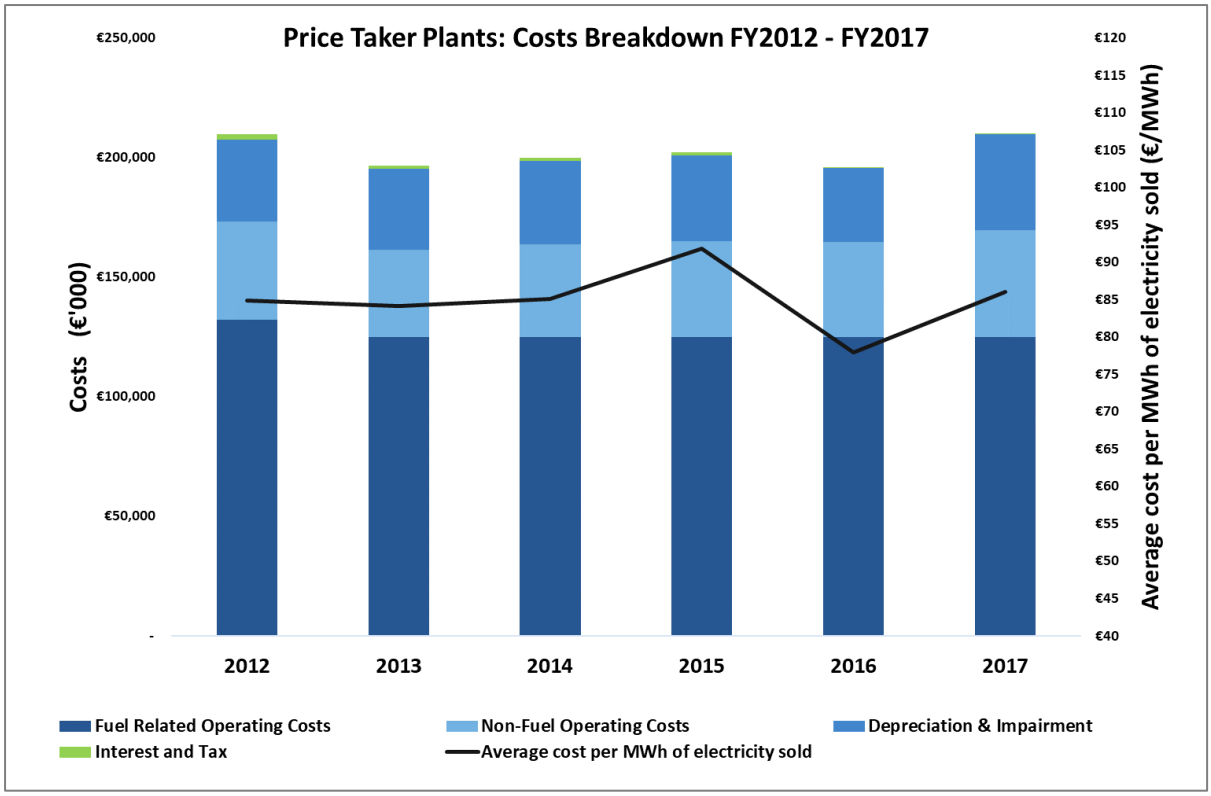




B.2.2 Price Taker Generation Plants

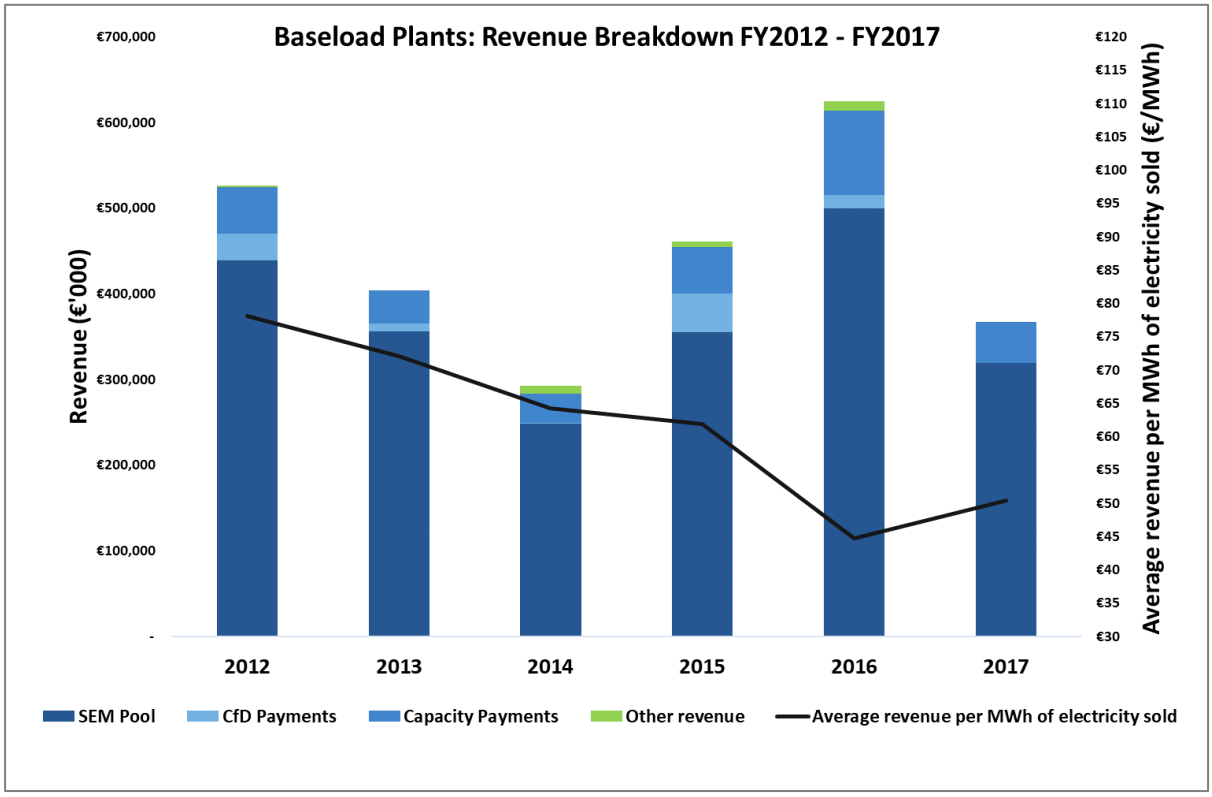
Figure B.2.2: Price Taker Plants – Revenue and Costs Breakdown FY2012 to FY2017

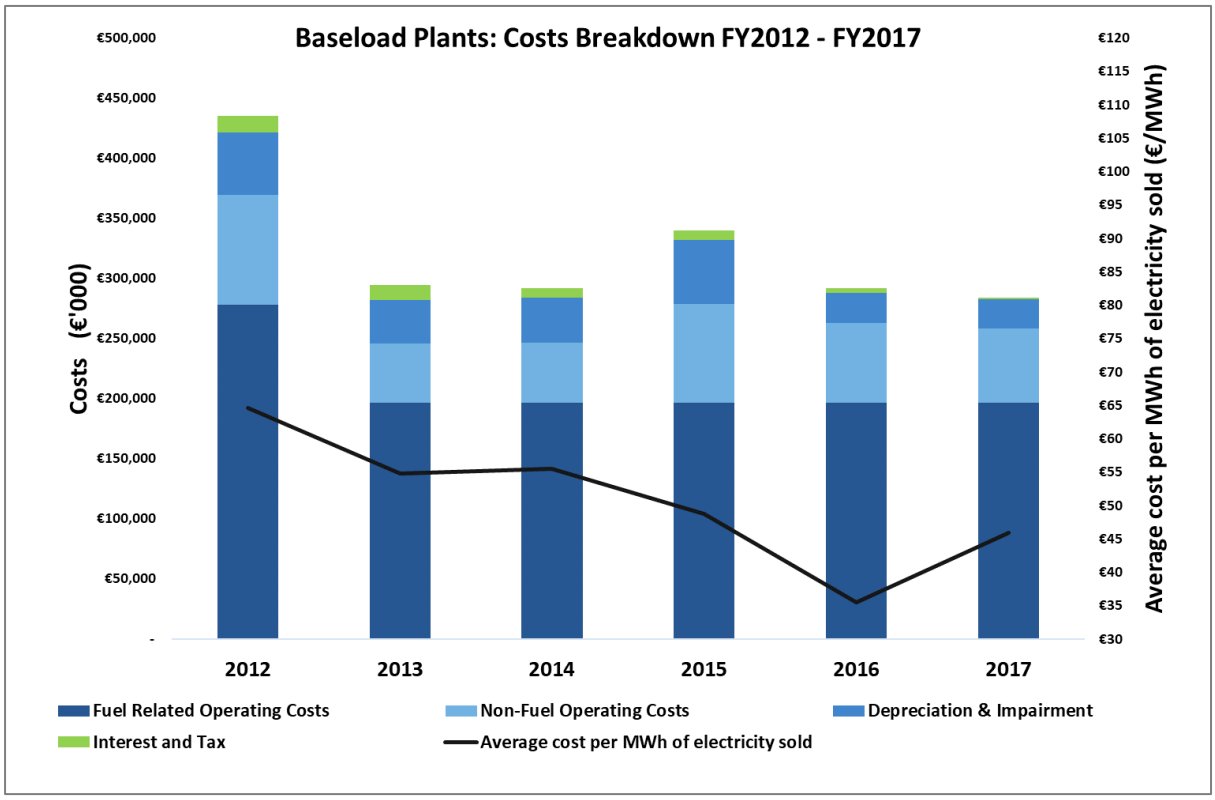




B.2.3 Baseload Generation Plants

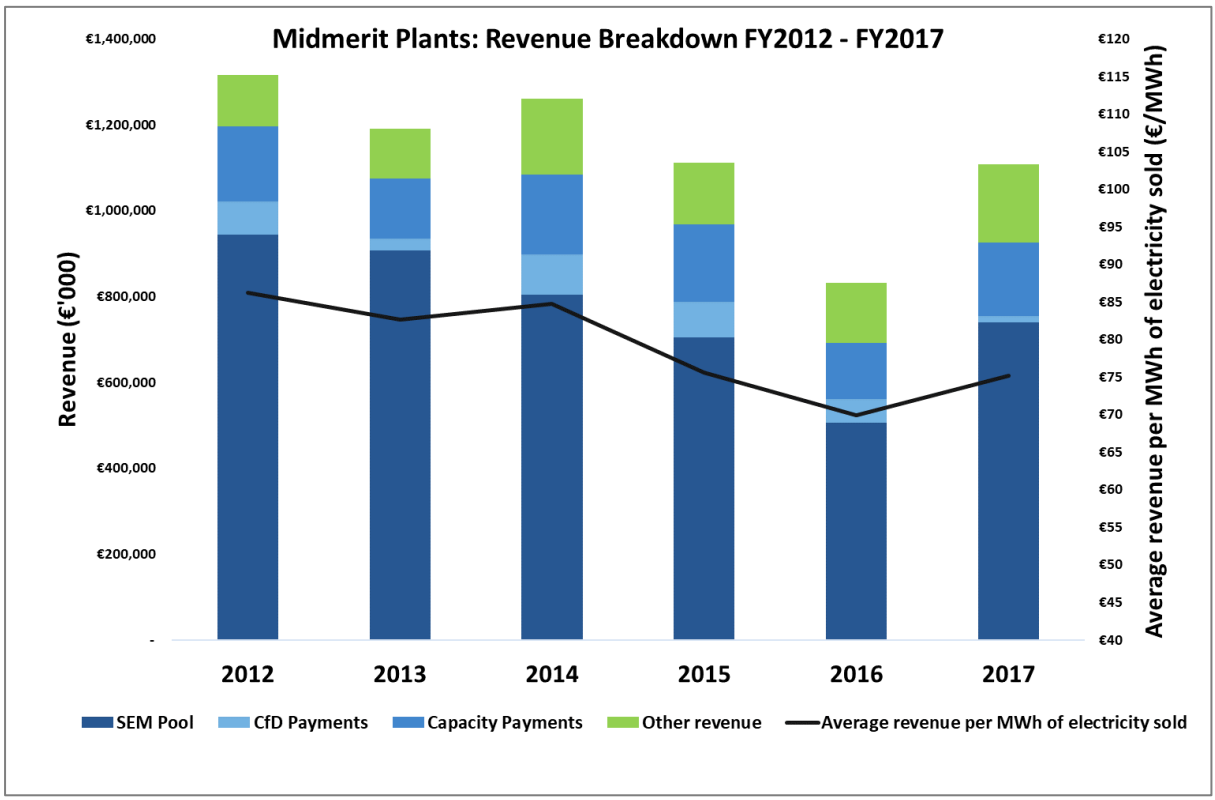
Figure B.2.3: Baseload Plants – Revenue and Costs Breakdown FY2012 to FY2017

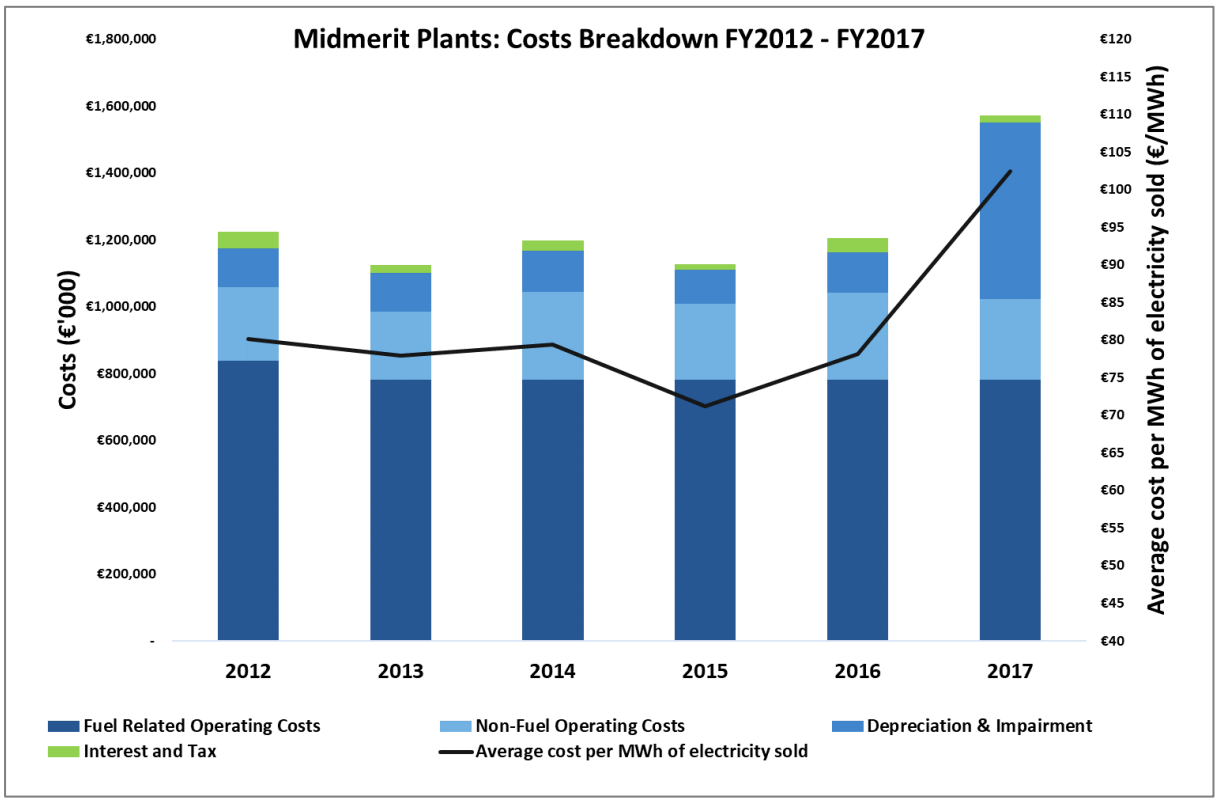




B.2.4 Mid-Merit Generation Plants

Figure B.2.4: Mid-Merit Plants – Revenue and Costs Breakdown FY2012 to FY2017





B.2.5 Peak Generation Plants

Figure B.2.5: Peak Plants – Revenue and Costs Breakdown FY2012 to FY2017