

Single Electricity Market (SEM)

GENERATOR FINANCIAL PERFORMANCE IN THE SEM FOR FINANCIAL YEAR 2021 Report SEM-23-094 23 November 2023

EXECUTIVE SUMMARY

The Generator Financial Performance Report examines the financial performance of licensed generation companies with a combined ownership capacity greater than or equal to 25MW operating in the Single Electricity Market (SEM). This report provides an update to include the 2021 financial year and follows on from previous reports published by the SEM Committee since 2013. The report provides aggregated information on the financial performance of generators in the SEM, and includes a breakdown by generation fuel source also.

Due to the time taken for generation companies to have their financial audits completed for a given year, and for the subsequent submission and collation of the relevant data, there is a lag between the reporting period covered in the Generator Financial Performance Report and its publication. The latest data included in this current report relates to the 2021 financial year. The context for this report was therefore markedly different in terms of commodity prices, and their impact on electricity prices, to the context at the time of publication of this report.

The main objectives of the report are to provide greater insight into the financial performance of generators in the SEM, which may inform policy decisions; and to improve the level of market data available to all industry stakeholders, which should assist in increasing market transparency.

In the previous version of the generator financial performance report for FY2020, the average revenue received by generators per MWh sold was reported as €77/MWh. FY2020 was an exceptional year with very low wholesale gas prices, high wind output and low demand due to COVID-19. In FY2021, the average revenue received by generators per MWh sold increased to €150/MWh. The increased revenue was a result of the reversed market situation in FY2021 as the wholesale gas prices increased significantly and the wind generation on the system decreased. The demand in the system also started increasing following relaxation of COVID-19 restrictions in FY2021. Plant availability levels were also low in 2021, with two of the more efficient power plants on long-term outages throughout the year leading to less efficient, more expensive generation being required to meet system demand. These factors contributed to the revenue received by the generators and are explained in more detail below.

Generator investments are capital-intensive, long-term investments, and made on the presumption of a degree of variability in revenues, and profits over the economic life of an asset. While FY2021 clearly reflects a year of particularly high revenues for all generator classes, this should be understood in the context of a number of years of lower margins, and expected long-term decrease in market revenues for conventional generators with the ongoing roll-out of low or zero marginal cost generation. As we move through the energy transition, the continued roll-out of a diverse range of renewable technologies — robust to low-wind periods — combined with new efficient gas generation will support consumer interests in the medium to long term.

Energy prices reached record-high levels across the European Union in 2021. The rising costs of gas-fired power generation drove up the electricity prices, due to strong influence of gas-fired plants in setting electricity prices in the short-term EU power markets. Additional factors such as unfavourable wind conditions and growing emission allowance prices further amplified electricity prices in Europe¹. Agency for the Cooperation of Energy Regulators (ACER), in its assessment of the high energy prices in Europe, stated that the root of the problem was the rise in global gas prices for various supply and demand dynamics prevalent at the time. By the end of 2021, governments across Europe were implementing measures to address the increasing energy prices.

KEY FINDINGS FROM THE GENERATOR FINANCIAL PERFORMANCE ANALYSIS FOR FINANCIAL YEAR 2021

Financial Year 2021 - Summary	All Generators
Installed Capacity - MW	11,691
Volume of Electricity Sold - MWh	27,546,870
Revenue, Costs and Profits	€'000
Total Revenue	€4,144,277
Total Operating Costs	€2,515,511
EBITDI	€1,628,766
Net Profit	€1,174,727
Gross Margin - %	39%
Net Margin - %	28%

Key Finding 1: Generators gained higher profits in FY2021.

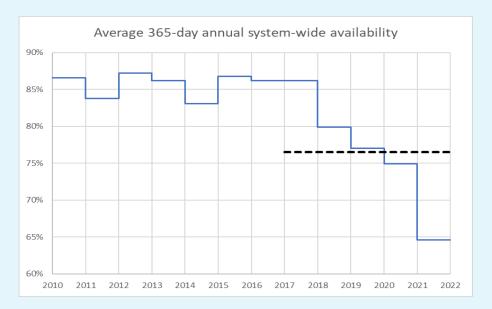
In general, the generators across SEM gained higher profits in FY2021. The majority of the generators reported positive gross and net margins in FY2021. The following factors have contributed to these trends:

• The availability of efficient generators was lower in FY2021. The system-wide availability in SEM has been decreasing for the past number of years due to the ageing of plants. This affects the generation plant's ability to provide maximum adequacy support to demand. For thermal plants in particular, forced plant outages of two of the more efficient high-capacity units brought the 365-day rolling capacity weighted system availability down to a low of 64% in the month of November 2021 (compared to 75% plant availability in FY2020)². The lower plant availability in the system and the

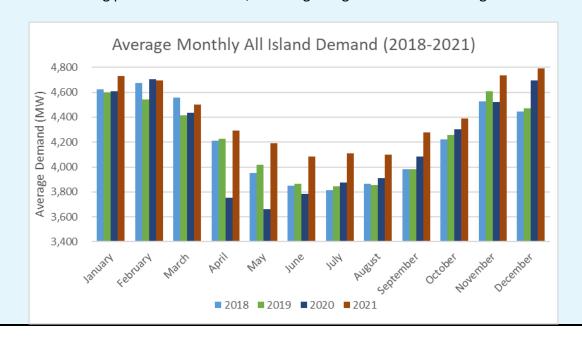
¹ ACER's Final Assessment of the EU Wholesale Electricity Market Design, available <u>here</u>.

² Generation Capacity Statement 2022-2031, available <u>here</u>.

type of unit that was unavailable (i.e., more efficient and generally cheaper units) resulted in more expensive, older, or less efficient units setting the marginal price for all units clearing the market more often. This effect was exacerbated for consumers by the higher wholesale gas costs leading to higher end prices. More efficient, available generation benefited from higher marginal prices.

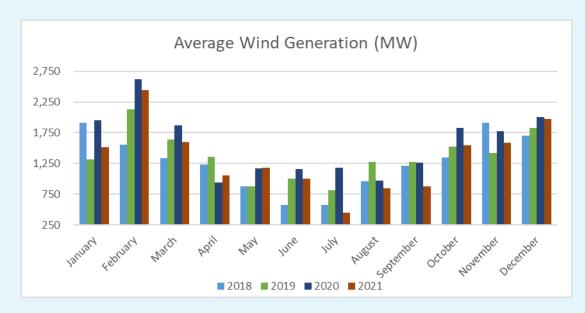


• The system demand was higher in FY2021. Following a slight decrease in total system demand in 2019 and 2020, there was a 5% increase in total demand in FY2021 from FY2020³. The increase in demand coupled with the low availability of generators drove up the wholesale electricity prices in FY2021, as less efficient plants cleared in more trading periods than normal, resulting in higher revenues for all generators.



³ Data sourced from System and Renewable Data Summary Report, available <u>here</u>. Please note that the data contained herein is indicative as it is based on raw 15-minute SCADA readings which are produced in real time and are not quality controlled.

• Wind generation was lower in FY2021. Wind generation naturally varies from one year to another. The total wind generation in FY2021 was the second-lowest wind output recorded between 2014 and 2021⁴. When the wind generators are not available to be dispatched, more gas and fossil fuel generators will be dispatched to meet the demand in the SEM. In such a situation, the marginal unit to be cleared in the market would be a costlier gas-fired or fossil-fuel power plant. As with the generator availability issue, the low wind year effect was exacerbated by particularly high input costs for dispatchable units.

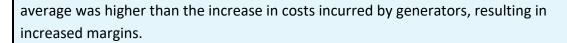


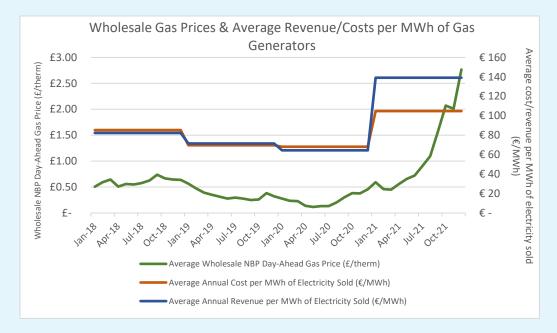
Key Finding 2: Gas generators made significant profits despite higher gas prices.

The wholesale gas prices increased significantly in FY2021 resulting in higher costs for generators. On average the wholesale price of gas was 380% higher in 2021 compared to 2020 with most of these increases occurring during the second half of the year. Following a rapid recovery of the global economy post COVID-19, the prices of commodities like gas and carbon increased substantially to an extent where coal units were cheaper than gas for parts of the year. These cost increases were experienced in energy markets across Europe and beyond as economies met the challenges of supply and demand for wholesale energy supplies.

The average cost per MWh of electricity sold for **Gas** generators was €105/MWh in FY2021 (previous five-year average was €73/MWh) and the average fuel related operating costs per MWh of electricity sold for **Gas** generators was €90/MWh in FY2021. The average revenue per MWh of electricity sold for **Gas** generators was €139/MWh in FY2021 (previous five-year average was €71/MWh). Due to the increased running of older, less efficient units, the increase in revenues earned by the Gas generators on

⁴ Data sourced from System and Renewable Data Summary Report, available <u>here</u>. Please note that the data contained herein is indicative as it is based on raw 15-minute SCADA readings which are produced in real time and are not quality controlled.

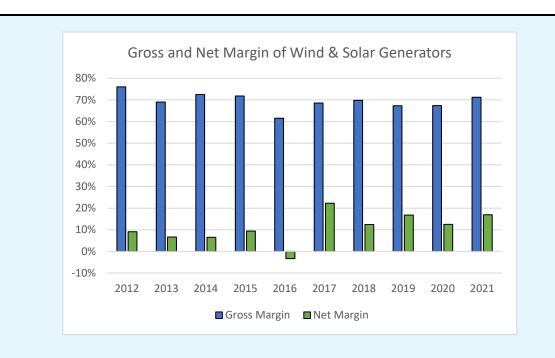




Key Finding 3: No significant change in gross margin and net margin for Wind & Solar generators in FY2021 compared to FY2020.

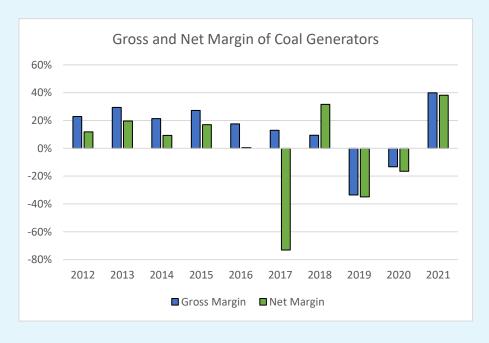
Despite the higher revenues received by generators in FY2021, the gross margin and net margin for **Wind & Solar** generators remained at similar levels as in FY2020. In FY2021, **Wind & Solar** generators recorded a gross margin of 71% (67% in FY2020) and a net margin of 17% (13% in FY2020). The similar levels of margins in two years with different wind outputs (2020 was a high wind generation year and 2021 with low wind output) imply that **Wind & Solar** generators tend to receive relatively stable revenues via the Power Purchase Agreements (PPAs) they have with intermediary suppliers, and are less impacted by movements in the wholesale market price, as would be expected.

That said, most of the reporting **Wind** generators and their intermediary suppliers are under the Irish Government's REFIT support scheme which is a one-way Contract for Difference (CfD). The RAs understand that the revenue above the support price is often shared between the intermediary suppliers and the **Wind** generators based on the terms of the agreed Power Purchasing Agreements (PPAs), so there is a not a direct pass-through of the market price to the generator revenues, reported here.

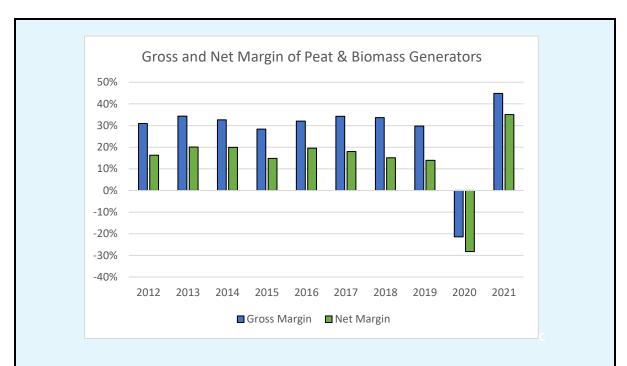


Key Finding 4: Coal and Peat & Biomass generators returned to profit in FY2021.

Total revenues received by **Coal** generators had been decreasing since 2015 and recorded negative margins in FY2019 and FY2020, but the gross and net margins were less negative in FY2020. In FY2021, the **Coal** units sold 1.5 times more electricity than FY2020 and reported a gross margin of 40% and net margin of 38%. As noted earlier, there were trading periods in FY2021 where **Coal** units were cheaper than **Gas** units. The **Coal** units received €780 million euros from electricity markets in FY2021 compared to the previous five-year average of €213 million euros.

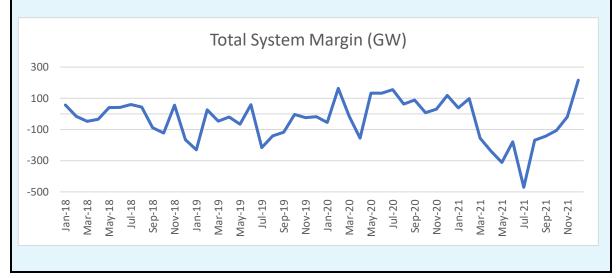


Peat & Biomass generators reported negative margins in FY2020 but gained profits again in FY2021. This shift in their margins can be attributed to their decreased operating costs (by 47% from FY2020) and increased revenue (by 17% from FY2020).



Key Finding 5: Despite lower volumes of electricity sold, generators had a higher level of running.

The volume of electricity generated by reporting generators in the SEM decreased in FY2021 by 11.5% from FY2020. With low plant availability and low wind generation, dispatchable generators were on a higher level of running to meet the high demand in FY2021, while the balance was met by imports through interconnectors. From March 2021 to November 2021, the total system demand was more than the total system generation⁵. As the system experienced tightness in FY2021, this was also the year with most number of system alerts.



⁵ Data sourced from System and Renewable Data Summary Report, available <u>here</u>. Please note that the data contained herein is indicative as it is based on raw 15-minute SCADA readings which are produced in real time and are not quality controlled.

Key Finding 6: More efficient Gas generators made significantly higher profits than less efficient Gas generators.⁶

Gas generators sold 14,656,921 MWh in the electricity markets in FY2021 − 52% of total generation. Gas generators operate at a range of different levels of efficiency. Broadly, generators that are efficient when operating, often are less flexible than less efficient units. Thus, there is often an element of trade-off between efficiency units and more flexible, inefficient units. Eighty-four percent of gas generation was sold by more efficient Gas generators. The average net profit earned by more efficient Gas generators was €39/MWh and the average net profit earned by less efficient Gas generators was €9/MWh. As explained in Key Finding 1, efficient generators received the benefit of the increased marginal price when less efficient units were required to run. This pushed up the overall levels of profitability for efficient generators when they were available.

⁶ More efficient gas generators are those gas generators with more than 50% thermal efficiency LHV at full load.

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1. INTRODUCTION AND CONTEXT

1.1. PURPOSE

Following the decision papers in May 2012⁷ and August 2019⁸, as published by the SEM Committee on the reporting of generator financial performance in the SEM, licensed generation companies with a combined ownership capacity greater than or equal to 25MW are required to complete and return an annual financial performance reporting template after the end of their financial year. The uniformity of the template means that data can be aggregated across chosen generator categories. A copy of the template is shown in Appendix B.

This report examines the financial performance of such licensed generation companies in the SEM in the financial year 2021. Most generators in the SEM have their financial year-end in either September, December, or March. To accommodate this variance, the FY2021 report relates to the 12-month period up to September 2021 for generators with a September year-end, December 2021 for generators with December year-end and up to March 2022 for generators with a March financial year-end.

This publication can be read in conjunction with reports published by the Market Monitoring Unit (MMU) in order to fully understand market performance. The purpose of this report is to enhance transparency in the SEM and help in understanding the revenues accruing to different categories of generators, while respecting individual generator commercial sensitivity by presenting aggregated information only.

Data from the following categories of **Fuel Sources**, in aggregated form, is included in this analysis:

- Wind & Solar
 Hydro
 Pu
 - Pumped Storage Gas
 - Coal Peat & Biomass
- Distillate & Oil

This is the eighth report to be published following the SEM Committee's "Decision Paper on Generator Financial Reporting in the SEM"⁷. It follows a broadly similar structure to the previous seven reports¹⁰.

⁷ Decision paper SEM-12-027 in 2012 on Generator Financial Reporting in the SEM available here.

⁸ Decision paper SEM/19/036 in 2019 on Updates to Generator Financial Performance Reporting Requirements (August 2019), available here.

⁹ Information on the MMU can be found <u>here</u> and publications produced by the MMU can be accessed <u>here</u>.

¹⁰ SEM/22/021 Generator Financial Performance in the SEM (June 2022), available here SEM/21/052 Generator Financial Performance in the SEM (June 2021), available here SEM/20/021 Generator Financial Performance in the SEM (April 2020), available here SEM/19/016 Generator Financial Performance in the SEM (April 2019), available here 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

However, some changes to the reporting were introduced⁸ in August 2019 following a consultation in June 2019, primarily to reflect the new SEM trading arrangements from 1 October 2018.

Although this report focuses on annual generator financial 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. As markets respond to the energy transition and move to reduce carbon emissions, the generation mix will have an impact on overall generation revenues. This will result in fluctuations in revenues for different generation types with some years being more profitable than others. For an explanation of some of the financial terms used in this report, please refer to Appendix A.

1.2. MARKET & COMMODITY PRICE CONTEXT

Figure 1.2.1 presents the monthly average all-island electricity demand from 2017-2021. The average demand for most months increased sharply in FY2021 when compared to FY2020. This can be identified as a consequence of relaxing the COVID-19 restrictions that were in place for FY2020. The rise in demand in FY2021 is significant even when compared to pre-COVID-19 demand.

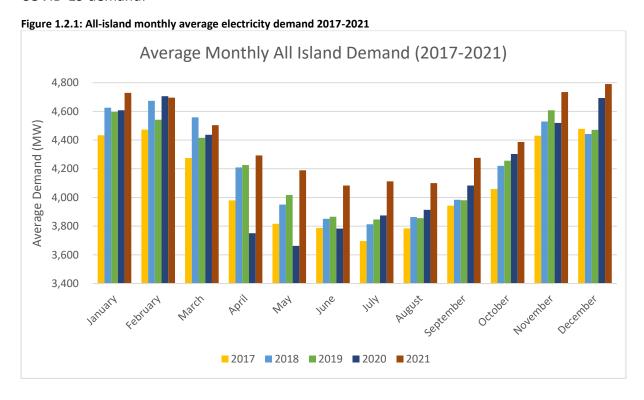


Figure 1.2.2 shows the evolution of the monthly average market prices in the SEM since 2012. The increase in demand as well as the increase in wholesale gas prices (increased from £0.25/therm in FY2020 to £1.16/therm in FY2021) resulted in an increase in average wholesale electricity prices in FY2021 to €136/MWh from the previous five year average of

€48/MWh. The lowest monthly average wholesale electricity price occurred in February 2021 and highest monthly average wholesale electricity price occurred in December 2021.

The financial performance of generators in the SEM should be assessed in the context of the associated fuel prices, which are a key component of the costs of many generators. The price of fuel generally determines the wholesale market price and hence the revenues generators receive from the sale of electricity.

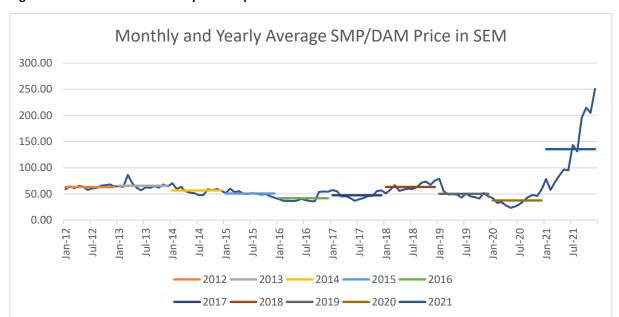


Figure 1.2.2: Wholesale electricity market prices 2012 - 2021

The trend in wholesale electricity prices in the SEM is in line with wholesale gas prices during this period. Wholesale 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 or decreases, the wholesale energy price is expected to increase or decrease correspondingly.

Gas has been the marginal fuel for much of the 2012-2021 period and consequently, electricity prices often follow the shape of the gas prices, as is evident from Figure 1.2.3. This was also the case during 2021, where the Day-ahead Market price followed the upward trend of wholesale gas prices.

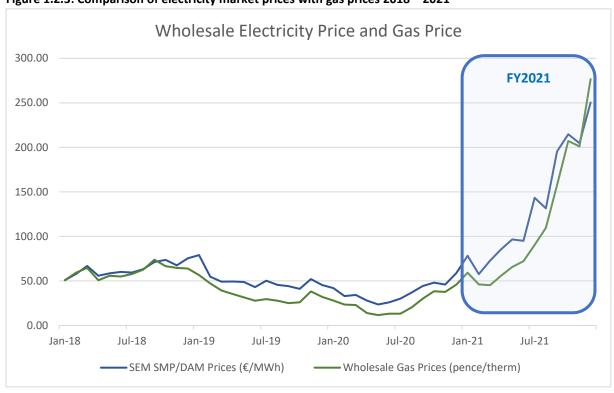


Figure 1.2.3: Comparison of electricity market prices with gas prices 2018 – 2021



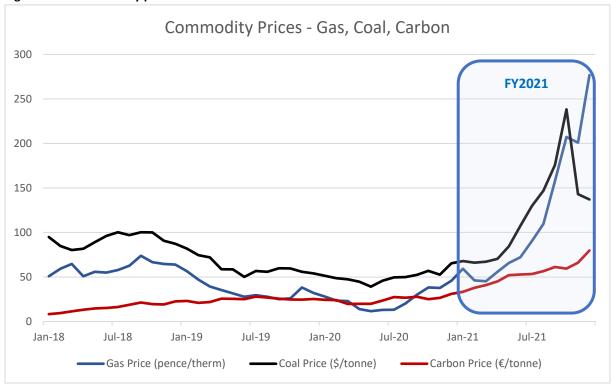


Figure 1.2.4 shows that **Coal** prices increased continuously in FY2021 before falling sharply in November 2021 and December 2021. Throughout FY2021, **Carbon** prices followed an upward trend and reached record high prices in December 2021.

1.3. SPARK & DARK SPREADS

Spreads between electricity prices and fuel/input and carbon costs are of great significance to thermal generators. 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%. In simple terms, the spark spread is the difference between the wholesale market price of electricity and the fuel cost of gas-fired generation.
 - The *clean spark spread* (which is also known as the "*spark green spread*") takes the cost of carbon into account in addition to the fuel cost of gas-fired generation.
- Clean Dark Spread: The *dark spread* is the gross margin of a coal plant accounting for the coal input and an assumed efficiency level of 35%. In simple terms, the *dark spread* is the difference between the wholesale market price of electricity and the fuel cost of coal-fired generation.
 - The *clean dark spread* (which is also known as the "dark green spread") takes the cost of carbon into account in addition to the fuel cost of coal-fired generation.

These spreads are the theoretical gross income of a plant selling a unit of electricity. The plant must recover all its additional costs (e.g., operation, maintenance, capital) from this spread to be able to break even or earn a profit. 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 received from energy production depends on the level of utilisation of the plant (i.e., the production volume). When the utilisation level goes down, the generator is likely to require a higher spread in order to cover its fixed costs, start up and maintenance 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 or fuel transportation costs have not been included in the calculation of the spark spreads in this report. This is consistent with the methodology used in common practice.

Figure 1.3.1 presents the Clean Spark Spread (for gas) and the Clean Dark Spread (for coal) in the SEM over the period 2012 to 2021. The Clean Spark Spread kept fluctuating in 2021, but for most of the year it was higher than that of 2020. The Clean Dark Spread shows upward trend similar to average market prices.

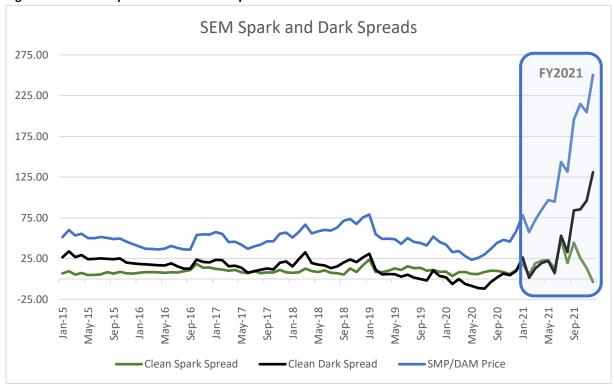


Figure 1.3.1: Clean Spark and Clean Dark Spreads in the SEM from FY2015 - FY2021

2. FY2021 FINANCIAL PERFORMANCE & 2012-2021 TRENDS FOR ALL GENERATORS

2.1. FY2021 FINANCIAL PERFORMANCE TABLE FOR ALL GENERATORS

Table 2.1.1 presents the total FY2021 results, across all fuel sources. The RAs received Generator Financial Performance Reports from 11,691 MW capacity in FY2021. Total reported volumes of electricity sold by generators in SEM in FY2021 amounted to 27.6TWh, a decrease of 11% (3.5 TWh) from the 31.1 TWh sold in FY2020. This is mostly due to lower availability of plants due to forced and scheduled outages as well as low wind generation in FY2021.

The results for All Generators are presented across three columns, as shown below:

- total values,
- per MW of installed capacity,
- per MWh of electricity sold.

Table 2.1.1: FY2021 Financial performance table for All Generators

Financial Year 2021	Total	Per MW of installed capacity	Per MWh of electricity sold*
Installed Capacity - MW	11,691		
Volume of Electricity Sold - MWh	27,546,870		
(*excluding Pumped Storage)	27,771,934		
Revenue	€'000	€'000/MW	€/MWh
Revenue from Electricity Markets	€4,279,090	€365	€153
Revenue from CfDs, Contract & Difference Payments	(€434,925)	(€37)	(€16)
Revenue from Capacity Market	€283,686	€24	€10
Other Revenue (System Services, Support, etc)	€16,425	€1	(€)
Total Revenue	€4,144,277	€353	€147
Operating Costs	€'000	€'000/MW	€/MWh
Fuel Related Operating Costs	€1,933,317	€165	€70
Non-fuel Operating Costs	€582,193	€50	€20
Total Operating Costs	€2,515,511	€214	€90
Earnings	€'000	€'000/MW	€/MWh
EBITDI	€1,628,766	€139	€57
Depreciation & Impairment	€260,045	€22	€9
EBIT	€1,368,721	€117	€48
Interest & Tax	€193,994	€17	€7
Net Profit	€1,174,727	€100	€41
Gross Margin - %	39%	39%	39%
Net Margin - %	28%	28%	28%

Note: Pumped Storage, as a net consumer of electricity, has been excluded from the per MWh analysis. This increases the figures for overall volume sold and resulting margins.

2.2. TOTAL REVENUES FOR ALL GENERATORS

Total reported revenue in FY2021 amounted to €4.14 billion, translating to revenues of €353,000/MW of installed capacity and €150/MWh of electricity sold (€147/MWh excluding Pumped Storage).

The generators have different sources to earn revenue from the market such as the wholesale electricity market, through contracts for difference and revenue from capacity market. In general, market revenues are closely correlated with market prices as shown in Figure 2.2.1 below, where average revenue per MWh tracks average annual SMP/DAM prices. Average revenue in FY2021 was €150/MWh (previous five-year average at €79/MWh) while average annual DAM price was €136/MWh in FY2021 (previous five-year average at €48/MWh). The possible drivers of the increased revenue are lower plant availability, increased demand and low wind generation in FY2021.

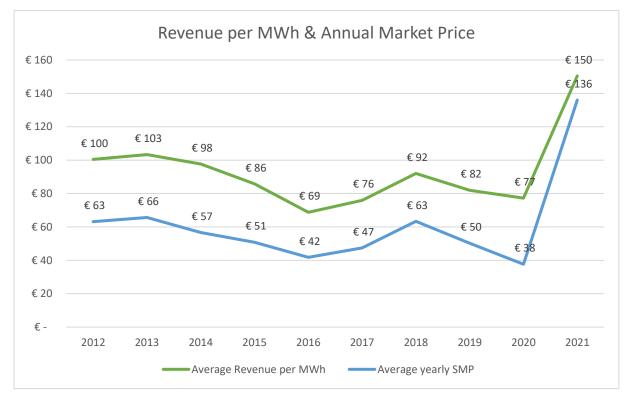


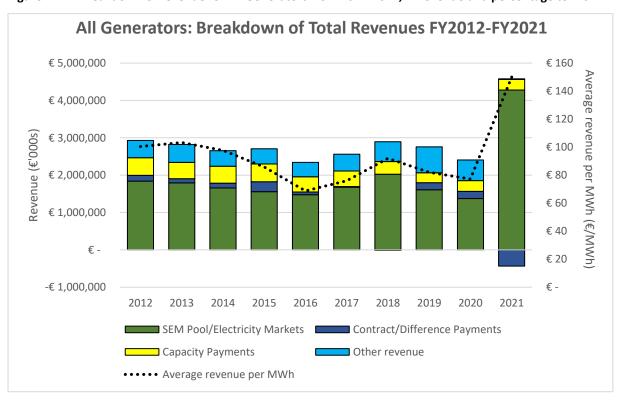
Figure 2.2.1: Average annual revenue and market prices in the SEM from FY2012 - FY2021

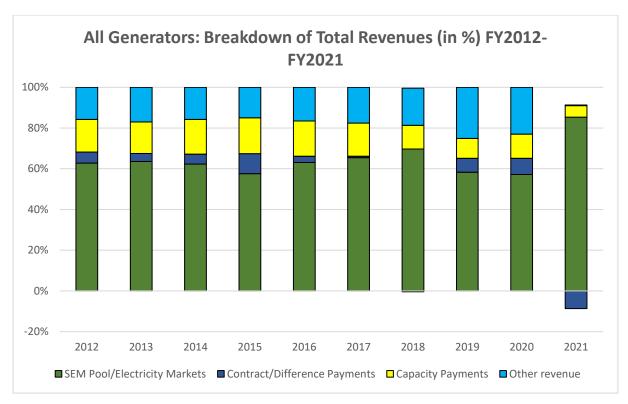
Within the financial reporting template, generators are asked to disaggregate revenue into four categories:

- Energy payments, from the SEM Pool until FY2018, now from Electricity Markets (Dayahead Market, Intraday Market, and Balancing Market).
- Contract for Difference (CfD) & Contract payments where CfDs are bilateral agreements with renewable generators stipulating that the buyer will pay to the seller the difference between an agreed fixed price (the strike price) and a market reference price (the spot price), such that the holder of the CfD is guaranteed to receive the strike price for its energy. These can be either one-way or two-way contracts.

- Reliability Option (RO) Difference Charges incurred which refers to the difference between energy price and strike price that needs to be paid back by the capacities with a capacity contract. The reported RO charges are included under CfD & Contract Payments and is hereafter referred as 'Contract/Difference Payments'.
- Capacity revenue, from Capacity Payments until FY2018, now from the Capacity Market.
- Other revenue (System Services, other support mechanisms, sale of assets, etc).

Figure 2.2.2: Breakdown of revenue for All Generators from 2012-2021, in revenue and percentage terms





The trend in the breakdown of total revenue across all generators from 2012 to 2021 is shown in Figure 2.2.2, in both revenue and percentage terms. In actual terms, revenues from Electricity Markets increased from FY2020, while revenues from CfDs, Contracts & Difference Payments and Other Revenue decreased. The decrease in revenue from Capacity Market is not significant. The increase in Electricity Market revenue is possibly driven by the fact that the marginal units cleared in the market in FY2021 were mostly less efficient, more expensive gas units. Of the total revenue, the share from Electricity Markets increased significantly, while the share from other sources of revenue decreased.

Revenue from the Electricity Markets (Day ahead, Intraday and Balancing) accounted for 103% of total revenue in 2021 (€4.3 billion), where the previous five-year average of share of total revenue from Electricity Markets is 63% (€1.6 billion). This is the highest share from this revenue source recorded across the reporting period (2012-2021).

The share of revenue from Capacity Market was the second largest source of revenue at 7% of total revenue (€283 million), where the previous five-year average was 13% (€342 million).

'Other Revenue', which includes revenue from both system/ancillary services and support mechanisms (PSO, NIRO), amounted to €16 million (0.4% of total revenue), where the previous five-year average was €523 million (20% of total revenue). This decrease might be due to the negative PSO charged for the FY2021.

The revenue from Contract/Difference Payments was reported to be negative, with the share of revenue from this source being negative for the first time in the reporting period (2012-2021).

2.3. TOTAL COSTS FOR ALL GENERATORS

Total reported Fuel Related Operating Costs and Non-fuel Operating Costs in FY2021 amounted to €1.93 billion (previous five-year average was €1.18 billion) and €582 million (previous five-year average was €712 million) respectively. In FY2021, Depreciation & Impairment were €260 million (previous five-year average was €500 million), and Interest & Tax were €194 million (previous five-year average was €131 million). In combination, this translated to costs of €253,000/MW of installed capacity and costs of €106/MWh of electricity sold (excluding Pumped Storage).

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

- Fuel Related Operating Costs
- Non-fuel Operating Costs

• Depreciation & Impairment

Interest & Tax

A breakdown of costs across all generators is shown in Figure 2.3.1 below. In actual cost terms, the Non-fuel Operating Costs have fallen in FY2021 due to lower volumes of electricity sold, while the Fuel Related Operating Costs have increased in FY2021 due to higher gas and coal prices compared to FY2020. The cost of 'Interest & Tax' increased while 'Depreciation & Impairment' costs decreased significantly due to significant impairment reversals by a number of generators. As a result, the share of Fuel Related Operating Costs increased very significantly to 65%, compared to previous years.

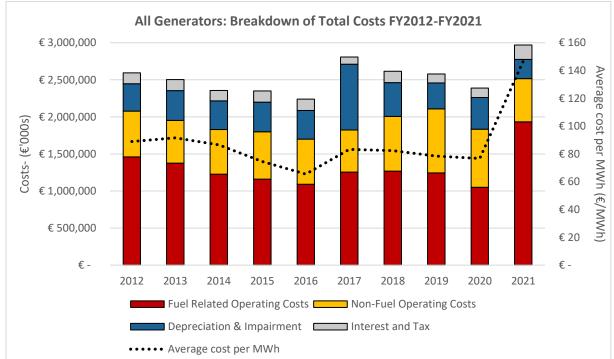
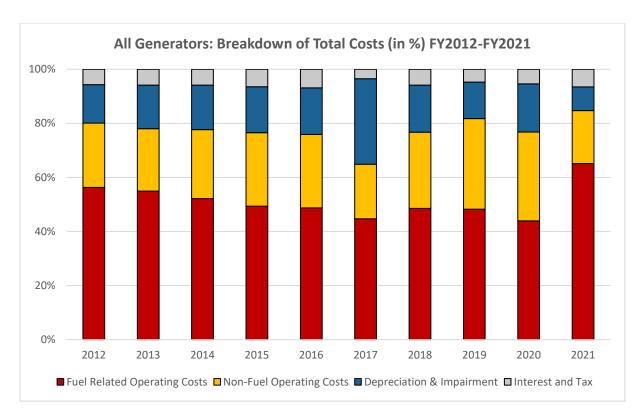


Figure 2.3.1: Breakdown of costs for All Generators from 2012-2021, in revenue and percentage terms

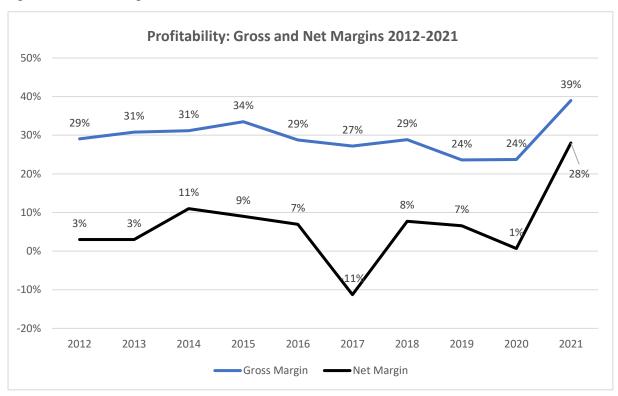


Proportional contributions from generator cost categories have remained stable since FY2012, particularly when excluding impairment charges which were exceptionally high in FY2017 and the Fuel Related Operating Costs in FY2021. The high impairment charges in 2017 have been partially offset by impairment reversals by a number of generators in FY2021. Around 70% of the Fuel Related Operating Costs in FY2021 are incurred by gas generators and another 20% of the same by coal generators.

2.4. TOTAL PROFITABILITY FOR ALL GENERATORS

Figure 2.4.1 shows the trend of gross margins and net margins from FY2012 to FY2021. The gross margin increased to 39% in FY2021 as the increase in revenue received by generators was higher than the increase in the Operating Costs. The net margin also increased to 28% in FY2021. The increase in net margin is driven by higher revenues and impairment reversals made by the generators.





3. FY2021 FINANCIAL PERFORMANCE & 2012-2021 TRENDS BY GENERATION FUEL SOURCE

3.1. FY2021 FINANCIAL PERFORMANCE TABLES BY FUEL SOURCE

Generation from the following fuel sources, in aggregated form, Wind & Solar, Hydro, Pumped Storage, Gas, Coal, Peat & Biomass and Distillate & Oil, is presented in this report.

In FY2019 a solar generator passed the 25MW threshold for reporting for the first time. In FY2020 and FY2021, there was again only one solar generator to pass the threshold. To maintain confidentiality, the solar generator was classified in the same category as wind and the report therefore referred to a combined category of Wind & Solar for these years.

The results aggregated by Fuel Source are presented across the following three tables as shown:

- Table 3.1.1 provides the total values for each fuel source in FY2021.
- Table 3.1.2 provides a breakdown of the results by fuel source <u>per MW of installed capacity</u> in FY2021.
- Table 3.1.3 provides a breakdown of the results by fuel source <u>per MWh of electricity</u> sold in FY2021.

Later subsections report on installed capacities, volumes, revenues, costs, and profitability across the different Fuel Sources, both in-year and via trends across 2012-2021.

Table 3.1.1: FY2021 Financial performance table by Fuel Source

Financial Year 2021	Total	Wind & Solar	Hydro	Pump St.	Gas	Coal	Peat & Biomass	Distillate & Oil
Volume of Electricity Sold - MWh	27,546,870	6,617,119	686,314	(225,064)	14,656,921	4,428,759	696,281	686,540
Volume of Electricity Sold (%)		24.0%	2.5%	-0.8%	53.2%	16.1%	2.5%	2.5%
Installed Capacity - MW	11,691	3,185	217	292	5,366	1,369	346	916
Installed Capacity (%)		27.2%	1.9%	2.5%	45.9%	11.7%	3.0%	7.8%
Revenue	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Revenue from Electricity Markets	€4,279,090	€697,109	€91,724	€32,763	€2,375,191	€780,463	€115,338	€186,502
Revenue from Contract/Difference	(€434,925)	€46,770	_	_	(€470,961)	€8,365	(€19,098)	_
Payments	(6434,323)	640,770	_	_	(6470,301)	68,303	(€13,036)	_
Revenue from Capacity Market	€283,686	€1,027	€9,158	€10,131	€166,601	€57,446	€4,443	€34,881
Other Revenue	€16,425	(€8,983)	€2,106	€24,139	(€31,117)	€9,806	€14,869	€5,605
Total Revenue	€4,144,277	€735,922	€102,988	€67,033	€2,039,714	€856,080	€115,552	€226,989
Operating Costs	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
Fuel Related Operating Costs	€2,248,317	€136	-	-	€1,639,797	€420,424	€51,506	€136,453
Non-fuel Operating Costs	€267,193	€211,538	€28,349	€13,832	(€113,926)	€94,063	€12,221	€21,117
Total Operating Costs	€2,515,511	€211,674	€28,349	€13,832	€1,525,871	€514,487	€63,728	€157,570
Earnings	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
EBITDI	€1,628,766	€524,248	€74,639	€53,201	€513,843	€341,593	€51,824	€69,418
Depreciation & Impairment	€260,045	€235,999	€5,120	€3,702	(€1,309)	€2,538	€7,484	€6,512
EBIT	€1,368,721	€288,248	€69,519	€49,499	€515,152	€339,055	€44,341	€62,906
Interest & Tax	€193,994	€163,568	-	-	€12,193	€12,924	€3,839	€1,470
Net Profit	€1,174,727	€124,681	€69,519	€49,499	€502,959	€326,131	€40,502	€61,436
Gross Margin - %	39%	71%	72%	79%	25%	40%	45%	31%
Net Margin - %	28.3%	17%	68%	74%	25%	38%	35%	27%

NOTE:

"€"

"_"

indicates a positive value which is in the range 0 to + 0.5 €′000

"(€)" indicates a negative value which is in the range 0 to - 0.5 €'000

indicates that no figure was reported for this breakdown category

Table 3.1.2: FY2021 Financial performance table by Fuel Source per MW of installed capacity in FY2021

Financial Year 2021	Total	Wind & Solar	Hydro	Pump St.	Gas	Coal	Peat & Biomass	Distillate & Oil
Installed Capacity - MW	11,737	3,185	217	292	5,366	1,369	346	916
Volume of Electricity Sold - MWh per MW installed	13,198	2,078	3,163	(771)	2,731	3,235	2,012	749
Revenue per MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW
Revenue from Electricity Markets	€365	€219	€423	€112	€443	€570	€333	€204
Revenue from Contract/Difference Payments	(€37)	€15	-	-	(€88)	€6	(€55)	-
Revenue from Capacity Market	€24	€	€42	€35	€31	€42	€13	€38
Other Revenue	€1	(€3)	€10	€83	(€6)	€7	€43	€6
Total Revenue	€353	€231	€475	€230	€380	€625	€334	€248
Operating Costs per MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW
Fuel Related Operating Costs	€192	€.04	-	-	€306	€307	€149	€149
Non-fuel Operating Costs	€23	€66	€131	€47	(€21)	€69	€35	€23
Total Operating Costs	€214	€66	€131	€47	€284	€376	€184	€172
Earnings per MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW	€'000/MW
EBITDI	€139	€165	€344	€182	€96	€250	€150	€76
Depreciation & Impairment	€22	€74	€24	€13	(€)	€2	€22	€7
EBIT	€117	€91	€320	€170	€96	€248	€128	€69
Interest & Tax	€17	€51	-	-	€2	€9	€11	€2
Net Profit per MW	€100	€39	€320	€170	€94	€238	€117	€67
Gross Margin - %	39%	71%	72%	79%	25%	40%	45%	31%
Net Margin - %	28%	17%	68%	74%	25%	38%	35%	27%

NOTE: "€" indicates a positive value which is in the range 0/MW to+ 0.5/MW

"(€)" indicates a negative value which is in the range 0/MW to -0.5/MW

"-" indicates that no figure was reported for this breakdown category

Table 3.1.3: FY2021 Financial performance table by Fuel Source per MWh of electricity sold in FY2021*

Financial Year 2021	Total	Wind & Solar	Hydro	Gas	Coal	Peat & Biomass	Distillate & Oil
Volume of Electricity Sold - MWh	27,771,934	6,617,119	686,314	14,656,921	4,428,759	696,281	686,540
Revenue per MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh
Revenue from Electricity Markets	€153	€105	€134	€162	€176	€166	€272
Revenue from Contract/Difference Payments	(€16)	€7	-	(€32)	€2	(€27)	-
Revenue from Capacity Markets	€10	€.16	€13	€11	€13	€6	€51
Other Revenue	(€)	(€1)	€3	(€2)	€2	€21	€8
Total Revenue	€147	€111	€150	€139	€193	€166	€331
Operating Costs per MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh
Fuel Related Operating Costs	€81	€.02	-	€112	€95	€74	€199
Non-fuel Operating Costs	€9	€32	€41	(€8)	€21	€18	€31
Total Operating Costs	€90	€32	€41	€104	€116	€92	€230
Earnings per MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh	€/MWh
EBITDI	€57	€79	€109	€35	€77	€74	€101
Depreciation & Impairment	€9	€36	€7	(€)	€1	€11	€9
EBIT	€48	€44	€101	€35	€77	€64	€92
Interest & Tax	€7	€25	-	€1	€3	€6	€2
Net Profit	€41	€19	€101	€34	€74	€58	€89
Gross Margin - %	39%	71%	72%	25%	40%	45%	31%
Net Margin - %	28%	17%	68%	25%	38%	35%	27%

NOTE: *Pumped Storage, as a net consumer of electricity, is not included in the per MWh analysis. This increases the figure for total volume sold.

[&]quot;€" indicates a positive value which is in the range 0/MWh to+ 0.5/MWh

[&]quot;(€)" indicates a negative value which is in the range 0/MWh to -0.5/MWh

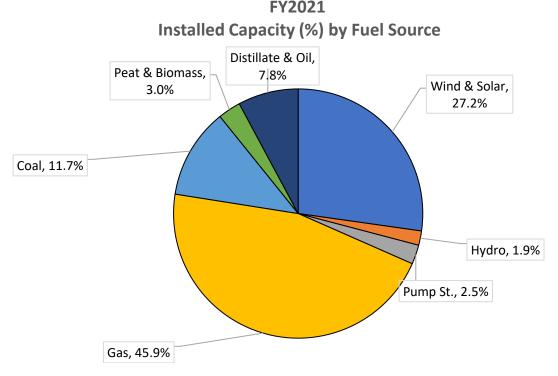
[&]quot;-" indicates that no figure was reported for this breakdown category

3.2. INSTALLED CAPACITIES & VOLUMES SOLD BY FUEL SOURCE

Figure 3.2.1 presents installed capacity in FY2021, broken down by fuel source, for generation over the reporting threshold (>25MW). **Gas** at 45.9% and the combined category of **Wind & Solar** generation at 27.2% together account for nearly 75% of all installed capacity. **Coal** and **Distillate & Oil** at 11.7% and 7.8% respectively constitute nearly 20% of installed capacity. **Peat & Biomass, Pumped Storage** and **Hydro** make up the remaining capacity.

As noted in the previous three Generator Financial Performance reports, wind continues to be under-reported. In FY2021, the total aggregate capacity of **Wind & Solar** generation reported was 3,185MW but the total installed all-island capacity of wind generators was 5,683MW in FY2021. The difference in the installed wind capacity likely results from the exemption from reporting for those generation companies where the capacity ownership of the company is less than 25MW in aggregate, as in previous years.

Figure 3.2.1 Breakdown of installed capacity (MW) by Fuel Source in FY2021



Figures 3.2.2 and 3.2.3 below illustrate the changing positions of generators in the market over time in terms of percentage of electricity sold using different fuel sources. In FY2021, **Wind & Solar** sold 24% of total electricity volumes, higher than the previous five-year average at 20.3%. Note that this excludes a significant proportion of electricity sold from installed wind and solar capacity due to the reporting limit of 25MW. The share of electricity sold by **Coal** plants, which was on a decreasing trend from FY2015 to FY2019, increased significantly in FY2021 to 16%. This may have been due to higher running of coal plants due to lower plant availability and also cheaper coal plants at times of the year as noted before. The RAs understand that the Moneypoint coal units were also run on a constrained basis for much of

the period during the two forced outages, for security of supply reasons. **Gas** decreased its share to 53% of the market in terms of volume of electricity sold. It must be noted that 800MW of **Gas** units were on outage in FY2021. **Hydro** and **Peat & Biomass** slightly decreased its share to 2.5% each. **Distillate & Oil** significantly increased its share to 2.5% in FY2021.

Figure 3.2.2: Breakdown of volumes sold (MWh) by Fuel Source in FY2021

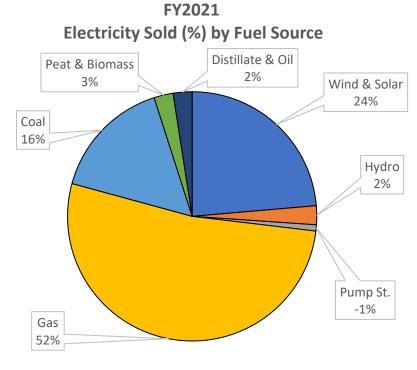
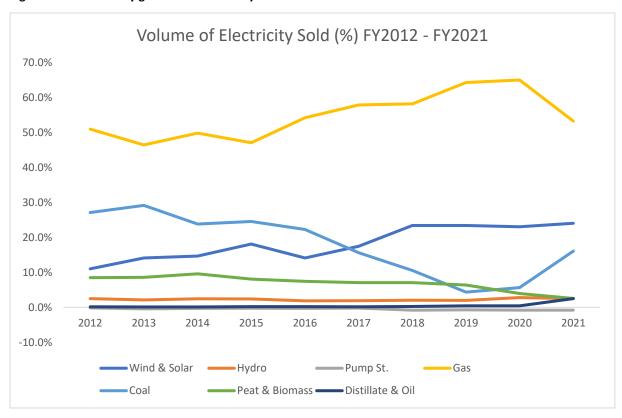


Figure 3.2.3: Electricity generation trends by Fuel Source from FY2012 - FY2021

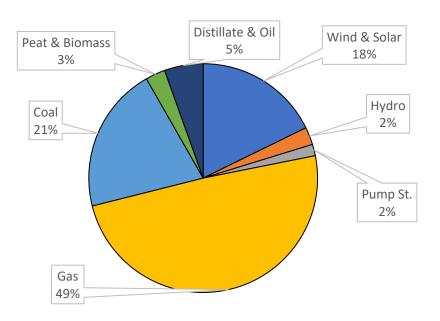


3.3. REVENUES BY FUEL SOURCE

Figure 3.3.1 shows the breakdown of total revenue by Fuel Source for FY2021. The share of total generation volumes for each fuel source and the total revenues for each fuel source are generally closely correlated. The share of **Gas** was 49.2% of total revenues received (decreased from previous five-year average at 53%). The share of **Coal** was 20.7% in FY2021 (compared to previous five-year average at 11%) of total revenue. **Wind & Solar** generators received 17.8% of total revenues in FY2021.

Figure 3.3.1: Breakdown of revenues by Fuel Source in FY2021

FY2021 Revenue Share (%) by Fuel Source



Increasing average wholesale energy prices in FY2021 (€136/MWh) have in part led to increased average total revenues of €147/MWh of electricity sold as shown in Table 3.3.1, which presents the trend in average revenue per MWh of electricity sold from 2012-2021. Average revenues per MWh of electricity sold increased for all generators, except for **Distillate & Oil.**

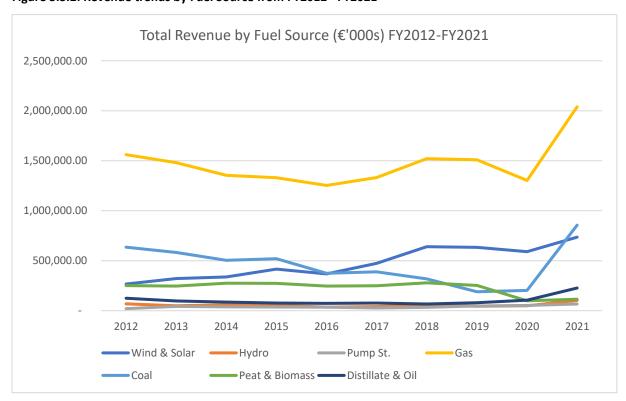
Figure 3.3.2 displays the change in actual total revenue by fuel source and demonstrates a similar pattern to Figure 3.2.3.

Table 3.3.1: Revenue per MWh of electricity sold by Fuel Source from FY2012 - FY2021

Revenue per MWh of Electricity Sold	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Wind & Solar	€83	€83	€85	€73	€76	€80	€88	€82	€83	€111
Hydro	€94	€87	€90	€72	€57	€64	€84	€68	€58	€150
Gas	€105	€117	€100	€90	€68	€68	€82	€72	€64	€139
Coal	€80	€73	€78	€67	€49	€74	€133	€133	€116	€193
Peat & Biomass	€101	€105	€106	€108	€97	€105	€124	€121	€81	€166
Distillate & Oil	€2,629	€3,118	€3,206	€1,384	€1,220	€1,703	€935	€607	€785	€331
Total	€100	€103	€98	€86	€69	€76	€91	€82	€77	€147

Note: Pumped Storage as a fuel source has been excluded from this table as it reports *negative* net electricity generation figures (electricity generated minus electricity used to pump water). However, the figure for Total Revenue per MWh of Electricity Sold includes revenue and volumes from Pumped Storage.

Figure 3.3.2: Revenue trends by Fuel Source from FY2012 - FY2021



Note: No solar generator passed the 25MW threshold for inclusion in the aggregated data before FY2019.

As shown in Figure 3.3.3, the main source of revenue across different fuel sources in FY2021 was through Electricity Markets.

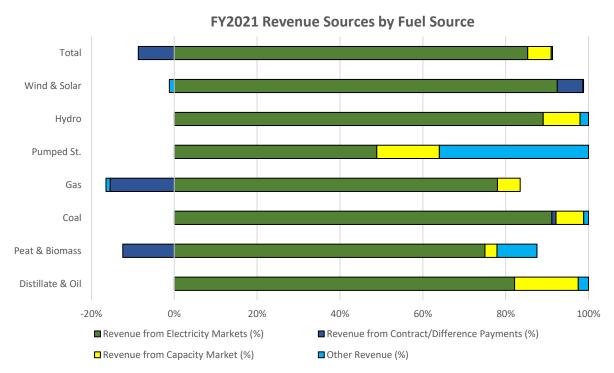


Figure 3.3.3: Sources of revenue as % of total by Fuel Source in FY2021

Figure 3.3.4 provides a percentage breakdown of generator revenue by fuel source between FY2012 and FY2021. The relative contribution of each revenue stream can substantially vary in importance over time. The share of revenue arising from Electricity Markets has increased across all fuel sources, while revenue shares from other sources has decreased. **Gas** and **Wind & Solar** generators increased their share of revenue from Electricity Markets the highest. **Gas** generators reported negative income from Difference Payments.

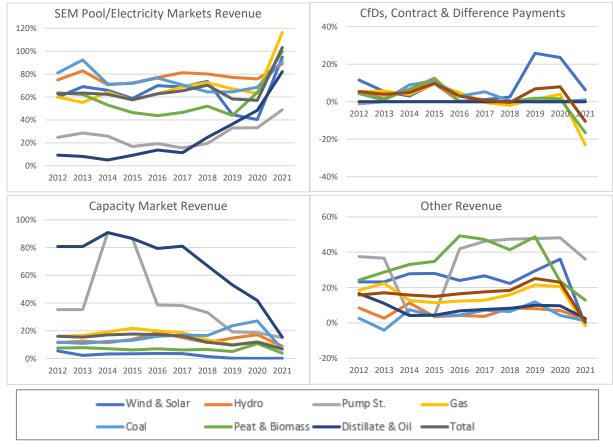


Figure 3.3.4: Percentage of Total Revenue by Fuel Source from FY2012 - FY2021

Graphs illustrating the trends from 2012 to 2021 in the breakdowns of the revenues of each of the fuel categories of generation (Wind & Solar, Hydro, Gas, Coal, Peat & Biomass, Distillate & Oil and Pumped Storage) are presented in Appendix C.

3.4. COSTS BY GENERATION FUEL SOURCE

Figures 3.4.1 and 3.4.2 present categories of generator costs grouped by fuel source. Overall, Fuel Related Operating Costs represent 65.1% of total costs for FY2021, with a previous five-year average of 47%. The Fuel Related Operating Costs increased for all fuel sources, except for **Peat & Biomass** generation in FY2021. Non-fuel Operating Costs are the second largest contributor to total generator costs with a share of 19.6% in FY2021 (previous five-year average at 29%). Depreciation and Impairment costs account for 8.8% (previous five-year average at 20%) and Interest and Tax account for the remainder of costs (6.5%).

The relative share of cost categories differs considerably between generators using different fuel sources. Renewable electricity sources (**Wind & Solar**, **Hydro** and **Pumped Storage**) have negligible 'Fuel Related Operating Costs'. **Wind & Solar** generators have relatively high capital costs, which is reflected in higher proportions of 'Interest & Tax' and 'Depreciation & Impairment' costs, whereas the majority of **Hydro** and **Pumped Storage** generator costs are accounted for by 'Non-fuel Operating Costs'. In contrast, the largest contribution to total costs

for **Gas**, **Coal**, **Peat & Biomass** and **Distillate & Oil** generators is from 'Fuel related Operating Costs'.

Figure 3.4.1: Source of generator costs as % of total by Fuel Source in FY2021

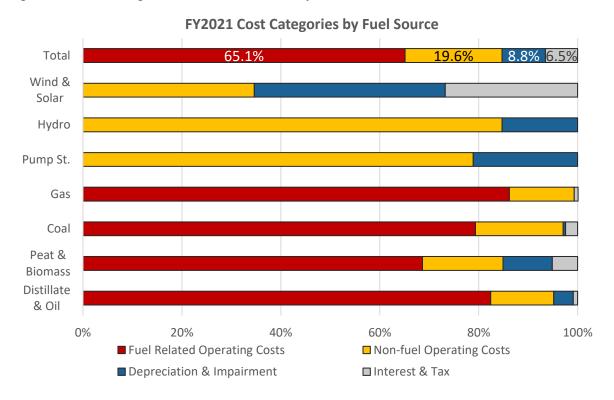


Figure 3.4.2 below provides a percentage breakdown of generator cost categories by Fuel Source between FY2012 and FY2020. Fuel Related Operating Costs for **Wind & Solar** and **Hydro** are near zero across the entire reporting period. Non-fuel operating costs have remained relatively stable for most Fuel Sources, accounting for above 80% of costs for **Hydro** and **Pumped Storage** generators and between 20%-40% for most other fuel sources. **Coal** has suffered the greatest fluctuations in costs across the reporting period with sharp increases and decreases across Fuel related Operating Costs, Non-fuel related Operating Costs and Depreciation & Impairment. Depreciation & Impairment and Interest & Tax account for a large share of **Wind & Solar** costs, reflecting the high capital requirements of such renewable generation. The share of Fuel Related Operating Costs of **Distillate & Oil** generators increased dramatically since 2017.

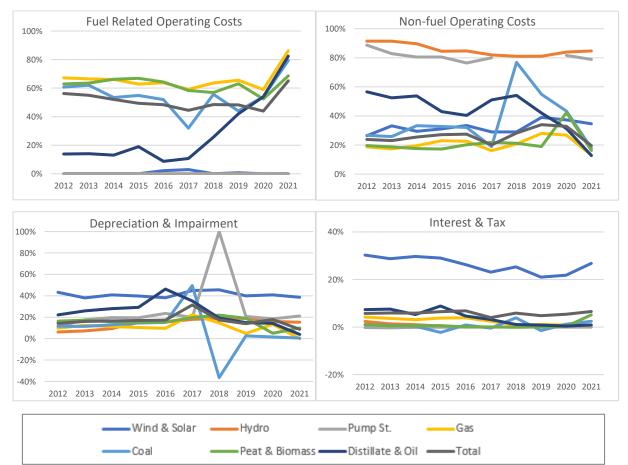


Figure 3.4.2: Percentage breakdown of costs categories by Fuel Source from FY2012 - FY2021

Graphs illustrating the trends from 2012 to 2021 in the breakdowns of costs of each of the fuel categories of generation (Wind & Solar, Hydro, Gas, Coal, Peat & Biomass, Distillate & Oil and Pumped Storage) are presented in Appendix C.

3.5. PROFITABILITY BY FUEL SOURCE

The total average gross and net margins for FY2021 were 39% (previous five-year average at 26%) and 28% (previous five-year average at 2%), respectively. Table 3.1.1 shows how these margins varied by fuel source in FY2021. Figures 3.5.1 and 3.5.2 illustrate the trends in gross and net margins by fuel source across FY2012 - FY2021.

- Pumped Storage reported the highest margins (79% gross margin and 74% net margin) although their revenue accounted only 2% of total revenue across all generators. Hydro generation had the second highest margins (72% gross margin and 68% net margin) with a revenue share of 3% across all generators. Both Pumped Storage and Hydro plants benefit from very low operating costs and low financing costs due to their age.
- Wind & Solar generation at 71% had the third highest gross margin in FY2021. High
 gross margins for wind generators are driven by low Fuel Related Operating Costs. Net
 margin for Wind & Solar generation is significantly lower at 17%, caused by high
 financing and Depreciation & Impairment costs.
- Peat generation had recorded a notable switch to negative gross (-21%) and net (-28%) margins in FY2020, due to revenue decreasing at a higher rate than costs. In FY2021, Peat & Biomass generators gained profits with gross margin of 45% and net margin of 35% due to increase in their revenue and decrease in their operating costs compared to FY2020.
- **Coal** units were unprofitable in FY2019 and FY2020 but reported positive margins (40% gross margin and 38% net margin) in FY2021. This might be a result of higher running of **Coal** units due to low availability of more efficient **Gas** plants as well as cheaper price of coal compared to that of gas in the market for some parts of FY2021. The **Coal** units sold 1.5 times more electricity in FY2021 than FY2020.
- The gross margin for **Distillate & Oil** generators decreased in FY2021 to 31% (and net margin remained same at 27%).
- Wholesale energy prices in the SEM frequently correlate to a large extent with gas prices (refer to figure 1.2.2). The increase in operating costs for Gas generators was compensated by higher increase in revenue received from electricity markets which led to an increase in gross margins to 25%. There was a significant increase in Depreciation & Impairment costs in FY2020 which resulted in negative net margins (-6%) for Gas in FY2020. In FY2021, two gas generators incorporated impairment reversals into their accounts. The combination of higher energy revenues and the impairment reversals resulted in higher net profit (25%) for Gas generators in FY2021.

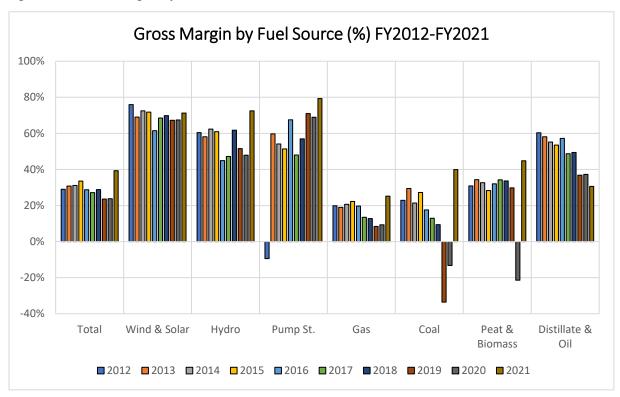


Figure 3.5.1: Gross margins by Fuel Source for FY2012 - FY2021

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

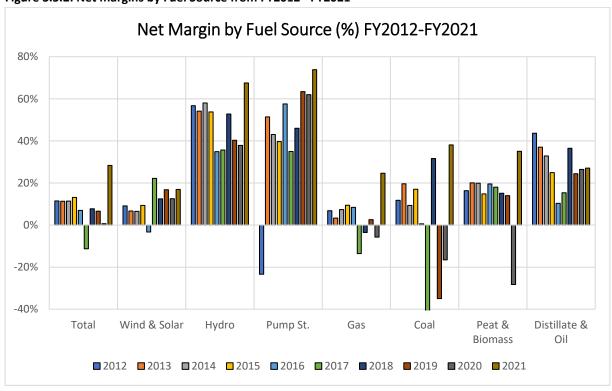


Figure 3.5.2: Net margins by Fuel Source from FY2012 - FY2021

Note: The negative margin for Coal in FY2016 was -73%.

APPENDIX A FINANCIAL TERMS

Appendix A provides brief explanations of financial terms and abbreviations that relate to the context and scope of this report.

Term	Explanation	
Amortization	The process of writing down the value of either a loan or an intangible asset.	
Depreciation	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 is the gross profit minus depreciation & impairment.	
EBITDI/EBITDA	Earnings before interest, tax, depreciation, and impairment/ amortization is the gross profit minus the operating costs minus depreciation and minus impairment/amortization.	
Gross Profit The total generator revenue received from all sources minus t and non-fuel operating costs.		
Gross Margin	ss Margin Gross profit expressed as a percentage of total revenue.	
Impairment	Reflects a substantial reduction in the estimated value of the asset. For a non-current asset, it is included under expenses when the book value exceeds the future cash flow or benefit of the asset. For an intangible asset, it is included under expenses when the asset is deemed less valuable than is stated on the balance sheet after amortization.	
Net Profit	The gross profit minus semi-fixed and fixed costs such as depreciation, impairment, interest, and tax.	
Net Margin	et Margin Net profit expressed as a percentage of total revenue.	

APPENDIX B REPORTING TEMPLATE FY2021

The following template was used to gather information from individual generators. More detailed explanations of the constituent breakdown elements of: a) revenue; and b) cost, can be found in <u>SEM/19/036</u> "Updates to Generator Financial Performance Reporting Requirements".

Figure B.2: Financial reporting template for FY2021 data collection

	Information Requested	Complete in either Euro or	Explanatory Information		
Ref.	(Refer to Appendix A of SEM-19-036 for explanation of fields)	Sterling as appropriate	(as appropriate)		
1	Name of generation asset owner	oto8 as app. opatc	(as appropriate)		
2	Company making this submission				
3	Name of Generation Site				
4	Name of Generation Unit				
5	Technology Class				
6	Fuel Source				
7	EIC W Code of the generation Unit				
8	Capacity (MW) of the Generation Unit				
9	Financial Year				
10	End-Month of Generator's financial year-end				
11	Total Volume of Electricity Sold , consisting of:				
	Day Ahead - MWh				
	Intra Day - MWh				
	Balancing Market - MWh				
12	Currency				
13	Revenue				
14	Revenue from Electricity Markets, consisting of:				
15	Net Energy Payments				
16	> Day Ahead				
17	> Intra Day				
18	> Balancing Market				
19	Net Constraints Payments				
20	Revenue from CfDs and Contracts				
21	Revenue from Capacity Payments				
22	Reliability Option Difference Charges				
23	Total of Other Revenue, made up of:				
24	> Revenue from DS3 System Services				
25	> Revenue from Ancillary Services				
26	> Revenue from Support Mechanisms				
27	> Other Revenue Sources				
28	Total Revenue				
29	Operating Costs				
30	Fuel Related Operating Costs				
31	Non-fuel Operating Costs				
32	Total Operating Costs				
	Earnings & Profit				
33	EBITDI				
34	Depreciation				
35	Impairment				
36	EBIT				
37	Interest & Tax				
38	Net Profit				
			1		
	Gross Margin				
40	Net Margin				
	Legend		4		
	Data entry required, as applicable				
	Sub-totals - calculated				
	Totals - calculated				
	. 5 ta. 5 taleuluteu		ال.		
	Before submission to the RAs, please cross check the data entries above with the worksheet entitled "Common Errors".				

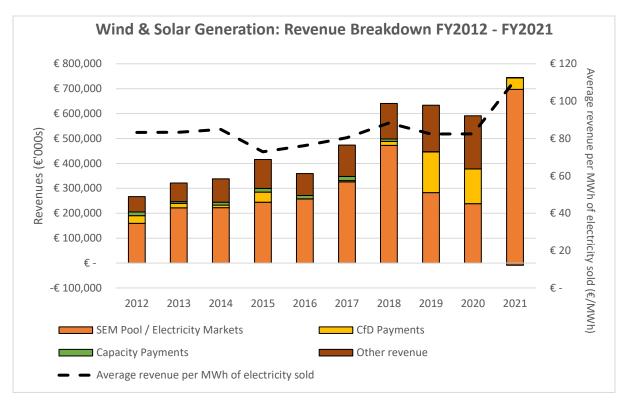
APPENDIX C REVENUE AND COST DETAIL FROM 2012-2021 BY GENERATION FUEL SOURCE

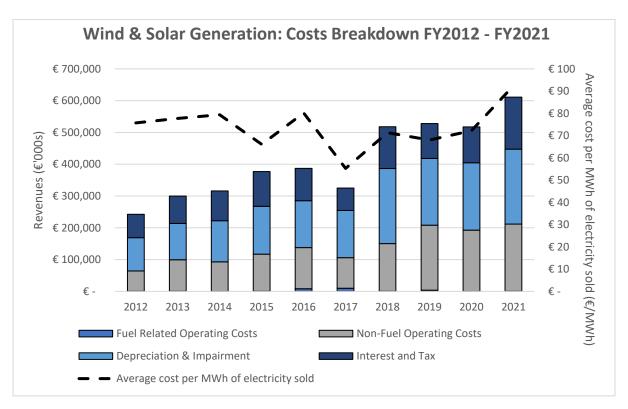
This section presents revenue and costs breakdown FY2012 to FY2021 for each generation fuel as follows:

- i. Wind & Solar
- ii. Hydro
- iii. Gas
- iv. Coal
- v. Peat & Biomass
- vi. Distillate & Oil
- vii. Pumped Storage

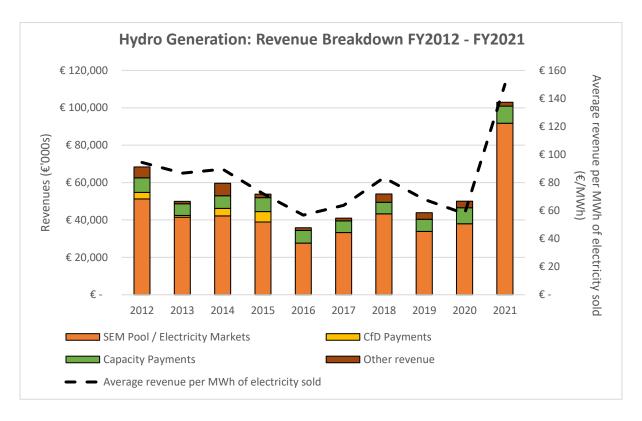
In each of the revenue breakdown charts, the average revenue per MWh of electricity sold within that category is plotted. Similarly, in each cost breakdown chart, the average costs per MWh of electricity sold within that category is plotted.

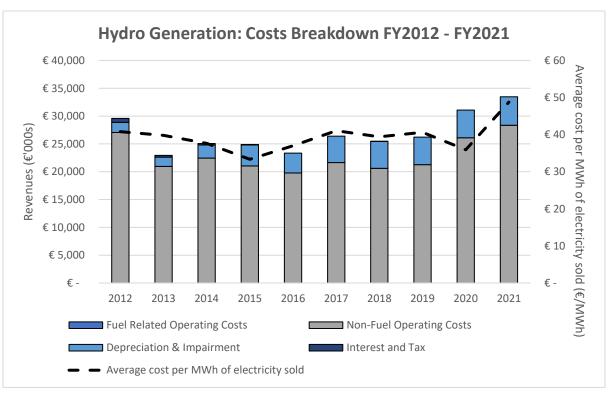
i. Wind Generation - Revenue and Costs Breakdown FY2012 to FY2021



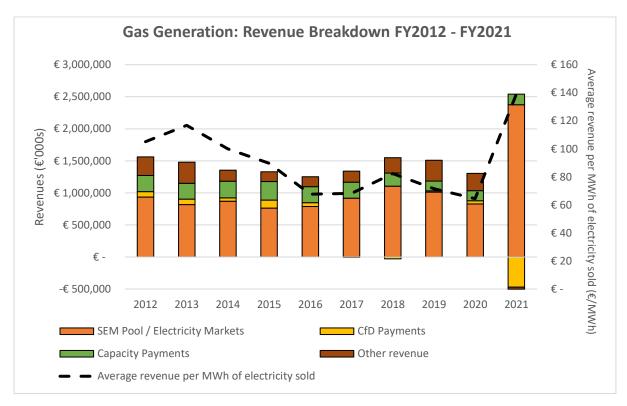


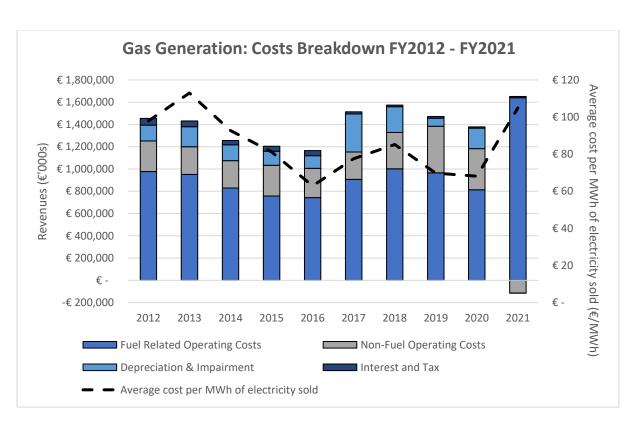
ii. Hydro Generation - Revenue and Costs Breakdown FY2012 to FY2021



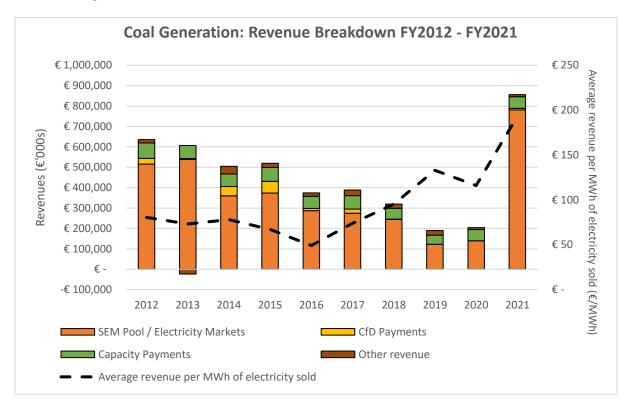


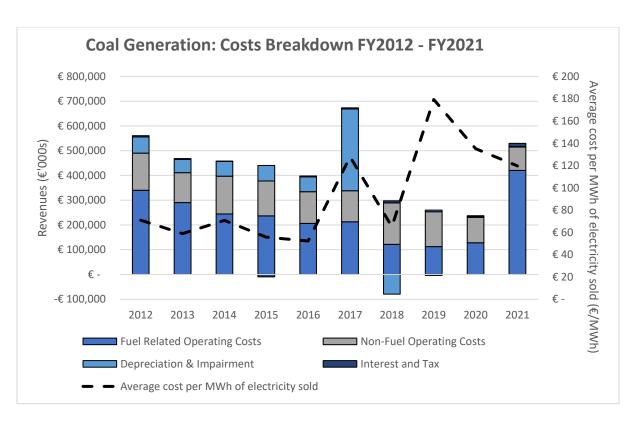
iii. Gas Generation - Revenue and Costs Breakdown FY2012 to FY2021



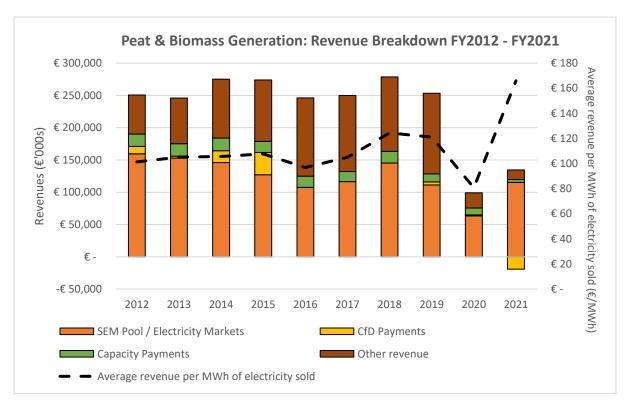


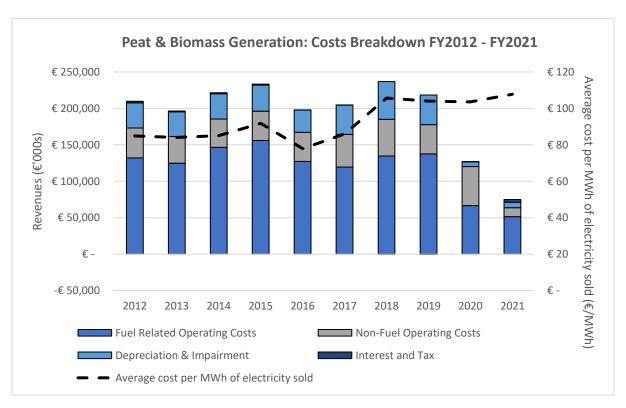
iv. Coal Generation – Revenue and Costs Breakdown FY2012 to FY2021



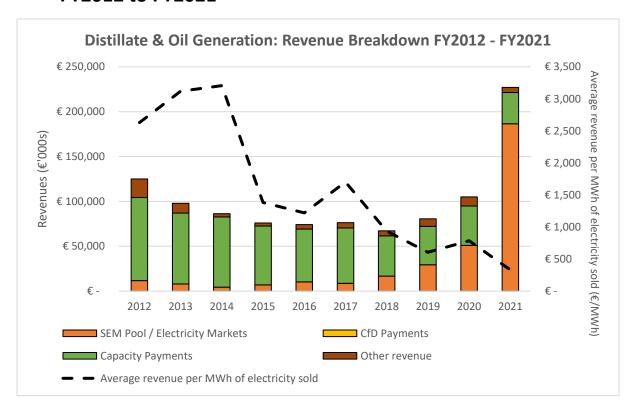


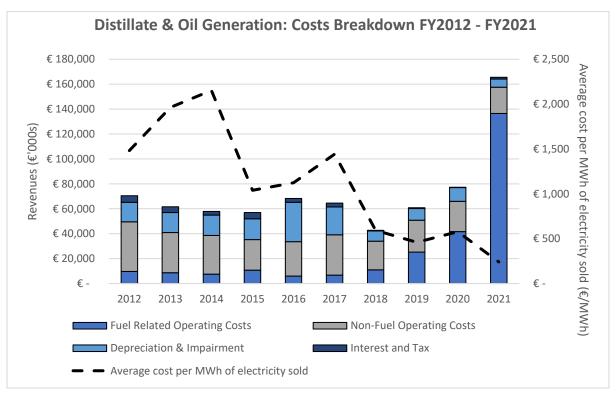
v. Peat & Biomass Generation – Revenue and Costs Breakdown FY2012 to FY2021





vi. Distillate & Oil Generation – Revenue and Costs Breakdown FY2012 to FY2021





vii. Pumped Storage Generation – Revenue and Costs Breakdown FY2012 to FY2021

