

# MONTHLY DAS TRADING SYSTEM REPORT

*NOVEMBER 2019*

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## Monthly Report Highlights

### Participation in DAS

- According Law 4414/2016, Article 5, RES Aggregators and RES Producers participated in DAS for first time in November 2019.
- In Participants' Register for month November 2019, there were: **67** Participants from which **52** were active during the month: **8** Producers, **3** RES Aggregators, **1** RES Producer, **25** Suppliers and **14** Traders.

### System Marginal Price (SMP) and Reserves Prices

- The average SMP for November is **55,35 €/MWh** which is 7,97 €/MWh **lower** than the SMP of the previous month and 13,95 €/MWh **lower** comparing to the same month of the previous year.

### DAS Energy Balance

- For November, *Domestic Demand* constitutes the **96,34%** of total monthly Load, *Exports* the **3,48%** and *Pumping* the **0,18%**. Generation from *Natural Gas Units* covered **31,00%** of the monthly Load, *Imports* covered **25,09%**, *RES* the **20,57%**, *Lignite Units* the **19,40%**, and *Hydro Production* the **3,94%**.
- Comparing to November 2018, *Natural Gas Units Generation* decreased (**-15%**). *Imports* increased (**8%**) and *Exports* decreased significantly (**-77%**). *Lignite Generation* decreased significantly (**-46%**) and *Hydro Generation* increased slightly (**+2%**). Finally, *RES generation* decreased (**-8%**).
- Electricity demand decreased (**-9%**) relatively to November 2018 demand. The highest load appeared at 21:00 27/11/2019 (**6585 MW**) while the lowest load was **3418 MW** at 5:00 08/11/2019.
- The monthly DAS value for November reached **211,9 MEUR** while the daily average DAS value was **7,1 MEUR**.

### Domestic Power Generation

- *Monthly Production Shares per fuel type* for November were: *Natural Gas Units* **41,38%**, *RES* **27,45%**, *Lignite Units* **25,90%** and *Hydro Units* **5,26%**. Concerning Market Participants, the respective shares were: *PPC* **36,69%**, *DAPEEP* **26,11%** and *ELPEDISON* **13,07%**.

### Supply of Electricity

- The *Daily Average Load* for November was **120.641 MWh**.
- The monthly *Consumption Share of PPC* in November was **69,75%** (High Voltage: 13,11, Medium Voltage: 10,58%, Low Voltage: 46,06%). The second higher consumption share belongs to *HERON* **5,97%** (HV: 0,00%, MV: 2,97%, LV: 3,00%) which is the highest monthly Consumption share of an alternative supplier during the last 3 years and the third to *MYTILINEOS* **5,64%** (HV: 0,02%, MV: 3,11%, LV: 2,52%). The relevant numbers for the previous month were *PPC*: 69,75%, *HERON*: 5,95% and *MYTILINEOS*: 5,63%.

### Electricity Trading

- Total energy injections for November from *Imports* amounted **942 GWh** while *Exports* reached **131 GWh**.
- For the Interconnection with Italy, *wrong direction energy flows* were scheduled for **340 hours** (47% of total month hours) while for the Interconnection with Bulgaria *wrong direction energy flows* were scheduled for **138 hours** (19% of total month hours).

## 1. Participation in DAS

### 1.1 Participants Register

The following tables present the registered Participants from the Participants' Register at the end of the month. Participants who participated in DAS during the month with the specific Participant Type which is stated at the top of each table are indicated with blue color.

#### Producers

S/N	PARTICIPANT NAME	ABBREVIATION
1	ELPEDISON ΠΑΡΑΓΩΓΗ ΗΛΕΚΤΡΙΚΗΣ ΕΝΕΡΓΕΙΑΣ Α.Ε.	ELPEDISON
2	ΔΗΜΟΣΙΑ ΕΠΙΧΕΙΡΗΣΗ ΗΛΕΚΤΡΙΣΜΟΥ Α.Ε.	PPC
3	ΗΡΩΝ II ΒΟΙΩΤΙΑΣ Α.Ε.	HERON_II_VIOTIAS
4	ΗΡΩΝ ΘΕΡΜΟΗΛΕΚΤΡΙΚΗ Α.Ε	HERON
5*	ΚΟΡΙΝΘΟΣ POWER Α.Ε.	KORINTHOS_POWER
6*	ΛΙΓΝΙΤΙΚΗ ΜΕΓΑΛΟΠΟΛΗΣ Α.Ε.	LIG_MEGALOPOLIS
7*	ΛΙΓΝΙΤΙΚΗ ΜΕΛΙΤΗΣ Α.Ε.	LIG_MELITIS
8	ΜΥΤΙΛΗΝΑΙΟΣ ΑΝΩΝΥΜΟΣ ΕΤΑΙΡΕΙΑ – ΟΜΙΛΟΣ ΕΠΙΧΕΙΡΗΣΕΩΝ	MYTILINEOS

\* LIG\_MELITIS, LIG\_MEGALOPOLIS and KORINTHOS\_POWER, holders of production license, participated also in DAS as Suppliers for serving the auxiliary loads of their generation units. The RES and GOs Operator S.A. (DAPEEP) participated in DAS as a "Producer", as the credits for the RES production are transferred to the RES Special Account of Article 40 of Law 2773/1999.

#### RES Aggregators

S/N	PARTICIPANT NAME	ABBREVIATION
1	OPTIMUS ENERGY ΑΝΩΝΥΜΗ ΕΤΑΙΡΕΙΑ	OPTIMUS_ENERGY
2	SOLAR ENERGY	SOLARENERGY
3	ΜΥΤΙΛΗΝΑΙΟΣ ΑΝΩΝΥΜΟΣ ΕΤΑΙΡΕΙΑ – ΟΜΙΛΟΣ ΕΠΙΧΕΙΡΗΣΕΩΝ	MYTILINEOS

\* The RES and GOs Operator S.A. (DAPEEP) participated also in DAS as Last Resort RES Aggregator (FOSETEK).

#### RES Producers

S/N	PARTICIPANT NAME	ABBREVIATION
1	ΒΙΟΛΑΡ Α.Ε.	VIOLAR

#### Suppliers

S/N	PARTICIPANT NAME	ABBREVIATION
1*	ALPIQ ENERGY SE	ALPIQ_ENERGY
2	ECONOMIC GROWTH Α.Ε.	GROWTH
3	EDELWEISS ENERGIA S.P.A.	EDELWEISS
4*	ELECTRADE S.P.A.	ELECTRADE SPA
5*	ELPEDISON ΠΑΡΑΓΩΓΗ ΗΛΕΚΤΡΙΚΗΣ ΕΝΕΡΓΕΙΑΣ Α.Ε.	ELPEDISON
6	ENEL GREEN POWER HELLAS ΠΡΟΜΗΘΕΙΑ Α.Ε.	EGPH_SUPPLY
7*	EUNICE TRADING Α.Ε.	EUNICE_TRADING
8*	EVN TRADING SOUTH EAST EUROPE EAD	EVN_TRADING_SEE
9*	GEN-I ATHENS Μ.Ε.Π.Ε. (SMLLC)	GEN-I-ATHENS
10*	GREEK ENVIRONMENTAL & ENERGY NETWORK Α.Ε.	GREENENV
11	GREENSTEEL-CEDALION COMMODITIES Α.Ε.	GREENSTEEL
12	NOVAERA ENERGY Α.Ε.	NOVAERA_ENERGY
13*	NRG TRADING HOUSE S.A.	NRG_TRADING_HOUS
14	NECO Α.Ε.	NECO_HELLAS
15*	PROTERGIA ΘΕΡΜΟΗΛΕΚΤΡΙΚΗ Α.Ε.	PROTERGIA_THER
16	SOLAR ENERGY	SOLARENERGY

17*	VOLTERRA A.E.	VOLTERRA
18*	VOLTON ΕΛΛΗΝΙΚΗ ΕΝΕΡΓΕΙΑΚΗ Α.Ε.	VOLTON
19*	WATT AND VOLT A.E.	WATT_AND_VOLT
20	ΑΝΩΝΥΜΗ ΕΤΑΙΡΕΙΑ ΤΣΙΜΕΝΤΩΝ ΤΙΤΑΝ	TITAN
21*	ΒΙΕΝΕΡ Α.Ε. ΕΝΕΡΓΕΙΑΚΕΣ ΕΠΙΧΕΙΡΗΣΕΙΣ Α.Ε.	VIENER
22	ΒΙΟΛΑΡ Α.Ε.	VIOLAR
23*	ΔΗΜΟΣΙΑ ΕΠΙΧΕΙΡΗΣΗ ΗΛΕΚΤΡΙΣΜΟΥ Α.Ε.	PPC
24	ΕΛΙΝΟΙΛ ΕΛΛΗΝΙΚΗ ΕΤΑΙΡΙΑ ΠΕΤΡΕΛΑΙΩΝ Α.Ε.	ELINOIL
25	ΕΛΛΗΝΙΚΑ ΤΑΧΥΔΡΟΜΕΙΑ Α.Ε.	ELTA
26	ZENIO GAS & LIGHT	EPA_THESS
27*	ΗΛΕΚΤΡΟΠΑΡΑΓΩΓΗ ΣΟΥΣΑΚΙΟΥ Α.Ε.	SUSAKI_POWER
28*	ΗΡΩΝ ΘΕΡΜΟΗΛΕΚΤΡΙΚΗ Α.Ε.	HERON
29*	ΙΝΤΕΡΜΠΕΤΟΝ – ΔΟΜΙΚΑ ΥΛΙΚΑ Α.Ε.	INTERBETON
30*	ΚΕΝ ΠΑΡΑΓΩΓΗ ΚΑΙ ΕΜΠΟΡΙΑ ΕΝΕΡΓΕΙΑΚΩΝ ΠΡΟΪΟΝΤΩΝ Α.Ε.	KEN
31	ΚΩΝΣΤΑΝΤΙΝΟΣ Β. ΜΑΡΚΟΥ Α.Β.Ε.Ε.	KVMARKOUSA
32	ΜΟΤΟΡ ΟΙΛ (ΕΛΛΑΣ) ΔΙΥΛΙΣΤΗΡΙΑ ΚΟΡΙΝΘΟΥ ΑΕ	MOH
33*	ΜΥΤΙΛΗΝΑΙΟΣ Α.Ε. – ΟΜΙΛΟΣ ΕΠΙΧΕΙΡΗΣΕΩΝ	MYTILINEOS
34	ΟΤΕ ΑΚΙΝΗΤΑ Α.Ε.	OTEESTATE
35	ΠΕΤΡΟΓΚΑΣ ΕΛΛΗΝΙΚΗ ΕΤΑΙΡΙΑ ΥΓΡΑΕΡΙΩΝ, ΒΙΟΜΗΧΑΝΙΚΩΝ ΠΡΟΪΟΝΤΩΝ & ΓΕΝΙΚΩΝ ΕΠΙΧΕΙΡΗΣΕΩΝ Α.Ε.	PETROGAZSA
36	ΠΡΟΜΗΘΕΥΤΗΣ ΚΑΘΟΛΙΚΗΣ ΥΠΗΡΕΣΙΑΣ	PPC_USS
37	ΠΡΟΜΗΘΕΥΤΗΣ ΤΕΛΕΥΤΑΙΟΥ ΚΑΤΑΦΥΓΙΟΥ	PPC_LRS
38	ΦΥΣΙΚΟ ΑΕΡΙΟ-ΕΛΛΗΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΝΕΡΓΕΙΑΣ	ATTIKI_GSC

\* Participants who are holders of supply license, participated in DAS as Traders.

#### Traders

S/N	PARTICIPANT NAME	ABBREVIATION
1	ALPIQ ENERGY HELLAS A.E.	ALPIQ_HELLAS
2	AYEN ENERGIJA D.O.O.	AYEN_ENERGIJA
3	AXPO ENERGY ROMANIA S.A.	AXPO_ROMANIA
4	CEZ A.S.	CEZ A.S.
5	DANSKE COMMODITIES A/S	DANSKECOM
6	DUFERCO ENERGIA S.P.A.	DUFERCO
7	EDISON S.P.A	EDISON_TRADING
8	EDF TRADING LIMITED	EDF_TRADING_LTD
9	ELEKTRICNI FINANCNI TIM D.O.O.	EFT_SLOVENIA
10	ENEL TRADE S.P.A.	ENEL_TRADE
11	ENERGY MT EAD	ENERGY_MT_EAD
12	ENSCO S.A.	ENSCO_ENERGY
13	EZPADA S.R.O.	EZPADA
14	GAZPROM MARKETING & TRADING LIMITED	GAZPROM
15	HSE D.O.O.	HSE
16	INTERENERGO D.O.O.	INTERENERGO
17	LE TRADING A.S.	LE TRADING
18	NVALUE A.G.	NVALUE
19	SENTRADE A.E.	SENTRADE
20	VITOL GAS AND POWER B.V.	VITOL
21	ΣΟΛΑΡΙΣ ΕΝΕΡΓΕΙΑΚΗ Α.Ε.	SOLARIS
22	ΤΕΡΝΑ ΕΝΕΡΓΕΙΑΚΗ ΑΒΕΤΕ	TERNA_ENERGY

## 1.2 Generation Units in Interconnected System

	UNIT	OWNER	INSTALLED CAPACITY (MW)
Lignite Units	AG. DIMITRIOS I	PPC	274.0
	AG. DIMITRIOS II	PPC	274.0
	AG. DIMITRIOS III	PPC	283.0
	AG. DIMITRIOS IV	PPC	283.0
	AG. DIMITRIOS V	PPC	342.0
	AMYNDEO I	PPC	273.0
	AMYNDEO II	PPC	273.0
	MELITI	LIG_MELITIS	289.0
	KARDIA I	PPC	271.1
	KARDIA II	PPC	270.8
	KARDIA III	PPC	280.0
	KARDIA IV	PPC	280.0
	MEGALOPOLI III	LIG_MEGALOPOLIS	255.0
	MEGALOPOLI IV	LIG_MEGALOPOLIS	256.0
	<b>Total of Lignite Units</b>		<b>3,903.9</b>
Natural Gas Units	KOMOTINI	PPC	476.0
	LAVRIO 4	PPC	550.0
	ELPEDISON THESS	ELPEDISON	400.2
	ELPEDISON THISVI	ELPEDISON	410.0
	HERON 1	HERON	49.0
	HERON 2	HERON	49.0
	HERON 3	HERON	49.0
	<b>Subtotal of bi-fuel Natural Gas Units*</b>		<b>1,983.2</b>
	LAVRIO 5	PPC	378.0
	ALIVERI V	PPC	417.0
	MEGALOPOLI V	PPC	500.0
	HERON CC	HERON_II_VIOTIAS	422.0
	PROTERGIA CC	MYTILINEOS	432.7
	KORINTHOS POWER	KORINTHOS POWER	433.4
	ALOUMINIO	MYTILINEOS	334.0
	<b>Total of Natural Gas Units</b>		<b>4,900.3</b>
Hydro Units	AGRAS	PPC	50.0
	ASOMATA	PPC	108.0
	P_AOOU	PPC	210.0
	EDESSAIOI	PPC	19.0
	THESAVROS	PPC	384.0
	ILARIONAS	PPC	153.0
	KAISTRAKI	PPC	320.0
	KREMASTA	PPC	437.2

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	LADONAS	PPC	70.0
	PLASTIRAS	PPC	129.9
	PLATANOVRYSI	PPC	116.0
	POLYFYTO	PPC	375.0
	POURNARI 1	PPC	300.0
	POURNARI 2	PPC	33.6
	STRATOS 1	PPC	150.0
	SFIKIA	PPC	315.0
	Total of Hydro Units		3,170.7
RES**	WIND	RES	3,153.5
	PV	RES	2,251.9
	PV ROOFS	RES	351.4
	HYDRO	RES	240.3
	BIOMASS	RES	86.9
	CHP	RES	105.5
	Total of RES Units		6,189.4
	Total of Thermal Units		8,804.2
	Total of RES & Hydro Units		9,360.1
	Total of all Units		18,164.3

Source: DAPEEP, ADMIE

\* From Dispatch Day 11/04/2019, Trading System functionalities for the implementation of RAE's Decision 199/2018 were activated. RAE has approved amendments on Power Exchange Code for Electricity (PECE) and System Operation Code regarding the participation of bi-fuel Generation Units in DAS. The bi-fuel Generation Units are the following: KOMOTINI, LAVRIO 4, ELPEDISON THESS, ELPEDISON THISVI, HERON 1, HERON 2, HERON 3.

\*\*From Dispatch day 01/11/2019, Trading System functionalities for the implementation of Law 4414/2016, Article 5, for RES Aggregators and Producers owners of RES & HE CHP Units with the Obligation to participate in DAS, were activated.

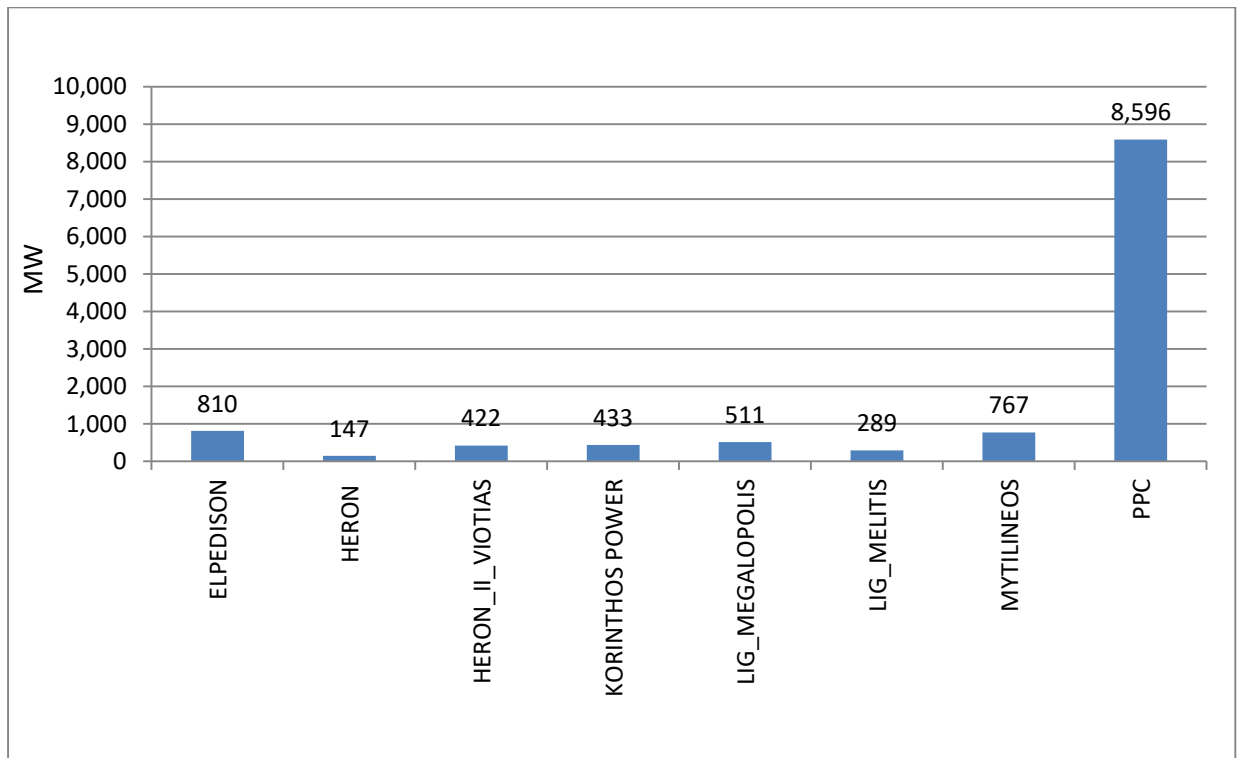


Figure 1: Total Installed Capacity of Units per Producer (RES excluded)

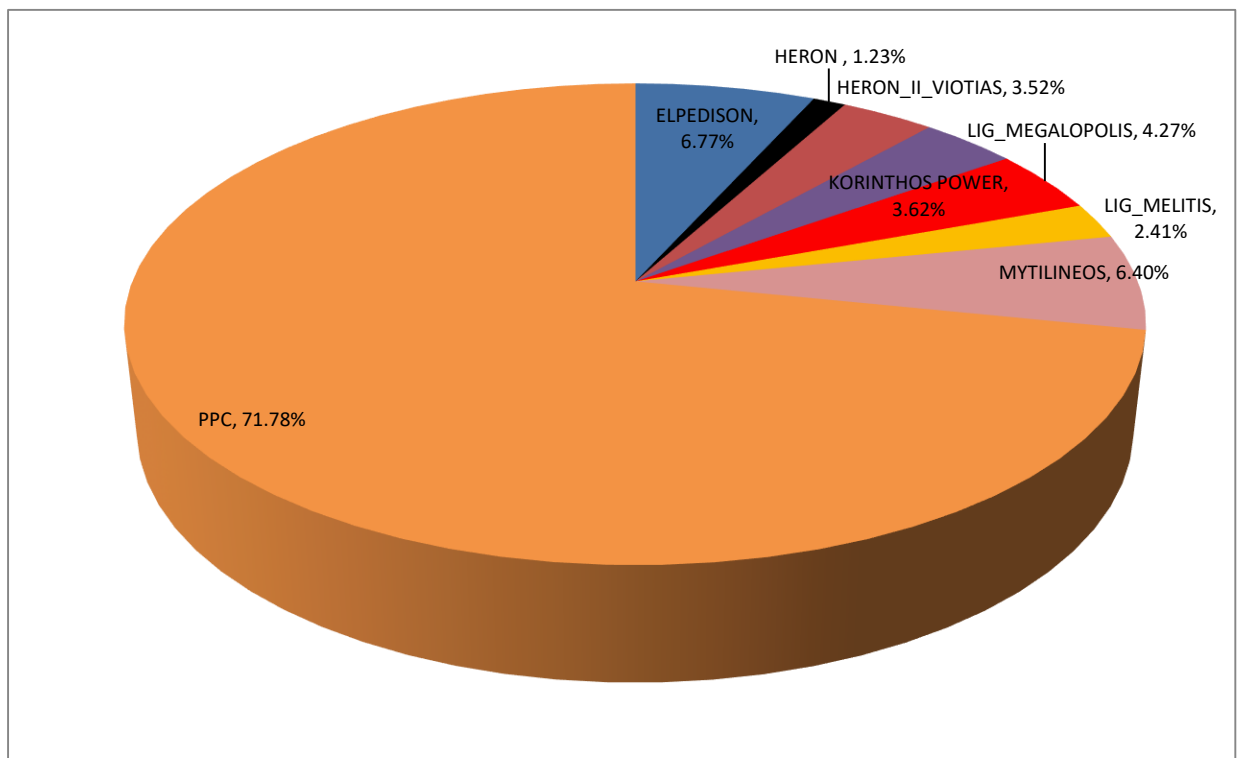


Figure 2: Percentage (%) of Total Installed Capacity per Producer (RES excluded)



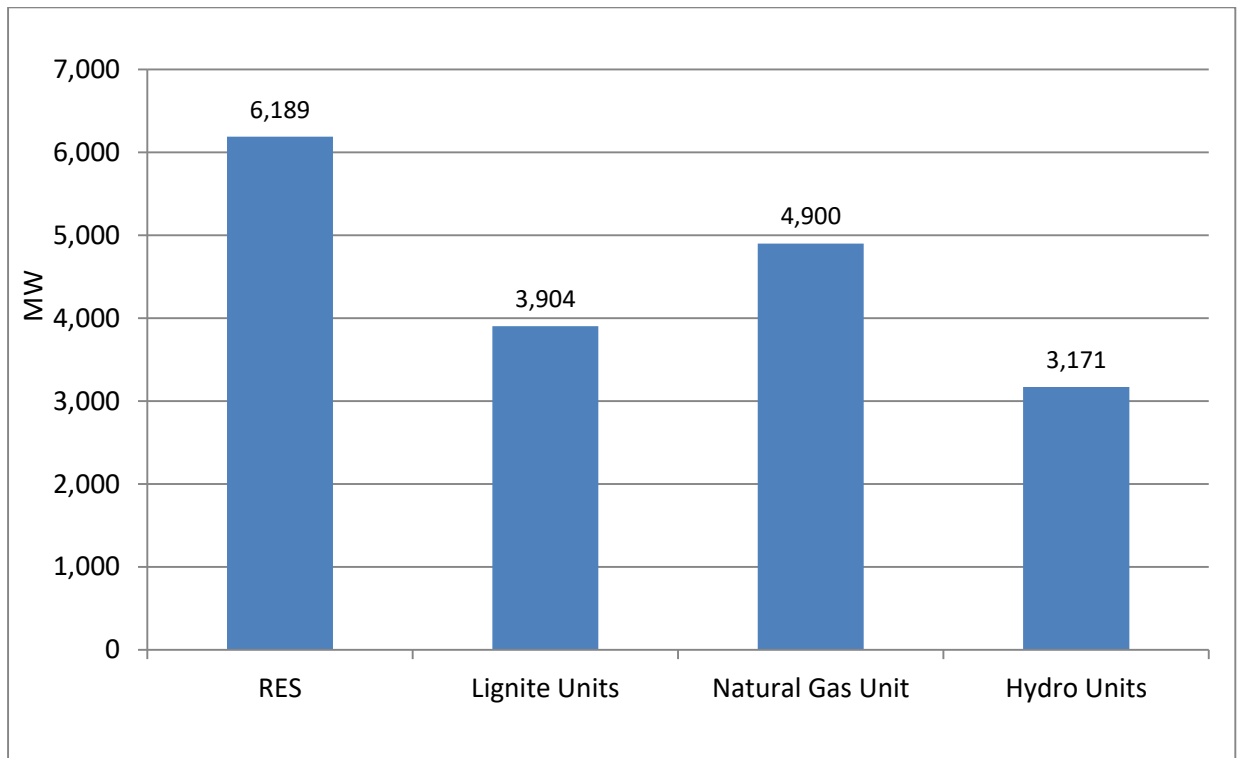


Figure 3: Total Installed Capacity of Units per Fuel type in the Interconnected System

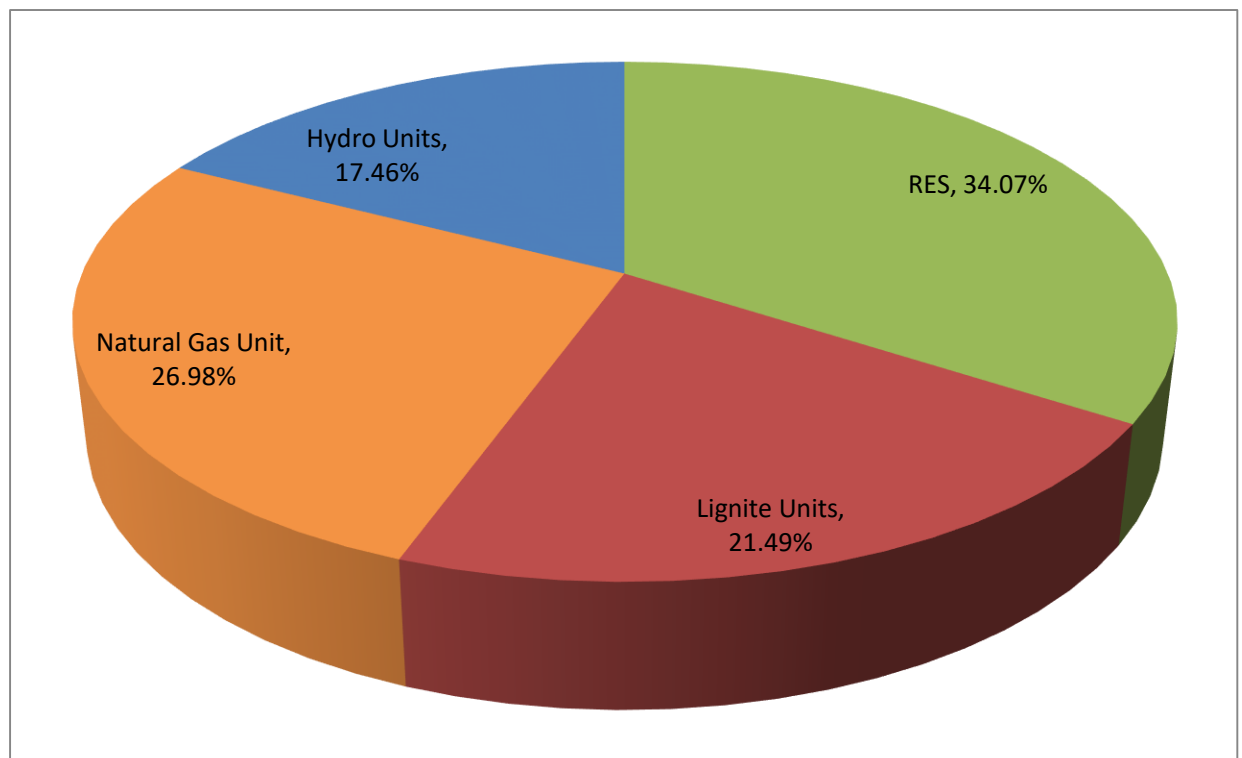


Figure 4: Percentage (%) of total Installed Capacity per Fuel type in the Interconnected System

## 2. System Marginal Price (SMP) and Reserves Prices

	SMP (€/MWh)	Date	Hour
Minimum	0,000	20/11/2019	01
Maximum	89,030	25/11/2019	22
Average	55,347		

Table 1: SMP data

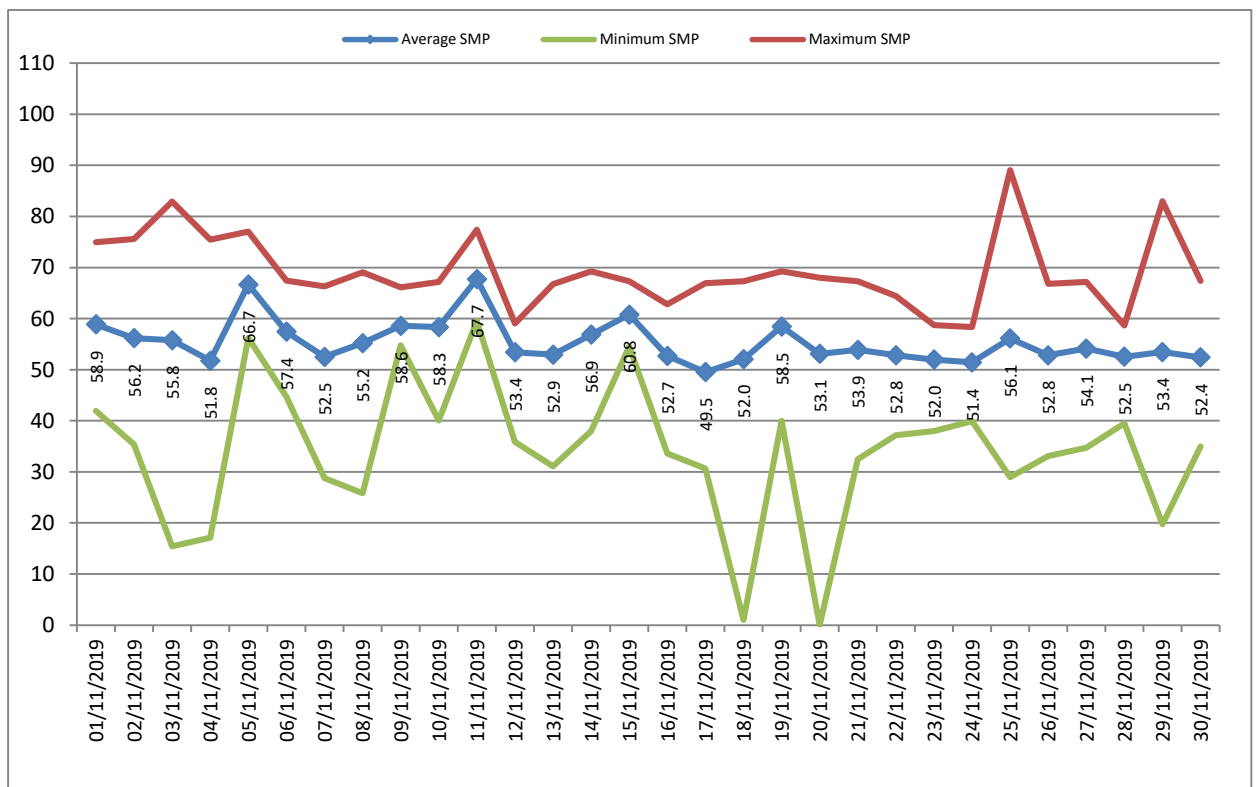


Figure 5: Average, Minimum and Maximum Daily SMP (€/MWh)

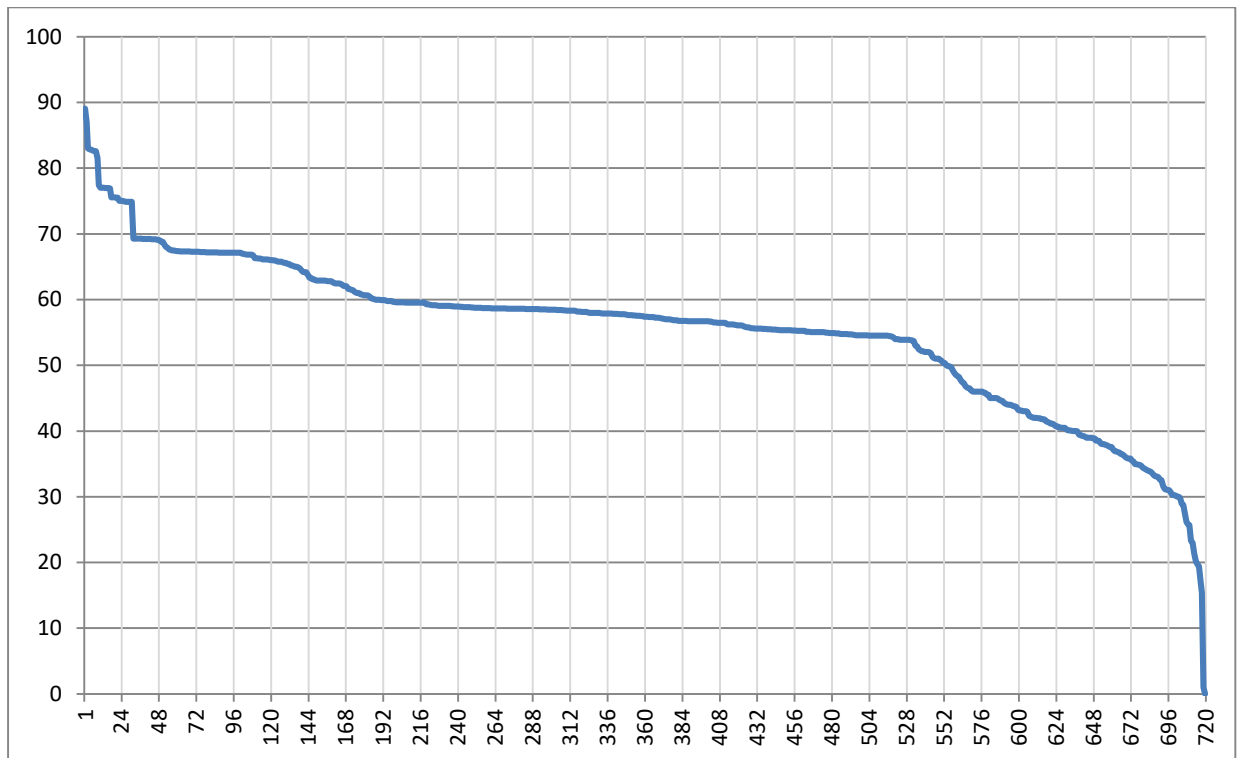


Figure 5a: SMP duration curve (€/MWh)

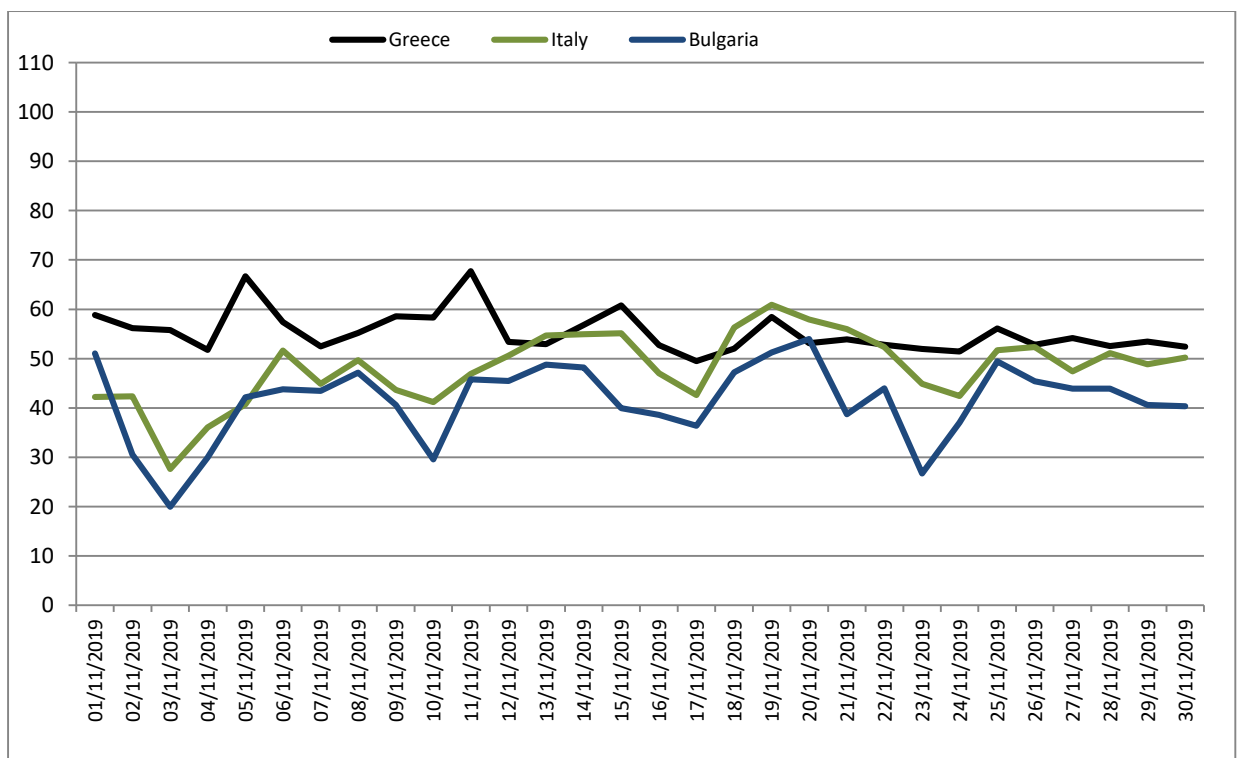


Figure 5b: Daily average marginal energy prices (€/MWh) of Greece, Italy, Bulgaria

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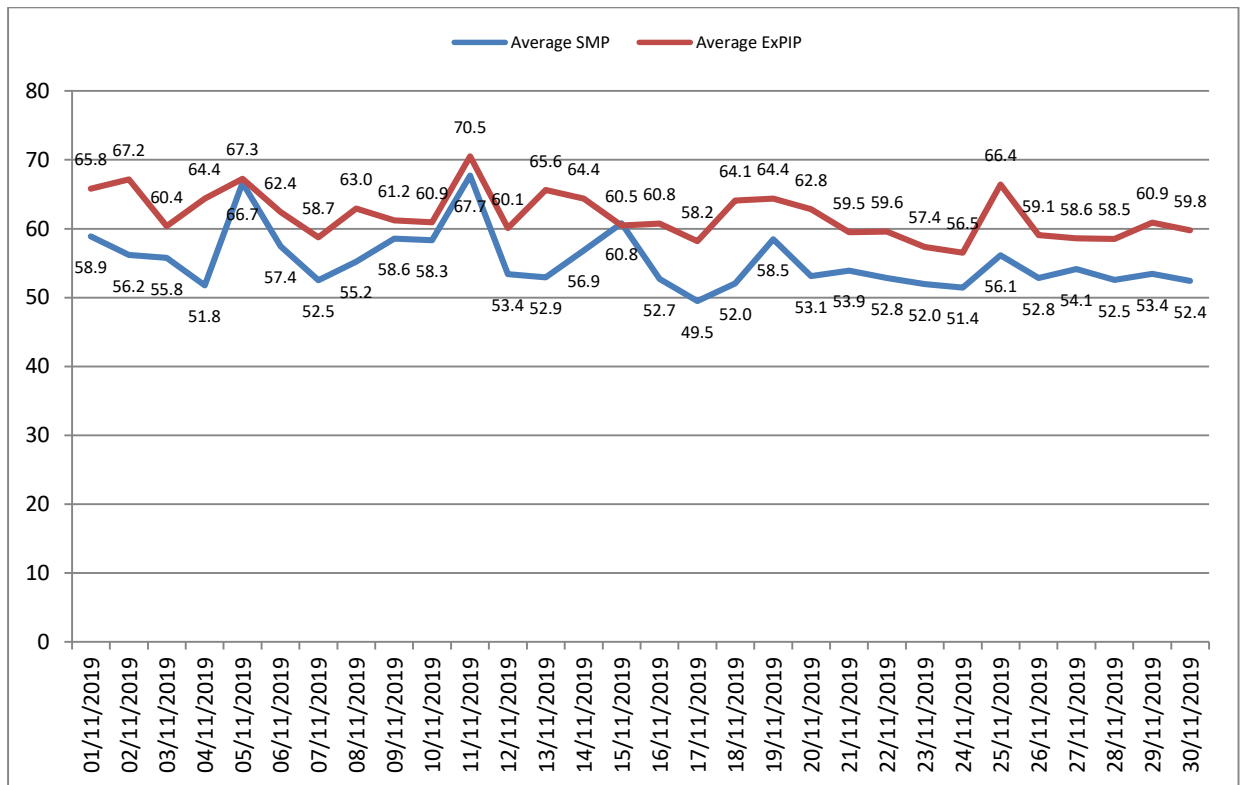


Figure 6: Average Daily SMP and ExPIP

Source: HENEX, ADMIE

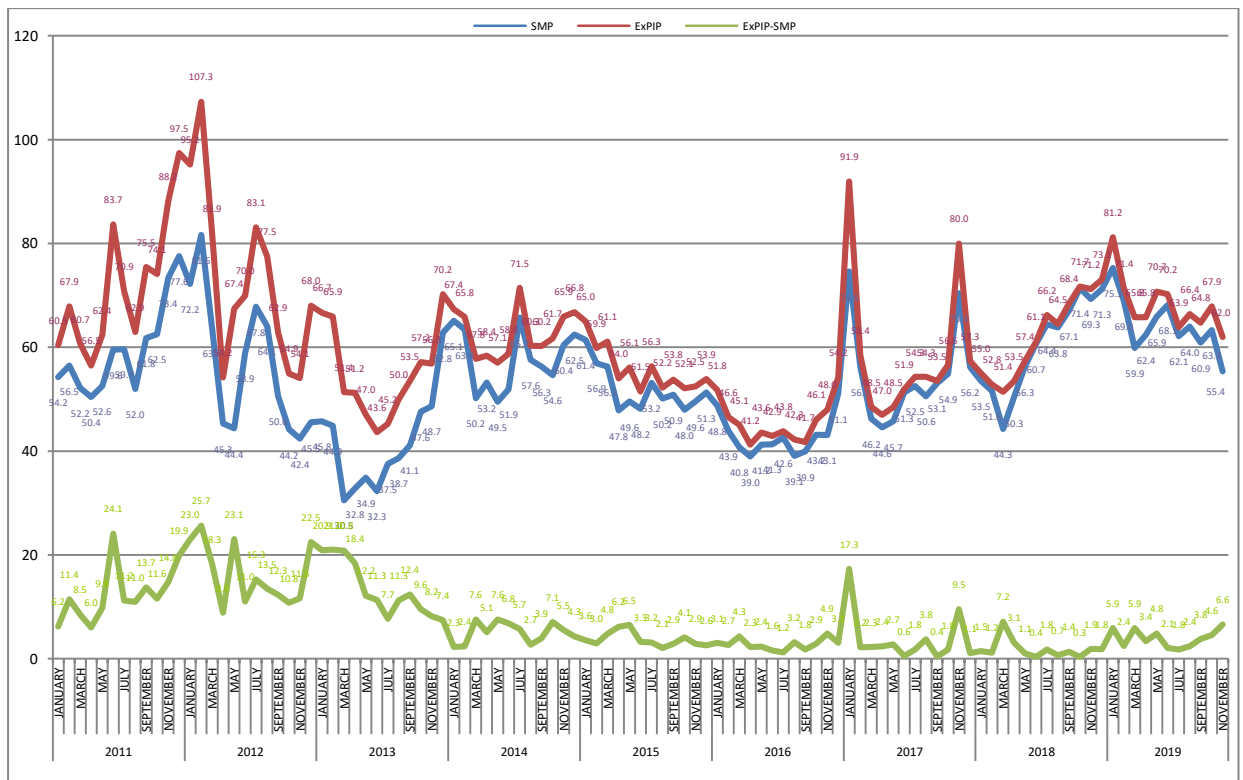


Figure 7: Evolution of average monthly SMP, ExPIP and their difference

Source: HENEX, ADMIE

		Average Monthly SMP		Average Monthly ExPIP		Difference SMP-ExPIP
		€/MWh	% deviation*	€/MWh	% deviation*	€/MWh
2018	January	53,50	-28,28	54,99	-40,17	1,49
	February	51,63	-8,17	52,82	-9,61	1,19
	March	44,28	-4,19	51,44	6,07	7,16
	April	50,35	12,97	53,47	13,81	3,12
	May	56,32	23,15	57,37	18,36	1,05
	June	60,69	18,26	61,07	17,68	0,38
	July	64,42	22,62	66,20	21,87	1,77
	August	63,83	26,23	64,52	18,79	0,69
	September	67,06	26,38	68,43	27,88	1,37
	October	71,40	30,11	71,74	26,68	0,34
	November	69,30	-1,63	71,22	-10,95	1,93
	December	71,25	26,81	73,08	27,48	1,83
2019	January	75,28	40,73	81,21	47,68	5,93
	February	69,01	33,67	71,44	35,26	2,43
	March	59,87	35,19	65,79	27,89	5,93
	April	62,40	23,93	67,29	25,85	4,89
	May	65,91	17,03	70,75	23,31	4,84
	June	68,14	12,27	70,21	14,96	2,07
	July	62,14	-3,53	63,90	-3,47	1,76
	August	64,02	0,30	66,42	2,95	2,40
	September	60,91	-9,17	64,75	-5,38	3,84
	October	63,32	-11,31	67,90	-5,36	4,57
	November	55,35	-20,13	61,96	-13,00	6,61

Source: HENEX, ADMIE

Table 2: Evolution of average monthly SMP, ExPIP and their difference, as well as the % deviation of average monthly SMP & ExPIP in relation to the same month of the previous year

\*The calculation of SMP & ExPIP commenced in the Fifth Reference Day on 30/09/2010

Reserve	Minimum Price (€/MW)	Maximum Price (€/MW)	Date of Maximum Price	Average Price (€/MW)
Primary	0,001	0,002	11/11/2019	0,001
Secondary Up	0,001	17,000	04/11/2019	0,811
Secondary Down	0,001	15,000	01/11/2019	0,954

Table 2a: Average, Minimum and Maximum Monthly Reserves Prices

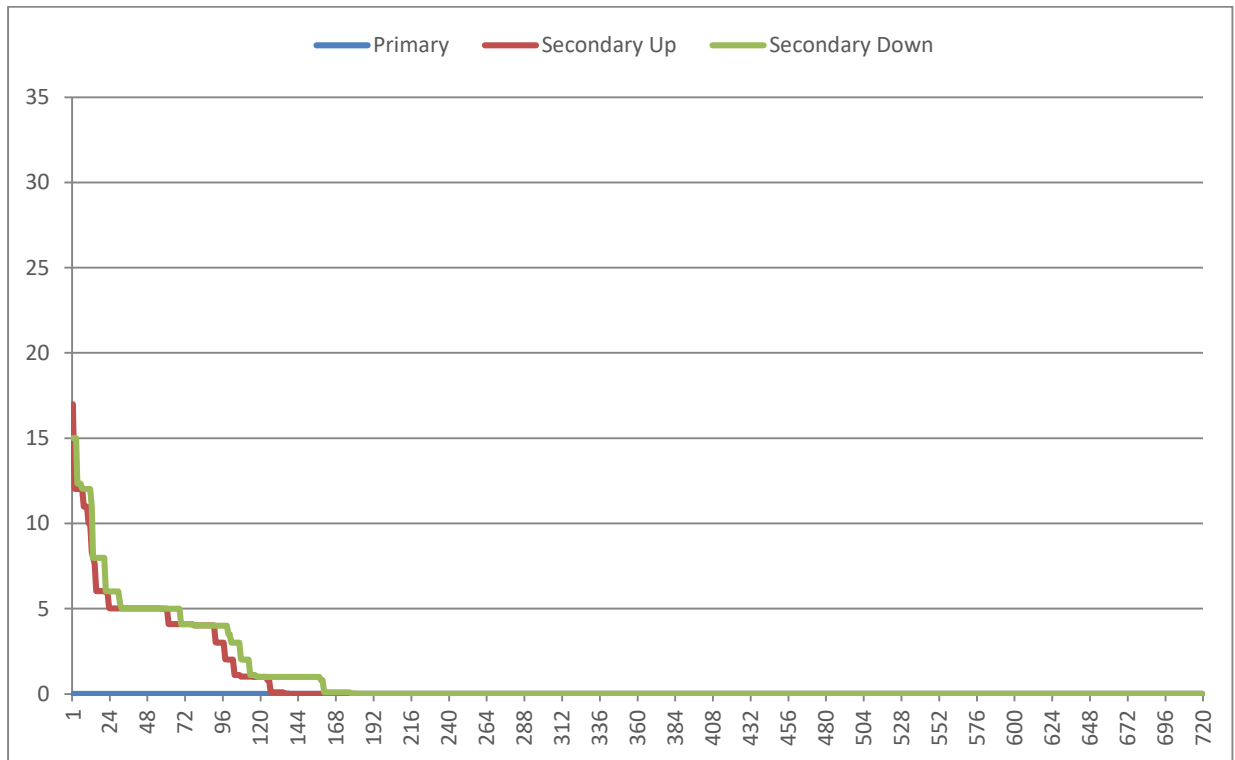


Figure 7a: Duration Curve of Primary, Secondary Up and Secondary Down Reserve Prices (€/MW)

	Lignite	Natural Gas	Hydro	Imports	Exports
Hours/Month	53	369	20	135	143

Table 3: Number of hours for each type of fuel, imports and exports that have defined the SMP

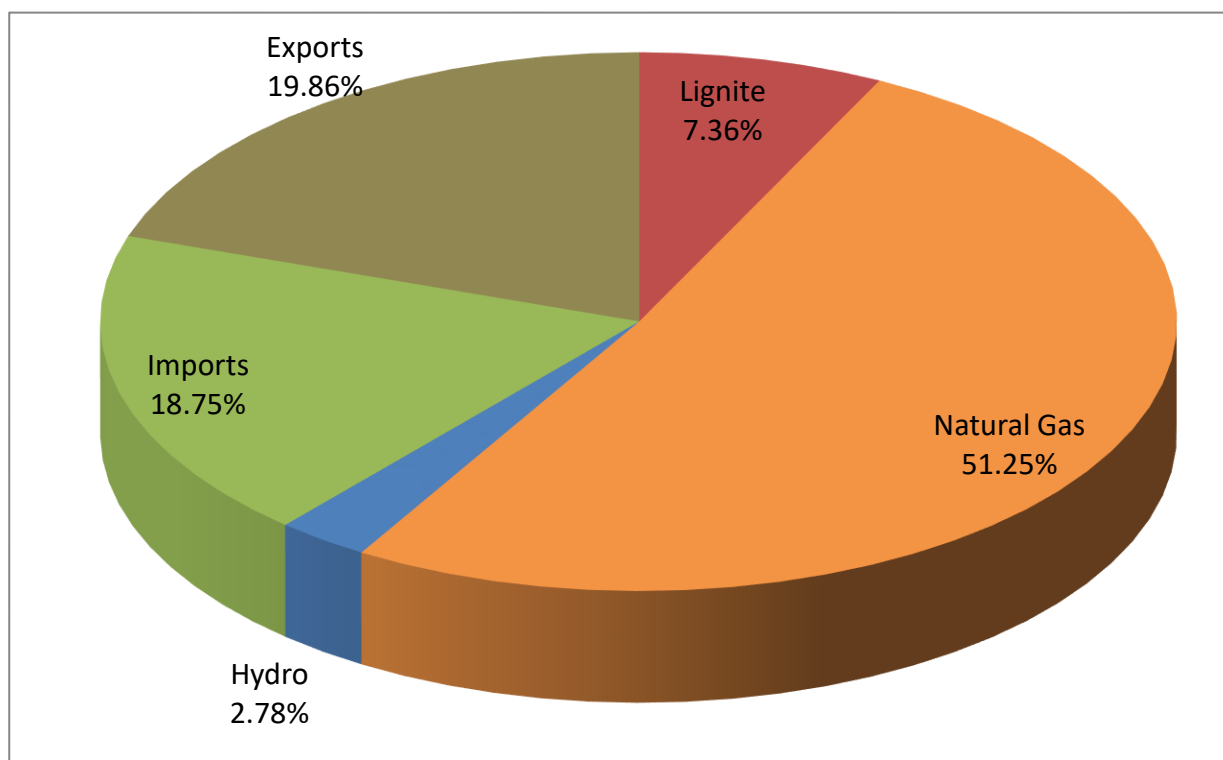


Figure 8: Percentage (%) of total hours per fuel type/imports/exports that have defined the SMP

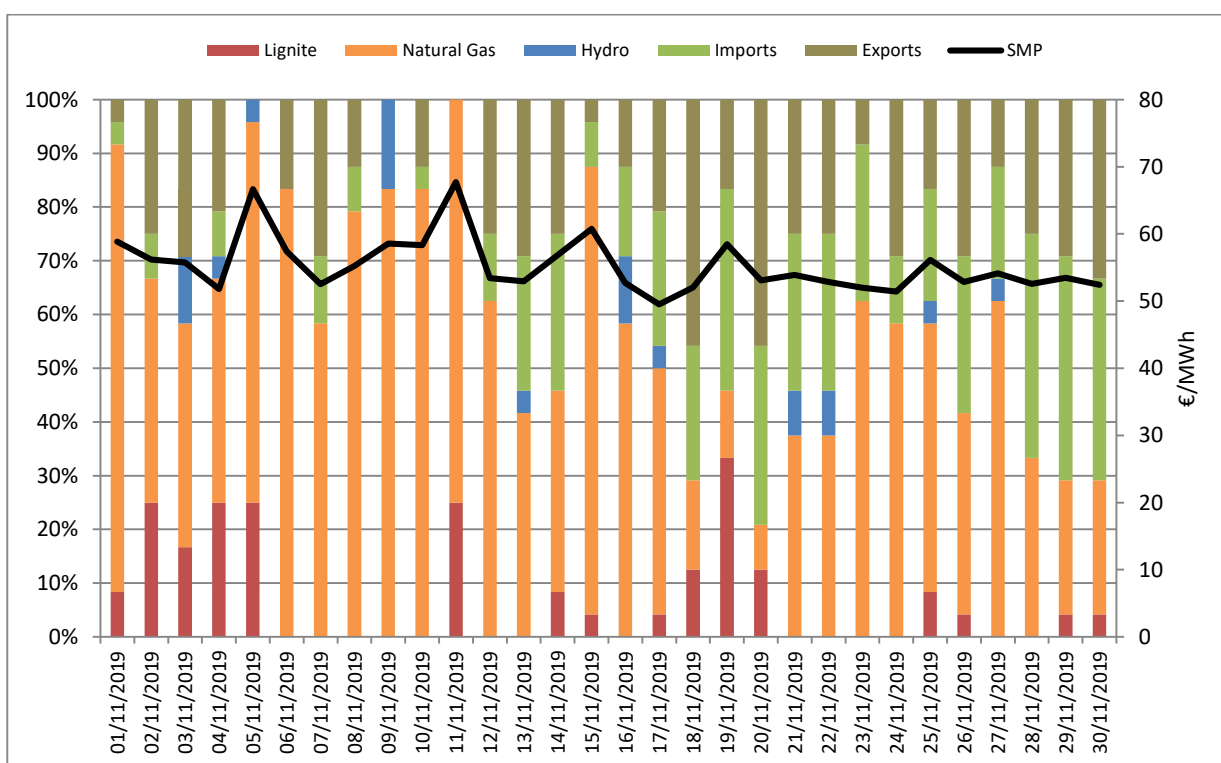


Figure 9: Daily percentage (%) distribution of fuel type/import/export that have defined SMP

### 3. DAS Energy Balance

	November 2019	% deviation (from 11/2018)	January - November 2019	% deviation (from 01-11/2018)
<b>PRODUCTION AND IMPORTS - EXPORTS BALANCE (MWh)</b>				
<b>TOTAL PRODUCTION &amp; IMPORTS - EXPORTS BALANCE</b>	<b>3.626.002</b>	<b>-9,34</b>	<b>46.186.662</b>	<b>-0,03</b>
<b>NET PRODUCTION ANALYSIS</b>				
LIGNITE	728.867	-45,62	9.418.229	-30,36
OIL	0	0,00	737	0,00
NATURAL GAS	1.164.630	-14,57	16.171.073	19,44
HYDRO	148.141	1,95	2.481.452	-43,05
RES	772.652	-8,38	9.519.117	3,10
<b>TOTAL NET PRODUCTION</b>	<b>2.814.289</b>	<b>-23,78</b>	<b>37.590.608</b>	<b>-7,54</b>
<b>IMPORTS</b>				
	<b>942.380</b>	<b>7,98</b>	<b>11.334.440</b>	<b>14,65</b>
ALBANIA	155.396		1.548.987	
BULGARIA	327.224		3.300.528	
ITALY	196.535		3.542.356	
F.Y.R.O.M.	219.885		2.374.199	
TURKEY	43.339		568.370	
<b>EXPORTS</b>	<b>130.667</b>	<b>-76,88</b>	<b>2.738.387</b>	<b>-36,94</b>
ALBANIA	35.407		636.208	
BULGARIA	1.469		341.623	
ITALY	58.427		951.107	
F.Y.R.O.M.	16.606		778.464	
TURKEY	18.757		30.985	
<b>IMPORTS - EXPORTS BALANCE</b>	<b>811.713</b>	<b>163,97</b>	<b>8.596.053</b>	<b>55,05</b>
<b>DEMAND (MWh)</b>				
<b>TOTAL DEMAND</b>	<b>3.626.002</b>	<b>-9,34</b>	<b>46.186.662</b>	<b>-0,03</b>
<b>NET DEMAND</b>	<b>3.619.245</b>	<b>-9,48</b>	<b>46.144.635</b>	<b>-0,07</b>
<b>PUMPING</b>	<b>6.757</b>	<b>335,97</b>	<b>42.026</b>	<b>103,52</b>
<b>TOTAL DEMAND ANALYSIS</b>				
LOW VOLTAGE CUSTOMERS	2.260.793	-7,80	29.780.050	3,97
MEDIUM VOLTAGE CUSTOMERS	875.747	-14,31	10.870.876	-7,43
HIGH VOLTAGE CUSTOMERS	482.705	-7,88	5.493.709	-5,15
<b>SYSTEM PEAK POWER (MW)</b>				
<b>MAXIMUM HOURLY SYSTEM POWER</b>	<b>6.585</b>	<b>-13,77</b>	<b>9.313</b>	<b>2,57</b>
Date	27/11/2019		10/07/2019	
Hour of maximum	21,00		14:00	

The DAS Energy Balance refers to the Market Point, where the solution of DAS also refers to, in which system losses have already been allocated. According to Chapter 10 of the Power Exchange Code for Electricity, to each Generation Unit Metering point and to each Interconnection Metering point for Import, as well as to each Meter point of the Distribution Network, losses factors are applied, in order to allocate both injected and absorbed power to the Market Points.



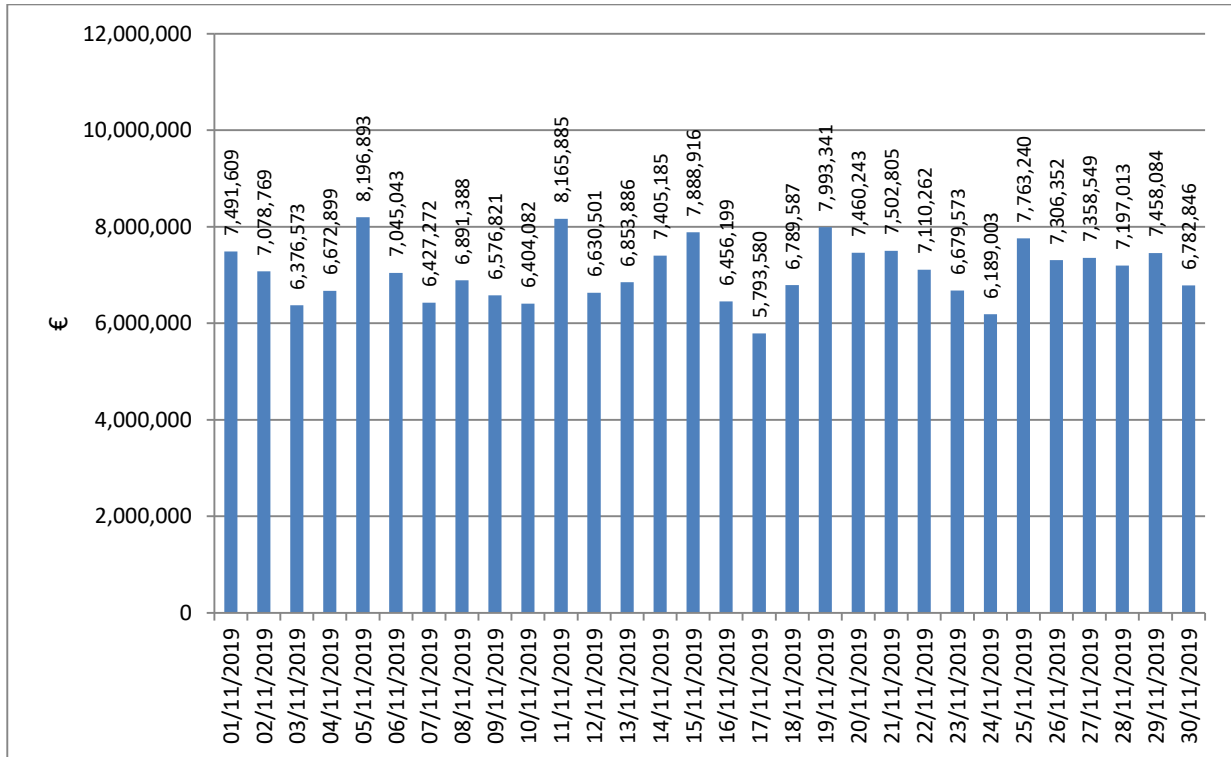


Figure 10: Daily value of DAS

The total value of DAS for November 2019 reached 211,9 M€.

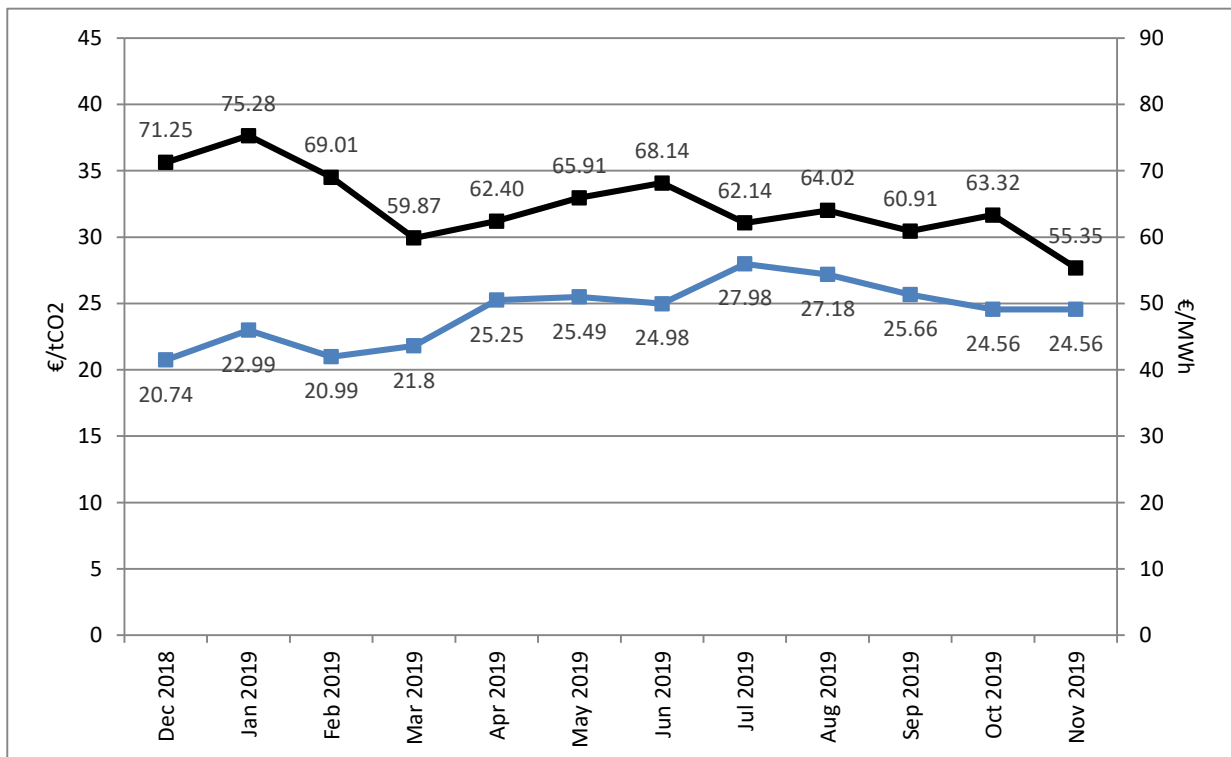


Figure 11: Weighted Average Monthly Prices of CO2 emissions rights (auction T3PA) and SMP (right axis)

Source: DAPEEP

## 4. Domestic Power Generation

### 4.1 Production and Credit per fuel type

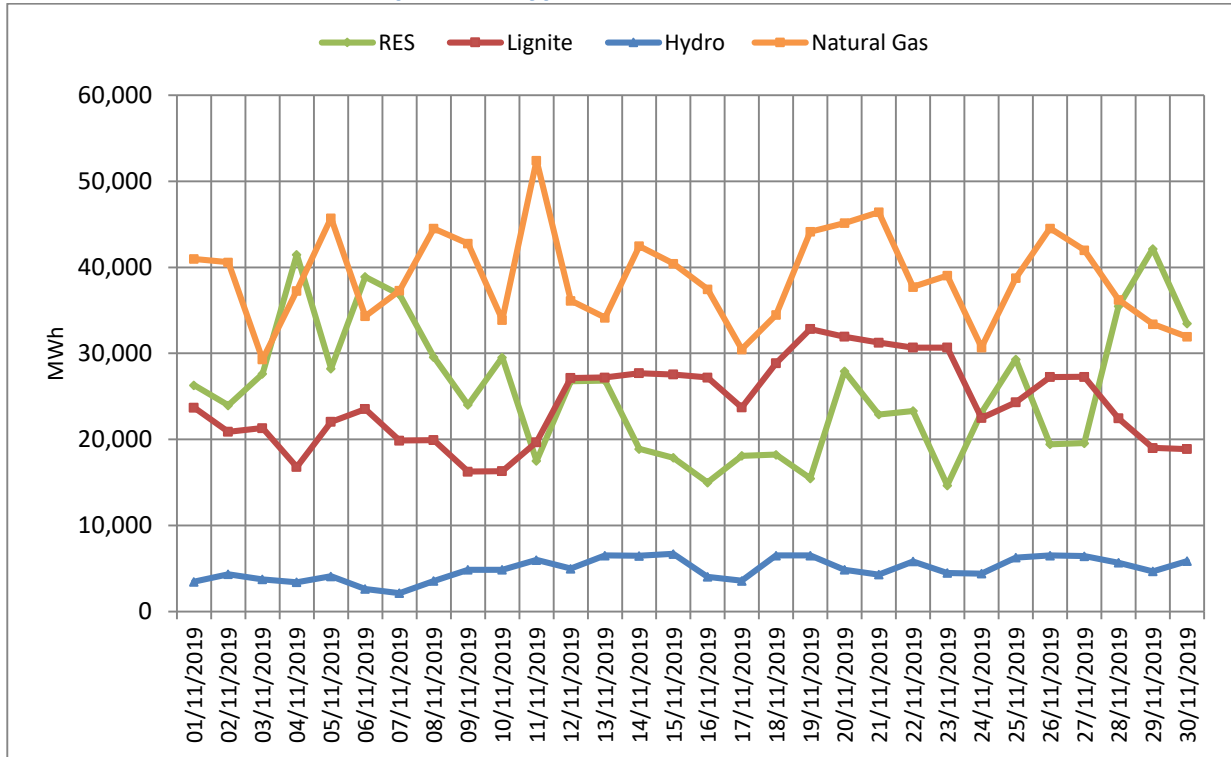


Figure 12: Daily production per fuel type

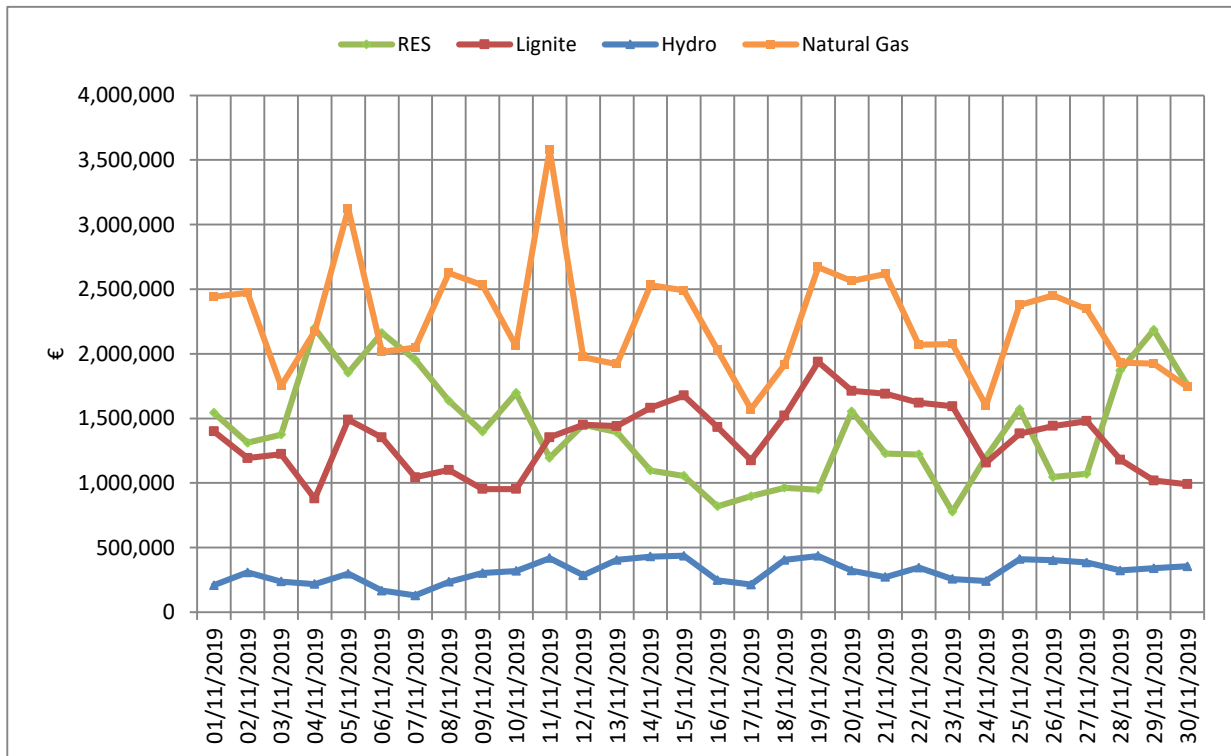


Figure 13: Daily production credit per fuel type

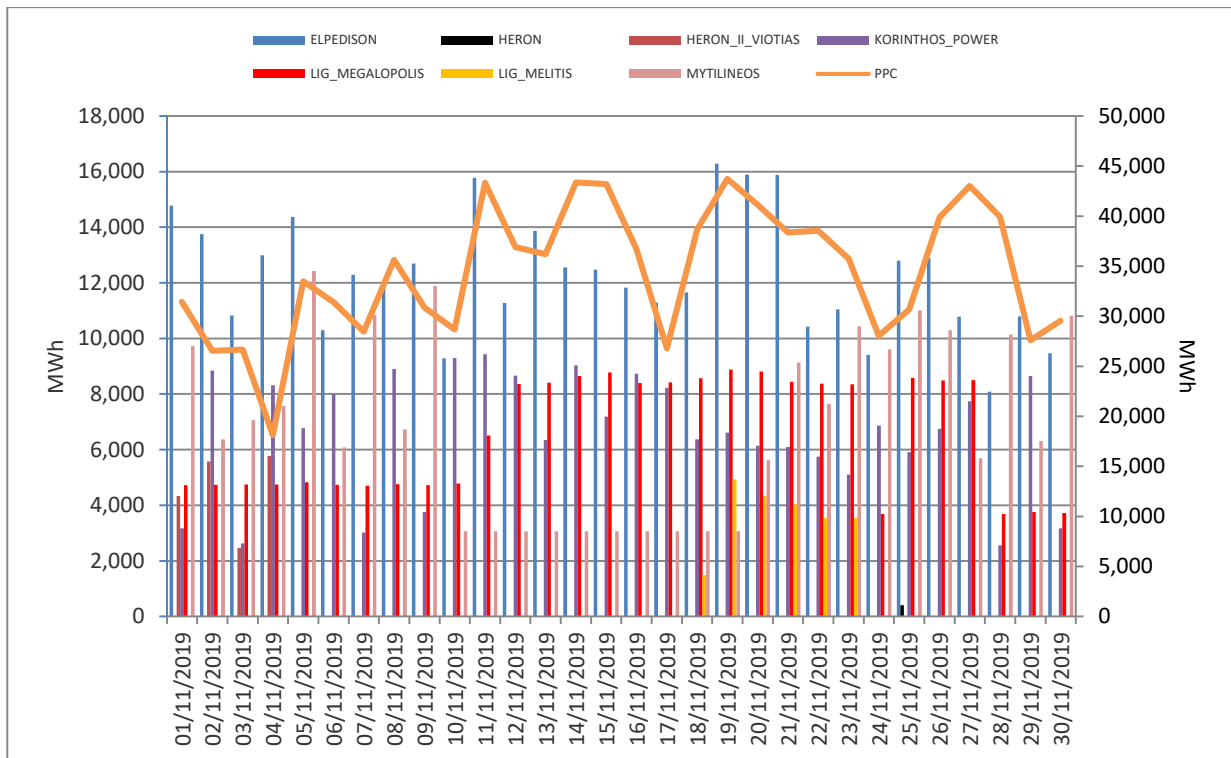


Figure 14: Daily production per Participant excluded RES (the right axis represents the production of PPC)

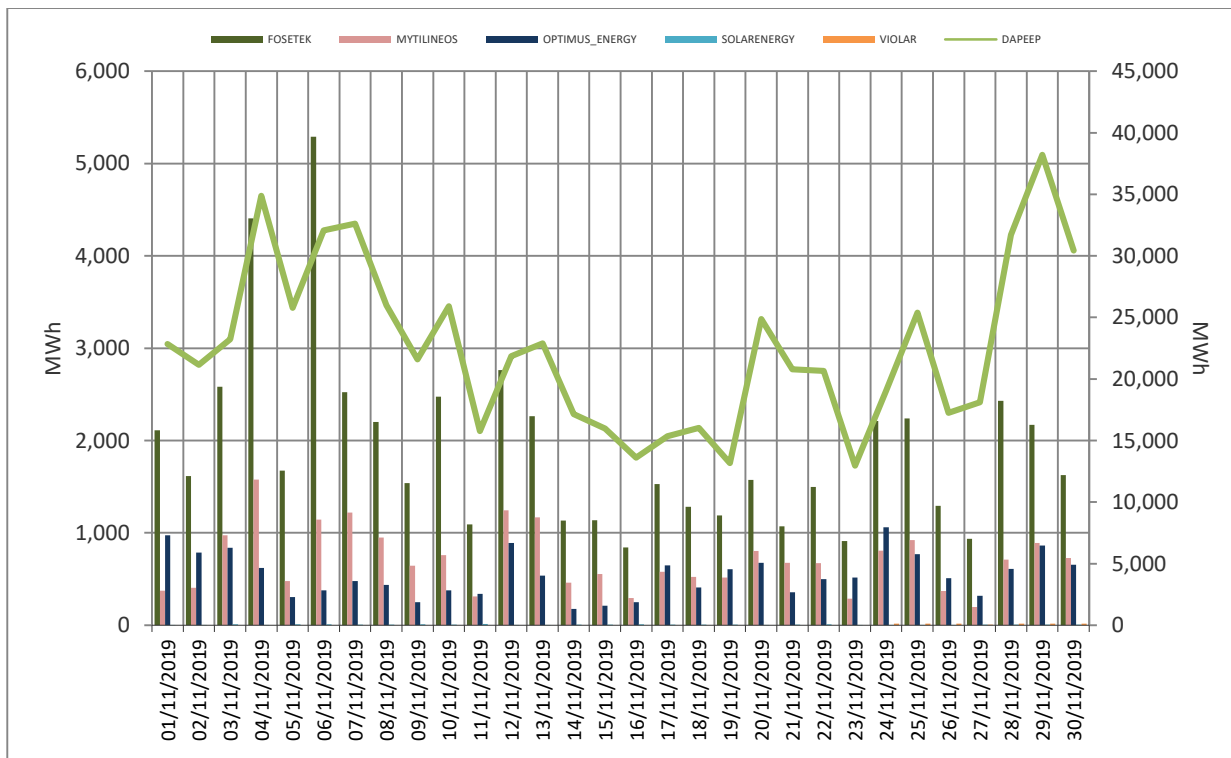


Figure 14a: Daily production per RES Participant (the right axis represents the production of DAPEEP excluded FOSETEK Production)

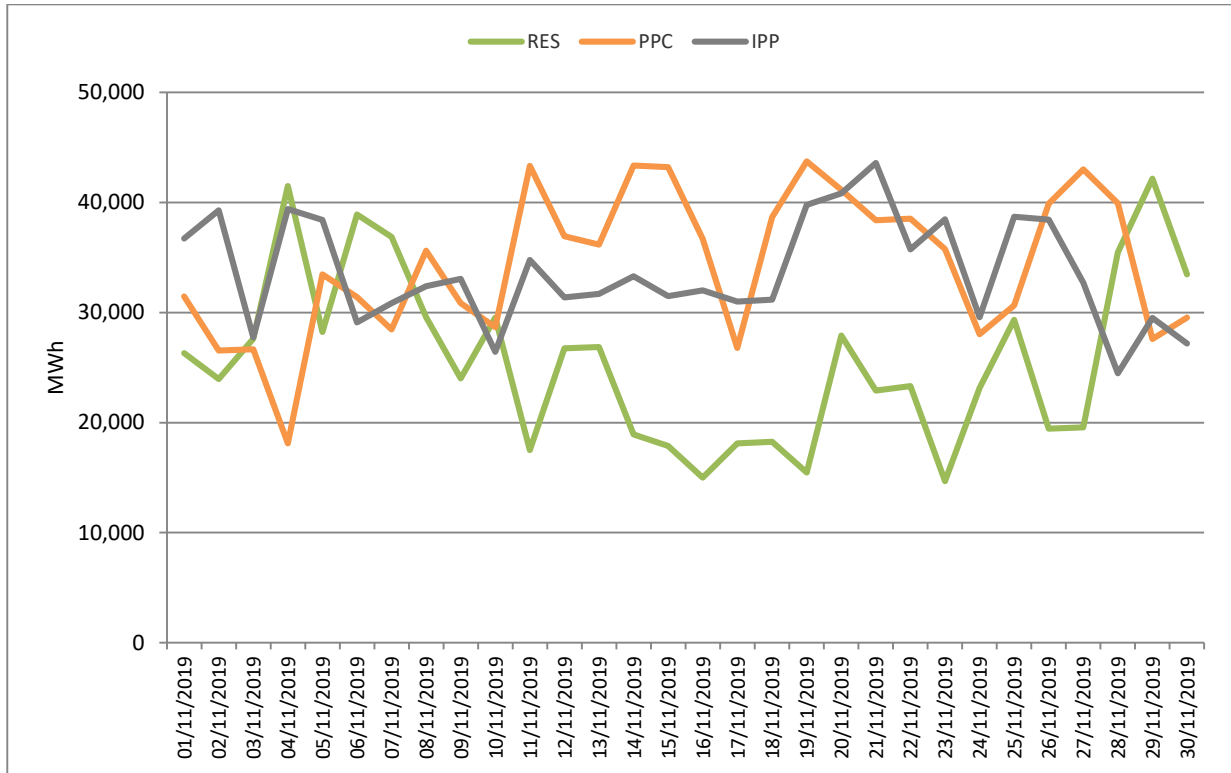


Figure14b: Daily production for PPC, RES and Independent Power Producers

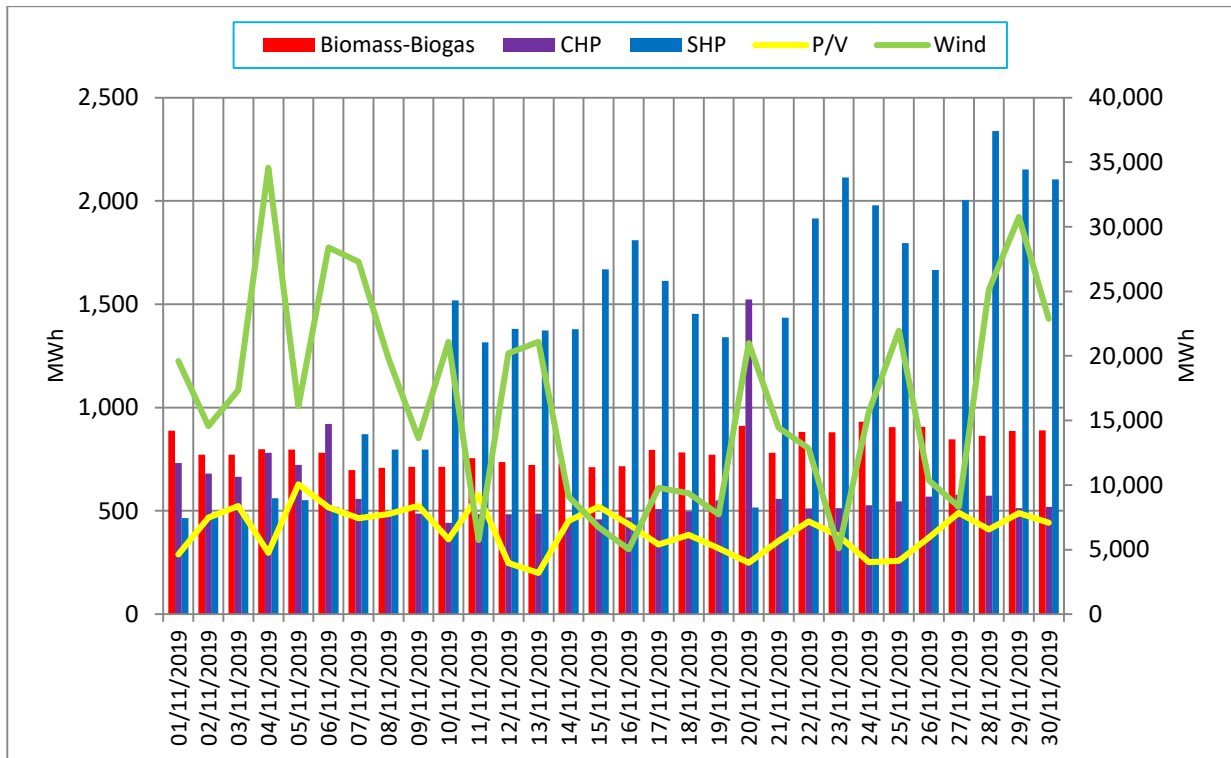


Figure14c: Daily RES production per Technology (the right axis represents Wind and P/V generation)

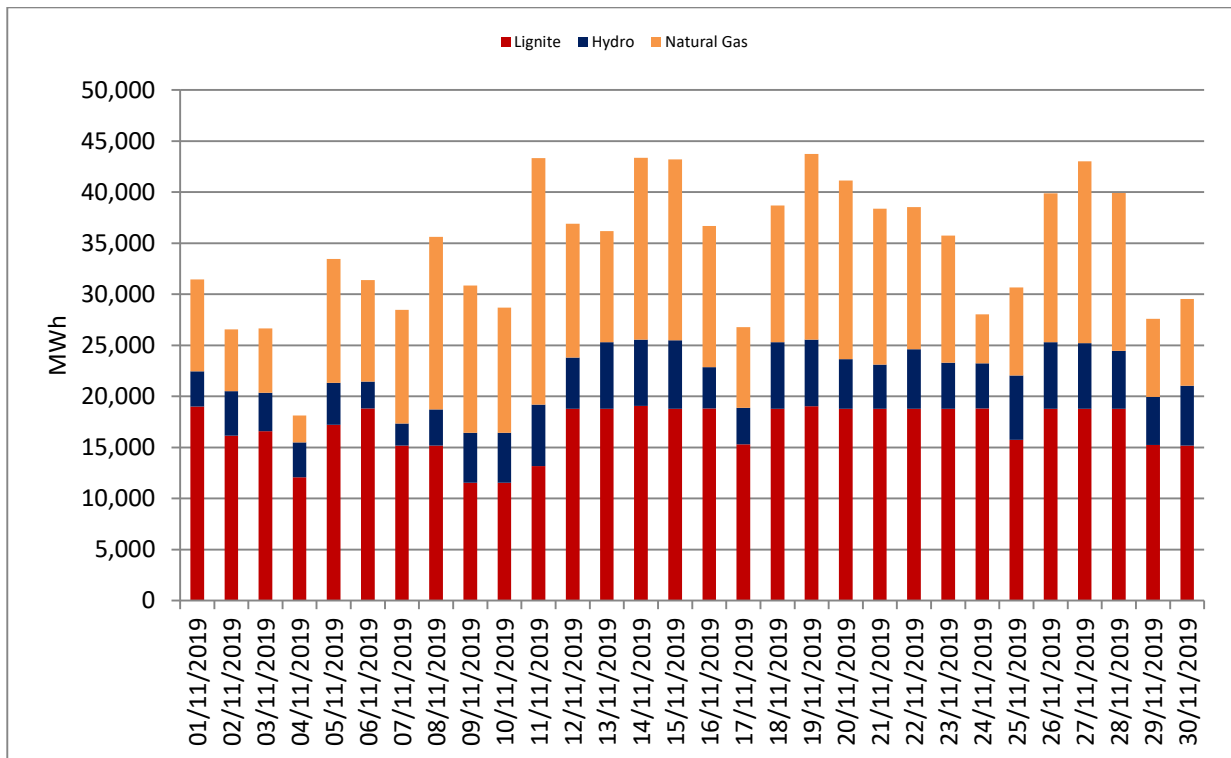


Figure 15: Daily production of PPC units per fuel type

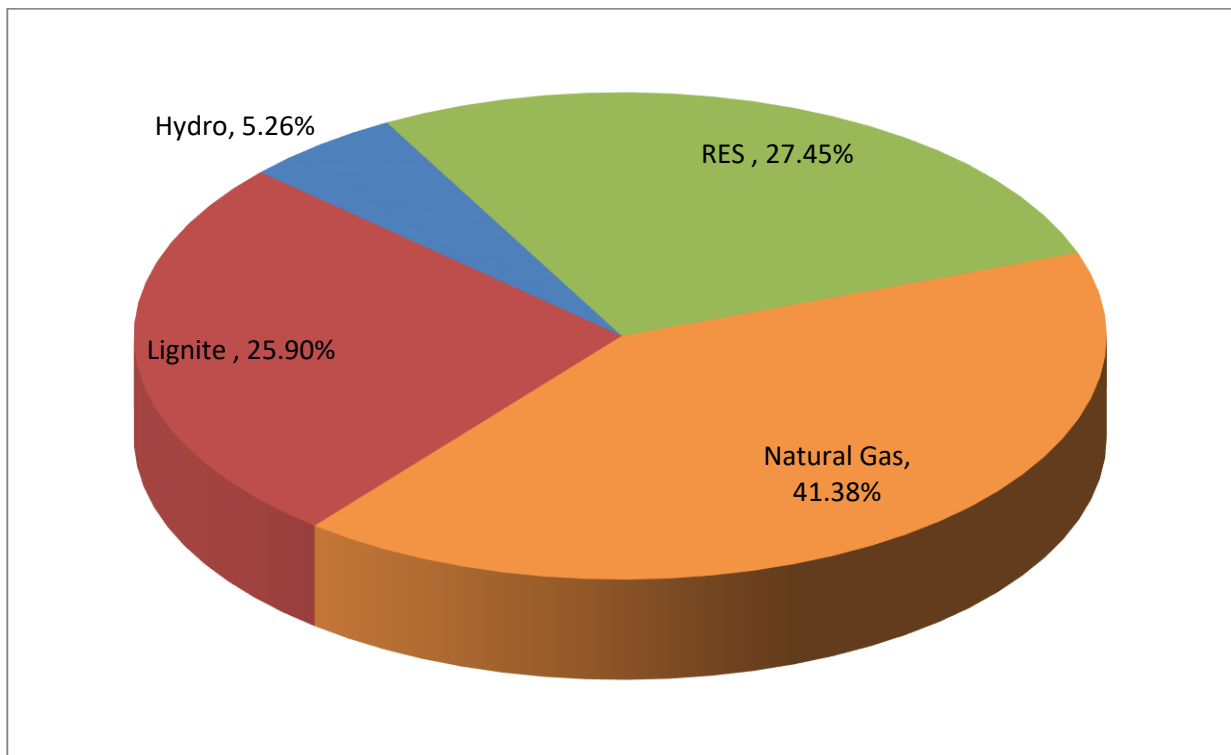


Figure 16: Percentage (%) of total Monthly Production per fuel type

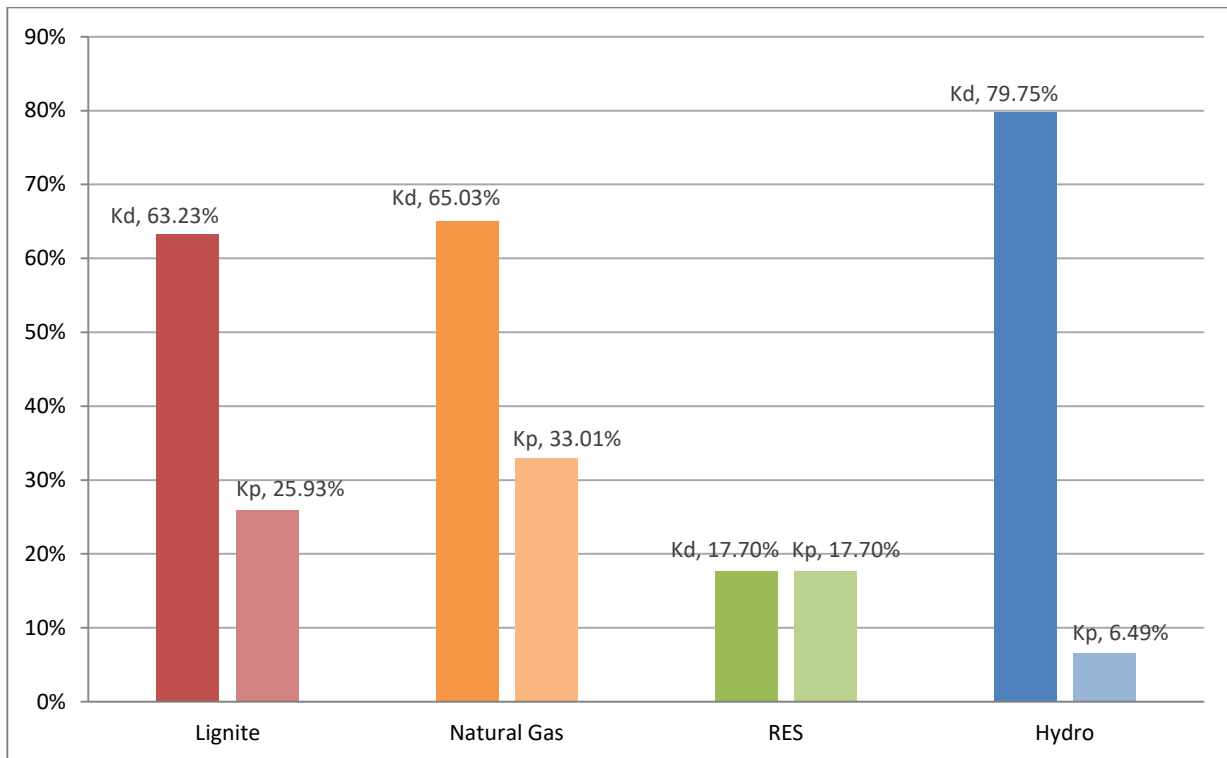


Figure 16a: Availability factor (Kd)\* and production factor (Kp)\*\* per fuel type at monthly level

\* Availability factor (Kd) per fuel type is defined as the ratio of the energy that could have been produced by the available capacity of all units per fuel type for a period of time to the energy that would have been produced by the same units and same period of time at full capacity.

\*\* Production factor (Kp) per fuel type is defined as the ratio of the energy produced by all units per fuel type during a given period of time to the energy that would have been produced by the same units and same period of time at full capacity.

## 4.2 Production and Credits per Participant

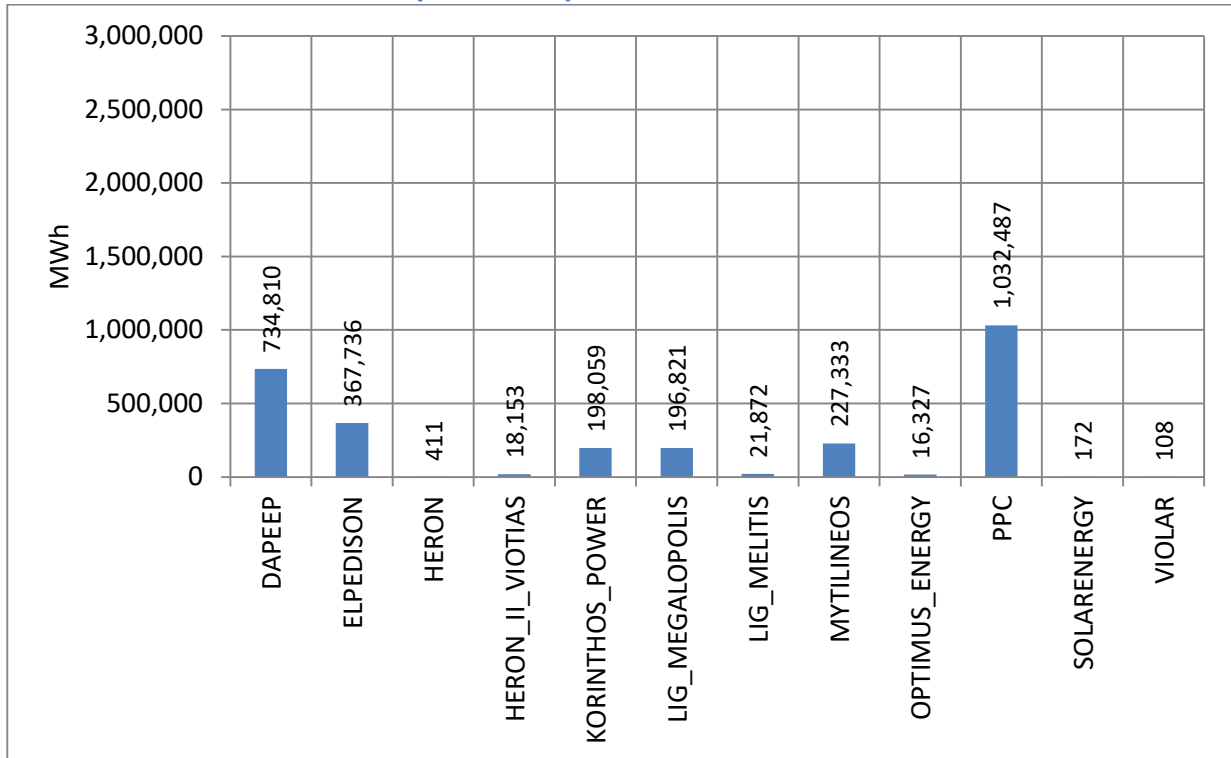


Figure 17: Monthly Production per Participant

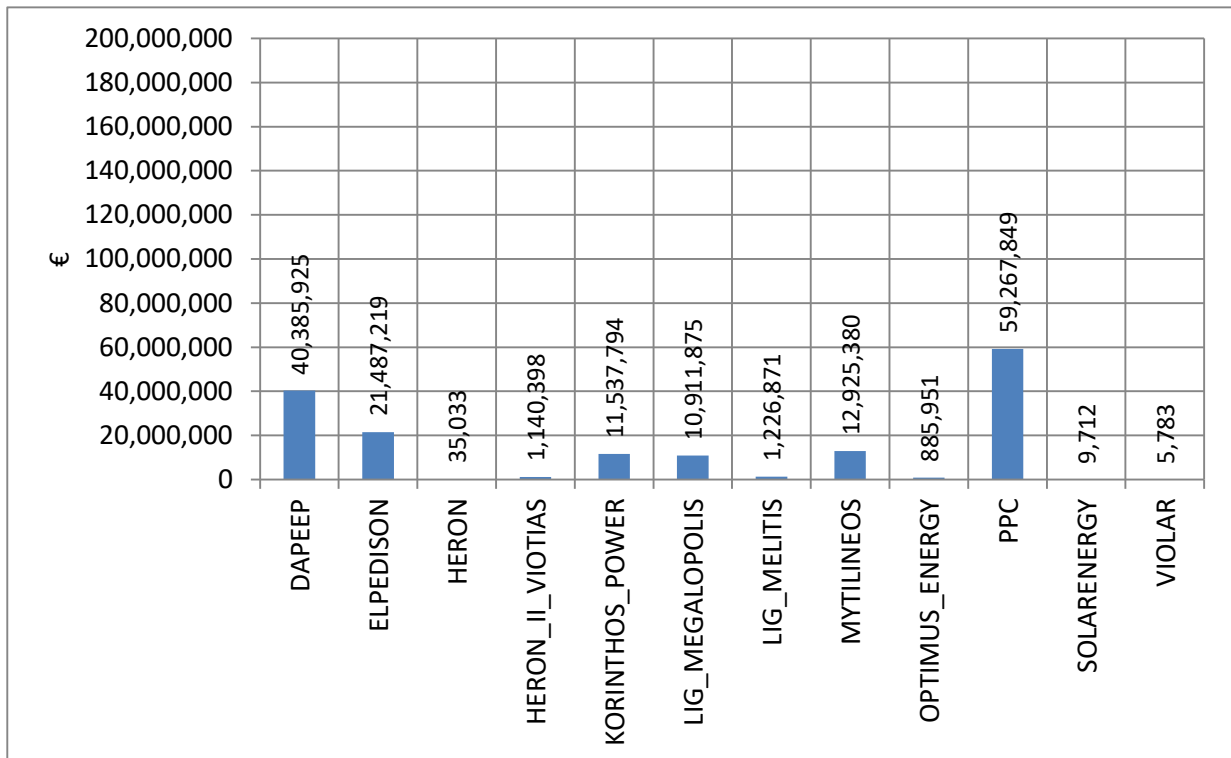


Figure 18: Monthly Production Credits per Participant

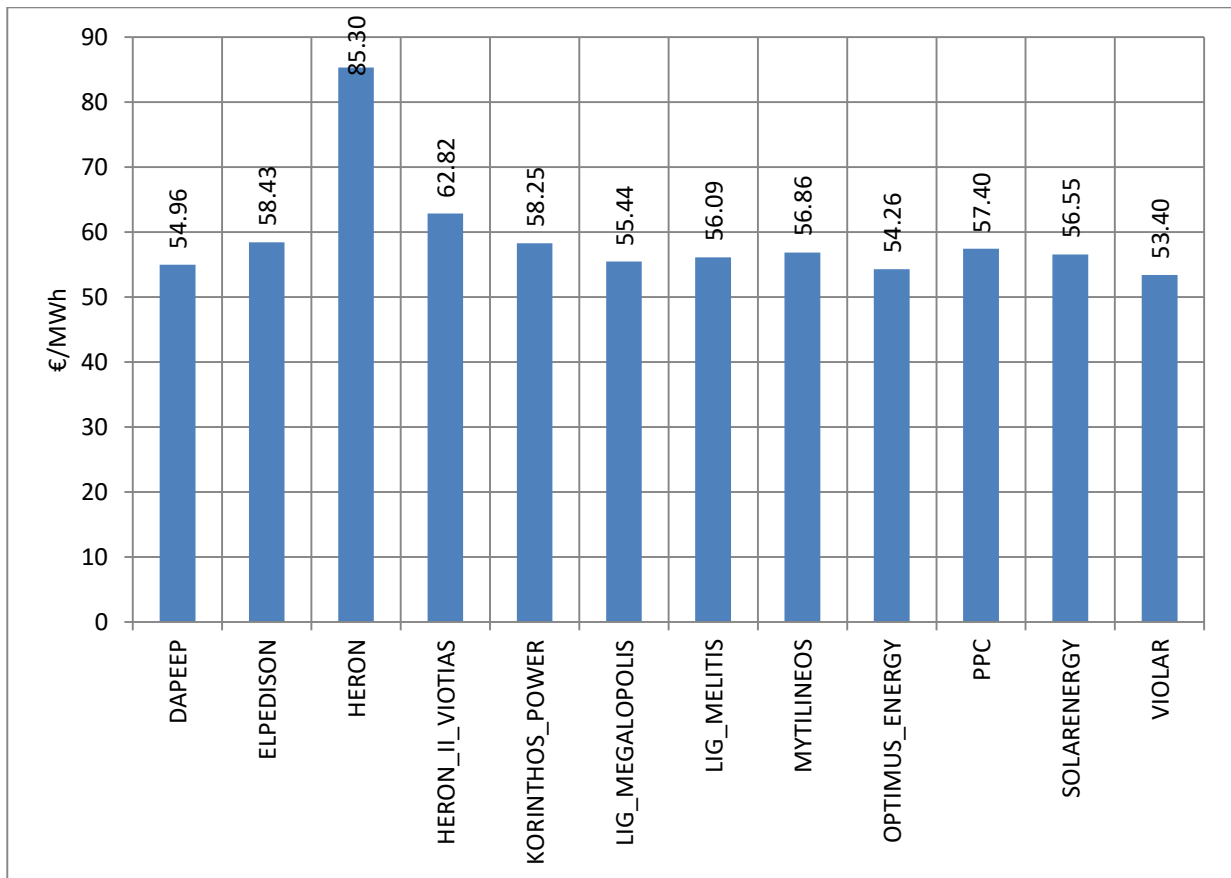


Figure 19: Monthly Credits / Monthly Production in €/MWh per Participant

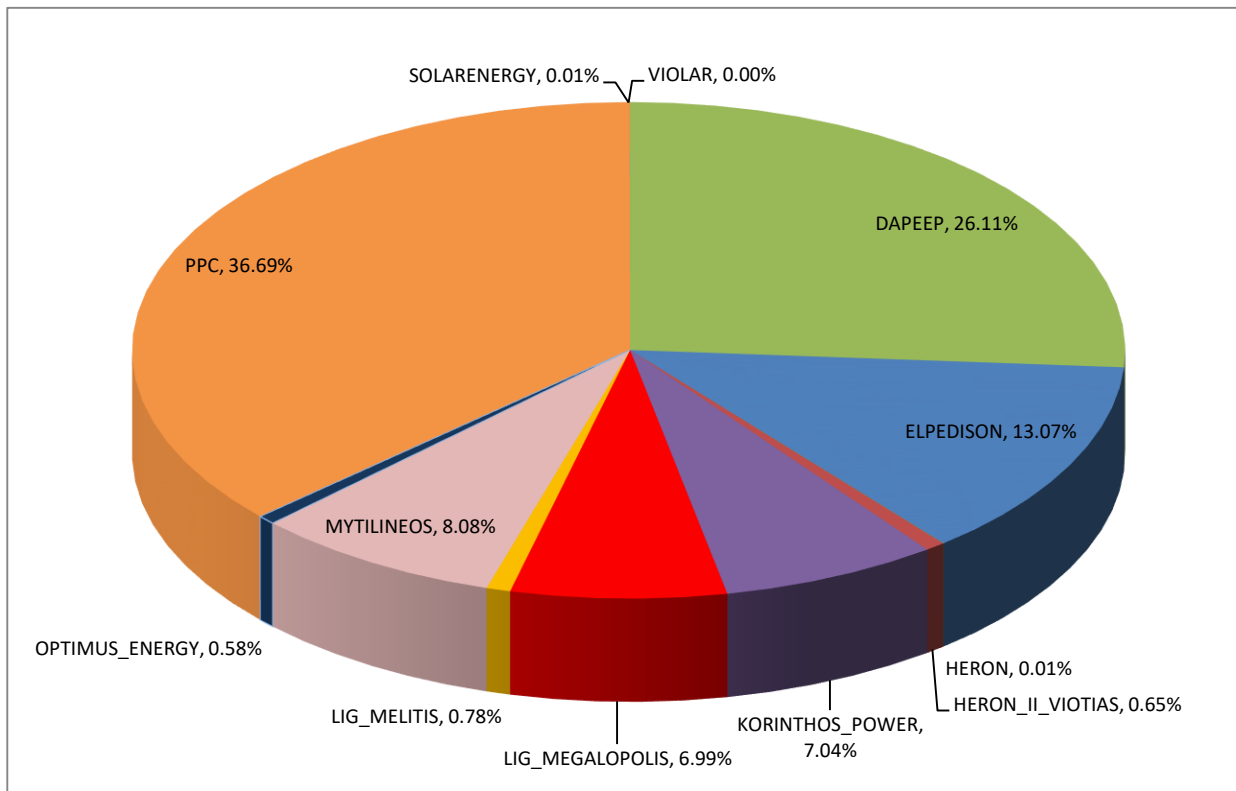


Figure 20: Percentage (%) of Total Monthly Production per Participant



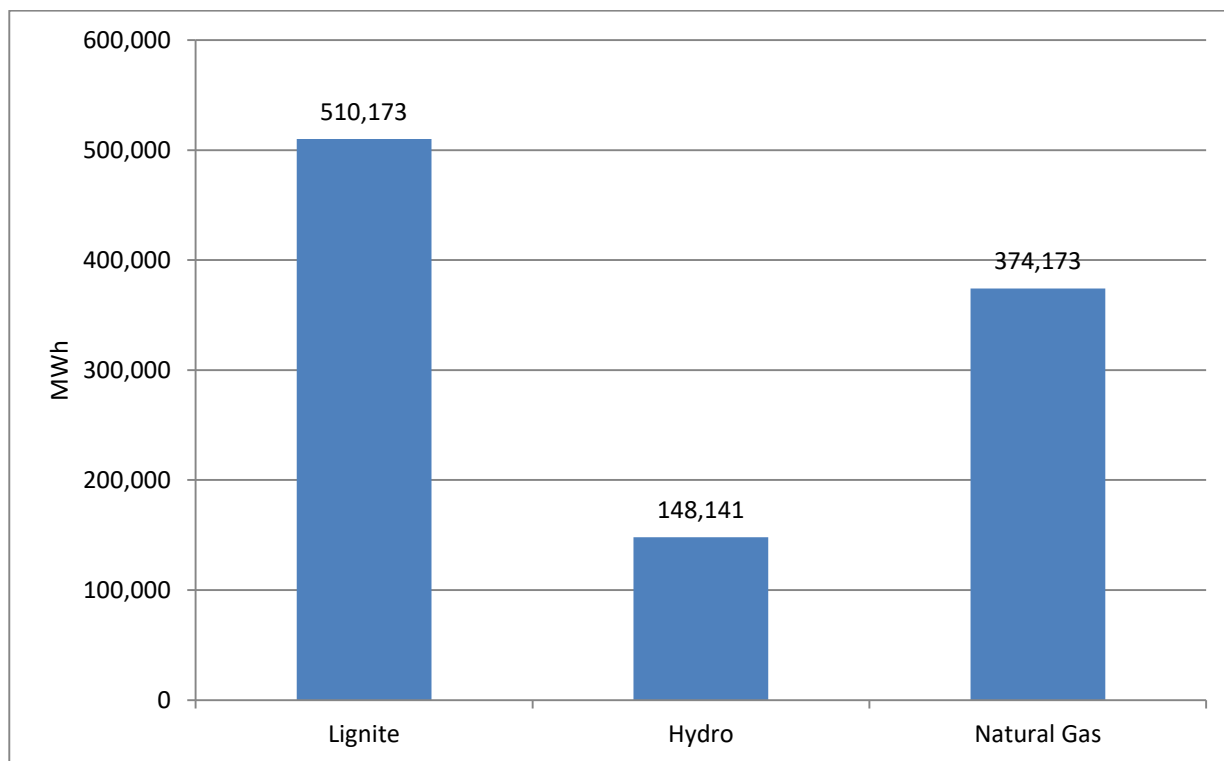


Figure 21: Monthly Production of PPC per fuel type

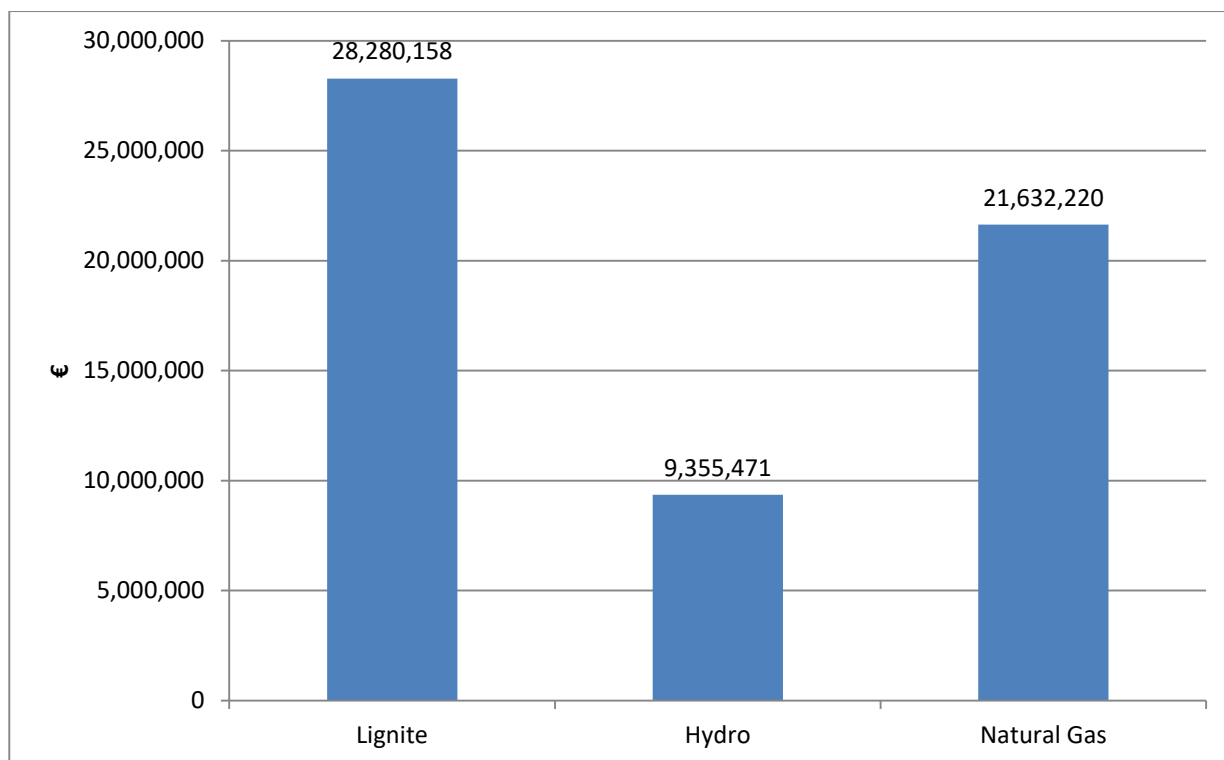


Figure 22: Monthly Credits of PPC per fuel type

### 4.3 Production per Participant, fuel type and operation status

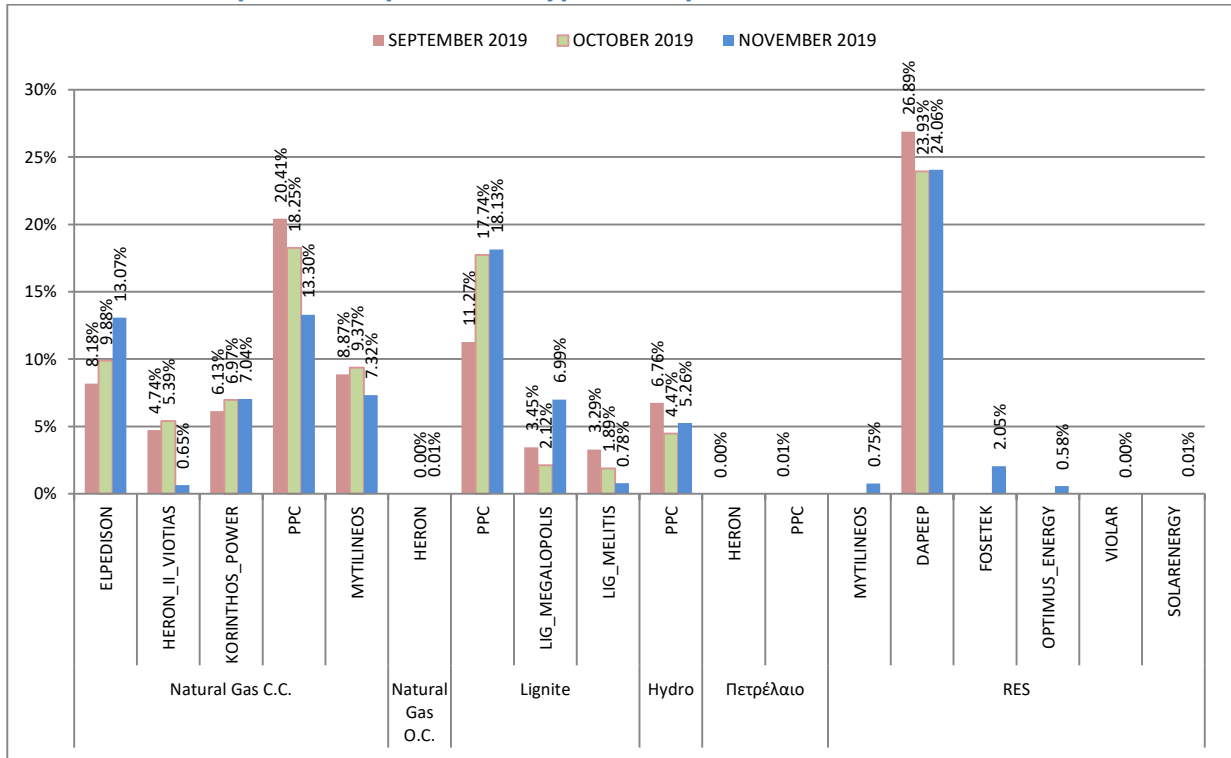


Figure 23: Percentage (%) of total Monthly Production per Participant and fuel type, in comparison to the previous months. DAPEEP percentage as FOSETEK is shown separately.

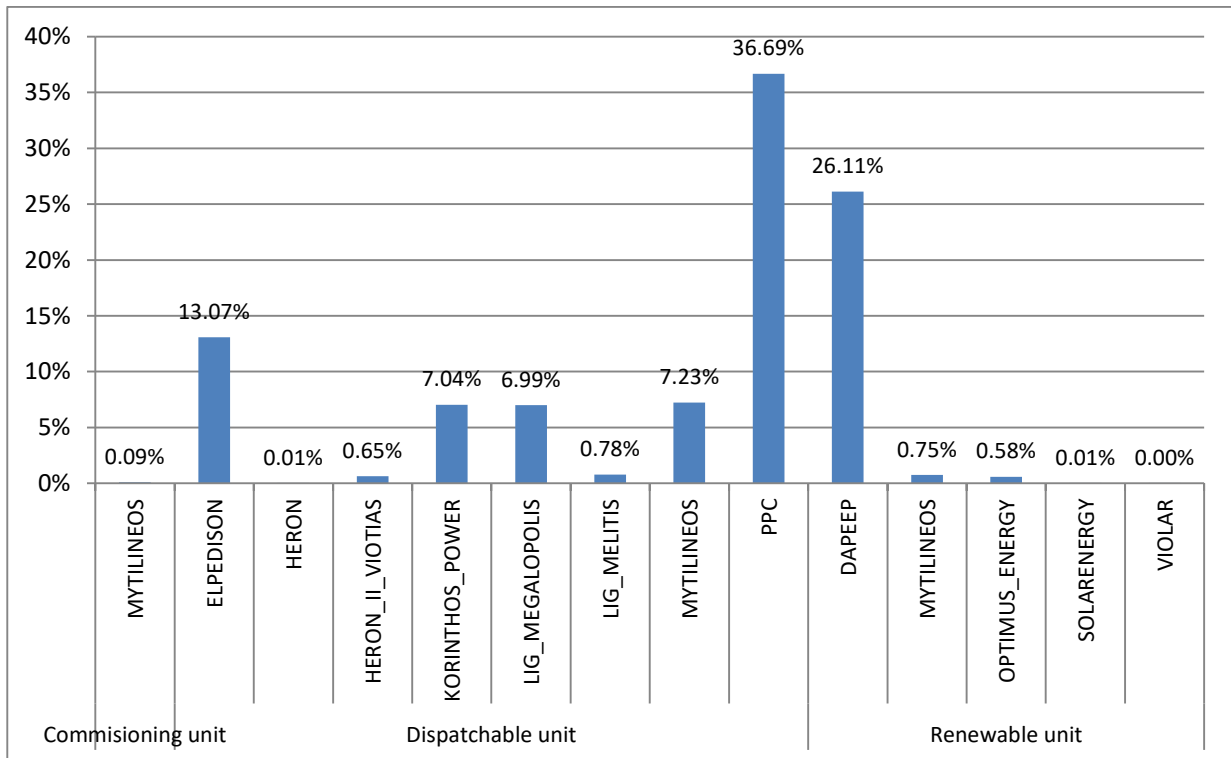


Figure 24: Percentage (%) of Total Production per Participant and operation status (testing operation, dispatchable unit, RES)

#### 4.4 Production and Credits per Unit

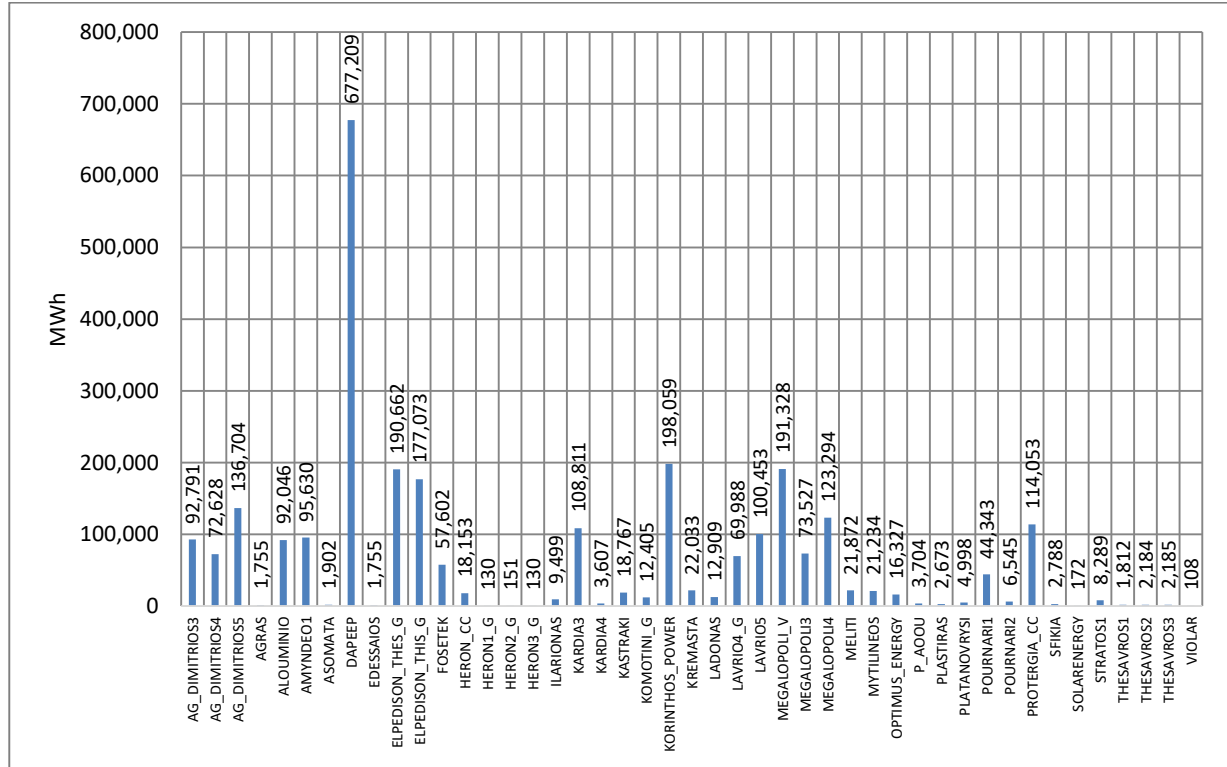


Figure 25: Monthly Energy per Unit

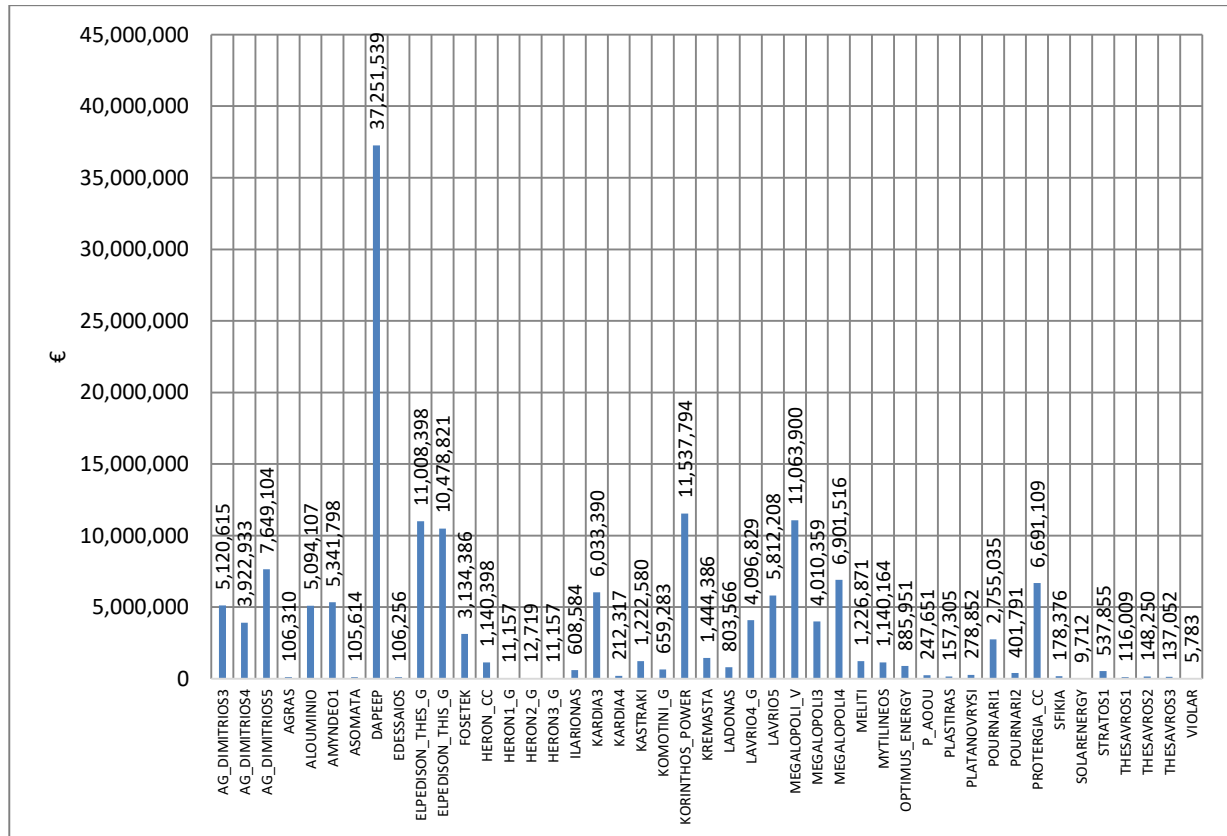


Figure 26: Monthly Credits per Unit and RES Aggregators

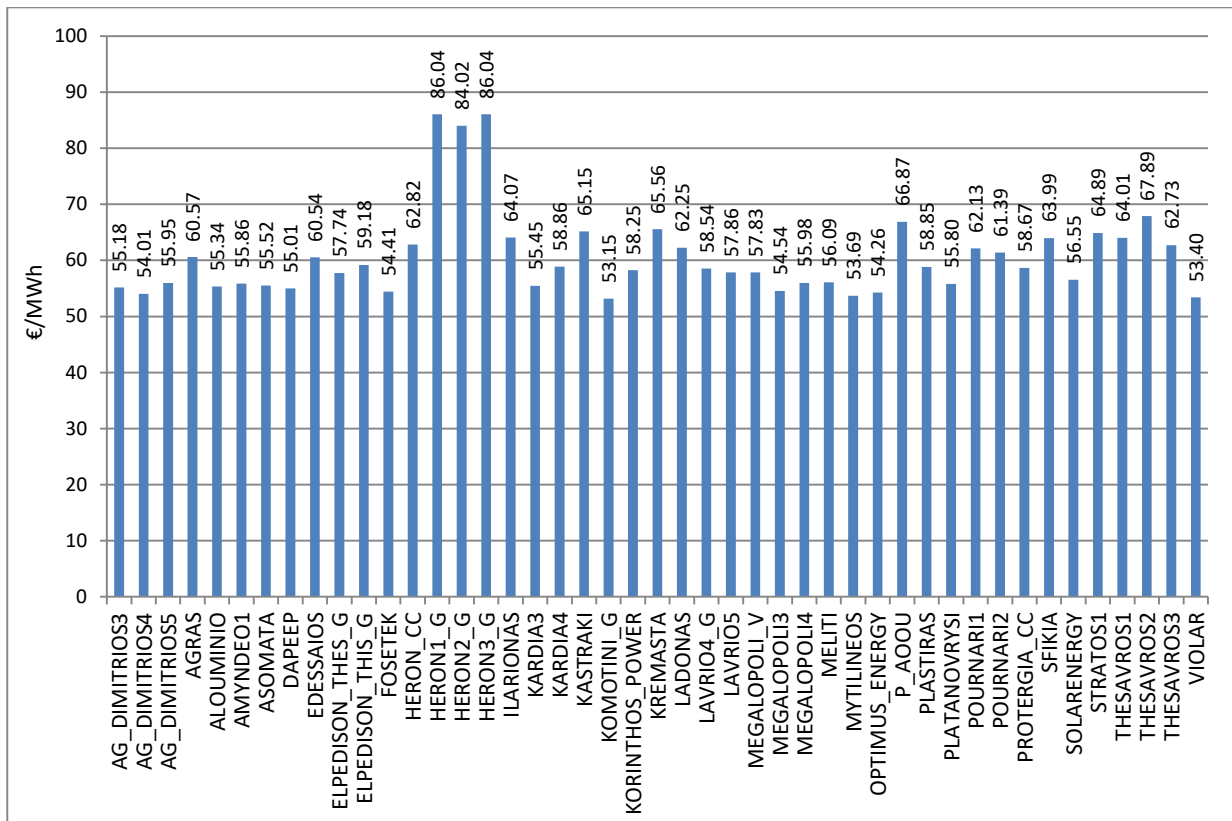


Figure 27: Monthly Credits/Monthly Production in €/MWh per Unit and RES Aggregators

## 5. Supply of Electricity

### 5.1 Load Declarations and Debits

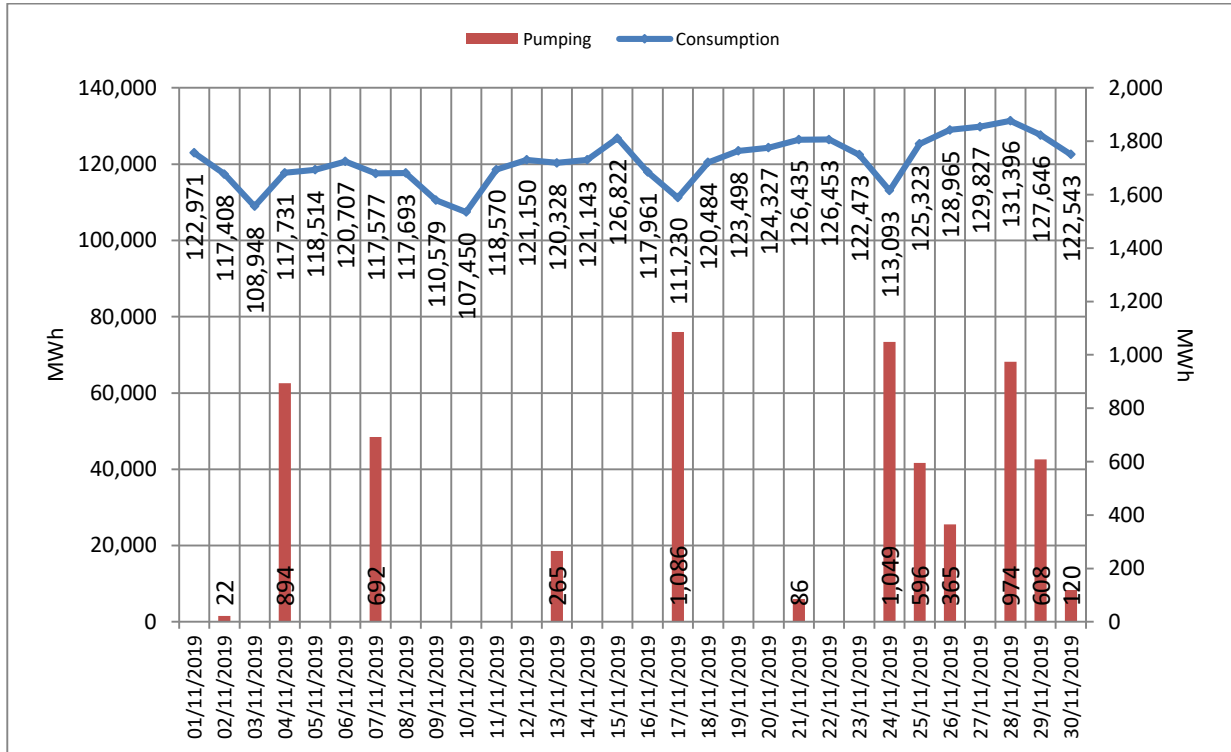


Figure 28: Daily Load Declarations and Pumping (MWh) (right axis represents pumping operation)

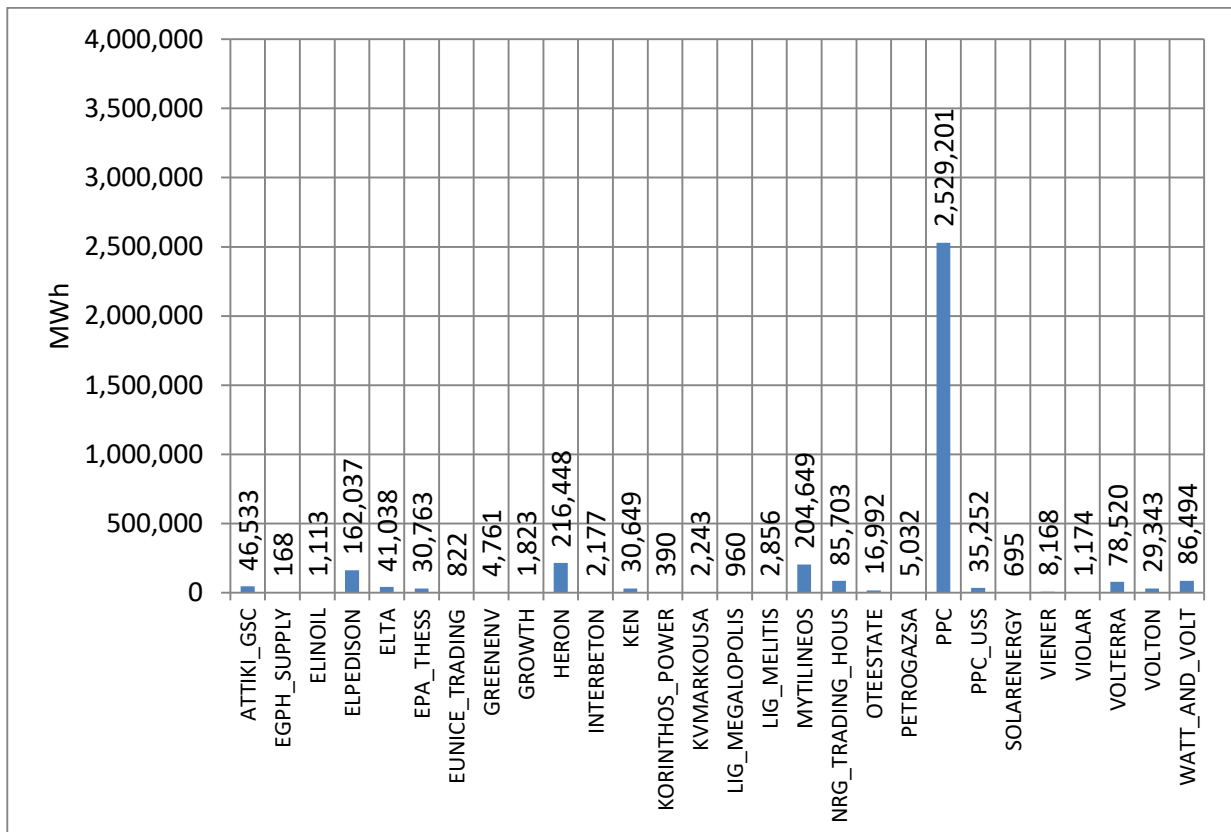


Figure 29: Monthly Supply per Participant

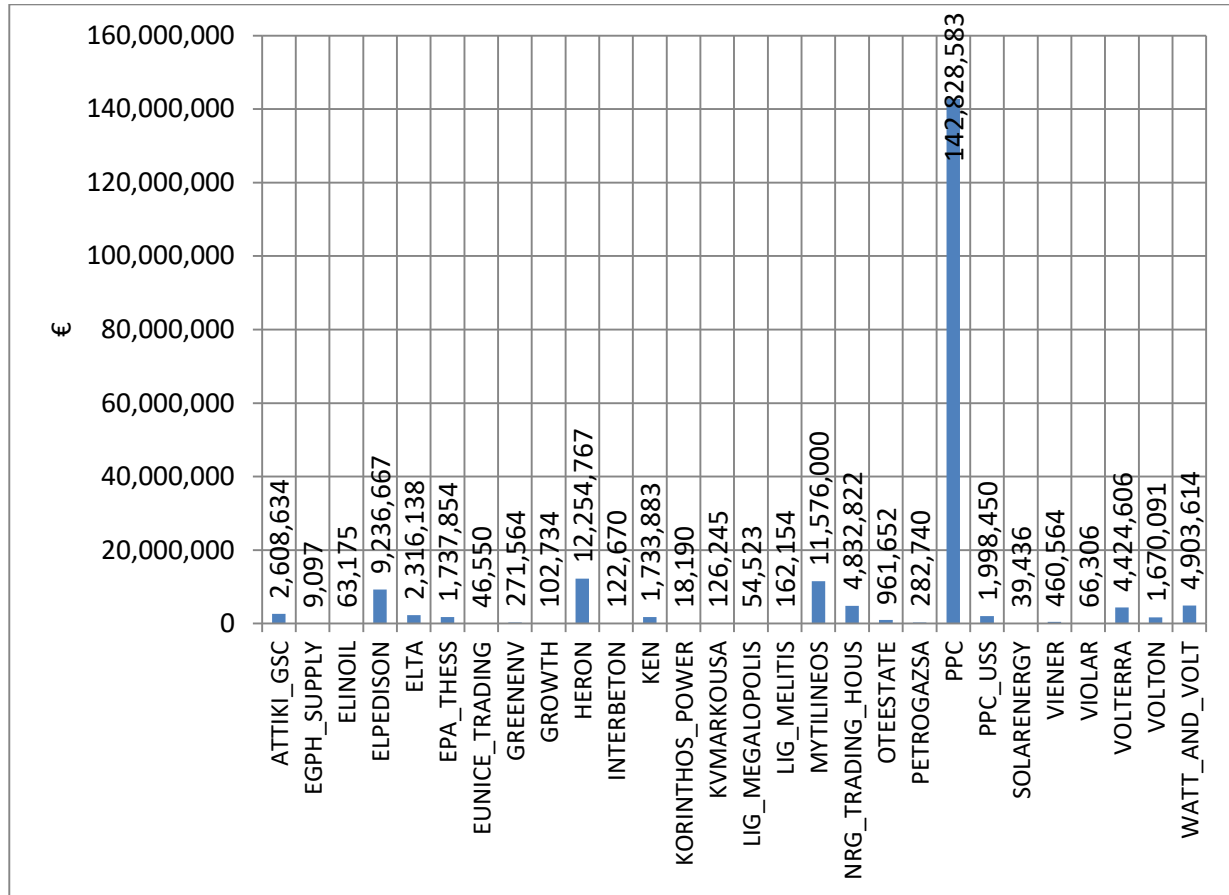


Figure 30: Monthly Supply Debits per Participant

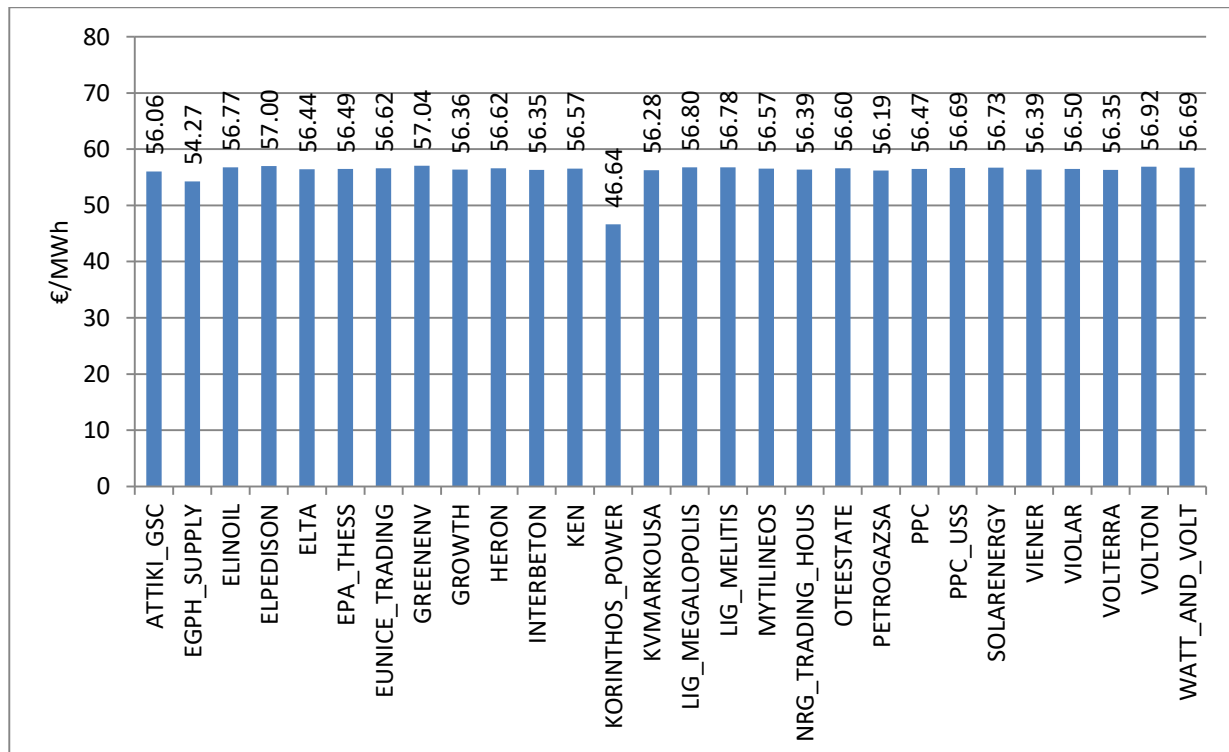


Figure 31: Monthly Debits / Monthly Supply in €/MWh per Participant

## 5.2 Analysis on Supply per Participant, Load Zone and Voltage Level

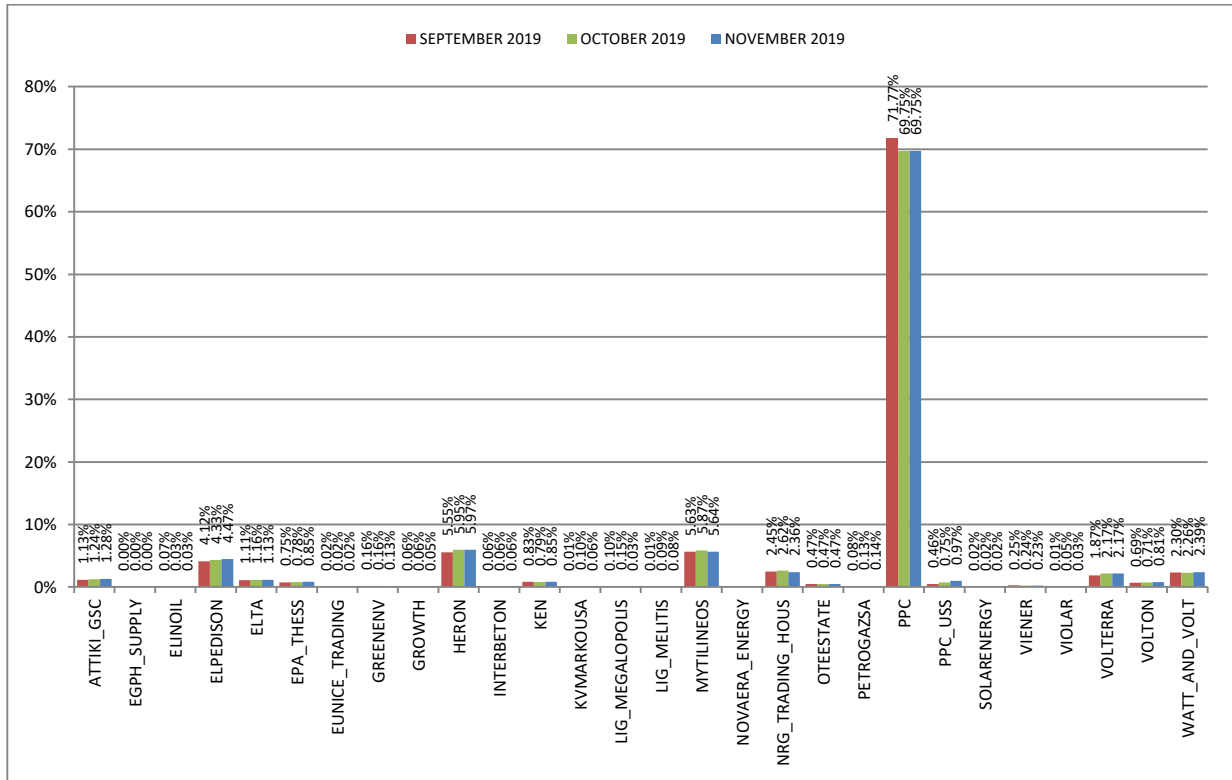


Figure 32: Percentage (%) of Total Monthly Supply per Participant in comparison with the two last months

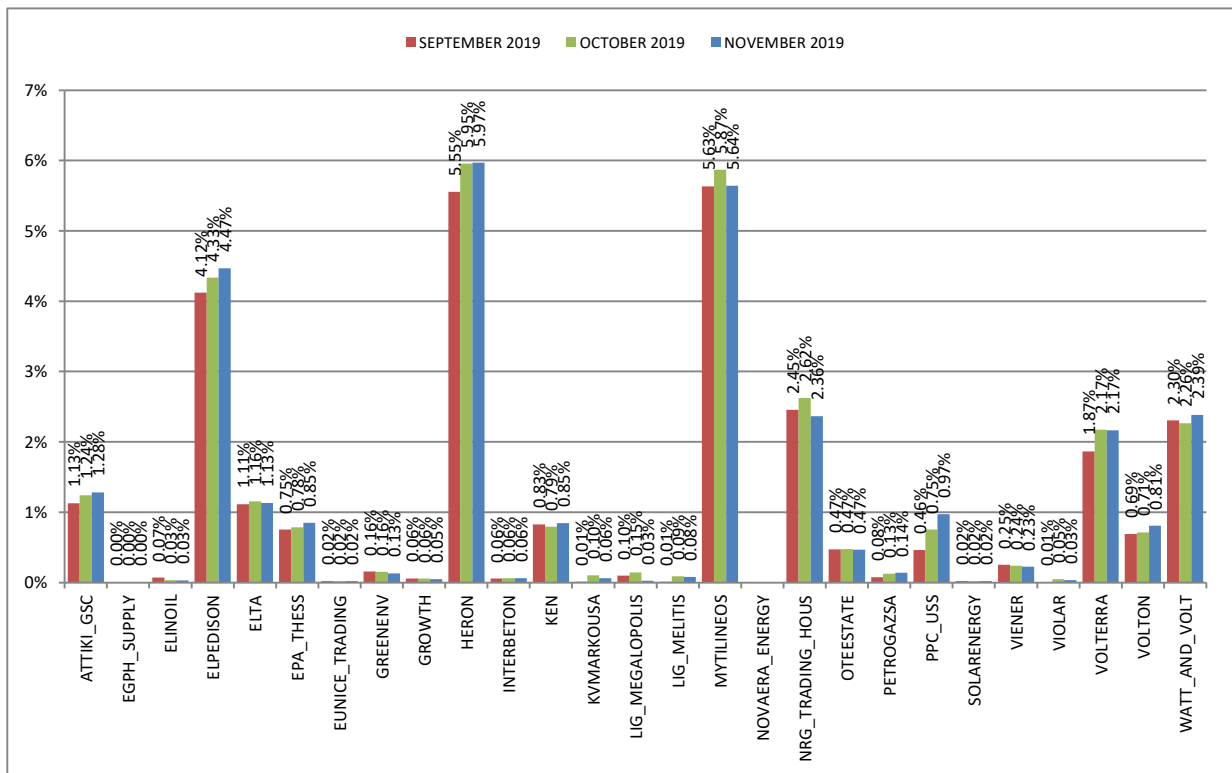


Figure 32a: Percentage (%) of Total Monthly Supply per Participant (without PPC) in comparison with the two last months.

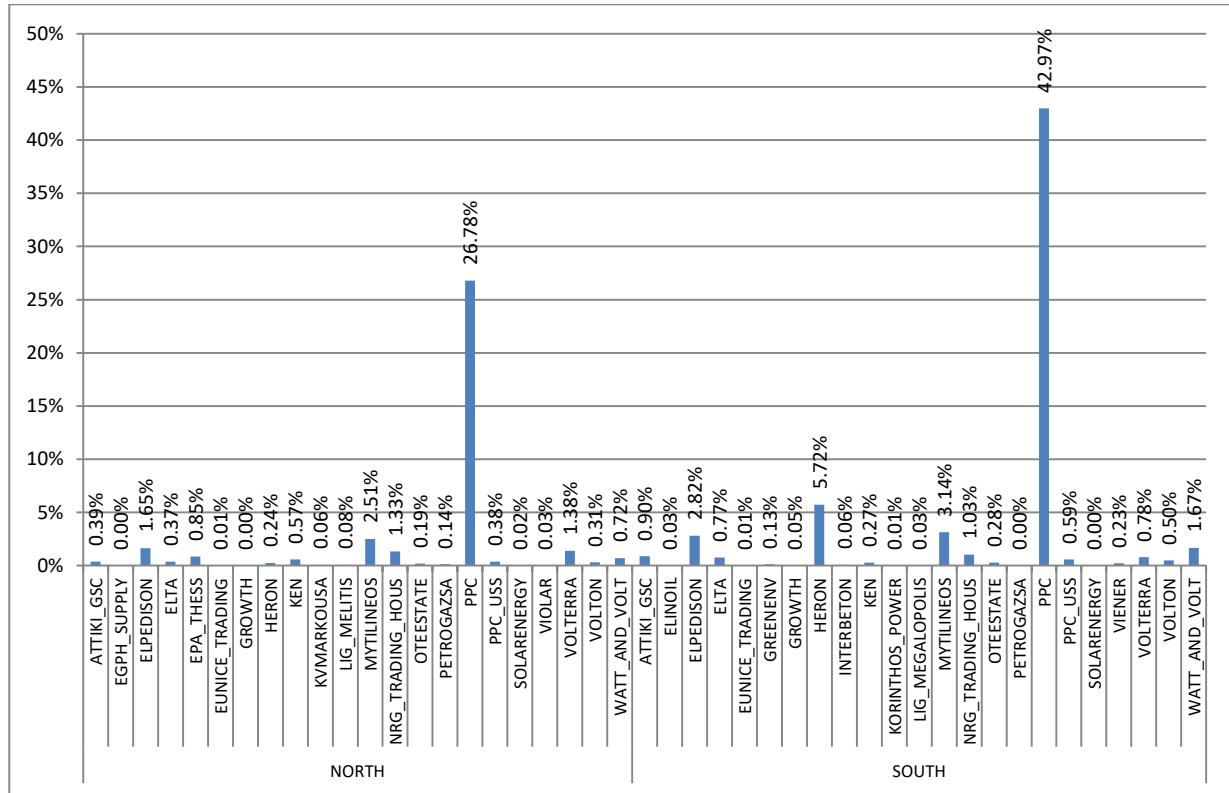


Figure 33: Percentage (%) of Total Monthly Supply per Participant and Zone

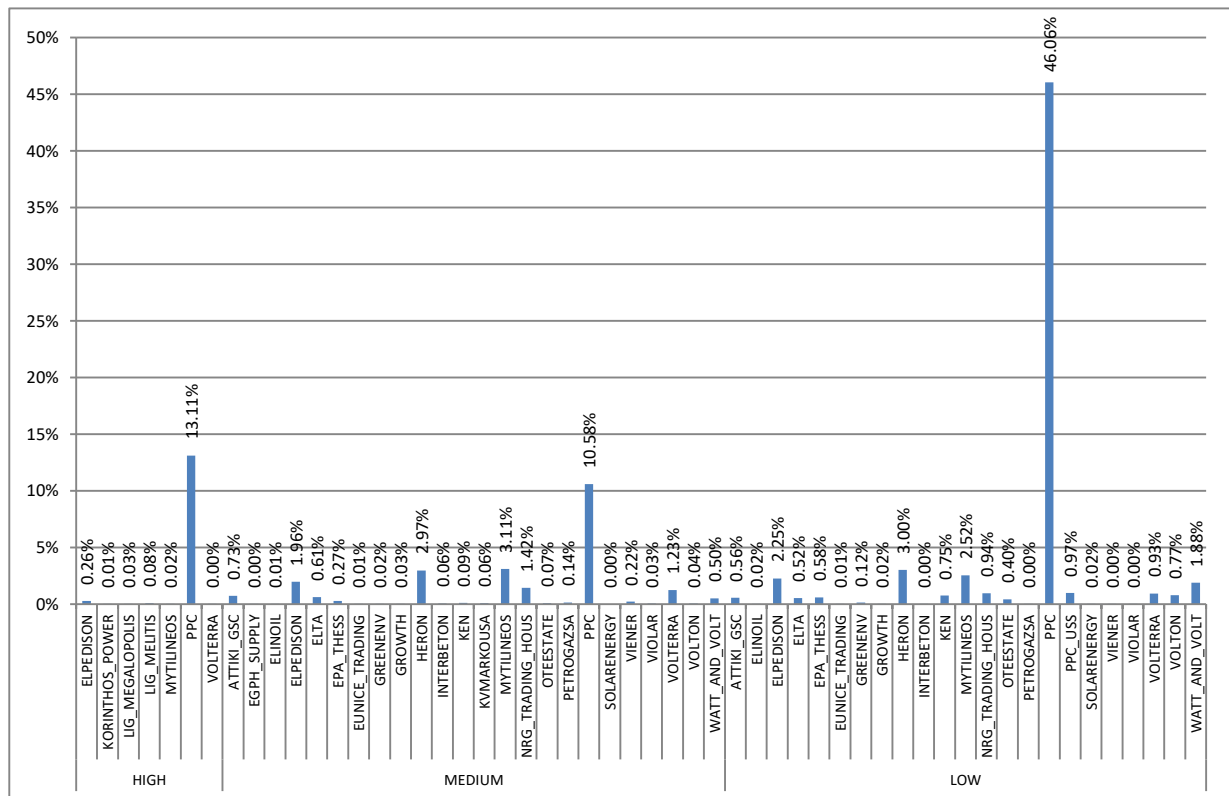


Figure 34: Percentage (%) of Total Monthly Supply per Participant and Voltage Level



## 6. Electricity Trading

### 6.1 Imports

	Total	Albania	Bulgaria	Italy	F.Y.R.O.M.	Turkey
<b>Daily Average Imports</b>	31,413	5,180	14,227	6,551	7,329	1,445
<b>Total Monthly Imports</b>	942,380	155,396	327,224	196,535	219,885	43,339

Table 4: Daily Average and Total Monthly Imports per Interconnection (MWh)

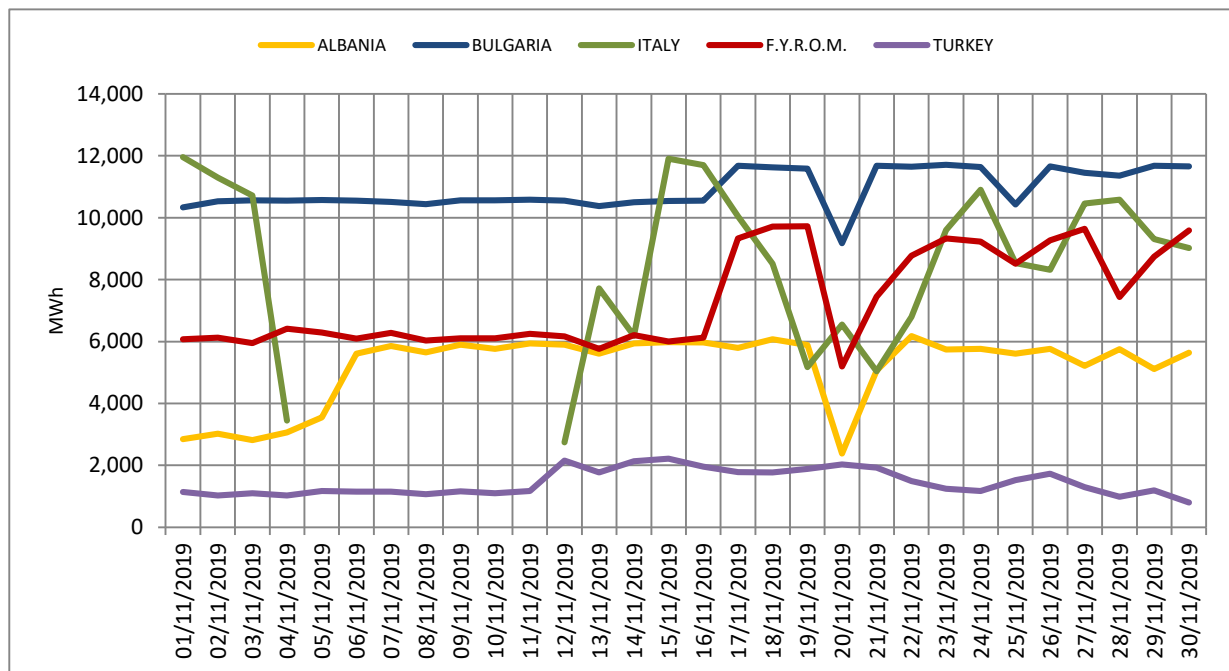


Figure 35: Daily Imports per Interconnection

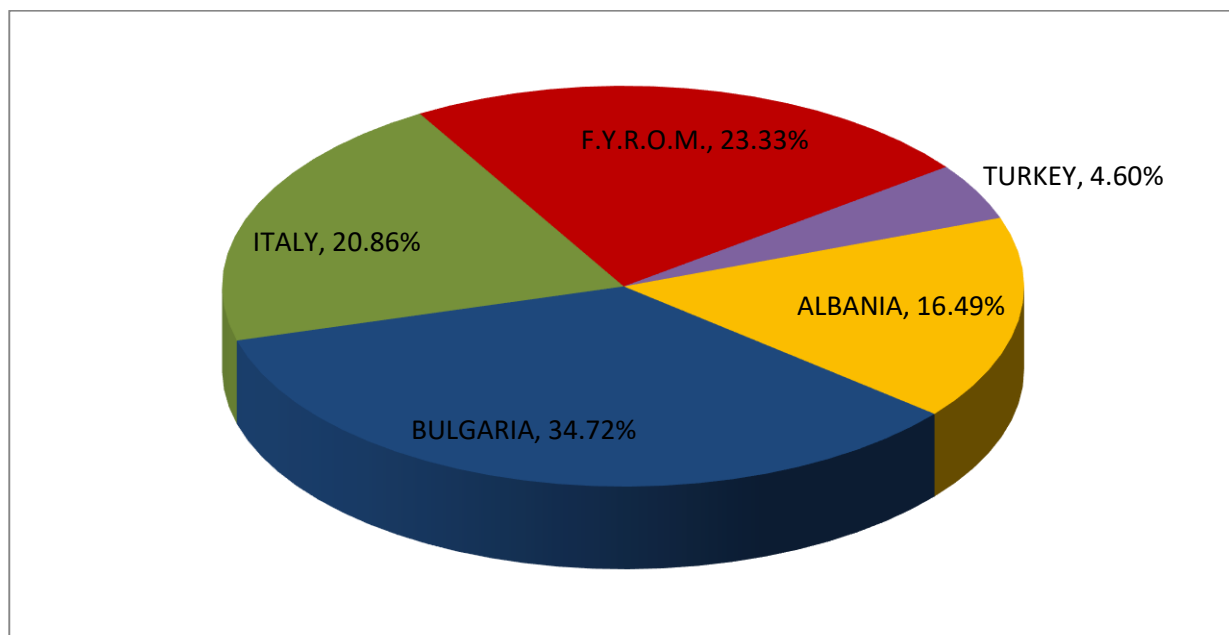


Figure 36: Percentage (%) of Monthly Imports per Interconnection

## 6.2 Exports

	Total	Albania	Bulgaria	Italy	F.Y.R.O.M.	Turkey
<b>Daily Average Exports</b>	4,356	2,213	67	1,948	639	625
<b>Total Monthly Exports</b>	130,667	35,407	1,469	58,427	16,606	18,757

Table 5: Daily Average and Total Monthly Exports per Interconnection (MWh)

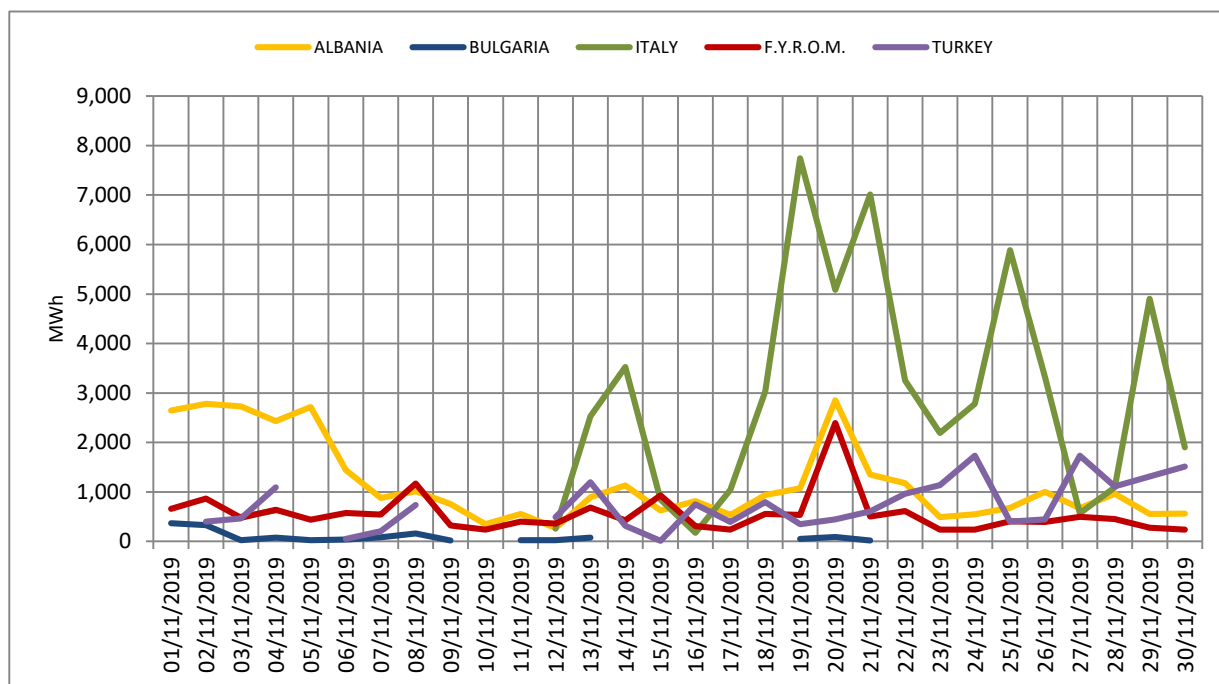


Figure 37: Daily Exports per Interconnection (MWh)

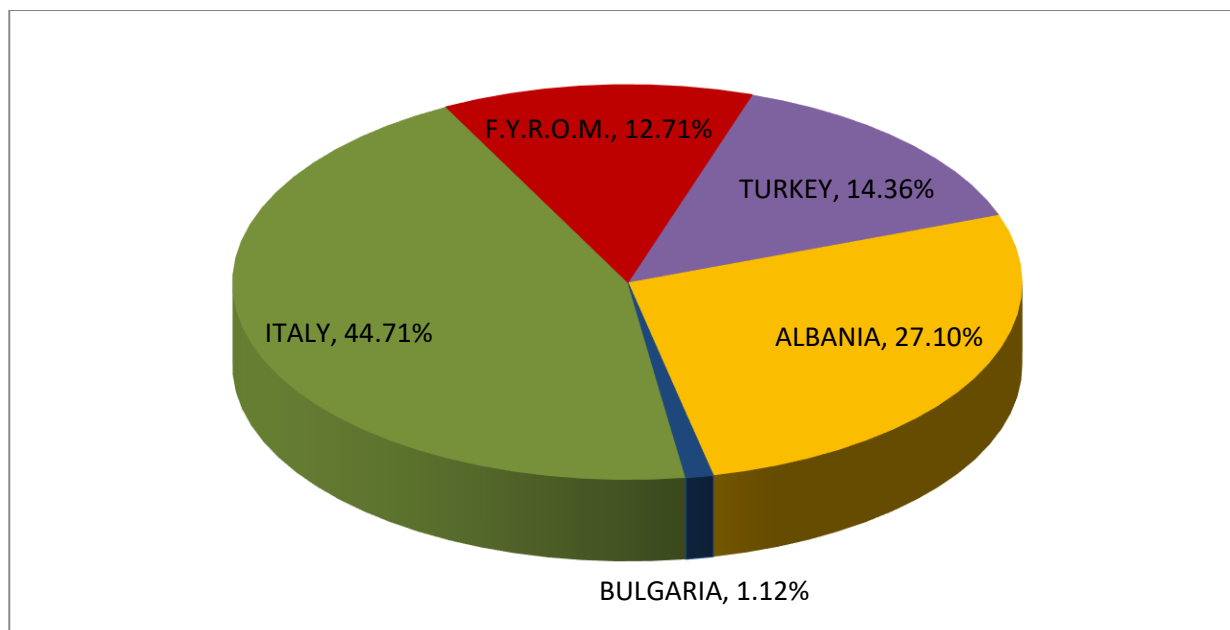


Figure 38: Percentage (%) of Monthly Electricity Exports per Interconnection

### 6.3 Electricity Transit

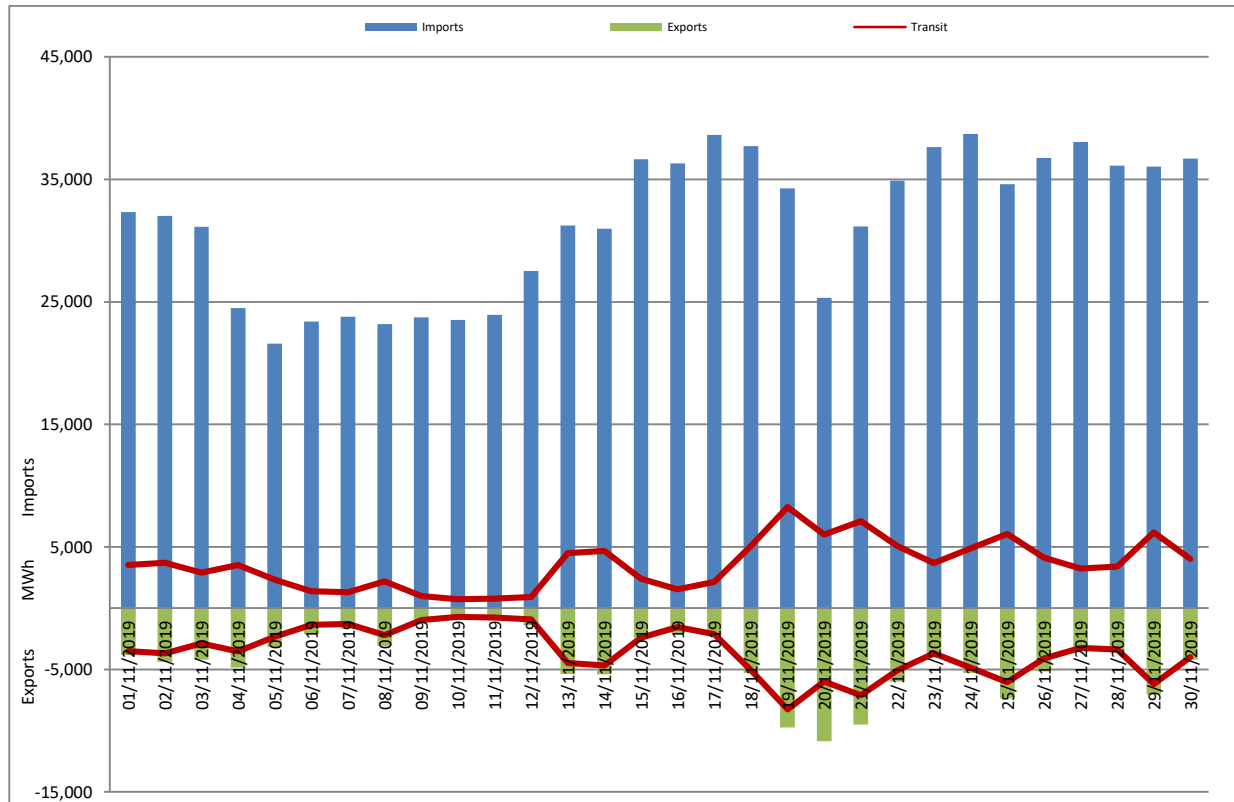


Figure 39: Daily Transit\*

\* Energy Transit shall mean the concurrent, namely during the same Dispatch Period, Import and Export of energy by the same participant, regardless of the capacity in which such Participant carries out such concurrent Import and Export. The energy quantity transited by a Participant during a Dispatch Period shall be calculated as the minimum between the absolute value of all Imports and the absolute value of all Exports performed by such Participant in the same Dispatch Period.

Source: Power Exchange Code for Electricity, Article 81

#### 6.4 Net Position of Interconnections Balance

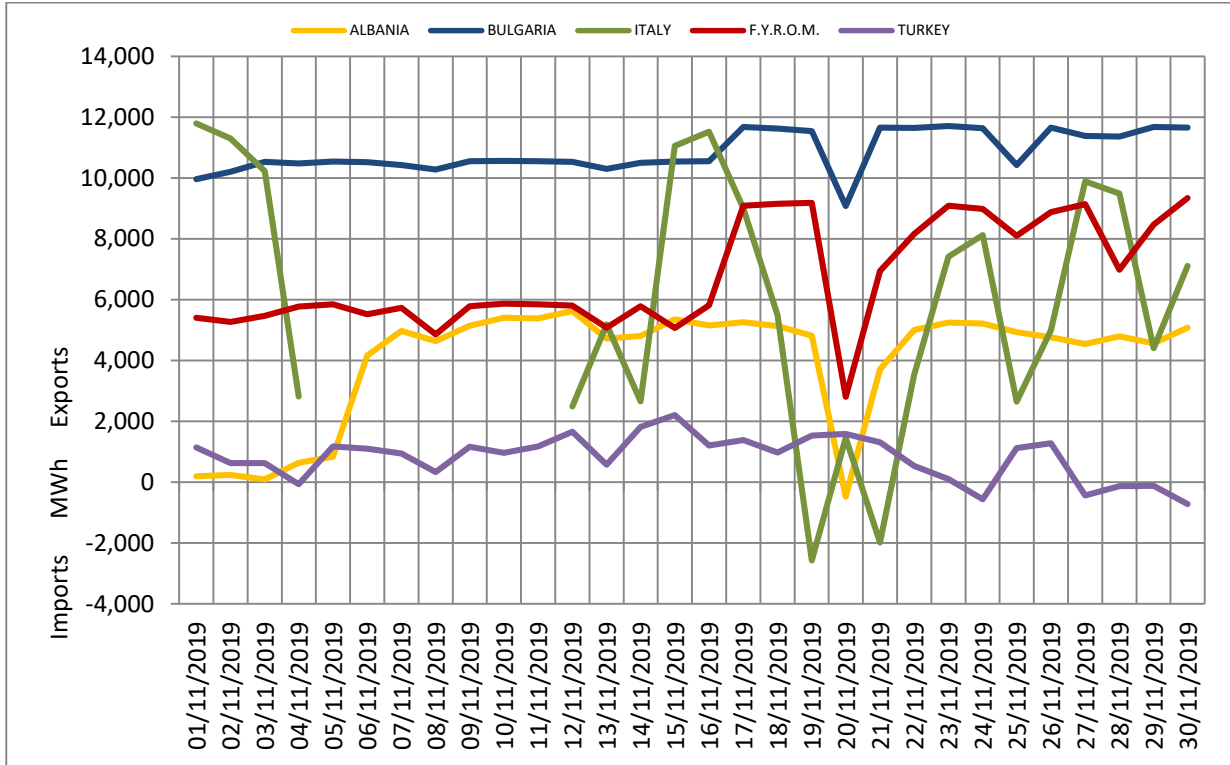


Figure 40: Daily Net Position of Interconnections (Imports-Exports), (positive values: more Imports, negative values: more Exports)

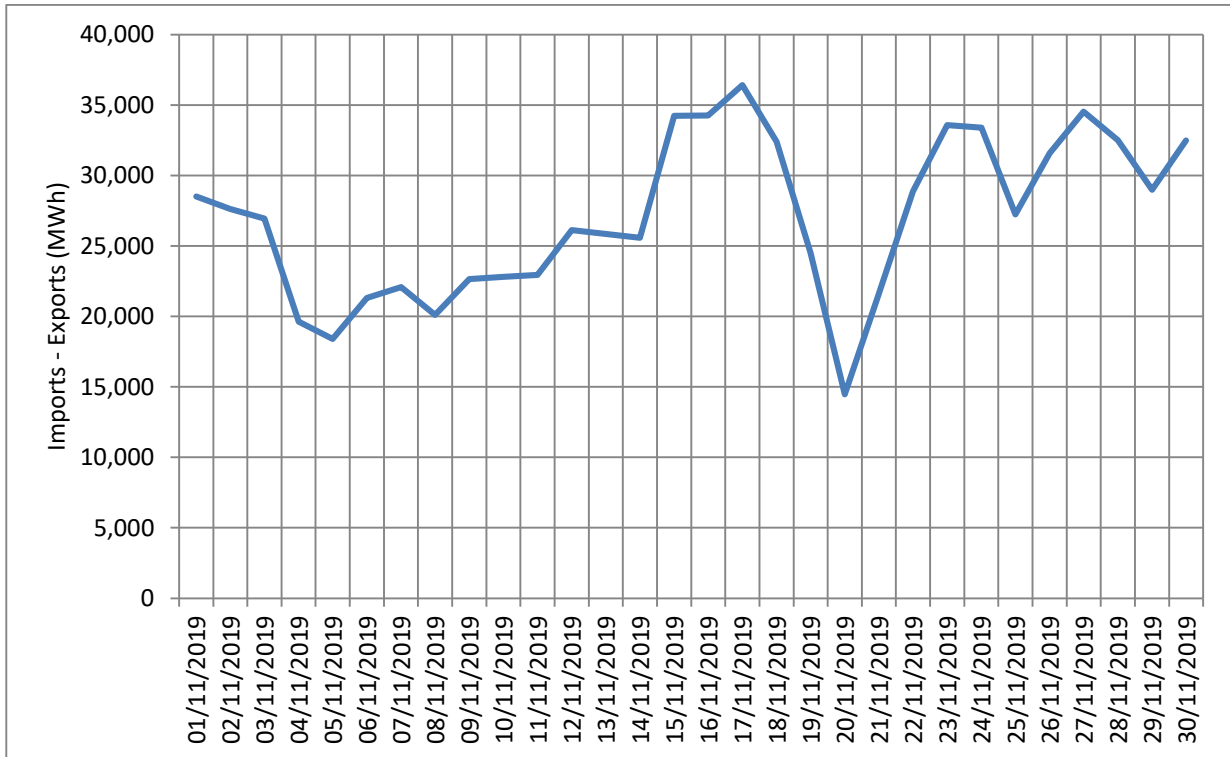


Figure 41: Daily Net Position of all Interconnections (Imports - Exports)

## 6.5 Analysis on Trading per Participant and Interconnection

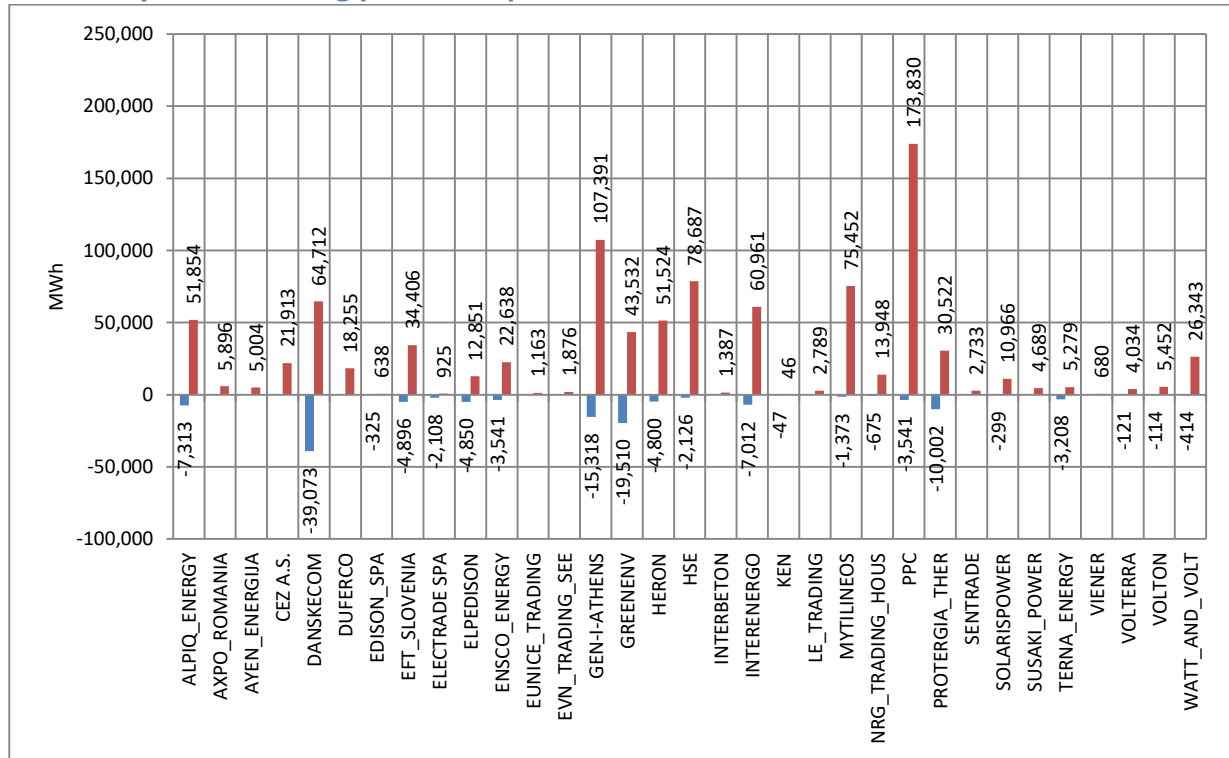


Figure 42: Monthly Trading per Participant and activity (positive values: Imports, negative values: Exports)

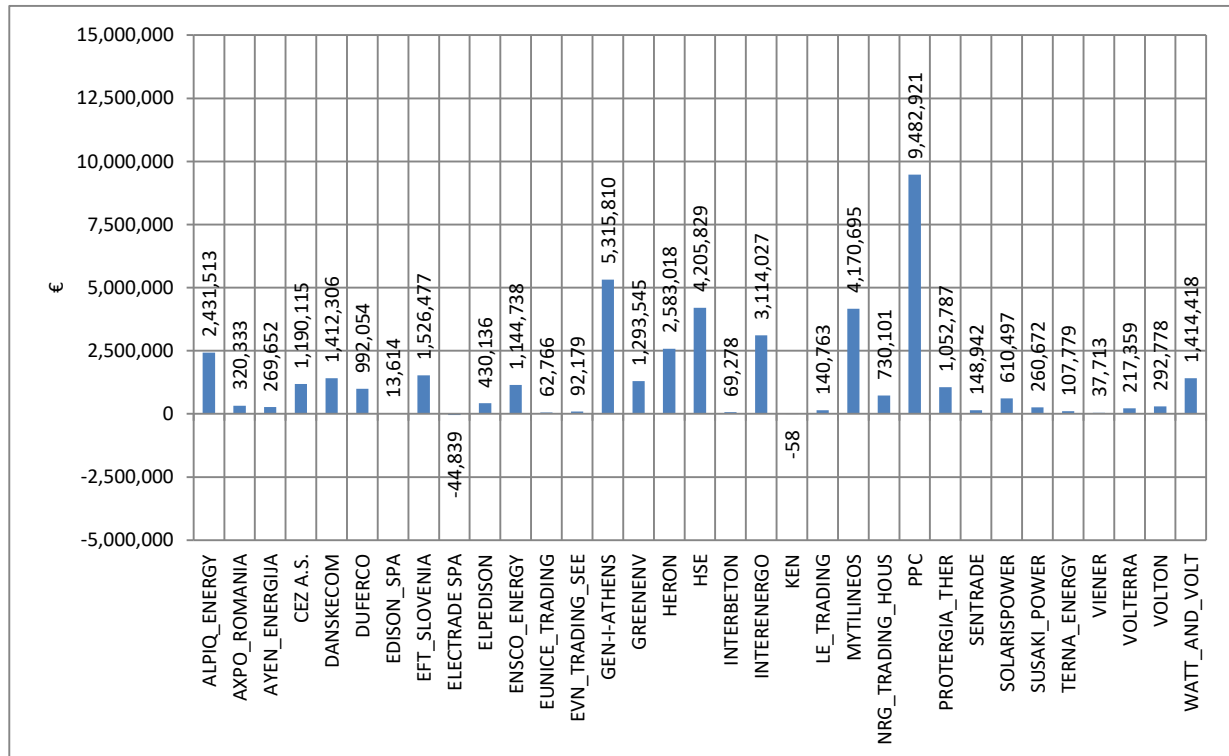


Figure 43: Trading Credits/Debits per Participant (positive values: Credits, negative values: Debits)

## 6.6 Wrong Direction Energy Flows

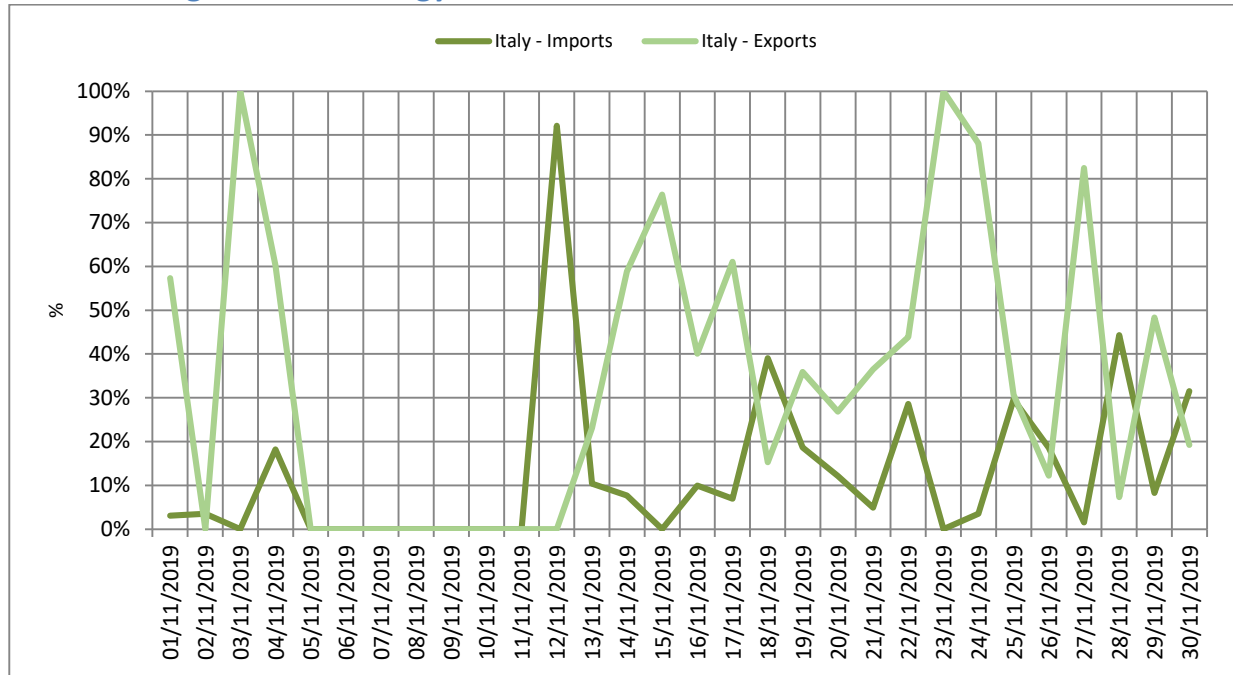


Figure 44: Daily percentage (%) of indicative wrong direction energy flows\* as part of the realized imports/exports for the interconnection of Greece-Italy, which would not get implemented under market coupling

\*As indicative wrong energy flow is defined the energy flow from a bidding zone with higher price to a bidding zone with lower price. The above values of energy trading are calculated based on the Short-Term Capacity Rights.

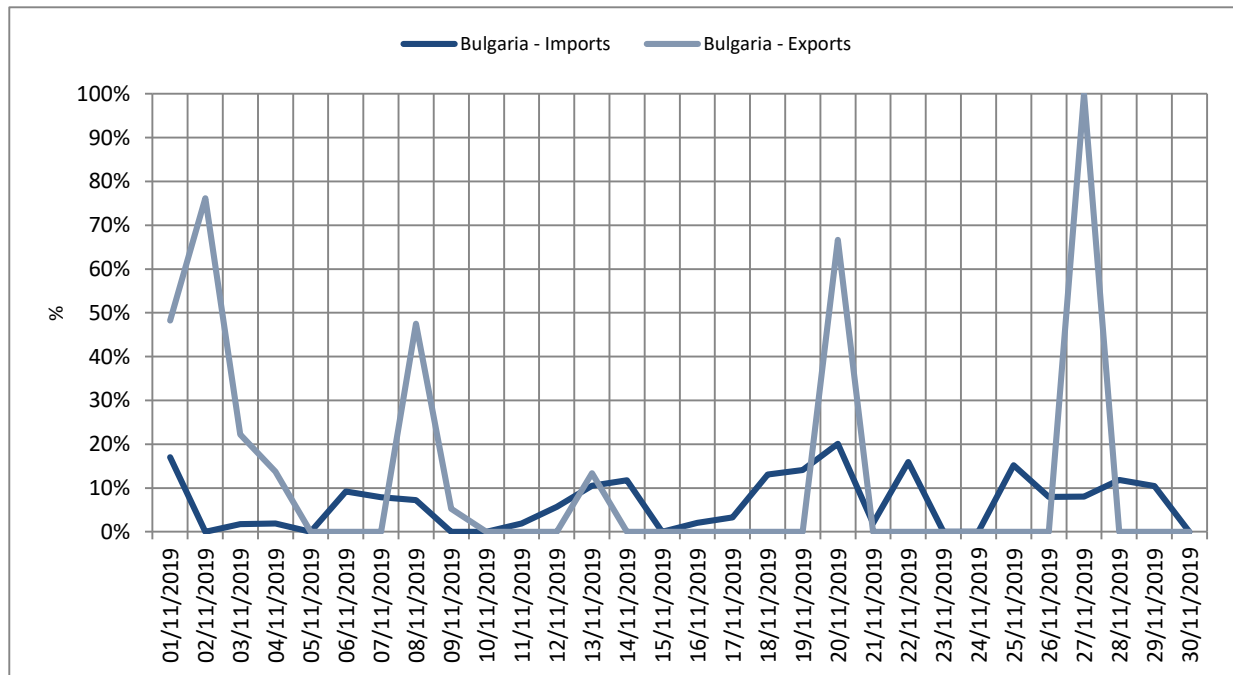


Figure 45: Daily percentage (%) of indicative wrong direction energy flows\* as part of the realized imports/exports for the interconnection of Greece-Bulgaria, which would not get implemented under market coupling

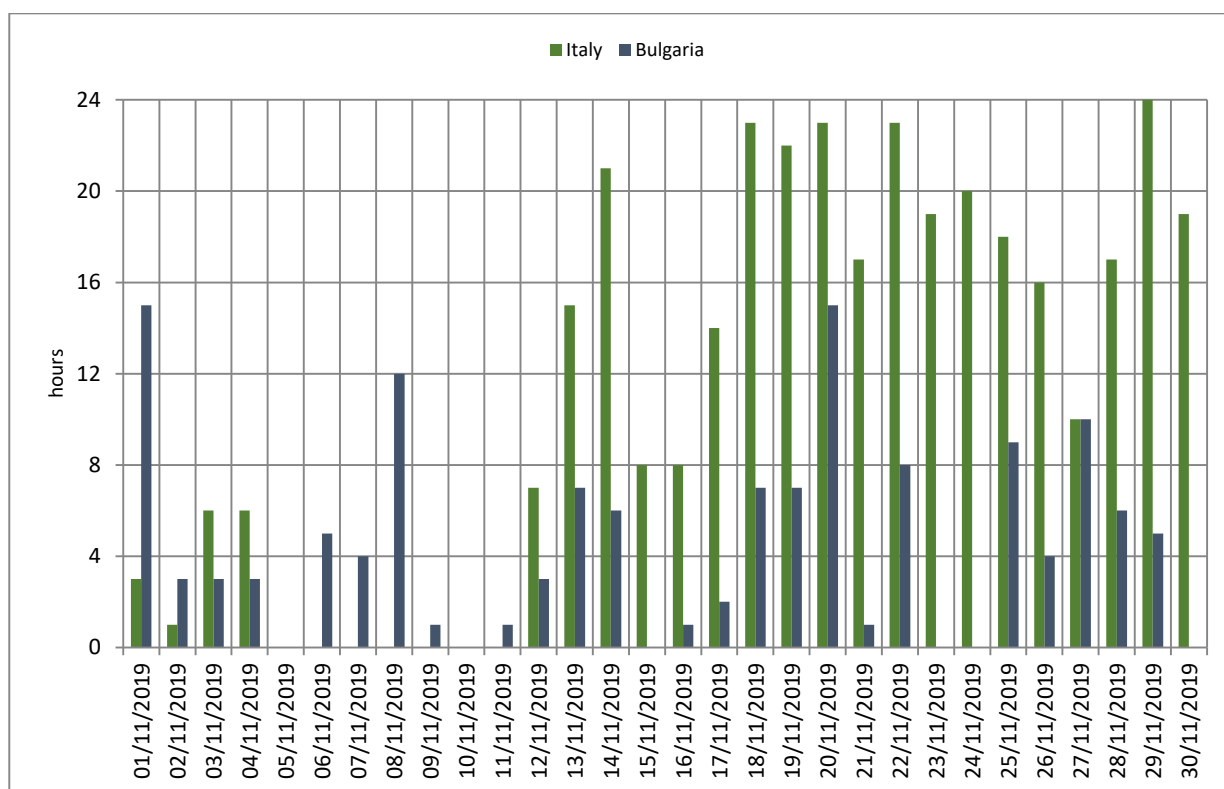


Figure 46: Hours per day with wrong direction energy flows