

YEARLY DAS TRADING SYSTEM REPORT

2019

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Yearly Report Highlights

Participation in DAS

- From November 2019, according Law 4414/2016, Article 5, RES Aggregators and RES Producers participate in DAS.
- In Participants' Register for 2019, there were: **69** Participants from which **57** were active during the month: **8** Producers, **3** RES Aggregators, **1** RES Producer, **33** Suppliers and **18** Traders.

System Marginal Price (SMP) and Reserves Prices

- The average *SMP* for 2019 is **63,82 €/MWh** which is 3,43 €/MWh **higher** than the *SMP* of the previous year.

DAS Energy Balance

- For 2019, *Domestic Demand* constitutes the **94,69%** of total Yearly Load, *Exports* the **5,21%** and *Pumping* the **0,10%**. Generation from *Natural Gas Units* covered **32,39%** of the Yearly Load, *Imports* covered **23,48%**, *RES* the **19,58%**, *Lignite Units* the **19,46%**, and *Hydro Production* the **5,09%**.
- Comparing to 2018, *Natural Gas Units Generation* increased (**+13%**). *Imports* increased (**+14%**) and *Exports* decreased significantly (**-44%**). *Lignite Generation* decreased significantly (**-32%**) and *Hydro Generation*, decreased also significantly (**-40%**). Finally, *RES generation* increased slightly (**+5%**).
- Electricity demand decreased slightly (**-0,65%**) relatively to 2018 demand. The highest load appeared at 14:00 10/07/2019 (**9313 MW**) while the lowest load was **3131 MW** at 5:00 29/04/2019.
- The Yearly DAS value for 2019 reached **3,47 BEUR** while the monthly average DAS value was **289,2 MEUR**.

Domestic Power Generation

- *Yearly Production Shares per fuel type* for 2019 were: *Natural Gas Units* **42,33%**, *RES* **25,58%**, *Lignite Units* **25,43%** and *Hydro Units* **6,65%**. Concerning Market Participants, the respective shares were: *PPC* **40,80%**, *DAPEEP* **25,39%** and *MYTILINEOS* **8,21%**.

Supply of Electricity

- The *Monthly Average Load* for 2019 was **4,2 TWh**.
- The *Yearly Consumption Share of PPC* in 2019 was **74,21%** (High Voltage: 11,62, Medium Voltage: 12,02%, Low Voltage: 50,57%). The second higher consumption share belongs to *MYTILINEOS* **5,09%** (HV: 0,02%, MV: 2,73%, LV: 2,35%) and *HERON* **5,09%** (HV: 0,00%, MV: 2,40%, LV: 2,70%). The relevant numbers for the previous month were *PPC*: 81,13%, *MYTILINEOS*: 3,94% and *HERON*: 4,17%.

Electricity Trading

- Total energy injections for 2019 from *Imports* amounted **12.521 GWh** while *Exports* reached **2.778 GWh**.
- For the Interconnection with Italy, *wrong direction energy flows* were scheduled for **5.480 hours** (63% of total year hours) while for the Interconnection with Bulgaria *wrong direction energy flows* were scheduled for **2.715 hours** (15% of total year hours).

1. Participation in DAS

1.1 Participants Register

The following tables present the registered Participants from the Participants' Register during the year 2019. Participants who participated in DAS during the year 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_MEGALOPOLIS, LIG_MELITIS 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	INACCESS NETWORKS S.A.	INACCESS
2	OPTIMUS ENERGY ΑΝΩΝΥΜΗ ΕΤΑΙΡΕΙΑ	OPTIMUS_ENERGY
3	SOLAR ENERGY	SOLARENERGY
4	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 TITAN	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	ΠΕΤΡΟΓΚΑΖ 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	GROUP TRANS ENERGY OOD	GT_ENERGY
16	HSE D.O.O.	HSE
17	INTERENERGO D.O.O.	INTERENERGO
18	LE TRADING A.S.	LE TRADING
19	NVALUE A.G.	NVALUE
20	SENTRADE A.E.	SENTRADE
21	STATKRAFT MARKETS GMBH	STATKRAFT_MARKET
22	VITOL GAS AND POWER B.V.	VITOL
23	ΣΟΛΑΡΙΣ ΕΝΕΡΓΕΙΑΚΗ Α.Ε.	SOLARIS
24	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
	Total of Lignite Units		3,903.9
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
	Subtotal of bi-fuel Natural Gas Units**		1,983.2
	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
	Total of Natural Gas Units		4,900.3
Hydro Units	AGRAS	PPC	50.0
	ASOMATA	PPC	108.0
	P_AOOU	PPC	210.0
	EDESSAIOS	PPC	19.0
	THESAVROS	PPC	384.0
	ILARIONAS	PPC	153.0
	KASTRAKI	PPC	320.0
	KREMASTA	PPC	437.2

	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	3,282.8
	PV	RES	2,287.9
	PV ROOFS	RES	351.4
	HYDRO	RES	240.3
	BIOMASS	RES	86.9
	CHP	RES	105.5
	Total of RES Units		6,354.8
	Total of Thermal Units		8,804.2
	Total of RES & Hydro Units		9,525.5
	Total of all Units		18,329.7

Source: DAPEEP, ADMIE

* Installed capacity as of December 2019

** 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.

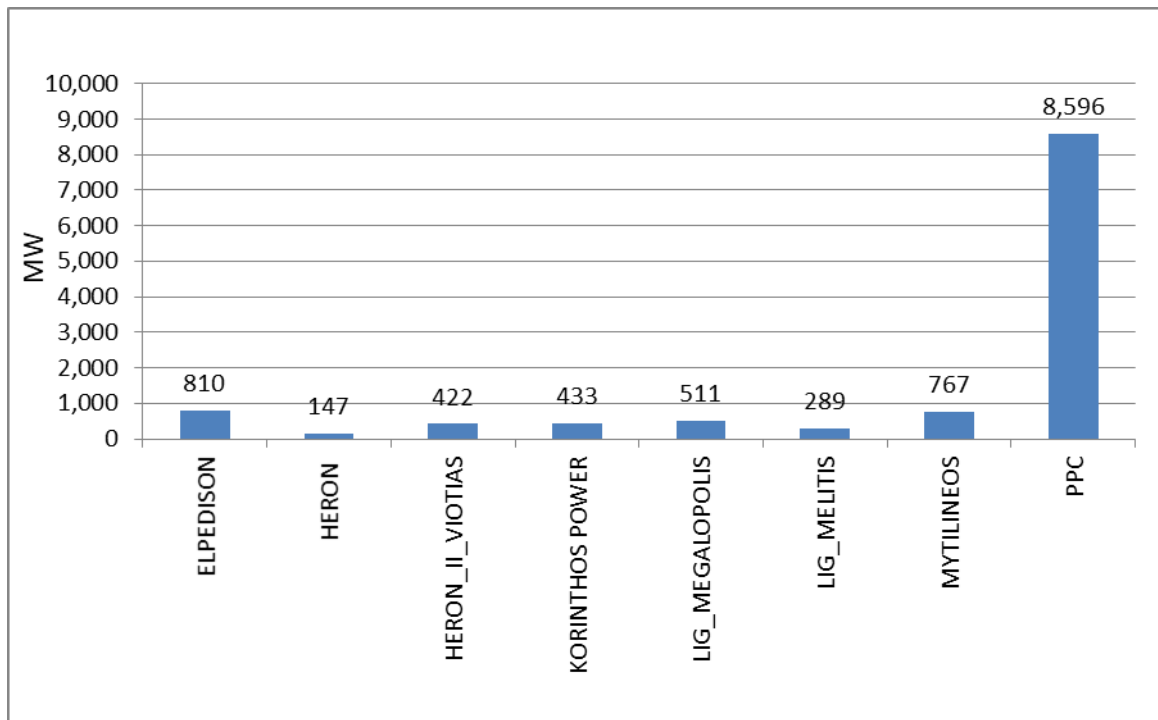


Figure 1: Total Installed Capacity of Units per Producer (RES excluded) (December 2019)

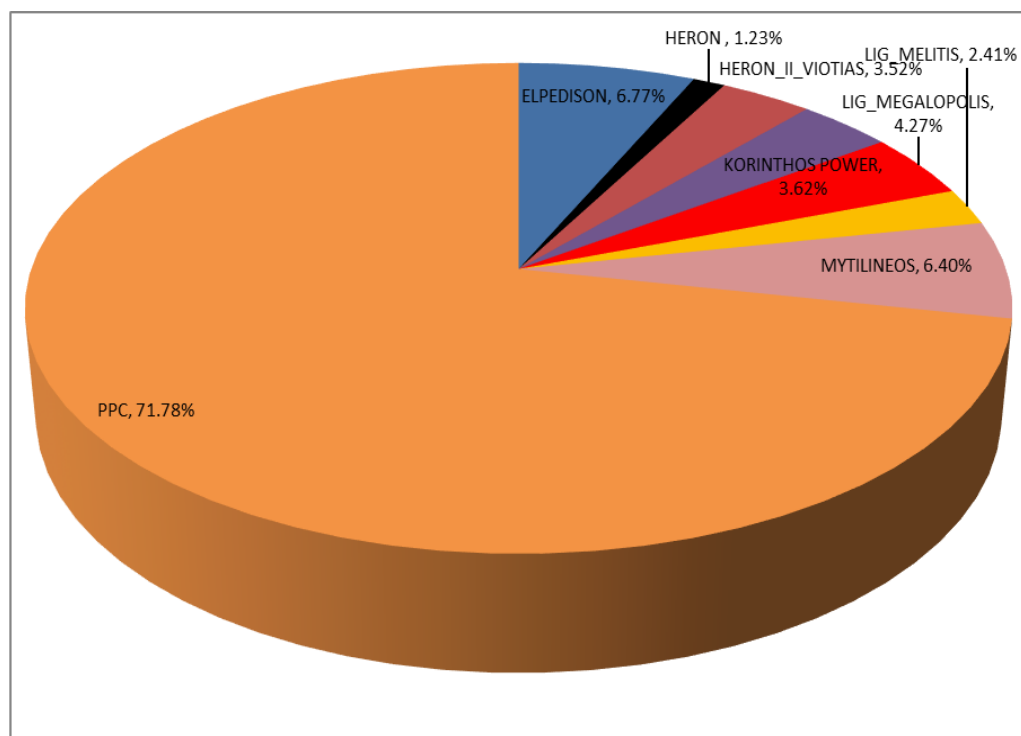


Figure 2: Percentage (%) of Total Installed Capacity per Producer (RES excluded) (December 2019)

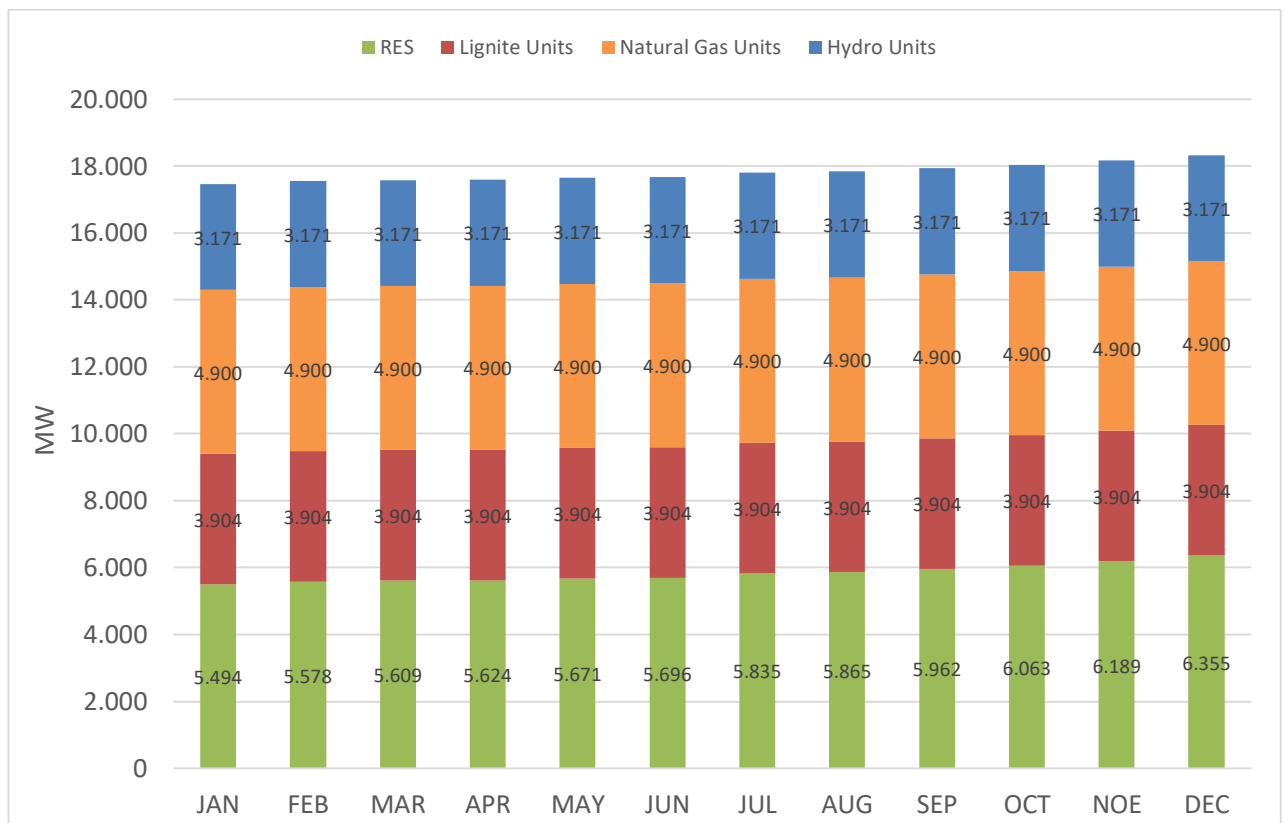


Figure 3: Total Monthly Installed Capacity of Units per Fuel type in the Interconnected System

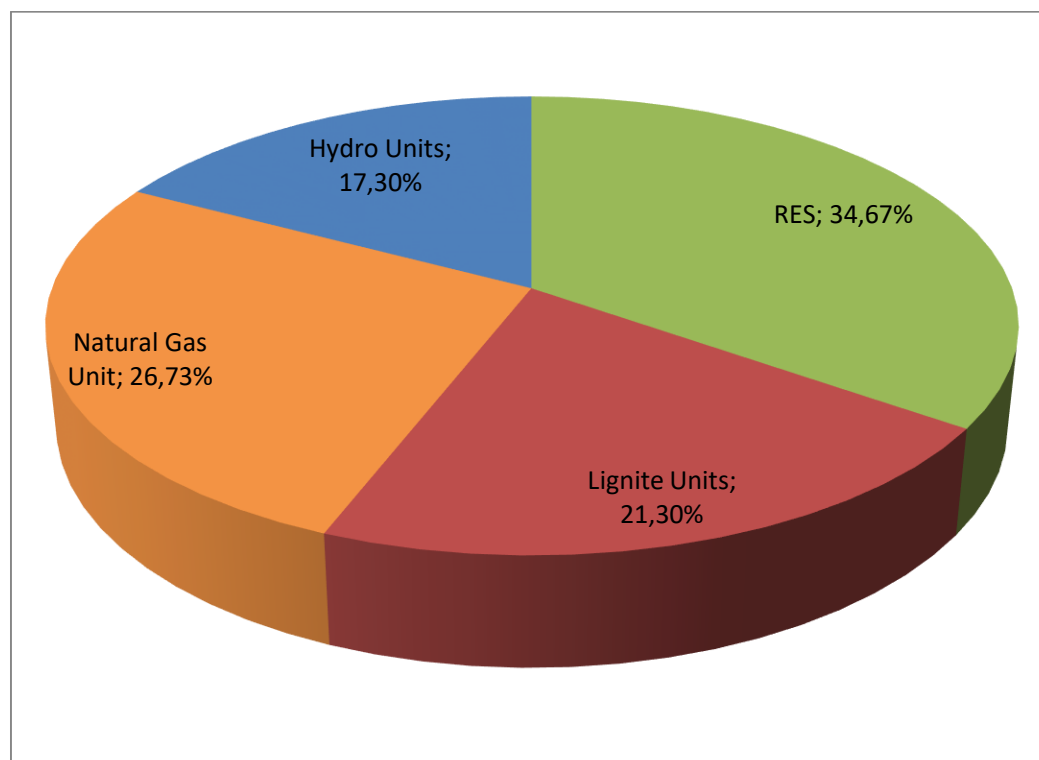


Figure 4: Percentage (%) of total Installed Capacity per Fuel type in the Interconnected System (December 2019)

2. System Marginal Price (SMP) and Reserves Prices

	SMP (€/MWh)	Date	Hour
Minimum	0,000	11/01/2019	01
		30/01/2019	01
		06/03/2019	01
		12/03/2019	01
		22/03/2019	01
		24/09/2019	01
		02/10/2019	01
		06/10/2019	01
		27/10/2019	16
		20/11/2019	01
		22/12/2019	01
		23/12/2019	01
		31/12/2019	01
Maximum	145,000	17/01/2019	20
Average	63,817		

Table 1: SMP data

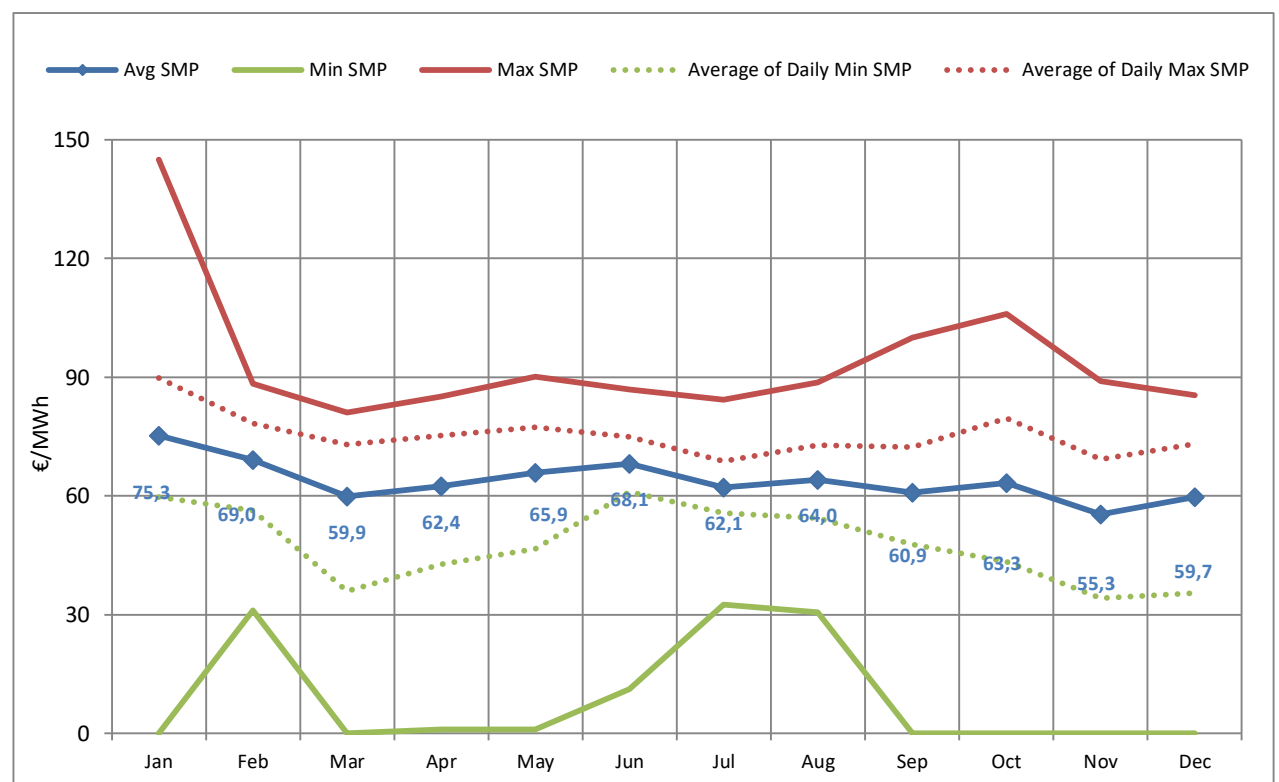


Figure 5: Average, Minimum and Maximum Monthly SMP (€/MWh) and average of Minimum and Maximum Daily SMP (€/MWh) per month

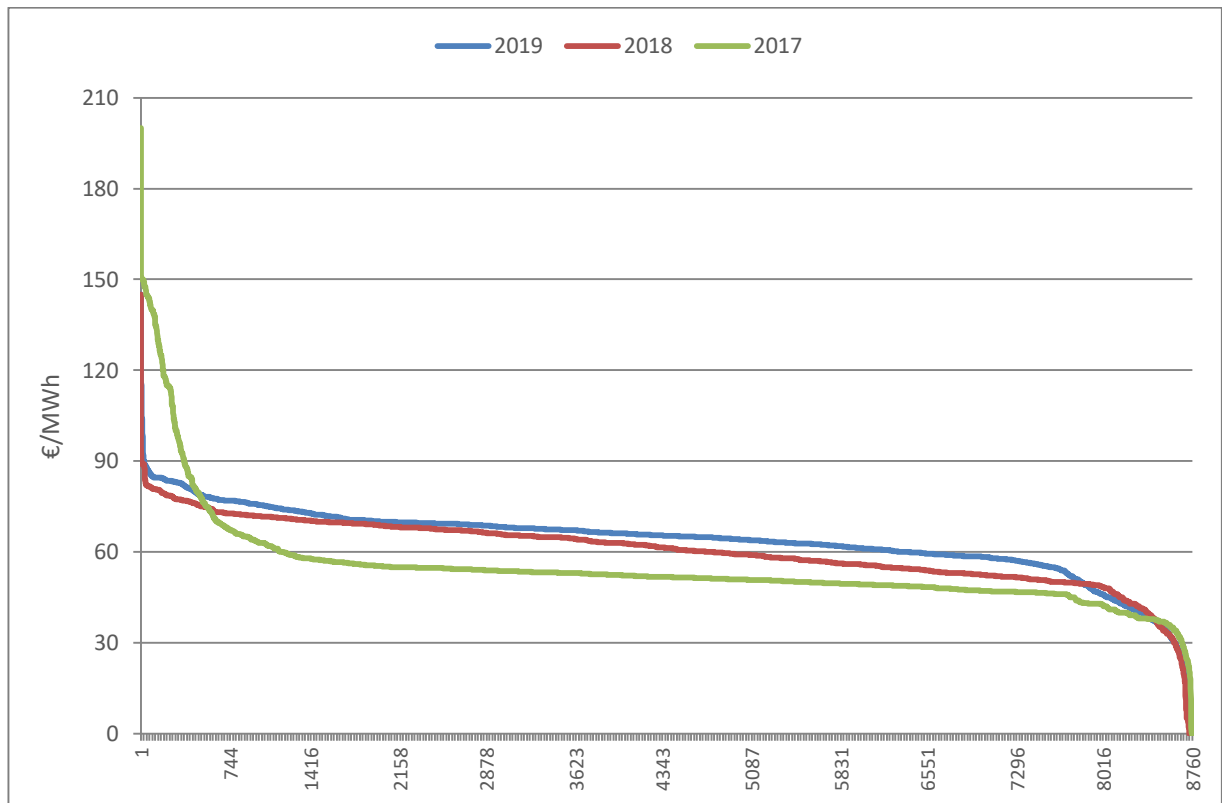


Figure 5a: SMP duration curve (€/MWh) for years 2019, 2018, 2017

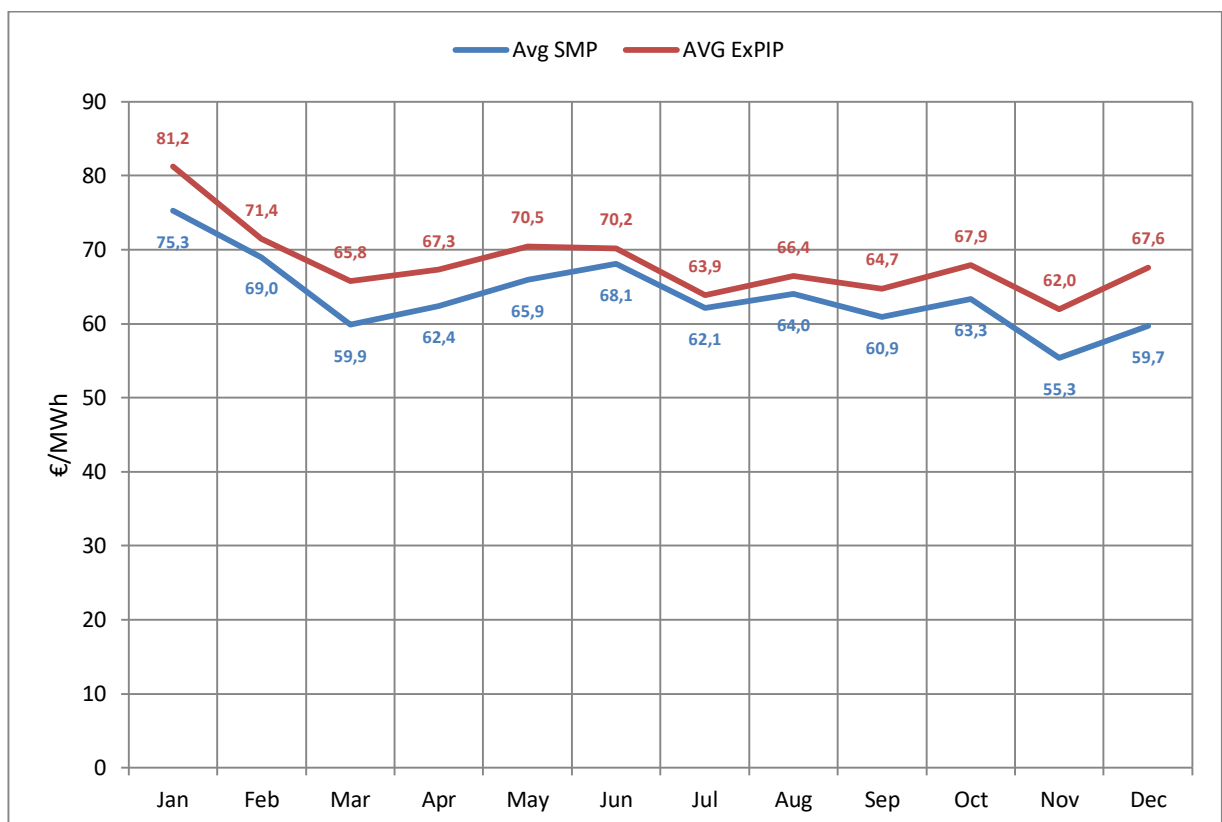


Figure 6: Average Monthly SMP and ExPIP

Source: HENEX, ADMIE

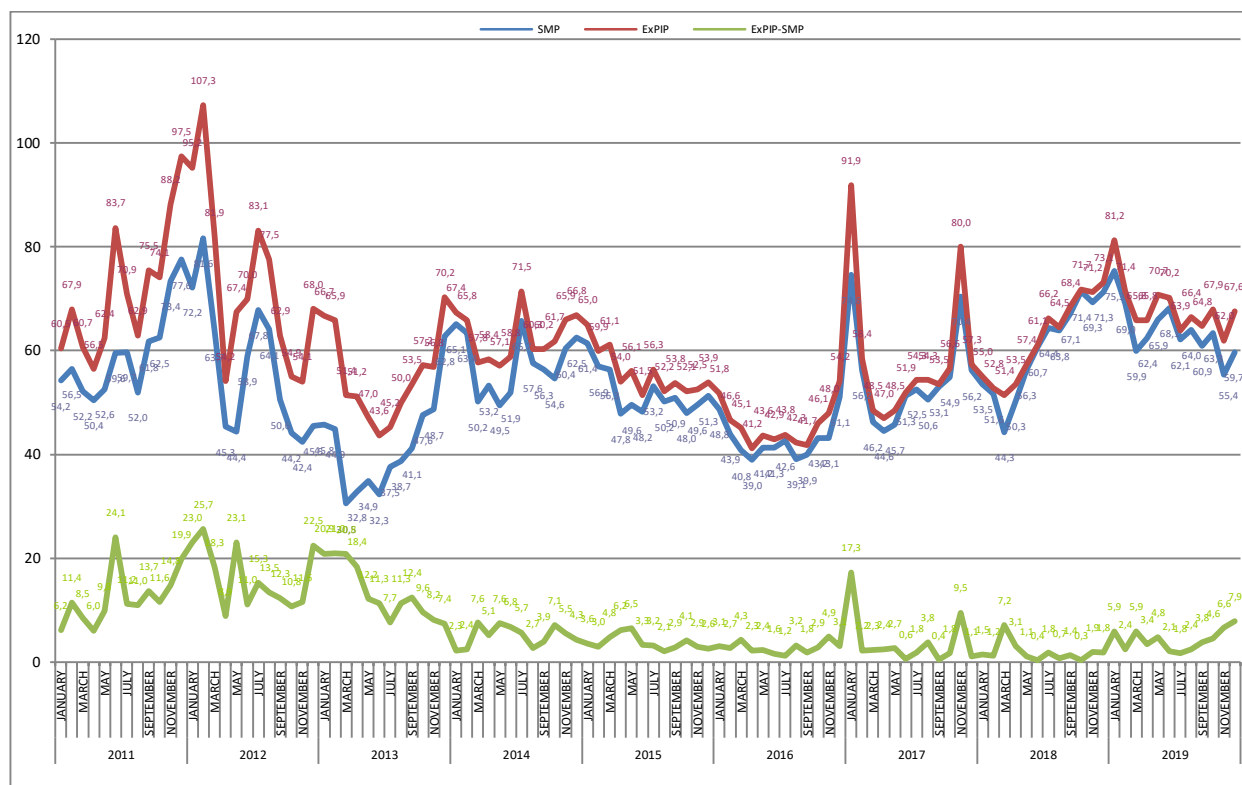


Figure 7: Evolution of average monthly SMP, ExPIP and their difference

Source: HENEX, ADMIE

		Average Monthly SMP		Average Monthly ExPIP		Difference SMP-ExPIP
		€/MWh	% deviation*	€/MWh	% deviation*	€/MWh
2017	January	74,60	53,00	91,91	77,38	17,32
	February	56,22	28,01	58,43	25,47	2,21
	March	46,22	13,33	48,50	7,60	2,28
	April	44,57	14,35	46,98	13,96	2,41
	May	45,73	10,88	48,47	11,17	2,74
	June	51,32	24,22	51,90	20,85	0,57
	July	52,54	23,33	54,32	23,93	1,78
	August	50,57	29,43	51,10	20,91	0,53
	September	53,06	32,86	53,51	28,21	0,45
	October	54,88	27,16	56,63	22,98	1,74
	November	70,45	63,41	79,98	66,72	9,53
	December	56,19	9,98	57,32	5,79	1,13
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
	December	59,68	-16,24	67,62	-7,46	7,94

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 for years 2019, 2018, 2017

*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	50,000	22/12/2019	0,067
Secondary Up	0,001	50,000	05/03/2019 25/03/2019 01/07/2019	1,450
Secondary Down	0,001	50,000	07/04/2019	1,286

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

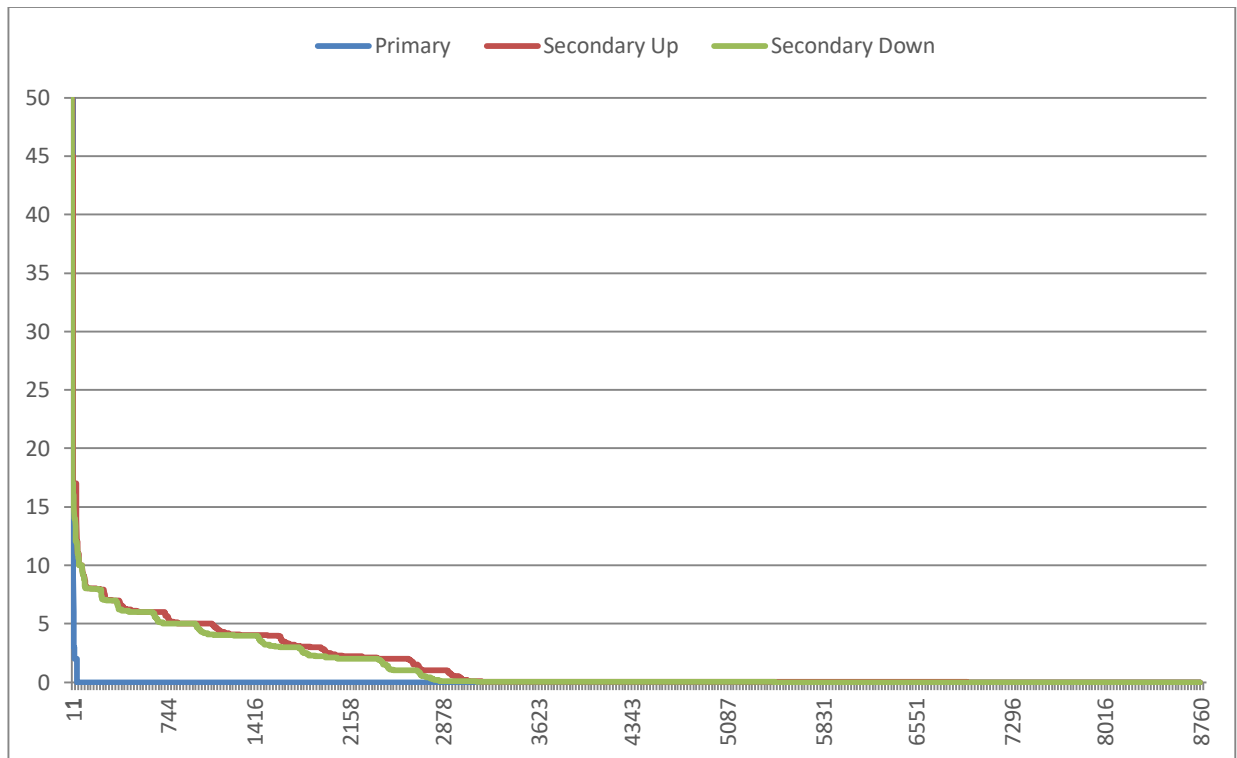


Figure 7a: Duration Curve of Primary, Secondary Up and Secondary Down Reserve Prices (€/MW)

	Lignite	Natural Gas	Hydro	Imports	Exports
January	197	344	147	38	18
February	134	436	31	64	7
March	201	288	33	162	59
April	198	301	18	164	39
May	173	448	25	72	26
June	116	544	24	26	10
July	60	570	3	75	36
August	107	497	25	66	49
September	87	448	36	115	34
October	149	390	38	99	69
November	53	369	20	135	143
December	183	367	2	96	96
Total	1658	5002	402	1112	586

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

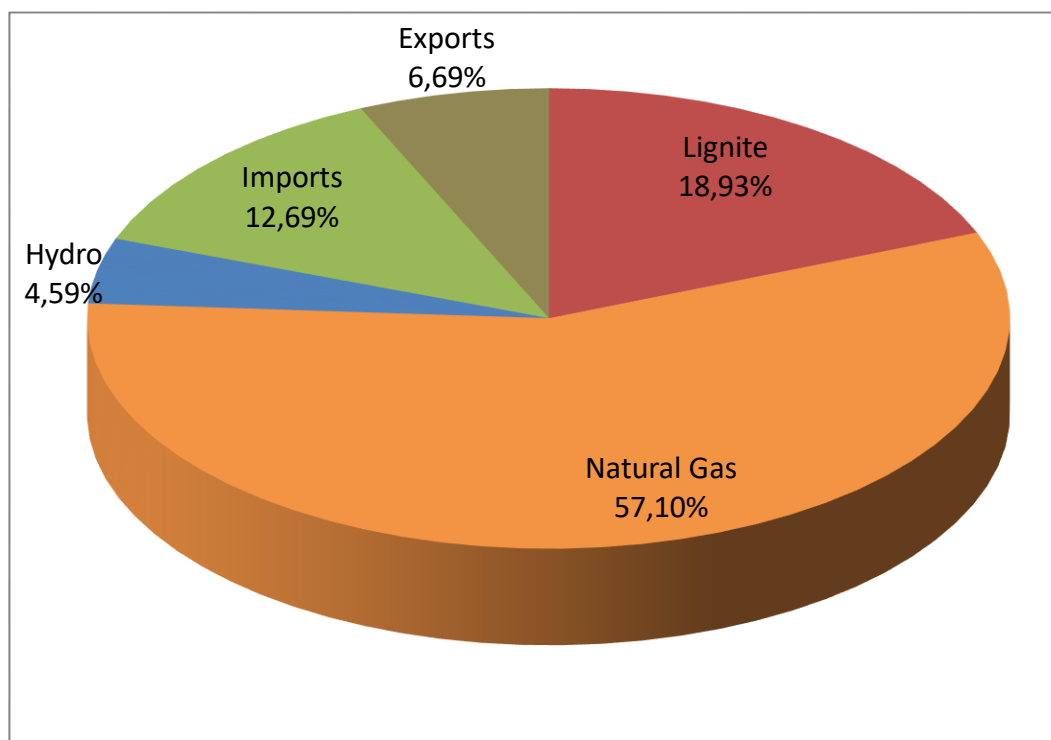


Figure 8: Percentage (%) of total hours per fuel type/imports/exports that have defined the SMP for year 2019

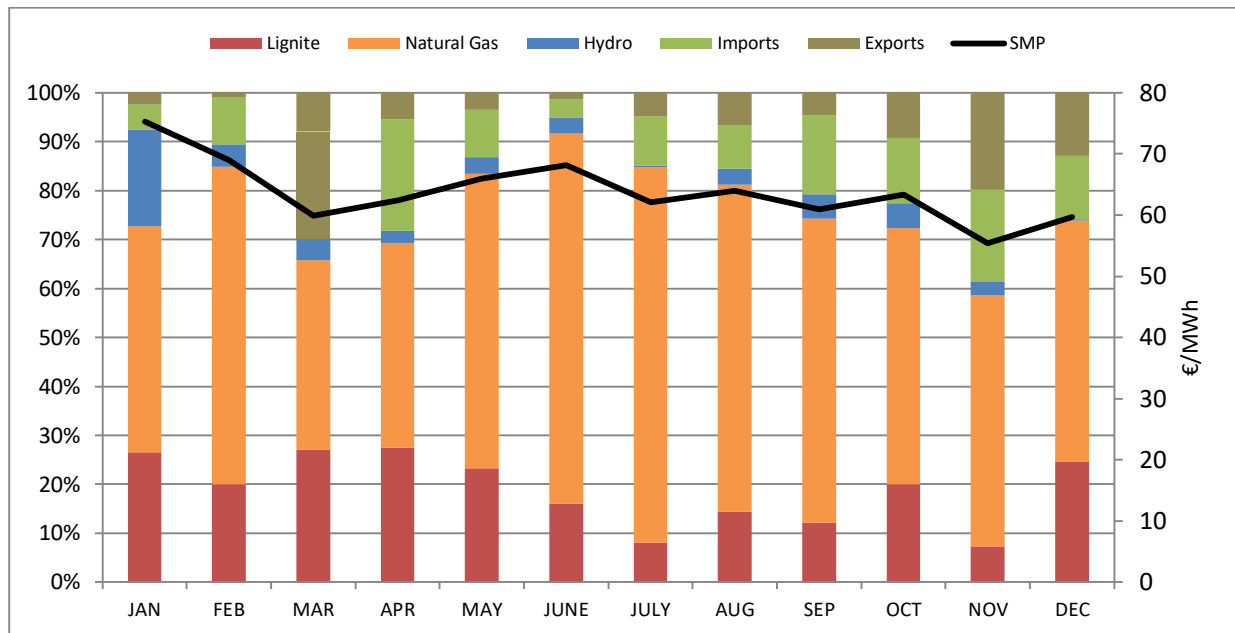


Figure 9: Monthly percentage (%) distribution of fuel type/import/export that have defined SMP in 2019

3. DAS Energy Balance

	2019	2018	% deviation of 2019 from 2018	2017	% deviation of 2018 from 2017
PRODUCTION AND IMPORTS - EXPORTS BALANCE (MWh)					
TOTAL PRODUCTION & IMPORTS - EXPORTS BALANCE	50.546.449	50.874.701	-0,65	51.600.870	-1,41
NET PRODUCTION ANALYSIS					
LIGNITE	10.377.791	15.214.863	-31,79	17.591.353	-13,51
OIL	1.200	0	-	0	-
NATURAL GAS	17.271.724	15.238.477	13,34	16.361.373	-6,86
HYDRO	2.713.972	4.514.111	-39,88	2.476.341	82,29
RES	10.438.601	9.907.656	5,36	9.109.374	8,76
TOTAL NET PRODUCTION	40.803.288	44.875.108	-9,07	45.538.441	-1,46
IMPORTS					
ALBANIA	1.703.854	1.936.354	-12,01	1.179.655	64,15
BULGARIA	3.657.020	3.799.122	-3,74	3.122.420	21,67
ITALY	3.881.282	1.628.667	138,31	2.063.929	-21,09
F.Y.R.O.M.	2.655.192	2.903.692	-8,56	2.044.662	42,01
TURKEY	623.868	709.022	-12,01	496.679	42,75
EXPORTS	2.778.055	4.977.265	-44,19	2.844.917	74,95
ALBANIA	638.963	1.007.954	-36,61	872.063	15,58
BULGARIA	343.091	220.583	55,54	265.318	-16,86
ITALY	972.332	2.134.381	-54,44	764.835	179,06
F.Y.R.O.M.	785.169	1.592.601	-50,70	926.212	71,95
TURKEY	38.499	21.745	77,05	16.489	31,88
IMPORTS - EXPORTS BALANCE	9.743.161	5.999.594	62,40	6.062.429	-1,04
DEMAND (MWh)					
TOTAL DEMAND	50.546.449	50.874.701	-0,65	51.600.870	-1,41
NET DEMAND	50.492.215	50.853.391	-0,71	51.501.445	-1,26
PUMPING	54.234	21.310	154,50	99.425	-78,57
TOTAL DEMAND ANALYSIS					
LOW VOLTAGE CUSTOMERS	32.699.172	31.705.914	3,13	32.261.988	-1,72
MEDIUM VOLTAGE CUSTOMERS	11.807.775	12.872.475	-8,27	13.010.623	-1,06
HIGH VOLTAGE CUSTOMERS	5.985.268	6.275.002	-4,62	6.228.834	0,74
SYSTEM PEAK POWER (MW)					
MAXIMUM HOURLY SYSTEM POWER	9.313	9.080	2,56	9.610	-5,51
Date	10/07/2019	23/07/2018		13/07/2017	
Hour of maximum	14:00	14:00		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.

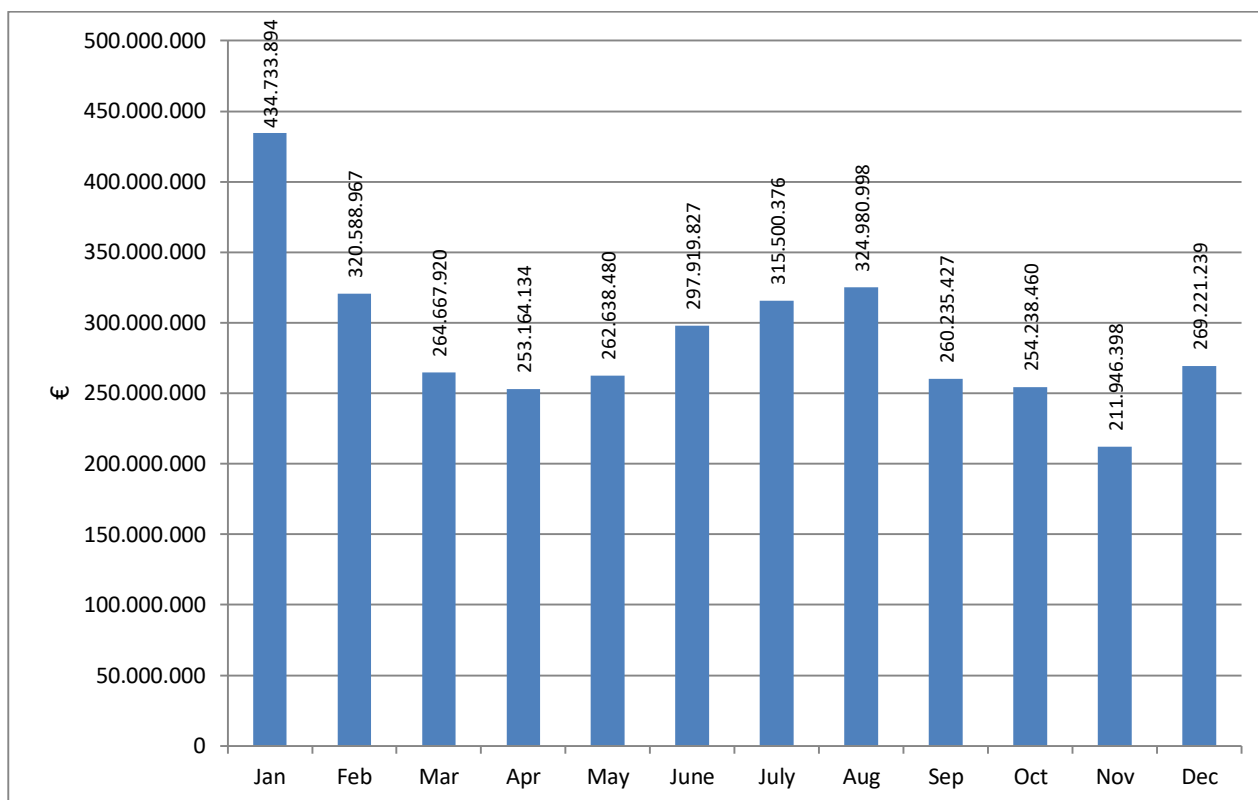


Figure 10: Monthly value of DAS

The total value of DAS for 2019 reached 3,47 B€.

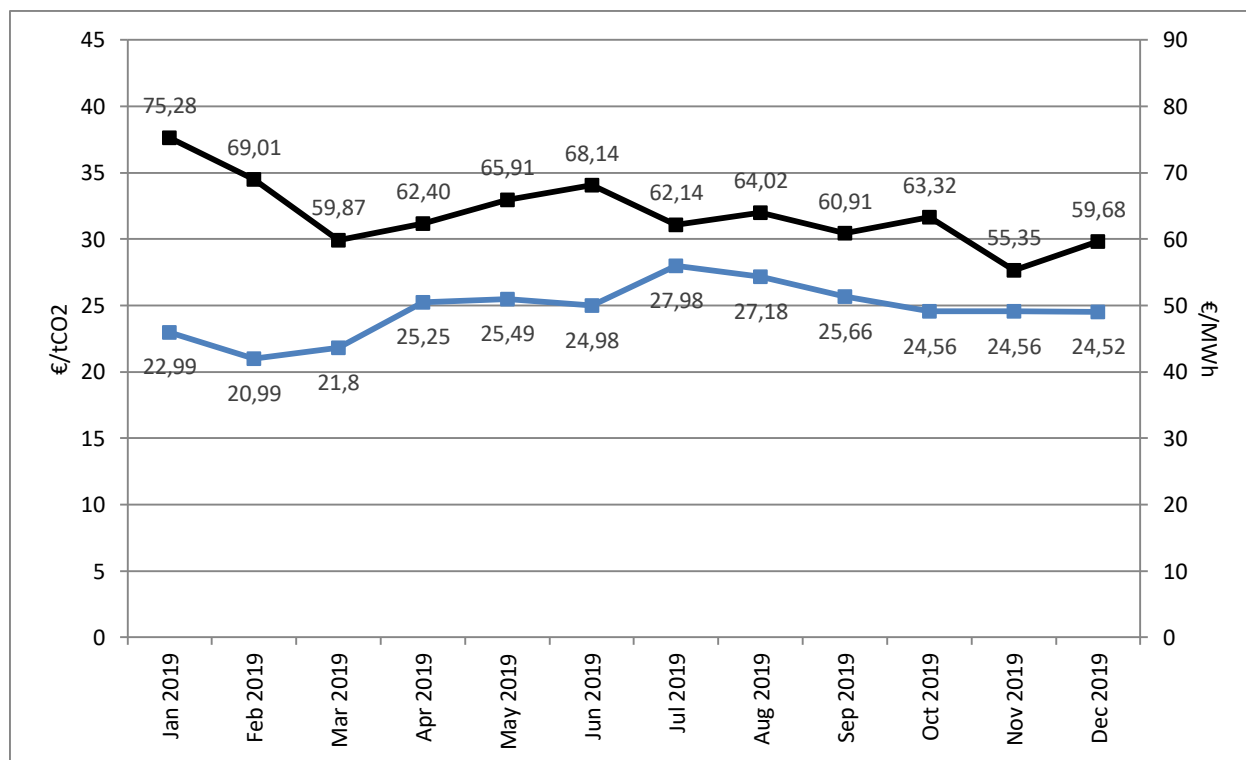


Figure 11: Weighted Average Monthly Prices of CO2 emissions rights (auction T3PA) and SMP (right axis).

4. Domestic Power Generation

4.1 Production and Credit per fuel type

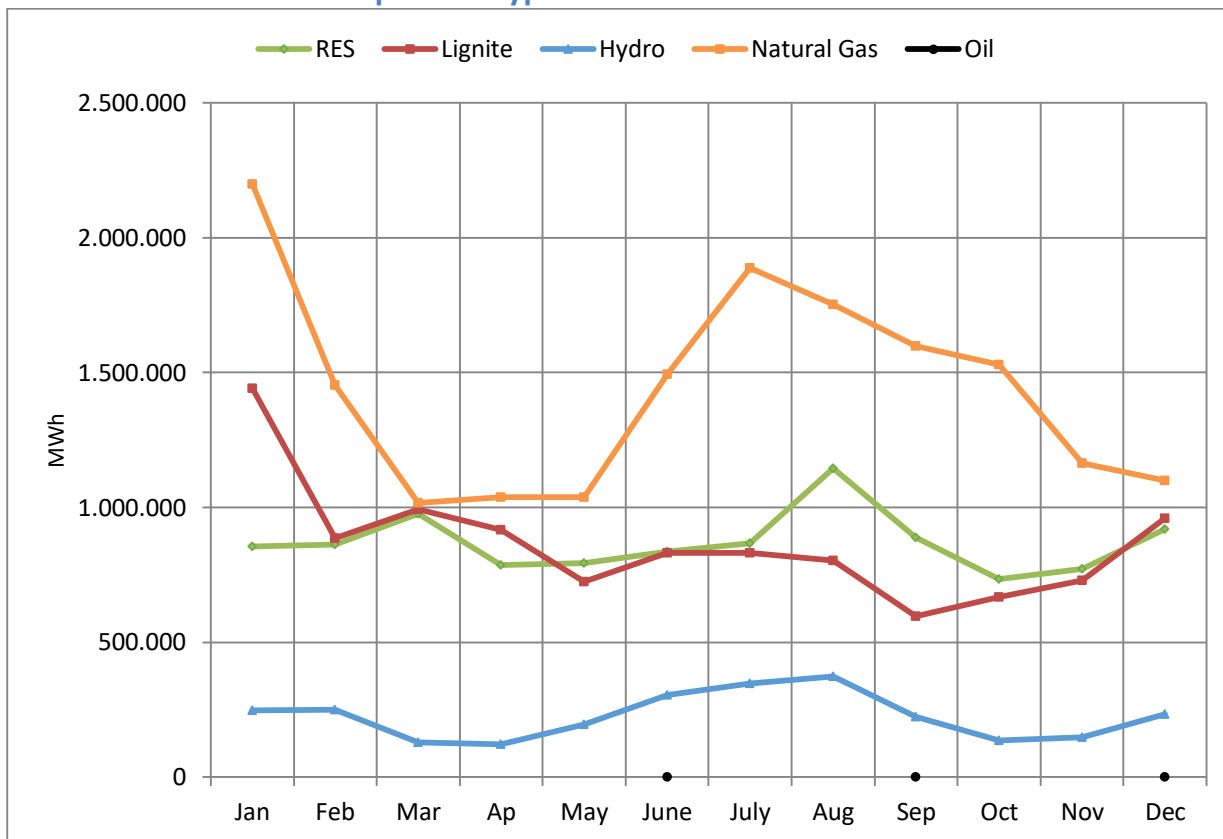


Figure 12: Monthly production per fuel type

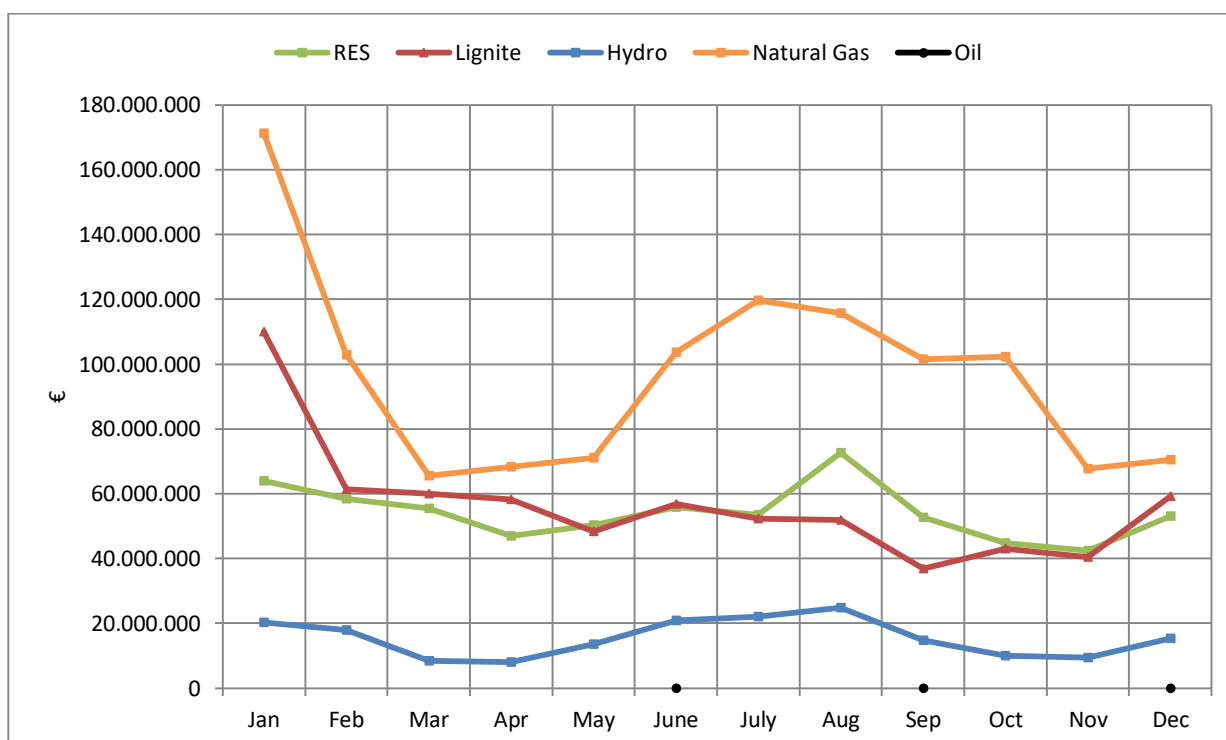


Figure 13: Monthly production credit per fuel type

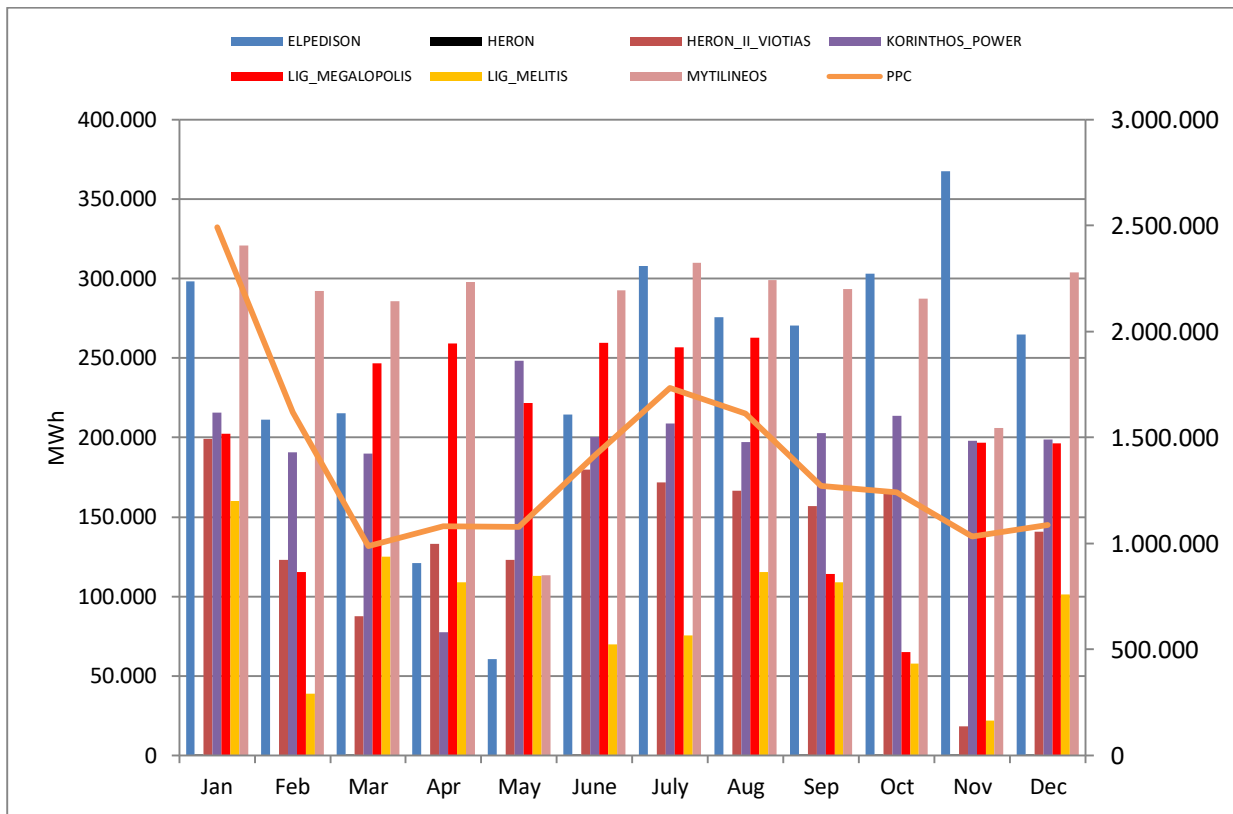


Figure 14: Monthly production per Participant excluded RES (the right axis represents the production of PPC)

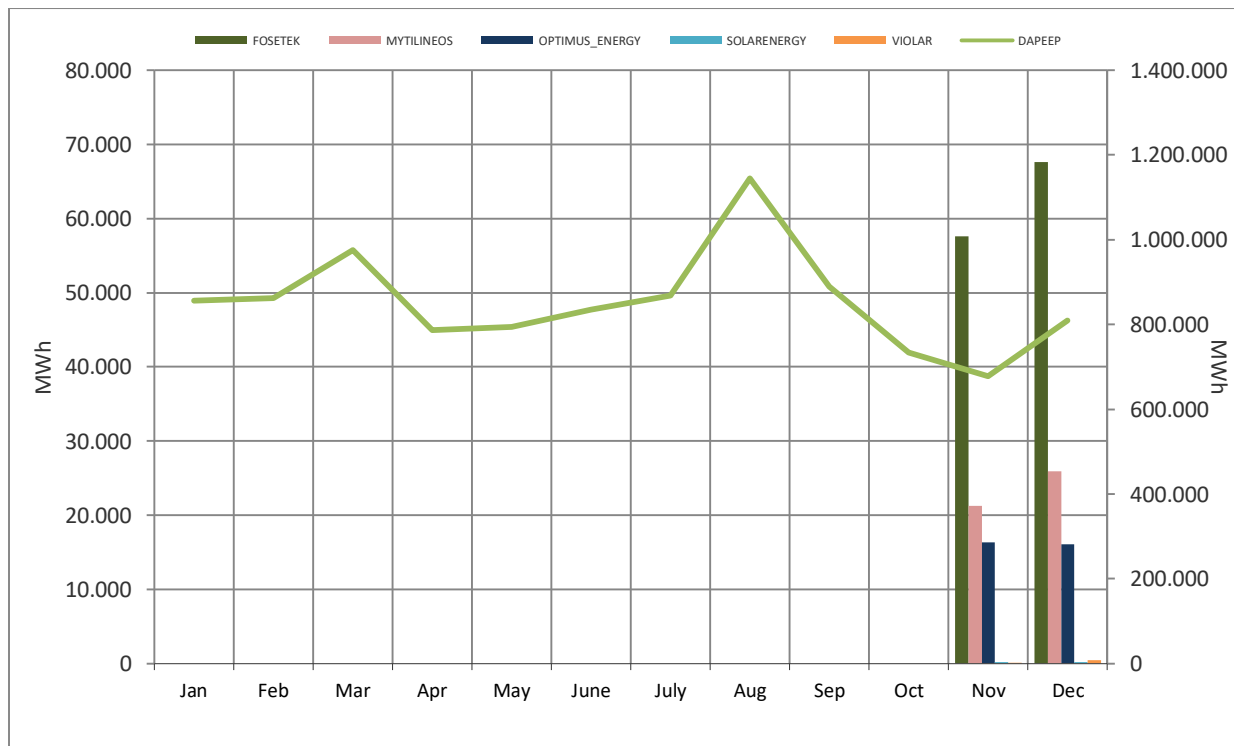


Figure 14a: Monthly production per RES Participant (the right axis represents the production of DAPEEP excluded FOSETEK Production)

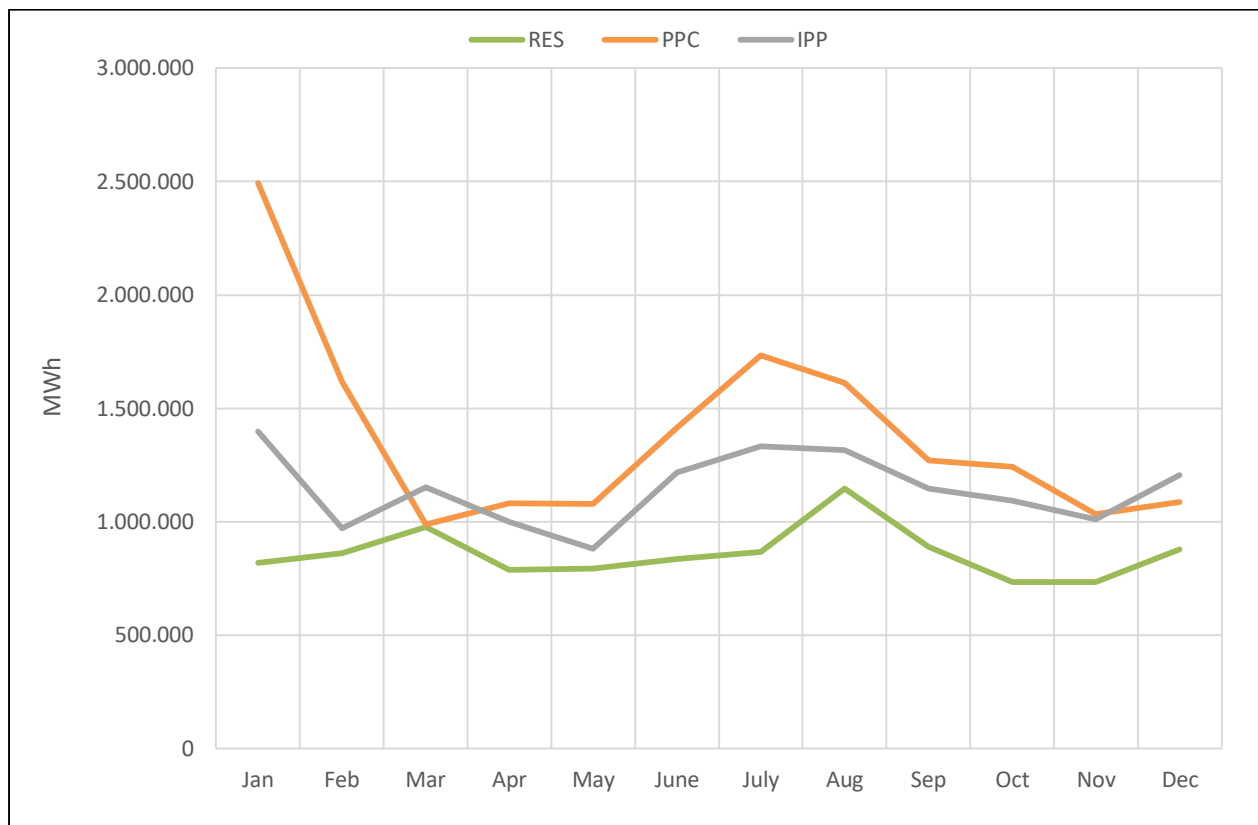


Figure14b: Monthly production for PPC, RES and Independent Power Producers

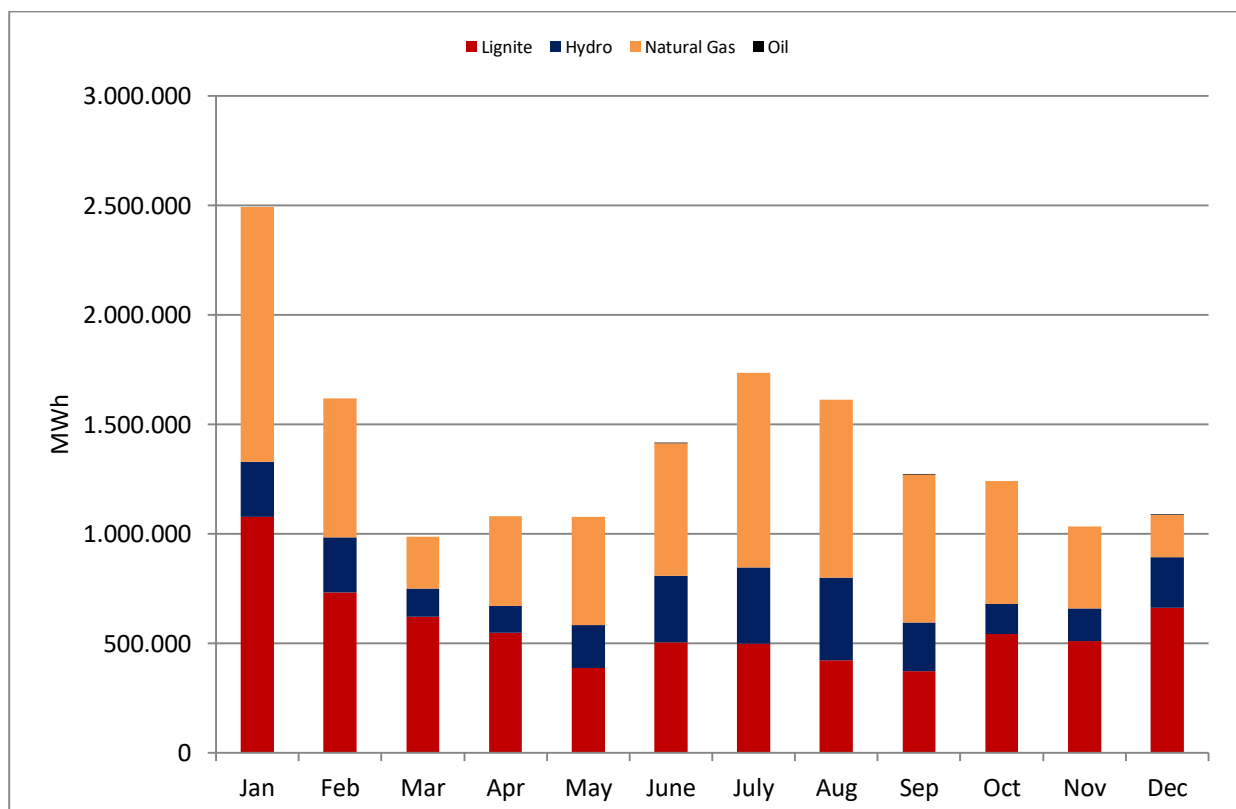


Figure 15: Monthly production of PPC units per fuel type

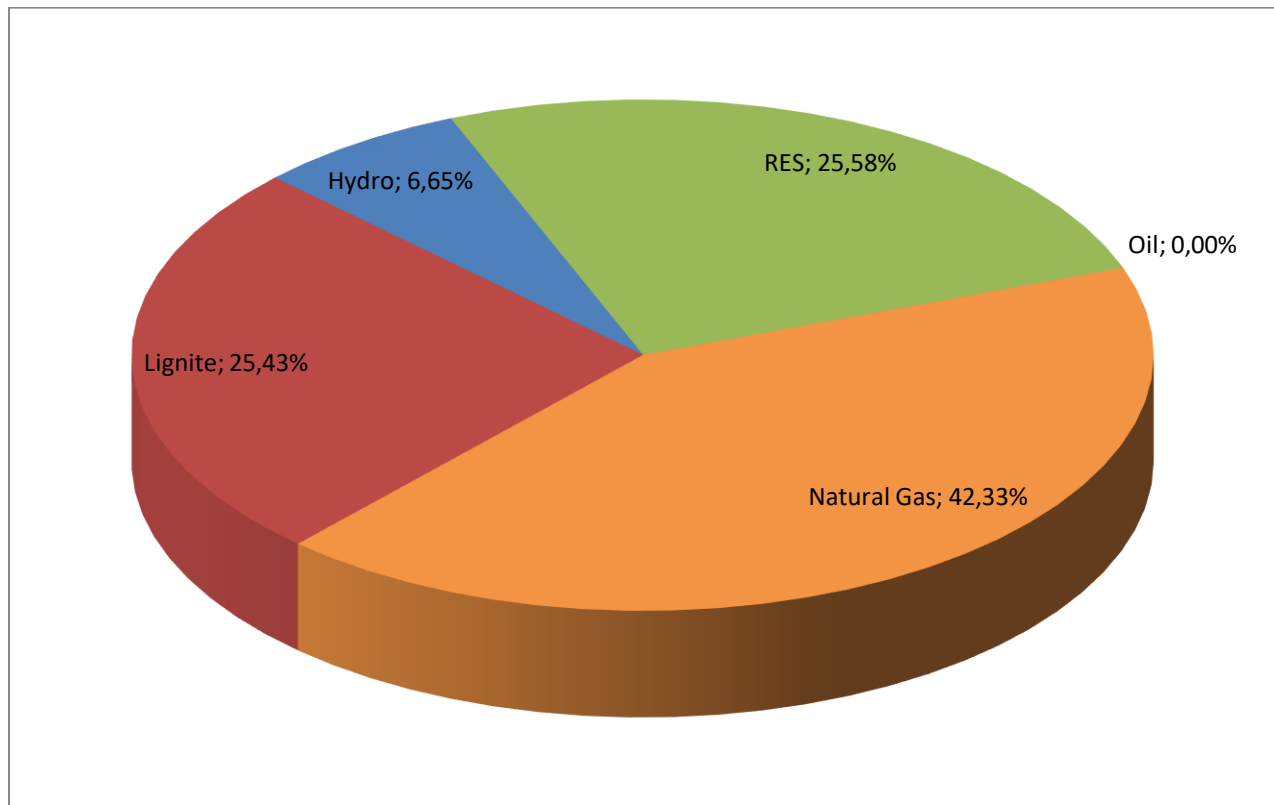


Figure 16: Percentage (%) of total Yearly Production per fuel type

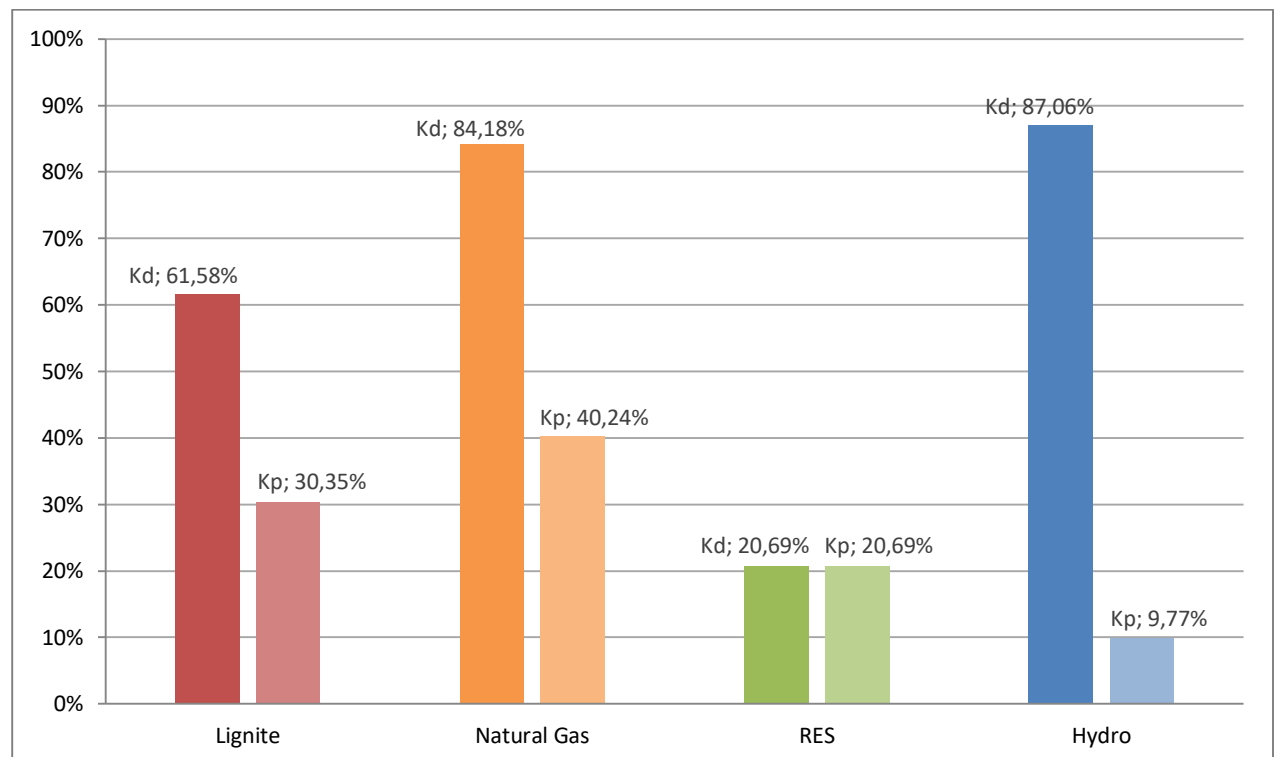


Figure 16a: Availability factor (Kd)* and production factor (Kp)** per fuel type at Yearly level

* 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

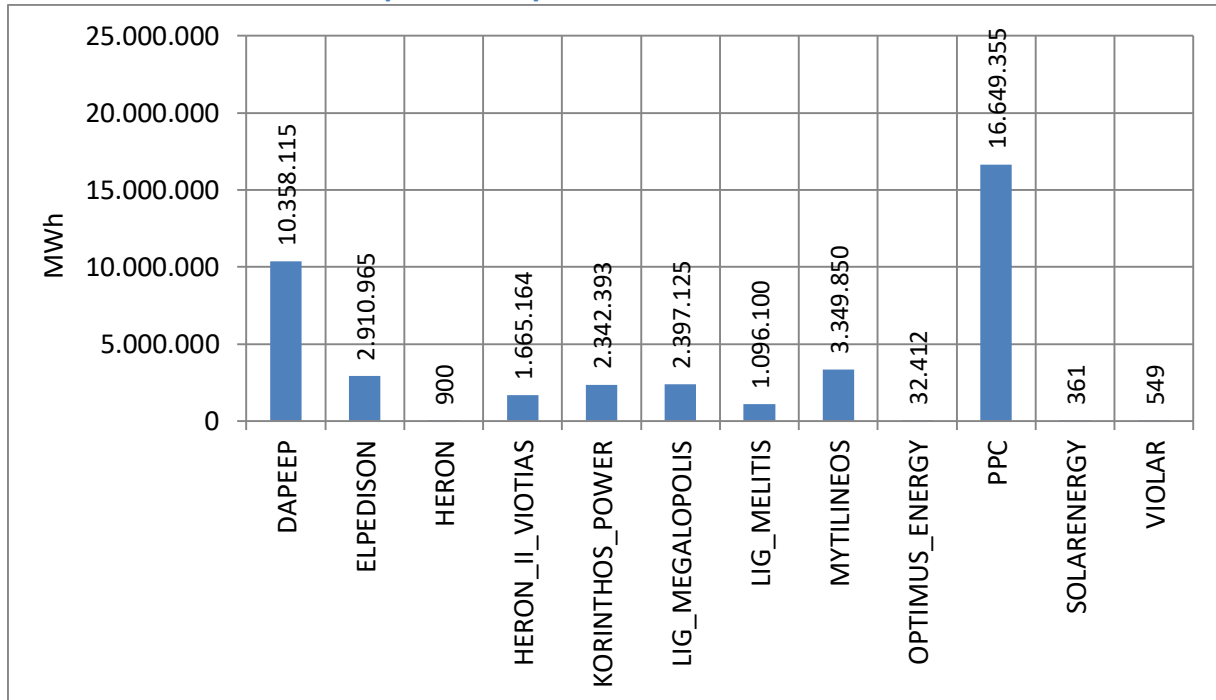


Figure 17: Yearly Production per Participant

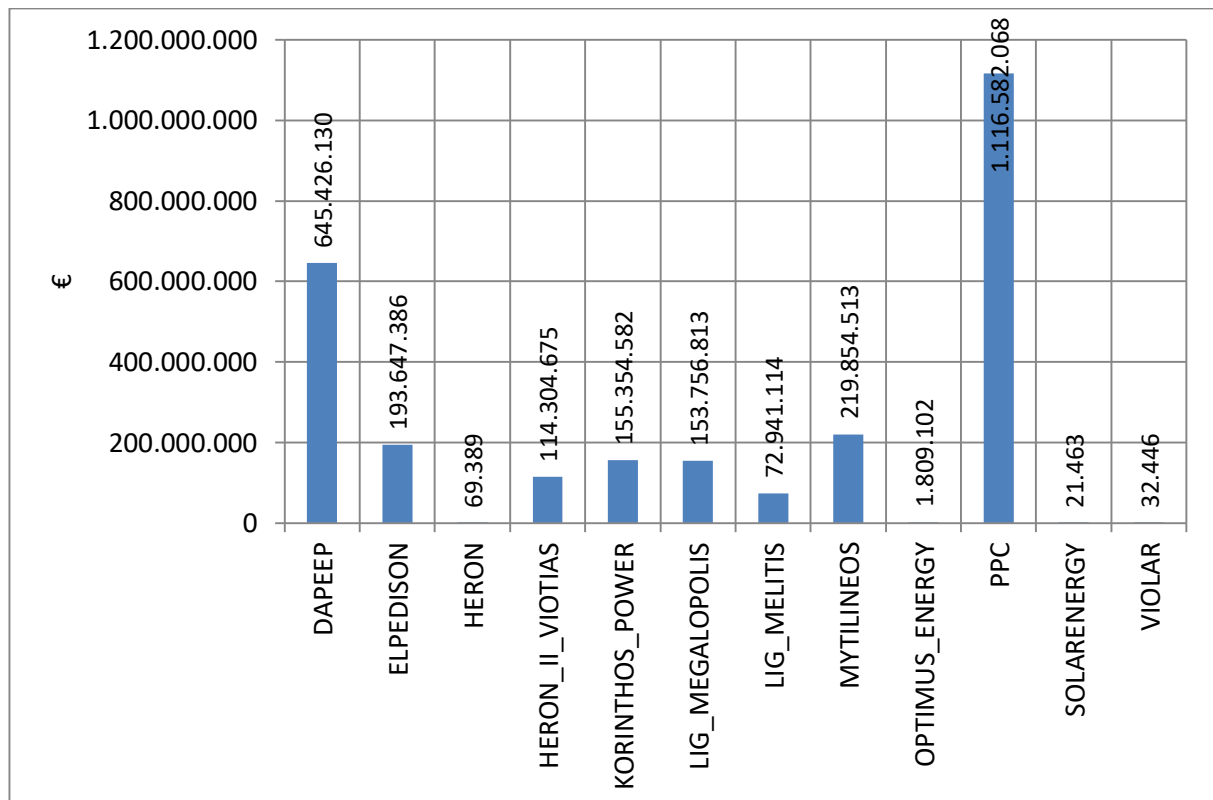


Figure 18: Yearly Production Credits per Participant

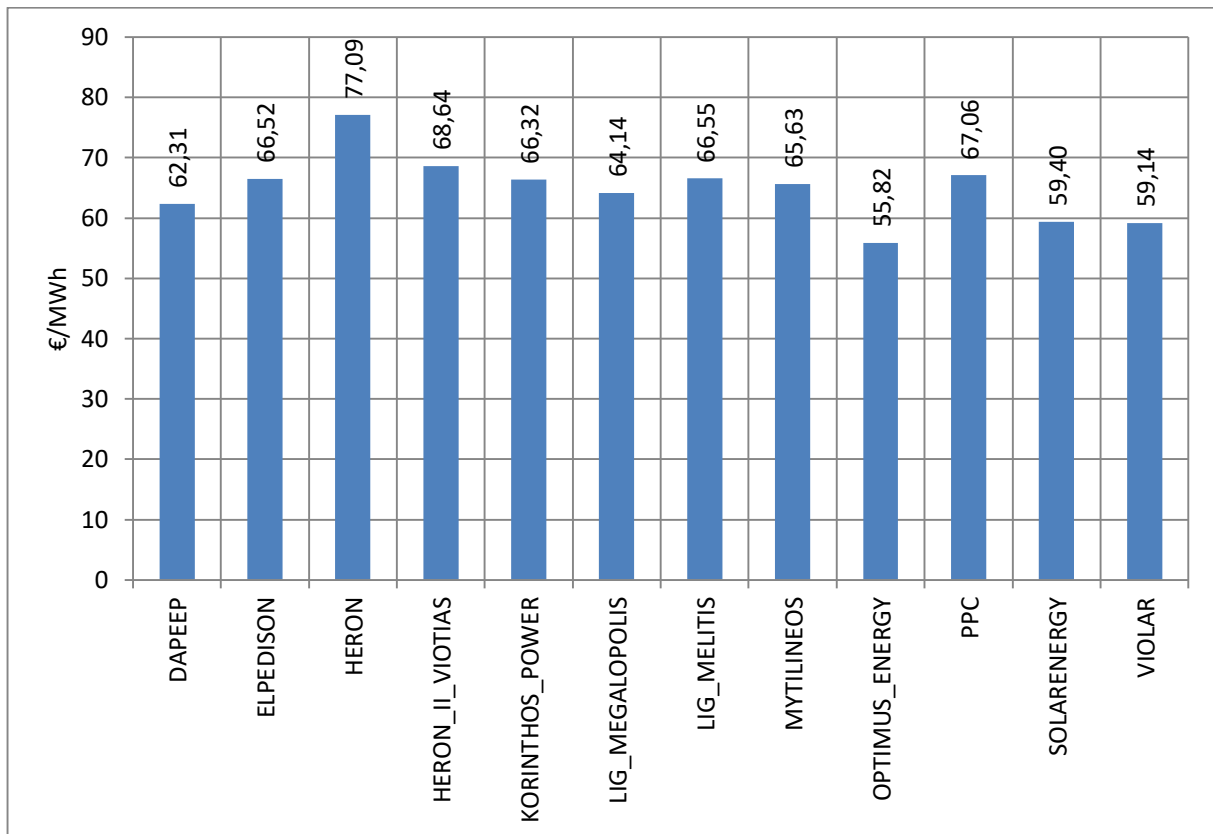


Figure 19: Yearly Credits / Yearly Production in €/MWh per Participant

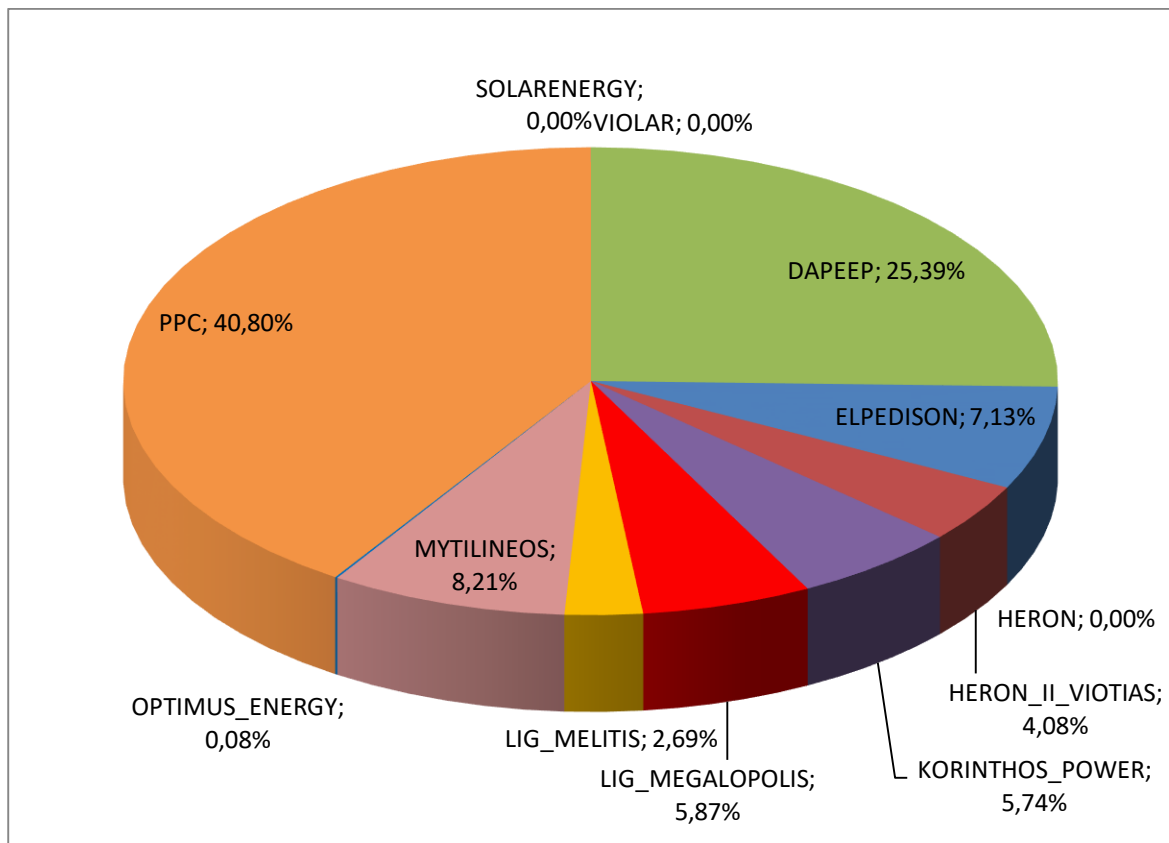


Figure 20: Percentage (%) of Total Yearly Production per Participant

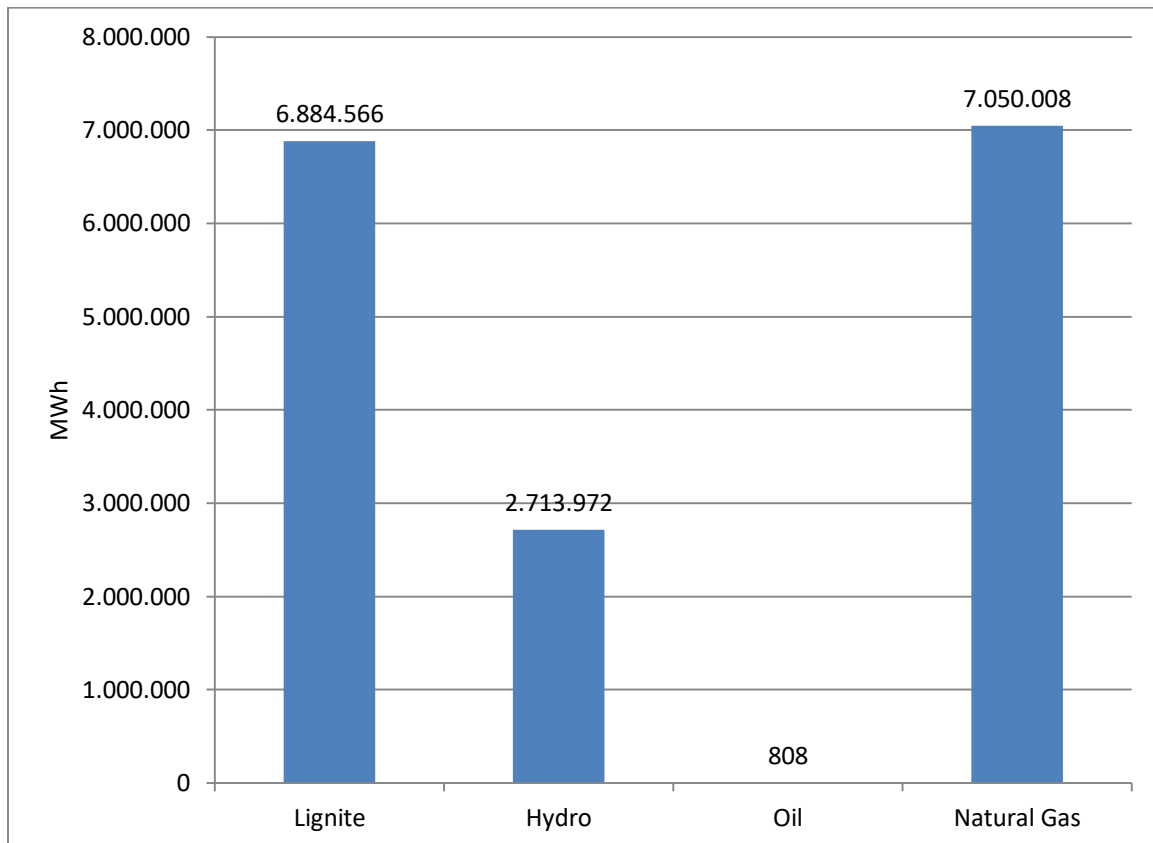


Figure 21: Yearly Production of PPC per fuel type

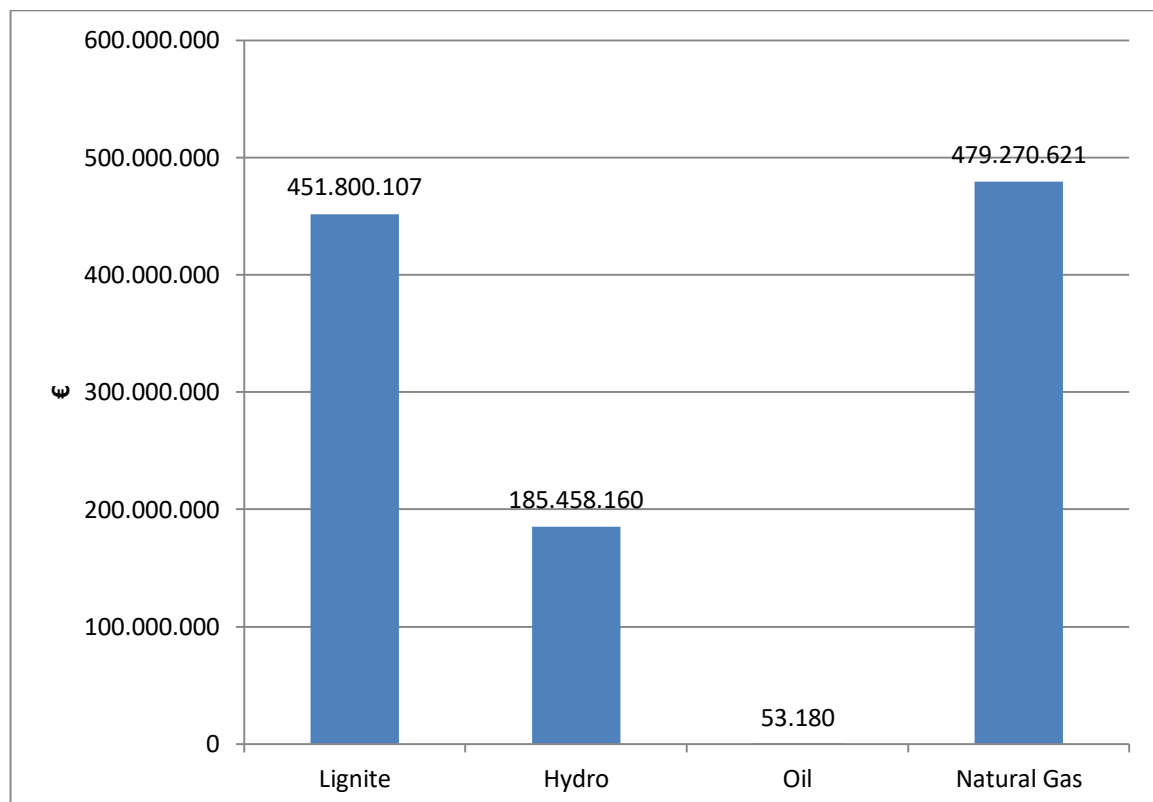


Figure 22: Yearly Credits of PPC per fuel type

4.3 Production per Participant, fuel type and operation status

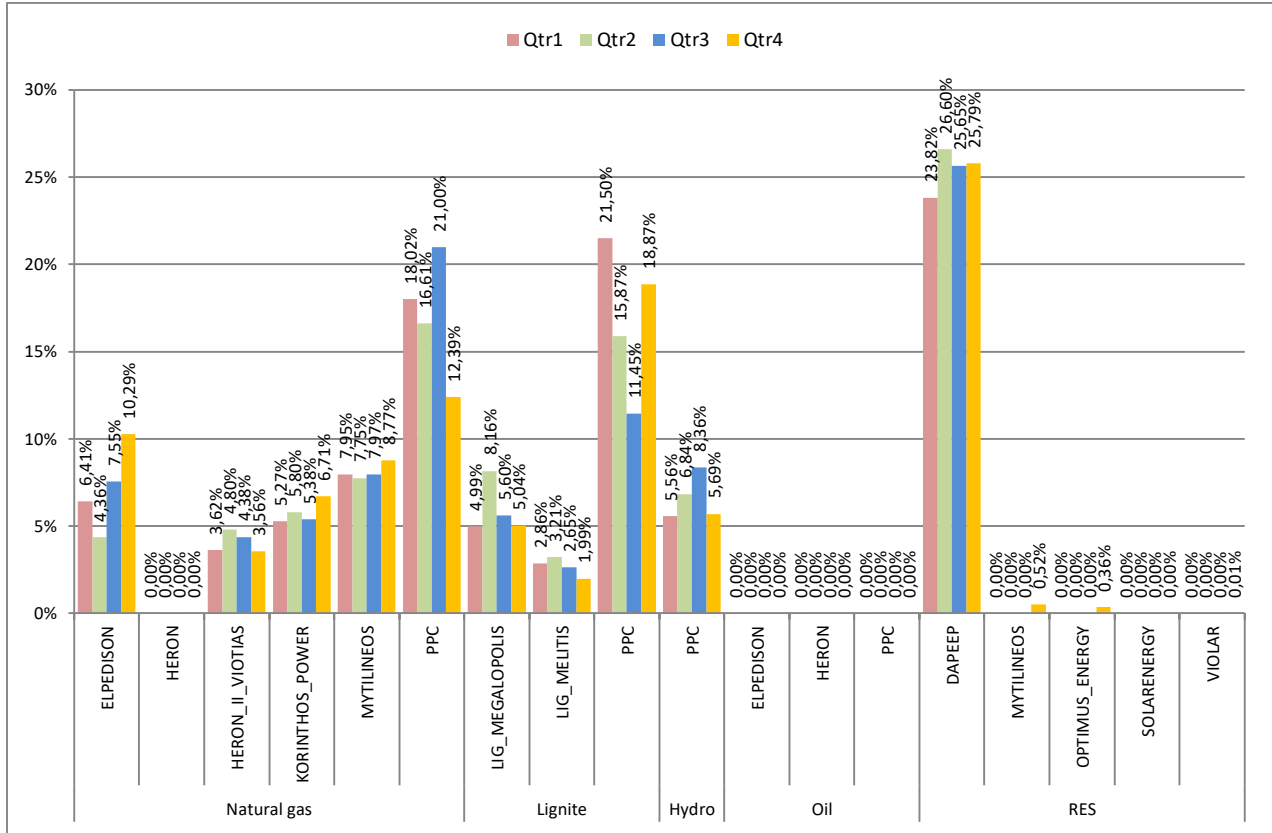


Figure 23: Percentage (%) of Total Quarter Production per Participant and fuel type for all quarters of 2019

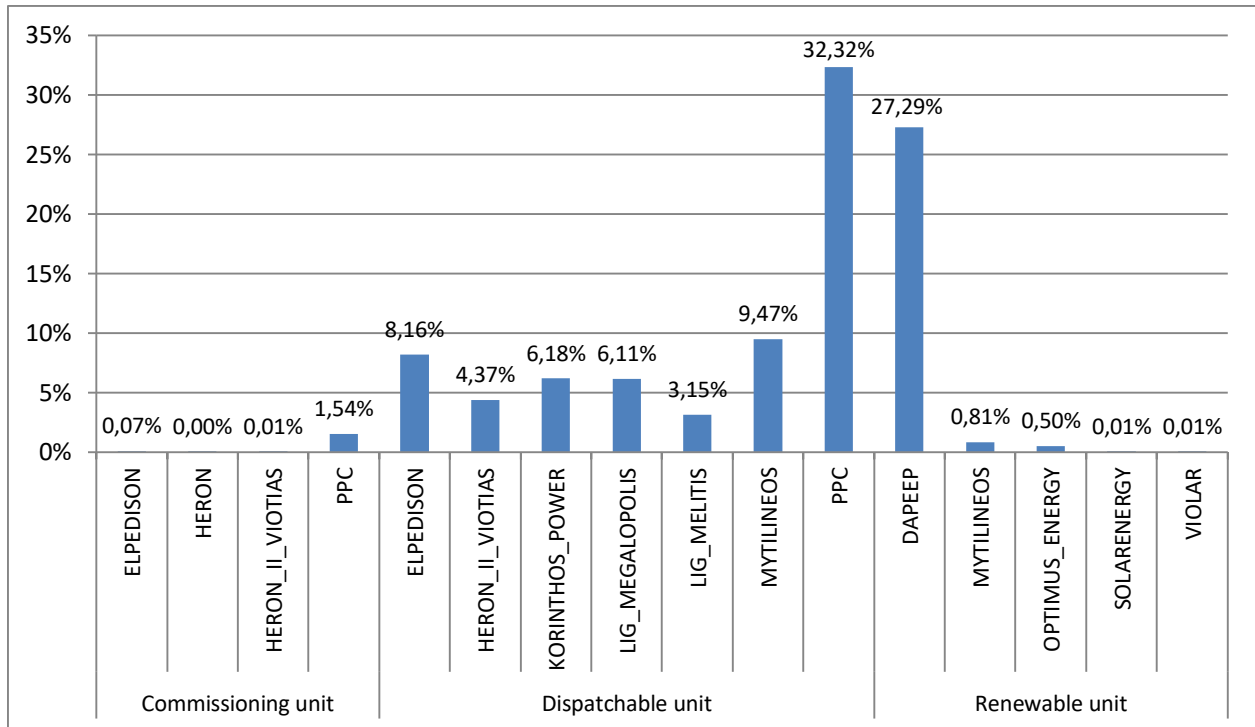


Figure 24: Percentage (%) of Total Yearly Production per Participant and operation status (testing operation, dispatchable unit, RES)

4.4 Production and Credits per Unit

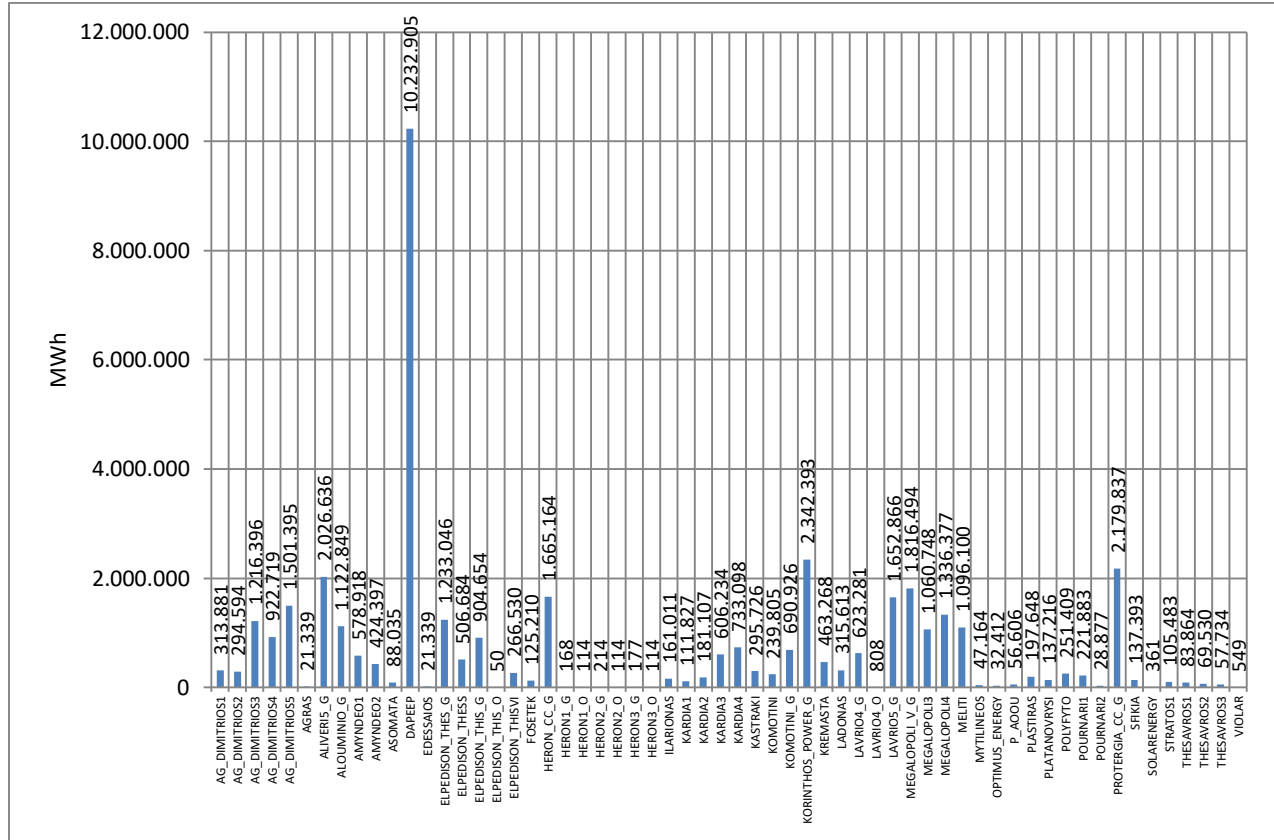


Figure 25: Yearly Energy per Unit and RES Aggregators

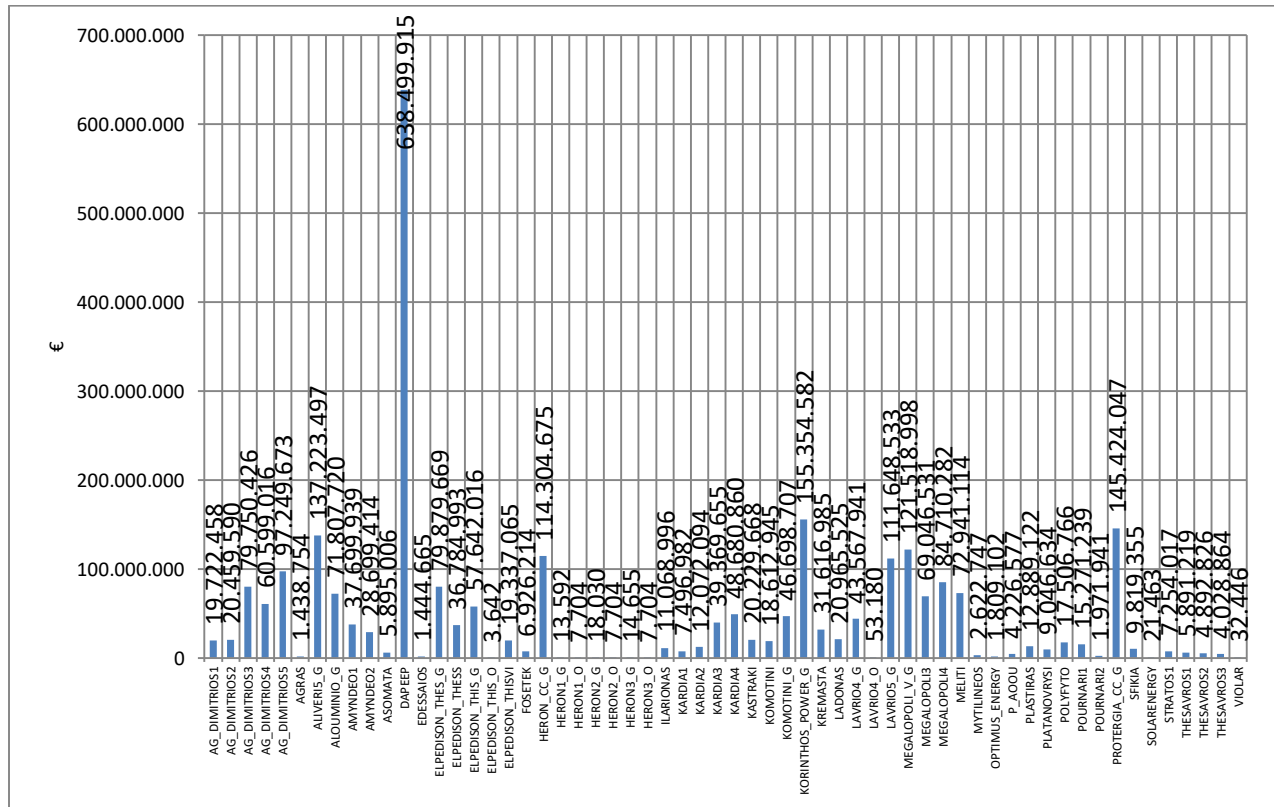


Figure 26: Yearly Credits per Unit and RES Aggregators

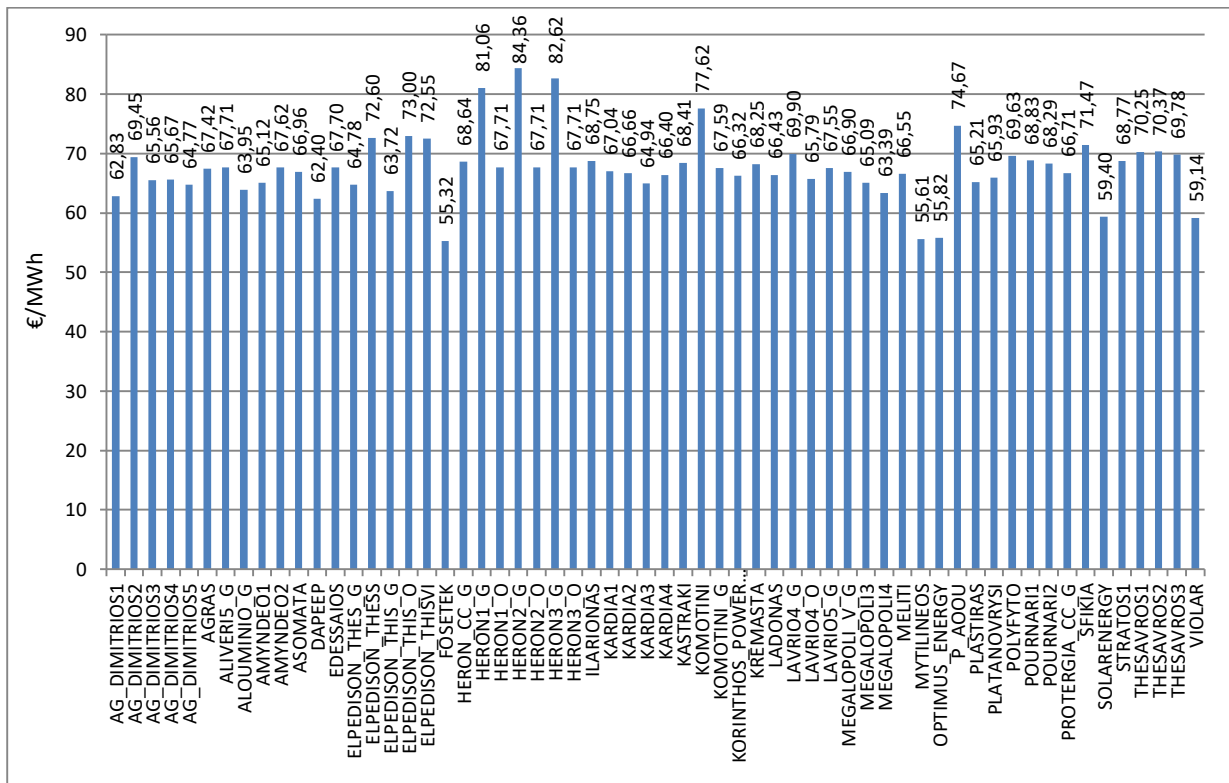


Figure 27: Yearly Credits / Yearly Production in €/MWh per Unit and RES Aggregators

5. Supply of Electricity

5.1 Load Declarations and Debits

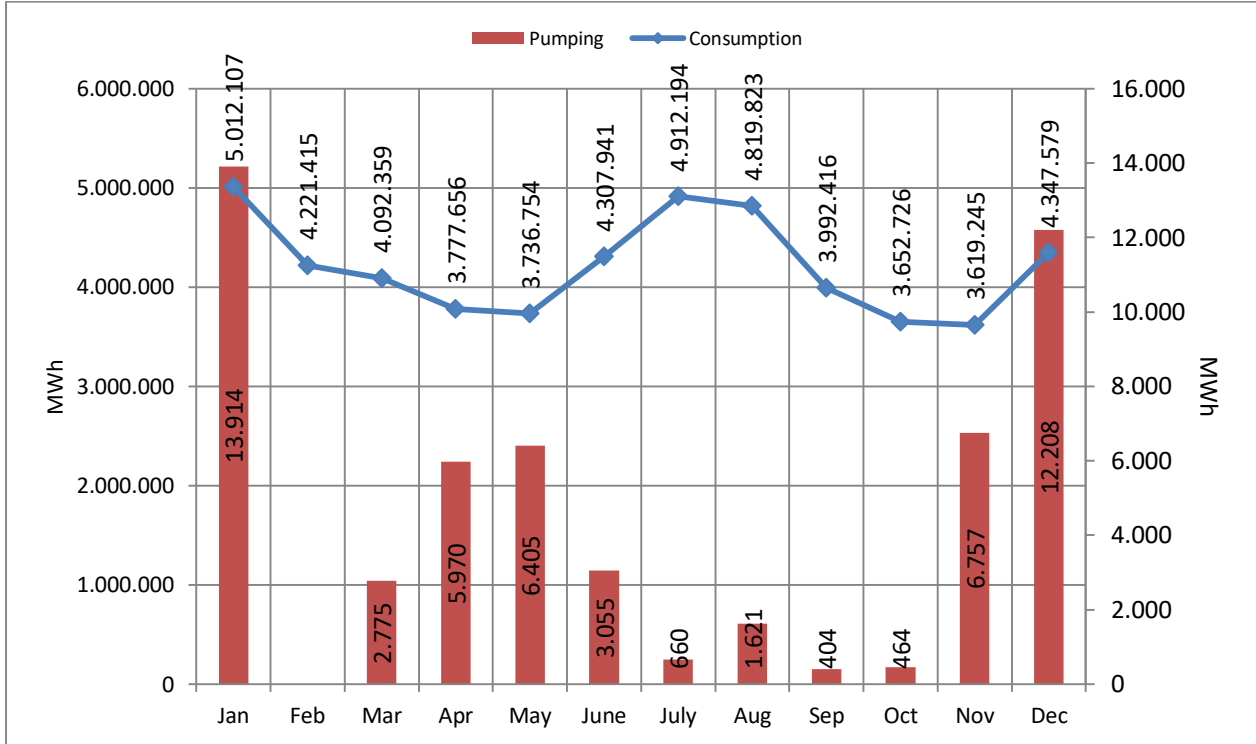


Figure 28: Monthly Load Declarations and Pumping (MWh)(right axis represents pumping operation)

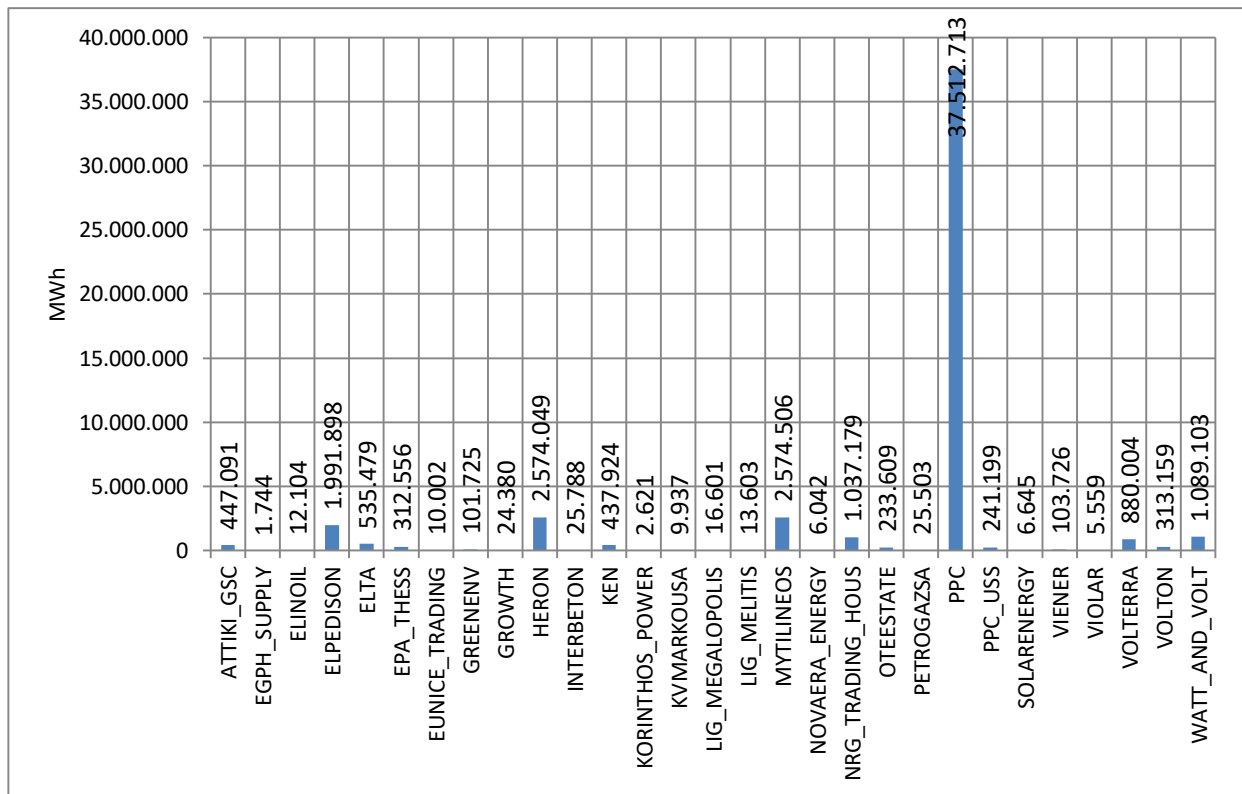


Figure 29: Yearly Supply per Participant

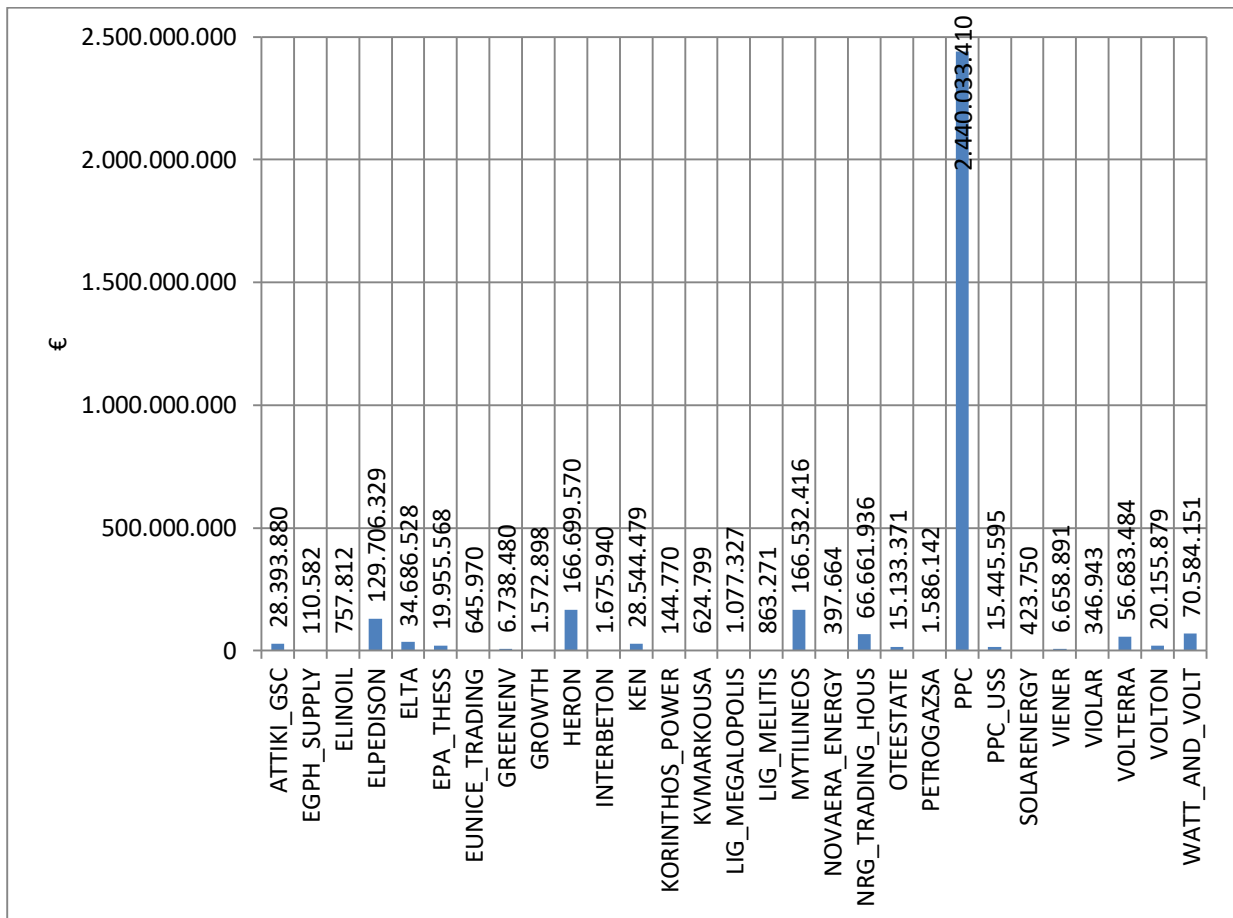


Figure 30: Yearly Supply Debits per Participant

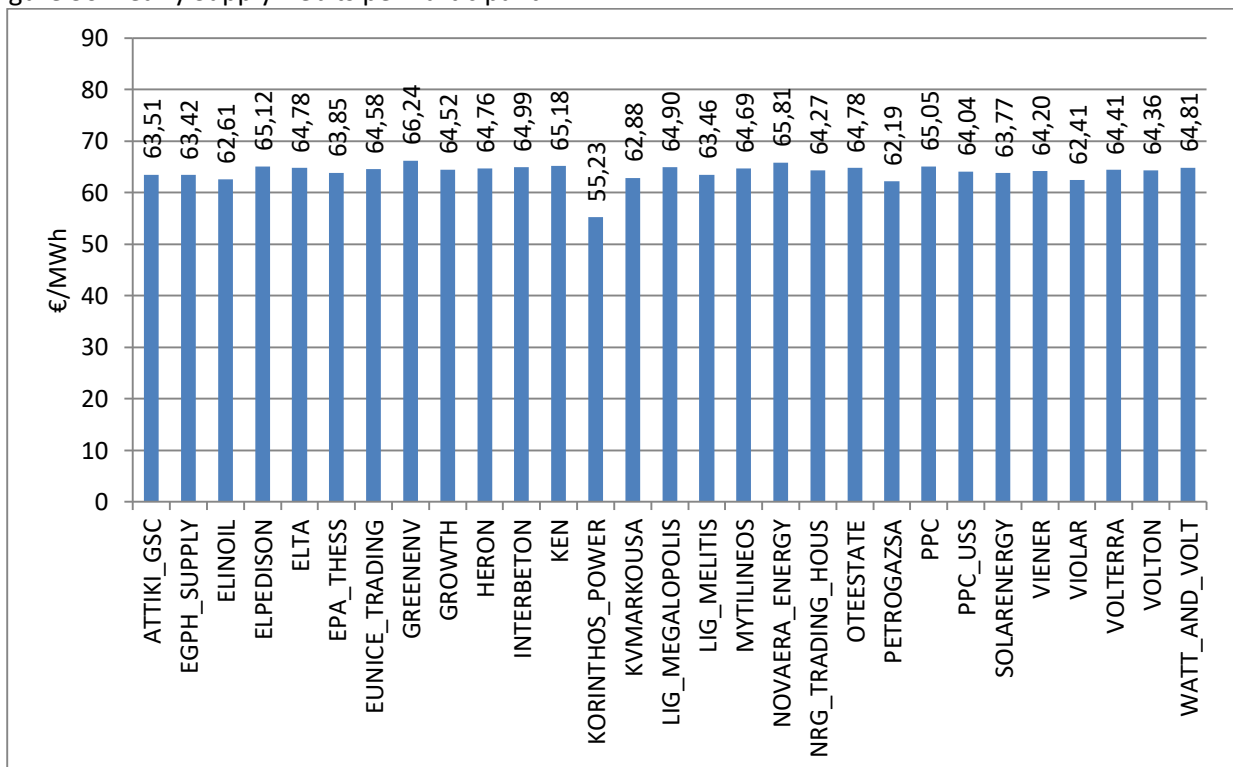


Figure 31: Yearly Debits / Yearly Supply in €/MWh per Participant

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

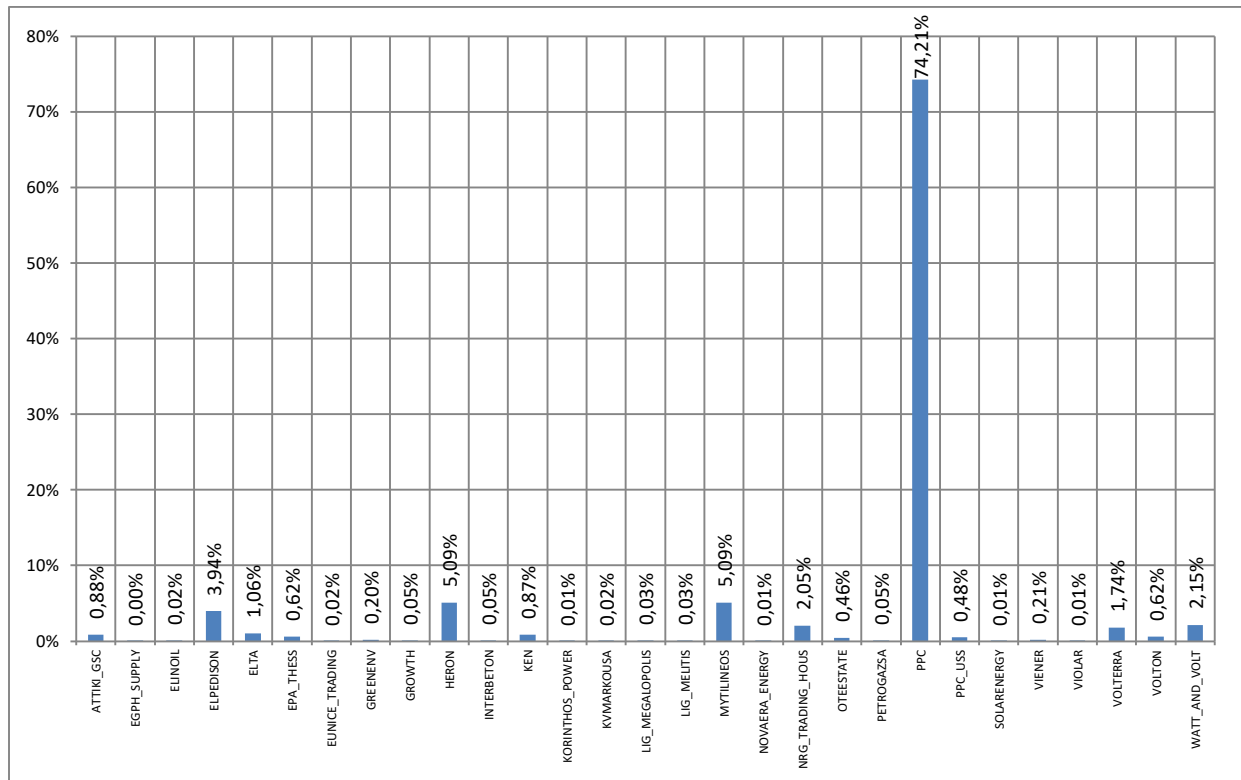


Figure 32: Percentage (%) of Total Yearly Supply per Participant.

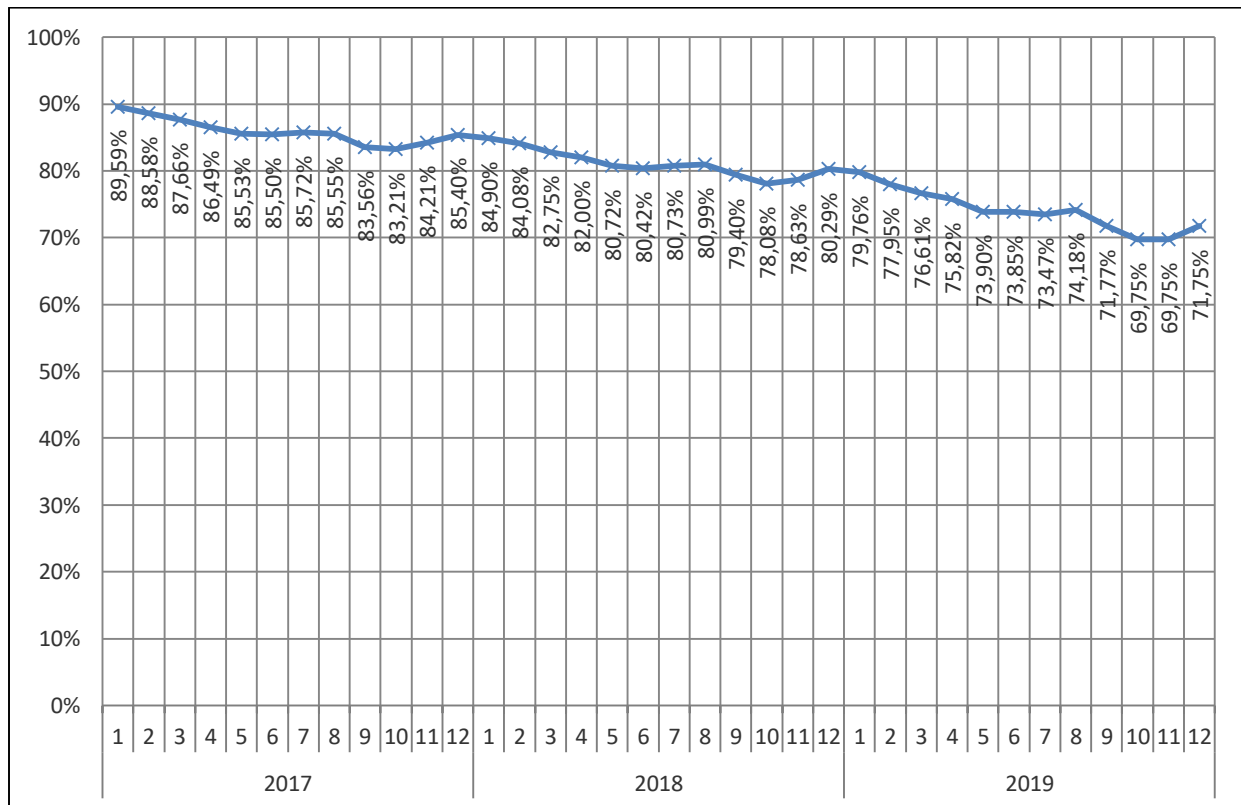


Figure 32a: Evolution of the percentage (%) of PPC in Total Monthly Supply from 2017 to 2019

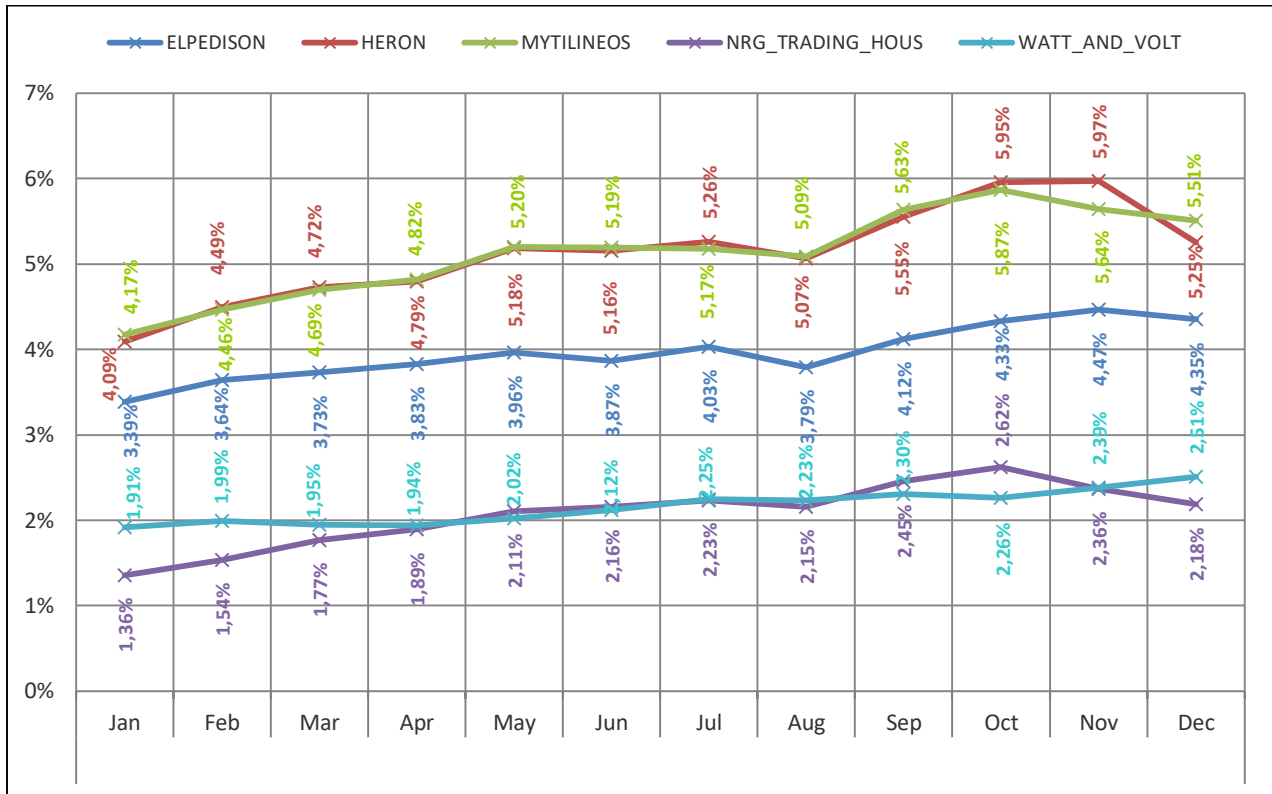


Figure 32b: Evolution of the percentage (%) of the five largest suppliers (PPC excluded) in Total Monthly Supply (as ranked in December 2019)

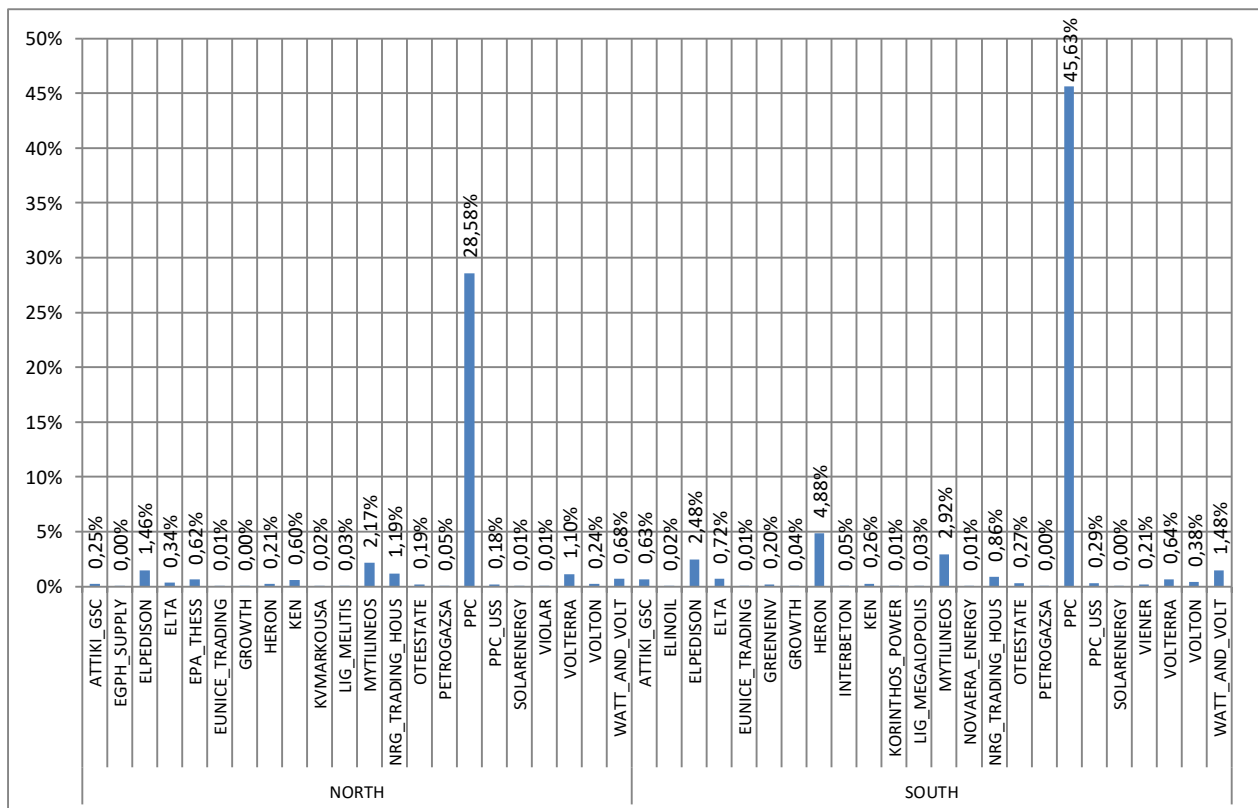


Figure 33: Percentage (%) of Total Yearly Supply per Participant and Zone

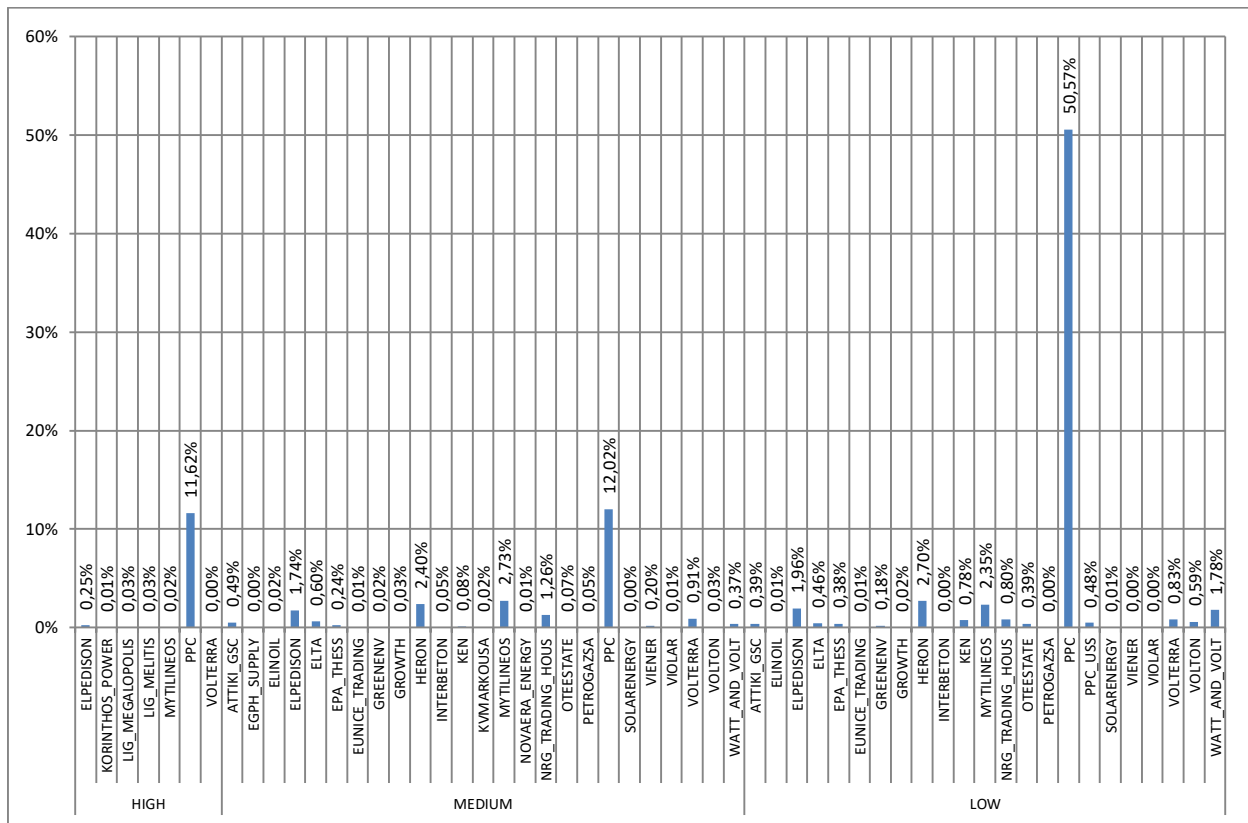


Figure 34: Percentage (%) of Total Yearly Supply per Participant and Voltage Level

6. Electricity Trading

6.1 Imports

	Total	Albania	Bulgaria	Italy	F.Y.R.O.M.	Turkey
Daily Average Imports	34,305	4,668	10,019	10,634	7,274	1,709
Monthly Average Imports	1,043,435	141,988	304,752	323,440	221,266	51,989
Total Yearly Imports	12,521,216	1,703,854	3,657,020	3,881,282	2,655,192	623,868

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

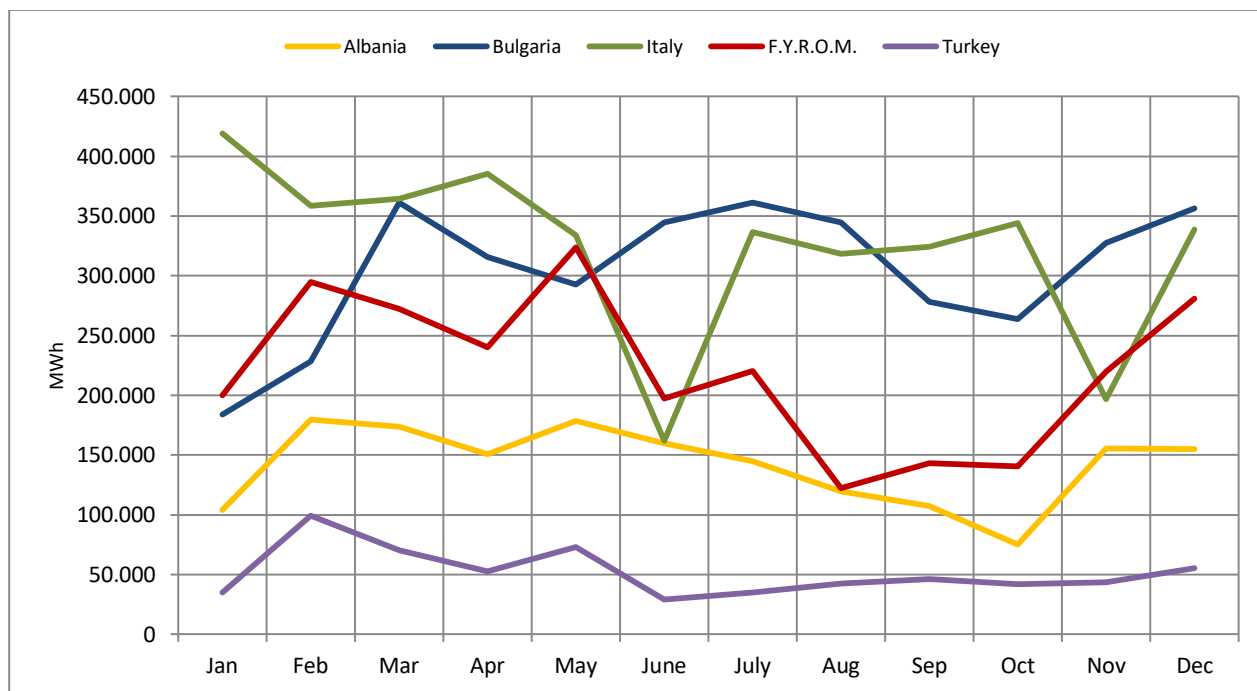


Figure 35: Monthly Imports per Interconnection

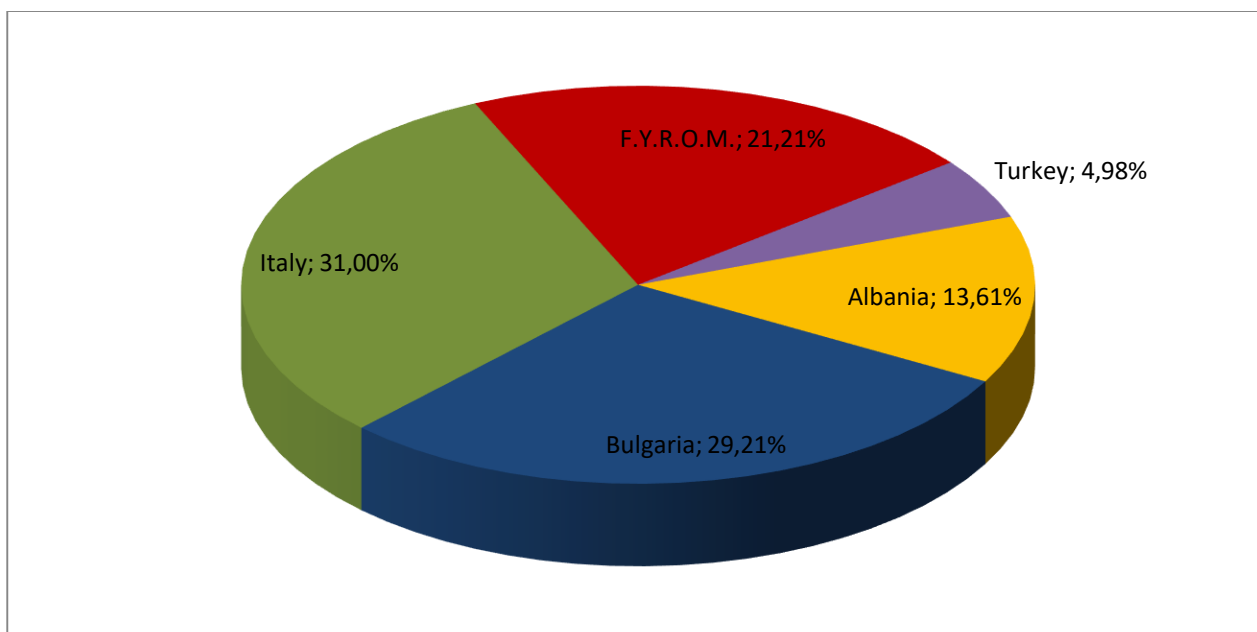


Figure 36: Percentage (%) of Yearly Imports per Interconnection

6.2 Exports

	Total	Albania	Bulgaria	Italy	F.Y.R.O.M.	Turkey
Daily Average Exports	7,611	1,751	940	2,664	2,151	105
Monthly Average Exports	231,505	53,247	28,591	81,028	65,431	3,208
Total Yearly Exports	2,778,055	638,963	343,091	972,332	785,169	38,499

Table 4: Daily Average, Monthly Average and Total Yearly Exports per Interconnection (MWh)

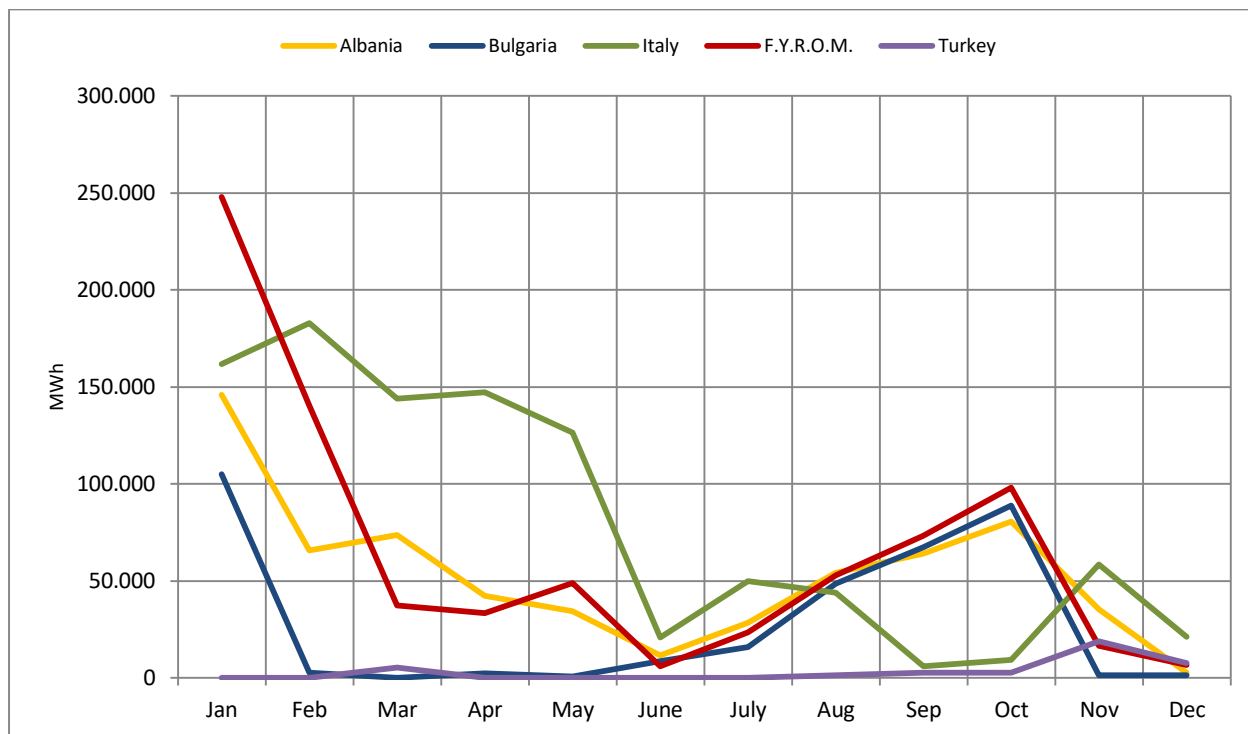


Figure 37: Monthly Exports per Interconnection (MWh)

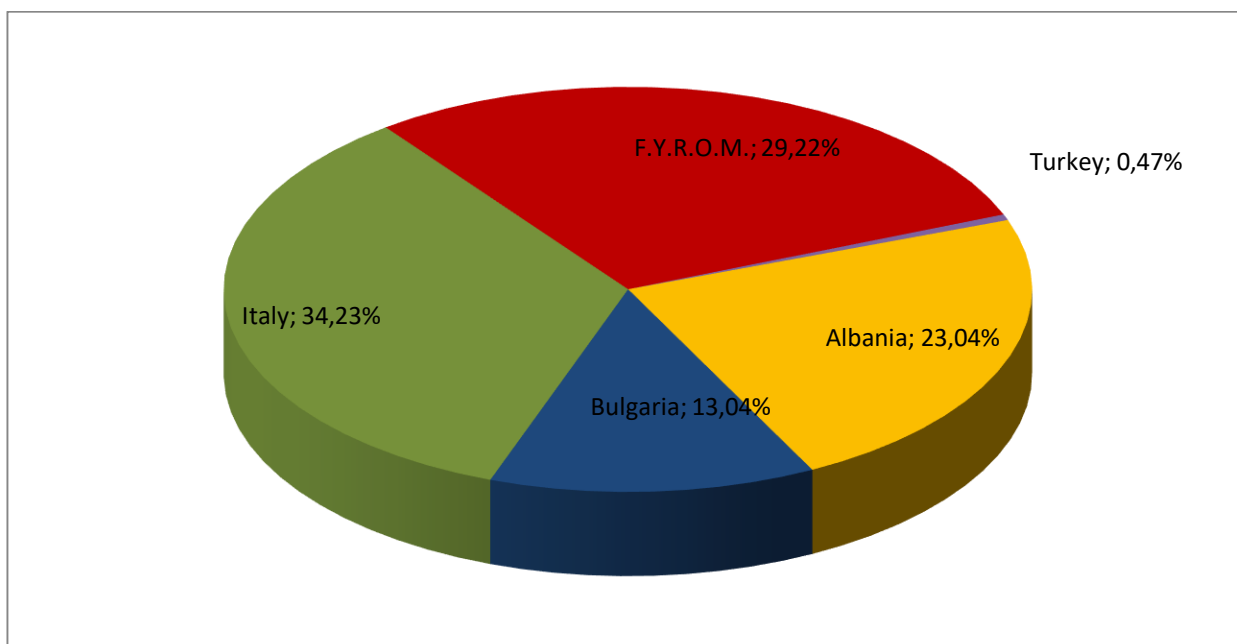


Figure 38: Percentage (%) of Yearly Electricity Exports per Interconnection

6.3 Electricity Transit

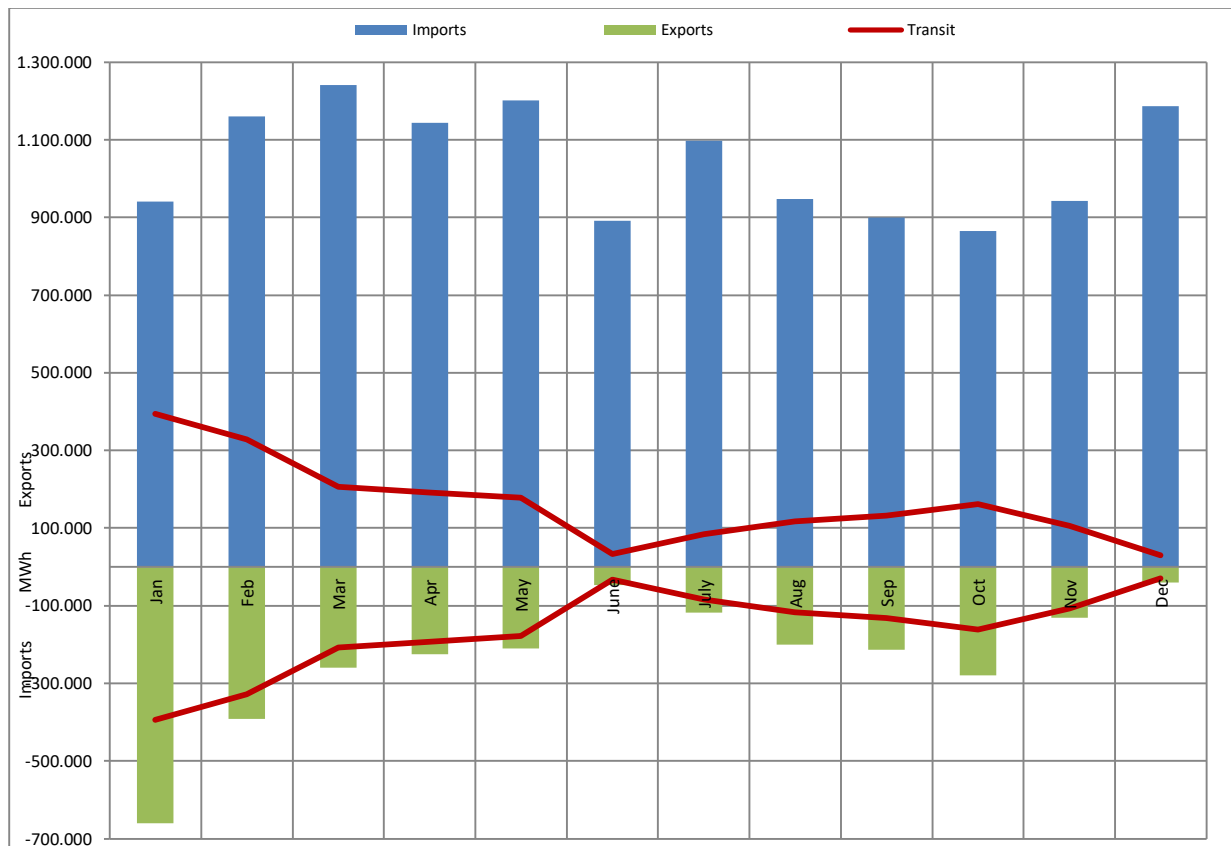


Figure 39: Monthly Transit*

* 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

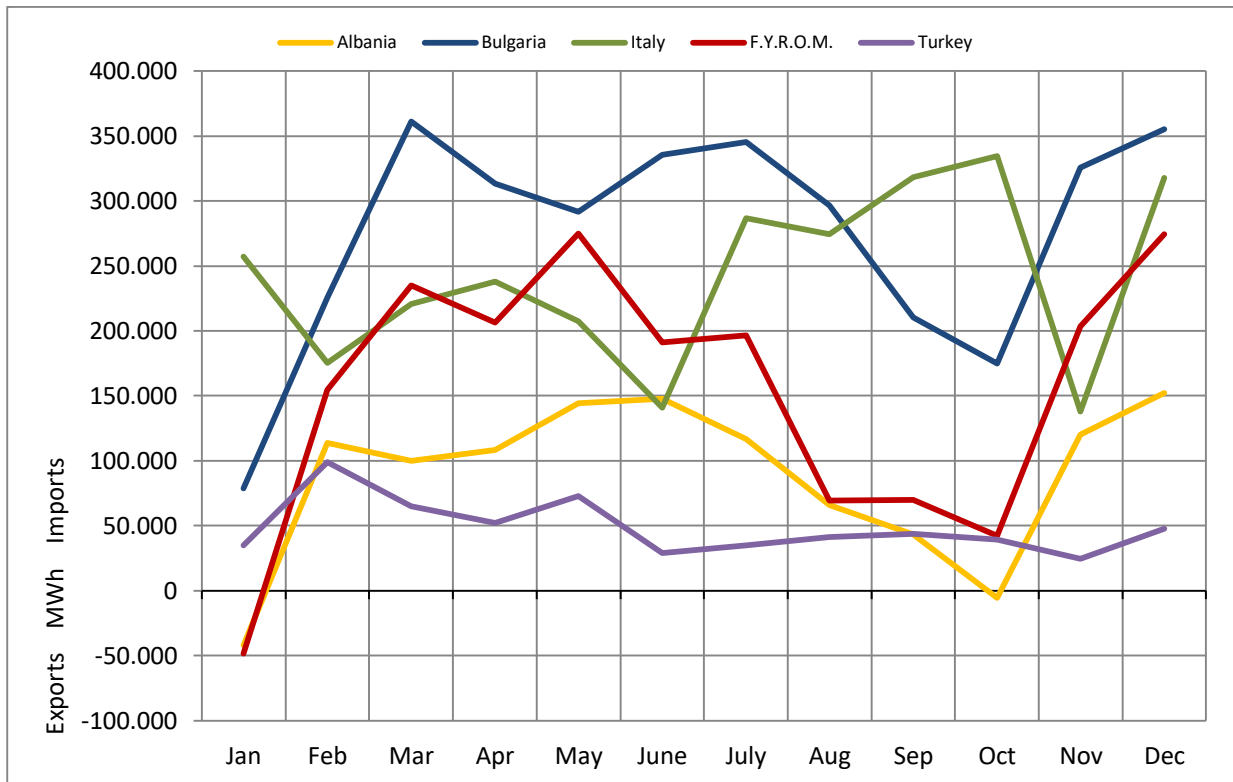


Figure 40: Monthly Net Position of Interconnections (Imports-Exports), (positive values: more Imports, negative values: more Exports)

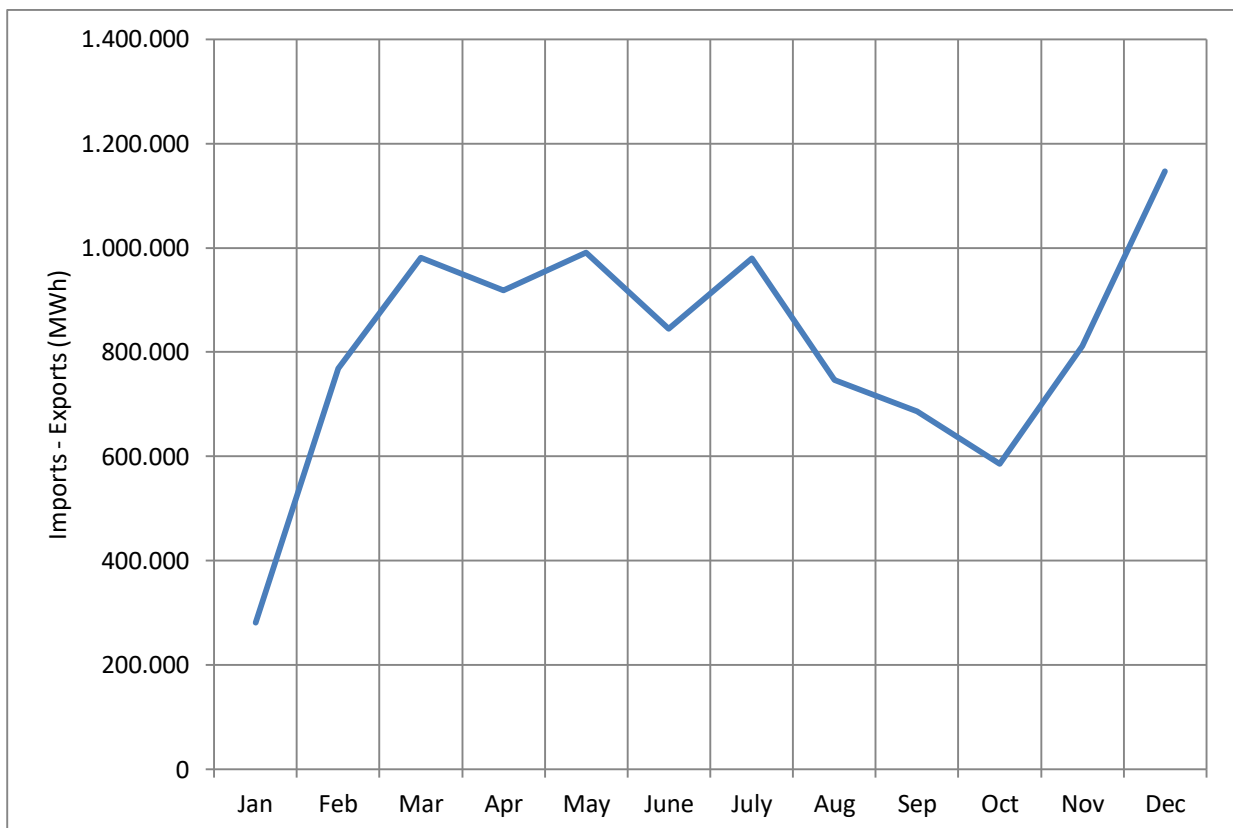


Figure 41: Monthly Net Position of all Interconnections (Imports - Exports)

6.5 Analysis on Trading per Participant and Interconnection

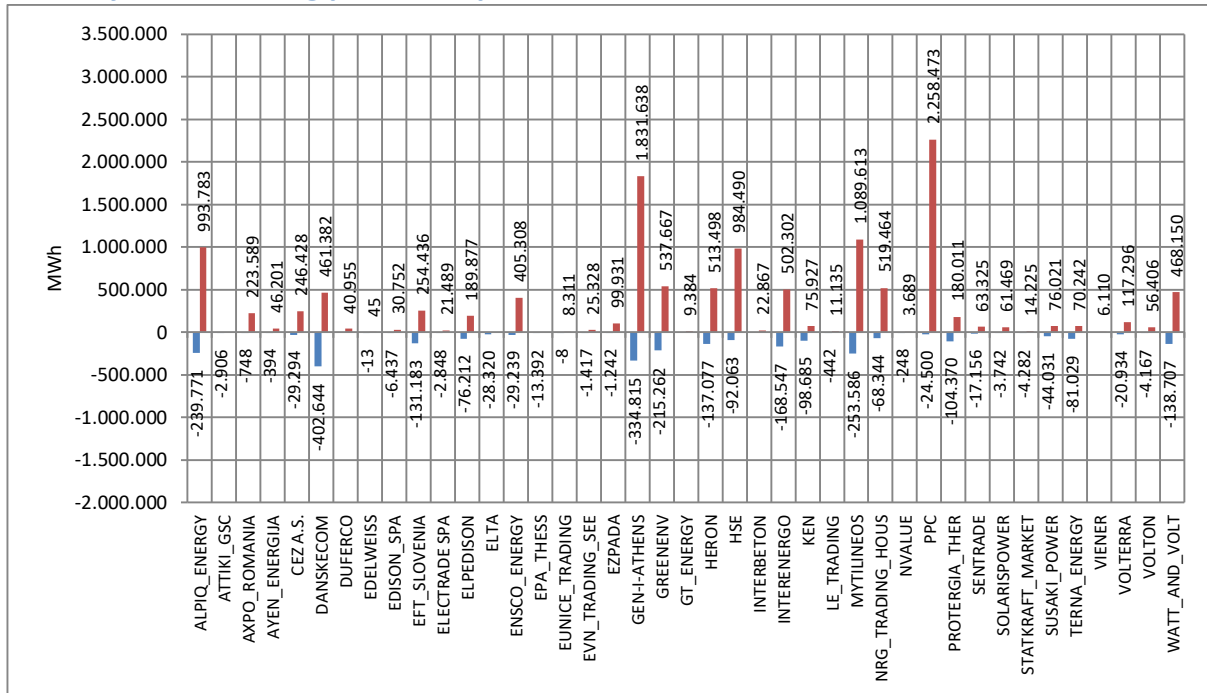


Figure 42: Yearly Trading per Participant and activity (positive values: Imports, negative values: Exports)

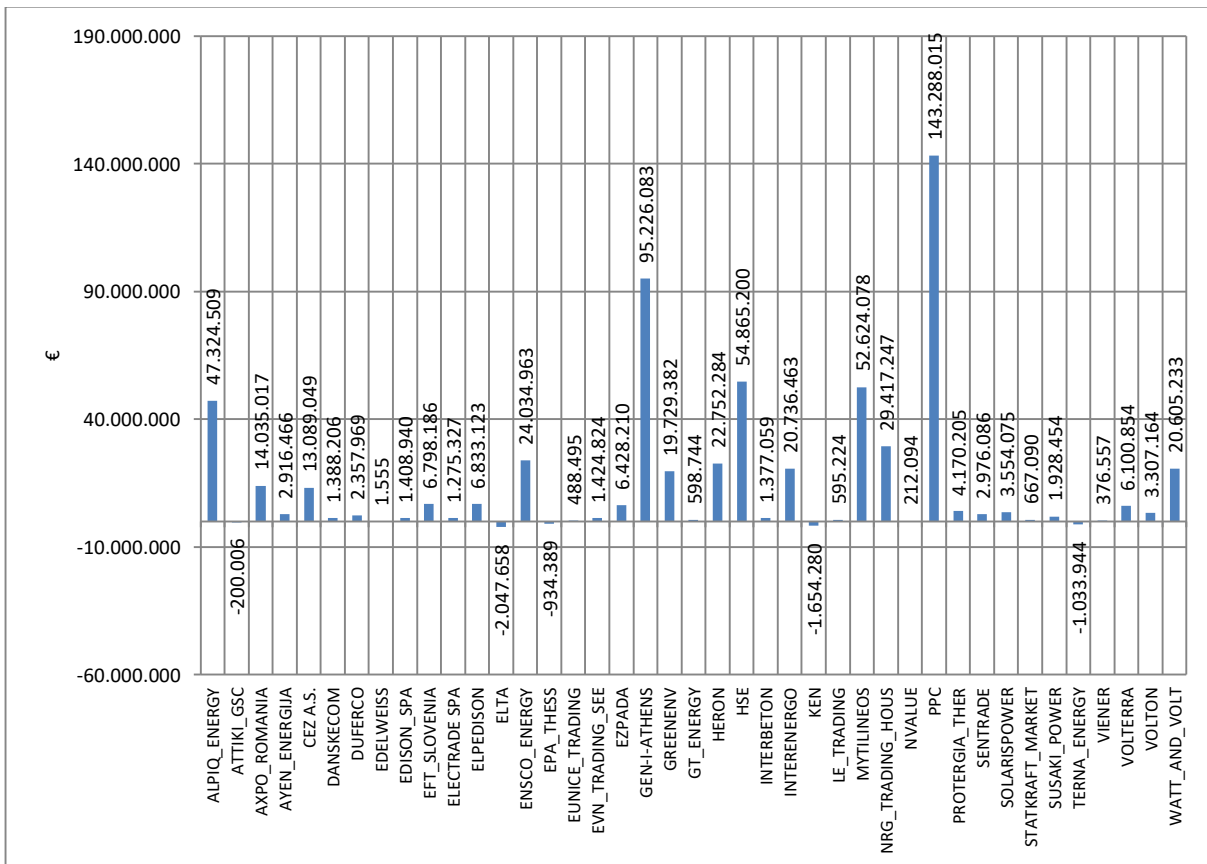


Figure 43: Yearly Trading Credits/Debits per Participant (positive values: Credits, negative values: Debits)

6.6 Wrong Direction Energy Flows

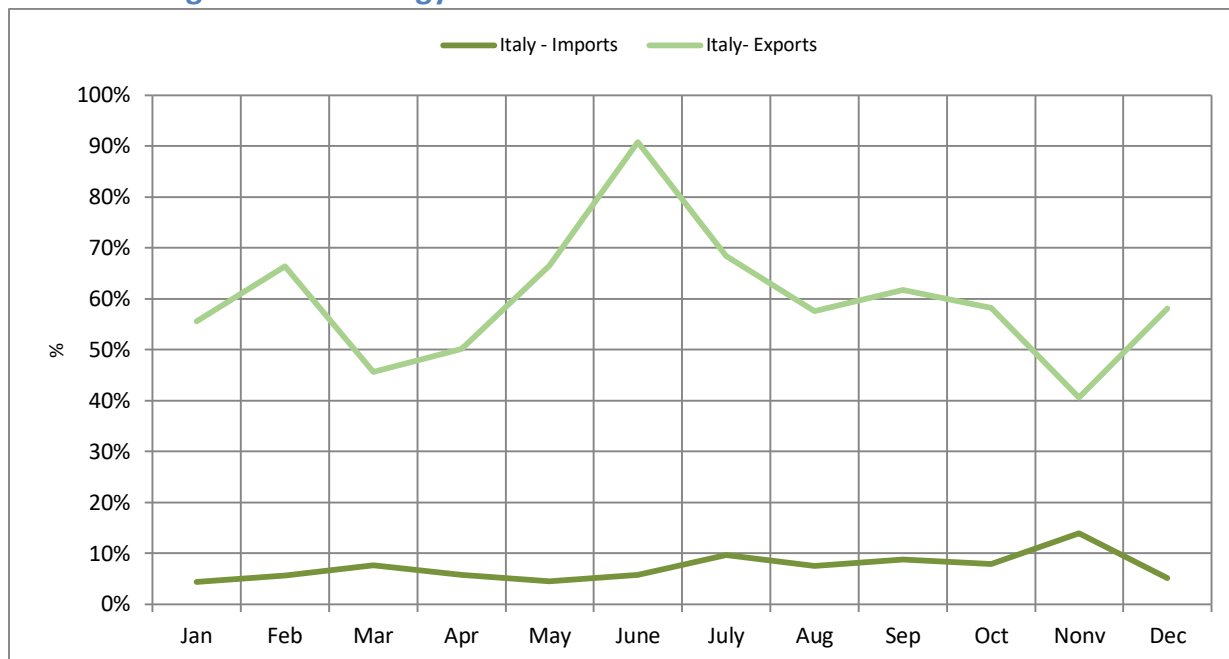


Figure 44: Monthly percentage (%) of indicative wrong direction energy flows* as part of the realized imports/exports for the interconnection of Greece-Italy, which would not get implemented under market coupling

*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.

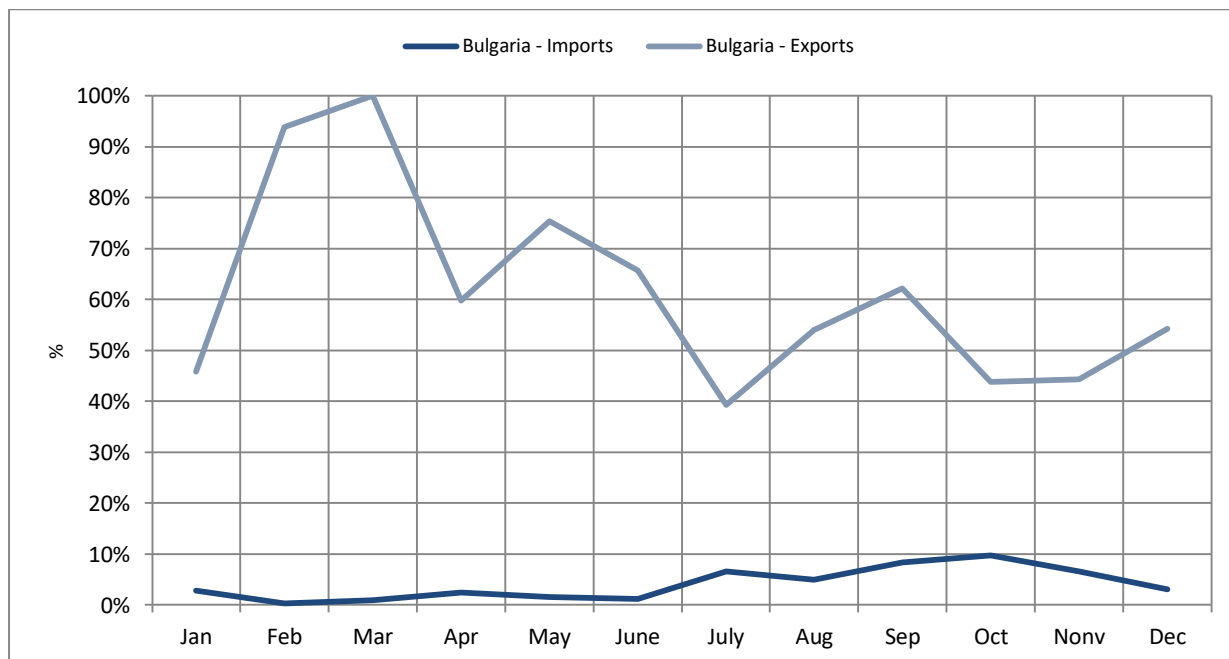


Figure 45: Monthly percentage (%) of indicative wrong direction energy flows* as part of the realized imports/exports for the interconnection of Greece-Bulgaria, which would not get implemented under market coupling

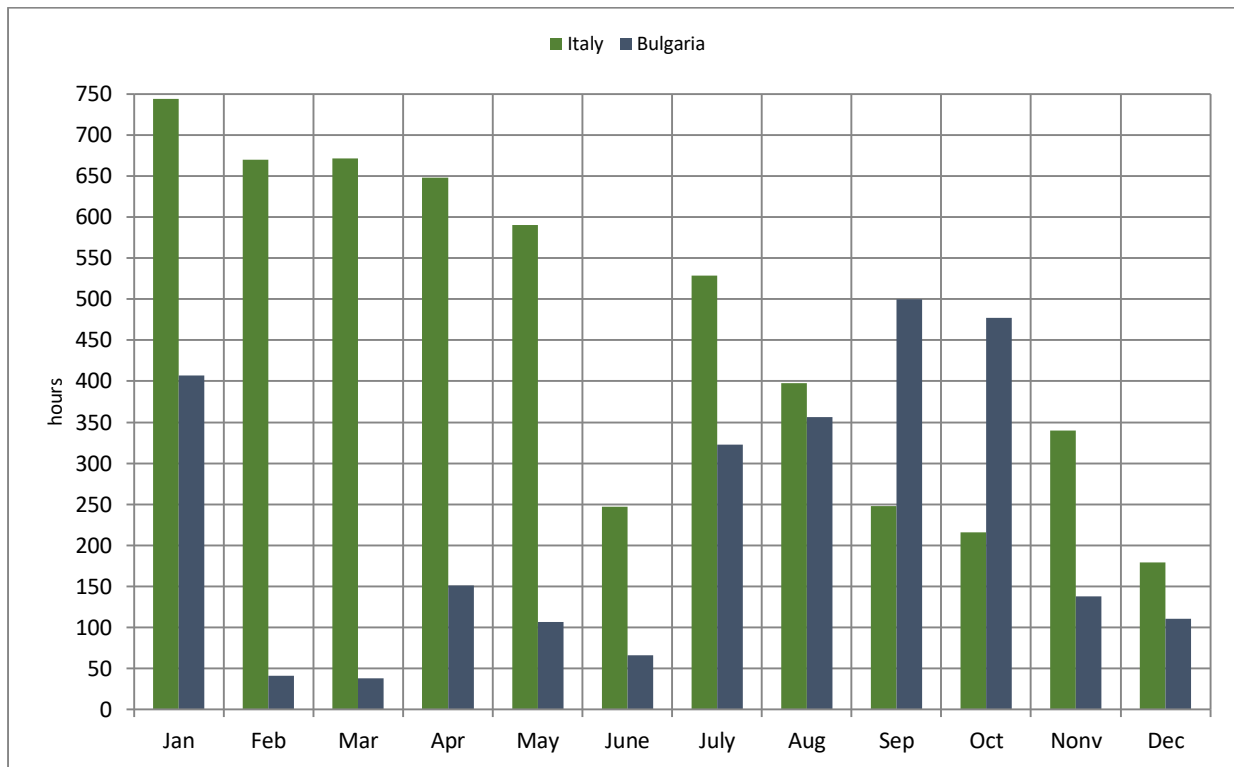


Figure 46: Hours per month with wrong direction energy flows