



ROMANIAN ENERGY REGULATORY AUTHORITY

DEPARTMENT OF MONITORING. REMIT



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**REPORT ON RESULTS OF MONITORING THE  
ROMANIAN ELECTRICITY MARKET  
NOVEMBER 2017**

*- This document represents an unauthorised translation of the Romanian document -*

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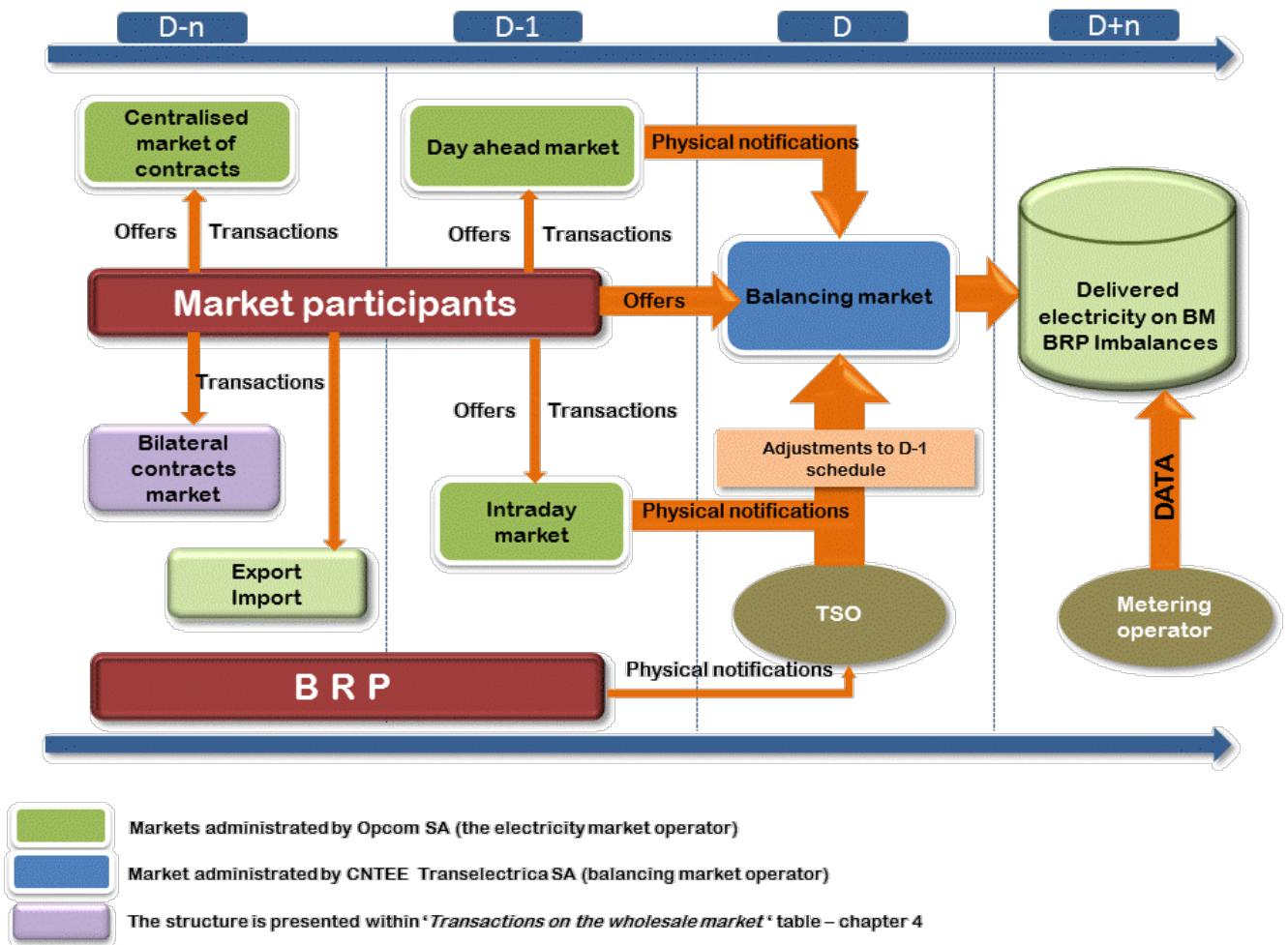
## I. MAIN EVENTS IN THE DEVELOPMENT OF THE ROMANIAN ELECTRICITY MARKET

- GD 365/1998 – vertically integrated monopol – RENEL – was split into separated distribution and supply companies (SC Electrica SA) and generation companies (SC Termoelectrica SA and SC Hidroelectrica SA) were established within a new company - CONEL SA. Two other electricity generators (SN Nuclearelectrica SA and RAAN) were separately established;
- transmission. system services and market administration were separately organised. within CONEL SA;
- the relationships between parties within the electricity sector were settled based on contracts;
- GD 122/2000 – electricity market opens at 10%;
- GD 627/2000 – CONEL holding is dissolved;
- September 2000 – launch of the compulsory electricity spot market in Romania. administrated by OPCOM and organized based on pool model;
- GD 1342/2001 – SC Electrica SA splits in 8 subsidiaries for electricity distribution and supply;
- GD 1524/2002 – SC Termoelectrica SA reorganizes in several separate legal entities for generation;
- July 2005 – launch of the new market model. based on:
  - voluntary spot market. with both sides offers and bilateral settlement;
  - compulsory balancing market. with TSO as single counterparty;
  - financial responsibilities of the balancing are allocated to the BRP;
- GD 644/2005 – electricity market opens at 83.5%;
- December 2005 – launch of the green certificates market;
- December 2005 – launch of the centralized market for bilateral contracts;
- March 2007 – launch of the centralized market for partially standardized bilateral contracts with continuous negotiation;
- GD 638/2007 – fully opening of electricity and gas markets;
- July 2007 – rules for capacity market have been established;
- July 2008 – launch of the mechanism of direct debit and guarantee for electricity transactions on the day-ahead market (OPCOM as central counterparty);
- August 2008 – process of legal unbundling of distribution and supply companies has been concluded;
- August/December 2010 – launch of bilateral coordinated auctions for capacity allocation on interconnections with Hungary and Bulgaria;
- July 2011 - launch of the intraday market;
  - GD 930/2010 – SC Electrica Furnizare SA had been established through merger of the former last resort suppliers Electrica Furnizare Muntenia Nord. Electrica Furnizare Transilvania Nord and Electrica Furnizare Transilvania Sud;
- June 2012 – a new entity obtains the generation license and enters on the electricity market - Complexul Energetic Oltenia SA. established in a dual system through merger of the former SNLO Tg. Jiu. Complexul Energetic Turceni. Complexul Energetic Rovinari and Complexul Energetic Craiova (GD 1024/2011);
- July 2012 – the Law of electricity and natural gas no. 123/2012 has enter into force;
- September 2012 – the application of the first stage from the timetable of phasing out of regulated electricity tariffs to final customers who choose not to exercise their eligibility rights. in accordance with the obligations assumed by the Romanian Government in relation with the IMF. World Bank and European Commission;
- October 2012 – the Law no. 160/2012 regarding the organisation and operation of the Romanian Energy Regulatory Authority has entered into force;
- November 2012 - a new entity obtains the generation license and enters on the electricity market - Complexul Energetic Hunedoara SA. established through merger of the former Electrocentrale Deva and Electrocentrale Paroseni (GD 1023/2011);
- December 2012 – launch of the organised electricity market for the large customers;
- July 2013 – launch of centralized market trading with continuous double negotiation of bilateral contracts for electricity;

- August 2013 – removal of injection transmission tariff for the imported and respectively of the extraction transmission tariff for the exported quantities. and of the corresponding system services;
- December 2013 – removal of the export tariffs applied by the electricity market operator;
  - certification with conditions for CNTEE Tranelectrica SA as an independent transmission and system operator;
  - application of last stage of the phasing out calendar for removal the regulated tariffs applied to the final nonhousehold clients who do not use their eligibility rights;
- August 2014 – CNTEE Tranelectrica SA certification as NES transmission system operator following the „independent system operator” model;
- October 2014 – entry into force of the Law no. 127/2014 for amending the Law no. 123/2012;
- November 2014 – the launch of the CZ-SK-HU-RO market coupling project. that encompasses the DAM markets from the Czech Republic. Slovakia. Hungary and Romania;
- January 2015 – entry into force of the new centralized market for bilateral contracts with its components: Extended Auctions Mechanism (CMBC–EA). Continuous Negotiation Mechanism (CMBC–CN). Fuel Processing Mechanism (CMBC–FP);
- February 2015 – implementing the centralized market for universal service;
- November 2016 - entry into force of the Law no. 203/2016 amending the Law no. 123/2012 on electricity and natural gas.

## II. WHOLESALE ELECTRICITY MARKET

### 1. Structure of the wholesale electricity market



## 2. Participants on the wholesale electricity market

The market participants\*<sup>1)</sup> acting on the electricity market in November 2017 are presented below split into categories:

No.	Category	No.	Category
<b>A Electricity generators on classic sources operating dispatching units</b>		<b>D Electricity generators on solar source operating dispatching units</b>	
1	Bepco SRL	1	Blue Sand Investment SRL
2	CET Arad SA	2	Caracal Solar Alpha SRL
3	CET Govora SA	3	Casa Crang SRL
4	CE Hunedoara SA	4	Cluj Solar SRL
5	CE Oltenia SA	5	Corabia Solar SRL
6	Contour Global Solutions SRL	6	Cujmir Solar SRL
7	Ecogen Energy SA	7	Delta & Zeta Energy SRL
8	Electrocentrale București SA	8	Ecosfer Energy SRL
9	Electrocentrale Constanța SA	9	Energo Proiect SRL
10	Electrocentrale Galați SA	10	Eye Mall SRL
11	Electro Energy Sud SRL	11	Fort Green Energy SRL
12	Enet Focsani SA	12	Foton Epsilon SRL
13	Gas Energy Ecotherm SA	13	Gamma & Delta Energy SRL
14	Lukoil Energy & Gaz Romania SRL	14	GPSB Solaris 48 SRL
15	Modern Calor SA	15	Greenlight Solution SRL
16	OMV Petrom SA	16	Green Vision Seven
17	Rulmenti SA	17	Izvor de Lumina SRL
18	SNGN Romgaz SA	18	Kentax Energy SRL
19	Termoficare Oradea SA	19	Lemar Grup SRL
20	Veolia Energie Iași SRL	20	LJG Green Source Energy Alpha SA
21	Veolia Energie Prahova SRL	21	LJG Green Source Energy Beta SRL
22	Vest Energo SA	22	LJG Green Source Energy Gamma SRL
<b>B Electricity generators on wind source operating dispatching units</b>		23	Long Bridge Milenium SRL
1	Alizeu Eolian SA	24	Mar-Tin Solar Energy SRL
2	Arinna Development SRL	25	Potelu Solar SRL
3	Blue Line Energy SRL	26	Power L.I.V.E. One SRL
4	Blue Planet Investments SRL	27	RA-RA PARC SRL
5	Braila Winds SRL	28	Romkumulo SRL
6	Bridgeconstruct SRL	29	Simico Prod Factory SRL
7	Catalan Electric SRL	30	Skybase Energy SRL
8	Cernavoda Power SRL	31	Solar Electric Frasinet SRL
9	Corni Eolian SRL	32	Solar Future Energy SRL
10	Crucea Wind Farm SRL	33	Solaria Green Energy SRL
11	Dan Holding MGM SRL	34	Solprim SRL
12	Eco Power Wind SRL	35	Spectrum Tech SRL
13	Ecoenergia SRL	36	Studina Solar SRL
14	EDPR Romania SRL	37	Sun Energy Complet SA
15	Electrica Serv SRL	38	Tis Energy SRL
16	Electricom SA	39	Tinmar Green Energy SRL
17	Elektra Green Power SRL	40	Urdel Enery SRL
18	Elektra Wind Power SRL	41	Vanju Mare Solar SRL
19	Enel Green Power Romania SRL	42	Varokub Energy Development SRL
20	Energia Verde Ventuno SRL	43	VIR Company International SRL
21	Enex SRL	44	VIS Solaris 2011 SRL
22	Eol Energy Moklova SRL	45	Vrish Pro Investments SRL
23	Eolian Center SRL	46	WDP Development RO SRL
24	Eolica Dobrogea One SRL	47	Xalandine Energy SRL
25	EP Wind Project (ROM) SIX SA	48	XPV SRL
26	Eviya Nalbant SRL	<b>E Electricity generators on hydro source operating dispatching units</b>	
27	Ewind SRL	1	Hidroelectrica SA
28	General Concrete Cernavoda SRL	<b>F Electricity generator on nuclear source operating dispatching units</b>	
29	Green Energy Farm SRL	1	SN Nuclearelectrica SA
30	Ground Investment Corp SRL	<b>G Transmission System Operator</b>	
31	Holrom Renewable Energy SRL	1	CNTEE TRANSELECTRICA SA
32	Horia Green SRL	<b>H Market Operator for DAM, Intra-Day, Centralised Markets - CMBC-EA, CMBC-CN, CMBC-FP, CM-OTC, CMUS</b>	
33	Intertrans Karla SRL	1	OPCOM SA
34	Kelavent Charlie SRL	<b>I Distribution operators</b>	
35	Kelavent Echo SRL	1	Distributie Energie Oltenia
36	Land Power SRL	2	Delgaz Grid
37	LC Business SRL	3	E-Distributie Banat
38	M&M 2008 SRL	4	E-Distributie Dobrogea
39	Mircasa Energies SRL	5	E-Distributie Muntenia
40	OMV Petrom Wind Power SRL	6	SDEE Muntenia Nord
41	Ovidiu Development SRL	7	SDEE Transilvania Nord
42	Peștera Wind Farm SRL	8	SDEE Transilvania Sud
43	Romconstruct Top SRL	<b>J Suppliers of Last Resort</b>	
44	Sibioara Wind Farm SRL	1	CEZ Vanzare SA
45	Smart Clean Power SRL	2	ENEL Energie SA
46	Smartbreeze SRL	3	E.ON Energie Romania SA
47	Soft Grup SRL	4	ENEL Energie Muntenia SA
48	Tomis Team SRL	5	Electrica Furnizare SA
49	Verbund Wind Power Romania SRL		
50	Wind Park Invest SRL		
51	Windfarm MV I SRL		
52	VS Wind Farm SRL		
<b>C Electricity generators on biomass source operating dispatching units</b>			
1	Bioenergy Suceava SRL		

No.	Category
<b>K</b>	<b>Electricity Suppliers acting exclusively on the wholesale market</b>
1	Alpiq Energy SE
2	Bit-Reen SRL
3	CEZ as
4	Cinta Energy SA
5	Danske Commodities/s Aarhus
6	EDF Trading Limited
7	Energo-Pro Trading EAD
8	Elpetra Energy E.A.D.
9	Eolian Project SRL
10	EVN Trading South East Europe
11	Ezpada SRO
12	Freepoint Commodities Europe Ltd
13	GEN I trgovanje in prodaja elektricne energije doo
14	Holding_Slovenske_Elektrarne
15	Interenergo Energetski, Inzeniring d.o.o.
16	JAS Energy Trading s.r.o.
17	Lord Energy SRL
18	MVM Partner Zrt
19	Nis Petrol SRL
20	OMV Gas Marketing & Trading GmbH
21	Petrol Bucharest Rom SRL
22	Photovoltaic Green Project SRL
23	Ritam-4-TB ood
24	Statkraft Markets GmbH
25	Transenergo Com SA
26	Unit Energy Trade SRL
27	Verbund Trading Romania SRL
<b>L</b>	<b>Electricity Suppliers acting also on the retail market</b>
1	Absolute Energy SRL
2	Aderro G.P. Energy SRL
3	A Energy Ind SRL
4	Alive Capital SRL
5	Alpiq RomIndustries SRL
6	Alro SA
7	Aqua Energia SA
8	Anchor Grup SA
9	Axpo Energy Romania SRL
10	Apuron Energy SRL
11	Ciga Energy SA
12	Cotroceni Park SA
13	Crest Energy SRL
14	Curent Alternativ SRL
15	CYEB SRL
16	E.ON Flash SA
17	Eco2Energy Choice SRL

No.	Category
<b>M</b>	<b>Electricity Suppliers acting also on the retail market</b>
18	EFE Energy SRL
19	EFT Furnizare SRL
20	Electric Planners SRL
21	Electricicare CFR SRL
22	Elsid SA
23	Electrocarbon SA
24	Electromagnetica SA
25	Enel Trade Romania SRL
26	Energy Distribution Services SRL
27	Energy Network SRL
28	Engie Romania SA
29	Enol Grup SA
30	Entrex Services SRL
31	E.V.A. Energy SRL
32	Flavus Investitii SRL
33	GDM Logistic SRL
34	Getica 95 COM SRL
35	Grenerg SRL
36	Hermes Energy International SRL
37	ICCO Energy SRL
38	ICPE Electrocond Technologies SA
39	Imperial Development SRL
40	Industrial Energy SA
41	Luxten LC SA
42	Menarom PEC SRL
43	Midas&CO SRL
44	MET Romania Energy Marketing SRL
45	Monsson Trading SRL
46	Neptun SA
47	Next Power SRL
48	Next Energy Parteners SRL
49	Nova Power&Gas SRL
50	P.C. Management & Consulting SRL
51	Plenerg SRL
52	Power Clouds SRL
53	QIA Energy SRL
54	QMB Energy SRL
55	RCS&RDS SA
56	Renovatio Trading SRL
57	Restart Energy One SRL
58	Romelectro SA
59	RWE Energie SRL
60	Stock Energy SRL
61	Tinmar Energy SA
62	Transformer Energy Supply SRL
63	Unistil SRL
64	Werk Energy SRL

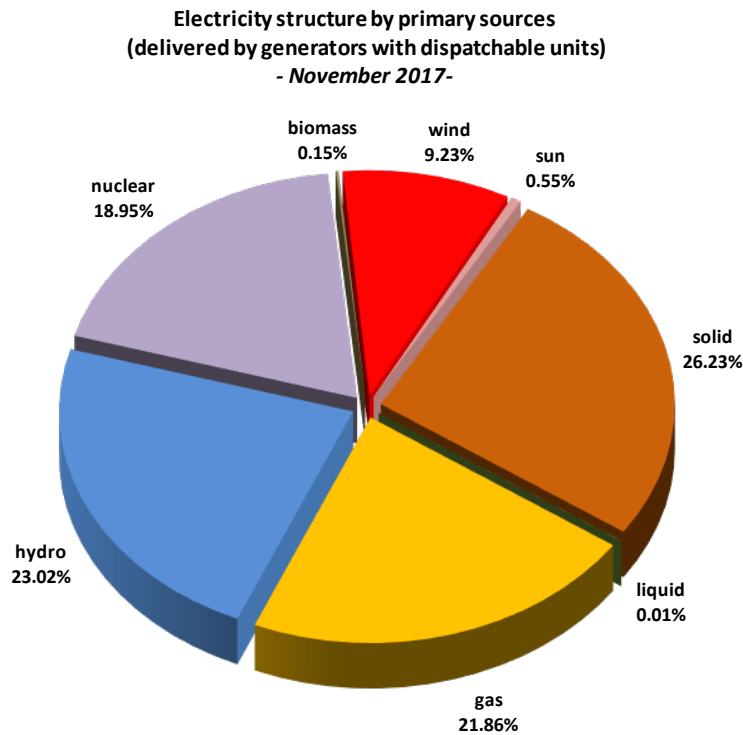
\*) The electricity market participants report to ANRE technical/commercial data according to the *Methodology of wholesale electricity market monitoring for assessing the competition level on market and preventing the abuse of dominant position*, approved by ANRE Order no. 35/2006 as well as to the *Methodology of retail electricity market monitoring*, approved by ANRE Order no. 60/2008. The table does not include the Balancing Responsible Parties (BRP). The BRP updated list is published on the Balancing Market Operator website - [www.transelectrica.ro](http://www.transelectrica.ro).

ANRE monitors the market activity of the generators with dispatchable units. According to the Regulation of scheduling the dispatchable generation units and consumption units, the considered generation units are:

- a. hydro generation group with installed power higher than 10 MW;
- b. thermal generation group (including biomass and nuclear) with installed power higher than 20 MW;
- c. wind, photovoltaic or internal combustion engine with installed power higher than 5 MW.

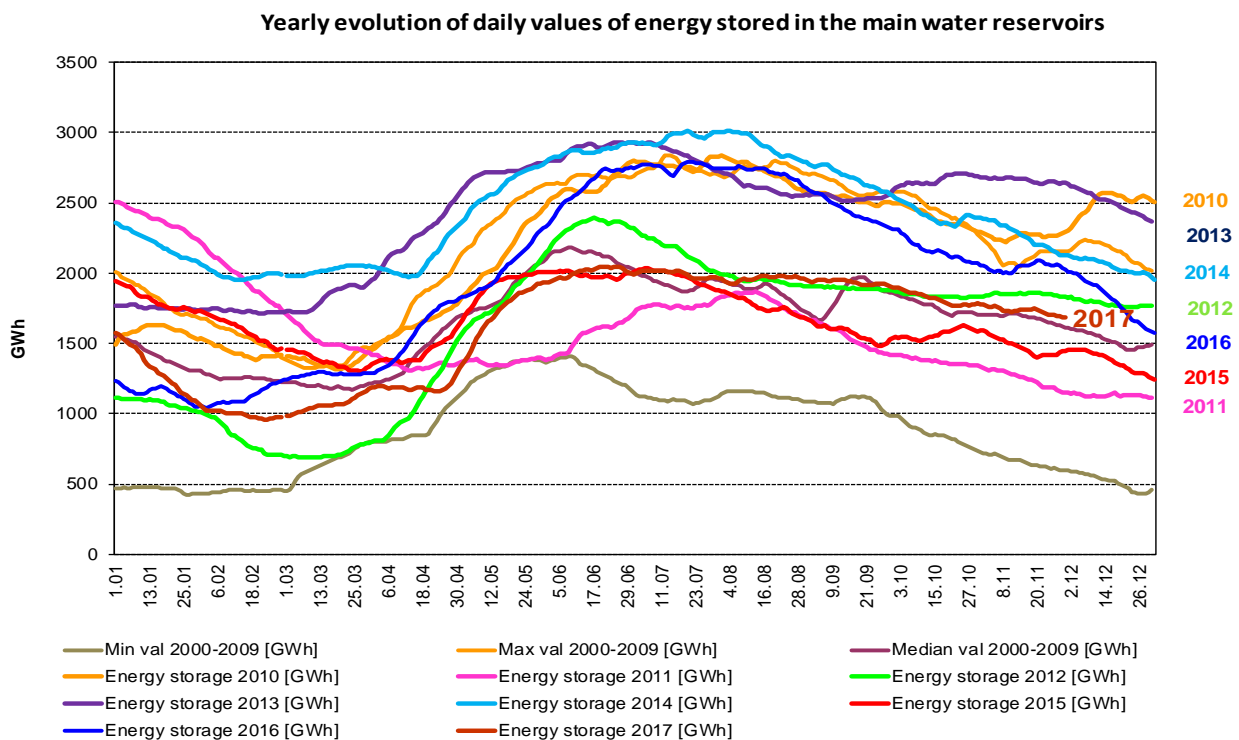
*Electricity Suppliers acting exclusively on the wholesale market category* include supplying license owners who act only on wholesale market and owners of a trading license issued according ANRE Order no. 13/2015 for approval the „General conditions associated to trading electricity license”.

### 3. Generation structure of National Energy System on resources types



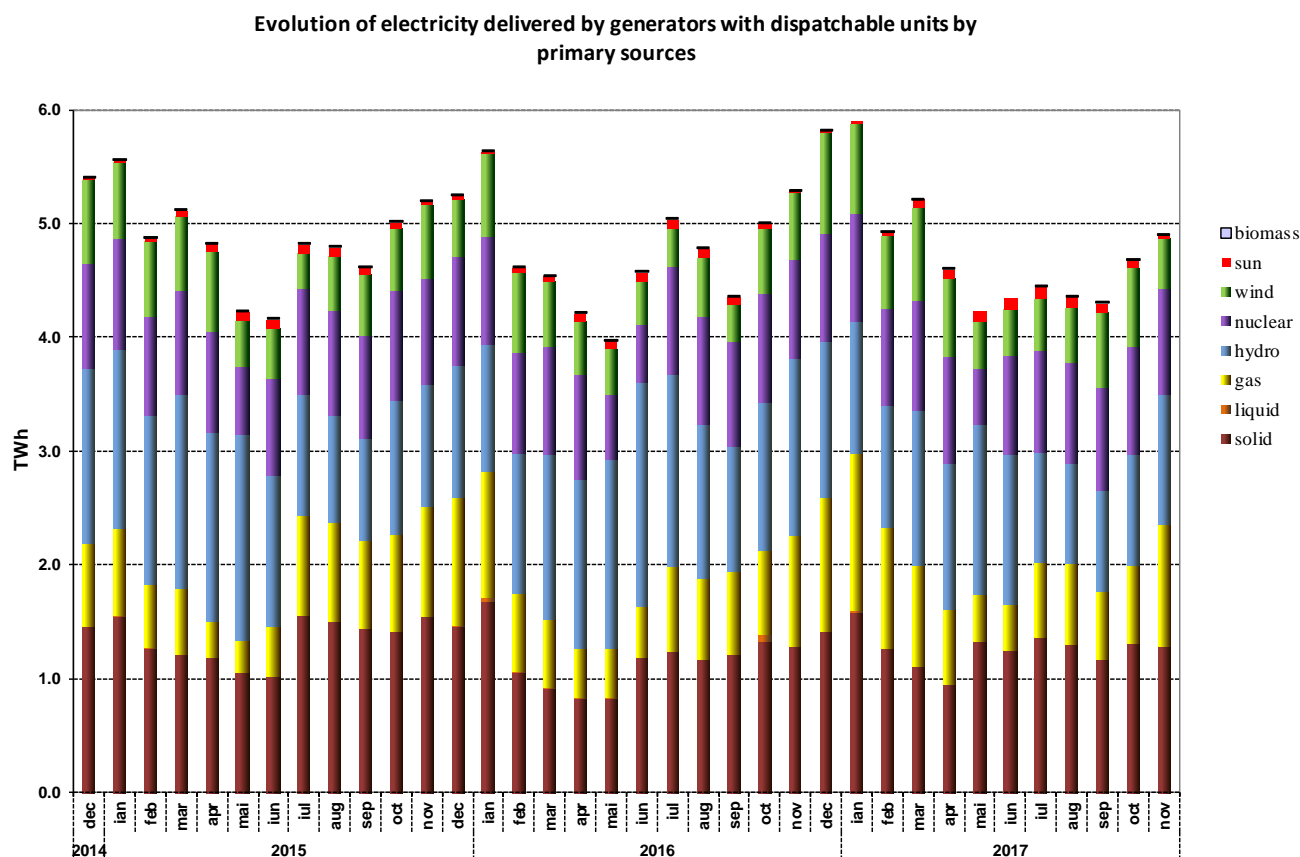
Source: Monthly reports of generators – processed by MG

The electricity generated from hydro resources and the energy stored in the main water reservoirs is directly correlated. The following graph presents the evolution of daily amounts of energy storage during November 2017 compared to the daily values of the last 7 years and compared to minimum, maximum and median values from 2000-2009.



Source: Monthly reports of S.C. Hidroelectrica S.A. – processed by MG

The evolution of delivered electricity structure, during the last 3 years, is the following:



Source: Monthly reports of generators – processed by MG

The following table presents the main data regarding the physical balance of electricity for November 2017 compared to data for similar period of 2016:

Nr. Crt.	INDICATOR	UM	Nov 2016	Nov 2017	%	Jan-Nov 2016	Jan-Nov 2017	%
0	1	2	3	4	5=4/3*100	6	7	8=7/6*100
1	Generated electricity	TWh	5.64	5.24	92.91	55.53	55.45	99.86
2	Delivered electricity	TWh	5.29	4.90	92.63	52.08	51.96	99.77
3	Import	TWh	0.25	0.27	108.00	3.40	3.49	102.65
4	Export	TWh	0.81	0.39	48.15	7.66	5.86	76.50
5	Internal consumption (2+3-4)	TWh	4.73	4.78	101.06	47.82	49.60	103.72
6	Consumption of household customers:	TWh	1.01	1.07	105.94	10.95	11.48	104.84
6.1	on Universal Service regime	TWh	1.01	0.90	89.11	10.95	10.31	94.16
6.2	on the competitive market*	TWh	-	0.17	-	-	1.17	-
7	Consumption of non-households customers:	TWh	3.03	3.04	100.33	31.84	32.89	103.30
7.1	on US and last resort regime	TWh	0.11	0.08	72.73	1.36	1.05	77.21
7.2	on the competitive market	TWh	2.92	2.96	101.37	30.48	31.84	104.46
8	Transmission–Injection component	TWh	5.21	4.80	92.13	51.21	50.79	99.18
9	Transmission–Extraction component	TWh	4.75	4.75	100.00	48.47	49.83	102.81
10	Actual transmission grid losses	TWh	0.09	0.08	88.89	0.92	0.87	94.57
11	Heat generated for delivery	Tcal	1468.16	1485.27	101.17	10462.48**	11196.07	107.01
12	Heat in co-generation	Tcal	1108.94	1144.29	103.19	8240.24	8628.73	104.71

Note: 1. The generated electricity and delivered electricity are presented according to the data reported by monitored generators, as they are defined as dispatchable in the Regulation of scheduling the dispatchable generation units and consumption units approved by the ANRE Order no. 32/2013;

2. Data shown in the table neither include the energy produced by the generators who do not own dispatchable units (positions 1 & 2) nor the energy delivered to the customers directly connected to the power plants (positions 6 & 7);

3. The imported/exported quantities do not comprise transits and cross-border exchange of CNTEE Tranelectrica SA with neighboring countries in order to ensuring the balance of the national energy system;

4. The electricity quantity for applying the injection tariff is the electricity delivered by the generation units with installed capacity higher than 5 MW linked to the transmission network and distribution network;

5. Households customers consumption for US regime represents electricity consumption invoiced at regulated and “Competitive Market Component” (CMC) tariff.

\*Data on this category started to be collected separately in January 2017

\*\*Differences compared to the Report on results of monitoring the Romanian electricity market – November 2016 are due to modified data reported by some participants

#### **4. Transactions’ structure on the wholesale electricity market**

The size of wholesale market depends on the sum of all transactions performed by the market players, exceeding the quantities physically transmitted from generation to consumption; the total transactions include also resale transactions made in order to match the contractual obligations and to obtain financial benefit.

When entering into force, the Law no. 123/2012 on Electricity and Natural Gas has set the general principle that energy competitive market and electricity transactions should take place in a transparent, public, centralized and non-discriminatory way. Therefore, all the new transactions have to be the result of participation on the centralized markets administrated by Opcom SA, the only owner of a license issued by ANRE for the electricity market operation in Romania. The centralized markets which are presently functional are DAM (Day Ahead Market), CMBC (centralized market of bilateral contracts with Extended Auction mechanism-EA, with Continuous Negotiation mechanism-CN, with Fuel Processing mechanism -FP), ID (Intraday Market), CM-OTC – (Centralized Market with Double Continuous Negotiation for Electricity Bilateral Contracts), CM-LCM (Large Consumers mechanism) and CMUS (Centralized Market for Universal Service).

Besides the existing centralized markets operated by Opcom SA (which ensure the transparent, public, centralized and non-discriminatory character required by the Law) there still exist bilateral negotiated contracts concluded before the entering into force of the Law still pending, export and import contracts and regulated contracts with regulated quantities and prices, based on ANRE decisions concluded between a number of generators and the suppliers of last resort.

Following the entering into force of the Law no. 23/2014 subsequent to Law no. 220/2008 for establishing the system for promoting producing electricity from renewable energy sources, modified and completed by Law no. 122/2015, a specific range of RES generators may conclude negotiated bilateral contracts as follows:

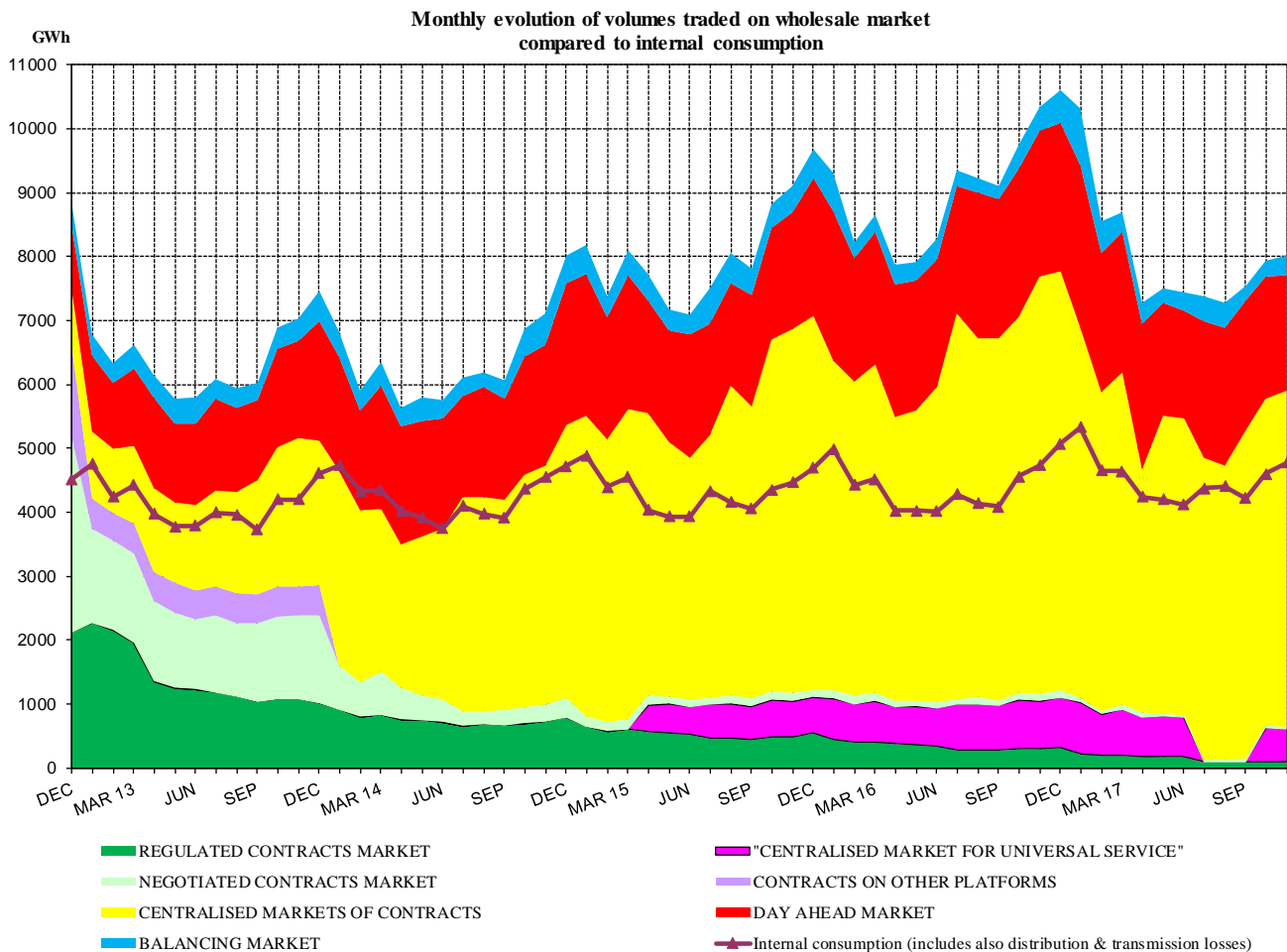
- those owning power plants that benefit from the promotion system and having installed capacity less than 1 MW/generator and less than 2 MW/generator for biomass high efficiency cogeneration, but only with suppliers for final customers;
- those owning power plants that benefit from the promotion system and having installed capacity between 1 and 3 MW/generator and between 2 and 3 MW/generator for biomass high efficiency cogeneration, but only if they are considered small or medium enterprises, according to the Law no. 346/2004.

The following table presents the volumes traded and the average prices on each type of contracts and on the main components of the wholesale market. The aggregated volumes and the average prices on negotiated contracts are reported by market participants on their own responsibility and except the concluded contracts based on provisions of Law no. 23/2014 they should reflect only the ongoing contracts which had been concluded before Law no. 123/2012 entered into force.

<b>TRANSACTIONS ON THE WHOLESALE MARKET</b>	<b>October 2017</b>	<b>November 2017</b>	<b>November 2016</b>
<b>1. BILATERAL CONTRACTS' MARKET</b>			
traded volume (GWh)	<b>146</b>	<b>131</b>	<b>416</b>
average price (lei/MWh)	128.09	129.54	136.13
% from internal consumption (%)	3.2	2.8	8.8
<b>1.1. Sales on regulated contracts</b>			
traded volume (GWh)	<b>97</b>	<b>100</b>	<b>302</b>
average price (lei/MWh)	117.84	117.56	133.57
% from internal consumption (%)	2.1	2.1	6.4
<b>1.2. Sales on negotiated contracts<sup>1)</sup></b>			
traded volume (GWh)	<b>49</b>	<b>32</b>	<b>114</b>
average price (lei/MWh)	148.36	166.91	142.89
% from internal consumption (%)	1.1	0.7	2.4
<b>2. EXPORT</b>			
traded volume (GWh) <sup>2)</sup>	<b>449</b>	<b>391</b>	<b>809</b>
average price (lei/MWh)	181.16	207.97	168.84
% from internal consumption (%)	9.8	8.2	17.1
<b>3. CENTRALIZED MARKETS OF CONTRACTS</b>			
traded volume (GWh)	<b>5103</b>	<b>5249</b>	<b>6521</b>
average price (lei/MWh)	176.53	180.99	164.22
% from internal consumption (%)	110.9	109.9	137.8
<b>3.1. Extended auction mechanism CMBC-EA<sup>3)</sup></b>			
traded volume (GWh)	<b>2310</b>	<b>2465</b>	<b>1950</b>
average price (lei/MWh)	170.93	175.88	161.01
% from internal consumption (%)	50.2	51.6	41.2
<b>3.2. Continuous negotiation mechanism CMBC-CN<sup>3)</sup></b>			
traded volume (GWh)	<b>954</b>	<b>950</b>	<b>1501</b>
average price (lei/MWh)	185.92	188.76	158.44
% from internal consumption (%)	20.7	19.9	31.7
<b>3.3. CM-OTC mechanism<sup>3)</sup></b>			
traded volume (GWh)	<b>1838</b>	<b>1833</b>	<b>3070</b>
average price (lei/MWh)	178.67	183.83	169.08
% from internal consumption (%)	40.0	38.4	64.9
<b>4. CENTRALIZED MARKET FOR UNIVERSAL SERVICE - CMUS</b>			
traded volume (GWh)	<b>529</b>	<b>512</b>	<b>746</b>
average price (lei/MWh)	234.12	234.13	164.90
% from internal consumption (%)	11.5	10.7	15.8
<b>5. DAY AHEAD MARKET</b>			
traded volume (GWh)	<b>1904</b>	<b>1815</b>	<b>2288</b>
average price (lei/MWh) <sup>5)</sup>	216.77	256.63	167.96
% from internal consumption (%)	41.4	38.0	48.3
<b>6. INTRADAY MARKET</b>			
traded volume (GWh)	<b>12.0</b>	<b>15.8</b>	<b>13.9</b>
average price (lei/MWh) <sup>5)</sup>	142.44	189.26	154.74
% from internal consumption (%)	0.3	0.3	0.3
<b>7. BALANCING MARKET</b>			
traded volume (GWh)	<b>257</b>	<b>299</b>	<b>362</b>
% from internal consumption (%)	5.6	6.3	7.6
upward volume (GWh)	<b>164</b>	<b>231</b>	<b>280</b>
average negative imbalance price(lei/MWh)	316.67	290.24	285.41
downward volume (GWh)	<b>93</b>	<b>68</b>	<b>82</b>
average positive imbalance price (lei/MWh )	53.07	62.91	30.76
<b>INTERNAL CONSUMPTION (GWh) (distribution and transmission losses included)</b>	<b>4602</b>	<b>4777</b>	<b>4733</b>

- Note:
- 1) Supply contracts to final customers and export contracts are not included as they are separately identified;
  - 2) Export volumes and price information correspond to those reported monthly by market participants and include the volumes exported by CNTEE Transelectrica as shipper for coupled DAM; in some cases those volumes are different from those notified in DAMAS platform;
  - 3) The monthly data are presented as reported by the participants for the electricity delivered in the respective month. These information refer both to transactions concluded previously on CMBC and CMBC-NC (ANRE Order 6/2011) and to transactions concluded on CMBC-EA and CMBC-NC (ANRE Order 78/2014) with delivery within the reported month;
  - 4) Price table price is calculated as the average of the hourly market closing price and it is published by Opcom SA. The average monthly price published by Opcom SA calculated as weighted average of the hourly market closing price with traded volumes was 265.71 lei/MWh in November 2017;
  - 5) The average monthly price is calculated based on monthly traded volume and transaction value published by Opcom SA.

The percentage of electricity quantities from the internal consumption (see table from above) offers a dimensional reference for each of the specified markets. Prices include only the injection component of the transmission tariff, in this way being comparable within a month and making possible the comparison with the previous month. The following graph presents the evolution of the relation between the volumes sold on each market and the estimated internal consumption, since December 2012.

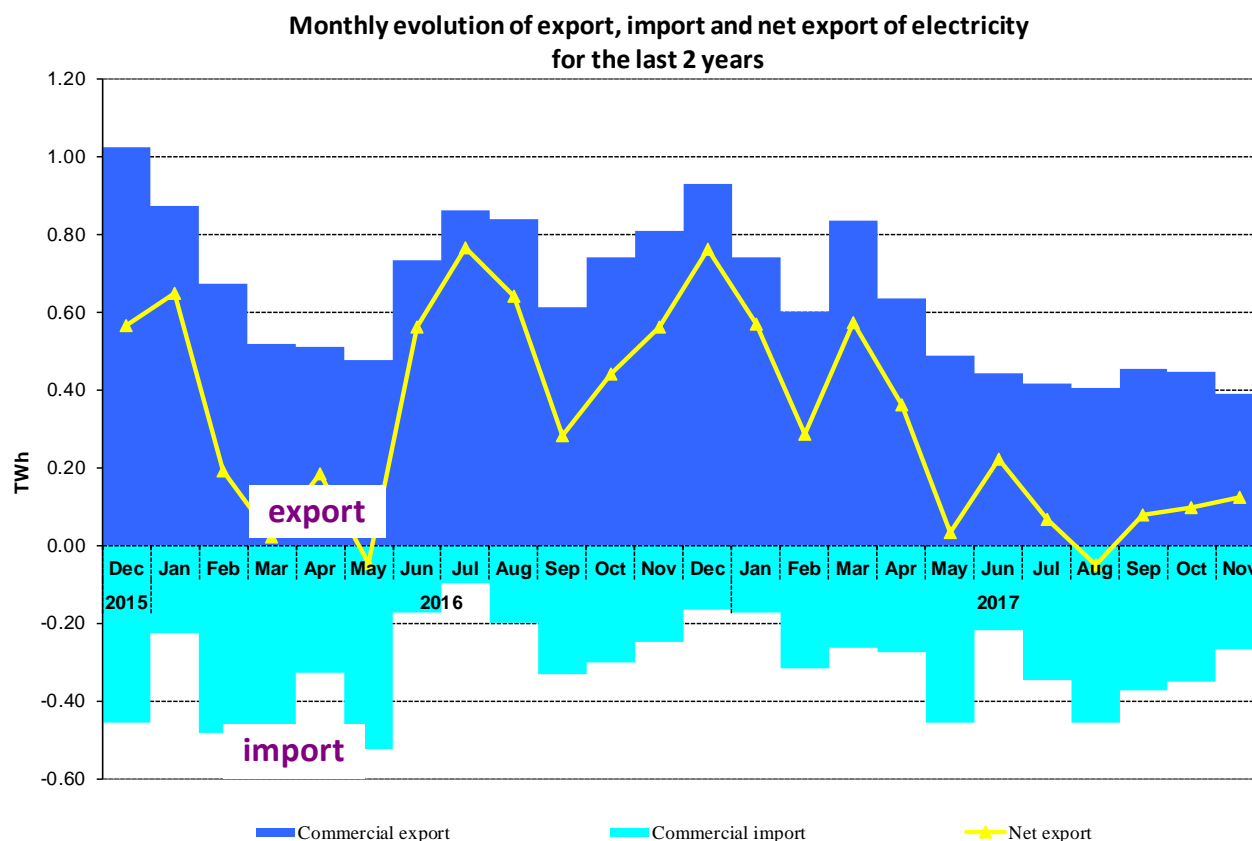


Source: Monthly reports of wholesale market participants. Opcom SA and CNTEE Transelectrica SA – processed by MG

Note: In the above graph, the volumes traded on negotiated contracts' market do not include the export trades.

The following graph presents the monthly values of commercial export (quantities for which the extraction component of transmission tariff was applied), commercial import (quantities for which the

injection component of transmission tariff was applied) and the net export (export minus import) during the last 24 months:

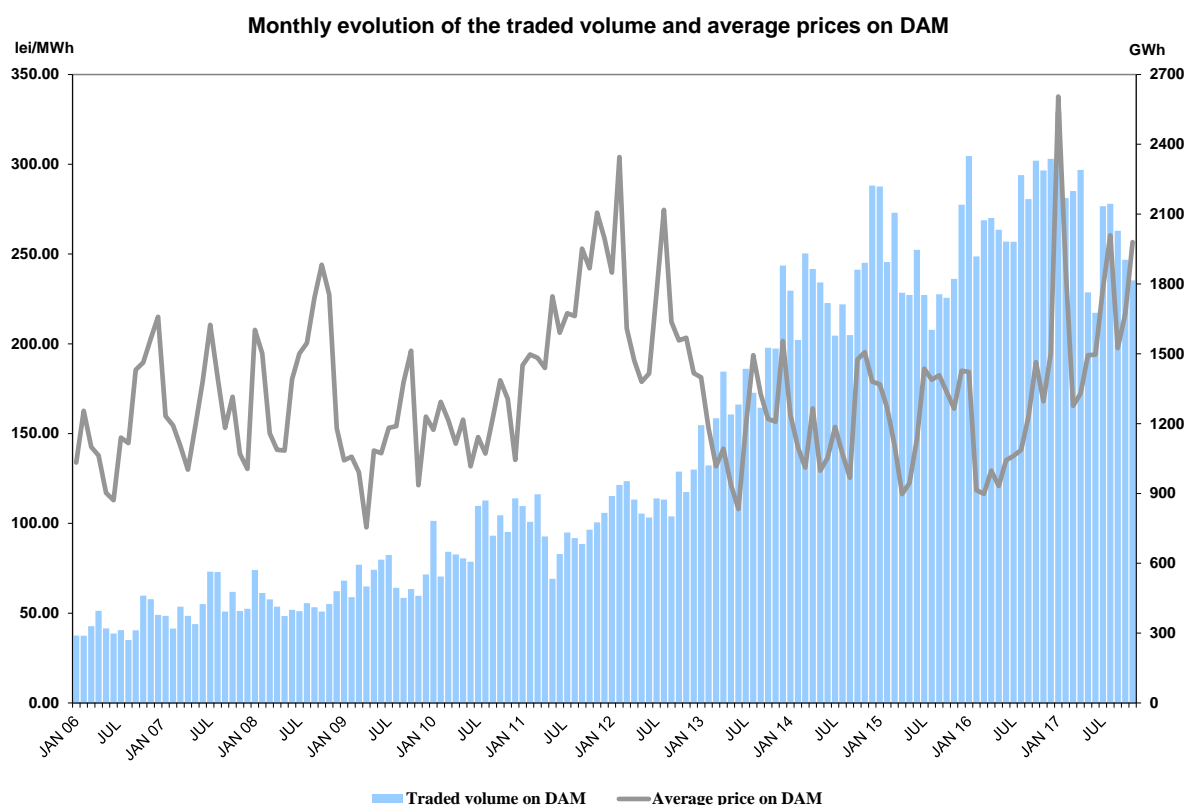


*Source: Monthly reports of CNTEE Transelectrica SA – processed by MG*

The following table presents commercial export and import transactions for electricity extracted/introduced from/in transmission network. These include transaction of CNTEE Transelectrica SA as shipper agent in the price coupling mechanism of DAM, known as 4M MC. Shipper agent role is reflected in physical and commercial transfer of electricity for import/export on the interconnections between Romania and Hungary.

Import/Export Transactions	October 2017	November 2017	November 2016
<b>Export</b>			
traded volume (GWh)	<b>449</b>	<b>391</b>	<b>809</b>
average price (lei/MWh)	181.16	207.97	168.84
% from internal consumption	9.8	8.2	17.1
<b>in which, for coupled DAM</b>			
traded volume (GWh)	<b>63</b>	<b>89</b>	<b>88</b>
average price (lei/MWh)	143.05	171.05	145.32
% from internal consumption	1.4	1.9	1.9
<b>Import</b>			
traded volume (GWh)	<b>352</b>	<b>266</b>	<b>247</b>
average price (lei/MWh)	251.85	300.65	187.57
% from internal consumption	7.6	5.6	5.2
<b>in which, for coupled DAM</b>			
traded volume (GWh)	<b>145</b>	<b>91</b>	<b>182</b>
average price (lei/MWh)	253.72	373.84	181.39
% from internal consumption	3.2	1.9	3.8

The following graph presents the volumes and the monthly average prices on DAM starting with January 2006:



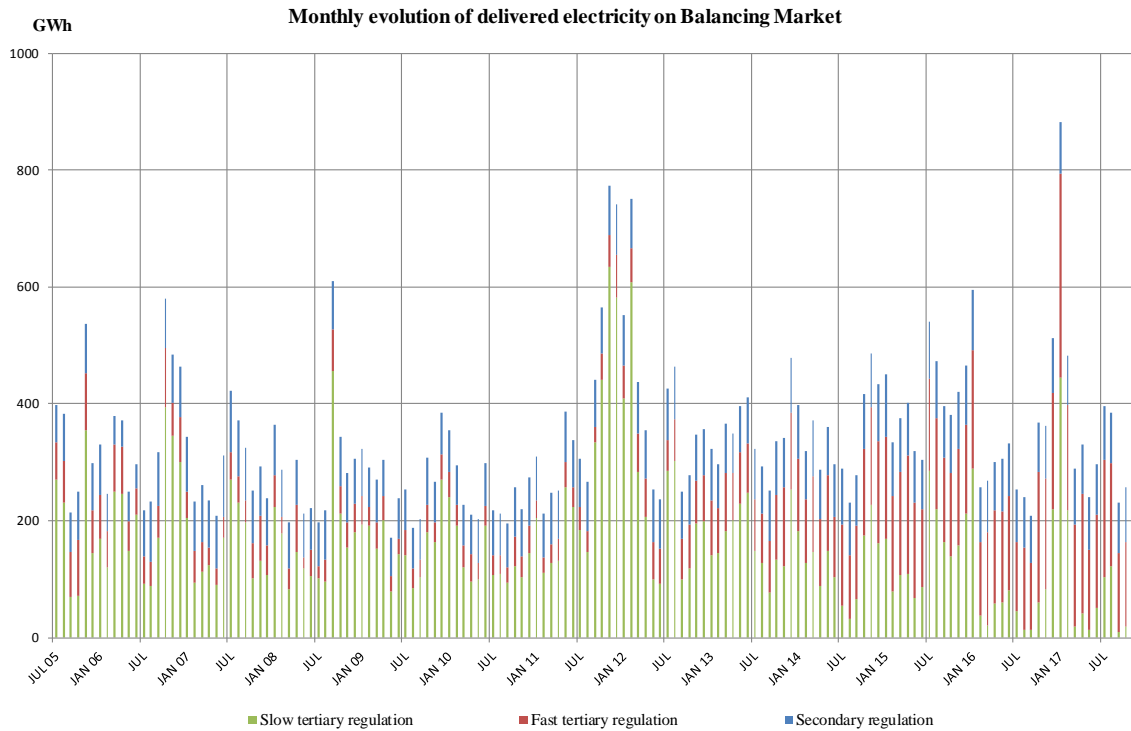
Source: Monthly reports of Opcom SA and CNTEE Tranelectrica SA – processed by MG

Balancing electricity is determined by the dispatch orders (accepted offers) received by generators. After settlement, the actual electricity delivered by generators on balancing market is determined based on the measured (approved) values; the relation between the accepted and delivered electricity in November 2017 is presented in the following table:

November 2017	Dispatch order (GWh)	Delivered electricity (GWh)	Deviation (%)
<b>Secondary regulation</b>	<b>84</b>	<b>84</b>	
<i>upward</i>	40	40	
<i>downward</i>	43	43	
<b>Fast tertiary regulation</b>	<b>206</b>	<b>197</b>	<b>6</b>
<i>upward</i>	178	173	7
<i>downward</i>	27	24	4
<b>Slow tertiary regulation</b>	<b>18</b>	<b>18</b>	<b>1</b>
<i>upward</i>	18	18	1
<i>downward</i>	0	0	2
<b>TOTAL</b>	<b>308</b>	<b>299</b>	
<i>upward</i>	237	231	
<i>downward</i>	71	68	
<b>INTERNAL CONSUMPTION</b>		<b>4777</b>	
<b>% share of traded volumes from internal consumption</b>		<b>6.3%</b>	

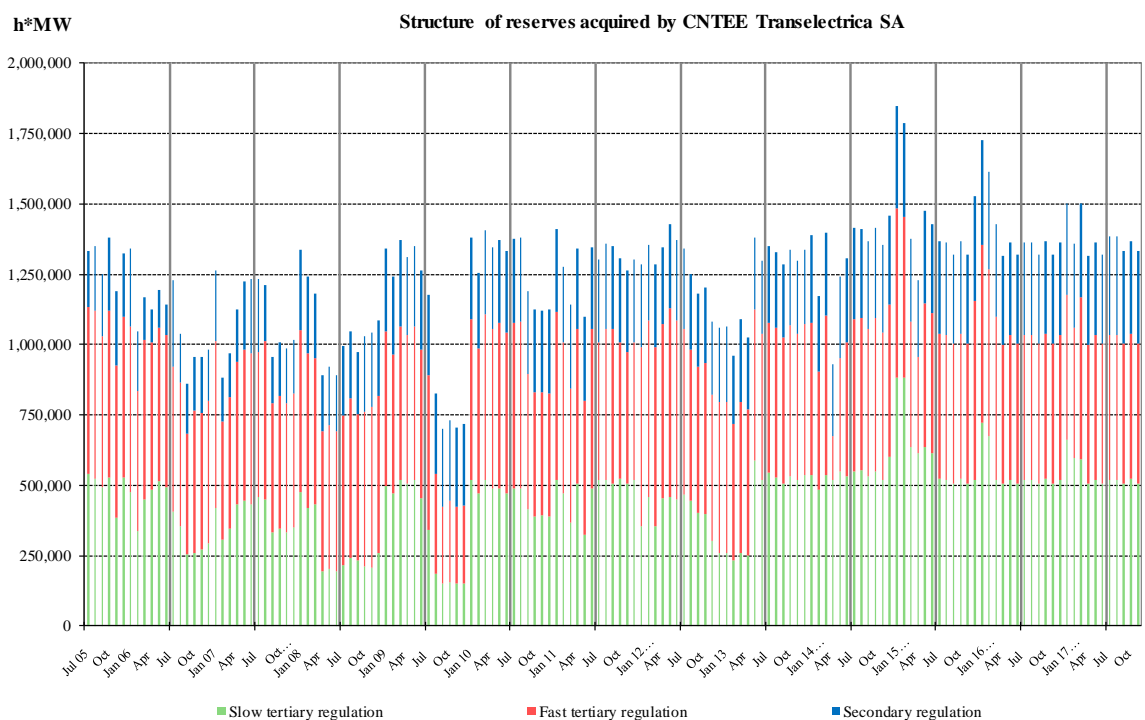
Source: Monthly reports of CNTEE Tranelectrica SA – processed by MG

The structure of balancing electricity delivered in the system on each type of regulation starting since July 2005 is presented in the graph below:



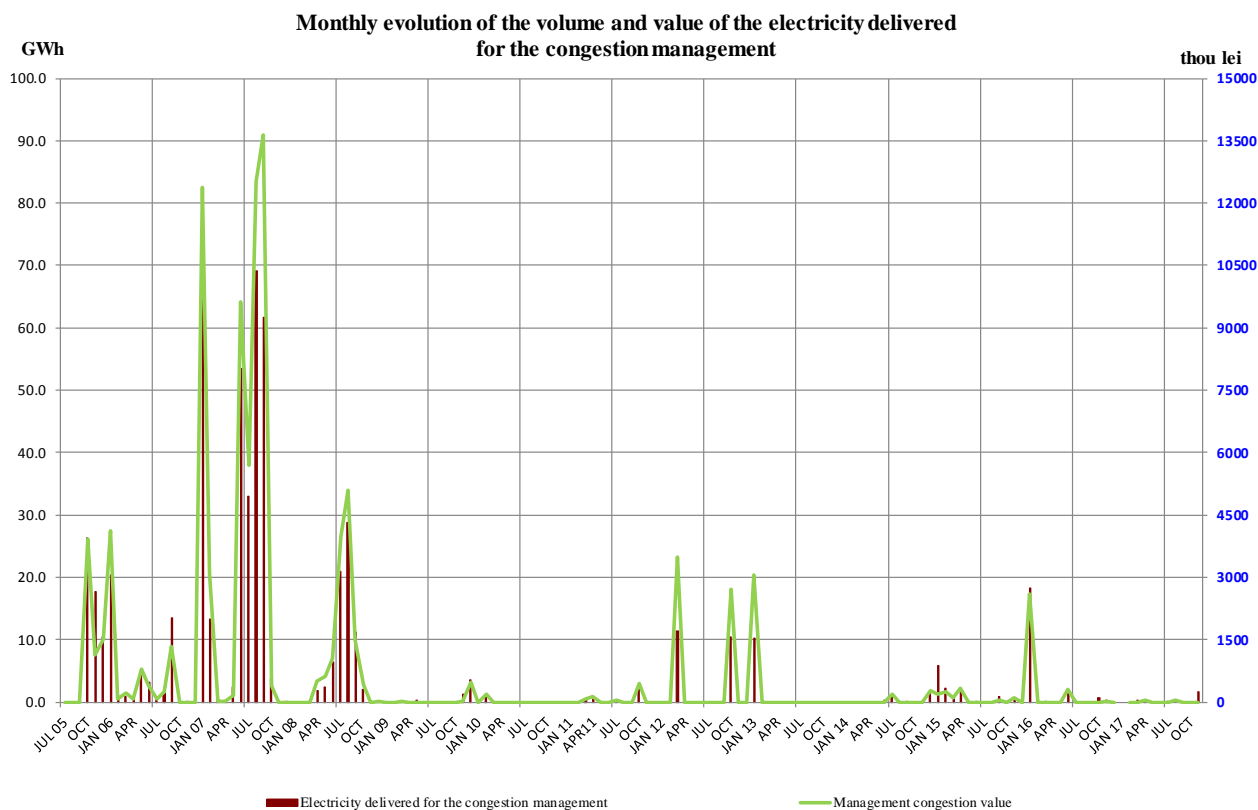
Source: Monthly reports of CNTEE Tranelectrica SA – processed by MG

For comparison, the following graph presents the evolution of reserves (ancillary services, i.e. obligations of generators to maintain their contracted capacities available for dispatching/offering on BM) acquired/paid by CNTEE Tranelectrica SA since July 2005 is showed in the graph below:



Source: Monthly reports of CNTEE Tranelectrica SA – processed by MG

The following graph presents the evolution of electricity traded by CNTEE Transelectrica SA on the Balancing Market for covering the electricity used for congestion management (in order to solve the congestions occurred within the transmission grid) and the evolution of the values of these transactions starting from July 2005.



Source: Monthly reports of CNTEE Transelectrica SA – processed by MG

## 5. Trading structure on the wholesale electricity market of different participant categories

### Generators

In November 2017 compared with similar period of 2016, the structure of electricity sales obligations contracted before delivery interval by the electricity generators with dispatchable units was the following:

Transaction type	November 2016	November 2017
Regulated contracts to suppliers of last resort - hydro generator	221.09	73.38
Regulated contracts to suppliers of last resort - nuclear generator	80.82	26.19
Negotiated contracts to suppliers	114.18	31.92
Contracts concluded on Opcom centralized markets:	3353.00	3231.29
<i>CMBC-EA</i>	<i>1261.16</i>	<i>2213.76</i>
<i>CMBC-CN</i>	<i>1113.68</i>	<i>414.73</i>
<i>CM-OTC</i>	<i>978.16</i>	<i>602.80</i>
Centralized market for universal service	478.32	312.66
DAM	1416.00	1196.43
Intraday	7.78	4.96
Supply contracts to final customers. from which:	293.27	482.68
<i>Households*</i>	-	0.28
<i>Non-households</i>	282.67	482.40
<b>Total</b>	<b>5953.85</b>	<b>5359.51</b>

Source: Monthly reports of generators – processed by MG

\* data on this category started to be collected separately in January 2017

## Suppliers

In November 2017, 96 companies with main activity the supply of electricity, concluded transactions on the electricity market; from those, 27 suppliers traded exclusively on the wholesale market and 69 suppliers on both retail and wholesale markets (in this category there are also included the 5 suppliers of last resort which act on both retail and wholesale markets).

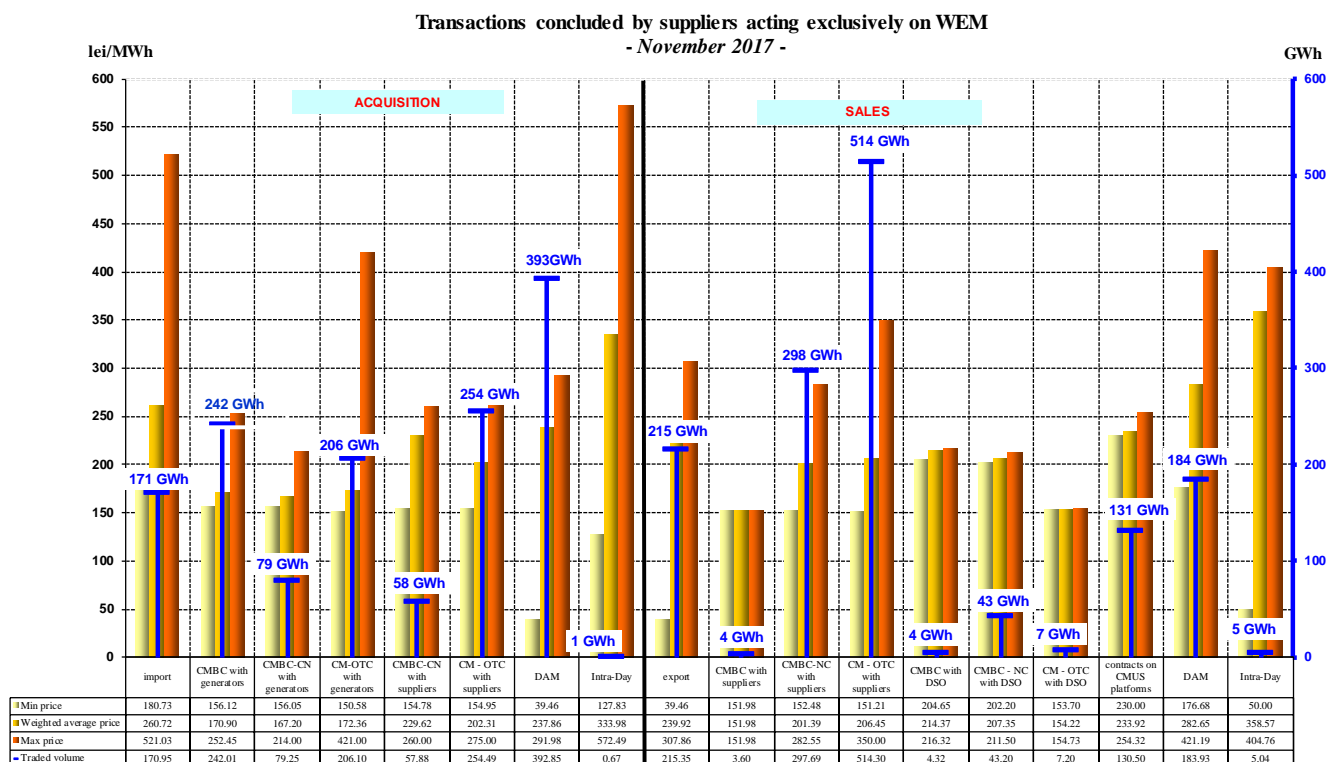
### Suppliers acting exclusively on WEM

The following table shows the activity for November 2017 of the suppliers acting exclusively on WEM, acquisitions and sales being split by categories of markets participants, compared with similar period of 2016:

Transactions structure of suppliers acting exclusively on WEM	-GWh-	
	November 2016	November 2017
<b>Purchase</b>		
Import	61.65	170.95
Negotiated contracts with generators	27.85	0.00
Contracts concluded on Opcom centralized markets:	1585.48	839.73
- on CMBC-EA with generators	201.94	242.01
- on CMBC-CN with generators	283.44	79.25
- on CM-OTC with generators	379.36	206.10
- on CMBC-EA with other suppliers	8.17	0.00
- on CMBC-CN with other suppliers	102.83	57.88
- on CM-OTC with other suppliers	609.73	254.49
DAM	234.84	392.85
Intraday market	1.22	0.67
<b>Sales</b>		
Export	576.44	215.35
Contracts concluded on Opcom centralized markets:	887.39	870.30
- on CMBC-CN with generators	13.63	0.00
- on CM-OTC with generators	0.84	0.00
- on CMBC-EA with other suppliers	78.36	3.60
- on CMBC-CN with other suppliers	84.59	297.69
- on CM-OTC with other suppliers	668.62	514.30
- on CMBC-EA with DO	8.96	4.32
- on CMBC-CN with DO	0.00	43.20
- on CM-OTC with DO	28.80	7.20
- on CMBC-EA with TSO	3.60	0.00
CMUS with last resort suppliers	72.78	130.50
DAM	371.25	183.93
Intraday market	3.74	5.04

*Source: Monthly reports of suppliers – processed by MG*

In addition to the data from the table above, the following graph presents the minimum, average and maximum actual prices by categories of transactions completed by the suppliers acting exclusively on WEM (traders) in November 2017.



Source: Monthly reports of the competitive suppliers – processed by MG

### Active suppliers on REM (the suppliers of last-Day resort are not included)

The following table presents aggregated information on transactions volume and structure for suppliers providing electricity to final customers, on the competitive market, for November 2017 compared with similar period of 2016:

Transactions' structure of suppliers acting on REM (suppliers of last resort excluded)	-GWh -	
	November 2016	November 2017
<b>Purchase</b>		
Import	3.47	4.22
Negotiated contracts with generators	87.28	33.49
Contracts concluded on Opcom centralized markets:	3258.64	2274.32
- on CMBC-EA with generators	721.51	1144.20
- on CMBC-CN with generators	284.85	110.51
- on CM-OTC with generators	488.10	215.44
- on CMBC-EA with other suppliers	385.58	63.12
- on CMBC-CN with other suppliers	164.69	178.12
- on CM-OTC with other suppliers	1213.90	562.92
Negotiated contracts with undispachable generators (others than L23/2014 and L122/2015)*	10.43	7.03
Negotiated contracts with undispachable generators (L23/2014 and L122/2015)**	23.57	16.80
DAM	916.01	285.22
Intraday market	6.11	9.95

Transactions' structure of suppliers acting on REM (suppliers of last resort excluded)	November 2016	November 2017
<b>Sales</b>		
Export	144.75	86.72
Contracts concluded on Opcom centralized markets:	2204.89	1050.42
- on CMBC-EA with generators	11.95	44.58
- on CMBC-NC with generators	31.35	8.64
- on CM-OTC with generators	55.92	0.00
- on CMBC-EA with other suppliers	327.12	74.64
- on CMBC-NC with other suppliers	236.29	174.47
- on CM-OTC with other suppliers	1304.78	612.47
- on CMBC-EA with DO	212.02	106.35
- on CMBC-NC with DO	3.73	10.80
- on CMBC-EA with TSO	21.74	18.00
- on CMBC-NC with TSO	0.00	0.48
CMUS with last resort suppliers	195.03	68.40
DAM	259.03	228.56
Intraday market	1.12	1.33
Household customers***	-	18.92
Non-household customers	1559.06	1217.21

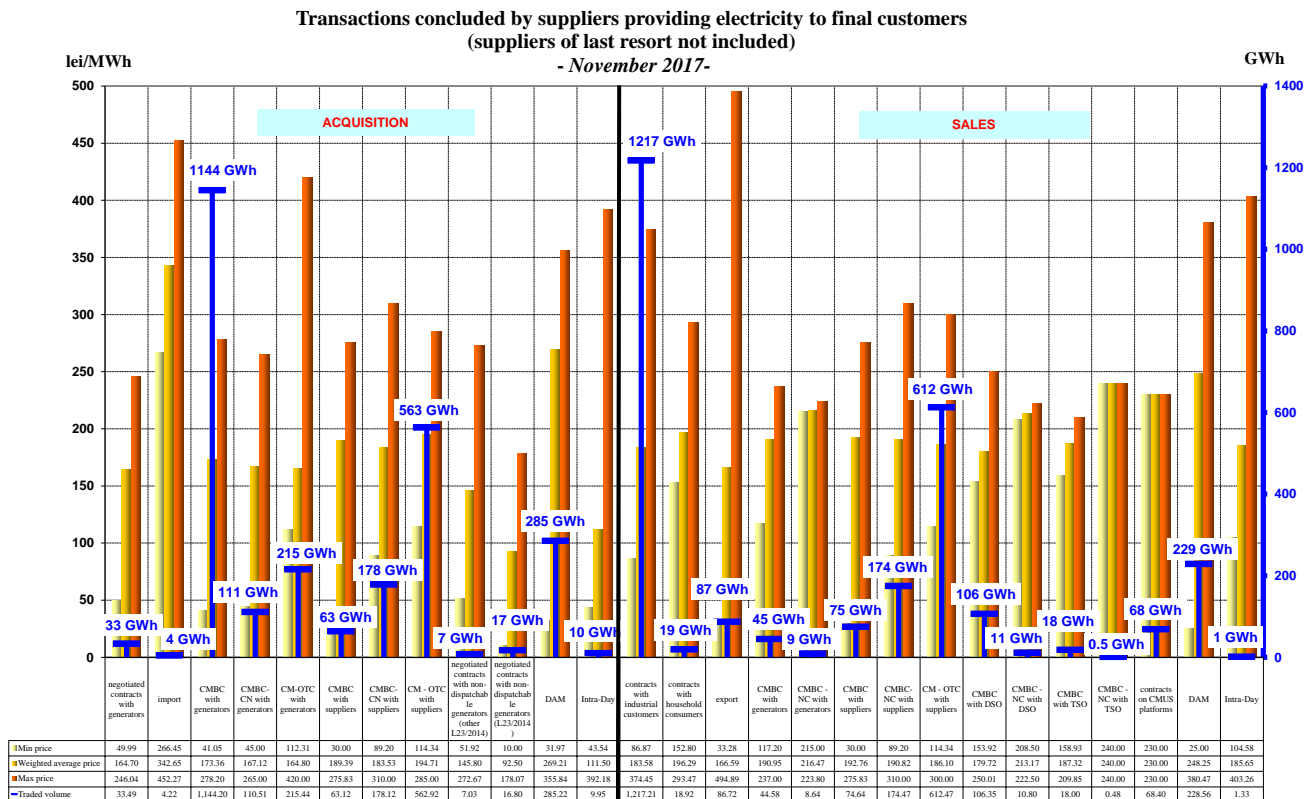
Source: Monthly reports of the competitive suppliers – processed by MG

\*negotiated trades concluded with undispachable generators which are not able to conclude contracts according to Law 23/2014 provisions, with subsequent changes and additions of Law no. 122/2015, both Laws subsequent to Law no. 220/2008

\*\*negotiated trades concluded with undispachable generators which may conclude contracts according to Law 23/2014 provisions, with subsequent changes and additions of Law no. 122/2015, both Laws subsequent to Law no. 220/2008

\*\*\* separate data collection on this category started with January 2017

In addition to the data from the table above, the following graph presents the sales structure and the minimum, average and maximum actual prices by categories of transactions completed by suppliers providing electricity to final customers November 2017:



Source: Monthly reports of the competitive suppliers – processed by MG

### Suppliers of last resort

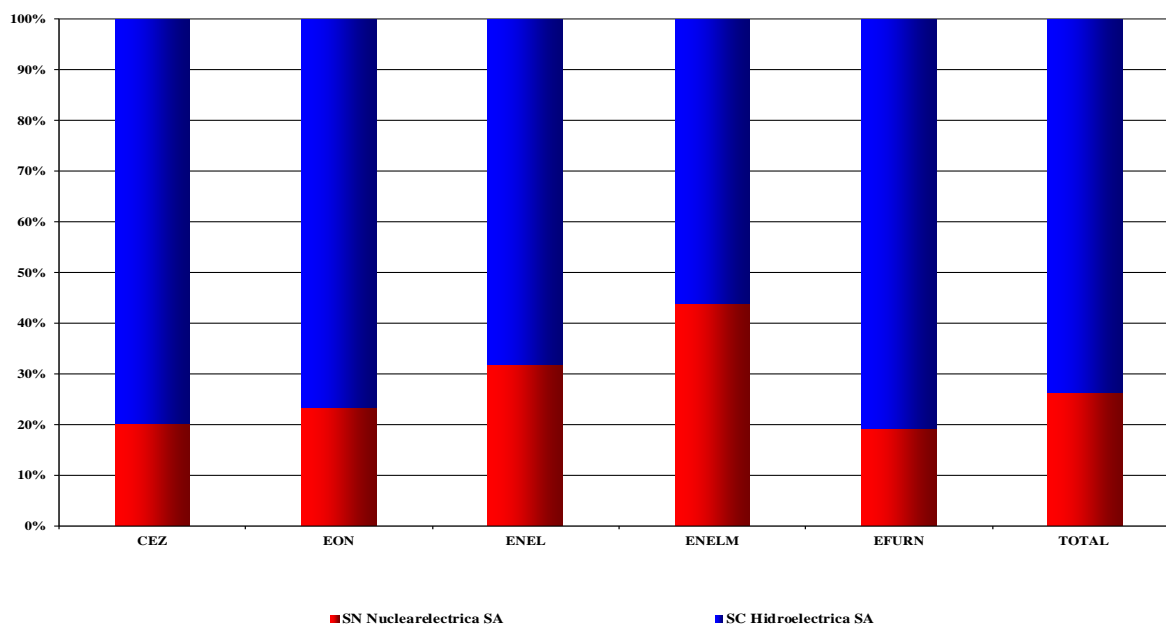
Electricity transactions structure of suppliers of last resort (before the delivery interval) for supplying the customers under SU and UI regime is presented in the table below for November 2017 compared to similar period of 2016:

- GWh -		
Transactions structure of suppliers of last resort for supplying the customers in SU and UI regime	November 2016	November 2017
Regulated contracts with generators	301.91	99.57
Negotiated contracts with undispachable generators (L23/2014 and L122/2015)*	0.01	0.01
Contracts concluded on Opcom centralized markets:	26.00	153.73
- contracts on CMBC-EA with generators	2.65	37.61
- contracts on CMBC-CN with generators	0.16	0.08
- contracts on CM-OTC with generators	18.08	0.08
- contracts on CMBC-EA with other suppliers	0.18	7.29
- contracts on CMBC-CN with other suppliers	3.60	82.80
- contracts on CM-OTC with other suppliers	1.34	25.87
Centralized market for universal service:	746.13	511.56
- contracts on CMUS with generators	478.32	312.66
- contracts on CMUS with suppliers	267.81	198.90
Transactions concluded on DAM:	42.09	174.93
- purchase	98.01	200.31
- sales	55.92	25.38
Transactions concluded on Intraday market	0.00	1.07
- purchase	0.00	1.07
- sales	0.00	0.00

\*negotiated trades concluded with undispachable generators which may conclude contracts according to Law 23/2014 provisions. with subsequent changes and additions of Law no. 122/2015. both Laws subsequent to Law no. 220/2008

The structure of the electricity purchased by the suppliers of last resort from the main generators on regulated contracts is presented in the following graph for November 2017:

**Electricity aquisition from main generators, on regulated contracts, of the suppliers of the last resort for delivering electricity to final consumers on regulated market**  
NOVEMBER 2017



Source: Monthly reports of the suppliers of last resort – processed by MG

The suppliers of last resort separately display in the bills of their customers the “Competitive Market Component” (CMC). This tariff component was proposed by each supplier of last resort and finally approved by ANRE. In accordance with the provisions of ANRE Order no. 83/2013 for approving the Methodology to set up prices and tariffs to the final customers who choose not to exercise their eligibility rights. Since July 01 2013, CMC is separately highlighted within the household invoice. In order to reduce the gap between acquisition prices of electricity bought for covering the consumption at CMC tariffs ANRE approved in July 2014 the regulatory framework for the Centralised Market for Universal Service (CMUS). This centralised market, operated by OPCOM became operational in April 2015 by implementing the trading mechanism. Consequently, the acquisition process of the forecasted demand to be invoiced with CMC tariffs is made in a centralised manner on CMUS and the difference between invoiced and forecasted demand is to be covered from DAM. The demand of final customers who are delivered in last resort regime is to be covered from the centralised markets – CMBC-EA, CMBC-CN, CM-OTC, DAM and ID.

The following table presents the electricity acquisition structure of suppliers of last resort for US (before the delivery interval) for November 2017 compared to similar previous period:

-GWh-

Transactions’ structure of suppliers of last resort for universal service	November 2016		November 2017	
	Quantity [GWh]	Average price [lei/MWh]	Quantity [GWh]	Average price [lei/MWh]
Contracts concluded on Opcom centralized markets:	0.00	0.00	134.13	228.11
- on CMBC-EA with generators	0.00	0.00	33.34	254.90
- on CMBC-CN with generators	0.00	0.00	0.00	0.00
- on CM-OTC with generators	0.00	0.00	0.00	0.00
- on CMBC-EA with other suppliers	0.00	0.00	7.19	223.90
- on CMBC-CN with other suppliers	0.00	0.00	75.60	217.10
- on CM-OTC with other suppliers	0.00	0.00	18.00	226.40
Contracts concluded on CMUS:	554.16	181.41	511.56	234.13
- contracts on CMUS with generators	350.01	177.05	312.66	235.11
- contracts on CMUS with suppliers	204.15	188.88	198.90	232.58
Transactions concluded on DAM:	-2.66	-	164.46	-
- purchase	42.11	190.47	177.66	303.50
- sales	44.77	169.83	13.20	163.18
<b>TOTAL</b>	<b>551.50</b>	<b>183.04</b>	<b>810.16</b>	<b>249.50</b>

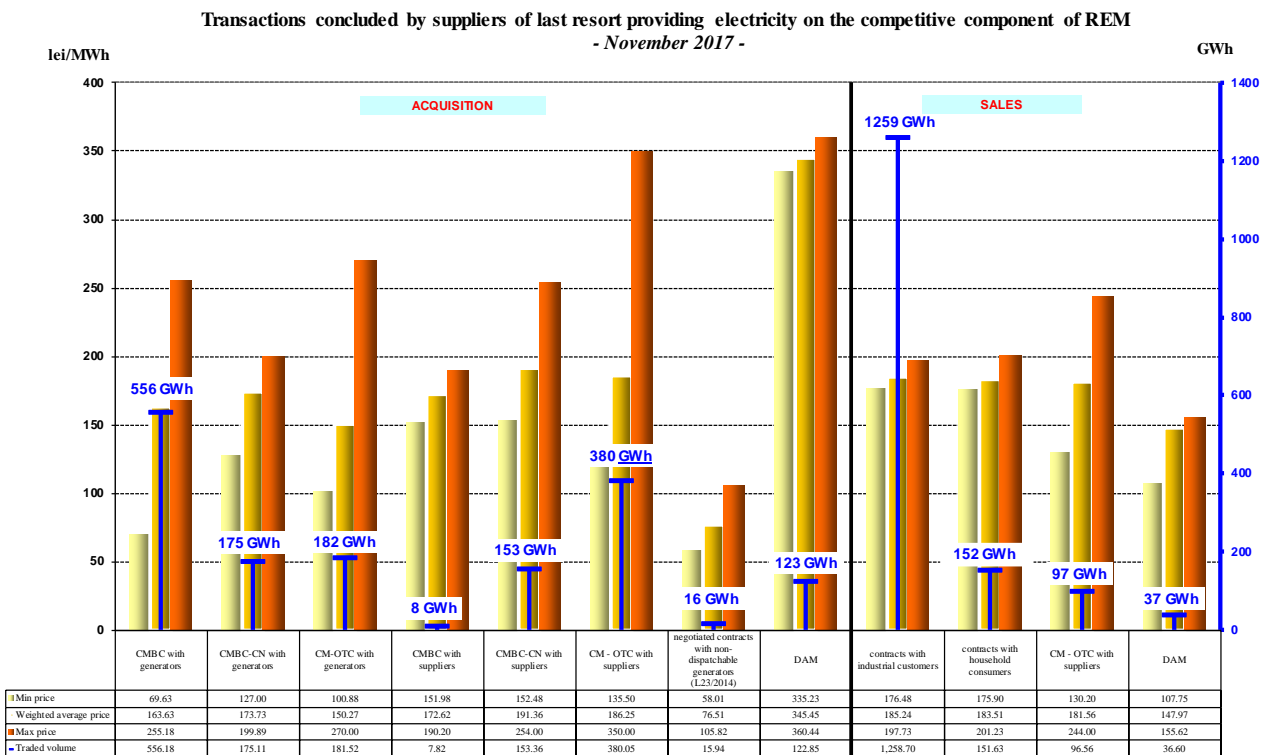
The following table presents the electricity acquisition structure of suppliers of last resort (before the delivery interval) corresponding to the competitive REM (energy supplied at negotiated prices to the customers who renounced to regulated tariffs) for November 2017 compared to similar previous period:

Transactions’ structure of suppliers of last resort for the competitive segment of REM	November 2016	November 2017
<b>Purchase</b>		
Contracts concluded on Opcom centralized markets:	862.20	1454.03
- on CMBC-EA with generators	172.22	556.18
- on CMBC-CN with generators	332.04	175.11
- on CM-OTC with generators	86.83	181.52
- on CMBC-EA with other suppliers	36.92	7.82
- on CMBC-CN with other suppliers	53.36	153.36
- on CM-OTC with other suppliers	180.82	380.05
Negotiated contracts with undispachable generators (L23/2014 and 122/2015)*	10.35	15.94
DAM	304.07	122.85
Intraday	0.00	0.09

Transactions' structure of suppliers of last resort for the competitive segment of REM	November 2016	November 2017
<b>Sales</b>		
Contracts concluded on Opcom centralized markets:	75.79	96.56
- on CMBC-CN with other generators	14.40	0.00
- on CMBC-EA with other suppliers	25.38	0.00
- on CMBC-CN with other suppliers	3.61	0.00
- on CM-OTC with other suppliers	32.40	96.56
DAM	3.20	36.60
Intraday	0.00	0.01
Household customers**	-	151.63
Non-household customers	1079.91	1258.70

\*negotiated trades concluded with undispachable generators which may conclude contracts according to Law 23/2014 provisions. with subsequent changes and additions of Law no. 122/2015. both Laws subsequent to Law no. 220/2008  
 \*\* data on this category started to be collected separately in January 2017

The structure by types of sources/destinations of the traded volumes combined with the actual average prices of the suppliers of last resort corresponding to the competitive segment of REM is presented in the following graph for November 2017:



Source: Monthly reports of the suppliers of last resort – processed by MG

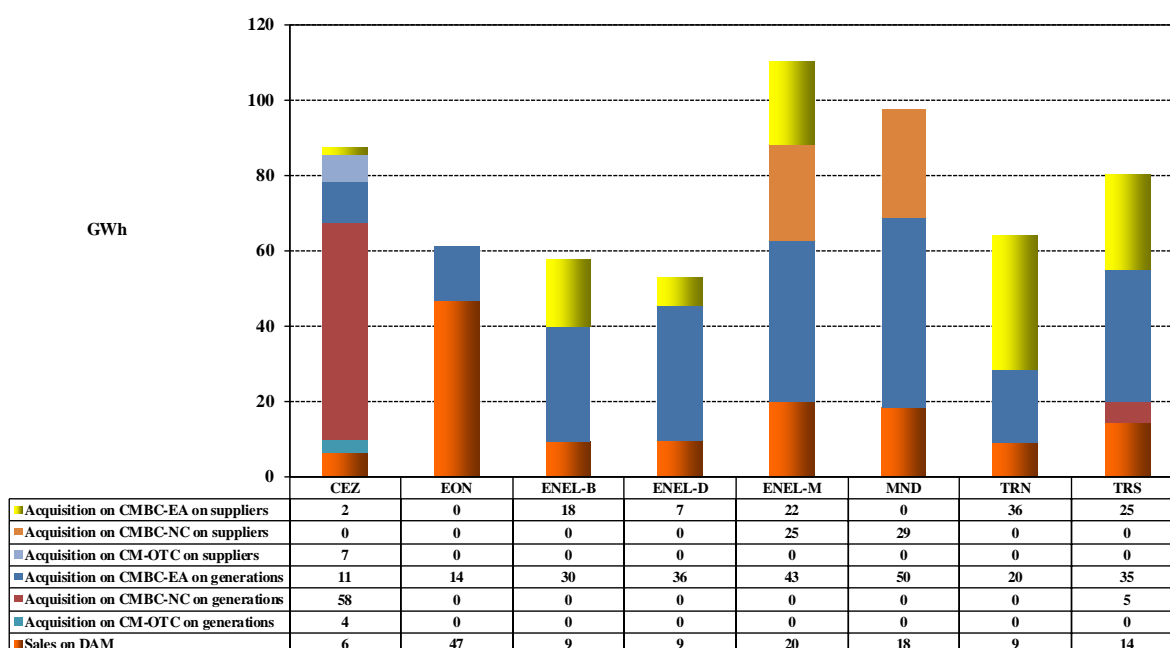
### Main distribution operators

The following table shows the electricity acquisition structure of main distribution operators (before the delivery interval), for covering the distribution network losses, for November 2017 compared with similar previous period:

Transactions' structure	November 2016	November 2017
Contracts concluded on Opcom centralized markets:	436.92	478.01
- CMBC-EA with generators	147.51	239.70
- CMBC-CN with generators	28.70	62.85
- CM-OTC with generators	7.20	3.60
- CMBC-EA with suppliers	220.98	110.67
- CMBC-CN with suppliers	3.73	54.00
- CM-OTC with suppliers	28.80	7.20
Transactions concluded on Intraday market	0.16	0.25
- purchase	0.16	0.21
- sales	0.00	0.04
Transactions concluded on DAM:	174.59	129.15
- purchase	180.50	132.33
- sales	5.91	3.18

The electricity purchased for covering their network losses is presented in detail in the following graph, for November 2017:

Electricity acquisition of distribution operators for covering the distribution losses  
November 2017



Source: Monthly reports of the distribution operators – processed by MG

## 6. Concentration indicators on the wholesale electricity market and its components

According to the economic theory and the EU documents, the following market concentration indicators may be defined:

- HHI, Herfindahl-Hirschman Index = sum of square market shares (%) of participants:

The indicator values signify:

HHI < 1000	non-concentrated market;
1000 < HHI < 1800	moderately concentrated market;
HHI > 1800	highly concentrated market.

- C1 = market share of the main market participant (%)

The indicator values signify:

C1 > 20%	alarming concentrated market;
C1 > 40%	suggests the existence of a dominant position;
C1 > 50%	clearly indicates a dominant position.

- C3 = sum of market shares of the main three participants in the market (%):

The indicator values signify:

40% < C3 < 70%	moderately concentrated market;
C3 > 70%	highly concentrated market.

These concentration indicators may be defined for the wholesale market (electricity market or ancillary services market) or for each of its components where direct competition takes place.

### Concentration indicators and market shares of the electricity generators

The market structure regarding the electricity generation offers an initial basis for analyzing the possible competitiveness level of the electricity market.

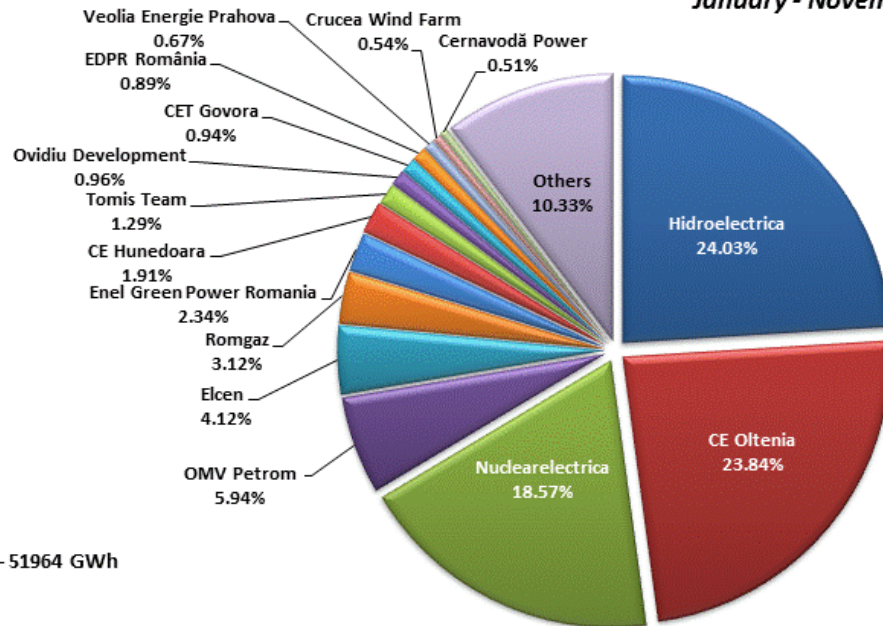
The following table presents the concentration indicators of generation for November 2017, calculated based on electricity delivered into the networks by the generators with dispatchable units while the graph shows the dispatchable generators market shares for eleven-months period.

Concentration indicators - November 2017 -	C1 (%)	C3 (%)	HHI
Value	23.51	65.46	1590

*Source: Monthly reports of generators – processed by MG*

A component of the WEM on which direct competition between generators exists is the Balancing Market (BM). The values of concentration indicators on this market are determined based on effectively delivered electricity, for each type of regulation defined within the Commercial Code, and they are presented in the following table for November 2017:

**Market share of generators with dispatchable units by delivered electricity  
January - November 2017**



Delivered electricity - 51964 GWh

C1 - 24.03 %

C3 - 66.44 %

HHI - 1569

The category "Others" comprises 111 generators with market shares less than 0.5%

Structure/concentration indicators of BM - November 2017 -	Regulation					
	Secondary		Fast tertiary		Slow tertiary	
	upward	downward	upward	downward	upward	downward
<b>C1 - % -</b>	<b>55</b>	<b>55</b>	<b>78</b>	<b>59</b>	<b>54</b>	<b>73</b>
<b>C3 - % -</b>	<b>96</b>	<b>97</b>	<b>90</b>	<b>97</b>	<b>92</b>	<b>100</b>
<b>HHI</b>	<b>4370</b>	<b>4426</b>	<b>6257</b>	<b>4391</b>	<b>3854</b>	<b>5849</b>

Source: Monthly reports of CNTEE Transelectrica SA – processed by MG

In order to maintain the level of security in the NES functioning, due to significant increase of the number of RES generators, Ancillary Services are ensured both on market mechanisms and regulated contracts. Based on GD no. 941/2014 provisions for modifying art. no. 4 of GD no. 138/2013 regarding approving some measures for electricity supplying security and for extension of a term, they were established regulated quantities for fast tertiary and slow tertiary reserves.

Besides that, CNTEE Transelectrica SA has organised auctions for acquiring reserves on the competitive component for secondary reserve, fast tertiary and slow tertiary reserve.

The relationship between regulated and competitive components on the Ancillary Services Market (ASM) as well as the main concentration indicators on each type of reserve (secondary, fast tertiary and slow tertiary) are presented in the following table, for November 2017.

Concentration indicators on ASM - November 2017 -		Secondary reserve	Fast tertiary reserve	Slow tertiary reserve
regulated component	contracted quantity (h*MW)	14400	14400	331200
	C1 (%)	66.1	100.0	100.0
	C3 (%)	100.0	100.0	100.0
competitive component	contracted quantity (h*MW)	314800	483600	172800
	C1 (%)	57.1	79.2	68.6
	C3 (%)	100.0	94.8	100.0
	HHI	4749	6408	5693

Source: Monthly reports of CNTEE Transelectrica SA – processed by MG

### Concentration Indexes for the Day Ahead Market

Day Ahead Market (DAM) is a voluntary market, opened both for buying and selling for all types of market participants: generators, suppliers, grid operators under applicable regulations.

The concentration indicators on DAM reflects the level of competition between sellers and between buyers respectively. the dynamics of both influencing the price level. The following table presents C1, C3 and HHI for buying and for selling side of DAM based on quantities traded by participants on this market.

Concentration indicators on DAM - November 2017 -	C1 (%)	C3 (%)	HHI
Selling	24.67	40.74	870
Buying	16.46	28.34	513

Source: Monthly reports of Opcom SA – processed by MG

### **7. Price evolution on wholesale electricity market**

Starting with November 2014 the Romanian DAM is working coupled with the spot markets from Hungary, Slovakia and Czech Republic based on the price coupling mechanism, project known as 4M MC. This coordinated correlation mechanism uses an unique European method for price coupling of regions (called *Price Coupling of Regions - PCR*-initiative) in order to fulfil the harmonization of national european markets and create the internal european electricity market.

The functioning of these spot markets is based on coupling algorithm recommended by ACER (Euphemia) and its goal is maximizing the social welfare to the entire area of the coupled markets.

The coupling mechanism is accomplished through the operators OTE-Czech Republic, EPEX Spot (operating as services supplier for OKTE-Slovakia and HUPX-Hungary) and from 17<sup>th</sup> of January 2017 OPCOM-Romania (who became PCR member from 1<sup>st</sup> January 2016). After succesfully finalisation of the implementation process of the changes and tests performed. OPCOM operates in its own name the coupling solution impelemented in the 4M MC operational mechanism, all processes performed was carried out in safety conditions of coupled functioning 4M MC day-ahead markets. Coupling operators are acting as Coordinators on a monthly rotation basis.

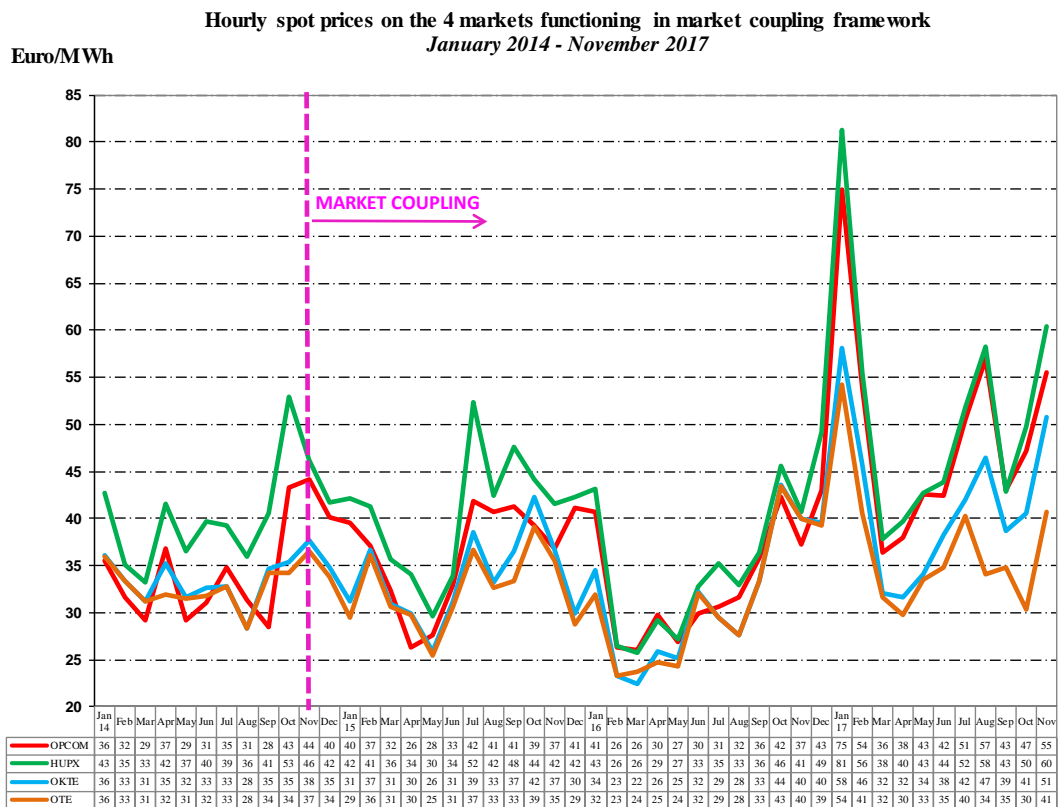
According to EU legislation, coordinated cross border capacity allocation is under the governance of the transmission system operators from the 4 countries and the allocation model to be used is the default allocation on DAM of the available interconnection capacity.

To better meet the purpose of DAM coupling mechanism - electricity transfer at level and direction based on generation and consumption conditions and dependent on the coupled DAM prices - starting with 1st January 2016. TSO operators from Romania and Hungary (CNTEE Transelectrica SA and Mavir ZRt) agreed to reserve a quota from interconnection capacity for DAM allocation based on the authorities recommendations from both countries, ANRE and MEKH. The same rule was adopted for interconnection capacity allocation on Bulgarian border.

Thus, for each month of the year, reserved capacity for DAM allocation is determined as a difference between monthly ATC for each subperiod and 80% from the lowest value between the ATC resulted for subperiods of the month, incremented with the already allocated capacity at the yearly auction but which has been returned to TSO.

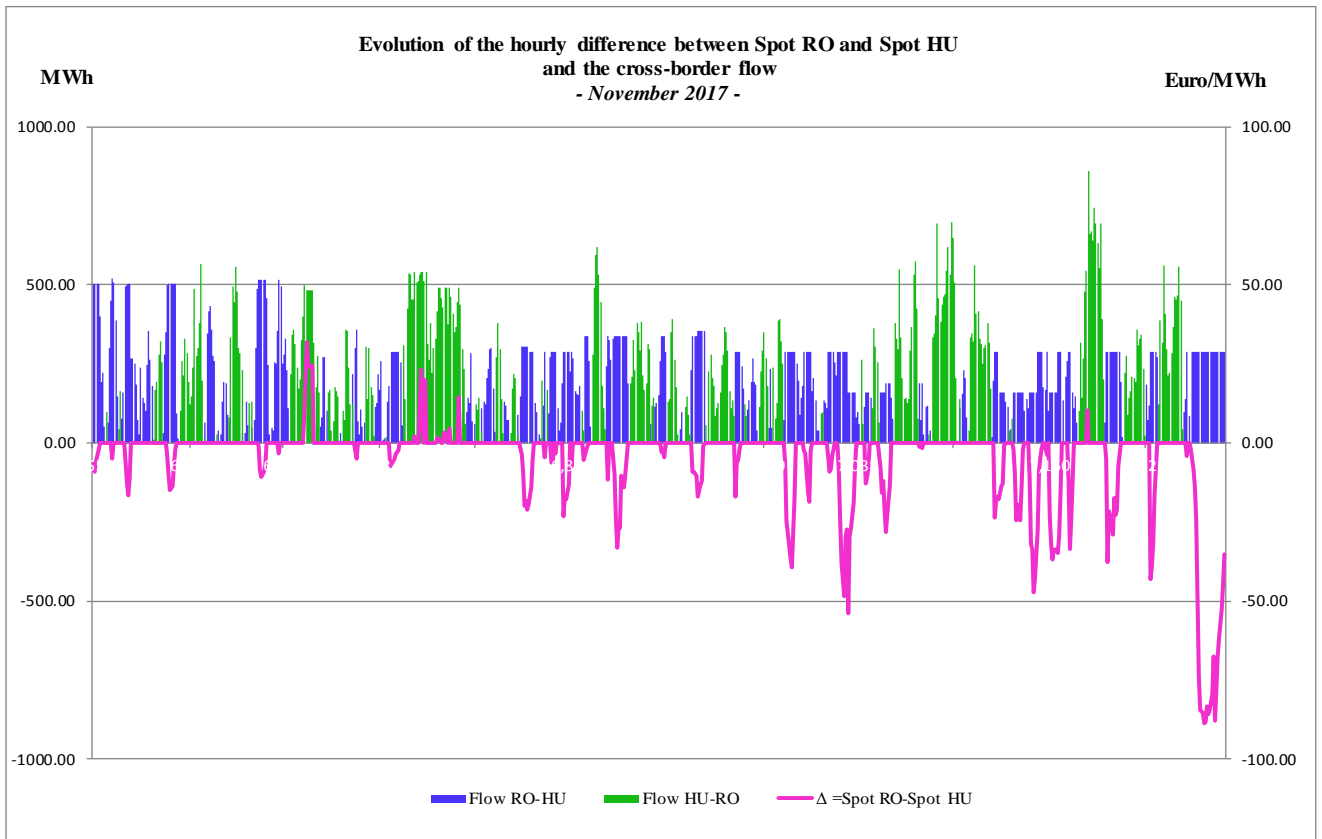
Particularly, for Hungarian border, if 80% from the lowest value of the ATC resulted for monthly subperiods is lower than 80 MW, ATC for monthly allocation will be 80% from the ATC calculated for each subperiod incremented with the already allocated capacity at the yearly auction but which has been returned to TSO.

Next graph presents the monthly spot prices of the 4 markets involved in the coupling mechanism starting with January 2014, before and after the start of operational phase.



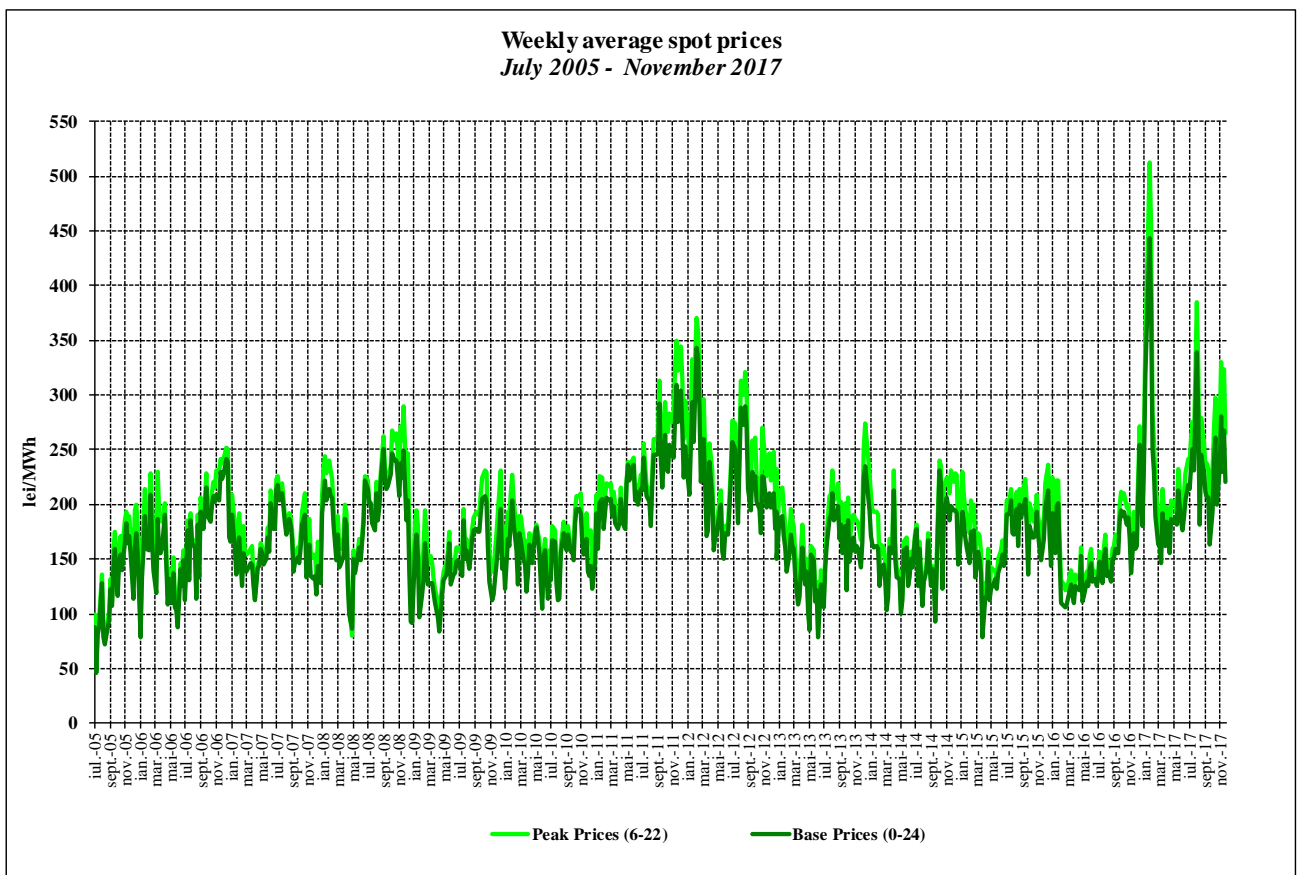
Source: Monthly reports of Opcom SA – processed by MG

The following graph presents the evolution of Novembre 2017 hourly gap between DAM prices in Romania and Hungary as a result of the functioning of coupled markets, correlated with the cross border flows RO-HU for both directions.



Source: Data published by Opcom SA – processed by MG

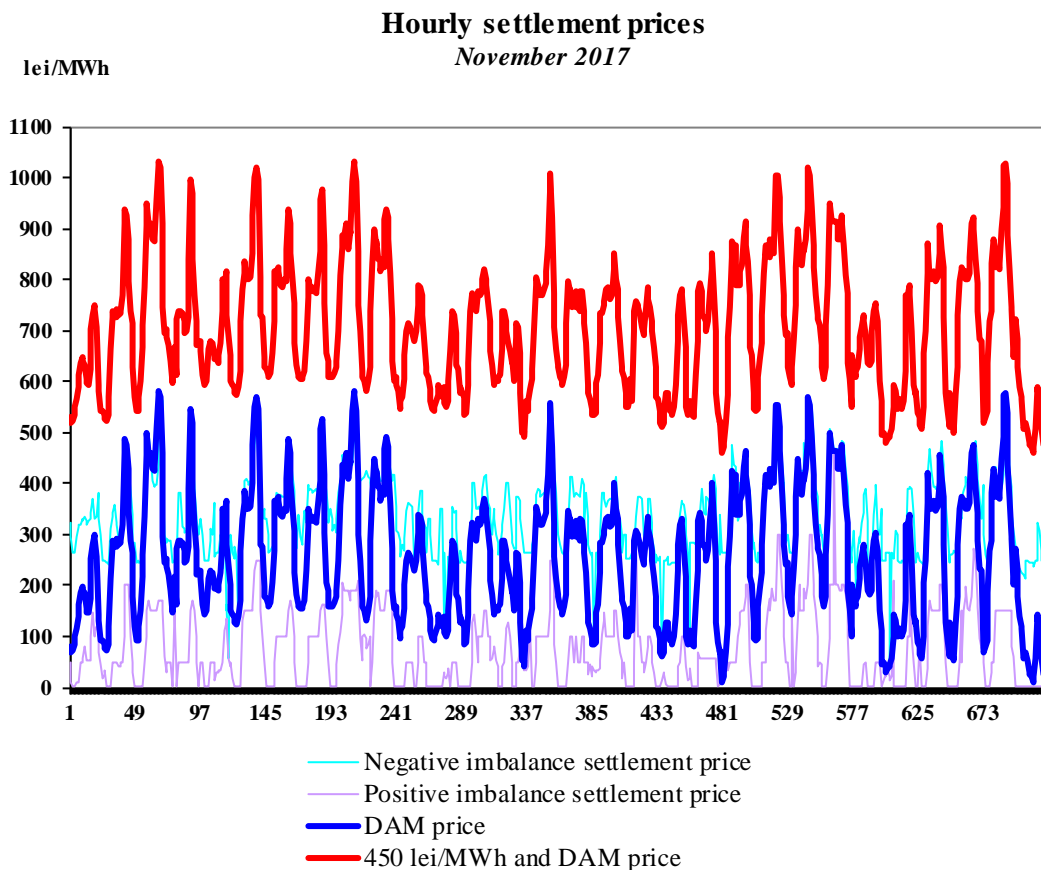
The following graph presents the evolution of weekly average spot prices starting with July 2005:



Source: Daily reports of Opcom SA – processed by MG

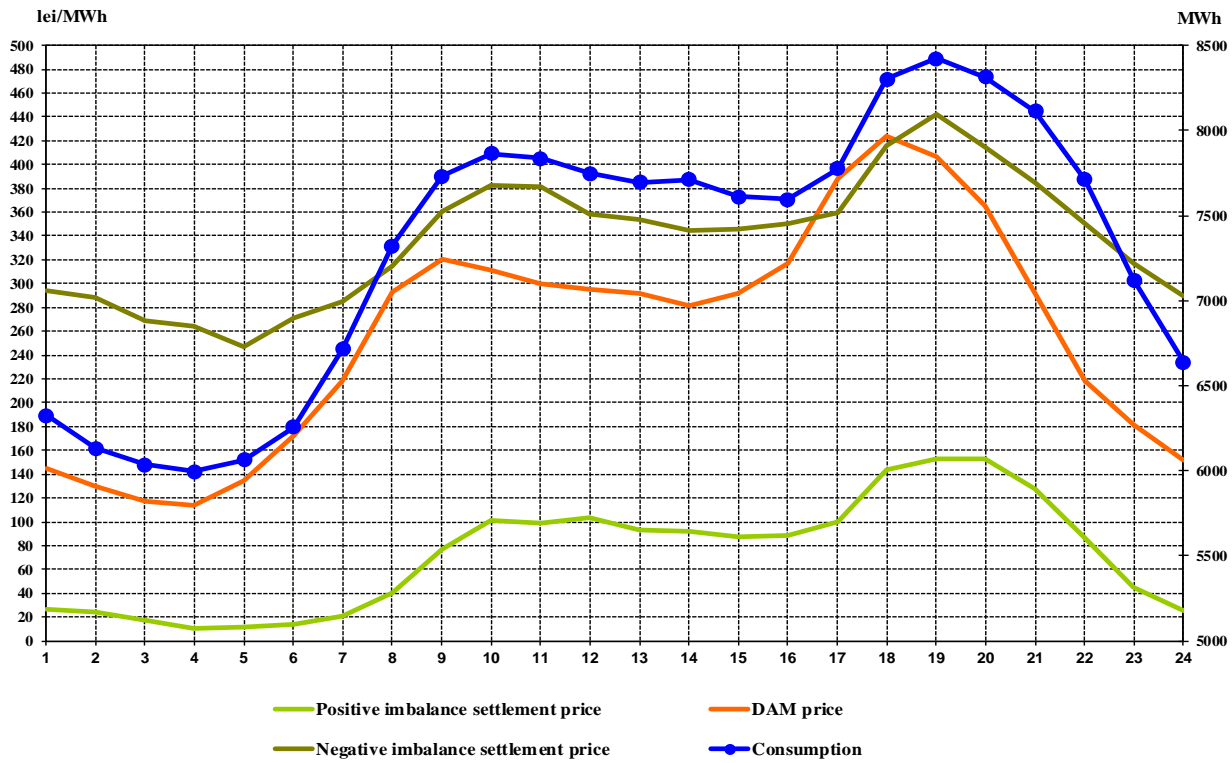
In order to cover the differences between planned/contracted amounts of consumption/ generation and the real time consumption, the system operator (CNTEE Transelectrica SA) operates the BM by buying or "selling" electricity at prices determined by the merit order of dispatchable generators' offers. The participants generating imbalances, grouped in BRPs, have to bear the imbalances costs. For the negative imbalances, they have to pay the settlement price resulting from the upward bids accepted on the BM, while for the positive imbalances they receive the settlement price resulting from the downward bids accepted on the BM.

The settlement prices (MCP on DAM, negative imbalance settlement price and positive imbalance settlement price) are represented on the same graph, showing the two markets correlation degree. In the first graph the prices are expressed in hourly values, in the second graph in hourly average values compared to internal consumption, and in the last graph in average monthly values.



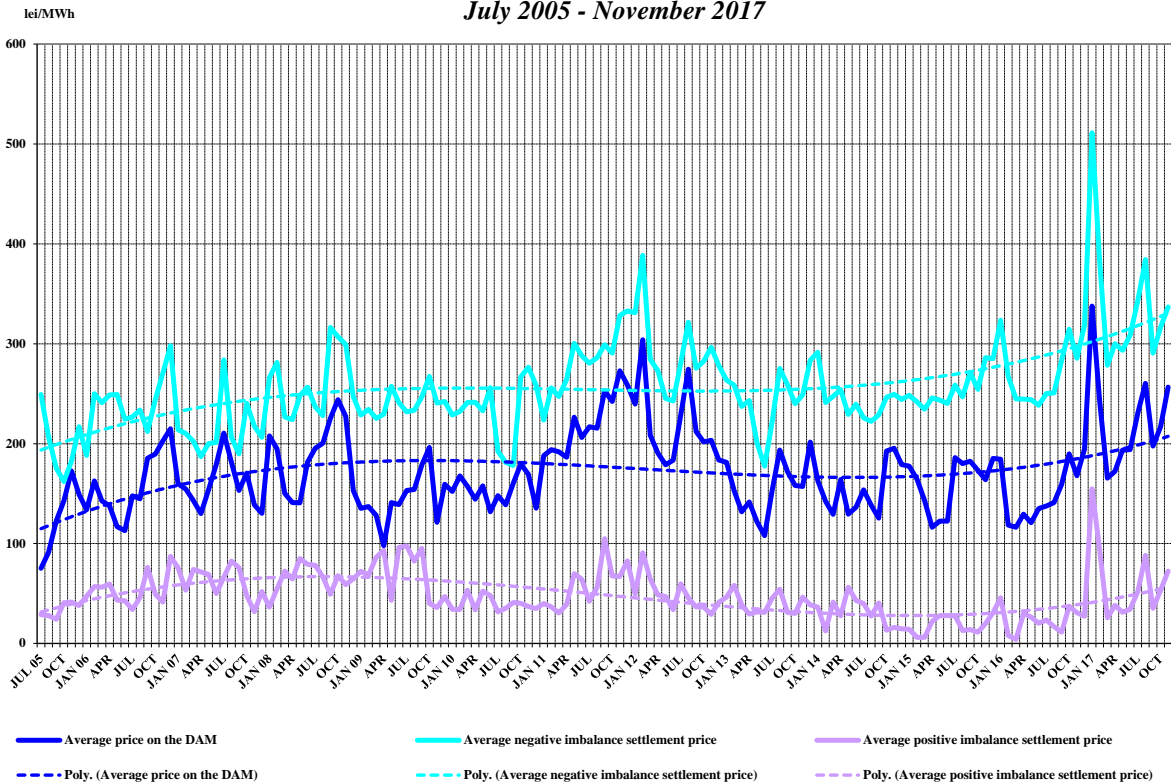
Source: Daily/monthly reports of Opcom SA – processed by MG

Hourly average settlement prices and internal consumption  
November 2017



Source: Monthly reports of Opcom SA and CNTEE Tranelectrica SA – processed by MG

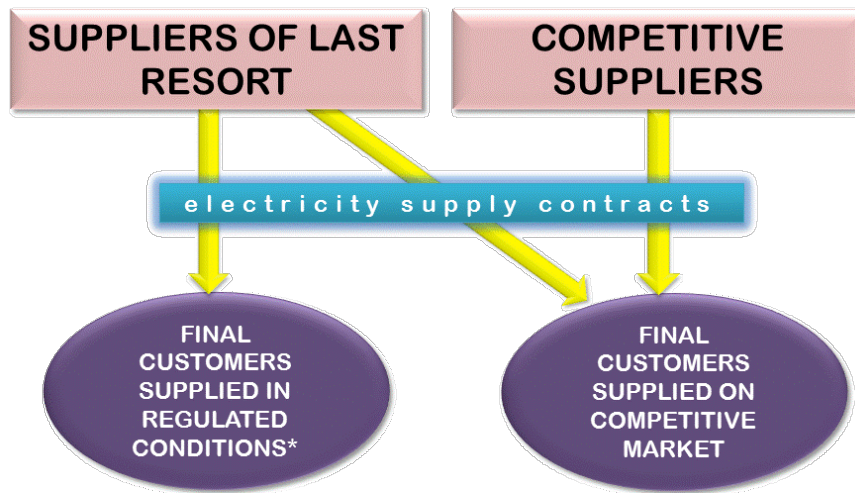
Monthly average prices on DAM and BM  
July 2005 - November 2017



Source: Monthly/daily reports of Opcom SA – processed by MG

### III. RETAIL ELECTRICITY MARKET

#### 1. Structure of the retail electricity market

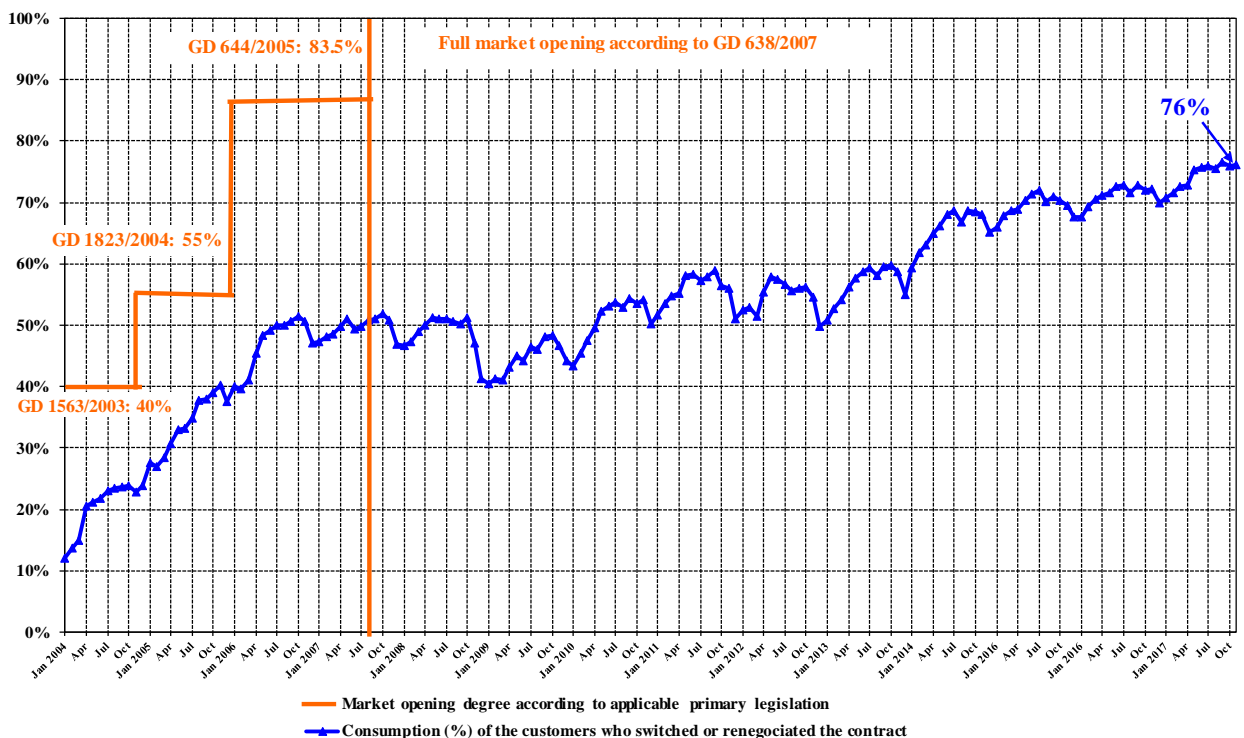


\* according to art. 53 (2) and art. 55 (1) from Electricity and Gas Law no. 123/2012

#### 2. Electricity market opening degree

The following graph contains the quota of the consumption from total consumption, of the customers who switched their supplier or renegotiated their contracts with the suppliers operating on the regulated market, between January 2004 – November 2017. The values presented are cumulated from the beginning of the opening process and are presented monthly:

Opening degree evolution of electricity market  
January 2004 - November 2017

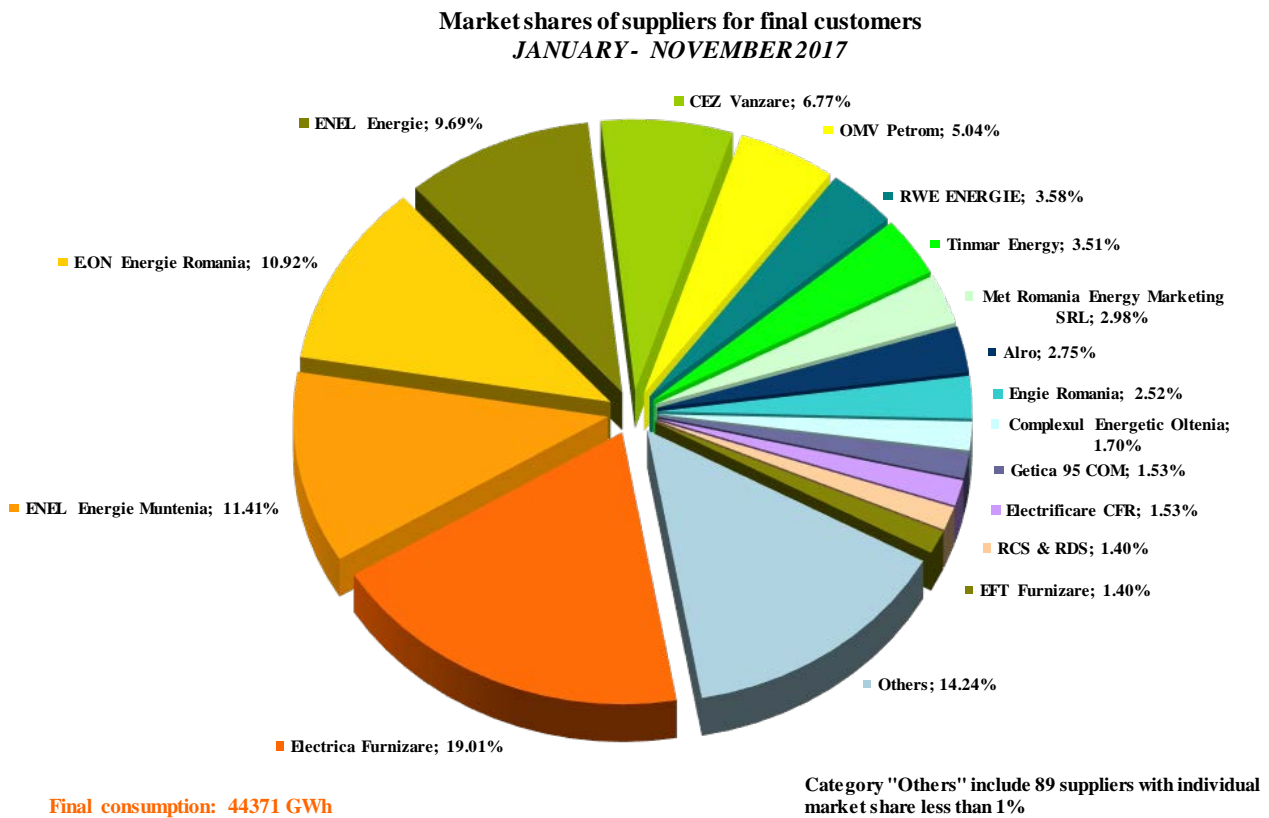


Source: Monthly reports of the final customers' suppliers – processed by MG

### 3. Market shares of the electricity suppliers

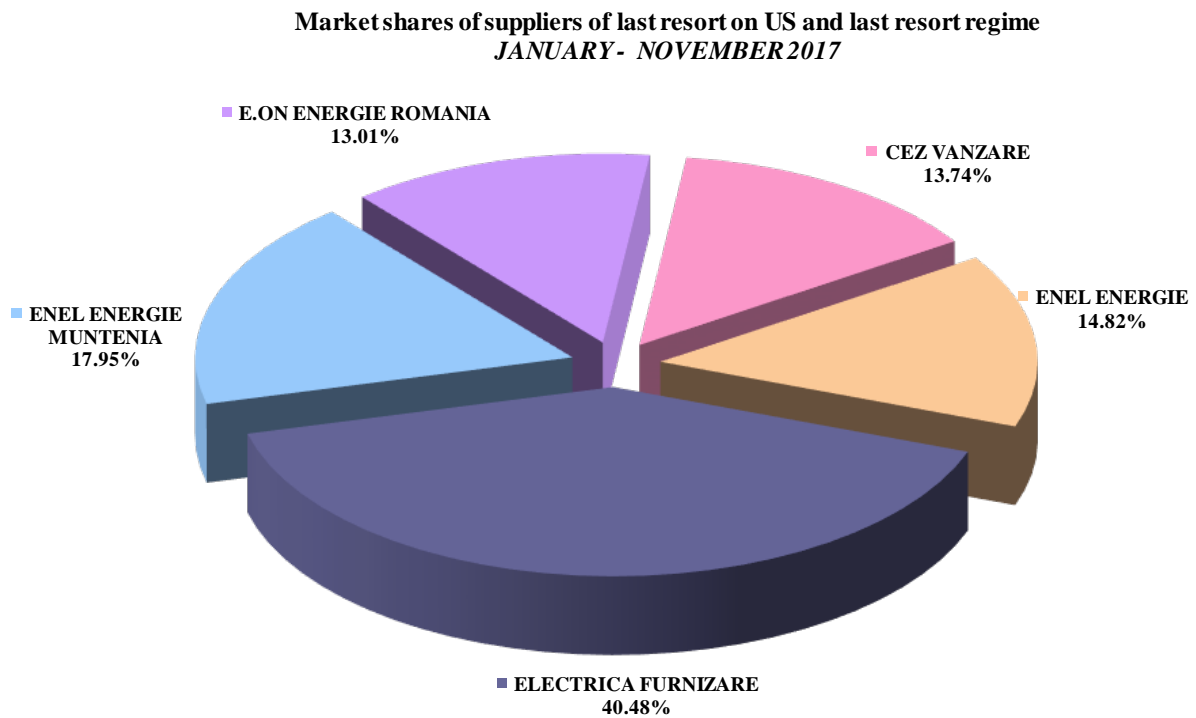
In the following three graphs there are presented the market shares of electricity suppliers on the retail market, calculated:

- a) for all suppliers acting on REM, including the suppliers of last resort, based on the electricity supplied to the final customers (on regulated. Competitive Market Component and last resort tariffs) in US and last resort regime, as well as to the customers who switched their supplier or renegotiated their contract;



Source: Monthly reports of suppliers for final customers– processed by MG

- b) for suppliers of last resort - based on the electricity supplied to the final customers in US and last resort regime;

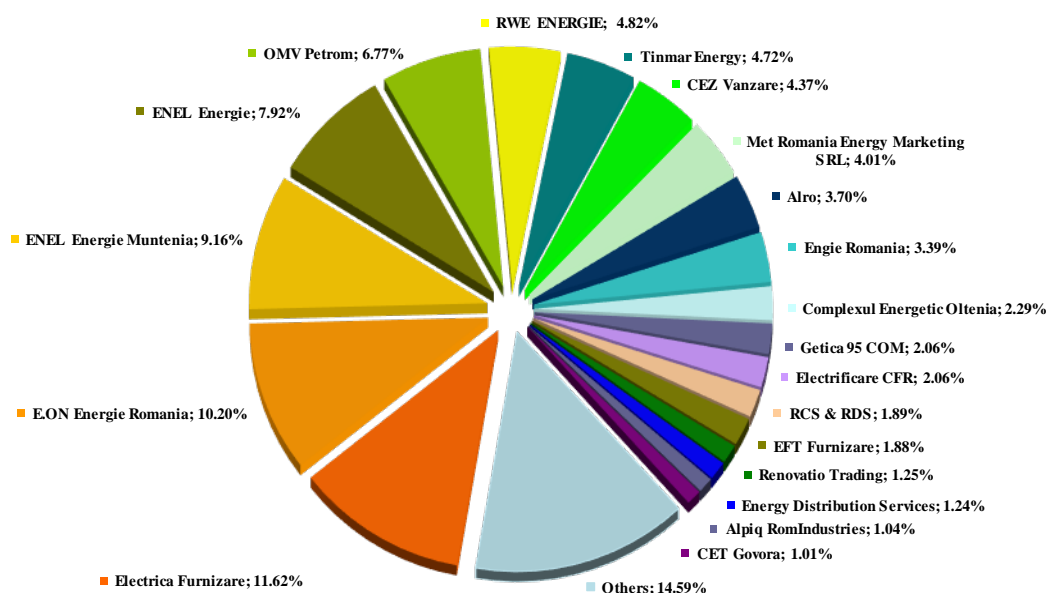


Consumption of customers supplied at regulated, CMC and last resort tariffs: 11361 GWh

Source: Monthly reports of the suppliers of last resort – processed by MG

- c) for all suppliers (including the suppliers of last resort) based on the electricity supplied for the customers at negotiated prices on competitive component of REM:

Market shares of suppliers delivering electricity on the competitive market  
JANUARY - NOVEMBER 2017



Consumption on competitive market: 33010 GWh  
Structure indicators:  
HHI - 570; C3 - 31%; C1 - 12%

Category "Others" includes 85 suppliers with individual

Source: Monthly reports of the competitive suppliers – processed by MG

The values of market indicators were calculated without taking into consideration the dominance principle. The delivered electricity used for determining the market share of each supplier comprises the self-consumption of the largest industrial customer which owns a supply license and based on it acquired its electricity from the WEM as a competitive supplier.

The electricity supplied to the final customers used for calculating the market share of every supplier includes also the self-consumption of that particular supplier (e.g. customers with supply license who buy electricity for themselves from WEM as competitive suppliers).

The analysis of the competitive suppliers' activity on the competitive REM component compared to their activity on the WEM is developed based on the weight of the electricity sold to final customers in total electricity sales. The table below presents the number of suppliers acting on the REM, grouped into categories of sales weight during November 2017:

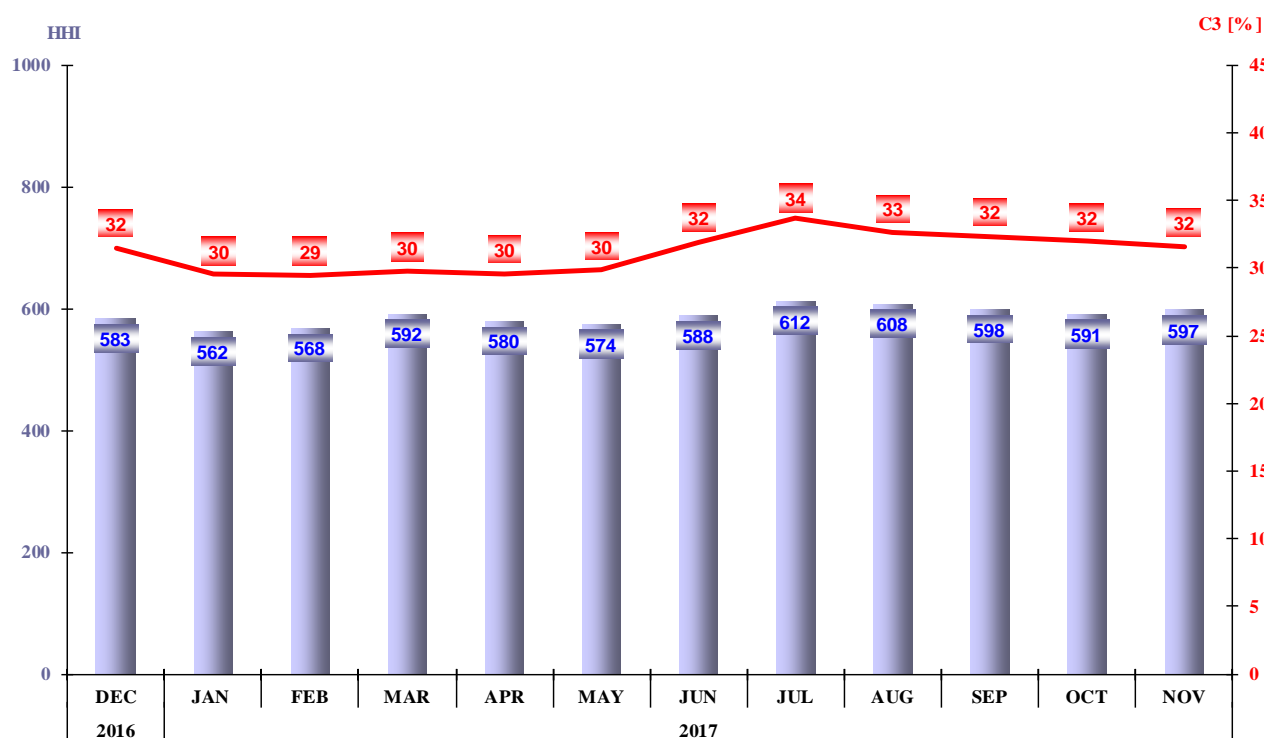
Number of suppliers	Share of sales to final customers from total sales transactions			
	100%	75% - 100%	50% - 75%	<50%
Competitive	8	18	12	26
Of last resort	0	5	0	0

Source: Monthly reports of the suppliers – processed by MG

#### 4. Concentration indicators of the competitive retail electricity market

The monthly evolution of concentration indicators (C3, HHI) determined on the competitive component of the REM is presented for November 2017 in the following graph:

Herfindahl-Hirschman (HHI) and Concentration Ratio of the main three suppliers delivering electricity on competitive market (C3)



Source: Monthly reports of the suppliers – processed by MG

The table below shows the values of structure indicators of competitive component of REM for and the number of active suppliers in November 2017, calculated for each non-household and household customer categories as defined by the Regulation (EU) 2016/1952 of the European Parliament and of the Council:

Indicators - nov 2017	Consumption tranches - Non-household customers							
	IA	IB	IC	ID	IE	IF	IG	Total
C1 - % -	29	25	18	12	18	16	17	11
C3 - % -	70	52	42	30	40	40	46	31
HHI	1874	1297	865	615	856	908	1029	573
Consumption - GWh -	121	367	301	718	387	244	820	2958
No. of SUPPLIERS	65	72	67	61	25	17	16	89
No. of suppliers of last resort	0	5	5	5	5	3	3	5
No. of competitive suppliers	51	52	49	44	16	10	7	62
No. of producers	14	15	13	12	4	4	6	22

Source: Monthly reports of the suppliers – processed by MG

Indicators - November 2017	Consumption tranches - Household customers					
	DA	DB	DC	DD	DE	Total
C1 - % -	63	46	36	31	29	46
C3 - % -	97	81	73	75	74	83
HHI	4932	2906	2225	2158	2062	2984
Consumption - GWh -	54	50	32	24	9	171
No. of SUPPLIERS	39	42	40	40	37	50
No. of suppliers of last resort	5	5	5	5	5	5
No. of competitive suppliers	31	34	31	32	28	39
No. of producers	3	3	4	3	4	6

Source: Monthly reports of the suppliers – processed by MG

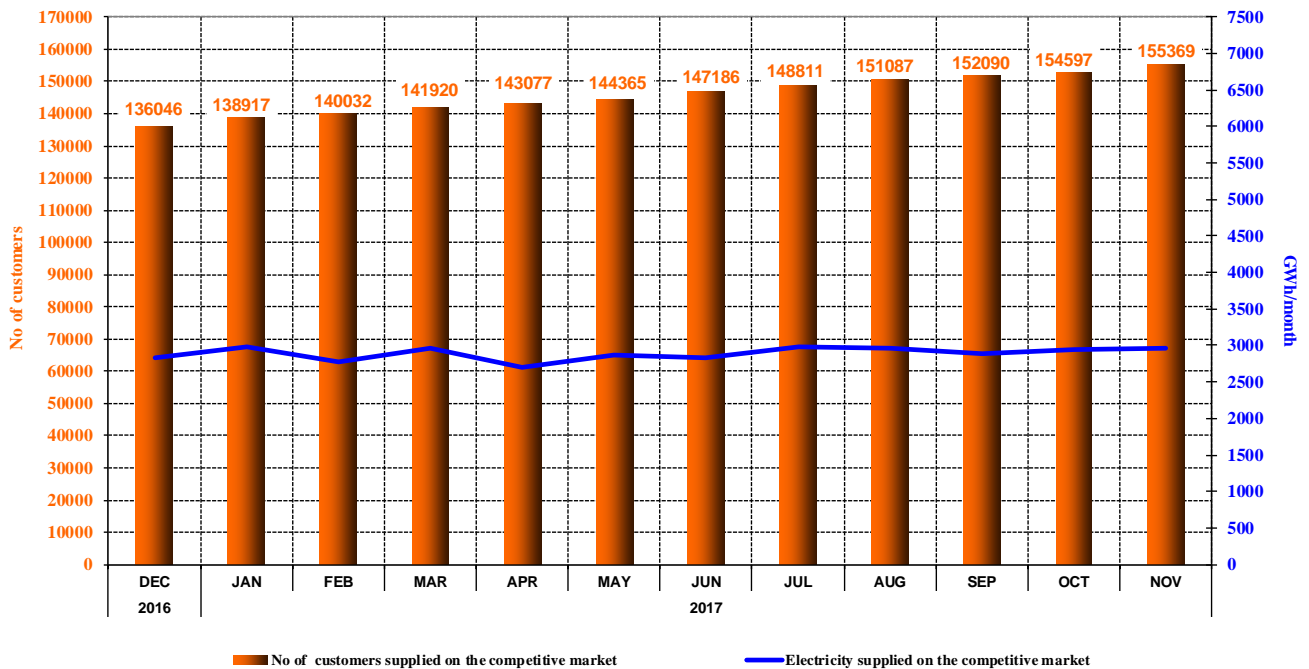
### 5. Evolution of customers' number and of electricity delivered

Number of customers supplied on the competitive market is presented as an evolution over the last 12 months; for November 2017 this number is split into categories, according to the provisions of Regulation (EU) no. 2016/1952 of the European Parliament and of the Council. The tables below presents the bands of consumption of each category of non-household and household customers:

Non-household customers	Annual electricity consumption (MWh):	
IA		<20
IB	>=20	<500
IC	>=500	<2000
ID	>=2000	<20000
IE	>=20000	<70000
IF	>=70000	<150000
IG	>=150000	

Household customers	Annual electricity consumption (kWh):	
DA		<1000
DB	>=1000	<2500
DC	>=2500	<5000
DD	>=5000	<15000
DE	>=15000	

Evolution of the number of supplied non-household customers and delivered electricity on the competitive market

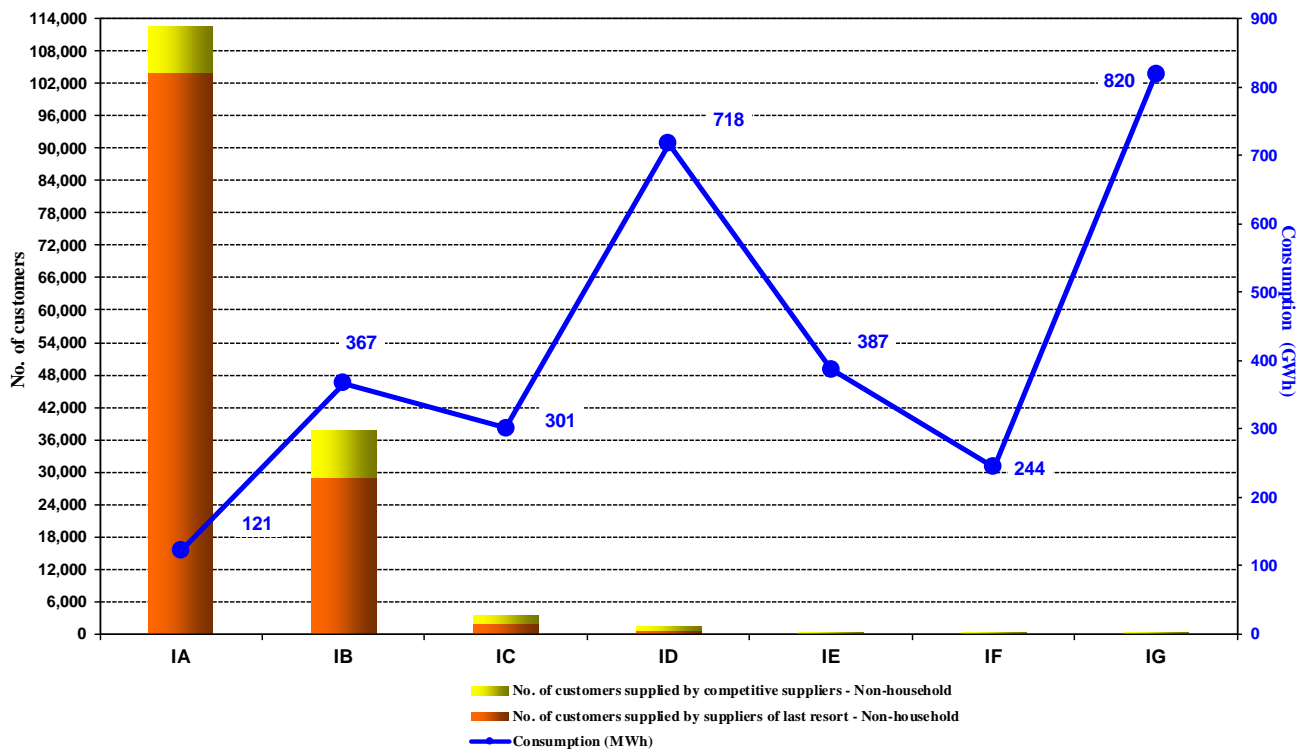


Source: Monthly reports of the competitive suppliers – processed by MG

Competitive suppliers sales to final household customers on the competitive component of REM is presented in the following table:

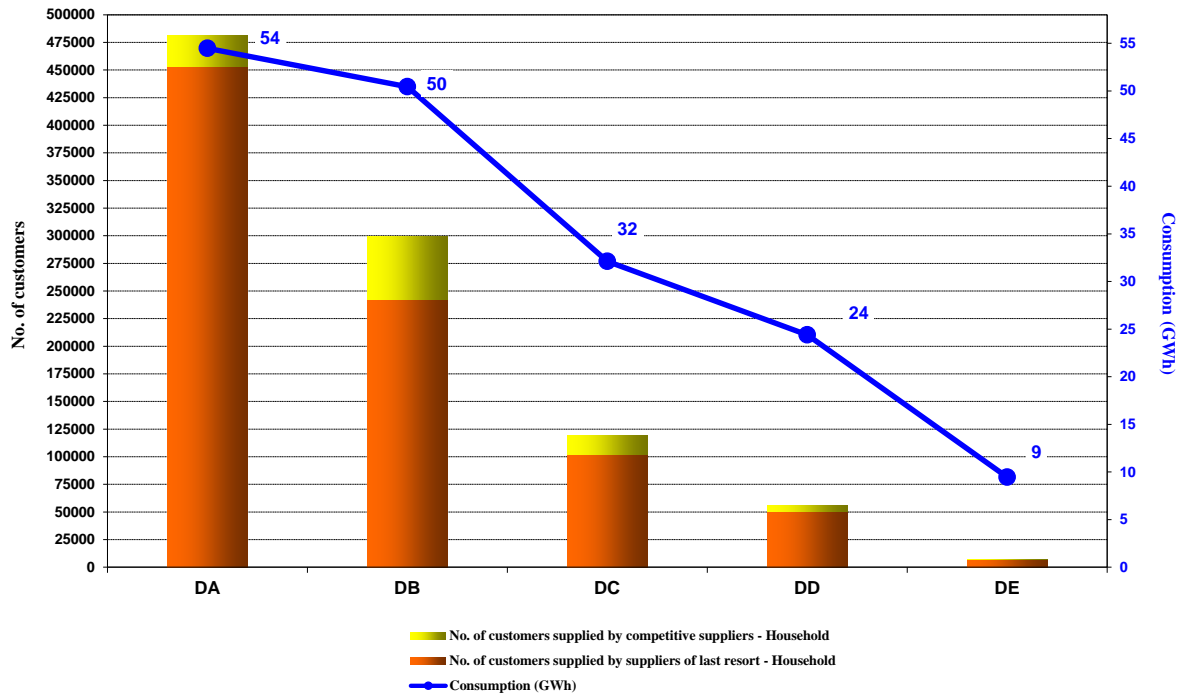
No.	Reporting month 2017	Supplied electricity (MWh)		No. of household customers	
		Total of which:	Suppliers of last resort	Total of which:	Suppliers of last resort
1	January	57.851	46.109	272.278	217.510
2	February	62.874	51.198	322.375	262.522
3	March	75.965	63.398	379.817	316.794
4	April	83.096	69.445	444.106	374.762
5	May	94.032	80.102	522.680	448.266
6	June	97.943	85.245	598.070	517.489
7	July	117.173	102.402	668.931	582.326
8	August	128.422	112.293	743.304	648.730
9	September	134.808	118.201	823.383	723.644
10	October	152.273	134.881	910.426	805.266
11	November	170.829	151.628	962.762	854.272

Number of non-household customers supplied on competitive market and the consumption of each category of customers  
- NOVEMBER 2017 -



Source: Monthly reports of the suppliers – processed by MG

Number of household customers supplied on competitive market and the consumption of each category of customers  
-NOVEMBER 2017 -

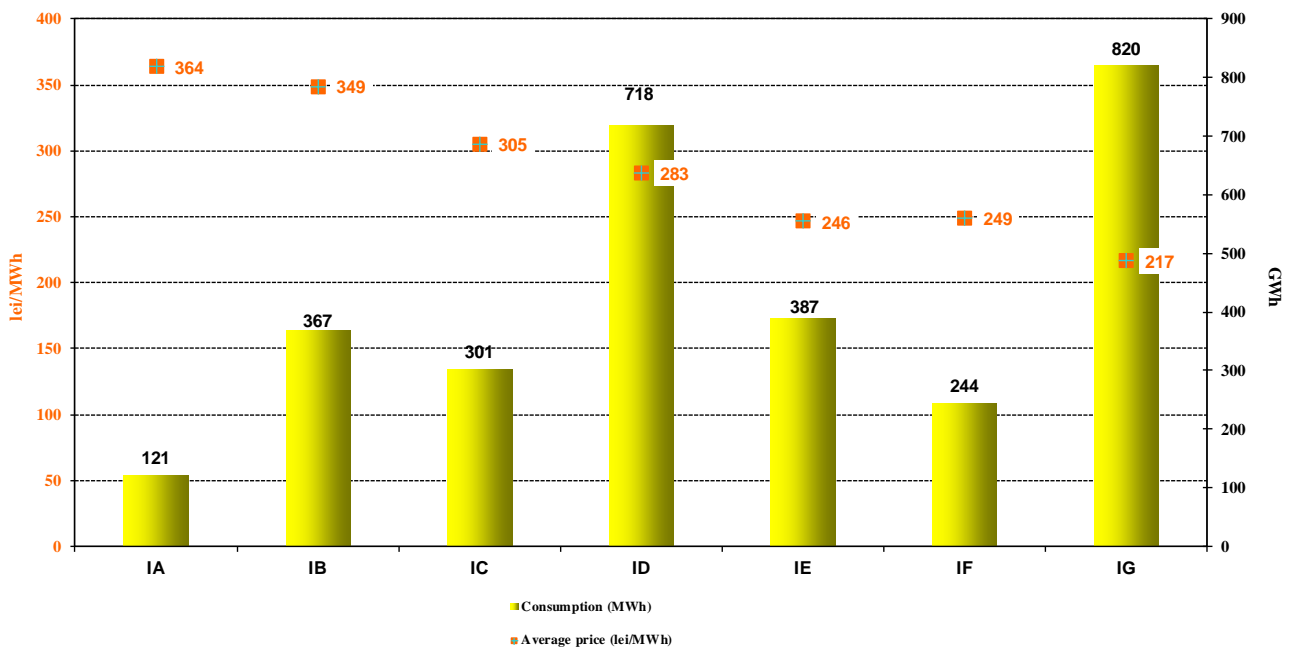


Source: Monthly reports of the suppliers – processed by MG

### 6. Average selling prices of customers supplied on the competitive market

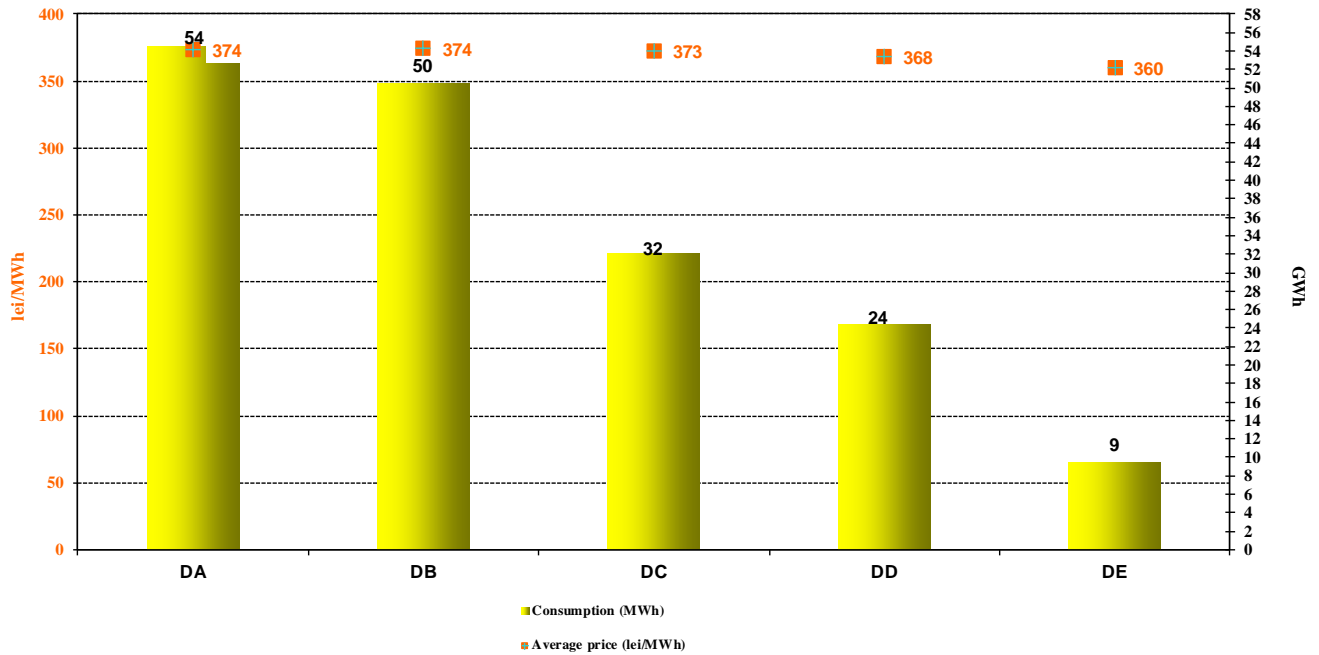
The following graph presents the average selling prices of customers supplied on the competitive market, based on the structure defined according to the Regulation (EU) no. 2016/1952 of the European Parliament and of the Council for November 2017.

Average price and energy consumption for non-household customers' tranches on competitive segment of REM  
- NOVEMBER 2017 -



Source: Monthly reports of the competitive suppliers – processed by MG

Average price and energy consumption for household customers' tranches on competitive segment of REM  
- NOVEMBER 2017 -



Source: Monthly reports of the competitive suppliers – processed by MG

Note: The average selling price on each category was calculated as weighted average of prices applied by suppliers with quantities supplied according to the provisions of the European Regulation. The average prices do not include VAT, excise or other taxes but include the corresponding services (transmission, system services, distribution tariffs, imbalance, BRP aggregated tax, metering). Splitting customers into categories was based on their annual consumption forecast, according to the provisions of above mentioned Regulation.

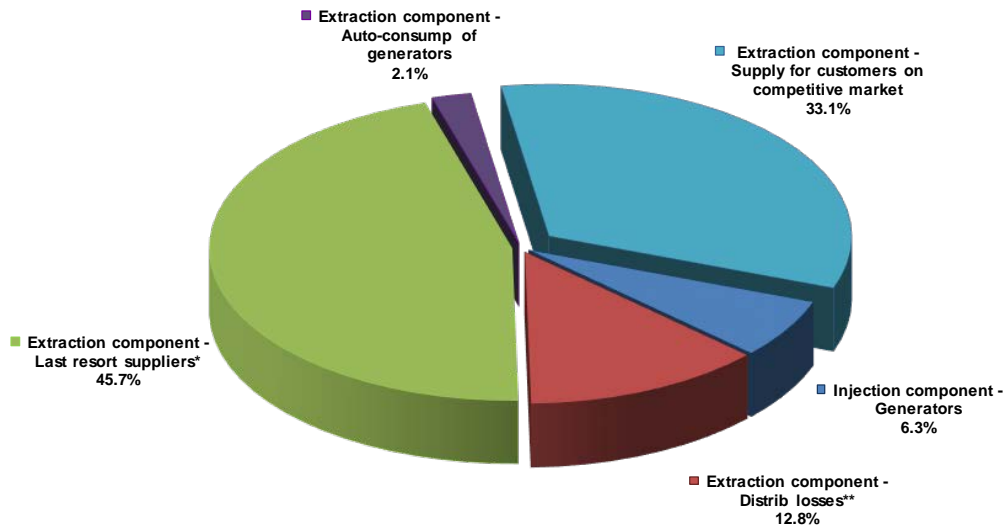
#### IV. TRANSMISSION AND SYSTEM OPERATOR CNTEE TRANSELECTRICA SA

TSO performs the electricity transmission service at regulated tariffs, differentiated by separate tariff zones, depending on the impact of injection or extraction of electricity in/from transmission grid upon NES functioning regime.

Compared to the previous method of establishing the transmission zonal tariffs, which aimed to offer locational signals, starting with July 2015 the methodological principles were modified in order to comply with EU regulations and ACER recommendations in this field. Following this, the injection tariff covers only the network losses costs with different zonal tariffs, while the extraction tariff covers the average cost of transmission service.

The following graph presents the structure of CNTEE Transelectrica SA revenues from performing the transmission services and reflects the structure of its clients benefiting from this type of service in November 2017.

**CNTEE Transelectrica SA structure of revenues from transmission services  
- November 2017 -**



\* for electricity extracted from their own licence areas as well as from other areas

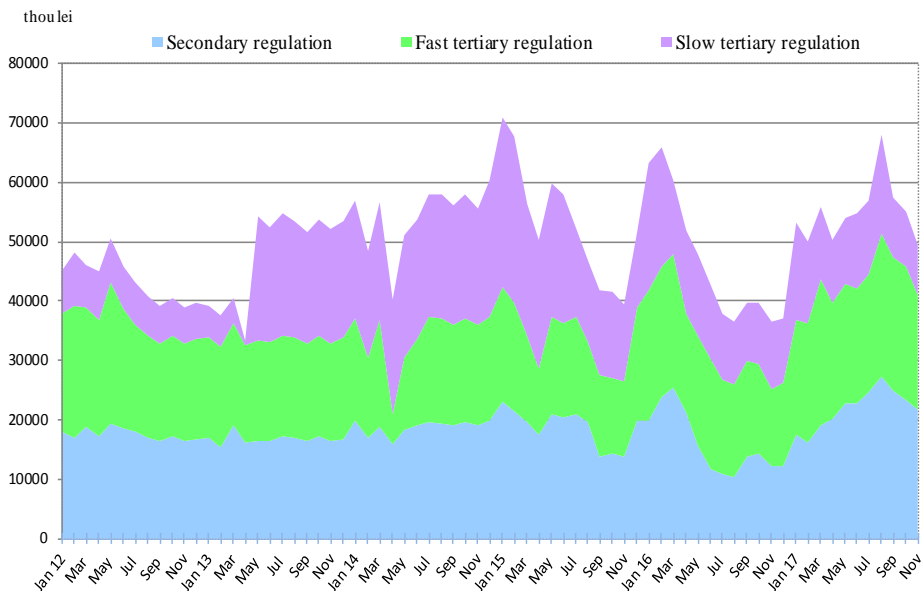
\*\* includes the electricity with which some distribution operators supply their own self-consumption places

Source: Monthly reports of CNTEE Transelectrica SA – processed by MG

In order to perform the system operator tasks. CNTEE Transelectrica SA assesses and contracts reserves (ancillary services) from qualified generators, which are integrated on BM. The ancillary services which may be used are reserves for secondary, fast tertiary, slow tertiary regulation and reactive energy.

The following graph represents the cost evolution of ancillary services acquisition which were paid by the transmission and system operator starting with January 2012. The tariffs applied for this type of services may be regulated (for the quantities approved through decision by ANRE) and/or competitive (in case the TSO organizes competitive sessions).

**Structure of CNTEE Transelectrica SA costs with ancillary services  
acquired from qualified generators**



Source: Monthly reports of CNTEE Transelectrica SA – processed by MG

## V. MARKET RULES EVOLUTION IN NOVEMBER 2017

In November 2017, ANRE issued the following regulations with impact on the wholesale and retail electricity markets:

- ANRE Decision no. 1671/2017 approving the quantities generated in high efficiency cogeneration units that benefit from the support scheme in October 2017.

## VI. EXPLANATIONS AND ABBREVIATIONS

### 1. Explanations

- *Electricity delivered into the grid* includes also the own consumption of auto-generators such as RAAN and OMV Petrom together with the electricity sold by the generators through direct lines or consumed by themselves at other consumption sites.
- *Self-consumption of generators* – in the graph regarding the revenues of CN Transelectrica SA the self-consumption exclusively represents the generators consumption at consumption places other than the generation sites.
- *Internal consumption* represents the electricity covered by the wholesale market participants and calculated as *Delivered electricity + Import – Export*.
- *Consumption of final customers on regulated market* represents the consumption of customers supplied at regulated tariffs and CMC by suppliers of last resort.
- *Consumption of final customers on competitive market* represents the consumption of customers supplied at negotiated prices.
- *Fuel consumption* represents the fuel consumed for generating electricity and heat.
- *Competitive supplier* represents the supplier which is active on the competitive retail market.

### 2. Abbreviation

- MG – Monitoring Group
- WEM – Wholesale Electricity Market
- REM – Retail Electricity Market
- CMBC – Centralised Market of Bilateral Contracts
- CMC – Competitive Market Component
- DAM – Day Ahead Market
- ID – Intraday Market
- BM – Balancing Market
- MCP – Market Clearing Price
- PCSU – Centralised Market of Universal Service (Romanian abbreviation)
- 4M MC – Price coupling mechanism for spot markets from Romania. Hungary. Slovakia and Czech Republic
- BRP – Balancing Responsible Party
- TG/TL – injection / extraction component of the transmission tariff
- OU-NPD – Operational Unit-National Power Dispatch
- US – Universal Service

- DO – Distribution operator
- SLR – Supplier of last resort
- ATC – Available Transmission Capacity
- DO – Distribution operator
- SLR – Supplier of last resort
- ATC – Available Transmission Capacity