REPORT ON RESULTS OF MONITORING THE ROMANIAN ELECTRICITY MARKET AUGUST 2018

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

TABLE OF CONTENTS

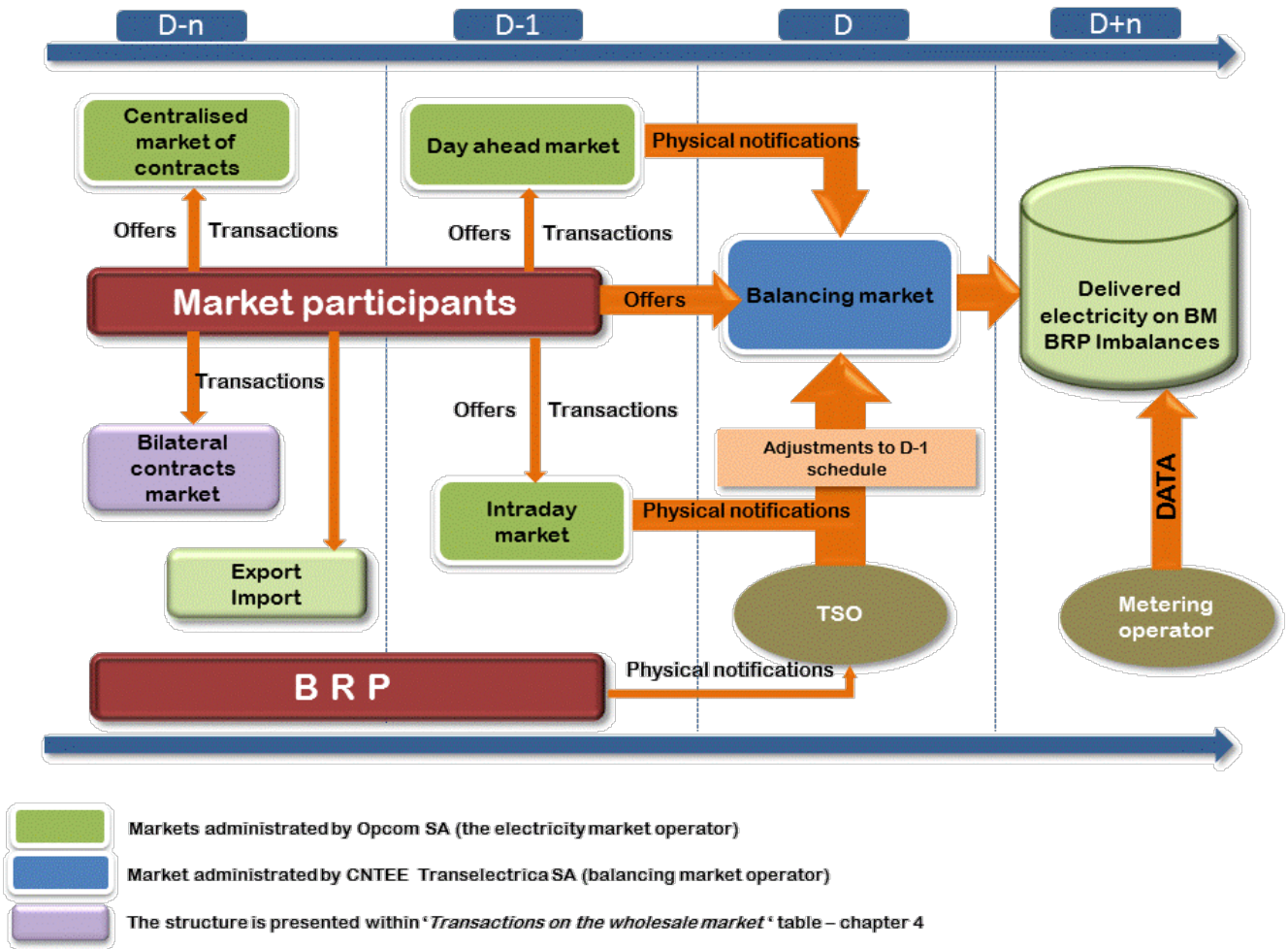
I. MAIN EVENTS IN THE DEVELOPMENT OF THE ROMANIAN ELECTRICITY MARKET

- **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 disolved;
- 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%;
- **November 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 negociation;
- **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/October 2010** – launch of bilateral coordinated auctions for capacity allocation on interconections 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 obtaines 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 obtaines 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 Transelectrica 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 Transelectrica 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*) acting on the electricity market in August 2018 are presented below split into categories:

No.	Category
A	***Electricity generators on classic sources operating dispatching units***
1	Bepco SRL
2	CET Arad SA
3	CET Govora SA
4	CE Hunedoara SA
5	CE Oltenia SA
6	Contour Global Solutions SRL
7	Ecogen Energy SA
8	Electrocentrale Bucureşti SA
9	Electrocentrale Constanţa SA
10	Electrocentrale Galaţi SA
11	Electro Energy Sud SRL
12	Enet Focsani SA
13	Gas Energy Ecotherm SA
14	Lukoil Energy & Gaz Romania SRL
15	Modern Calor SA
16	OMV Petrom SA
17	Rulmenti SA
18	SNGN Romgaz SA
19	Termoficare Oradea SA
20	Veolia Energie Iaşi SRL
21	Veolia Energie Prahova SRL
22	Vest Energo SA
B	***Electricity generators on wind source operating dispatching units***
1	Alizeu Eolian SA
2	Arinna Development SRL
3	Blue Line Energy SRL
4	Blue Planet Investments SRL
5	Braila Winds SRL
6	Bridgeconstruct SRL
7	Catalan Electric SRL
8	Cernavoda Power SRL
9	Corni Eolian SRL
10	Crucea Wind Farm SRL
11	Dan Holding MGM SRL
12	Eco Power Wind SRL
13	Ecoenergia SRL
14	EDPR Romania SRL
15	Electrica Serv SRL
16	Electricom SA
17	Elektra Green Power SRL
18	Elektra Wind Power SRL
19	Enel Green Power Romania SRL
20	Energia Verde Ventuno SRL
21	Enex SRL
22	Eol Energy SRL
23	Eol Energy Moldova SRL
24	Eolian Center SRL
25	Eolica Dobrogea One SRL
26	EP Wind Project (ROM) SIX SA
27	Eviva Nalbant SRL
28	Ewind SRL
29	General Concrete Cernavoda SRL
30	Green Energy Farm SRL
31	Ground Investment Corp SRL
32	Holrom Renewable Energy SRL
33	Horia Green SRL
34	Intertrans Karla SRL
35	Kelavent Charlie SRL
36	Kelavent Echo SRL
37	Land Power SRL
38	LC Business SRL
39	M&M 2008 SRL
40	Mireasa Energies SRL
41	East Wind Farm SRL
42	Ovidiu Development SRL
43	Peştera Wind Farm SRL
44	Romconstruct Top SRL
45	Sibioara Wind Farm SRL
46	Smart Clean Power SRL
47	Smartbreeze SRL
48	Soft Grup SRL
49	Tomis Team SRL
50	Verbund Wind Power Romania SRL
51	Wind Park Invest SRL
52	Windfarm MV I SRL
53	VS Wind Farm SRL

No.	Category
C	***Electricity generators on biomass source operating dispatching units***
1	Bioenergy Suceava SRL

No.	Category
D	***Electricity generators on solar source operating dispatching units***
1	Blue Sand Investment SRL
2	Caracal Solar Alpha SRL
3	Casa Crang SRL
4	Clue Solar SRL
5	Corabia Solar SRL
6	Cujmir Solar SRL
7	Delta & Zeta Energy SRL
8	Ecosfer Energy SRL
9	Energo Proiect SRL
10	Eye Mall SRL
11	Fort Green Energy SRL
12	Foton Epsilon SRL
13	Gama & Delta Energy SRL
14	GPSB Solaris 48 SRL
15	Greenlight Solution SRL
16	Green Vision Seven
17	Kentax Energy SRL
18	Lemar Grup SRL
19	LJG Green Source Energy Alpha SA
20	LJG Green Source Energy Beta SRL
21	LJG Green Source Energy Gamma SRL
22	Long Bridge Milenium SRL
23	Mar-Tin Solar Energy SRL
24	Potelu Solar SRL
25	Power L.I.V.E. One SRL
26	RA-RA PARC SRL
27	Romkumulo SRL
28	Simico Prod Factory SRL
29	Skybase Energy SRL
30	Solar Electric Frasinet SRL
31	Solar Future Energy SRL
32	Solaria Green Energy SRL
33	Solprim SRL
34	Spectrum Tech SRL
35	Studina Solar SRL
36	Sun Energy Complet SA
37	Tis Energy SRL
38	Tinmar Green Energy SRL
39	Urdel Enery SRL
40	Vanju Mare Solar SRL
41	Varokub Energy Development SRL
42	VIR Company International SRL
43	VIS Solaris 2011 SRL
44	Vrish Pro Investments SRL
45	WDP Development RO SRL
46	Xalandine Energy SRL
47	XPV SRL
E	***Electricity generators on hydro source operating dispatching units***
1	Hidroelectrica SA
F	***Electricity generator on nuclear source operating dispatching units***
1	SN Nuclearelectrica SA
G	***Transmission System Operator***
1	CNTEE TRANSELECTRICA SA
H	***Market Operator for DAM, Intra-Day, Centralised Markets - CMBC-EA, CMBC-CN, CMBC-FP, CM-OTC, CMUS***
1	OPCOM SA
I	***Distribution operators***
1	Distributie Energie Oltenia
2	Delgaz Grid
3	E-Distributie Banat
4	E-Distributie Dobrogea
5	E-Distributie Muntenia
6	SDEE Muntenia Nord
7	SDEE Transilvania Nord
8	SDEE Transilvania Sud
J	***Suppliers of Last Resort***
1	CEZ Vanzare SA
2	ENEL Energie SA
3	E.ON Energie Romania SA
4	ENEL Energie Muntenia SA
5	Electrica Furnizare SA

No.	Category
K	***Electricity Suppliers acting exclusively on the wholesale market***
1	Alpiq Energy SE
2	Axpo Energy Romania SRL
3	CEZ as
4	Danske Commoditiesa/s Aarhus
5	EDF Trading Limited
6	Energo-Pro Trading EAD
7	Elpetra Energy E.A.D.
8	Energi Danmark A/S
9	Energy Supply & Trade D.O.O
10	Eolian Project SRL
11	EVN Trading South East Europe
12	Ezpada SRO
13	Flavus Investiții SRL
14	Freepoint Commodities Europe Ltd
15	GEN I trgovanje in prodaja elektricne energije doo
16	Holding_ Slovenske_ Elektrarne
17	Interenergo Energetski, Inzeniring d.o.o.
18	JAS Energy Trading s.r.o.
19	Lord Energy SRL
20	MVM Partner Zrt
21	Neptun SA
22	Nis Petrol SRL
23	OMV Gas Marketing & Trading GmbH
24	Petrol, Slovenska energetska druzba
25	Photovoltaic Green Project SRL
26	Ritam-4-TB ood
27	Statkraft Markets GmbH
28	Transenergo Com SA
29	Unit Energy Trade SRL
30	Verbund Trading Romania SRL
L	***Electricity Suppliers acting also on the retail market***
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	Apuron Energy SRL
10	Ciga Energy SA
11	Cotroceni Park SA
12	Crest Energy SRL
13	Curent Alternativ SRL
14	CYEB SRL
15	EFE Energy SRL
16	EFT Furnizare SRL

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

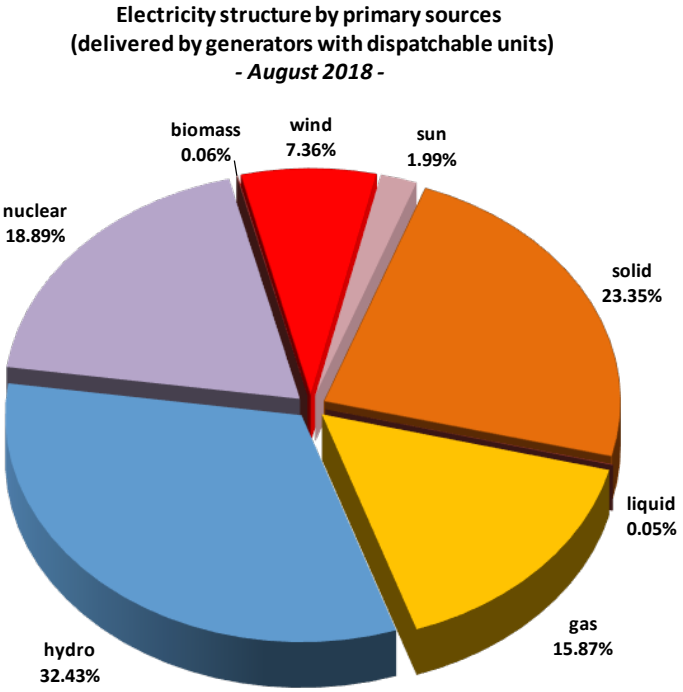
*The electricity market participants report to ANRE technical/commercial data according to the *Methodology of wholesale electricity market monitoring for assessing the competition level on market and preventing the abuse of dominant position.* approved by ANRE Order no. 67/2018 as well as to the *Methodology 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.

The monitored electricity generation license holders are producers holding dispatchable groups, which, according to the Regulation of Programming of production units and dispatchable consumers, approved by the ANRE President Order no. 32/2013 are classified under the following power categories:

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.

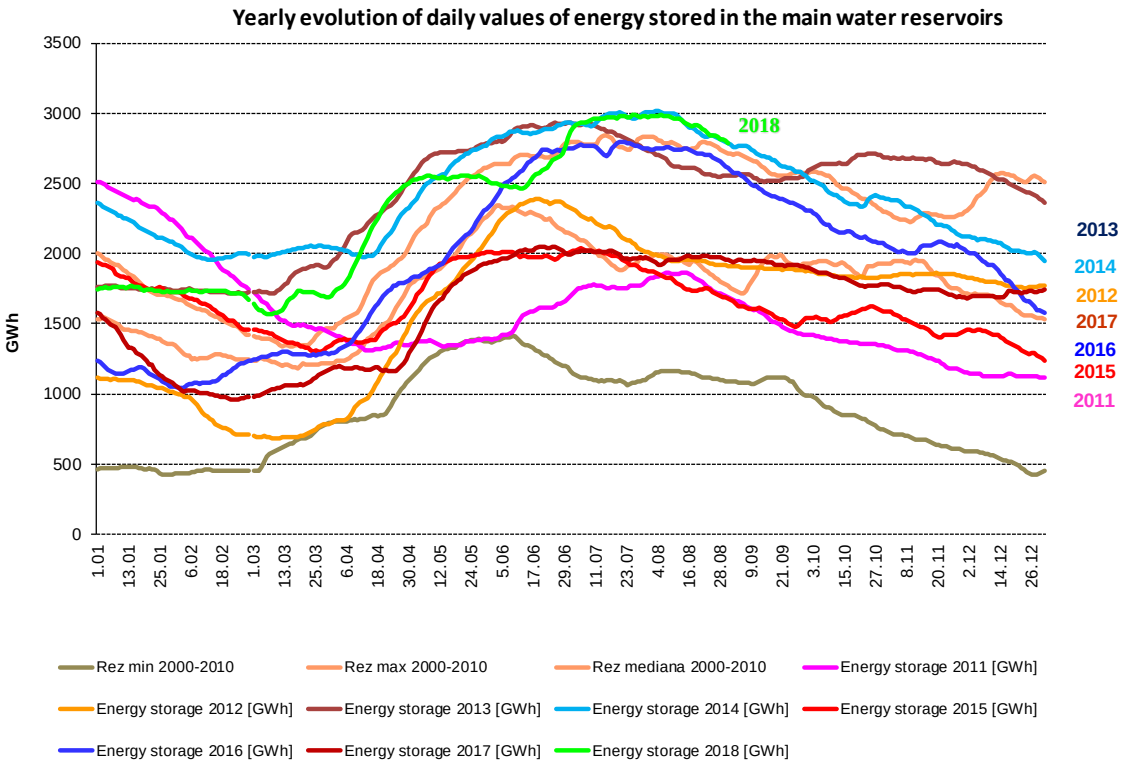
Electricity suppliers acting exclusively on the wholesale market category include supplying license owners who act only on wholesale market and owners of a trading license issued according ANRE Order no. 13/2015 for approval the „General conditions associated to the license for trading electricity".

3. Generation structure of National Energy System on resources types



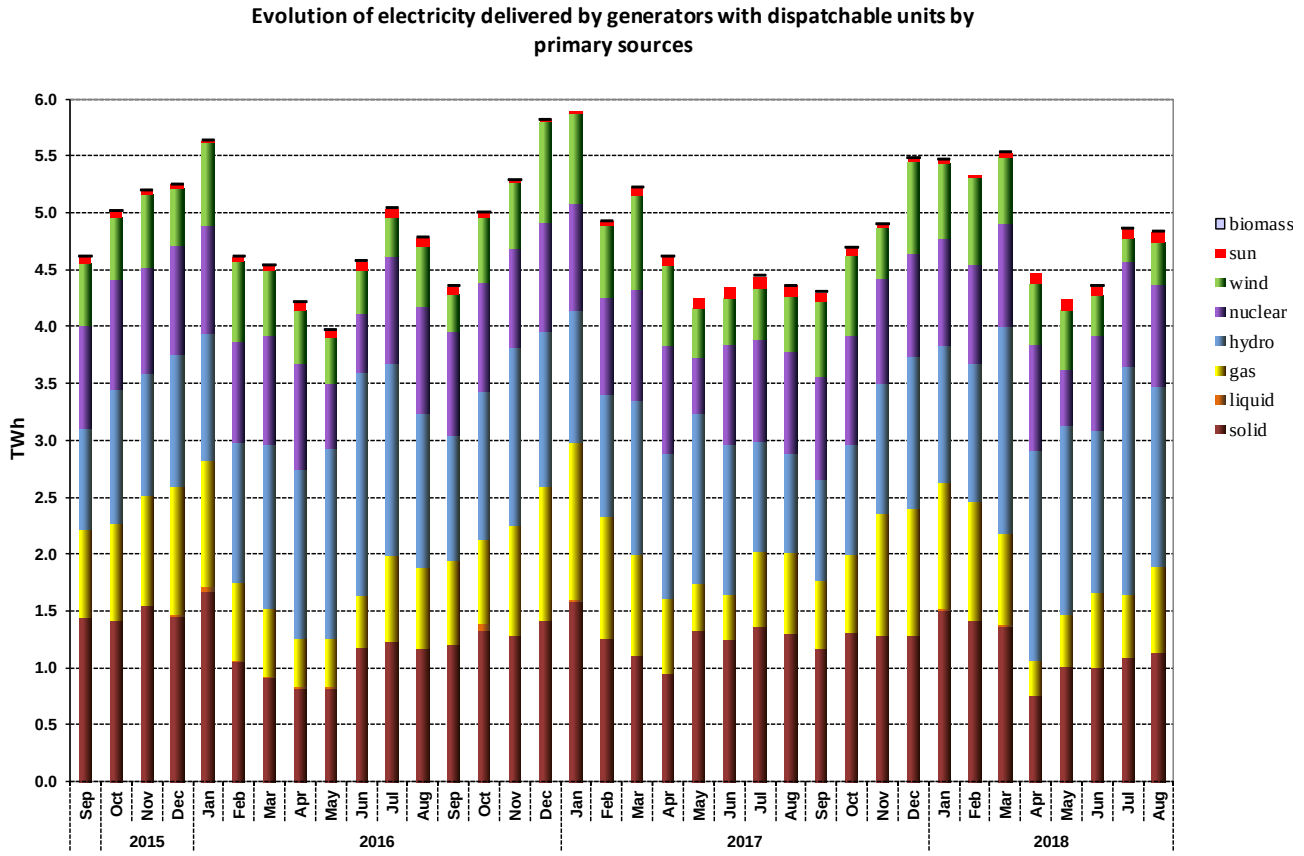
Source: Monthly reports of generators – processed by MU

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 August 2018 compared to the daily values of the last 7 years and compared to minimum, maximum and median values from 2000-2010.



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

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



Source: Monthly reports of generators – processed by MU

The following table presents the main data regarding the physical balance of electricity for August 2018, compared to data for the similar period of 2017:

Nr. Crt.	INDICATOR	UM	Aug 2017	Aug 2018	%	Jan-Aug 2017	Jan-Aug 2018	%
0	1	2	3	4	5=4/3*100	6	7	8=7/6*100
1	Generated electricity	TWh	4.67	5.12	109.64	40.63*	41.57	102.31
2	Delivered electricity	TWh	4.37*	4.83	117.16	38.08*	39.13	102.76
3	Import	TWh	0.45	0.12	26.67	2.50	1.59	63.60
4	Export	TWh	0.41	0.49	119.51	4.57	3.97	86.87
5	Internal consumption (2+3-4)	TWh	4.41	4.47	101.36	36.01*	36.76	102.08
6	Consumption of household customers:	TWh	1.03	1.02	99.03	8.38	8.44	100.72
6.1	*on Universal Service regime*	*TWh*	*0.90*	0.75	83.33	*7.67*	6.64	86.57
6.2	*on the competitive market*	*TWh*	*0.13*	0.27	207.69	*0.71*	1.80	253.52
7	Consumption of non-households customers:	TWh	3.03	3.19	105.28	23.86	24.81	103.98
7.1	*on universal service and last resort regime*	*TWh*	*0.09*	0.09	100.00	*0.81*	0.68	83.95
7.2	*on the competitive market*	*TWh*	*2.94*	3.10	105.44	*23.05*	24.13	104.69
8	Transmission–Injection component	TWh	4.26*	4.71	110.56	37.19*	38.23	102.80
9	Transmission–Extraction component	TWh	4.44	4.53	102.03	36.26*	36.99	102.01
10	Actual transmission grid losses	TWh	0.08	0.07	87.50	0.62	0.76	122.58
11	Heat generated for delivery	Tcal	431.93	466.51	108.06	8351.92	8016.26	95.98
12	Heat in co-generation	Tcal	346.11	314.12	90.76	6435.76	5970.42	92.77

Note:

1 The produced energy and the delivered energy are presented in accordance with the reports of the monitored production license holders - producers operating dispatchable electric groups, as defined in the Programming Regulation of Production Units and Dispatchable Consumers, approved by ANRE Order no. 32/2013 as amended;

2. The data presented in the table do not include the energy supplied to the final customers connected to the plant's installations (headings 6 and 7);

3. The imported / exported quantities do not include transits and cross-border exchanges of electricity by CNTEE Transelectrica SA with neighboring power systems in order to balance the system;

4. The electricity for which a transport contract is concluded corresponds to the electricity delivered from the plants with installed capacity of more than 5 MW connected to the transmission and distribution electric networks; the electricity extracted from the network for which a transport contract is concluded coincides with the electricity for which the electricity extraction tariff is charged in the network (according to ANRE Order 108/2018);

5. The consumption of US household customers (Universal Service) is the electricity consumption invoiced at US price.

** The differences from the Electricity Market Monitoring Report for August 2017 are determined by the processing of data corrections reported by economic operators.*

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.

At the same time, by way of derogation from the obligation of concluding all transactions on the competitive electricity market, in a transparent, public, centralized and non-discriminatory manner, in accordance with Law no. 184/2018 approving Emergency Government Ordinance (EGO) no. 24/2017 amending and completing Law no. 220/2008 establishing the system for promoting the production of electricity from renewable energy sources, may conclude direct negotiated bilateral contracts non-dispatchable producers of electricity from renewable energy sources and public authorities owning power plants from renewable energy sources with installed capacity of no more than 3 MW per producer, but only with the suppliers of final consumers for the sale of electricity and/or green certificates.

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, in the month under review compared to the previous month and the previous year. 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 the 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.

TRANSACTIONS ON THE WHOLESALE MARKET	July 2018	August 2018	August 2017
1. BILATERAL CONTRACTS' MARKET			
traded volume (GWh)	**23**	**27**	**133**
average price (lei/MWh)	188.63	183.85	138.05
% from internal consumption (%)	0.5	0.6	3.0
1.1. Sales on regulated contracts			
traded volume (GWh)			**93**
average price (lei/MWh)	-	-	124.23
% from internal consumption (%)			2.1
1.2. Sales on negotiated contracts[1)]			
traded volume (GWh)	**23**	**27**	**40**
average price (lei/MWh)	188.63	183.85	170.63
% from internal consumption (%)	0.5	0.6	0.9
2. EXPORT			
traded volume (GWh) [2)]	**522**	**487**	**406**
average price (lei/MWh)	193.36	232.27	212.32
% from internal consumption (%)	11.8	10.9	9.2
3. CENTRALIZED MARKETS OF CONTRACTS			
traded volume (GWh)	**5920**	**5810**	**4607***
average price (lei/MWh)	202,32	202,46	171,42*
% from internal consumption (%)	133,6	130,0	104,4*
3.1. Extended auction mechanism CMBC-EA[3)]			
traded volume (GWh)	**1768**	**1759**	**1940***
average price (lei/MWh)	189.01	189.25	165.73*
% from internal consumption (%)	39.9	39.3	44.0
3.2. Continuous negotiation mechanism CMBC-CN [3)]			
traded volume (GWh)	**1300**	**1325**	**924**
average price (lei/MWh)	202.88	202.96	176.73
% from internal consumption (%)	29.3	29.6	20.9*
3.3. CM-OTC mechanism			
traded volume (GWh)	**2852**	**2726**	**1742**
average price (lei/MWh)	210.32	210.73	174.94
% from internal consumption (%)	64.3	61.0	39.5
4. CENTRALIZED MARKET FOR UNIVERSAL SERVICE - CMUS			
traded volume (GWh)	**8**	**41**	
average price (lei/MWh)	205.55	248.72	-
% from internal consumption (%)	0.2	0.9	
5. DAY AHEAD MARKET			
traded volume (GWh)	**1752**	**1806**	**2145**
average price (lei/MWh) [4)]	181.49	242.77	260.42
% from internal consumption (%)	39.5	40.4	48.6
6. INTRADAY MARKET			
traded volume (GWh)	**11.6**	**11.5**	**14.7**
average price (lei/MWh) [5)]	71.50	70.24	257.12
% from internal consumption (%)	0.3	0.3	0.3
7. BALANCING MARKET			
traded volume (GWh)	**188**	**226**	**385**
% from internal consumption (%)	4.2	5.1	8.7
upward volume (GWh)	**113**	**143**	**274**
average negative imbalance price(lei/MWh)	276.71	329	384
downward volume (GWh)	**74**	**83**	**110**
average positive imbalance price (lei/MWh)	26.83	54.80	88.13
INTERNAL CONSUMPTION (GWh) (*distribution and transmission losses included*)	**4432**	**4471**	**4414***

Notes:

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;

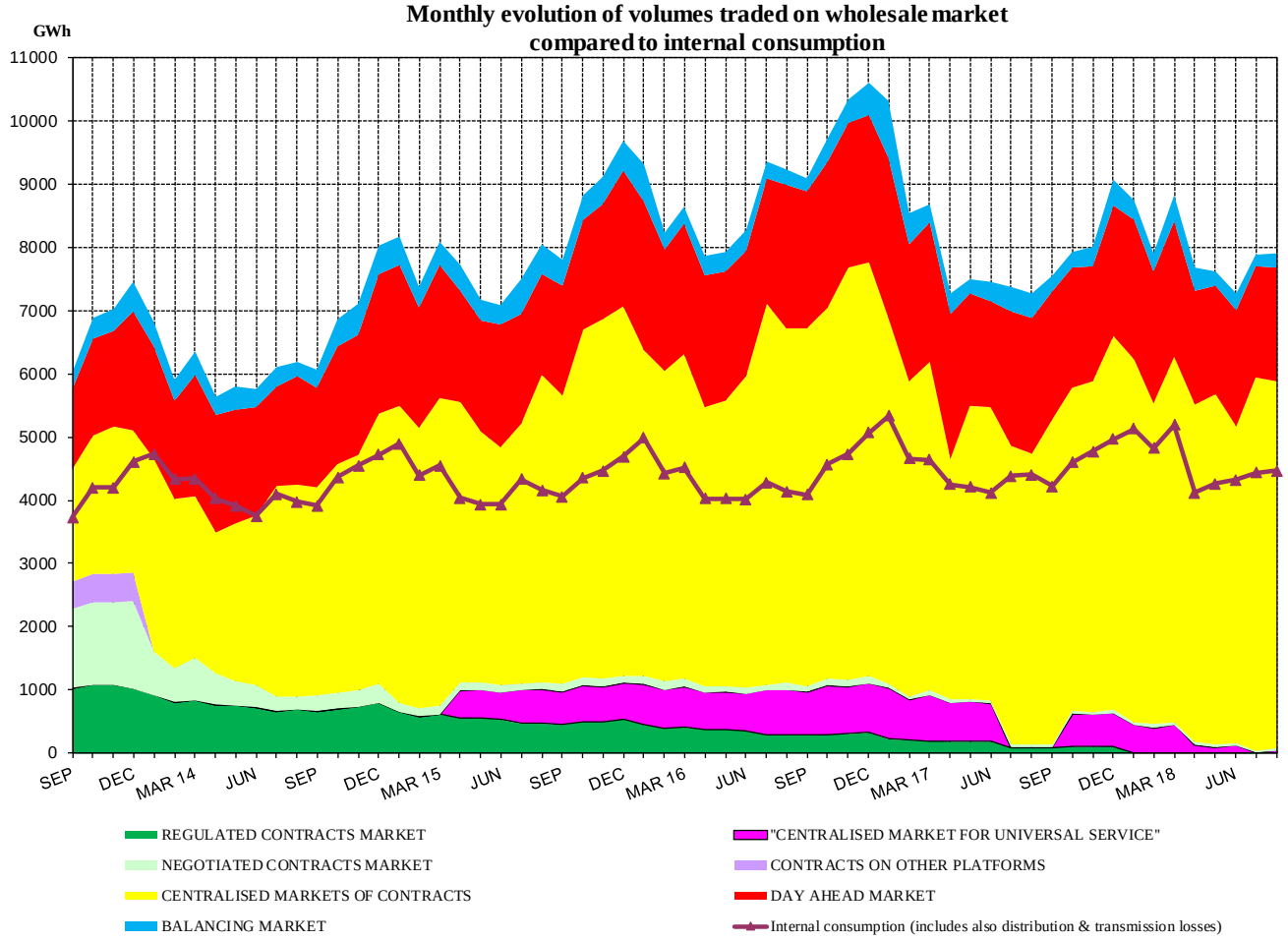
3) The monthly data are presented as reported by the participants for the electricity delivered in the respective month. This information refers both to transactions concluded previously on CMBC and CMBC-NC (ANRE Order 6/2011) and to transactions concluded on CMBC-EA and CMBC-NC (ANRE Order 78/2014), with delivery within the reported month;

4) The price is calculated as the average of the hourly closing prices and is published by Opcom SA.The average monthly price calculated by Opcom SA as weighted average of the hourly closing price with traded volumes was 247.75 lei/MWh in August 2018;

5) The average monthly price is calculated based on monthly traded volumes and transactions value, published by OPCOM SA.

** The differences from the Electricity Market Monitoring Report for the month of August 2017 are caused by the processing of the corrections reported by the economic operators.*

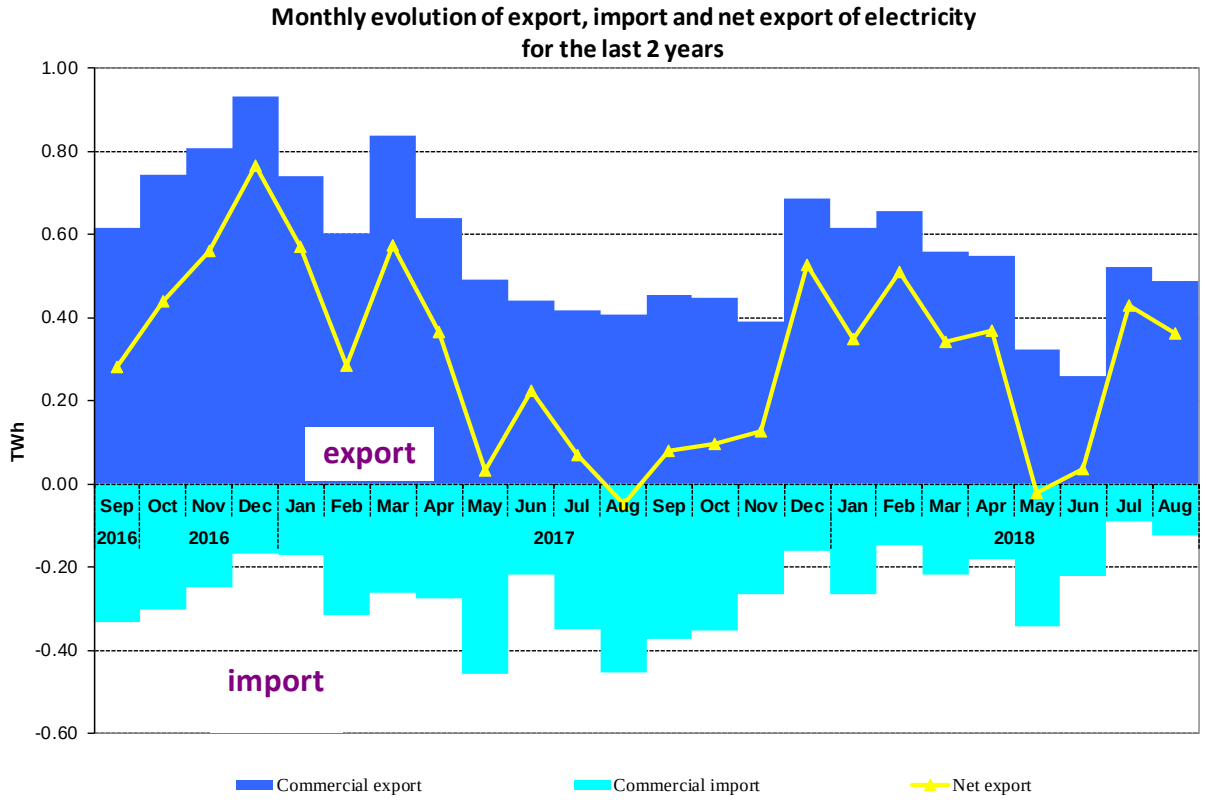
The percentage of electricity quantities from the internal consumption (see table from above) offers a dimensional reference for each of the specified markets. Prices include only the injection component of the transmission tariff, in this way being comparable within a month and making possible the comparison 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 March 2013.



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

Note: In the above graph, the volumes traded on negociated 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:

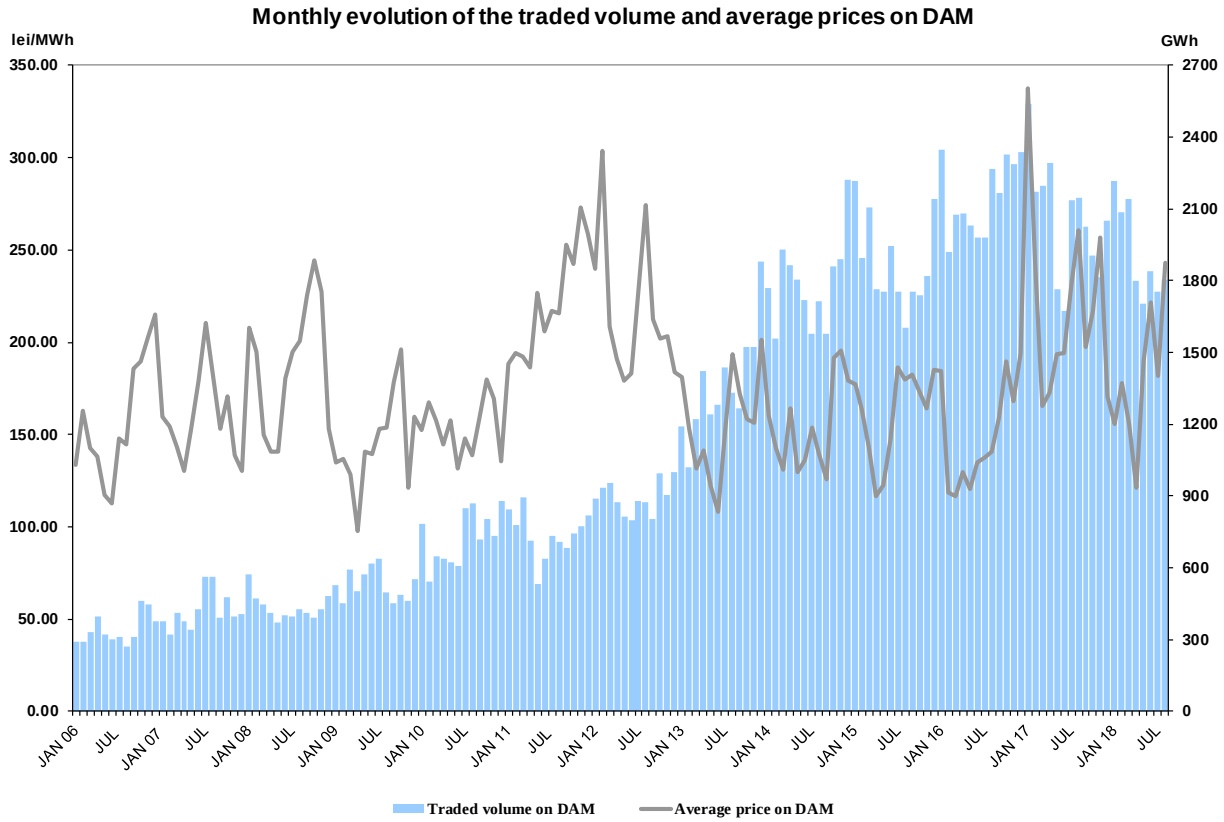


Source: Monthly reports of CNTEE Transelectrica SA – processed by MU

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	July 2018	August 2018	August 2017
Export			
traded volume (GWh)	**522**	**487**	**406**
average price (lei/MWh)	193.36	232.27	212.32
% from internal consumption	11.8	10.9	9.2
in which, for coupled DAM			
traded volume (GWh)	**203**	**152**	**31**
average price (lei/MWh)	175.67	210.51	201.97
% from internal consumption	4.6	3.4	0.7
Import			
traded volume (GWh)	**92**	**124**	**455**
average price (lei/MWh)	198.97	251.18	287.01
% from internal consumption	2.1	2.8	10.3
in which, for coupled DAM			
traded volume (GWh)	**2**	**36**	**291**
average price (lei/MWh)	264.18	312.25	298.59
% from internal consumption	0.04	0.8	6.6

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



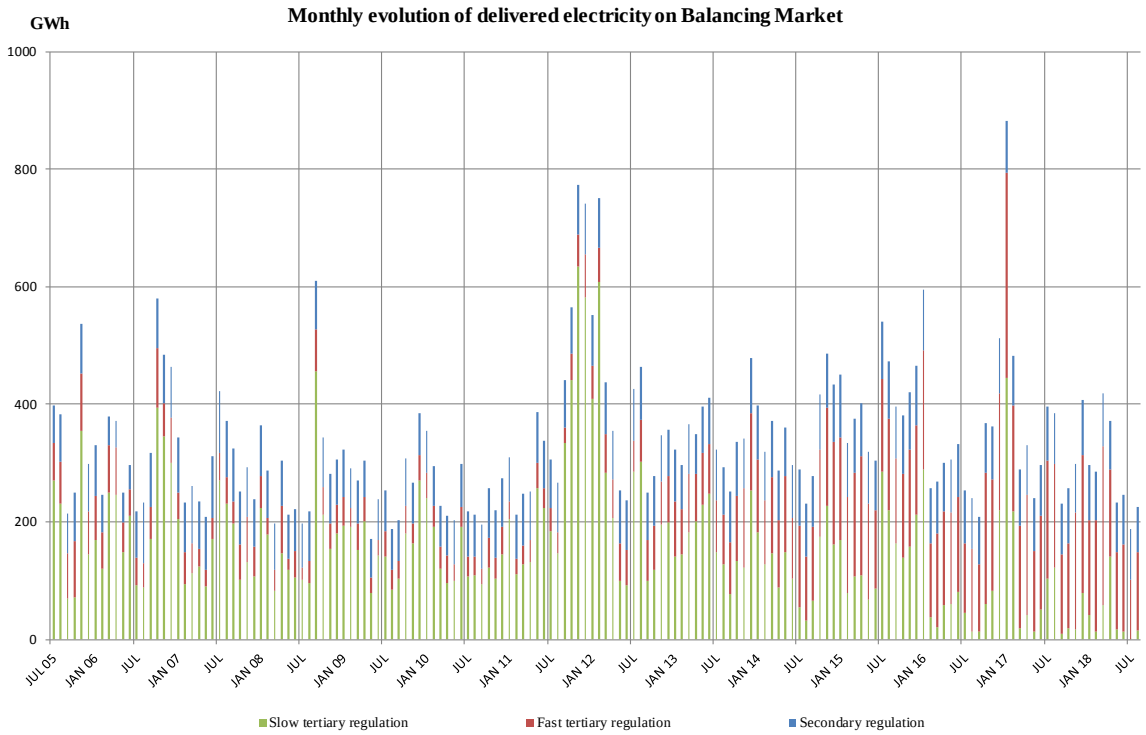
Source: Monthly reports of Opcom SA and CNTEE Transelectrica SA – processed by MU

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 August 2018 is presented in the following table:

August 2018	Dispach order (GWh)	Delivered electricity (GWh)	Deviation (%)
Secondary regulation	**78**	**78**	
upward	36	36	
downward	42	42	
Fast tertiary regulation	**138**	**133**	**4**
upward	95	93	3
downward	43	40	6
Slow tertiary regulation	**15**	**15**	**2**
upward	15	14	1
downward	1	1	7
TOTAL	**231**	**226**	
upward	146	143	
downward	86	83	
INTERNAL CONSUMPTION		**4471**	
% share of traded volumes from internal consumption		***5.1%***	

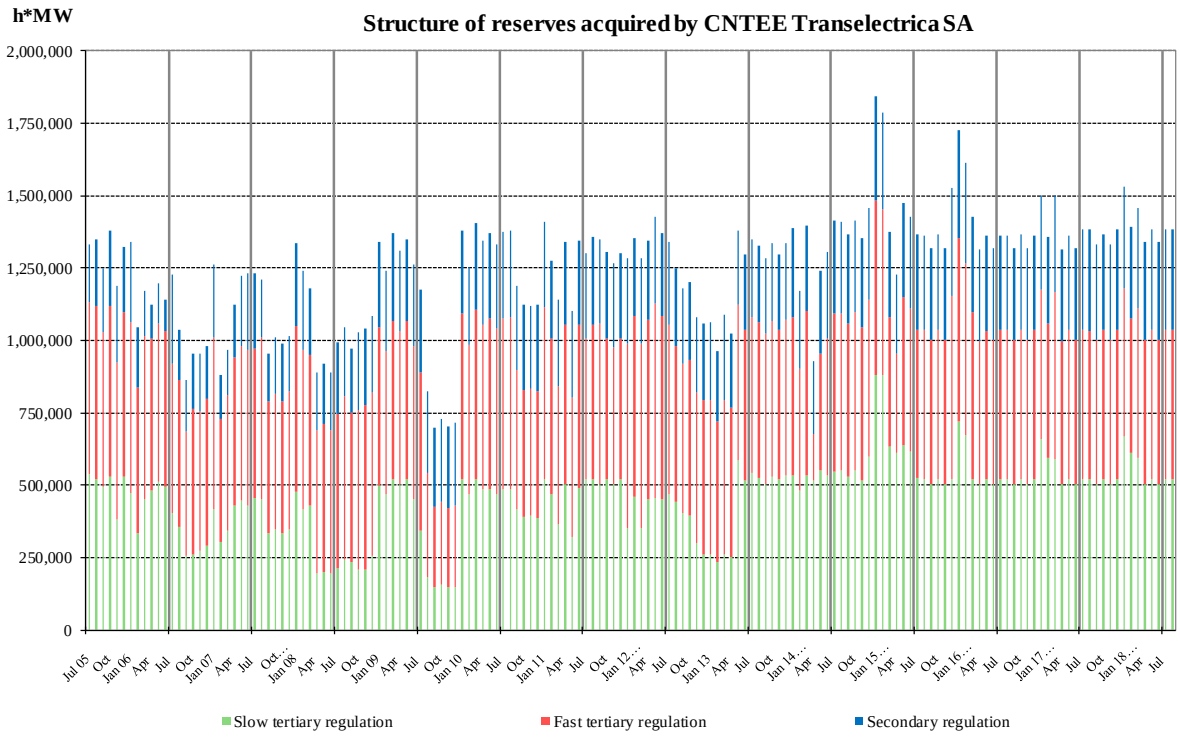
Source: Monthly reports of CNTEE Transelectrica SA – processed by MU

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



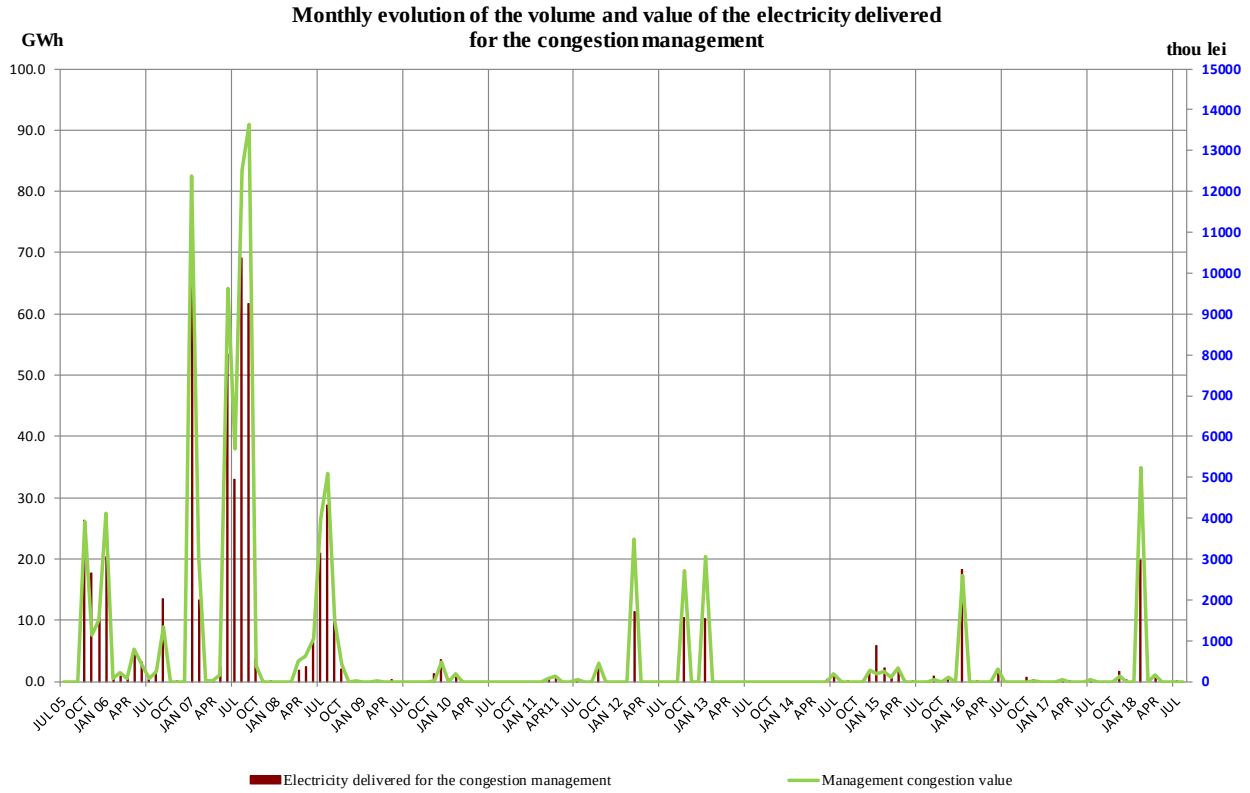
Source: Monthly reports of CNTEE Transelectrica SA – processed by M

The following chart shows the evolution of the reserves (technological system services - STS, representing obligations of the producers to keep available to the dispatcher / bid on the balancing market of contracted capacities) purchased / settled by CNTEE Transelectrica S.A. for the period July 2005 - August 2018:



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

The following graph presents the monthly 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 MU

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

Generators

In August 2018 compared with the similar period of 2017, the structure of electricity sales obligations contracted before delivery interval by the electricity generators with dispatchable units was the following:

-GWh-

Transaction type	**August 2017**	**August 2018**
	1	**2**
Regulated contracts to suppliers of last resort - hydro generator	54.53	-
Regulated contracts to suppliers of last resort - nuclear generator	38.60	-
Negotiated contracts to suppliers	39.53	26.64
Contracts concluded on Opcom centralized markets:	2987.77*	3861.51
CMBC-EA	*1764.58**	*1639.27*
CMBC-CN	*608.27*	*1005.18*
CM-OTC	*614.93*	*1217.06*
Centralized market for universal service	-	18.58
DAM	1224.56	1100.44
Intraday	4.13	4.48
Supply contracts to final customers, from which:	443.34	396.74
Households	0.54	*0.50*
Non-households	442.90*	*396.23*
Total	**4792.57***	**5408.39**

Source: Monthly reports of generators – processed by MU

** The differences from the Electricity Market Monitoring Report in August 2017 are determined by processing the corrections reported by the economic operators.*

Suppliers

In August 2018, on the electricity market there were active 100 economic operators whose main activity is supplying electricity; of these, 32 are suppliers that only operate on WEM (some of which are already licensees for the activity of electricity trading) and 68 are suppliers also active in the REM (including last resort suppliers).

Suppliers acting exclusively on WEM

The following table shows the activity of the suppliers acting exclusively on WEM, acquisitions and sales being split by categories of markets and market participants, for August 2018 compared with similar period of 2017:

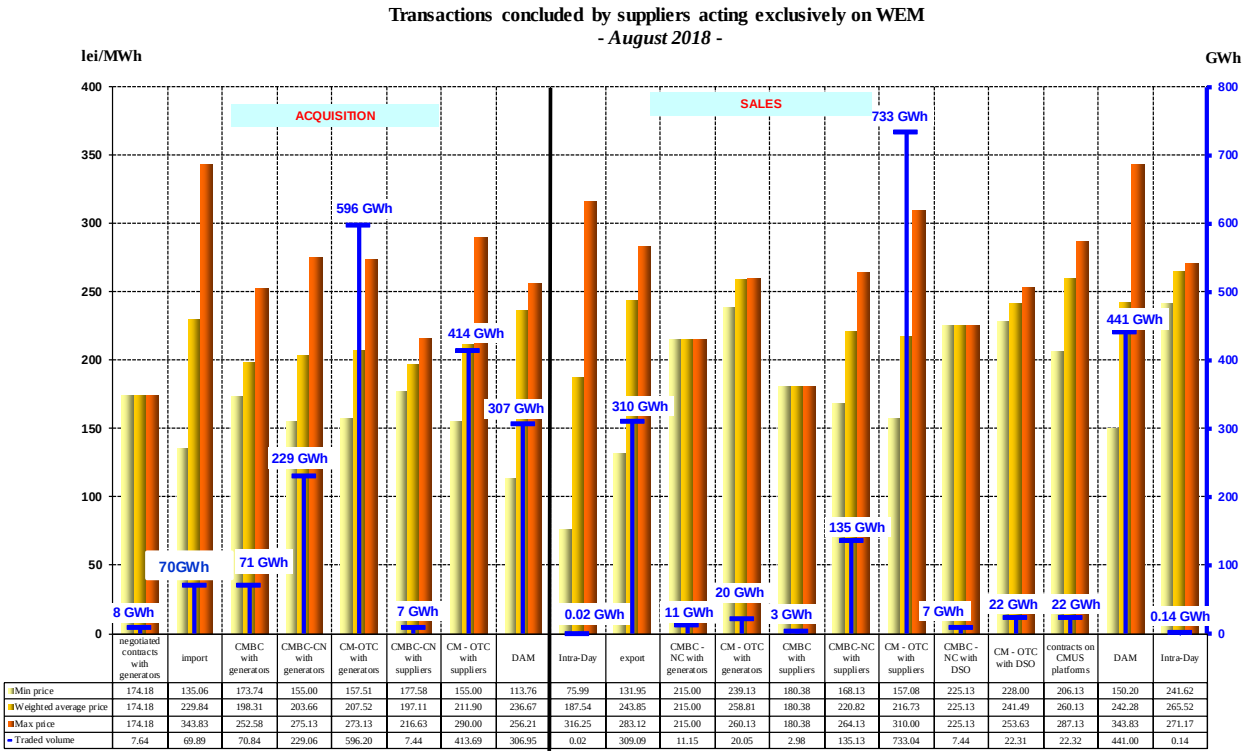
-GWh-

Transactions structure of suppliers acting exclusively on WEM	**August 2017**	**August 2018**
Purchase		
Import	141.71	69.89
-transactions negotiated with generators	0.00	7.64
Contracts concluded on Opcom centralized markets:	946.35	1317.24
- on CMBC-EA with generators	*247.19*	*70.84*
- on CMBC-CN with generators	*212.50*	*229.06*
- on CM-OTC with generators	*195.59*	*596.20*
- on CMBC-EA with other suppliers	*0.00*	*0.00*
- on CMBC-CN with other suppliers	*15.22*	*7.44*
- on CM-OTC with other suppliers	*275.86*	*413.69*
DAM	290.74	*306.95*
Intraday market	0.31	0.02
Sales		
Export	303.14	309.09
Contracts concluded on Opcom centralized markets:	761.66	932.09
- on CMBC-CN with generators	*56.06*	11.15
- on CM-OTC with generators	*43.90*	*20.05*
- on CMBC-EA with other suppliers	*8.39*	*2.98*
- on CMBC-CN with other suppliers	*128.25*	*135.13*
- on CM-OTC with other suppliers	*493.98*	*733.04*
- on CMBC-CN with DO	*16.20*	*7.44*
- on CM-OTC with DO	*14.88*	*22.31*
CMUS with last resort suppliers	-	22.32
DAM	308.22	441.00
Intraday market	6.02	0.14

Source: Monthly reports of suppliers – processed by MU

Note: Data in the table also includes the transactions negotiated with producers reported by an economic operator that was not active on the WEM during the analyzed month.

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 August 2018.



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

Suppliers active on REM (suppliers of last resort 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 August 2018 compared with the similar period of 2017:

-GWh -

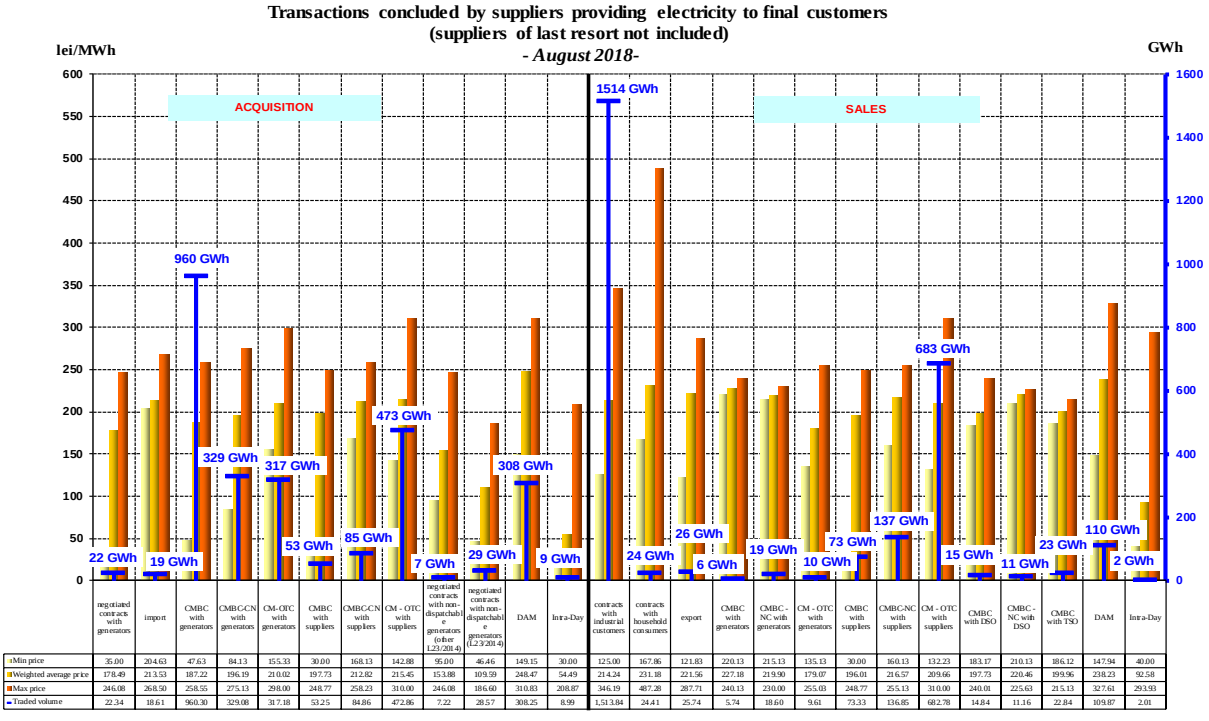
Transactions' structure of suppliers acting on REM (suppliers of last resort excluded)	**August 2017**	**August 2018**
Purchase		
Import	22.22	18.61
Negotiated contracts with generators	40.89	22.34
Contracts concluded on Opcom centralized markets:	1984.20	2217.53
- *on CMBC-EA with generators*	*976.01*	*960.30*
- *on CMBC-CN with generators*	*223.19*	*329.08*
- *on CM-OTC with generators*	*231.50*	*317.18*
- *on CMBC-EA with other suppliers*	*51.01*	*53.25*
- *on CMBC-CN with other suppliers*	*79.44*	*84.86*
- *on CM-OTC with other suppliers*	*423.06*	*472.86*
Negociated contracts with undispatchable generators (others than under Law 23/2014 and Law 122/2015)*	7.27	7.22
Negociated contracts with undispatchable generators (Law 23/2014 and Law 122/2015)**	30.55	28.57
DAM	218.23	308.25
Intraday market	5.51	8.99

Transactions' structure of suppliers acting on REM (without the suppliers of last resort)	**August 2017**	**August 2018**
Sales		
Export	71.90	25.74
Contracts concluded on Opcom centralized markets:	779.17	975.75
- *on CMBC-EA with generators*	*30.47*	*5.74*
- *on CMBC-NC with generators*	*8.82*	*18.60*
- *on CM-OTC with generators*	*11.16*	*9.61*
- *on CMBC-EA with other suppliers*	*51.54*	*73.33*
- *on CMBC-NC with other suppliers*	*105.55*	*136.85*
- *on CM-OTC with other suppliers*	*486.39*	*682.78*
- *on CMBC-EA with DO*	*72.88*	*14.84*
- *on CMBC-NC with DO*	*1.18*	*11.16*
- *on CMBC-EA with TSO*	*11.18*	*22.84*
DAM	242.56	109.87
Intraday market	1.59	2.01
Household customers	15.57***	24.41
Non-household customers	1222.39***	1513.84

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

**negotiated trades concluded with non-dispatchable generators which do not fall under Law 23/2014 provisions, with subsequent amendments and supplementations of Law no. 122/2015, both Laws subsequent to Law no. 220/2008*
***negotiated trades concluded with non-dispatchable generators which may conclude contracts according to Law 23/2014 provisions, with subsequent amendments and supplementations of Law no. 122/2015, both Laws subsequent to Law no. 220/2008*
**** The differences with Electricity Market Monitoring Report for the month of August 2017 are caused by the processing the corrections reported by the economic operators.*

The breakdown by source/destination of the volumes traded, the minimum, average and maximum prices for the month of August 2018, for suppliers active on the REM and WEM are shown in the following graph:



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

Suppliers of last resort

The trades structure on the WEM of suppliers of last resort (made before the delivery interval) for delivery to final consumers under Universal Service regime (optional/obligated) and last resort regime, is shown in the table below for August 2018 compared with the similar period of 2017:

- GWh -

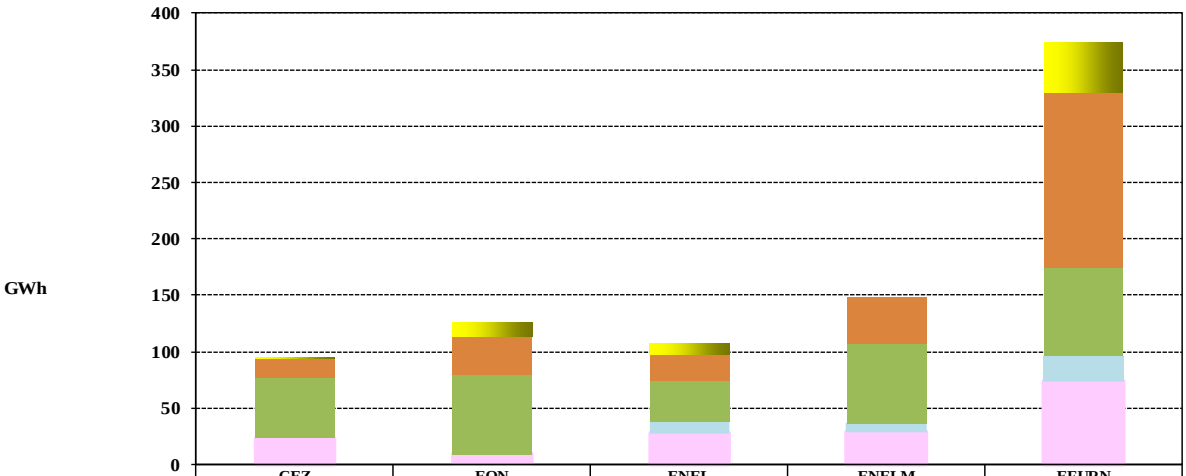
Transactions structure of suppliers of last resort for supplying the customers under Universal Service and last resort regime	**August 2017**	**August 2018**
Regulated contracts with generators	93.14	-
Negociated contracts with undispatchable generators (Law 23/2014 and Law 122/2015)*	0.05	0.01
Contracts concluded on Opcom centralized markets:	152.87**	646.48
- *contracts on CMBC-EA with generators*	*26.79*	*66.04*
- *contracts on CMBC-CN with generators*	*15.24***	*160.91*
- *contracts on CM-OTC with generators*	*0.09*	*51.14*
- *contracts on CMBC-EA with other suppliers*	*0.85***	*0.11*
- *contracts on CMBC-CN with other suppliers*	*20.29***	*109.08*
- *contracts on CM-OTC with other suppliers*	*89.61***	*259.20*
Centralized market for universal service:	-	40.90
- *contracts on CMUS with generators*	-	*18.58*
- *contracts on CMUS with suppliers*	-	*22.32*
Transactions concluded on DAM:	733.72**	141.80
- *purchase*	*735.34***	*162.92*
- *sales*	*1.63*	*21.12*
Transactions concluded on Intraday market:	0.65	0.00
- *purchase*	*0.65*	*0.00*
- *sales*	*0.00*	*0.00*

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

*** The differences from the Electricity Market Monitoring Report in August 2017 are determined by processing the corrections reported by the economic operators.*

The structure of the electricity purchased by the suppliers of last resort for the final consumers supplied under universal service and last resort regime for August 2018 is presented in the following graph:

Transactions structure of suppliers of last resort for supplying the customers in SU and UI regime
- AUGUST 2018 -



	CEZ	EON	ENEL	ENELM	EFURN
Purchase on CMBC-EA	1	11	10	0	45
Achizitii pe PCCB-NC	17	34	23	41	155
Purchase on CM-OTC	55	71	36	72	78
Purchase on CMUS	0	0	11	7	22
Purchase on DAM	23	9	27	29	74

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

Starting with 01.07.2018, according to the provisions of the *The Regulation for the competitive selection of suppliers of last resort*, approved by the ANRE Order no. 26/2018, ANRE has designated as obligated suppliers of last resort for each network area until 30 June 2022, E.ON Energie Romania SA, Enel Energie SA, Enel Energie Muntenia SA, Electrica Furnizare SA and CEZ Vânzare SA , and, as optional supplier of last resort, Enel Energie Muntenia SA (for the regions of Moldova, Oltenia, North Muntenia, Northern Transylvania and South Transylvania) until 30 June 2019.

At the same time, starting with 01 July 2018, in accordance with the *Methodology for setting the calculation method and the conditions for approving prices applied by the obligated suppliers of last resort and the optional suppliers of last resort to the final customers* (approved by Order No. 39/06 March 2018), obligated and optional suppliers of last resort apply in the final customer invoices the final prices, approved by ANRE for each network area and application period, as follows:

- obligated suppliers of last resort apply the price for universal service (to households and non-households that benefit of universal service) and, based on its multiplication with an increase coefficient, the price for inactive clients (non-households that did not use their eligibility rights and do not fulfill the conditions for universal service or did not request to be supplied under the universal service regime);

- optional suppliers of last resort apply to final consumers that benefit from universal service the price for universal service, determined by applying on the universal service price applied by the obligated supplier a discount assumed by the optional supplier through the pricing offers.

At the same time, the obliged suppliers of last resort determine and apply the last resort price to the non-household final customers supplied under the universal service regime under the conditions stipulated by the *Methodology* approved by Order no. 39/2018.

On the date of entry into force of ANRE President Order no. 27/2018 for the approval of the *Regulation for organizing and conducting the auctions on the centralized market for the universal service*, the conditions of participation of suppliers of last resort to CMUS for the purchase of electricity to cover the consumption of final customers supplied under US regime were changed, the participation in the auctions sessions becoming, thus, voluntary.

The structure electricity trades of suppliers of last resort on the REM (made before the delivery interval) for universal service is presented in the following table for August 2018, compared with the similar period of 2017:

-GWh-

Transactions' structure of suppliers of last resort for universal service	**August 2017**		**August 2018**	
	Quantity [GWh]	**Average price [lei/MWh]**	**Quantity [GWh]**	**Average price [lei/MWh]**
Contracts concluded on Opcom centralized markets:	135.83	213.42	621.62	214.56
- *on CMBC-EA with generators*	11.16	165.39	*65.61*	*200.77*
- *on CMBC-CN with generators*	*14.88*	*208.71*	*159.17*	*205.49*
- *on CM-OTC with generators*	*0.00*	*0.00*	*49.19*	*240.04*
- *on CMBC-EA with other suppliers*	*0.74*	*203.17*	*0.00*	*0.00*
- *on CMBC-CN with other suppliers*	*20.17*	*204.92*	*107.63*	*227.15*
- *on CM-OTC with other suppliers*	*88.88*	*222.25*	*240.02*	*213.47*
Contracts concluded on CMUS:	-	-	40.90	248.72
- contracts on CMUS with generators	-	-	*18.58*	*235.00*
- contracts on CMUS with suppliers	-	-	*22.32*	*260.13*
Transactions concluded on DAM:	681.84	-	116.45	291.69
- purchase	*681.91*	*278.37*	*136.38*	*277.35*
- sales	*0.07*	*143.64*	*19.93*	*193.55*
TOTAL	**817.67**	**267.59**	**778.97**	**227.88**

The following table presents the electricity acquisition structure of suppliers of last resort (before the delivery interval) corresponding to the competitive REM for August 2018 compared to similar previous period:

-GWh-

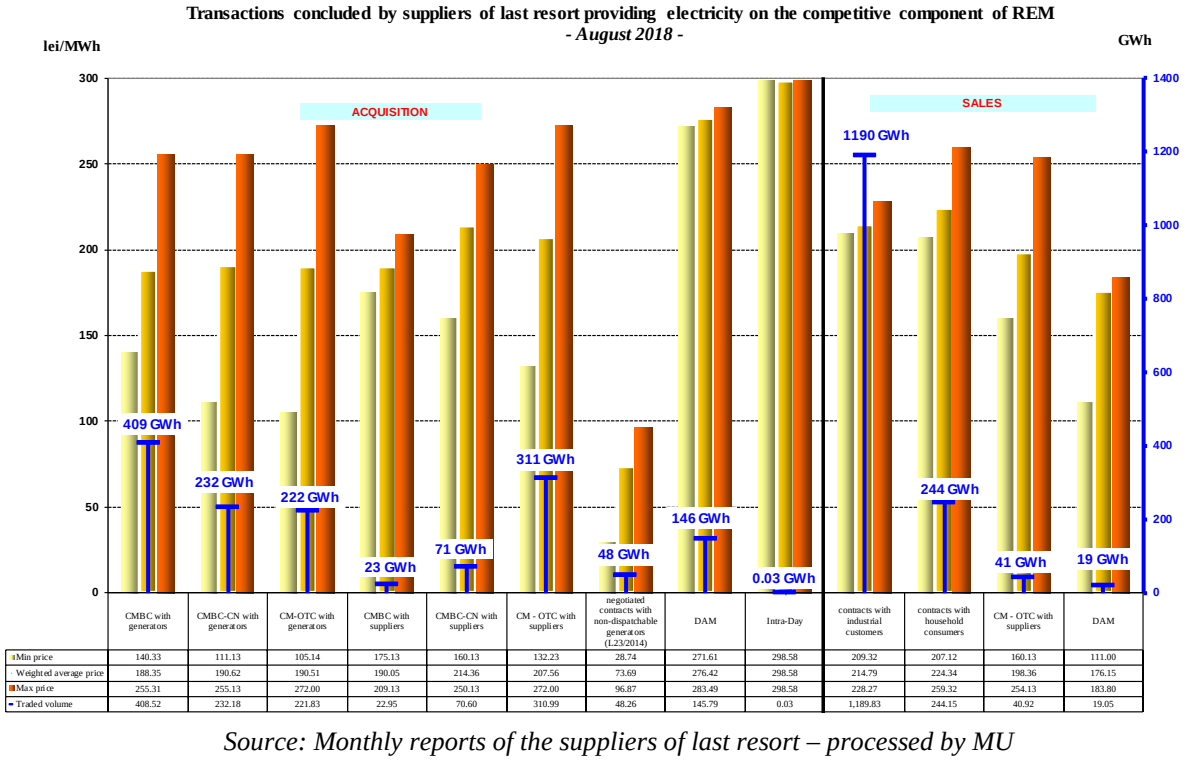
Transactions' structure of suppliers of last resort for the competitive segment of REM	**August 2017**	**August 2018**
Aquisitions		
Contracts concluded on Opcom centralized markets:	1163.83**	1267.05
- *on CMBC-EA with generators*	*420.08***	408.52
- *on CMBC-CN with generators*	*165.95***	*232.18*
- *on CM-OTC with generators*	*182.15*	*221.83*
- *on CMBC-EA with other suppliers*	*8.07*	*22.95*
- *on CMBC-CN with other suppliers*	*118.86***	*70.60*
- *on CM-OTC with other suppliers*	*268.72***	*310.99*
Negociated contracts with undispatchable generators (Law 23/2014 and Law 22/2015)*	38.39	*48.26*
- transactions DAM	258.40**	145.79
Sales		
Contracts concluded on Opcom centralized markets:	78.06	40.92
- *on CMBC-EA with generators*	*1.19*	0.00
- *on CM-OTC with other suppliers*	*76.87*	*40.92*
- transactions DAM	22.76	19.05
- transactions Intraday market	0.02	0.00
Household customers	112.27**	1189.83
Non-household customers	1296.70**	244.15

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

*** The differences from the Electricity Market Monitoring Report in August 2017 are determined by processing the corrections reported by the economic operators.*

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

The structure by types of sources/destinations of the traded volumes and of the average prices of the suppliers of last resort on the competitive segment of REM is presented in the following graph for August 2018:



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

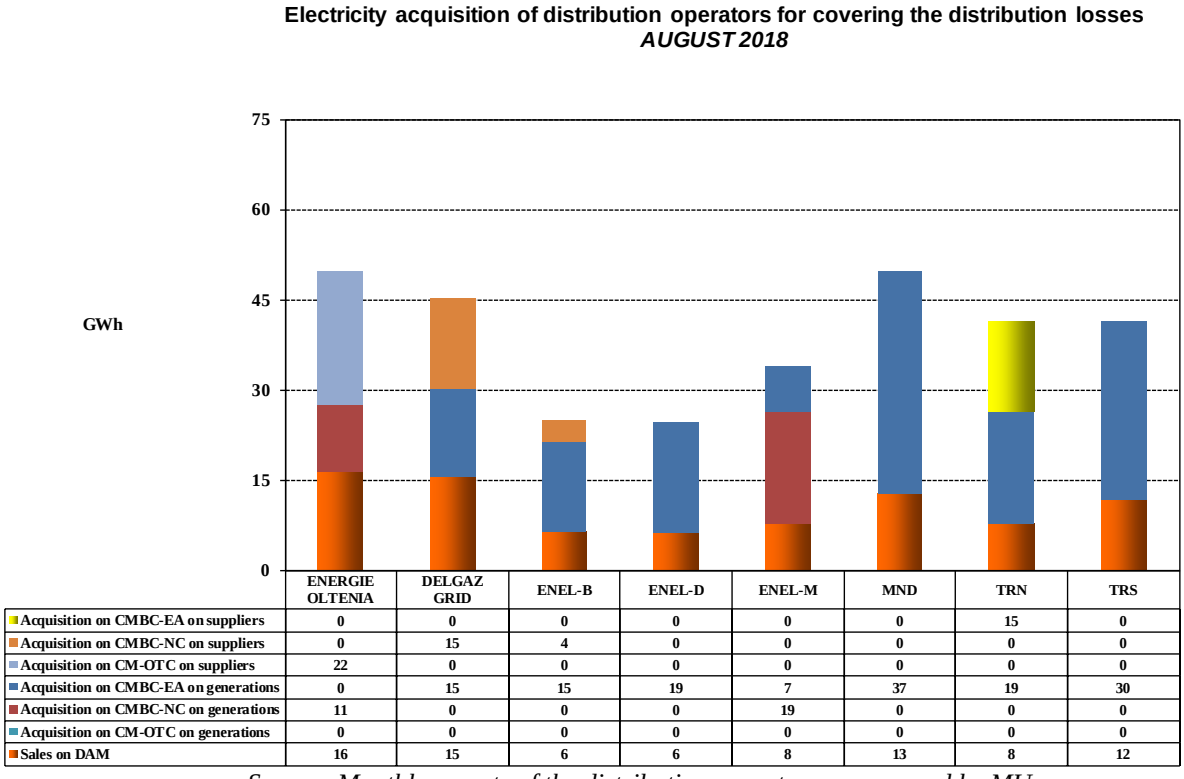
Main distribution operators

The following table shows the electricity acquisition structure of main distribution operators (before the delivery interval), for covering the distribution network losses, for August 2018 compared with similar previous period:

Transactions' structure	August 2017	August 2018
Contracts concluded on Opcom centralized markets:	227.45	226.77
- *CMBC-EA with generators*	*107.44*	*141.25*
- *CMBC-CN with generators*	*11.15*	*29.78*
- *CM-OTC with generators*	*3.72*	*0.00*
- *CMBC-EA with suppliers*	*72.88*	*14.84*
- *CMBC-CN with suppliers*	*17.38*	*18.60*
- *CM-OTC with suppliers*	*14.88*	*22.31*
Transactions concluded on Intraday market	0.28	0.05
- *purchase*	*0.28*	*0.05*
- *sales*	*0.00*	*0.00*
Transactions concluded on DAM:	102.11	84.09
- *purchase*	*103.09*	*84.11*
- *sales*	*0.98*	*0.03*

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

The electricity bought for covering network losses is presented in detail in the following graph, for August 2018:



	ENERGIE OLTENIA	DELGAZ GRID	ENEL-B	ENEL-D	ENEL-M	MND	TRN	TRS
Acquisition on CMBC-EA on suppliers	0	0	0	0	0	0	15	0
Acquisition on CMBC-NC on suppliers	0	15	4	0	0	0	0	0
Acquisition on CM-OTC on suppliers	22	0	0	0	0	0	0	0
Acquisition on CMBC-EA on generations	0	15	15	19	7	37	19	30
Acquisition on CMBC-NC on generations	11	0	0	0	19	0	0	0
Acquisition on CM-OTC on generations	0	0	0	0	0	0	0	0
Sales on DAM	16	15	6	6	8	13	8	12

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

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

According to the economic theory, 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 existance of a dominant position;
  C1>50% clearly indicates a dominant position.

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

  The indicator values signify:
  40% < C3 < 70% moderately concentrated market;
  C3 > 70% highly concentrated market.

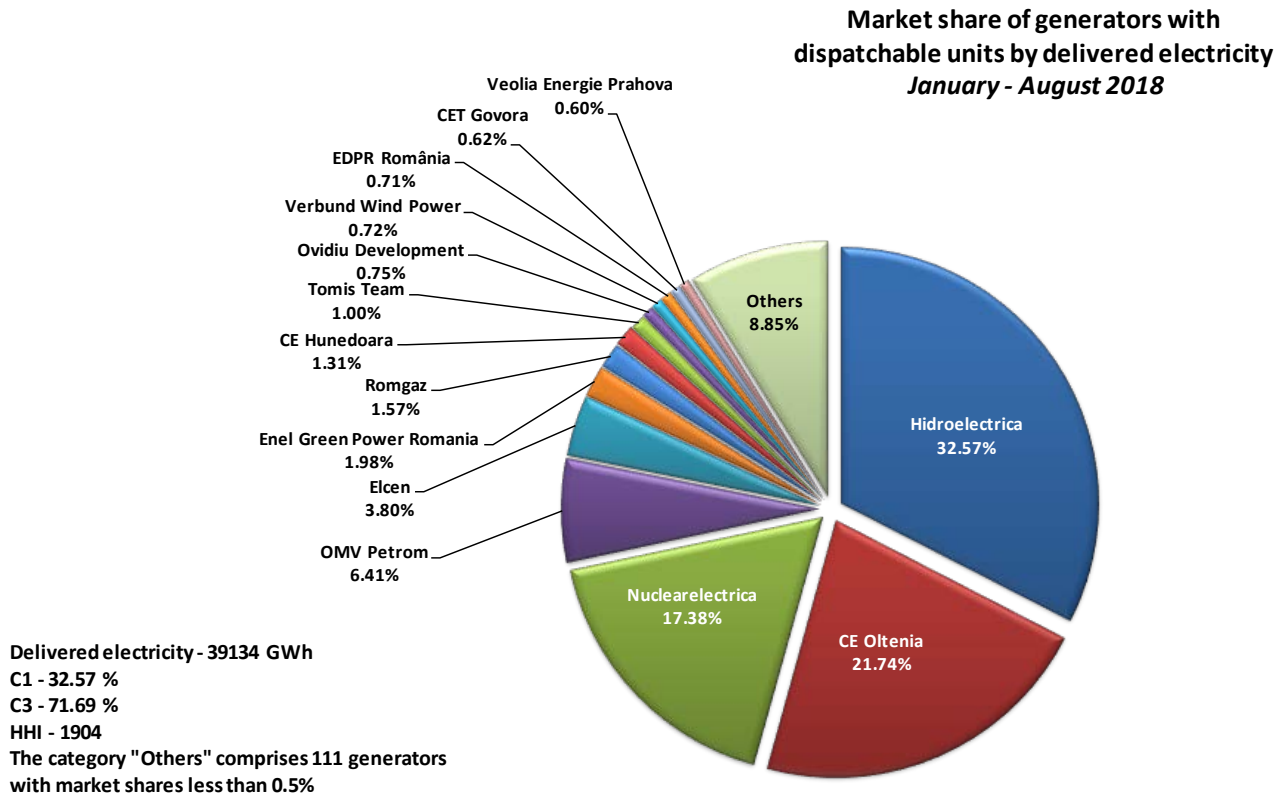
These concentration indicators may be defined for the wholesale market (electricity market or ancillary services market) or for each of its components where direct competition takes place.

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 August 2018, calculated based on electricity delivered into the networks by the generators with dispatchable units while the graph shows the dispatchable generators market shares for the eight-months period.

Concentration indicators - August 2018 -	**C1 (%)**	**C3 (%)**	**HHI**
Value	**32.38**	**72.80**	**1990**



Source: Monthly reports of generators – processed by MU

A component of the WEM on which direct competition between generators is directly manifested 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 August 2018:

Structure/concentration indicators of BM - August 2018 -	Regulation					
	Secondary		Fast tertiary		Slow tertiary	
	upward	downward	upward	downward	upward	downward
C1 - % -	78	77	84	43	74	55
C3 - % -	97	97	93	99	100	100
HHI	6346	6134	7141	3589	6134	5008

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

The acquisition of the necessary ancillary services in order to maintain the operational safety of the National Power System in August 2018 was achieved both through competitive and regulated procurement.

Pursuant to the provisions of Emergency Government Ordinance No. 26/2018 on the adoption of measures for security of electricity supply, it was approved ANRE President Decision no. 655/2018 on the acquisition at a regulated price for the period from 1 May to 31 December 2018 from CE Hunedoara SA of a quantity of ancillary services representing slow tertiary reserve for a capacity of 400 MW. In addition, CNTEE Transelectrica S.A. organized auctions for the purchase of reserves on all types of regulation.

In the following table are shown the concentration indicators by types of reserves (secondary fast tertiary and slow tertiary).

Concentration indicators on Ancillary Services Market - August 2018 -		**Secondary reserve**	**Fast tertiary reserve**	**Slow tertiary reserve**
regulated component	**contracted quantity (h*MW)**	**-**	**-**	**297600**
	C1 (%)	**-**	**-**	**100.0**
	C3 (%)	**-**	**-**	**100.0**
competitive component	**contracted quantity (h*MW)**	**350300**	**514600**	**223200**
	C1 (%)	**84.2**	**88.7**	**53.5**
	C3 (%)	**100.0**	**94.4**	**100.0**
	HHI	**7258**	**7893**	**4426**

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

Concentration Indicators for the Day Ahead Market

Day Ahead Market (DAM) is a voluntary market opened for both buying and selling, for all licensees and for foreign economic operators who have been granted by ANRE by Decision, the confirmation of the right to carry out the electricity supply activity or the activity of a trader in Romania, under the conditions established by the applicable regulations

The concentration indicators on DAM reflect 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 the buying and for the selling side of DAM, based on quantities traded by participants on this market.

Concentration indicators on DAM - August 2018 -	**C1 (%)**	**C3 (%)**	**HHI**
Selling	**24.54**	**46.66**	**959**
Buying	**25.71**	**37.91**	**849**

Source: Monthly reports of Opcom SA – processed by MU

7. Price evolution on wholesale electricity market

Starting with November 2014 the Romanian DAM is coupled with the spot markets from Hungary, Slovakia and Czech Republic based on the price coupling mechanism, project known as 4M MC. This coordinated corelation 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 the 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 developed through the coupling operators OTE-Czech Republic, EPEX Spot (operating as services supplier for OKTE-Slovakia and HUPX-Hungary) and from 17 January 2017, OPCOM-Romania (who became PCR member from 1 January 2016). After succesful 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 being carried out in the security conditions of the coupled functioning of the 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 that of implict allocation on DAM of the available interconnection capacity.

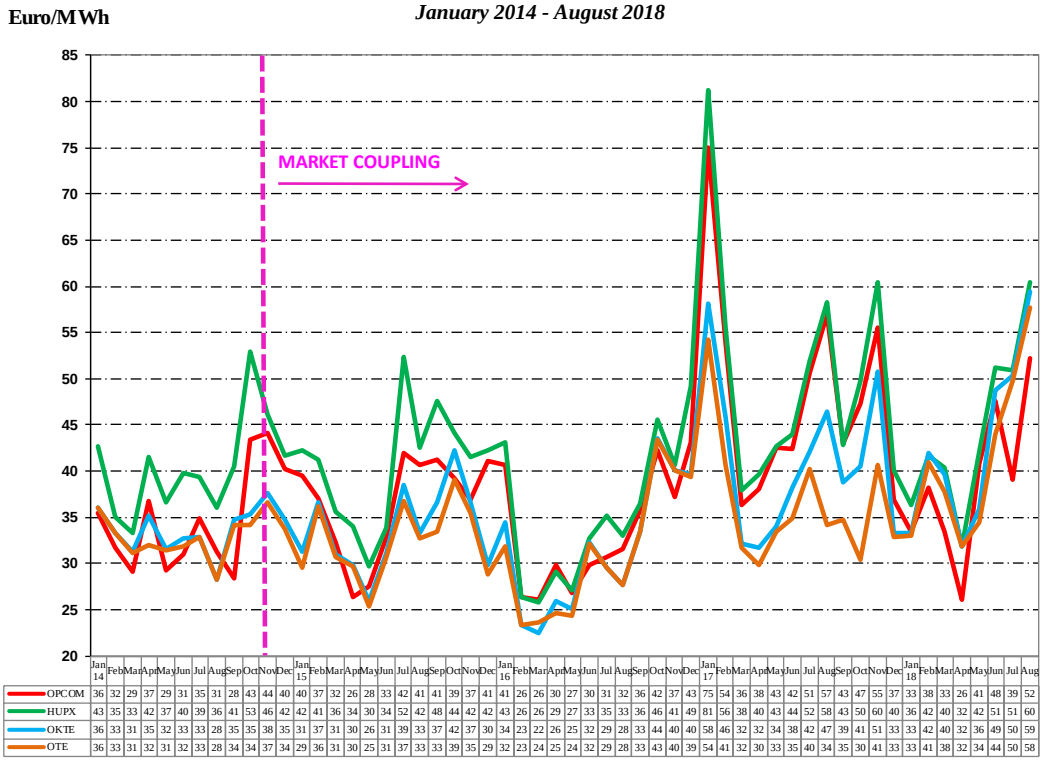
To better meet the purpose of DAM coupling mechanism - electricity transfer at a level and direction determined by the known conditions of generation and consumption and based on the coupled markets prices - starting with 1 January 2016, TSO operators from Romania and Hungary (CNTEE Transelectrica SA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

Thus, for each month of the year, reserved capacity for DAM allocation is determined as a difference between monthly available transmission capacity (ATC) calculated monthly for each subperiod and 80% from the lowest ATC value resulted for the subperiods of the month, plus the capacity allocated at the annual auction, returned to TSO.

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

Next graph presents the monthly spot prices of the 4 markets involved in the coupling mechanism starting with 1 January 2014, before and after the start of the operational phase.

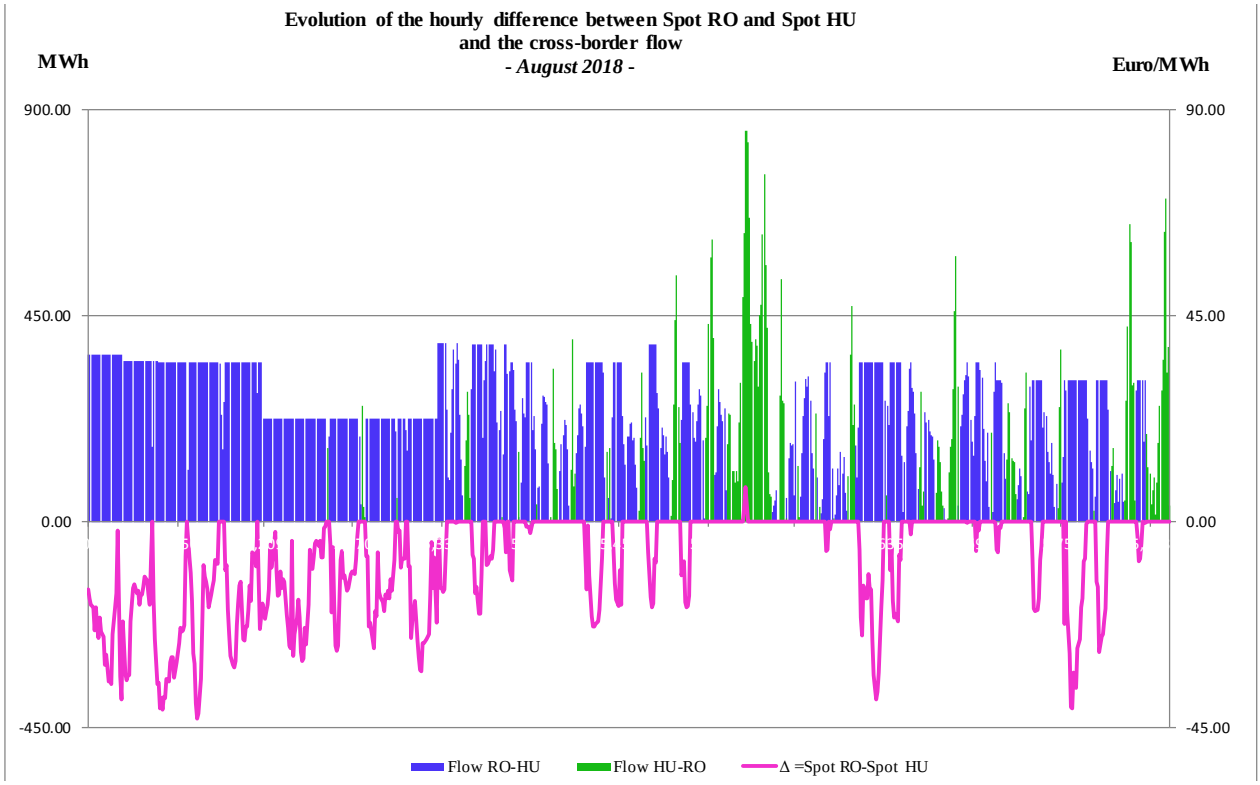
Hourly spot prices on the 4 markets functioning in market coupling framework
January 2014 - August 2018



	Jan 14	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 15	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 16	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 17	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 18	Feb	Mar	Apr	May	Jun	Jul	Aug
OPCOM	36	32	29	37	29	31	35	31	28	43	44	40	40	37	32	26	28	33	42	41	41	39	37	41	41	26	26	30	27	30	31	32	36	42	37	43	75	54	36	38	43	42	51	57	43	47	55	37	33	38	33	26	41	48	39	52
HUPX	43	35	33	42	37	40	39	36	41	53	46	42	42	41	36	34	30	34	52	42	48	44	42	42	43	26	26	29	27	33	35	33	36	46	41	49	81	56	38	40	43	44	52	58	43	50	60	40	36	42	40	32	42	51	51	60
OKTE	36	33	31	35	32	33	33	28	35	35	38	35	31	37	31	30	26	31	39	33	37	42	37	30	34	23	22	26	25	32	29	28	33	44	40	40	58	46	32	32	34	38	42	47	39	41	51	33	33	42	40	32	36	49	50	59
OTE	36	33	31	32	31	32	33	28	34	34	37	34	29	36	31	30	25	31	37	33	33	39	35	29	32	23	24	25	24	32	29	28	33	43	40	39	54	41	32	30	33	35	40	34	35	30	41	33	33	41	38	32	34	44	50	58

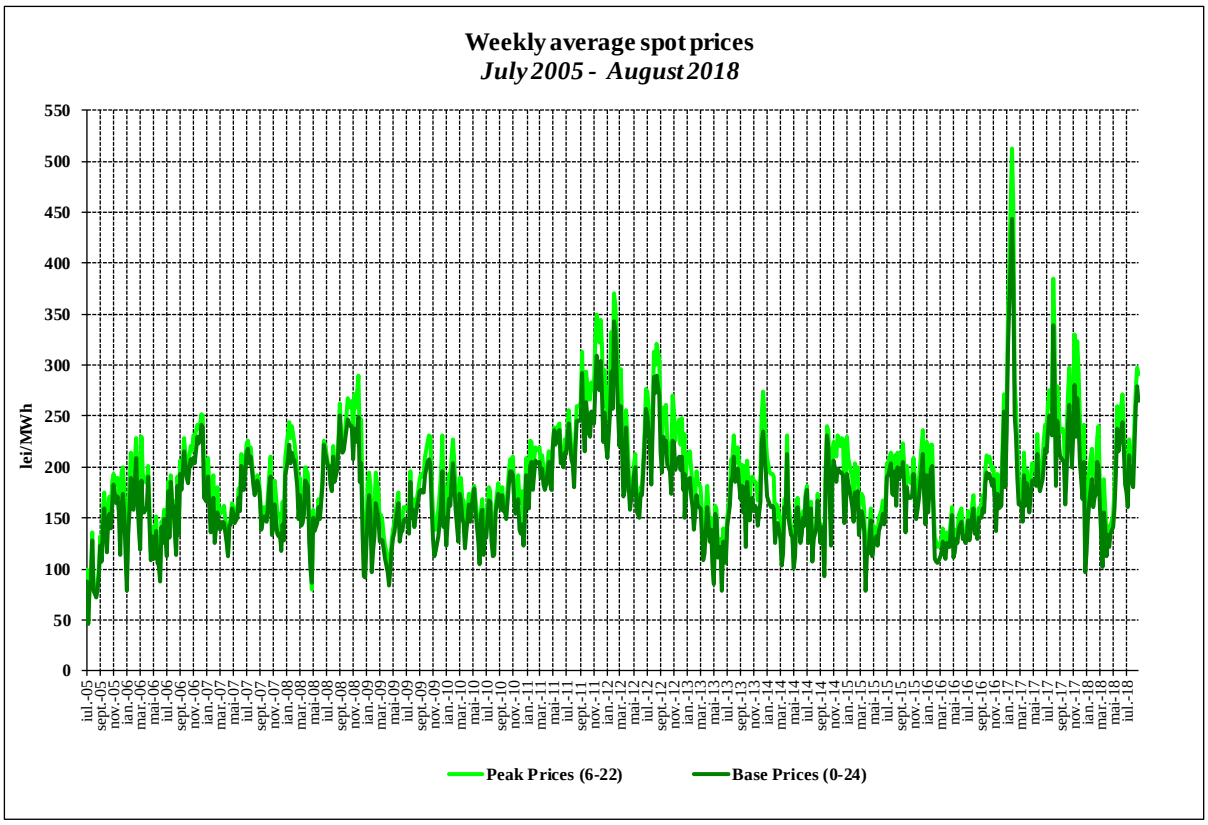
Source: Monthly reports of Opcom SA – processed by MU

Next, the following graph presents the hourly evolution of the difference between the closing prices of the coupled DAM on the Romanian and Hungarian area, correlated with the cross border flows on the Romanian – Hungarian border, on both directions, for the month of August 2018:



Source: Data published by Opcom SA – processed by MU

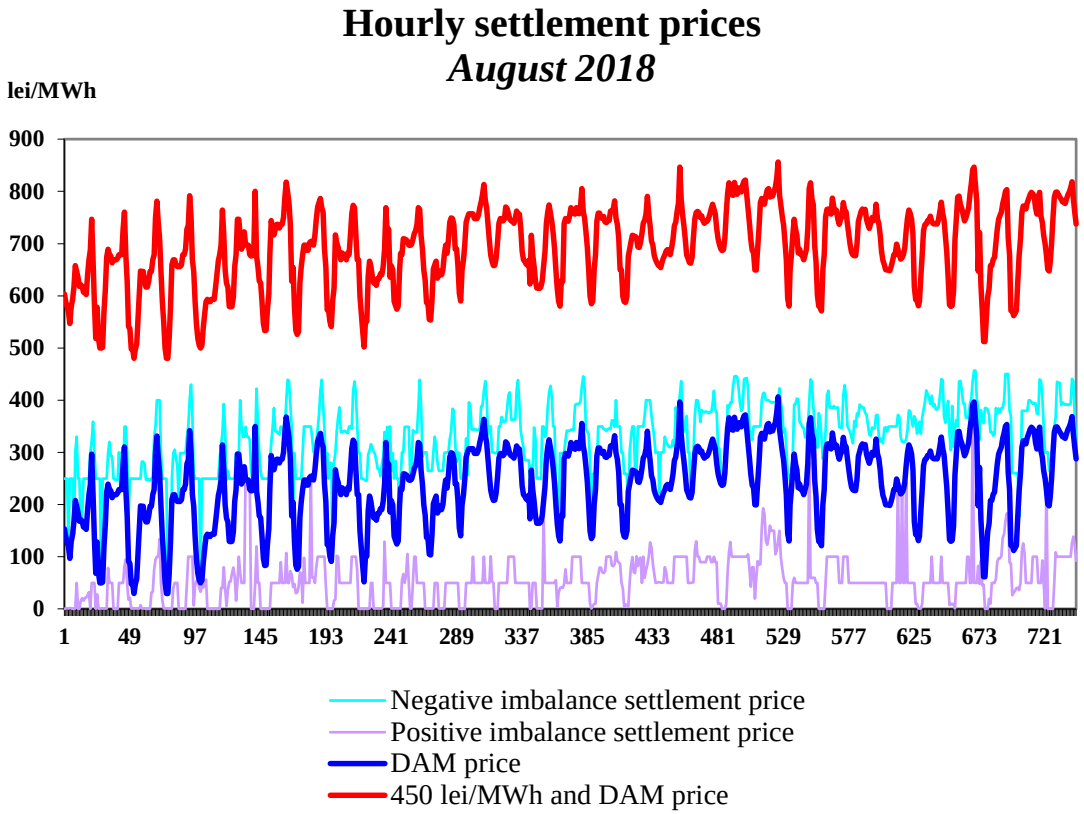
The following graph presents the evolution of weekly average spot prices starting with July 2005:



Source: Daily reports of Opcom SA – processed by MU

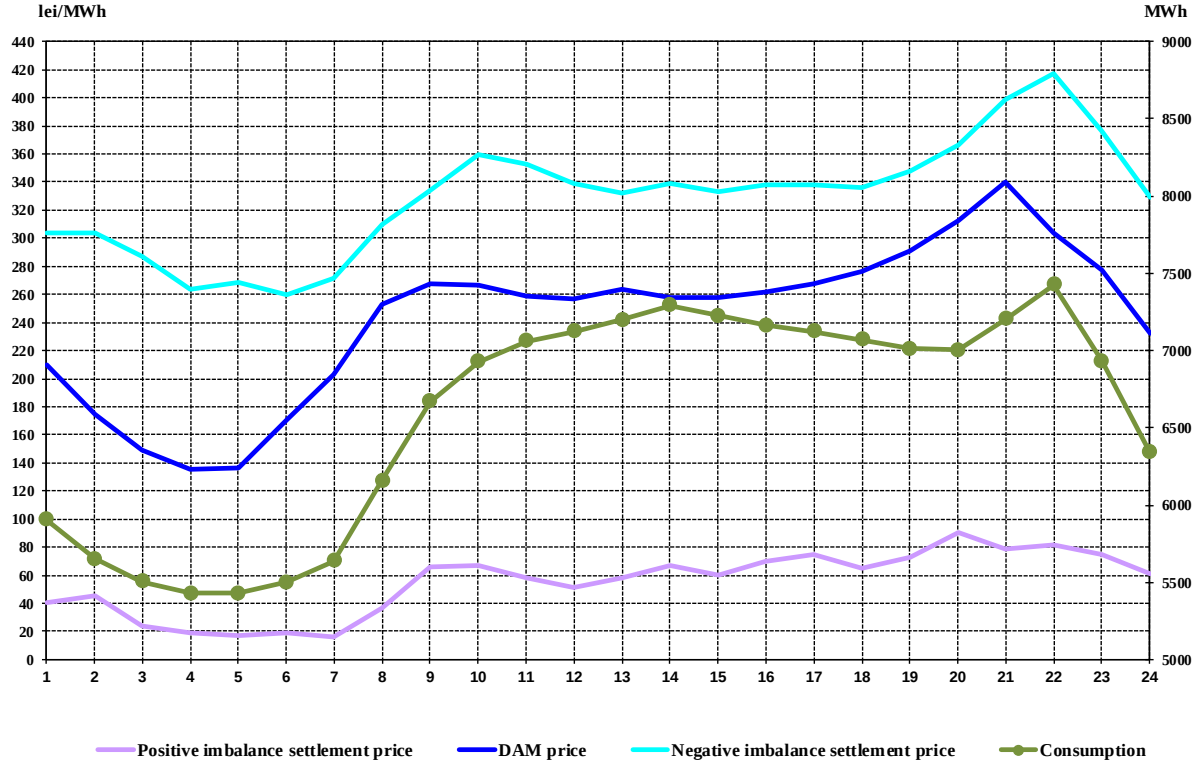
In order to cover the differences between planned/contracted amounts of consumption/ generation and their values in real time, the system operator (CNTEE Transelectrica SA) operates the balancing market (BM), ”buying” or "selling" electricity at prices determined by the merit order of dispatchable generators’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

The settlement prices (market closing price on DAM, negative imbalance price and positive imbalance price) are represented on the same graph, thus showing the two markets correlation degree. In the first graph the settlement 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.



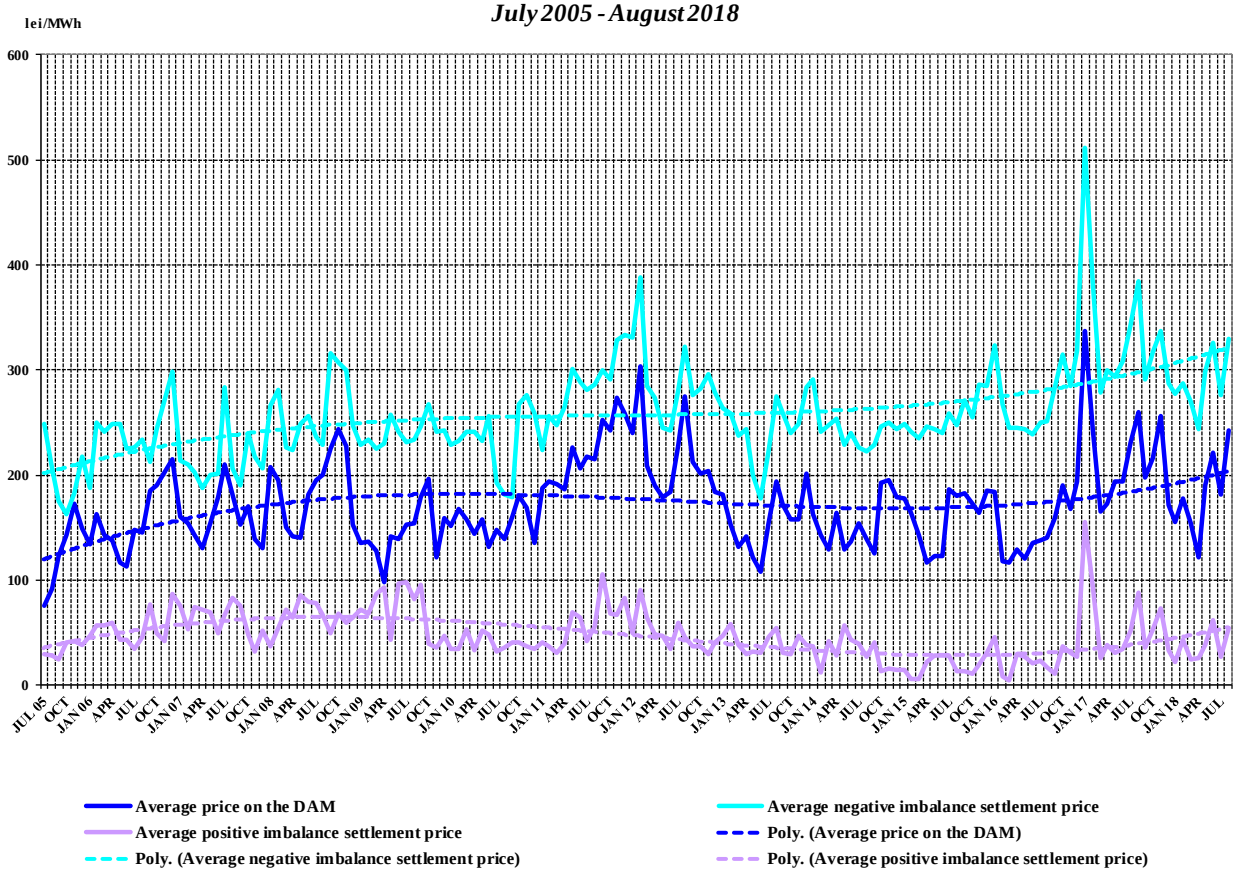
Source: Daily/monthly reports of Opcom SA – processed by MU

Hourly average settlement prices and internal consumption
August 2018



Source: Monthly reports of Opcom SA and CNTEE Transelectrica SA – processed by MU

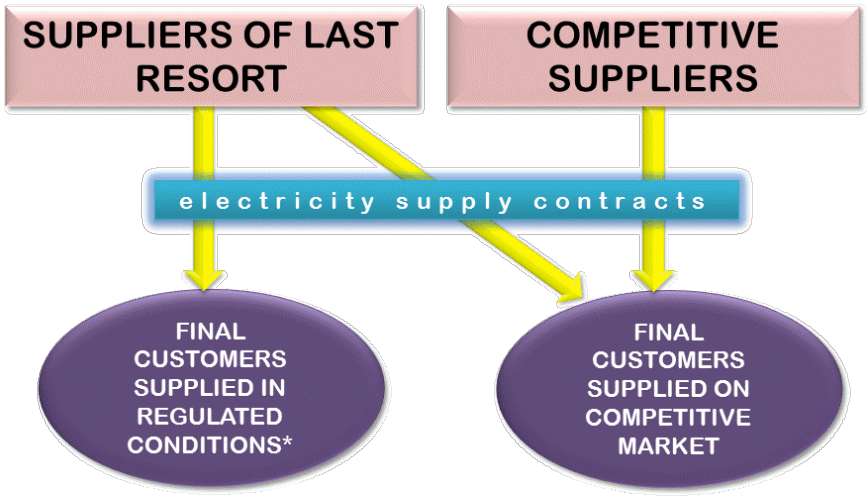
Monthly average prices on DAM and BM
July 2005 - August 2018



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

III. RETAIL ELECTRICITY MARKET

1. Structure of the retail electricity market

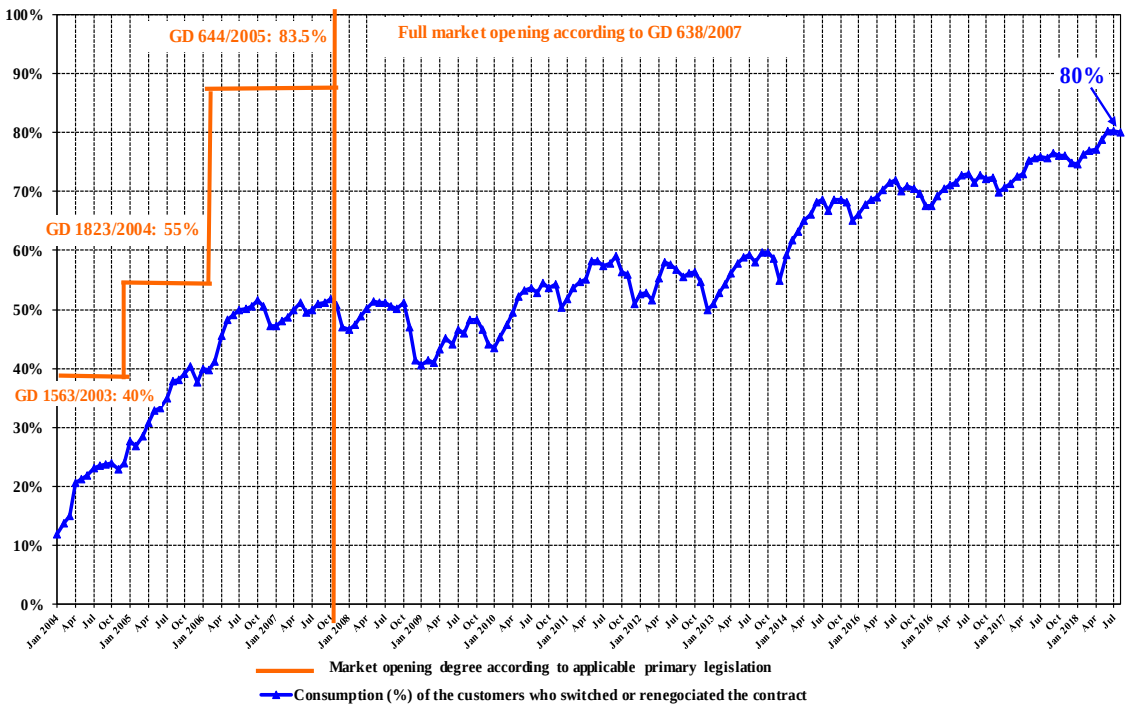


* according to art. 53 (2) and art. 55 (1) from Electricity and Gas Law no. 123/2012

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 – August 2018. The values presented are cumulated from the beginning .of the market opening process and are presented monthly:

Opening degree evolution of electricity market
January 2004 - August 2018

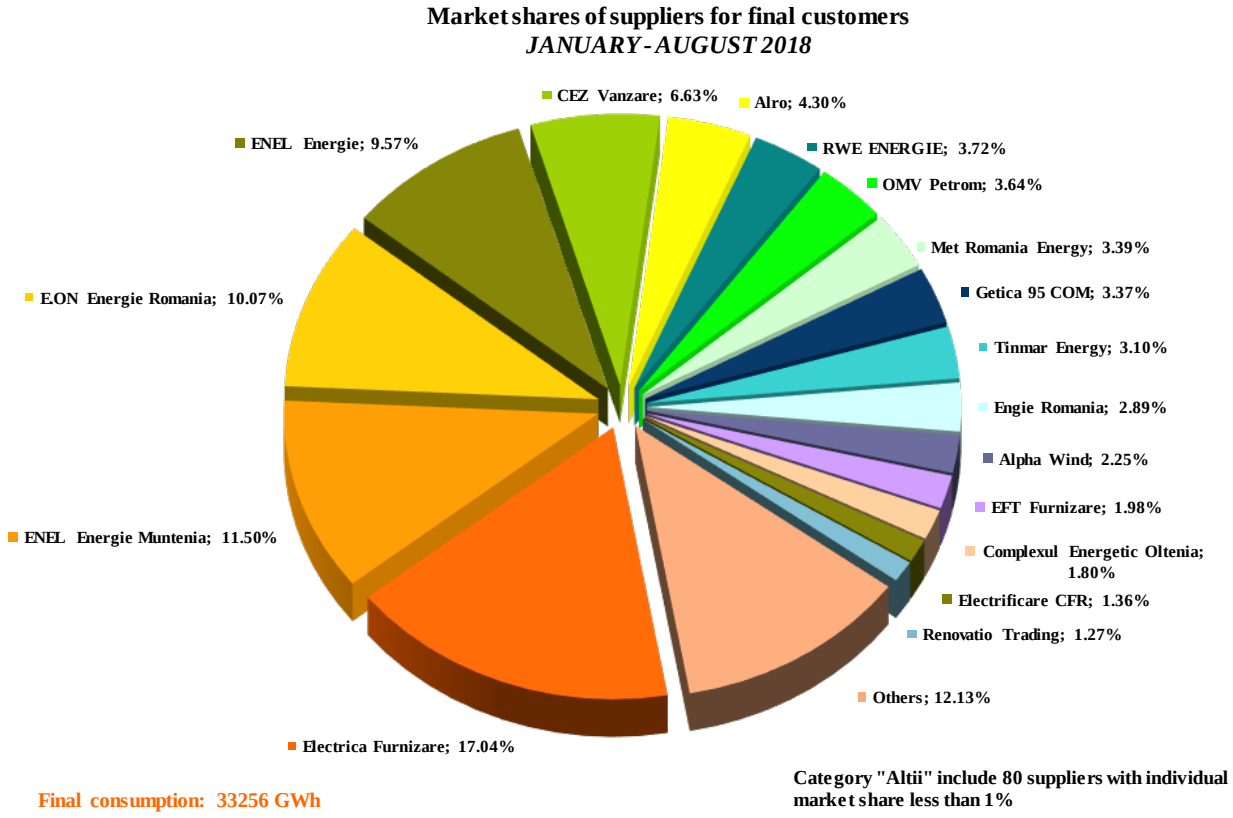


Source: Monthly reports of the final customers suppliers – processed by MU

3. Market shares of the electricity suppliers

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

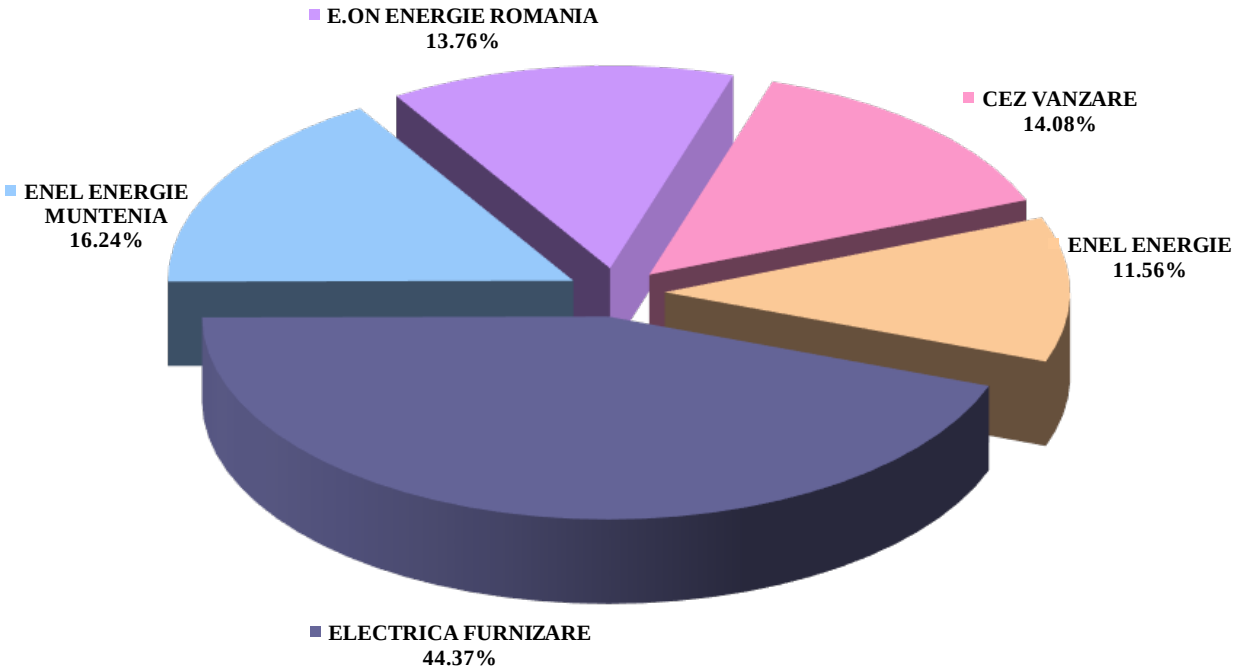
a) for all licensees monitored, suppliers and producers active on REM, including suppliers of last resort, in terms of electricity supplied to final consumers under US and last resort regime and to consumers who have switched their supplier or have negotiated the contract;



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

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

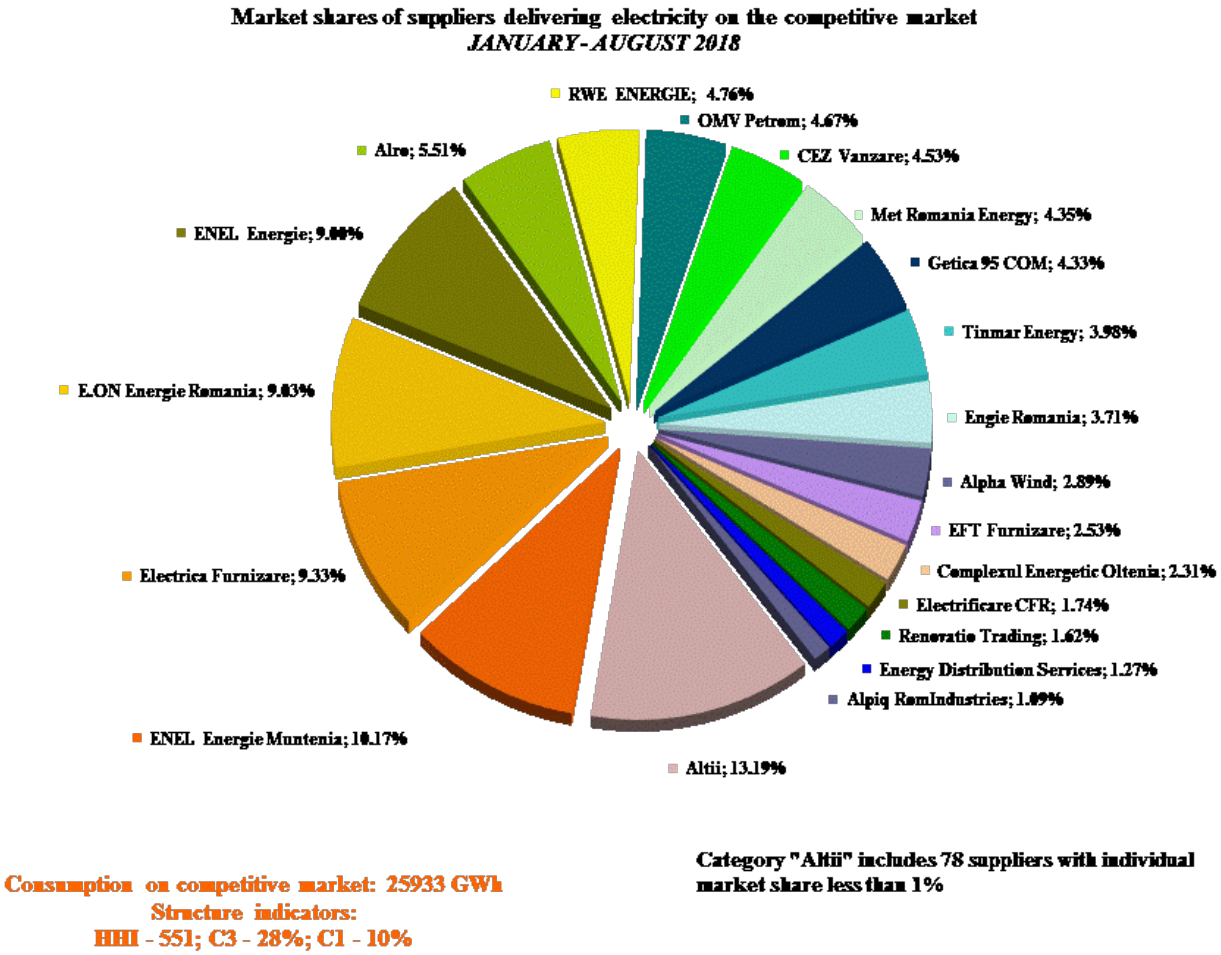
Market shares of suppliers of last resort on US and last resort regime
JANUARY - AUGUST 2018



Consumption of customers supplied at CMC and last resort tariffs: 7323 GWh

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

c) for all licensees monitored, suppliers and producers, active on the competitive segment of the REM, including suppliers of last resort - depending on the electricity supplied to consumers who have switched suppliers or negotiated their contracts.



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

It is noted that in the calculation of the market indicator values the principle of dominance was not taken into account and the electricity supplied on the basis of which each supplier's market share was established includes the self-consumption of the large industrial consumers who also hold a supply license and who have decided to buy the necessary electricity on the wholesale market as competitive suppliers. Quantification of the activity carried out within the competitive segment of REM compared to that on the WEM by suppliers can be achieved by determining the share of sales to final consumers in total sales transactions. Thus, the following table shows the number of suppliers active on the REM, structured according to the size of the activity carried out on this market in August 2018.

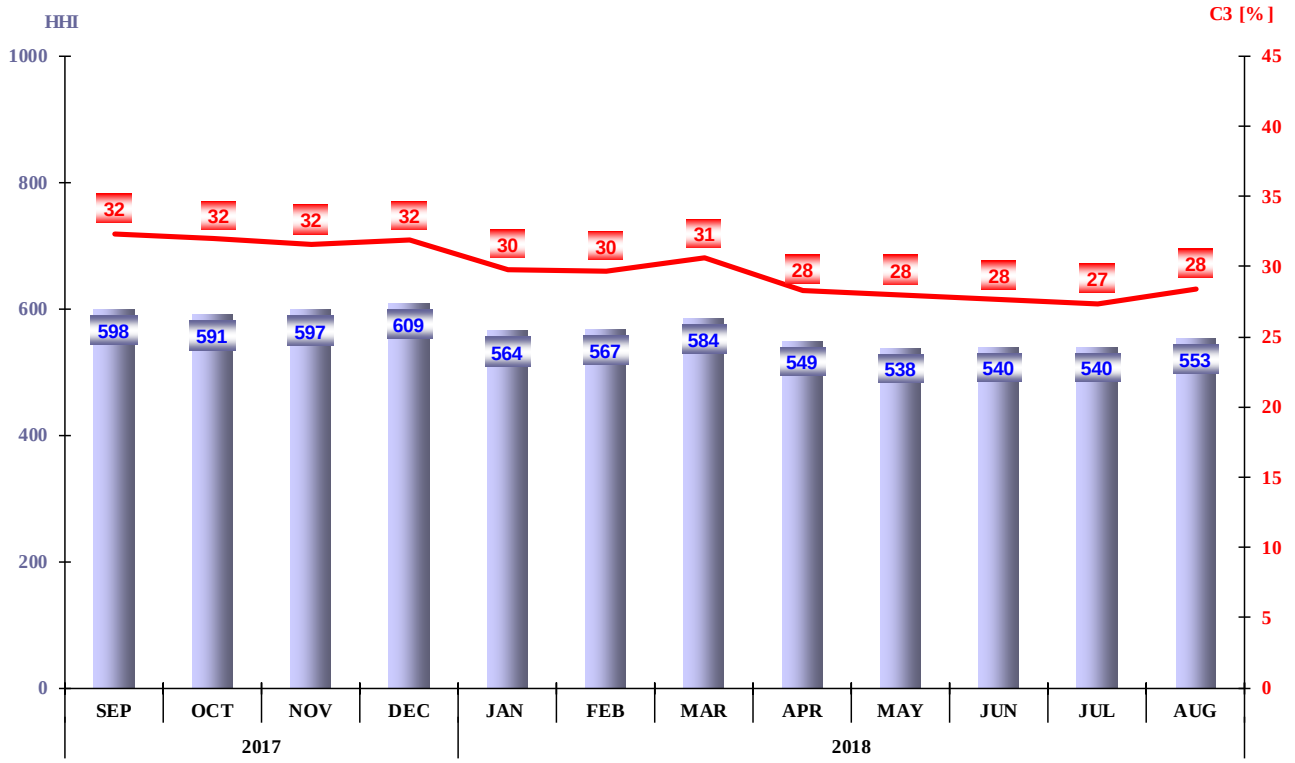
Number of suppliers	Share of sales to final customers from total sales transactions			
	100%	75% - 100%	50% - 75%	<50%
Competitive	12	17	9	25
Of last resort	0	5	0	0

Source: Monthly reports of the suppliers– processed by MU

4. Concentration indicators of the competitive retail electricity market

The monthly evolution of the concentration indicators (C3, HHI) determined on the competitive component of the REM is presented for August 2018 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 MU

The tables below show the values of structure indicators of competitive component of REM and the number of active suppliers in August 2018, calculated for consumption band defined by the Regulation (EU) 2016/1952 of the European Parliament and of the Council for household customers and non-household customers:

Indicators - Aug 2018	Consumption bands - Non-household customers							
	IA	IB	IC	ID	IE	IF	IG	Total
C1 - % -	44	21	15	11	15	12	19	**9**
C3 - % -	76	49	37	29	41	30	45	**27**
HHI	2650	1184	783	606	817	623	964	**518**
Consumption - GWh -	131	400	308	714	402	255	890	**3100**
No. of SUPPLIERS	67	77	67	62	25	21	18	**90**
No. of suppliers of last resort	0	5	5	5	5	5	3	**5**
No. of competitive suppliers	52	55	47	45	15	13	8	**62**
No. of producers	15	17	15	12	5	3	7	**23**

Source: Monthly reports of the suppliers – processed by MU

Indicators - August 2018	Consumption bands - Household customers					
	DA	DB	DC	DD	DE	Total
C1 - % -	50	32	30	30	34	**37**
C3 - % -	91	79	74	73	74	**79**
HHI	3612	2223	2063	2140	2133	**2418**
Consumption - GWh -	85	89	49	34	12	**269**
No. of SUPPLIERS	40	40	39	42	39	52
No. of suppliers of last resort	5	5	5	5	5	**5**
No. of competitive suppliers	31	32	31	34	30	**41**
No. of producers	4	3	3	3	4	**6**

Source: Monthly reports of the suppliers – processed by MU

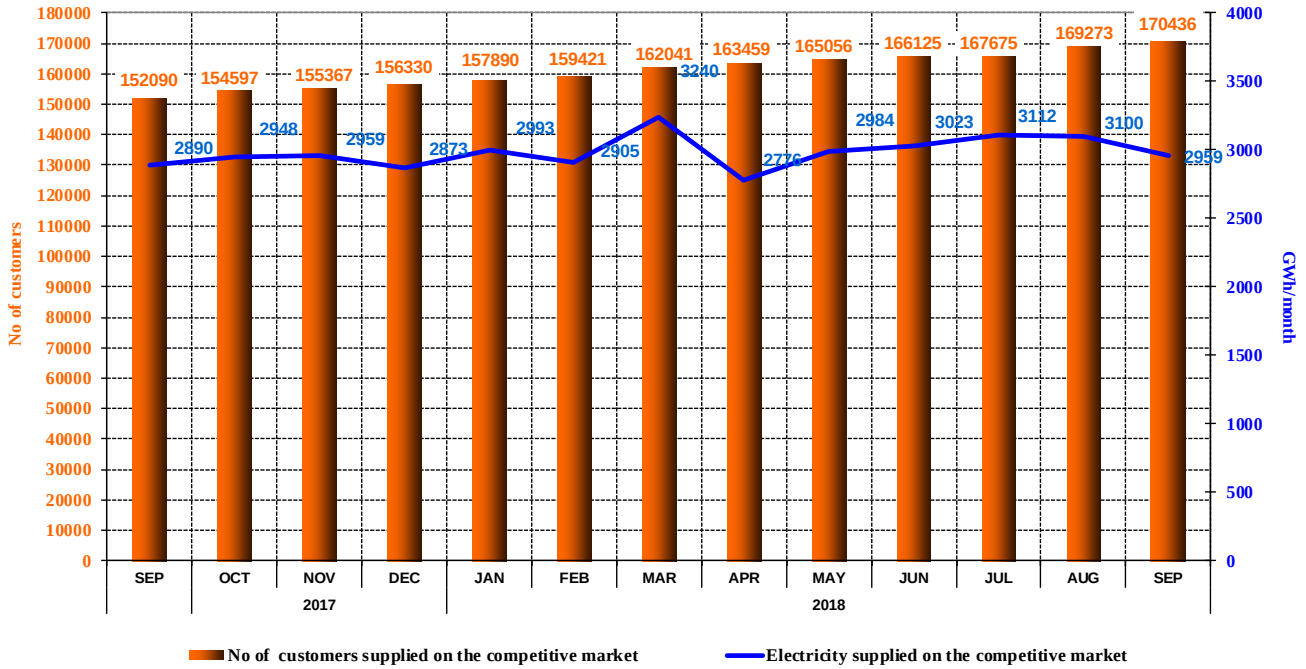
5. Evolution of customers' number and of electricity delivered

The number of final customers to whom electricity is supplied under competitive conditions is shown on a monthly basis over the last 12 months. Also, for August 2018 this number is split into customers categories, according to the provisions of Regulation (EU) no. 2016/1952 of the European Parliament and of the Council. The tables below present the consumption bands for 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	

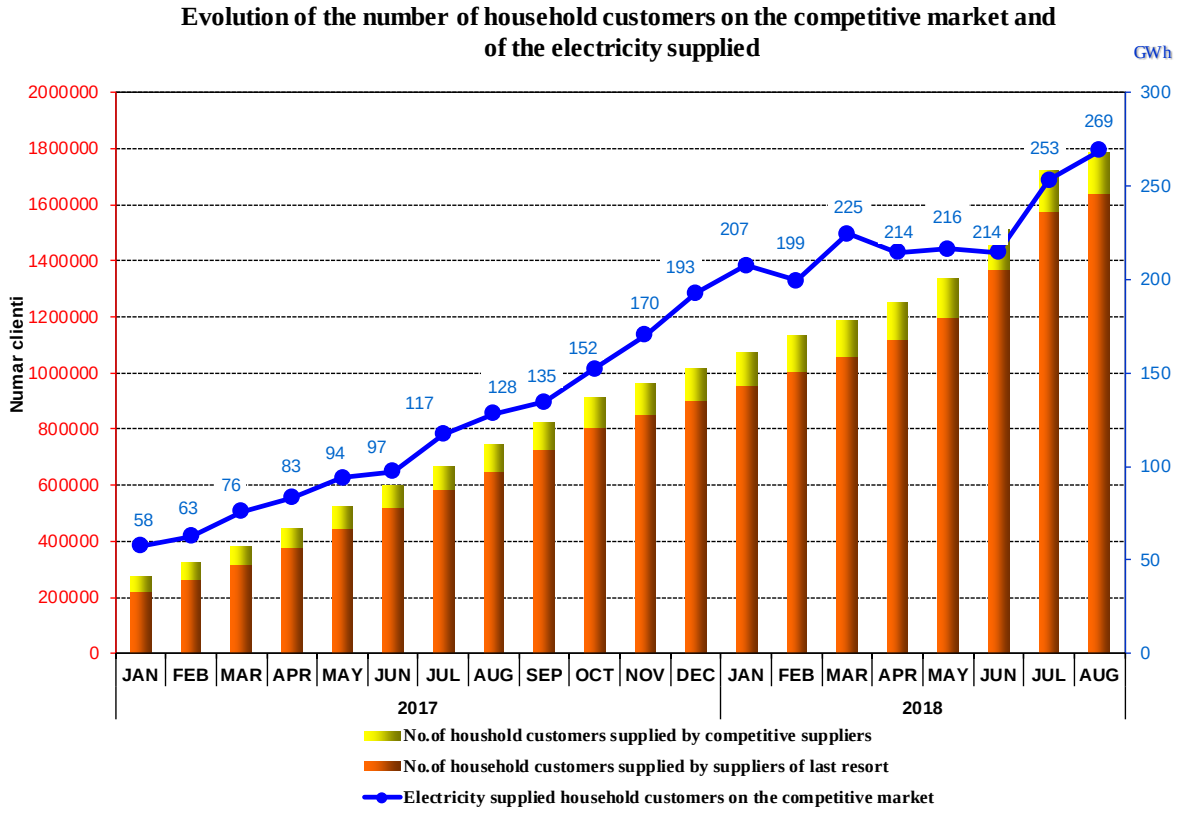
Household customers	Annual electricity consumption (kWh):	
DA		<1000
DB	>=1000	<2500
DC	>=2500	<5000
DD	>=5000	<15000
DE	>=15000	

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

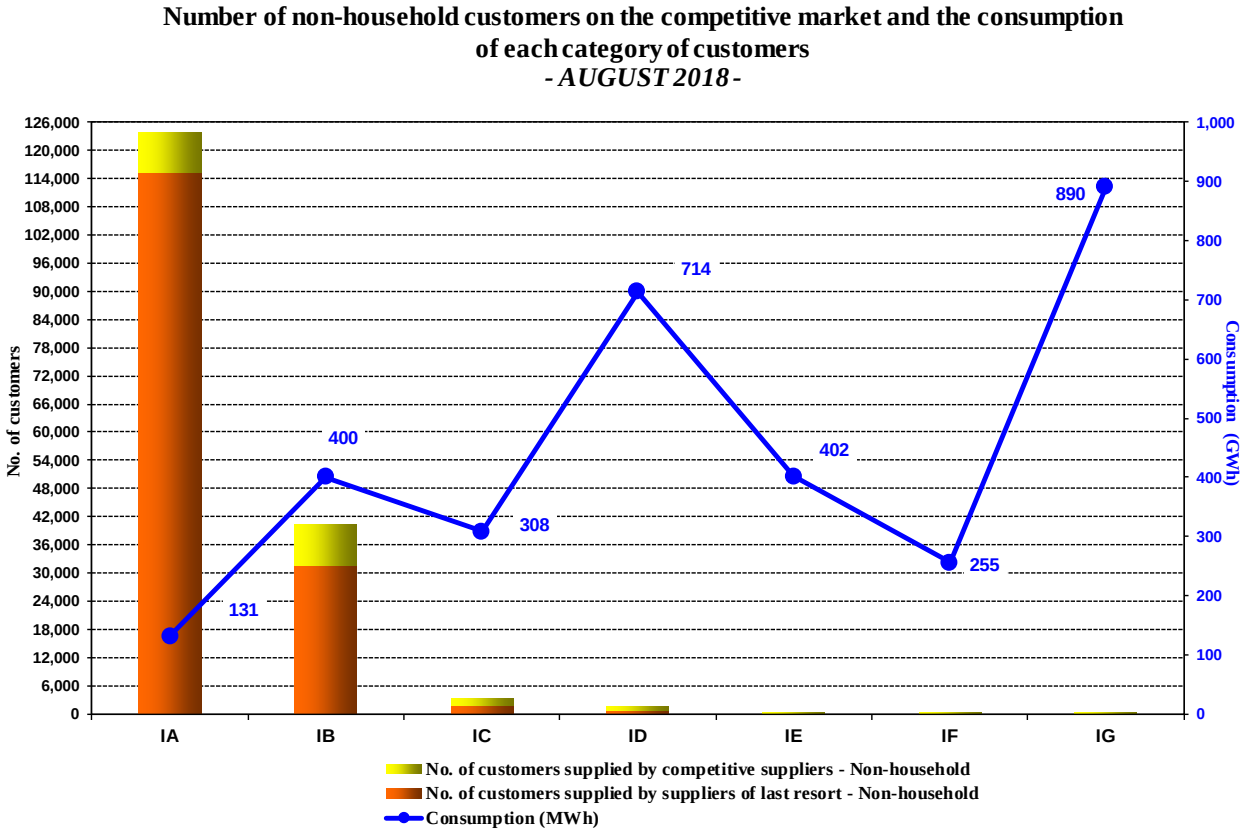


Source: Monthly reports of the competitive suppliers – processed by MU

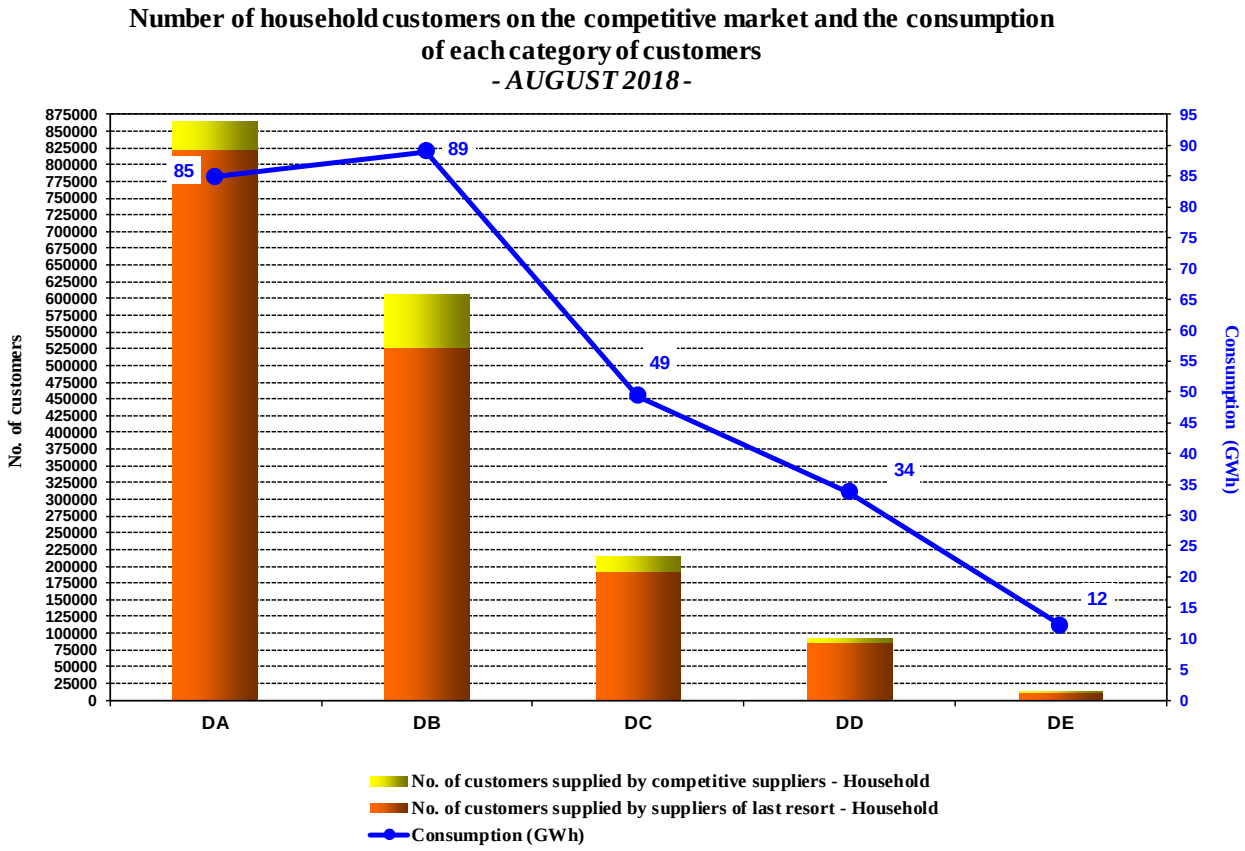
Electricity sales under competitive conditions to household customers between January 2017 and August 2018 are shown in the following graph:



Source: Monthly reports of the suppliers – processed by MU



Source: Monthly reports of the suppliers – processed by MU

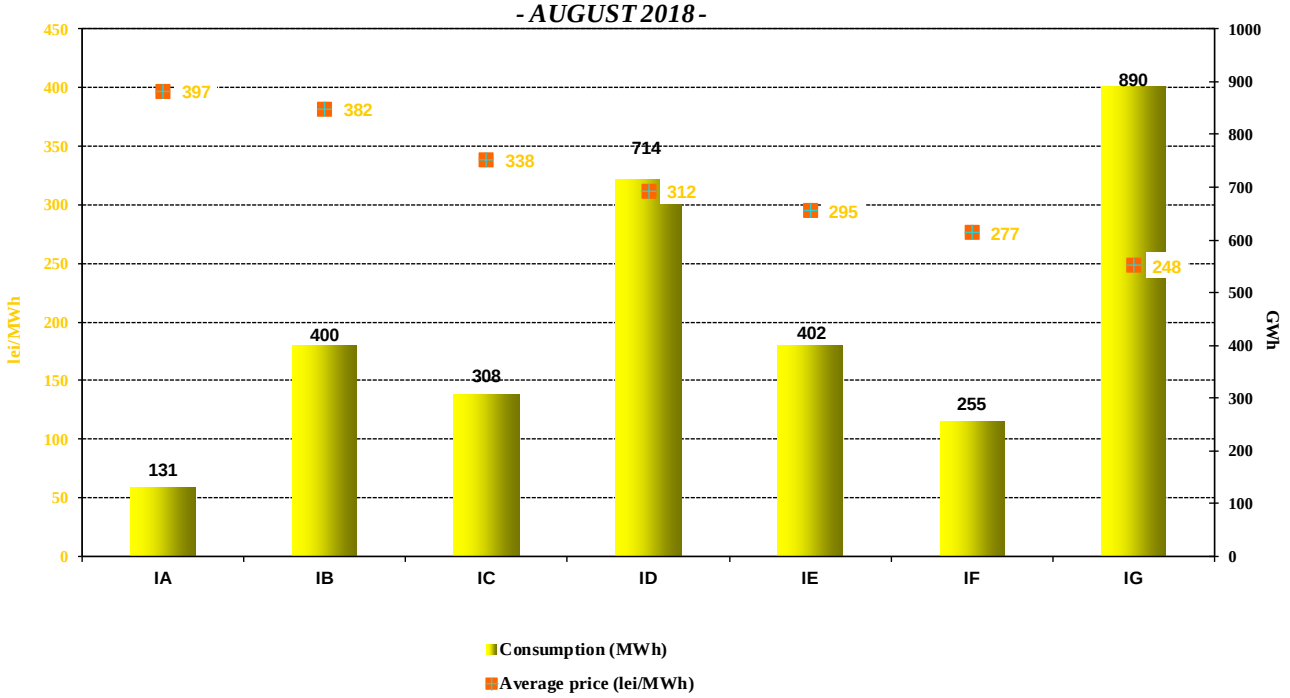


Source: Monthly reports of the suppliers – processed by MU

6. Average selling prices to customers supplied on the competitive market

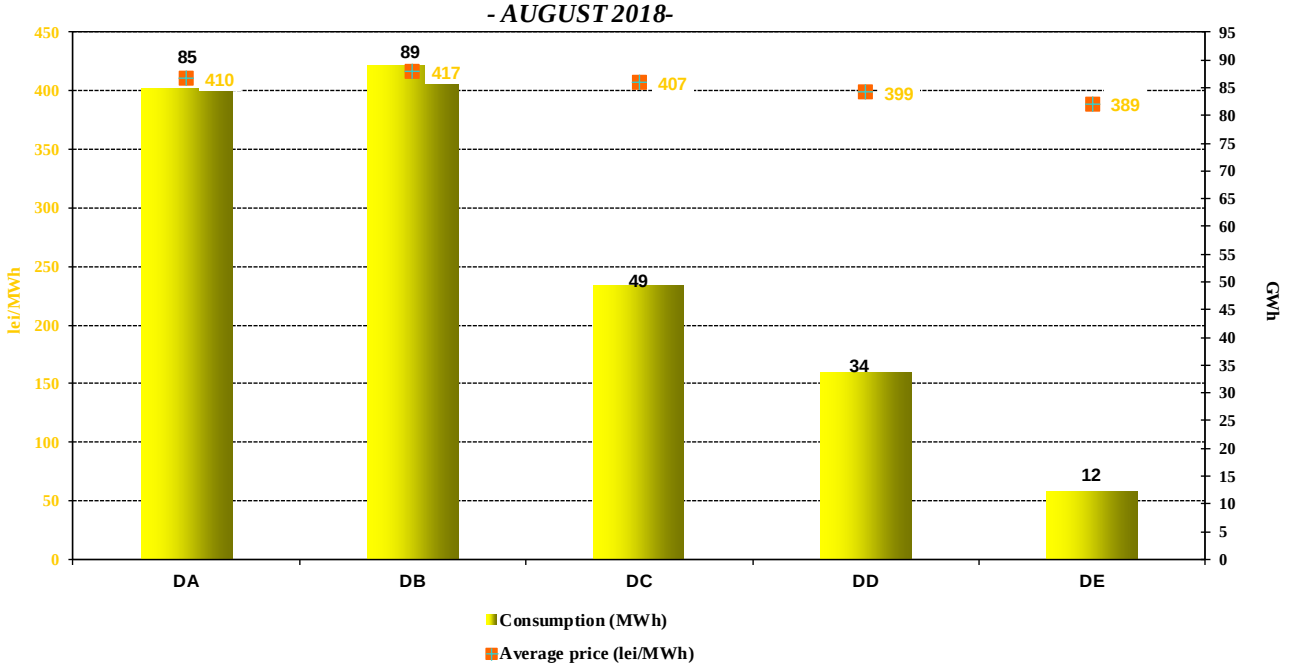
The following graphs present the average selling prices to household and non-household customers supplied on the competitive market, based on the structure defined according to the Regulation (EU) no. 2016/1952 of the European Parliament and of the Council for August 2018.

Average price and energy consumption for non-household customers on the competitive segment of the REM
- AUGUST 2018 -



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

Average price and energy consumption for household customers on the competitive segment of the REM
- AUGUST 2018-



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

***Specifications**: The average selling price for each consumption band was determined as an average of the prices applied by suppliers weighted with the quantities supplied by them to the respective consumption band in accordance with the provisions of Regulation (EU) 1952/2016. Prices do not include VAT, excise or other taxes, but include all related services (transport and distribution tariffs, system services, imbalances, BRP aggregation taxes, measurement). Breakdown of customers into consumption bands was based on their annual consumption forecast.*

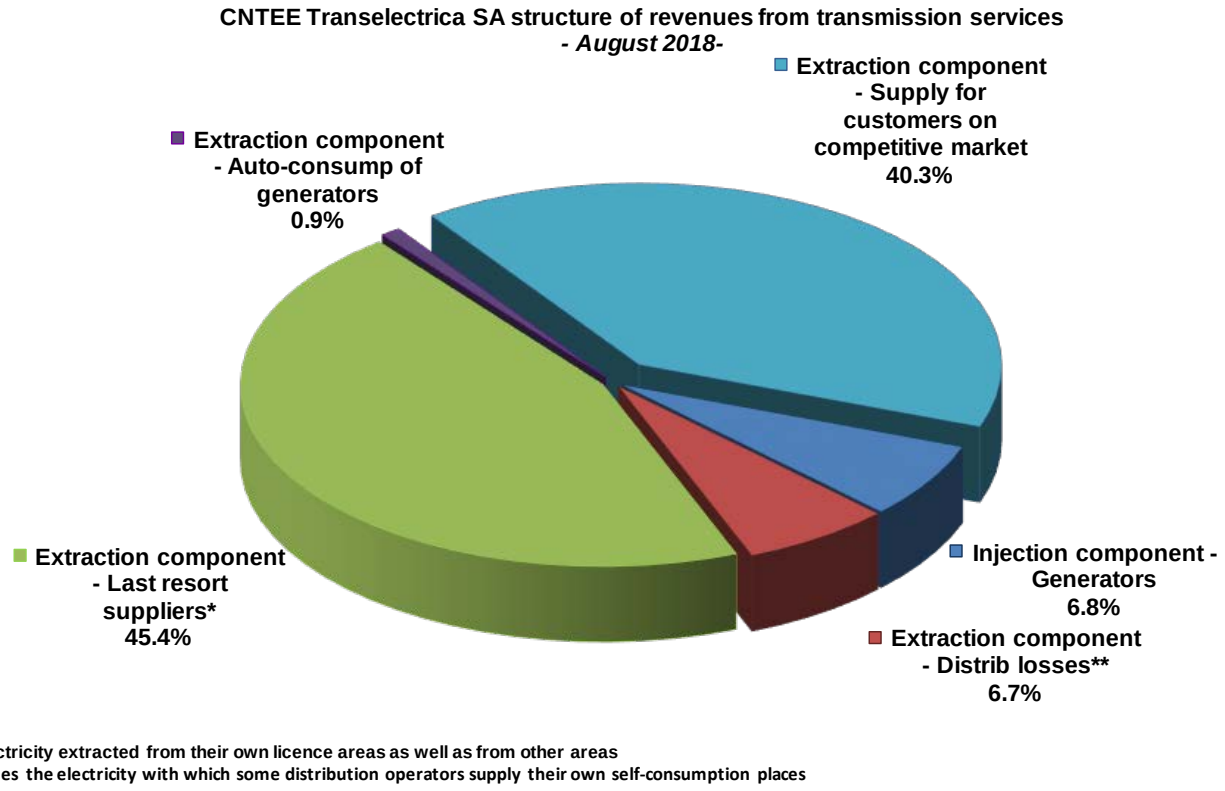
IV. TRANSMISSION AND SYSTEM OPERATOR CNTEE TRANSELECTRICA SA

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

Compared to the previous method of establishing the regional transmission tariffs, which aimed to offer signals for the location of energy sources and consumption areas respectively, starting with July 2015 the transmission service tariff methodological principles were modified in order to comply with EU regulations and ACER recommendations.

Therefore, the injection tariff covers only the network losses costs, differentiated by tariff regions, while the extraction tariff covers the average cost of the transmission service.

The following graph presents the structure of CNTEE Transelectrica SA revenues in August 2018 following the provision of the transmission service, determined also by the successive changes of the regulated regional transmission tariffs.

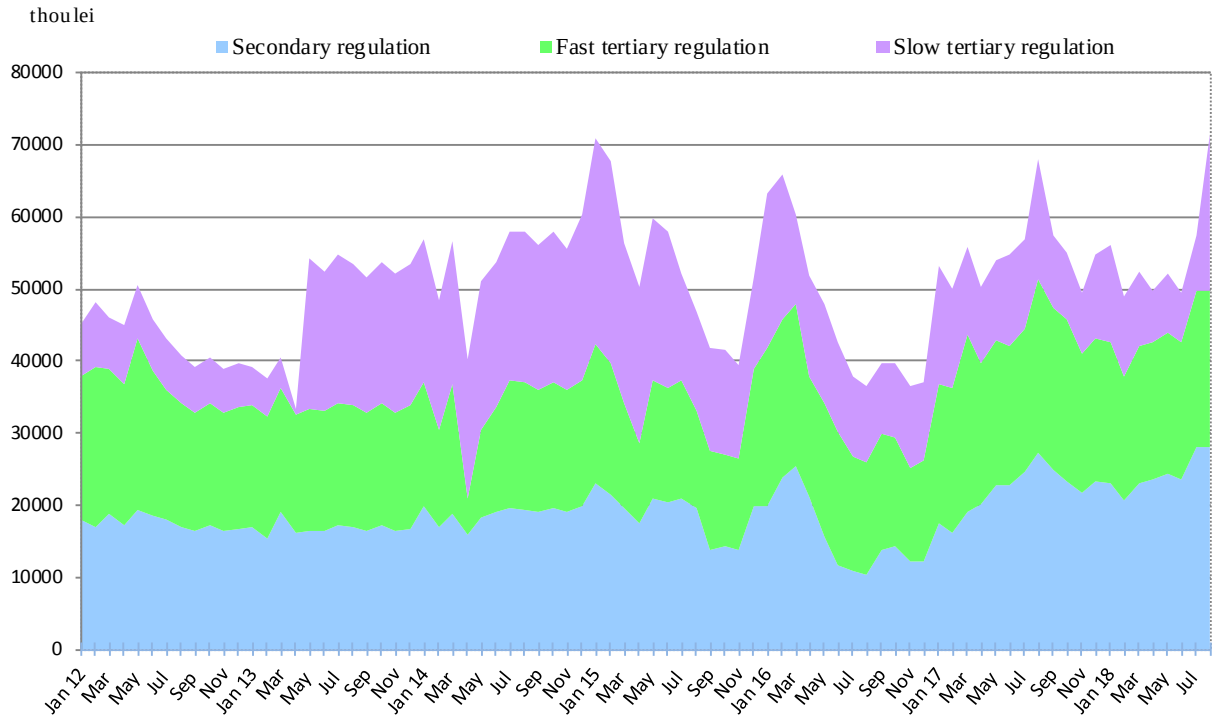


Source: Monthly reports of CNTEE Transelectrica SA – processed by MU

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

The following graph represents the evolution of the costs of the transmission and system operator, starting with January 2012, for the aquisition (regulated and/or through market mechanisms) of ancillary services. In order to cover these costs corresponding to the contracts for the provision of ancillary services, as well as to cover its own operating costs, the TSO applies the regulated tariff for the system service.

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



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

V. MARKET RULES EVOLUTION IN AUGUST 2018

In August 2018, ANRE issued the following regulations with an impact on the wholesale and retail markets:

• ANRE President Order no. 163 / 29.08.2018 on the amendment of the Regulation for issuing green certificates, approved by ANRE President Order no. 4/2015;

• ANRE President Order no. 164 / 29.08.2018 regarding the rules for registration in the Green Certificates Register for green certificates consumed for the fulfillment by the economic operators of their obligation to purchase green certificates for the year 2018;

• ANRE President Decision no. 1410 / 22.08.2018 regarding the approval of the quantities produced in high efficiency cogeneration units benefiting from the bonus scheme for the month of July 2018.

VI. EXPLANATIONS AND ABBREVIATIONS

1. Explanations

- ***Internal consumption*** is calculated, in this document, as the sum of electricity delivered into the grid (described below) and the balance of trades made on the basis of the import and export contracts of the wholesale market participants;
- ***Consumption of final customers under universal service and last resort regime*** represents the consumption of customers supplied by the suppliers of last resort at CMC and last resort prices;
- ***Consumption of final customers on competitive market*** represents the consumption of customers supplied at negociated prices or defined by standard bids;
- **Fuel consumption** represents the fuel consumed for generating electricity and heat in the power plants of monitored generators;
- ***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;
- ***Electricity delivered into the grid*** includes the electricity sold by the generators through direct lines or consumed by themselves at other consumption sites;
- ***Electricity delivered into the grid according to the transport contract*** is the electricity for which the transport service (the grid input component) is provided corresponding to the electricity delivered from the power plants with installed capacity of more than 5 MW connected to the transmission and distribution electric grids (according to ANRE President Order No. 89/2013); CNTEE Transelectrica SA charges for only a part of the respective electricity, given that in four of the grids the regional tariffs are zero (according to ANRE President Order No. 27/2016)

2. Abbreviations

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