MINISTERUL ECONOMIEI, ENERGIEI ȘI
MEDIULUI DE AFACERI

Report on the progress achieved in the fulfilment of the national energy efficiency objectives

2020

Directorate for Energy Efficiency
Ministry of Economy, Energy and Business Environment

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1. INTRODUCTION

On 18 July 2014, the Parliament of Romania adopted **Law No 121/2014 on energy efficiency,** which was published in **the Official Gazette of Romania, Part I No 574 of 1 August 2014**. The law transposes **Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency**, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, as published in the Official Journal of the European Union series L No 315 of 14 November 2012. It is pointed out that Article 3(2)(e) and Annex 11 of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, transpose the provisions of Article 24(1) and of Annex 14 of Directive 27/2012 into the Romanian legislation.

The law sets out that energy efficiency improvement is a strategic objective of the national energy policy due to its major contribution to achieving the security of energy supply, sustainable development and competitiveness, saving primary energy resources, and reducing greenhouse gas emissions.

The policy measures relating to energy efficiency apply throughout the entire chain: primary resources, production, distribution, supply, transmission, and final consumption.

In accordance with Article 1(3) of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, an indicative national target for reducing energy consumption by 19 % is set to be achieved by 2020.

In accordance with Article 8 of Law No 121/2014 on energy efficiency, the target set for the energy savings achieved as a result of the application of the energy policy measures is 1.5 % compared to 2018-2020. In accordance with Article 1(3) of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, an indicative national target for reducing energy consumption by 19 % is set to be achieved by 2020, projected in the baseline scenario produced using the 2007 PRIMES model (year 2005), with a primary energy saving of 10 million toe in 2020 compared to the domestic primary energy consumption projected for 2020 of 52.99 million toe. Thus, the domestic primary energy consumption target for 2020, as set out in Article 3(1) of the Energy Efficiency Directive is 42.99 million toe, and achieving it leads to a final energy consumption of 30.32 million toe, according to the National Energy Efficiency Action Plan (NEEAP) IV, as approved under Government Decision No 203/2019.

The energy efficiency policy of Romania by 2020 relies on the fundamental objectives of the European Union: sustainability, competitiveness, and security of supply.

In accordance with Emergency Ordinance No 1 of 6 January 2020 concerning certain fiscal measures and amending and supplementing certain legislative acts, published in the Official Gazette of Romania No 11 of 9 January 2020, in view of implementing the provisions of Law No 121/2014 on energy efficiency, the Directorate for Energy Efficiency of the Ministry of Economy, Energy and Business Environment is the competent authority for development and implementation of the primary and secondary energy efficiency legislation and monitoring the progress in applying the policy measures in view of achieving the national energy efficiency objectives.

This Annual Report shows the figures for 2018, in accordance with Annex 11 Part I(a)-(e) of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented.

In order to enable the aggregation of results and comparisons, the representatives of EC's DG ENER recommended all Member States to use the EUROSTAT database as a source of primary information to ensure reporting consistency. Under these circumstances, primary information from the EUROSTAT database was used in the drawing up of this **Report**.

In accordance with the methodological specifications of 30 November 2018 under the "Energy" section of the database, EUROSTAT launched a new methodology for energy balances and new indicator codes. The new methodology and new codes were used to determine the values of energy indicators in 2017 and in previous years. This may explain certain (small) differences between the historical values in this Report and those shown in the reports of the previous years.

In the context of approving the Clean energy for all Europeans package, Eurostat published the primary and final energy consumption for 2018 (Europe 2020-2030) for Romania under *Sustainable Development Indicators - 2020 edition.*

Table 1

Row No.	Indicator	M.U.	2018	2017	2016	2015	2014
1	**primary energy consumption**	thousand toe	32 577	32 375	30 615	30 730	30 316
2	**final energy consumption**	thousand toe	23 592	23 205	22 236	21 850	21 686

Source: Eurostat
https://ec.europa.eu/eurostat/web/energy/data/database

2. UPDATES OF THE MAIN LEGISLATIVE AND NON-LEGISLATIVE MEASURES IMPLEMENTED IN THE PREVIOUS YEAR (in accordance with Annex 11(b) of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented)

A. Primary legislation

- Law No 121 of 18 July 2014 on energy efficiency;
- Government Emergency Ordinance No 1/2020 of 6 January 2020 concerning certain fiscal measures and amending and supplementing certain legislative acts;
- Government Decision No 44/2020 on the organisation and operation of the Ministry of Economy, Energy and Business Environment, published in the Official Gazette of Romania, Part I No 69 of 31 January 2020;
- Law No 184/2018 approving Government Emergency Ordinance No 24/2017 amending and supplementing Law No 220/2008 establishing the system for promotion of energy production from renewable sources and amending certain legislative acts;
- Government Decision No 203/2019 approving the National Energy Efficiency Action Plan IV, published in the Official Gazette of Romania No 273 of 10 April 2019.

B. Secondary legislation

- Decision No 1685/2019 approving the Procedure to be applied to verify compliance with minimum criteria in the elaboration of energy audits;
- Decision No 366/2019 approving the total energy consumption declaration layout and the energy analysis questionnaire layout;
- Decision No 2168/2019 approving the Template for drawing up the Energy Efficiency Improvement Programme (EEIP) for localities with more than 5 000 inhabitants;
- Order of the Ministry of Economy, Energy and Business Environment (MoEEBE) No 1726/2020 on transitional measures aiming at ensuring the continuation of the system for authorisation of energy auditors natural and legal persons, certification of energy managers, and authorisation of companies providing energy services, published in the Official Gazette of Romania No 413 of 19 May 2020;
- Order No 4/2019 concerning the application for the year 2018 of the provisions of Article 18(1), Article 21(2) and Article 27 of Regulation on the qualification of the electricity produced from high-efficiency cogeneration, and on the verification and monitoring of fuel consumption and useful electricity and heat production from high-efficiency cogeneration, as approved by the Order No 114/2013 of the President of the National Energy Regulatory Authority, and of the provisions of Articles 21-23 of Regulation laying down the method of collection of the high-efficiency cogeneration contribution and of payment of the bonus for electricity produced from high-efficiency cogeneration, as approved by the Order No 116/2013 of the President of the National Energy

Regulatory Authority;

- ANRE Order No 237/2019 concerning the application for the year 2019 of the provisions of Article 18(1), Article 21(2) and Article 27 of Regulation on the qualification of the electricity produced from high-efficiency cogeneration, and on the verification and monitoring of fuel consumption and useful electricity and heat production from high-efficiency cogeneration, as approved by the Order No 114/2013 of the President of the National Energy Regulatory Authority;
- ANRE Order No 25/2018 amending and supplementing the Order No 145/2014 of the President of the National Energy Regulatory Authority on the implementation of the electricity smart measurement systems;
- ANRE Order No 33/2018 amending Regulation for the issuing of green certificates, as approved by Order of the President of the National Energy Regulatory Authority No 4/2015;
- ANRE Order No 178/2018 amending and supplementing Regulation for the organisation and functioning of the green certificates market, as approved by Order No 77/2017 of the President of the National Energy Regulatory Authority;
- ANRE Order No 65/2018 amending Regulation for the organisation and functioning of the green certificates market, as approved by Order No 77/2017 of the President of the National Energy Regulatory Authority;
- ANRE Order No 11/2020 amending and supplementing the Methodology for establishing the mandatory annual quotas of green certificates to be purchased, as approved by ANRE Order No 157/2018;
- ANRE Order No 164/2018 approving the Rules for entering the green certificates used by economic operators to meet their green certificate purchase requirement into the Green Certificates' Register;
- ANRE Order No 177/2018 approving the framework conditions for the development of the timetable of implementation of the electricity smart measurement systems at national level;
- ANRE Order No 77/2020 amending and supplementing the Order No 226/2018 of the President of the National Energy Regulatory Authority approving the rules for trading electricity produced in the power plants from renewable sources having an installed power of maximum 27 kW belonging to prosumers;
- ANRE Order No 210/2019 amending and supplementing the Methodology for pricing and price adjustment of the electricity and heat produced and supplied from cogeneration plants benefiting of the support scheme, and of the high-efficiency cogeneration bonus, approved by ANRE Order No 15/2015;
- ANRE Order No 182/2018 approving the reference price of the electricity produced from high-efficiency cogeneration applicable in 2019 to producers of electricity and heat from cogeneration, which are entitled to a bonus;
- ANRE Order No 183/2018 approving the reference bonus values for the electricity produced from high-efficiency cogeneration and of the reference prices for the heat from cogeneration, applicable in 2019;
- ANRE Order No 226/2018 approving the rules for trading electricity produced in the power plants from renewable sources having an installed power of maximum 27 kW belonging to prosumers, amended by Order No 69/2020;
- Order of the Minister for Regional Development and Public Administration No 2544/2018 approving the National Programme for Energy Efficiency Increase in Residential Blocks with funding in 2018, as amended by Order No 2675/2019 amending Annexes 1 an 2 to the Order No 2088/2019 of the Deputy Prime Minister, Minister for Regional Development and Public Administration approving the Multiannual National Programme for Energy Efficiency Increase in Residential Blocks with funding in years 2019-2021;
- Order No 4494/2018 of the Minister for Regional Development and Public Administration approving the List of the reference designators of the Romanian standards that transpose the harmonised European construction standards, as amended by Order No 1687/2019 approving the List of the reference designators of the Romanian standards that transpose the harmonised European standards relating to construction products, published in the Official Gazette of Romania, Part I No 387 of 17 May 2019;
- Order No 4579/2018 of the Minister for Regional Development and Public Administration allocating

amounts for the co-financing of the investment works for the rehabilitation of centralised heat supply systems for localities, according to the programme "2006-2020 District Heating Heat and Comfort";
- Emergency Ordinance No 53 of 25 June 2019 approving the Multiannual Programme for the financing of investments in modernisation, rehabilitation, repowering and extension, or establishment of centralised heat supply systems for localities, and amending and supplementing the Law of public utility community services No 51/2006 for the period 2019-2027;
- Order No 241/2018 of the Deputy Prime Minister, Minister of Environment, amending and supplementing the Financing Guide of the 2017-2019 Programme for fostering the renewal of the national vehicle fleet, approved by Order No 661/2017 of the Deputy Prime Minister, Minister of Environment, supplemented by Order No 1347/2020 amending and supplementing the Financing Guide of the 2020-2024 Programme for fostering the renewal of the national vehicle fleet, approved by Order No 324/2020 of the Minister of Environment, Water and Forests, and amending and supplementing the Financing Guide of the 2020-2024 Programme for reducing the greenhouse gas emissions in transports by promoting clean and energy-efficient road transport vehicles, approved by Order No 323/2020 of the Minister of Environment, Water and Forest;
- Order No 278/2018 of the Deputy Prime Minister, Minister of Environment, amending and supplementing the Financing Guide of the 2017-2019 Programme for reducing the greenhouse gas emissions in transports by promoting clean and energy-efficient road transport vehicles, approved by Order No 660/2017 of the Deputy Prime Minister, Minister of Environment, supplemented by the Instruction of the President of the Environmental Fund Administration No 133 of 23 March 2020 allocating the amounts in the 2020 session of the 2020-2024 Programme for reducing the greenhouse gas emissions in transports by promoting clean and energy-efficient road transport vehicles;
- Order No 760/2018 of the Minister of Environment approving the Financing Guide of the Programme for reducing the greenhouse gas emissions in transports by promoting clean and energy-efficient road transport vehicles: electrical vehicle charging stations in county capital cities, amended and supplemented by Order No 393 of 18 April 2019 of the Deputy Prime Minister, Minister of Environment, amending and supplementing the Financing Guide of the Programme for reducing the greenhouse gas emissions in transports by promoting clean and energy-efficient road transport vehicles: electrical vehicle charging stations in county capital cities;
- Order No 1287/2018 of the Minister of Environment approving the Financing Guide of the Programme for installation of photovoltaic panels for electricity production to cover for the consumption needs and supply the excess electricity to the national network, supplemented by Order No 856 of 3 September 2019 amending and supplementing the Financing Guide of the Programme for installation of photovoltaic panels for electricity production to cover for the consumption needs and supply the excess electricity to the national network;
- Order No 1305/2018 of the Minister of Environment approving the Financing Guide of the Programme for installation of photovoltaic panels in remote households not connected to the national electricity distribution network;
- Instruction of the President of the Environmental Fund Administration No 161 of 3 May 2018 on the organisation of the financing application file submission session under the RO-LA Transport Programme;
- Order No 1172/2018 of the Deputy Prime Minister, Minister of Environment, published in the Official Gazette of Romania, Part I No 987 of 21 November 2018, approving the Financing Guide of the National Programme for the replacement of used electric and electronic equipment with more energy efficient ones, amended and supplemented by Order No 500/2019 amending and supplementing the Financing Guide of the National Programme for the replacement of used electric and electronic equipment with more energy efficient ones.

3. MACRO-ECONOMIC INDICATORS ON TREND IN ENERGY CONSUMPTION (in accordance with Annex 11(a) of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented)

In accordance with **Annex 11(a) of Law No 121/2014 on energy efficiency**, **as subsequently amended and supplemented, the monitoring of the progress achieved in the fulfilment of the 2020 national**

objectives relies on the annual reports. As minimum information, these reports need to include estimates of a number of indicators (set out under the law) for the year prior to the last completed year. As a result, this Report needs to include information for the year 2018. It is further provided that for the sectors that show a flat or increasing energy consumption, the causes thereof need to be analysed, and the respective assessment must be enclosed to its respective estimates.

The table below shows the values of the indicators, recorded in 2018, in accordance with **Annex 11 Part I(a)** of **Law No 121/2014**.

Table 2

Row No.	Indicator	M.U.	2018
1	**primary energy consumption**	**thousand toe**	32 577
2	**final energy consumption**	**thousand toe**	23 444
2.1	*final energy consumption in industry*	*thousand toe*	6 612
2.2	*final energy consumption in transports*	*thousand toe*	6 303
2.3	*final energy consumption in households*	*thousand toe*	7 775
2.4	*final energy consumption in services*	*thousand toe*	1 976
2.5	*final energy consumption in agriculture and forestry*	*thousand toe*	566
3	***gross value added, of which:***	*million EUR 2015*	164 698
3.1	*industry*	*million EUR 2015*	45 901
3.2	*services*	*million EUR 2015*	100 412
4	gross domestic product	million EUR 2015	187 924
5	**GDP growth rate v previous year**	**%**	4.4
6	**electricity production based on heat production**	TWh	39.1
7	**electricity production based on combined electricity and heat production**	TWh	9.6
8	**heat production based on thermal energy production**	thousand toe	1 760
9	**heat production based on combined electrical and thermal energy production plants, including industrial residual heat**	thousand toe	1 212
10	**fuel consumption for thermal energy production**	thousand toe	10 510

Source: EUROSTAT

The main observations and comments on the values of these indicators are as follows:

Primary energy consumption and final energy consumption constitute fundamental indicators in monitoring the progress made by the EU as a whole and by each Member State in achieving the targets set out by Directive 2012/27/EU.

The total energy resources available in 2018 remained relatively stable compared to 2017. Compared to the previous year, primary energy production went down by 1.7 %, the imports of energy resources went up by 4.2 %, the gross domestic energy consumption increased by 0.4 %, and the final energy consumption went up by 1.5 %. However, these growth rates were lower than the economic development rate, with the GDP going up by 4.4 %. It thus manifestly follows that this increase in energy consumption was driven by the economic development at national level, and occurred as a result of the increase in energy efficiency.

This is valid for both the national economy overall, and the economic sectors. The household sectors accounts for the highest share in the national final energy consumption (33.16 % in 2018). The measures taken to increase the standard of living and, implicitly, the quality of life for the population gave rise to a 0.55 % increase compared to the previous year. The energy efficiency policies and programmes put in place (thermal insulation of residential blocks, labelling of household appliances receivers, etc.) kept the household sector's consumption below the one recorded in the reference year 2015.

4. ENERGY EFFICIENCY MONITORING

The energy efficiency monitoring carried out in 2018 focused on four main levels:

- monitoring compliance with Law No 121/2014, as subsequently amended and supplemented, for the main categories of energy consumers: economic operators and local authorities;
- checking compliance with the provisions of the directives and regulations providing for the market surveillance work;
- monitoring the energy-using equipment market;
- monitoring energy savings achieved by implementing the National Energy Efficiency Action Plan.

The component intended for of energy consumer monitoring in 2018 was carried out using the Integrated Information System software platform (MIS) deployed in ANRE.

4.1. Monitoring of economic operators

Monitoring was conducted based on the Annual Statements of Total Energy Consumption and the Energy Assessment Questionnaires filled in by economic operators in accordance with Article 9(4) of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented.

Considering that these operators are required to submit the documents with the statistical data on energy consumption from the previous year before 30 April of each year, the 2019 monitoring exercise covered the 2018 activity of as many as 1 535 economic operators, of which 787 operators with consumption values above 1 000 toe/year (51 %), and 748 operators with consumption values below 1 000 toe/year (49 %).

For the 787 operators with an energy consumption above 1 000 toe/year, details are provided below:

- number of final energy consumers with an annual consumption above 50 000 toe/year: 37 (2.34 %);
- number of final energy consumers with an annual consumption between 5 000 and 50 000 toe/year: 193 (12.58 %);
- number of final energy consumers with an annual consumption between 1 000 and 5 000 toe/year: 557 (36.31 %).

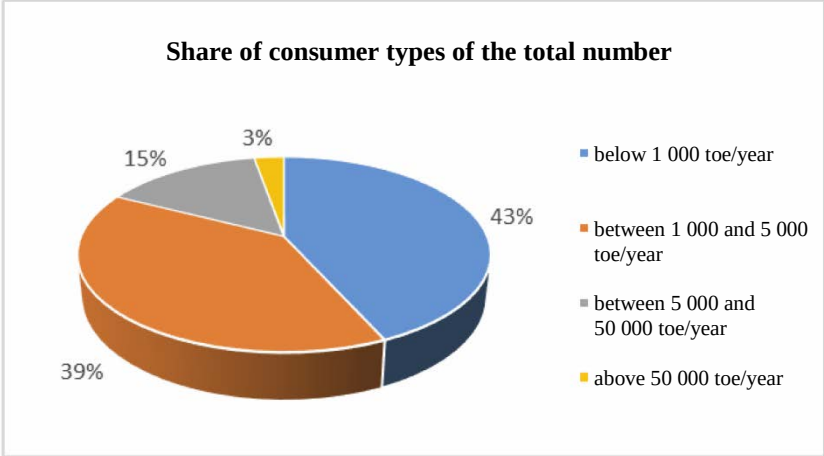
Table 3

CAEN index	Classification according to CAEN code	Number of economic operators	2018 consumption [toe]
A	Agriculture, forestry and fishing	45	124 614.02
B	Mining and quarrying	34	1 408 916.75
C	Processing industry	781	6 863 632.29
D	Electricity, heat, gas, steam and air conditioning supply	86	2 479 926.77
E	Water supply, sewerage, waste management and decontamination activities	60	122 311.10
F	Construction	89	80 927.13
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	120	239 902.90
H	Transportation and storage	86	804 098.40
I	Hotels and restaurants	15	18 674.91
J	Information and communications	25	86 804.92
K	Financial intermediation and insurance activities	14	27 637.54
L	Real estate transactions	108	86 948.82
M	Professional, scientific and technical activities	21	102 135.42
N	Administrative and support service activities	7	4 692.17
O	Public administration and defence; public social security	3	3 324.52
P	Education	15	38 216.36

Q	Health and social assistance	23	11 572.73
R	Arts, entertainment and recreation	2	1 733.44
S	Other service activities	1	31.30
GRAND TOTAL		1 535	12 506 101.49

Source: ANRE

Figure 1



4.2. Monitoring of localities with more than 5 000 inhabitants

In accordance with the provisions of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, the local public administration authorities from the localities with a population exceeding 5 000 inhabitants are required to draw up energy efficiency improvement programmes with short-term measures and 3-6 year measures.

Furthermore, local public administration authorities from localities with a population exceeding 20 000 inhabitants are required to draw up energy efficiency improvement programmes with short-term measures and 3-6 year measures, as well as to appoint an Energy Manager, who is certified in accordance with the legislation in effect, or to conclude an energy management contract with an authorized natural person, who is certified under the law, or with a legal entity acting as an energy services provider certified under the law.

These energy efficiency programmes were drawn up in observance of the template approved by the ANRE Decision No 7/2015. In 2019, ANRE completed the updating of the Template for the preparation of the Energy Efficiency Improvement Programme (EEIP) for the localities with more than 5 000 inhabitants by approving Decision No 2168/2019.

Table 4

Situation of EEIP preparation/submission by territorial and administrative units (UAT)

Row No.	**Number of inhabitants/Type of locality**	**Number of localities** on 1 July 2018 - according to the National Institute of Statistics (INS)	Number of localities that submitted **EEIPs** or tables
1	**More than 20 000 inhabitants**	**107**	**48**
	Cities	88	43
	Towns	17	3
	Communes	2	2
2	**5 000 – 20 000 inhabitants**	**669**	**59**
	Cities	14	4
	Towns	179	27
	Communes	476	28
TOTAL		**776**	**107**

Source: ANRE

4.3. Monitoring the energy-efficient equipment market

Part of its 2018 market surveillance work, ANRE conducted inspections to check whether household appliances met the applicable technical regulation requirements, and whether economic operators complied with their obligations.

These inspections concerned the fulfilment of the obligations laid down by the specific energy-efficiency labelling legislation:

- **Regulation (EU) 2017/1369** of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU;
- **Government Decision No 917/2012** laying down measures for the implementation of Commission Delegated Regulations (EU) 1059/2010, 1060/2010, 1061/2010, 1062/2010, and 626/2011 supplementing Directive 2010/30/EU of the European Parliament and of the Council of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products;
- **Government Decision No 580** /1 June 2011 laying down measures for the implementation of the Commission Regulations (EC) 640/2009, 641/2009, 642/2009 and 643/2009 implementing Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 on establishing a framework for the setting eco-design requirements for energy-related products, and amending Government Decision 1039/2003 setting out the energy labelling and efficiency requirements for placement on the market of household refrigerating appliances;
- **Government Decision No 1090/2013** laying down measures for the implementation of the Commission Regulations (EU) 327/2011, 206/2012 and 547/2012 implementing Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 on establishing a framework for the setting eco-design requirements for energy-related products;
- **Government Decision No 736/7 June 2006** setting out the energy labelling and efficiency requirements for placement on the market of household electric tumble driers;
- **Government Decision No 456/5 April 2006** setting out the energy labelling and efficiency requirements for placement on the market of household electric ovens;
- **Government Decision No 671/19 July 2001** setting out the energy labelling and efficiency requirements for placement on the market of household combined washer driers);
- **Government Decision No 1056/18 October 2001** setting out the energy labelling and efficiency requirements for placement on the market of household electrical lamps;
- **Government Decision No 1160/2 October 2003** setting out the energy labelling and efficiency requirements for placement on the market of ballasts for fluorescent lighting sources;
- **Government Decision No 1258/17 October 20**07 amending and supplementing certain legislative acts in the field of energy efficiency;
- **Government Decision No 217/ 2012** setting out the requirements for indication by labelling and standard product information of the consumption of energy and other resources by energy-related product, and amending Government Decision No 1039/2003 setting out the requirements for energy labelling and efficiency requirements for placement on the market of household refrigerating appliances.

Inspections undertaken

In order to determine whether the provisions of the effective legislation were complied with, ANRE undertook **24 inspections** in stores, of which: one inspection in Bucharest and 23 inspections across the country. The documentations, including the energy efficiency label, were reviewed for 2 774 household appliances displayed all across the country. Broken down on types of appliances, the checks concerned:

- ✓ 640 refrigerating appliances
- ✓ 212 dishwashers
- ✓ 402 washing machines
- ✓ 70 tumble driers
- ✓ 146 combined washer driers
- ✓ 584 televisions

- ✓ 119 air conditioners
- ✓ 311 electric ovens
- ✓ 290 extractor hoods

Because the inspections did not find any non-compliances, and that the requirements of the effective legislation were met, the inspection teams did not apply any penalties.

However, a number of recommendations were made:

- application of the label in a visible place, without any masking possibility;
- for the appliances missing the data-sheet from their respective technical documentation, this should be printed out in store and enclosed to the documentation supplied when the good is sold;
- training of the staff attending the store sections where regulated household appliances are sold to correctly advise potential buyers of the performance of each household appliance, and to recommend them appliances of the maximum energy efficiency classes;
- delivery of training to, and prohibiting the staff attending the store sections to apply any other energy consumption labels, marks, symbols or inscriptions that depart from the legal requirements, except for the eco-labelling;
- prohibition to apply any other energy consumption labels, marks, symbols or inscriptions that depart from the legal requirements.

International cooperation actions

In 2019, with a view to disseminating legislative information and brining all stakeholders (representatives of authorities, producers, distributors and traders) around the same table, ANRE got involved in actions intended to strengthen international cooperation and know-how transfer.

The Energy Efficiency Department of ANRE acted as the cooperation liaison with the Ministry of Energy, the Romanian Accreditation Association (RENAR) and the Romanian chapter of the European Europe Home Appliance (APPLIA) (the former Committee of Domestic Equipment Manufacturers – CECED).

At international level, ANRE sat in the *Administrative Cooperation Groups* (ADCO) tackling the topic of energy labelling – ENERLAB and, respectively of eco-design – ECOD, participating in their annual meetings.

ANRE kicked off the work required to register with the EU portal of the Information and Communication System on Market Surveillance – ICSMS, the market surveillance policy support IT tool that makes available a comprehensive communication platform for the market surveillance authorities, and thus supporting the establishment of a cooperation mechanism between the authorities.

ICSMS will provide the surveillance authorities with efficient and expeditious means of communication to exchange information in a short time frame. ICSMS will further allow swift and efficient exchanges of information with other authorities on the non-compliant or compliant products on the market (results of lab trials, product identification information, photos, information on economic operators, risk assessment, incident information, information on measures taken by surveillance authorities, etc.). Deployment of this system led to the following results:

- swift and timely exchange of information on market surveillance measures with peer EU authorities;
- efficient coordination of the work and inspections, focused mainly on products that had not been yet inspected or tested;
- resource sharing and obtaining extra time that can be then used to focus on other products to be subjected to trials;
- performance of large-scale interventions on the market whenever reports of doubtful products were received in order to thus avoid inspection duplication and multiplication;
- development and implementation of best practices;
- provision of an efficient and thorough market surveillance;
- safeguards against competition distorting;
- access to market surveillance information all across the EU.

The latest ICSMS version can be accessed at: https://webgate.ec.europa.eu/icsms

Dissemination actions; engagements in European projects

In February 2019, the European project ***IN****dustrial and tertiary product* ***T****esting and* ***A****pplication of* ***S****tandards* **–** INTAS, that had been deployed for a 3-year period, came to an end. ANRE was a member of the consortium of this project run and funded under the **HORIZON 2020** European programme.

The headline objective of INTAS was to increase compliance of the equipment on the European market with the provisions of the Eco-design Directive 2009/125/EC for a number of complex and large industrial products (in particular industrial power transformers and ventilation plants).

INTAS was mainly aimed at:

a) providing the European market surveillance authorities with support in assessment of industrial large products' compliance with Directive 2009/125/EC;
b) helping the industrial high-complexity and out-of-gauge equipment industry representatives get acquainted with their duties under the ecodesign directive;
c) putting in place a common European procedure for reviewing compliance of large industrial products with Directive 2009/125/EC.

The final results of the projects are available at https://intas-Testing.eu/storage/app/media/INTAS_D5.4_Summary_Web.pdf

Starting with June 2019, ANRE has participated in the consortium of the project **LABEL 2020 -** *New Label driving supply and demand of energy efficient products* run under the Horizon 2020 European Programme. These duties have been taken over by the Energy Efficiency Directorate of MoEEBE since February 2020.

LABEL 2020 is primarily aimed at providing support to all stakeholders in the transition from A+++ to D energy labelling to the original A-G class concept so as to avoid confusions and ensure its continuity and efficient application; the main objectives are:

- to provide support to consumers and professional buyers through efficient awareness-raising campaigns, services and tools;
- to enhance transparency for the energy labelling regrading process;
- to help retailers and producers correctly and efficiently apply the new label in points of sale and online sale channels;
- to support decision-makers and other stakeholders in application and advancement of the new label in the national programmes, initiatives and schemes;
- to support development and exchange of good practices of awareness-raising campaigns and support tools.

The project is implemented over a 42-month term.

In 2019, the project featured an assessment of the general framework put in place for running national campaigns, information and engagement of stakeholders who are key for the project's action, an assessment of the existing tools and of the opportunities to develop new ones, as well as the elaboration of a first plan of next steps.

4.4. Monitoring the National Energy Efficiency Action Plan (NEEAP)

The 2014-2020 National Energy Efficiency Action Plan (NEEAP III) was approved by the Government Decision No 122/2015, and the updated 2017-2020 National Energy Efficiency Action Plan (NEEAP IV) was submitted to the European Commission in December 2017. Government Decision No 203/03.04.2019 approving NEEAP IV was published in the Official Gazette of Romania No 273 and 273bis of 10 April 2019.

Compared to NEEAP III, which as implemented under 12 National Energy Efficiency Plans, the forth 2017-2020 NEEAP is structured on two components and covers new economic sectors, namely construction and agriculture.

A. 2017-2020 National Energy Efficiency Action Plan for the power supply system

- National Investment Plan
- Reduction of the Own Technological Consumption in the Distribution Network
- Reduction of the Own Technological Consumption in the Transmission Network
- Promotion of high-efficiency cogeneration

- Follow-up of the programme "2006-2020 District Heating - Heat and Comfort"

B. 2017-2020 National Energy Efficiency Action Plan for the final energy consumer (Article 7 of Energy Efficiency Directive 2012/27/EU)

- Smart metering
- Energy efficiency in industrial sector
- Energy efficiency in construction sector
- Energy efficiency in residential sector
- Energy efficiency in service sector
- Energy efficiency in transport sector
- Energy efficiency in agriculture sector

In accordance with Emergency Ordinance No 1 of 6 January 2020 concerning certain fiscal measures and amending and supplementing certain legislative acts, published in the Official Gazette of Romania No 11 of 9 January 2020, in view of implementing the provisions of Law No 121/2014 on energy efficiency, the Directorate for Energy Efficiency of the Ministry of Economy, Energy and Business Environment is the competent authority for development and implementation of the primary and secondary energy efficiency legislation and monitoring the progress in applying the policy measures in view of achieving the national energy efficiency objectives, as well as the National Energy Efficiency Plans contained in the 2017-2020 NEEAP IV. These measures transpose the provisions of Article 7(9) of Directive (EU) 2012/27 on energy efficiency into the national legislation by applying alternative measures at national level with a view to attaining the national energy efficiency targets.

This Report was drawn up using data from the Follow-up Report on the work of energy auditors and energy managers and the Follow-up Report on final energy consumers.

Relying on statistical data and the reports received on the 2019 actions, the key areas where important energy savings had been made were determined to be the following:

A. Power supply system

a) <u>The National Investment Plan (NIP)</u> has as headline objective to protect the environment by reducing the greenhouse gas emissions for fossil fuels-based electricity producers, and lists energy efficiency as secondary objective, by modernising the polluting electricity production sector.

By the Commission Decision C (2012) 4564 final of 6 July 2012 and under Article 10c (5) of Directive 2003/87/EC of the European Parliament and of the Council on the application to grant transitional free allocation for the modernisation of electricity generation notified by Romania, the European Commission – DG Climate Action authorised the Romanian application for transitional free allocation of greenhouse gas emissions certificates to electricity generators in the period 2013-2020.

By the Commission Decision C (2012) 8776 final of 5 December 2012 on State aid SA.34753 (2012/N) – Romania, transitional free allocation of greenhouse gas certificates for electricity producers under Article 10c of the ETS Directive, the European Commission – DG Competition advised, as regards Romania's Application, that the state aid granted through the scheme on transitional free allocation greenhouse gas certificates is compatible with the internal market, and decided not to raise objections to the notified measure.

The EU-ETS Directive on the Emission Trading System allows, under Article 10c, for a transitional derogation for the period 2013-2020 for the polluting electricity generation sector in the eligible Member States which in 2006:

- produced more than 30 % of their electricity from fossil fuels; and
- had a GDP per capita below 50 % of the European Union average GDP per capita.

This derogation allows granting of a transitional free allocation for electricity production modernisation in that country for the period 2013-2020.

In this context, starting with December 2012, Romania has been benefiting of:

- a mechanism for transitional free allocation of greenhouse gas certificates for 39 polluting electricity producers for the period 2013-2020;
- ex-post grants for 29 investments authorised by the European Commission and implemented after 25

June 2009 in order to modernise electricity production in Romania - National Investment Plan (NIP).

The project runs until 2020 and investments continue to be monitored for 5 years after their respective commissioning date or the date of conclusion of the financing agreement. The National Investment Plan authorised by the European Commission features investments for energy sector modernisation, considering also the two aforementioned Commission Decisions. The investments were selected using an open, transparent and non-discriminatory procedure. Among them, there is also a number of new gas power plants and other investments aimed at modernising the coal and lignite based electricity production.

The project is particularly important for the polluting Romanian electricity producers so much the more that it needs to comply with the EU-ETS Directive post 2020, which will be effective until 2030 (establishment of a Modernisation Fund financed by the EIB for transition to the low-carbon economy).

Under the two Commission Decision and pursuant to Article 60(3) of Law No 226/2013 approving the Emergency Ordinance No 164/2008 amending and supplementing the Emergency Ordinance 195/2005 on environmental protection, Government Decision No 1096/2013 approving the scheme of transitional free allocation of greenhouse gas certificates for electricity producers for the period 2013-2020 was adopted, including the National Investment Plan.

The Government Emergency Ordinance No 30/2015 on certain measures implementing the transitional free allocation of greenhouse gas certificates scheme for electricity producers for the period 2013-2020, including the National Investment Plan ("GEO No 30/2015"), put in place the legal and institutional framework for monitoring and implementing the investments set out in the National Investment Plan.

Article 1 of GEO No 30/2015 reads that the ministry in charge manages the amount of the transitionally free allocated greenhouse gas certificates, deploys the NIP, and monitors and implements the NIP investments.

To date, two investments have been completed at:

- **RO-015**: Combined-Cycle Gas-Fired Turbine of Brazi, having OMV Petrom as beneficiary, which was commercially operational in August 2012, started to operate in 2017 and reported an electricity production of 3 925.431 MWh;
- **RO-025**: Rehabilitation and modernisation of the lignite-fired power unit no. 4 of 330 MW – Rovinari PP. After modernisation and retrofitting, the unit was put back into service in 2015, and became commercially operational in 2017. The electricity production reported amounted to 2 119.678 MWh.

The technical performance indicators reported for 2018 for the completed investments are shown in the table below:

Investment	Year	Specific emissions	Emission reduction	Production of electricity	Energy saving
		[t CO_2/MWh]	[t CO_2/year]	MWh	[toe/an]
RO-015 860 MW combined-cycle gas-fired turbine, Brazi		0.35568	1 430 114.0	3 925.431	345 788
RO-025 Rehabilitation and modernisation of the 330 MW lignite-fired power unit no. 4 – Rovinari PP	2018	0.853874 v 0.9342 before modernisation	170 265.5	2 119.678	17 150
Total					**362 938**

b) <u>Increasing network energy efficiency by:</u>

Reducing own technological consumption in the electricity and gas distribution networks

- **Reducing own technological consumption in the electrical distribution networks**

ANRE regulated the reduction targets for the share of own technological consumption in the electricity distribution network according to the data shown in the **following tables**. It is apparent from the review of the energy efficiency improvement programmes (EEIPs) reported by the electricity distribution companies for

2018 that the following types of measures which helped obtain an estimated energy saving of 4 940.654 toe were put in place, according to Table 6.

Table 6

Electricity distribution company		No. of measures	Energy saving [toe]	Amount of investment [RON]
1	Distribuție Energie Oltenia	22	713.044	80 822 180
2	SDEE Muntenia Nord	62	125.060	23 835 850
3	SDEE Transilvania Nord	44	763.000	107 274 000
4	SDEE Transilvania Sud	15	189.640	10 199 990
5	E-Distributie Banat	6	823.290	54 626 830
6	E-Distributie Dobrogea	5	805.940	81 065 980
7	E-Distributie Muntenia	5	1 102.680	69 076 800
8	Delgaz Grid	13	418.000	121 400 000
TOTAL		**172**	**4 940.654**	**548 301 630**

Source: ANRE

The main energy efficiency improvement measures adopted by distribution operators were:

- securing/replacing measurement groups;
- implementing smart metering systems;
- balancing network phase loading;
- reconfiguring/optimising the LV network;
- modernising connection by installing level electricity distribution and metering cabinets/measurement and protection blocks at property limit;
- modernising transformer substations and stations;
- modernising overhead and underground power lines;
- replacing transformer substations, low-voltage overhead lines and medium voltage underground power lines;
- switching power/voltage adjustment transformers;
- replacing MV/LV transformers with low-loss transformers;
- adjusting (MV/LV) transformer plots;
- improving voltage level by MV/LV injection and/or new outgoings.

Table 7 - Reduction targets for the share of own technological consumption in the electricity distribution network

Distribution System Operator	2018 own technical consumption [%]					
	IT		MT		LV	
	actual	target	actual	target	actual	target
E-Distributie Muntenia	0.59	0.59	3.09	3.40	14.43	15.34
E-Distributie Banat	0.79	0.63	3.16	3.54	13.51	14.14
E-Distributie Dobrogea	1.55	1.71	4.90	4.24	12.48	13.21
Distributie Energie Oltenia	1.22	1.14	3.97	3.97	15.14	17.00
Delgaz Grid	0.93	0.96	2.66	2.80	14.74	16.00
SDEE Muntenia Nord	1.23	0.95	5.54	5.25	13.95	13.60
SDEE Transilvania Nord	0.99	0.96	4.36	4.00	10.42	10.20
SDEE Transilvania Sud	1.12	0.98	3.68	3.90	15.14	14.80

Table 8

Distribution System Operator	NAME	TOTAL 2019			
		IT (MWh)	MT (MWh)	LV (MWh)	TOTAL (MWh)
E-Distributie Muntenia	Total own technological consumption	52 070	252 351	675 456	979 877
E-Distributie Banat	Total own technological consumption	41 892	149 929	357 169	548 990
E-Distributie Dobrogea	Total own technological consumption	87 640	147 474	259 376	494 490
Distribuție Energie Oltenia	Total own technological consumption	116 695	213 501	480 021	810 218
Delgaz Grid	Total own technological consumption	46 728	129 421	441 316	617 465
SDEE Muntenia Nord	Total own technological consumption	74 409	318 974	408 744	802 127
SDEE Transilvania Nord	Total own technological consumption	55 902	237 840	319 145	612 887
SDEE Transilvania Sud	Total own technological consumption	67 090	215 596	420 578	703 264

Source: ANRE

- **Reducing own technological consumption in the gas distribution networks**

Looking into the energy efficiency improvement programme (EEIP) reported by Delgaz Grid, it is apparent that the following types of measures which led to technological consumption reduction were implemented: network maintenance in accordance with the effective technical regulations; deployment of high-performance technologies and state-of-the-art equipment for both loss checking and network interventions, allowing that only part of sections or none are depressurised, and implicitly rendering unnecessary the flushing/filling the pipes and suspending gas supply to consumers.

For 2018, Delgaz Grid reports network investments of RON 148 000 000, and an estimated energy saving of 4 363 toe.

The main energy efficiency improvement measures adopted by gas distribution operators were:

- modernising/retrofitting gas mains, cathodic protection stations and their related equipment/installations;
- designing the distribution systems so as to operate under average pressure, and using high-density polyethylene;
- replacing the existing regulators with modern regulators;
- on-going detection of gas leakages along the entire distribution system;
- cleaning the gas filters installed on high flowrate meters;
- using shutters to prevent the gas being delivered into the air when new pipes are coupled in;
- removing condense bags from adjustment substations;
- putting in place an annual programme for additional street detection of leakages for steel networks older than 5 years;
- installing valves at network branches for the fastest possible fault detection.

For 2019, the electricity distribution companies reported an energy saving of 4 287 toe in their respective EEIPs, according to Table 9.

Table 9

Electricity distribution company		No. of measures	Energy saving [toe]	Amount of investment [RON]
1	Distribuție Energie Oltenia	15	696	Costs according to the revenue and expenditure budget (REB)
2	SDEE Muntenia Nord	48	980	53 535 000
3	SDEE Transilvania Nord	12	140	11 256 000
4	SDEE Transilvania Sud	5	364	67 500 000
5	E-Distributie Banat	6	486	55 622.7
6	E-Distributie Dobrogea	6	566	54 694.7
7	E-Distributie Muntenia	5	1 008	60 906 000
8	Delgaz Grid	10	47	10 981 000
TOTAL		**107**	**4 287**	**204 288 317**

Source: ANRE

The NEEAP envisages a saving of 13 000 toe for 2018, driven by the reduction of own technological consumption in the electricity and gas distribution networks, and the actual saving obtained under this programme amounts to 9 304 toe.

- **Reducing own technological consumption in the electricity transmission networks (ETNs)**

The energy efficiency improvement measures adopted are in line with the 2018-2027 ETN Development Plan which, in turn, is linked with the European ETN Development Plan (2018-2027 TYNDP).

Short-term measures

Self-financed investments objectives commissioned in 2018:
Retrofitting of the 400/220/110/20 kV station of Bradu;
Modernisation of the 110 kV and 20 kV station of Suceava;
Execution of the 400 kV overhead interconnection line Resita – Pancevo;
Modernisation of the 400/110/10 kV station of Cluj East;
Modernisation of the command, control and protection system for the 220/110/20 kV station of Sardanesti;
Modernisation (of part) of the 220/110 kV station of Dumbrava.

Investments financed from the connection tariff and commissioned in 2018:
Putting in place the conditions for simultaneous operation of the 220 (400) kV overhead power lines Iernut – Ungheni and Brașov – Tg. Mureș – Cluj-Napoca – Oradea motorway, lot 2;
Putting in place the conditions for simultaneous operation of the 400) kV overhead power lines Mintia – Sibiu and Lugoj – Deva motorway, lot 4;
Connection of the consumption site MDF Factory of village of Ceusesti, county of Arges;
Relocation of the 220 kV networks out of Sebes – Turda motorway's corridor.

Investment projects in progress:
400 kV single-circuit overhead power line Iron Gates – Anina – Resita;
Modernisation of the 220/110 kV station of Raureni;
Modernisation of the 220/110 kV station of Arefu;
Modernisation of the 220/110 kV station of Dumbrava (continued);
Modernisation of the 220/110 kV station of Ungheni;
Modernisation of the 220/110 kV station of Craiova North;
Modernisation of the 220/110 kV station of Hasdat;
Modernisation of the 220/110 kV station of Turnu Severin East;
Modernisation of the 220 kV station of Hunedoara Steel Mill; Connection of the 400 kV overhead power line Isaccea – Varna and the 400 kV overhead power line Isaccea – Dobrudja with the 400 kV station of Medgidia

South, stage 1;
Retrofitting of the 400/110/20 kV station of Domnesti;
Retrofitting of the 400/110/20 kV station of Smardan;
Modernisation of the (400) 220/110 kV station of Focsani West;
Replacement of EMS/SCADA system.

Medium-term measures

For the projects below, the investment kicking-off measures were commenced, but not also the actual works:
Retrofitting of the 220/110 kV station of Filesti;
Retrofitting of the 220/110 kV station of Baru Mare;
Connecting the 400 kV overhead power line Isaccea – Varna and the 400 kV overhead power line Isaccea – Dobrudja in the 400 kV station of Medgidia South, stage 1 – completion of works;
Upgrading the 220 kV overhead power line Brazi Vest – Teleajen – Stâlpu to 400 kV and extension works in the related 400 kV and 220 kV stations;
Increasing the transmission capacity of the 220 kV overhead power line Stejaru – Gheorgheni – Fântânele;
220 kV station of Ostrovu Mare;
220 kV double-circuit overhead power line Ostrovu Mare – ETN;
400 kV overhead power line Cernavodă – Stalpu;
400 kV double-circuit overhead power line Gutinas – Smardan;
400 kV overhead power line Gadalin – Suceava;
400 kV overhead power line Suceava – Balti;
400 kV overhead power line Constanta North – Medgidia South;
Banat Axis stage III – 400 kV overhead power line Resita – Timisoara – Sacalaz.

Long-term measures

In the next 10 years, the projects currently in progress are due to be completed, and new projects are envisaged to be commenced, according to the order of priorities determined by the technical conditions of the systems and the importance of the electrical stations.

It is apparent from the review of the energy efficiency improvement programme (EEIP) reported by CNTEE Transelectrica SA that measures which helped obtain an energy saving of 187.56 toe were put in place, corresponding to both the own technological consumption in the electricity distribution network, as well as to the internal services in stations.

Table 10 - Reduction target for the share of own technological consumption

CNTEE Transelectrica SA	**2018 own technical consumption (MWh)**		**2018 own technical consumption (%)**			
	actual		**actual**		**target**	
	Sem. I	Sem. II	Sem. I	Sem. II	Sem. I	Sem. II
	603 916	496 452	2.76	2.20	2.43	2.40

- **Reducing own technological consumption in the gas transmission networks**

It is apparent from analysis of the energy efficiency improvement programme (EEIP) reported by SNTGN Transgaz SA that measures were or are to be implemented in view of reducing technological consumption. Thus, the retrofitting of the gas compression station of Sinca has an annual saving potential in the range of 250 toe.

The measures put in place during 2018-2022 concern in particular:

- substantiating the development and modernisation programmes with energy audit;
- including the energy efficiency criteria in the technical data-sheets of the products acquired to streamline operation;
- producing electricity by recovering the gas expansion energy.

The NEEAP envisages a saving of 1 000 toe for 2018, driven by the reduction of own technological consumption in the electricity and gas transmission networks, and the actual saving obtained under this programme amounts to 438 toe.

c) <u>Promotion of high-efficiency cogeneration</u>

With a view to having the secondary legislation issued by ANRE updated, a number of specific regulations tackling specifically the high-efficiency cogeneration support scheme were issued as follows:

- Order No 182/2018 of the President of ANRE approving the reference price of the electricity produced from high-efficiency cogeneration applicable in 2019 to producers of electricity and heat from cogeneration, which are entitled to receive a bonus;
- Order No 183/2018 of the President of ANRE approving the reference bonus values for electricity produced from high efficiency cogeneration and of the reference prices of the heat produced from cogeneration, applicable in 2019;
- Order No 206/2018 of the President of ANRE amending the Order No 123/2017 of the President of the National Energy Regulatory Authority approving the high efficiency cogeneration contribution and certain provisions in connection with its billing;
- Order No 4/2019 of the President of ANRE concerning the 2018 implementation of the provisions of Article 18(1), Article 21(2) and Article 27 of R Regulation on the qualification of the electricity produced from high-efficiency cogeneration, and on the verification and monitoring of fuel consumption and useful electricity and heat production from high-efficiency cogeneration, as approved by the Order No 114/2013 of the President of the National Energy Regulatory Authority, and of the provisions of Articles 21-23 of Regulation laying down the method of collection of the high efficiency cogeneration contribution and of payment of the bonus for the electricity produced from high-efficiency cogeneration, as approved by the Order No 116/2013 of the President of the National Energy Regulatory Authority;
- Order No 9/2019 of the President of ANRE amending and supplementing the Methodology for determination and monitoring of the overcompensation of the production of electricity and heat from high-efficiency cogeneration which benefit of the bonus-type support scheme, approved by Order No 84/2013 of the President of the National Energy Regulatory Authority;
- Order No 12/2019 of the President of ANRE amending the Methodology for pricing and price adjustment of the electricity and heat produced and supplied from cogeneration plants benefiting of the support scheme, and of the high-efficiency cogeneration bonus, approved by the Order No 15/2015 of the President of the National Energy Regulatory Authority;
- Order No 13/2019 of the President of ANRE approving the regulated price of the electricity produced from high efficiency cogeneration benefiting of bonus, sold under regulated contracts by combined electricity and heat producers, applicable during the period 1 March - 30 June 2019;
- Order No 49/2019 of the President of ANRE amending and supplementing the Regulation for collection of the high efficiency cogeneration contribution and payment of the bonus for the electricity produced from high efficiency cogeneration, approved by Order No 116/2013 of the President of the National Energy Regulatory Authority;
- Order No 65/2019 of the President of ANRE amending and supplementing the Methodology for pricing and price adjustment of the electricity and heat produced and supplied from cogeneration plants benefiting of the support scheme, and of the high-efficiency cogeneration bonus, approved by the Order No 15/2015 of the President of the National Energy Regulatory Authority;
- Order No 68/2019 of the President of ANRE approving the regulated price of the electricity produced in high efficiency cogeneration benefiting of bonus, sold under regulated contracts by combined electricity and heat producers, and of the reference price of the electricity produced in high efficiency cogeneration which benefit of bonus;
- Order No 69/2019 of the President of ANRE amending and supplementing the Order No 183/2018 of the President of the National Energy Regulatory Authority approving the reference bonus values for electricity produced from high efficiency cogeneration and of the reference prices of the heat produced from cogeneration, applicable in 2019;
- Order No 155/2019 of the President of ANRE amending and supplementing the Methodology for

determination and monitoring of the overcompensation of the production of electricity and heat from high-efficiency cogeneration which benefit of the bonus-type support scheme, approved by Order No 84/2013 of the President of the National Energy Regulatory Authority;

- Order No 156/2019 of the President of ANRE amending the Order No 123/2017 of the President of the National Energy Regulatory Authority approving the high efficiency cogeneration contribution and certain provisions in connection with its billing;
- Order of the No 159/2019 ANRE President amending and supplementing the Regulation for qualification of production of electricity from high efficiency electricity cogeneration, and for verification and monitoring of fuel consumption and electricity and useful heat productions from high efficiency cogeneration, as approved by the Order No 114/2013 of the President of the National Energy Regulatory Authority;
- Order No 196/2019 of the President of ANRE approving the regulated price of the electricity produced from high efficiency cogeneration benefiting of bonus, sold under regulated contracts by combined electricity and heat producers, and of the reference price of the electricity produced from high efficiency cogeneration which benefit of bonus;
- Order No 197/2019 of the President of ANRE approving the reference bonus values for electricity produced from high efficiency cogeneration and of the reference prices of the heat produced from cogeneration, applicable in 2020;
- Order No 198/2019 of the President of ANRE amending the Order No 123/2017 of the President of the National Energy Regulatory Authority approving the high efficiency cogeneration contribution and certain provisions in connection with its billing;
- Order No 199/2019 of the President of ANRE approving the Order No 196/2019 of the President of the National Energy Regulatory Authority approving the regulated price of the electricity produced from high efficiency cogeneration benefiting of bonus, sold under regulated contracts by combined electricity and heat producers, and of the reference price of the electricity produced from high efficiency cogeneration which benefit of bonus;
- Order No 200/2019 of the President of ANRE extending the time limit set out under Article IV of the Order No 198/2019 of the President of the National Energy Regulatory Authority amending the Order No 123/2017 of the President of the National Energy Regulatory Authority approving the high efficiency cogeneration contribution and certain provisions in connection with its billing;
- Order No 210/2019 of the President of ANRE amending the Methodology for pricing and price adjustment of the electricity and heat produced and supplied from cogeneration plants benefiting of the support scheme, and of the high-efficiency cogeneration bonus, approved by the Order No 15/2015 of the President of the National Energy Regulatory Authority;
- Order No 211/2019 of the President of ANRE approving the reference bonus values for electricity produced from high efficiency cogeneration and of the reference prices of the heat produced from cogeneration, applicable in 2020;
- Order No 212/2019 of the President of ANRE amending the Order No 123/2017 of the President of the National Energy Regulatory Authority approving the high efficiency cogeneration contribution and certain provisions in connection with its billing;
- Order No 237/2019 of the President of ANRE concerning the 2019 implementation of the provisions of Article 21(2)(i), Article 27(l) and Table 7 of Annex 3 to Regulation for qualification of production of electricity from high efficiency electricity cogeneration, and for verification and monitoring of fuel consumption and electricity and useful heat productions from high efficiency cogeneration, as approved by the Order No 114/2019 of the President of the National Energy Regulatory Authority.

The values of the savings of primary energy obtained from high efficiency cogeneration versus separate production of electricity and heat, obtained in 2019 by the producers accessing the cogeneration support scheme are shown in the table below.

Table 11

M.U.	Q I		Q II		Q III		Q IV		2019 Total	2018 Total
	2019	2018	2019	2018	2019	2018	2019	2018	**2019**	**2018**
GWh	1 062	1 212	434	385	252	285	891	854	**2 639**	**2 736***
toe	91 332	104 232	37 324	33 110	21 672	24 510	76 626	73 444	**226 954**	**235 296***

Source: ANRE

*The regularised value after the annual qualification calculation is 2 438 GWh.

The support scheme for promotion of high efficiency cogeneration was instituted in Romania under the Government Decision No 219/2007 on the promotion of high efficiency cogeneration based on useful heat, as subsequently amended and supplemented (it transposes into national law Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market which, as of 5 June 2014, has been replaced by Directive 2012/27/EU) and implemented by Government Decision No 1215/2009 laying down the necessary criteria and conditions for implementation of the support scheme for the promotion of high-efficiency cogeneration based on a useful heat demand, as subsequently amended and supplemented.

The bonus-type scheme qualifies as State aid (N 437/2009 - Romania), and was authorised by the European Commission as compatible with the common market, pursuant to Article 87(3)(c) of the EC Treaty, under the Decision C(2009)7085, amended by Decision C(2016)7522 final. This authorisation was notified by publication in the Official Journal of the European Union C31/09.02.2010. The bonus-type support scheme became effective on 1 April 2011.

By Government Decision No 494/2014 amending Government Decision No 1215/2009, Government Decision No 925/2016 amending and supplementing Government Decision No 1215/2009, Government Decision No 129/2017 supplementing Article 8 of Government Decision No 1215/2009, and Government Decision No 846/2018 amending and supplementing Government Decision No 1215/2009, it was supplemented the legal framework for application and implementation of the support scheme for the promotion of high efficiency cogeneration based on a useful heat demand with a view to harmonising it with the specific Guidelines on environmental protection and energy State aid for the period 2014-2020 (GEEA) and Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union.

Government Decision No 494/2014 amending Government Decision No 1215/2009 laying down the necessary criteria and conditions for implementation of the support scheme for the promotion of high-efficiency cogeneration based on a useful heat demand provides for the exemption from payment of the high efficiency contribution, meaning of the unit tariff payable on a monthly basis and expressed in RON/kWh, of the suppliers which export electricity, however only for the amount of electricity they effectively export.

In accordance with Government Decision No 925/2016, the support scheme applies only to the producers of heat and electricity in cogeneration who apply with ANRE for this support for the electricity produced from high efficiency cogeneration, for the cogeneration facilities entered in the List mentioned in Article 9(4) until 31 December 2016, as well as for the new cogeneration facilities that replace, after 31 December 2016, the existing cogeneration facilities which used to benefit of the high efficiency electricity bonus, within the limit of the installed capacity written on 31 December 2016 in the List mentioned in Article 9(4), for each producer benefiting of the support scheme.

Government Decision No 846/2018 amending and supplementing Government Decision No 1215/2009 provides that the value adjustment for the bonuses and heat prices granted to producers of electricity from high efficiency cogeneration, as well as the pricing of the electricity produced from high efficiency cogeneration would be done on a half-yearly basis instead of an yearly basis, and the electricity prices and the bonuses determined for the next year would also apply in November and December of the current year.

Government Decision No 846/2018 provides also for the means of applying reduced bonuses in November and December of the current year, in accordance with the analysis of the costs and revenues estimated by each producer in Q4 of the previous year, as well as for the means of reducing the bonuses determined for the second half of the year, according to the results of the ante-overcompensation analysis conducted for that year.

Furthermore, Government Decision No 846/2018 provides that, in order to secure the funds required for

payment of the bonuses applicable in November-December, ANRE shall determine the high efficiency cogeneration contribution applicable in November-December of the current year considering the revenues needed to pay the bonuses during the same period.

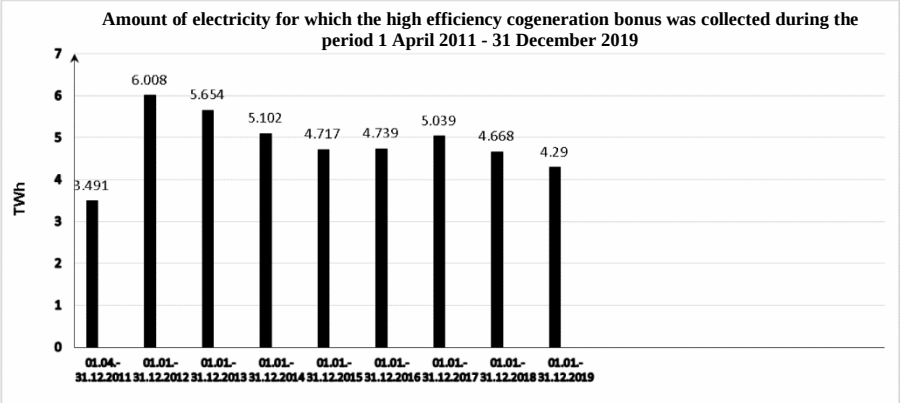
The main regulatory directions pursued to advance the electricity produced from high-efficiency cogeneration for 2019 were the following:

a) drawing up of regulations that would support application of the bonus-type scheme instituted under Government Decision No 219/2007 on the promotion of high efficiency cogeneration based on useful heat, as well as the transposition into the secondary legislation of the amendments operated on Government Decision No 1215/2009 laying down the necessary criteria and conditions for implementation of the support scheme for the promotion of cogeneration based on a useful heat demand, and following up on such implementation;
b) issuing of decisions to amend the List of heat and electricity cogeneration production facilities with final accreditation;
c) issuing of monthly/annual decisions to approve the amounts of electricity produced from high efficiency cogeneration benefiting of bonus;
d) issuing of decisions regarding the overcompensation the production of electricity and heat from high efficiency cogeneration for the evaluation period from 1 January 2018 to 31 December 2018 - ANRE reviewed the costs and revenues for the production of electricity from high-efficiency cogeneration and of cogeneration heat for the evaluation period from 1 January 2018 to 31 December 2018 for each producer who benefited of the support scheme during this period, and when any overcompensation was found, the producer concerned was issued a decision with the amount thereof. In accordance with the provisions of Article 24(3) of Government Decision No 1215/2009, the ANRE decisions concerning the overcompensation amount are enforced for recovery purposes by the scheme manager (CN Transelectrica SA) issuing a decision in line with the State aid legislation;
e) performance of the ante-overcompensation review for the evaluation period from 1 January 2020 to 31 December 2020 - ANRE reviews the costs and revenues for the production of electricity from high-efficiency cogeneration and of cogeneration heat cogeneration, as these were estimated for the following year for each producer who benefit of the support scheme and, relying on the results of this review, bonuses are approved for each producer for the following year;
f) issuing of decisions to approve the bonus for electricity and the regulated prices of the electricity and heat produced from high efficiency cogeneration (periods 1 January 2019 - 30 June 2019, 1 July 2019 - 28 November 2019, and 29 November 2019 - 31 December 2019, and the entire 2020);
g) issuing of the necessary clearances for approval of the heat prices based on the determination/adjustment formulas applied to the price for of heat produced and supplied from cogeneration plants, where the operators and local public administration have opted to establish the heating pricing on the basis of formulas, and issuing of the clearances for approval of the cogeneration heat regulated prices, determined on the basis of these formulas;
h) issuing of the necessary clearances for final accreditation of new or retrofitted cogeneration plants;
i) performance of analyses in order to have the contribution for the second half of 2019, months of November and December 2019, adjusted, and to determine the amount of the cogeneration contribution as of 1 January 2020.

For the 36 producers concerned who collected the bonus in months January - December 2018, the total amount of electricity produced from high efficiency cogeneration was 4 536 TWh before the regularisation of March 2019, and 4 668 TWh after the regularisation of March 2019, with an approx. 7.36 % decrease compared to same value of 2017.

For the 35 producers concerned who collected the bonus in months January - December 2019, the total amount of electricity produced from high efficiency cogeneration was 4 218 TWh before the regularisation of March 2020, and 4 290 TWh after the regularisation of March 2020, with an approx. 8.1 % decrease compared to same value of 2018.

Figure 2



Source: ANRE

The 2011-2019 monitoring data for the cogeneration support scheme is shown in **Table 12**.

Table 12

Indicator	M.U.	2011	2012	2013	2014	2015	2016	2017	2018	2019[1)]
Total value of the contribution charged to consumers and exporting suppliers 1)	thousand RON	690 931	928 877	1 072 840	770 626	757 447	708 194	624 519	519 931	649 543
Amount of electricity billed to end consumers (including the one used by suppliers and self-supply/self-consumption producers) the cogeneration contribution was applied to	GWh	32 639	46 450	44 930	45 457	46 476	47 103	48 669	50 145	49 489
Amount of exported electricity the cogeneration contribution was applied to	GWh	1 465	1 108	1 959	3 310 [2)]	0 [2)]	0 [2)]	0 [2)]	0 [2)]	0 [2)]
Amount of electricity produced through high efficiency cogeneration bonus which benefited for the support scheme	GWh	3 491	6 008	5 654	5 102	4 717	4 739	5 039	4 668	4 218
Total amount of the bonuses due to cogeneration producers eligible for the bonus-type scheme	thousand RON	594 473	978 098	1 098 112	927 234	896 796	887 761	842 872	611 658	721 689
Total amount of electricity imported under guarantees of origin for the electricity production from high efficiency cogeneration subject to contribution refund claims	GWh	0	0	0	0	0	0	0	0	0
Fuel savings made in bonus-eligible high efficiency cogeneration processes, in accordance with the Qualification Regulation	GWh	2 131	3 498	3 430	3 016	2 623	2 751	2 864	2 702	2 639

Source: ANRE

[1] according to quarterly reports.

[2] Pursuant to Government Decision No 494/2014 amending Government Decision No 1215/2009 laying down the necessary criteria and conditions for implementation of the support scheme for the promotion of cogeneration based on a useful heat demand provides for the exemption from payment of the high efficiency contribution, meaning of the unit tariff payable on a monthly basis and expressed in RON/kWh, of the suppliers which export electricity.

Table 13 - National production of electricity and heat from cogeneration

Year	Total electricity produced in cogeneration units	Electricity produced from cogeneration (Annex II to Directive 2004/8/EC replaced by Annex I to Directive 2012/27/EU)		Electricity produced from cogeneration of the total national production	Useful heat produced in cogeneration units (Annex II to Directive 2004/8/EC replaced by Annex I to Directive 2012/27/EU)	
		Total	of which autoproducers		Total	of which autoproducers
	TWh	**TWh**	**%**	**%**	**Legal entities**	**%**
2007	14.23	6.62	14.65	10.7	73.2	15.85
2008	14.06	6.21	15.62	9.6	71.5	18.04
2009	12.33	6.26	13.74	10.8	66.3	17.50
2010	11.93	6.54	17.74	10.8	69.0	22.46
2011	13.47	7.28	17.45	11.9	71.9	23.50
2012	12.54	6.72	16.07	11.4	66.1	22.37
2013	11.1	6.6	18.78	11.3	57.9	21.99
2014	10.7	6.1	19.38	9.4	55.4	21.86
2015	9.2	5.6	16.07	8.5	51.0	18.43
2016	8.90	5.29	10.78	8.2	45.9	13.07
2017	8.94	5.81	13.25	9.1	48.3	13.66
2018	8.46			13	51.45	

Source: ANRE

The NEEAP envisages a consumption reduction target of 242 400 toe for 2018, and the value obtained under this programme amounts to 232 372 toe.

d) <u>2006-2020 District Heating Programme</u>

"2006-2020 District Heating, Heat and Comfort" Programme was approved by Government Decision No 462/2006, republished in the Official Gazette of Romania No 556 of 23 July 2008, and subsequently amended and supplemented by Government Decision No 692/2012, Government Decision No 315/2013, and Government Decision No 602/2015. In years 2008-2012, the programme was implemented in the Ministry of Internal Affairs, but it was later transferred to the Ministry of Regional Development and Public Administration which proposed its extension by 2020.

The funding provided to this programme's projects in 2018 helped execute specific energy efficiency works in 11 administrative and territorial units, for 15 investment projects, as follows:

- modernising heat production units - 3 projects;
- rehabilitating transmission and distribution networks - 8 projects;
- rehabilitating heating substations and installing heating stations or modules - 2 projects;
- heating substation monitoring, automation and dispatch control - 2 projects.

The works executed helped increase energy efficiency (by rendering more efficient the centralized heat production, transmission and distribution systems), and enhance the quality of the heat supply public service.

For the projects implemented in 2018, according to the reporting of the Ministry of Regional Development and Public Administration, the planned energy efficiency is 277.19 toe/year, while the actual value is to be measured and calculated after a certain period of operation.

The NEEAP envisages a consumption reduction target of 31 000 toe for 2018, and the value obtained under this programme amounts to 30 710 toe.

B. <u>Final energy customer. (Article 7 of Energy Efficiency Directive 2012/27/EU)</u>

a) <u>Smart metering</u>

Smart electricity measurement systems were put in place and rolled out in observance of the provisions of Article 66 of the Electricity and Gas Law No 123/2012 implementing the similar provisions of the Annex concerning the consumer protection measures to Directive 72/2012 on the internal electricity market, and require that the smart electricity measurement systems are checked for reliable deployment, and are approved a deployment calendar by 2020, and for 80 % of customers, when the assessment returns a positive result for the cost-benefit analysis. Then, this article was amended to the effect that the deadline was extended and the deployment conditions were changed.

Furthermore, Articles 10, 11 and 15 of Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, provide that, in so far as it is technically possible, financially reasonable and capable of energy savings, smart metering systems should be deployed under the conditions laid down by Law No 123/2012 so that, provided that an adequate regulatory framework is put in place and dynamic network and supply tariffs are available, energy efficiency is obtained by reducing consumption, meeting the demand, distributed production, and energy storage.

In 2017 and 2018, the additional investments in SMS were capped at 10 % of the annual investment programme's amount, subject to the efficiency requirements set out under the investment regulatory framework.

The Order No 177/2018 of the President of ANRE approving the Framework Conditions for fulfilment of the Calendar for national deployment of the smart electricity measurement systems was issued in 2018, and laid the foundation for kicking off the national SMS deployment under a 10-year deployment programme (2019-2028). These Framework Conditions lay down the principles the electricity distribution system operators which make proposals of SMS deployment plans for years 2019-2028 should guide themselves by, and the basic requirements any piece of equipment and subsystem due to be installed into SMS should meet.

In 2019, ANRE issued Decision No 778/2019 approving the 2019-2028 Calendar for national deployment of the smart electricity measurement systems.

Status of SMS deployment

According to Order No 177/2018, every year ANRE reviews that status of the SMS deployment plans approved under Decision No 778/2019 relying on the reports it receives from electricity distribution system operators.

Table 14 - Breakdown on types of consumers and total number of consumers integrated into SMS in years 2015-2019

Distribution System Operator	Total number of users integrated into SMS in the end of the year, of which:	Number of end household consumers integrated into SMS	Number of end non-household consumers integrated into SMS	Number of prosumers integrated into SMS	Number of producers integrated into SMS
eDistributie Muntenia	333.634	314.224	19.395	11	4
eDistributie Banat	201.629	185.267	16.345	16	1
eDistributie Dobrogea	175.761	162.130	13.627	4	0
Distribuție Energie Oltenia	33.815	31.528	2.283	4	0
Delgaz Grid	321.155	306.180	14.955	15	5
SDEE Muntenia Nord	13.091	12.422	669	0	0
SDEE Transilvania Nord *					
SDEE Transilvania Sud*	26.211	24.505	2.762	0	0
Total	**1 105 296**	**1 036 256**	**70.036**	**50**	**10**

Note: * Data still pending clarification. Clarifications were requested from the Distribution System Operator

Table 15 - Degree of implementation further to the installations performed under the pilot project programmes during 2015 and 2016 and the investment programmes developed during 2017-2019 in each concession area and at country level

Distribution System Operator	Degree of implementation on 31 December 2018	Degree of implementation for 2019	Total degree of implementation for 2019	Total degree of implementation reported on 31

		according to the Deployment Calendar approved by Decision No 778/2019	according to the Calendar approved by Decision No 778/2019	December 2019
eDistributie Muntenia	17.7 %	6.0 %	23.7 %	24.95 %
eDistributie Banat	15.4 %	5.0 %	20.4 %	21.96 %
eDistributie Dobrogea	20.6 %	6.0 %	26.6 %	26.73 %
Distribuție Energie Oltenia	2.4 %	1.0 %	3.4 %	2.31 %
Delgaz Grid	21.3 %	1.0 %	22.3 %	21.46 %
SDEE Muntenia Nord	0.7 %	1.0 %	1.7 %	1.00 %
SDEE Transilvania Nord*	1.9 %	1.0 %	2.9 %	0.00 %
SDEE Transilvania Sud*	2.3 %	0.2 %	2.5 %	2.25 %
Country total	**9.6 %**	**3.0 %**	**12.6 %**	**11.49 %**

Note: Data still pending clarification. Clarifications were requested from the Distribution System Operator.

Table 16 - Savings made through reduction of the own technological consumption in areas where the consumption sites were integrated into SMS

Distribution System Operator	Own technological consumption reduction achieved in 2019 v 2018 [MWh]	Own technological consumption reduction achieved in 2019 v 2018 [%]
eDistributie Muntenia	-13.232	-6.58 %
eDistributie Banat	7.140	9.02 %
eDistributie Dobrogea	-779	-0.98 %
Distribuție Energie Oltenia	N/A	N/A
Delgaz Grid	-5.601	-6.44 %
SDEE Muntenia Nord	-14,545	-1.89 %
SDEE Transilvania Nord*	N/A	N/A
SDEE Transilvania Sud*	19	16.09 %
Total	**-12.467**	**-2.79 %**

The NEEAP envisages a consumption reduction target of 4 000 toe for 2018, and the value obtained under this programme amounts to 609 toe.

b) Energy efficiency in industrial sector

Energy efficiency in the industry receiving a State aid under Government Decision No 495/2014, as subsequently amended and supplemented, instituting a State aid scheme related to exclusion of certain categories of end consumers from application of Law No 220/2008 establishing the system for the promotion of energy production from renewable energy sources, as subsequently amended and supplemented:

The purpose of this decision is to institute a State aid scheme with the aim of excluding from application of Article 8(2) of Law No 220/2008 establishing the system for the promotion of energy production from renewable energy sources, republished, as subsequently amended and supplemented, a share of the electricity amount supplied to electro-intensive industrial consumers, in observance of the applicable relevant European regulations, meaning the "2014-2020 Environmental and Energy Aid Guidelines" devised by the European Commission.

The provisions of Government Decision No 495/2014 apply to undertakings operating in sectors exposed to the risk of becoming less competitive due to financing the support provided to energy from renewable sources, which risk is generated by the beneficiary's electro-intensity and exposure to international trade.

The aid is only granted if the undertaking is listed among the sectors of Annex 1 to the Guidelines, and conditional upon the beneficiaries paying for at least 15 % of the number of green certificates falling within

the mandatory quota, leaving out the reduction granted under the exempted scheme.

Depending on the electro-intensity of undertakings, beneficiaries are required to pay for the following shares of the number of green certificates falling within the mandatory quota:

a) 15 % for electro-intensity in excess of 20 %;
b) 40 % for electro-intensity between 10 % and 20 %;
c) 60 % for electro-intensity between 5 % and 10 %.

For electro-intensive undertakings set up for less than a year and listed among the sectors in Annex 1 to the Guidelines, the data estimated for the first year of operation is used. After the first year of operation, the former Ministry of the Economy checked whether the undertaking met the eligibility criteria set under the support scheme and then regularise the financial support granted, as applicable. For the second year of operation, the data for the first year of operation was used. For the third year operation, the arithmetic mean of the data for the first 2 years of operation was applied. Starting with the fourth year of operation, the arithmetic mean of the 3 previous years is used.

The validity period of the State aid scheme is 10 years.

Further to the implementation of this State aid scheme during 2015-2018, the application by beneficiaries of the energy efficiency measures gave rise to the following savings:

- ✓ 2015 - 56 130.6 toe
- ✓ 2016 - 104 745 toe
- ✓ 2017 - 26 962.6 toe

The ministry in charge reviews every year whether the conditions laid down in the effective Community and national regulations have been met, and monitors the State aid scheme in order to ensure that the exemptions granted fall within the percentages set out in Government Decision No 495/2014, as subsequently amended and supplemented and that the beneficiary of the State aid still meets the eligibility criteria laid down under the scheme, relying on the documentation submitted by the beneficiary before the 31st of May of each year.

The NEEAP envisages a consumption reduction target of 66 200 toe for 2018, and the value obtained under this programme amounts to 187 838 toe.

c) Energy auditing and management

Energy auditing

In 2018, the EED of ANRE received and centralised the activity reports of energy auditors as legal persons (including authorised natural persons - PFA). The reports of the 47 energy auditors pointed out that energy audits were undertaken at 330 economic operators, and concluded with approximately 1 500 energy efficiency improvement measures recommended, the implementation of which would lead to envisaged energy savings of 332 070 toe/year, with an investment of approximately RON 12 661 108 thousand.

Compared to 2018, the number of economic operators which undertook energy audits dropped in 2019, and the number of legal entities authorised to conduct energy audits reduced to 50.

According to the estimates produced by energy auditors, implementation of the energy efficiency measures recommended in the comprehensive energy audits could give rise to aggregate energy savings in excess of 100 000 toe.

The energy savings expected to be obtained should the energy efficiency measures recommended in the comprehensive audit reports be implemented are notably higher than what it could be achieved further to performance of measures recommended in heat audits or electricity audits. While the number of heat audits performed is considerably lower than the number of electricity audits, the energy efficiency measures recommended and embodied in the audit reports show that the potential to save energy is higher in the heat plants.

The industries in respect of which energy efficiency measures able to support substantial energy savings in excess of 70 000 toe were identified are energy industry and cement industry. It should be noted that these are estimates produced in the energy audits undertaken at 304 economic operators.

In 2019, four energy audits were undertaken in the public sector. Further to implementation of the energy efficiency measures proposed for this sector, the energy auditors expect savings of more than 1 000 toe, which would require investments of approximately RON 155 340 000.

Table 17 - Status of energy audits elaboration for the period 2010-2019

Year	Energy auditors as legal persons	Economic operators	Estimated energy savings (toe)	Estimated costs (thousand RON)
2010	14	72	176 200	1 628 212
2011	6	41	112 171	128 813
2012	23	198	406 652	1 791 466
2013	33	226	196 705	663 684
2014	37	349	26 790	1 160 678
2015	73	431	247 611	750 761
2016	70	330	144 818	2 185 336
2017	72	232	145 086	1 139 723
2018	60	330	332 070	12 661 108
2019	50	304	202 561	4 340 970

Energy management, applied in an economic operator, is primarily aimed at ensuring a reasonable and efficient use of energy for profit maximization purposes, by cutting down the costs of energy to a minimum and thus rendering the company more competitive on the market.

The energy management services are highly important for a company in monitoring the energy consumptions and cutting down the costs thereof by putting in place an energy efficiency improvement plan. This lists energy efficiency measures which, if implemented, lead to measurable energy savings and have visible effects in cutting down the energy costs.

This is possible either by employing a certified energy manager, or by entering into an energy management contract with a certified authorised natural person (PFA) or a company providing energy services that has at least one employed energy manager.

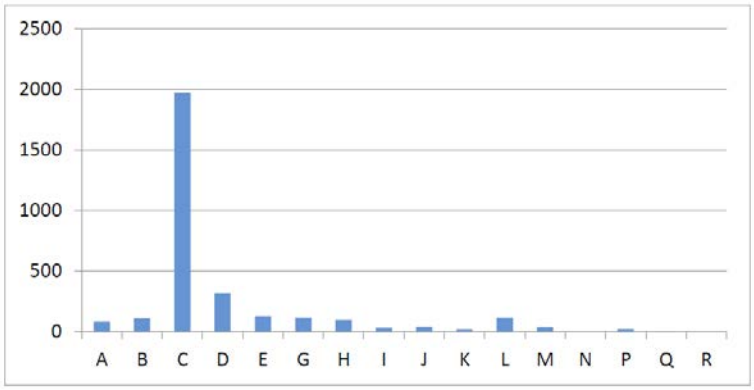
The review of the 2018 energy efficiency improvement programmes points to a 84 325 toe energy saving.

Table 18 - Energy efficiency improvement programmes implemented further to energy audits

CAEN index	Classification according to CAEN code	Number of measures	Energy saving [toe]
A	Agriculture, forestry and fishing	85	3 540
B	Mining and quarrying	113	12 160
C	Processing industry	1 972	87 714
D	Electricity, heat, gas, steam and air conditioning supply	318	50 099
E	Water supply, sewerage, waste management and decontamination activities	129	2 798
G	Wholesale and retail trade, repair of motor vehicles and motorcycles	115	3 639
H	Truck transport	100	3 300
I	Hotels and restaurants	34	388
J	Information and communications	43	2 361
K	Financial intermediation and insurance activities	21	332
L	Real estate transactions	114	557
M	Professional, scientific and technical activities	42	589
N	Administrative and support service activities	4	13
P	Education	23	210
Q	Human health and social work activities	4	61
R	Arts, entertainment and recreation	5	138.11
	TOTAL	**3 122**	**167 899**

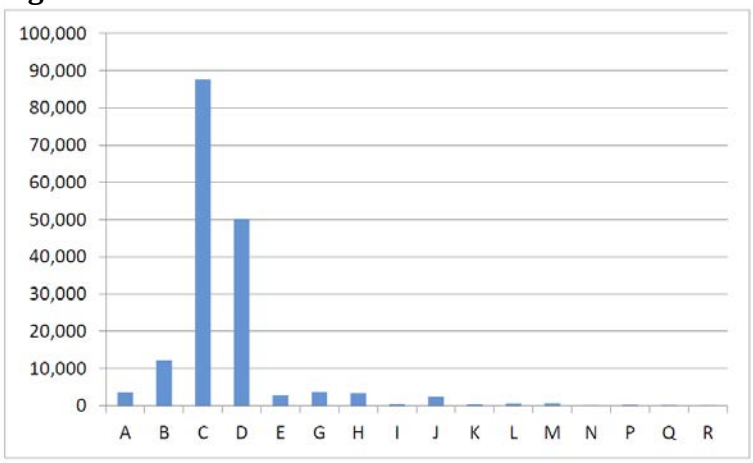
For the "Processing industry", as many as 1 972 energy efficiency measures were reported, accounting for 63 % of the total measures, according to the chart below.

Figure 3



Implementation of these measures leads to the energy savings shown in the chart below.

Figure 4



At the end of 2019, the certificates/authorisations issued in the field of energy efficiency were as follows:

- 380 energy manager certificates;
- 175 permits issued to energy auditors as natural persons;
- 50 permits issued to energy auditors as legal persons, of which 7 energy auditors as authorised natural persons (PFA);
- 75 companies providing accredited energy services, of which 16 on a self-employed basis (PFA).

2018

According to the reports on energy management contracts submitted by the approved/authorised energy service companies and by the self-employed (PFA) energy managers, energy savings of 76 376.41 toe/year would be achieved should the energy efficiency measures they proposed be put in place. When this value is compared with the annual energy consumption of the 313 economic operators (2 175 979.62 toe), it follows an estimated 3.5 % energy saving potential for the economic operators which outsourced the energy management service.

The companies and self-employed (PFA) providing energy services also reported that implementation of the energy efficiency measures featured in the energy efficiency improvement programmes could provide energy savings of 48 126.80 toe**.** We point out that these energy savings are reported for the 313 economic operators which outsourced the energy management service and relate to the energy efficiency measures embodied in the reports received from the companies providing energy services.

Table 19

Provider of energy services	Number of energy management contracts	Total annual energy consumption subject to energy reviews	Estimated energy savings (toe/year)	Estimated energy saving potential (%)
Authorised natural person (PFA)	84	277 149.64	16 600.74	5.98 %
Companies providing energy services	229	1 898 829.98	59 775.4	3.14 %
Authorised natural persons (PFA) + Companies providing energy services	313	2 175 979.62	76 376.14	3.5 %

Source ANRE

The NEEAP envisages a consumption reduction target of 229 800 toe for 2018, and the value obtained under this programme amounts to 332 070 toe energy savings expected to be obtained should the energy efficiency measures recommended in the energy audits be implemented; the 2018 energy efficiency programmes submitted add additional energy savings of 84 325 toe.

d) Energy efficiency in construction sector

- **Acquisition of high performance equipment**

It is apparent from the analysis of the 2018 energy efficiency improvement programmes that the following types of measures were put in place:

- introducing variable speed drives for electric engines (using frequency converters);
- rehabilitating the indoor and outdoor lighting systems using LED technology;
- modernising the fleet of construction vehicles and machineries;
- installing condensers for reactive power compensation;
- modernising the concrete and asphalt stations;
- replacing the air conditioning systems in halls with new energy-efficient ones;
- replacing the (oversized) transformers according to the powers demanded by consumers in business units;
- thermal rehabilitation of halls and office buildings.

The NEEAP envisages a consumption reduction target of 2 000 toe for 2018, and the value obtained under this programme by the economic operators which submitted information under the energy efficiency improvement programmes showed a saving of 1 175 toe; this is new measure under the NEEAP IV approved under Government Decision No 203/2019.

- **Energy auditing and management in construction**

The monitored economic operators falling into **CAEN code: "F - Construction**. **Real estate development"** performed energy audits according to the effective legislation (every 4 years) concluded with proposals of energy efficiency measures which were then taken over in the energy efficiency improvement programmes.

It is apparent from the analysis of the 2018 energy efficiency improvement programmes that the following types of measures were put in place:

- route optimisation for the operated means of transport;
- organisational measures concerning the operators' business (improving the employees' energy conduct, monitoring energy consumptions, adjusting the heat carrier temperature down to the required minimum, following up the use of lighting, air conditioning and ventilation systems);

- matching the heating hours of the work spaces within companies' premises with the working hours;
- improving the quality of the fuel burning processes through preventive maintenance measures;
- operating centralised and automated heating control systems;
- restoring the optimal operation parameters of the production hall air conditioning equipment;
- installing GPS systems on board of transport vehicles.

Implementation of these general types of measures helped the economic operators which submitted information under the energy efficiency improvement programmes make savings of 587 toe.

Similarly, 8 energy audits were undertaken also in the Construction sectors which estimated a total energy saving of 366.06 toe in 2018, corresponding to an investment of RON 1 694 090.

e) Energy efficiency in residential sector

➢ **Implementation of the National Programme for Energy Performance Improvement in Residential Blocks**

The purpose of the National Programme for Energy Performance Improvement in Residential Blocks, in accordance with the provisions of the Government Emergency Ordinance No 18/2009, as subsequently amended and supplemented, and those of the joint order No 163/2009 of the Minister of Regional Development and Housing, Minister of Public Finance No 540/2009, and Minister of Internal Affairs No 23/2009 approving the Implementing Methodological Rules for Government Emergency Ordinance No 18/2009, as subsequently amended and supplemented, is:

- to increase energy performance in the residential blocks built according to designs drafted before December 2005 by reducing the amount of energy used for heating purposes so that the annual specific energy consumption determined for heating the housing units stays below 100 kWh/sqm of useful area;
- to ensure and maintain the interior thermal climate;
- to reduce greenhouse gas emissions and to introduce alternative energy production sources, as applicable;
- to improve the urban appearance of localities.

To fulfil the Programme's purposes, the following are eligible for financing:

a) thermal rehabilitation works to the envelope: thermal insulation of outer walls of the building; replacement of the existing outer frames and glass panes, including the entry door; thermal insulation of the terrace; thermal insulation of the flooring above the last level, where roof framing is provided; enclosure of balconies and/or loggias with thermally insulating frame and glass panes, including thermal insulation of bulwarks, the thermal insulation of the floor over the basement;
b) thermal rehabilitation works to the heating system: repairing/recovery of the distribution installation between the connection point and the floor over the basement/heat duct, including its thermal insulation; mounting of thermostatic valves to radiators; repairing/replacement of the boiler and/or burner in the central heating plant serving the building (or a section thereof);
c) rehabilitation and upgrading of the heat carrier distribution plant - heating and hot water, which serves the entire multi-apartment building, including mounting of thermostatic valves to radiators and insulation of underground pipes/heat duct in order to reduce heat and mass losses and increase energy efficiency;
d) thermal rehabilitation works to the system supplying hot water;
e) installation of alternative systems for production of energy from renewable sources - solar panels for heat production, solar panels for electricity production, heat pumps and/or biomass-fired heating plants, including acquisition thereof.

Depending on the results of the technical expert assessment and the energy audit of the building, these works may be supplemented with: repairing of the facade construction elements where there is the danger of falling off and/or they affect the functionality of the residential block; repairing of the terrace/roof framing, including the rainwater collection system on the terrace/roof framing envelope; removal of installations and equipment mounted visibly on the facades/terrace of the residential block and putting these back in place after

completion of the intervention works; reworking of the indoor finishes in the areas of intervention; repairing/reworking the ventilation channels in apartments in order to maintain/achieve natural ventilation for the occupied spaces; works to disconnect the residential block from the centralised heat production and supply system; installation of individual energy heat and hot water consumption measurement equipment; repairing of the protection sidewalks in order to remove infiltrations into the multi-apartment building's infrastructure; repairing/replacement of the cold water distribution installation and/or of sewage and/or rainwater mains in the basement of the multi-apartment building up to the connecting manhole; and replacement of the fluorescent and incandescent lighting fixtures in common areas with highly energy efficient and longer lifetime lighting fixtures.

Compared to the energy saving figure of 572 859 MWh (49 266 toe) obtained from implementation of the energy efficiency measures in years 2011-2017 in the residential blocks covered by the National Programme, in 2018 the savings made under the same programme were of 4 366 243.10 kwh (375 toe).

- **Implementation of the Programme for thermal rehabilitation of residential blocks funded from the European Union's Structural and Cohesion Funds - 2014-2020 Regional Operational Programme (ROP)**

The 2014-2020 Regional Operational Programme (ROP) finances investments intended to increase the energy efficiency under its Priority Axis 3: Supporting the shift to a low-carbon economy, Investment Priority 3.1. – energy efficiency in public buildings, residential buildings and public lighting in the following areas: residential buildings, public buildings and public lighting.

For Operation A – Residential buildings, the completed projects had the following results:
- 279 residential blocks (19 596 apartments) were thermally rehabilitated,
- the amount of specific annual energy used for heating purposes was reduced by 21 691 kWh/sqm per year,
- the specific annual energy consumption was reduced by 35 389 kWh/sqm per year.

Primary energy savings of 149 012 596 kWh/year (12 815 toe/year) were made

No data is available to be reported in connection with the energy savings made for Operation B – Public buildings and Operation C – Public lighting because no projects were completed by the end of 2018.

The NEEAP envisages a consumption reduction target of 90 000 toe for 2018, and the value obtained under this programme amounts to 62 455 toe.

- **Acquisition of high-performance electrical equipment**

Assessment of NEEAP's impact uses data from the report produced by GfK TEMAX® Romania which shows that the Romanian household appliance market grew by 14 % in Q3 2018 v the same period of 2017, up to EUR 814 million. The growth drivers were the telecommunication sector, which took off by 19 %, and the office equipment sector which observed a 17 % increase.

- **Large household appliances**

Value wise, large household appliances are the second largest sector on the market in durable goods. While the growth pace slowed down compared to 2017, this sector still grew by close to 12 % driven by the positive developments seen in products such as:
- tumble driers, +45 %
- dishwashers, +13 %
- freezers went up by 18 % in Q4 v Q4 2017
- suction hoods and microwave ovens stayed relatively flat with -0.4 % and -1 %.

- **Market in electronics**

The market in electronics was valued at EUR 539 million in 2018, and accounted for the third largest sector of the entire electronic-IT market, with an increase of close to 12 % compared to 2017. 85 % of all

sector's sales (EUR 458 million) were sales of TV sets, a category of goods that gives the sector's growth trend, with a flat increase of almost 7 % compared to 2017.

There were also categories that were decreasing, such as portable media players (-26 % v 2017) or video players that lost 21 %.

For TV sets, the last three months of 2018 saw increases of 40 % in sales, with virtually no growth compared to the Q4 2017 (only 0.2 %).

All other categories were marked by decreases in Q4 2018, the poorest performer being video players (-36 %).

Audio systems observed a strong growth. The Audio Home Systems and Docking/Mini Speakers categories went up by 15 % and respectively 18 % compared to 2017.

Home cinema systems had a good performance, going up by + 2 % compared to Q4 2017, and, added to audio systems, their overall increase was of more than 12 %.

Goods on a negative trend:

- portable media players and car navigation systems saw the sharpest decreases of -28 % and -23 %;
- video players/recorders, -16 %;
- headphones, -17 %;
- video/sport cameras, -10.5 %;
- Digital photo cameras went down by -10 %.

- **Small household appliances**

With sales of EUR 245 million in 2018, the small household appliances account for just slightly over 7 % of the total electronic-IT market, with an increase of 7 % v 2017. Value wise, the small household appliances market shrank by 8 % in 2018.

Vacuum cleaners are a category of goods where new product launches and innovations boosted sales by more than 12 %, up to EUR 61 million, with a market share of 25 % of the total category.

Other goods observed with high growth rates were razors (+ 14 %, up to EUR 26 million), hot beverage makers (+26 %, up to EUR 39 million), or fryers (+41 %, but starting from a low base only EUR 2 million in 2018). The fryer category remains, however, the main growth driver for the sector.

Multi-cookers account for over 45 %, and ironing stations for close to 35 %. The categories that lose value are juicers and meat grinders: -17 % and -9 %.

- **Office equipment and consumables**

The segment of office equipment and consumables, which covers for all types of multipurpose and printing devices, grew by 15 % in 2018, up to EUR 37 million. With sales of EUR 13 million, Q4 accounts for 34 % of the annual sales in terms of value, and is 13 % above the figure of the same quarter of 2017.

- **IT**

The IT market grew by close 8 %, up to EUR 485 million. In this market segment, the star category is that of Mobile Computing (notebooks) as it accounts for 55 % of the entire sector value-wise, going up by 7.5 % v 2017. However, computers and accessories continue to grow strong by 14 % increase, as do monitors, with a 16 % increase v 2017.

Tablets is the category of goods that was hit the strongest by the growth in phablets. Their sales reached EUR 50 million in 2018, however this is 7.5 % below the figure reported for the previous year. For the IT sector too, the last quarter proves to be the best performing time of the year, with 34 % of the total annual sales. Compared to Q4 2017, the increase was of only 1 %.

Mobile Computing accounts for 55 % of the sector's quarterly sale, and went up by close to 5 % v Q4 2017. Still, video cameras (9.5 %) was the category reported with the strongest increase, up to EUR 3 million.

Computers accounted for close to 18 % of the quarterly sales, but went down by more than 8 % compared to the same period of 2017, to EUR 30 million.

- **Telecommunications**

The telecommunication market covers smartphones and mobile phones, phablets (smartphones with a display size > 5.4 inches), headphones and wearables. While the sales of mobile phones rapidly lose market share, smartphones and phablets are observing growth rates of over 300 %. Wearables are also booming (+ 45 % v Q4 2017), driven by the new gadgets launched at a fast pace.

Compared to 2017, the entire sector went up by 35 %. When quarterly performances are compared, it is seen that Q4 2018 saw an increase of 10 % compared to the same period of 2017, while, within the sector, phablets grew by 287 %.

- **Photo**

The photo sector continues on an already established downward trend. The sector covers digital cameras, with EUR 23 million in 2018 and 10 % below 2017. As for tablets, the boost of the phablet category was, to a certain extent, also at the expense of cameras. Looking into the quarterly figures, the sector reached EUR 7 million in Q4 2018, which is more than 10 % less compared to the fourth quarter of 2017.

- **"Household Appliance Scrapping" (Rabla) Programme**

The household sector is the second largest user of electricity in Romania, after the industrial sector. Therefore, the 2019 "Household Appliance Scrapping" programme kicked off on 18 December 2018 was earmarked a total budget of EUR 20 million. This program allows citizens to have their used electrical and electronic appliances replaced by ones that have better energy performances. Citizens can acquire more pieces of equipment in exchange for handing over an equivalent number of old and used pieces of equipment for which they receive a number of vouchers, however not more than one for each category.

Financing is granted as vouchers for the purchase of household electrical and electronic equipment falling within the energy efficiency classes A ++ and A +++, in the category of dishwashers and refrigerators/combined refrigerators-freezers/freezers.

Vouchers have the following values:

- RON 200 for A++ washing machines;
- RON 300 for A+++ washing machines;
- RON 300 for air conditioners with cooling energy efficiency (A +++/A ++);
- RON 300 for A++ refrigerators/combined refrigerators-freezers/freezers;
- RON 400 for A+++ refrigerators/combined refrigerators-freezers/freezers.

f) Energy efficiency in service sector

➢ **Energy efficiency in government buildings**

With a view to implementing the provisions of Article 5(1) of Directive 2012/27/EU on energy efficiency, the inventory of the buildings with areas larger than 250 sqm was updated, including also relevant energy data about the inventoried assets, as provided in Order No 3466/2013 of the Minister of Regional Development and Public Administration, published in Official Gazette of Romania, Part I No 778/2013, and in Order No 263/2015 of the Minister of Regional Development and Public Administration, published in Official Gazette of Romania, Part I No 490/2015 and posted on the website of the Ministry of Regional Development and Public Administration under the section *Construction/Energy performance of buildings.*

In order to achieve the 3 % annual renovation rate for this category of buildings, as this was determined with reference to the total useful area of the heated and/or cooled buildings, which are held and occupied by the central public administration, the following actions were carried out:

- performance of technical expert assessments of the structural strength of the buildings;
- performance of energy audit, including drawing up and displaying the energy performance certificate of the inventoried buildings;
- devising of the energy efficiency plan, with specific targets and actions concerning major renovation/thermal rehabilitation of the inventoried buildings and the expected energy saving;
- replacement of the existing exterior window frames and glass panes with energy efficient ones;
- partial thermal insulation of some elements of the building's envelope;

- replacement of the incandescent/fluorescent lighting fixtures with economic and high energy efficiency lighting fixtures;
- maintenance/repairing of the interior heating installations, including replacement with a higher output heating plant;
- complex works intended to increase the energy performance (major rehabilitation).

Compared to the energy saving made further to implementation of the energy efficiency measures in years 2015-2017, meaning of 36 103 MWh, an additional saving of 4 818 753.88 kWh (415 toe) was made in 2018 from the execution of the above energy efficiency works.

The NEEAP envisages a consumption reduction target of 7 000 toe for 2018, and the value obtained under this programme amounts to 5 520 toe.

- **Thermal rehabilitation of public buildings**

The Swiss-Romanian Cooperation Program aims to plug the economic and social gaps within the enlarged European Union, Focus Area 4 "Improving the environment", and financing is available for the following projects thereunder:

- thermal rehabilitation of non-tertiary education units of Cluj-Napoca;
- renovation of municipal buildings and schools employing smart construction technologies in City of Brasov;
- the sustainable energy administration fund (SEAF), which disburses funds for energy efficiency actions in towns located in the poor/underdeveloped regions of Romania, such as the thermal rehabilitation of 2 public buildings in the towns of Isaccea and Brezoi.

In 2018, the energy saving obtained from thermal rehabilitation of public buildings was 113 toe, as shown in the reports submitted by 15 authorities of the local public administration. In this respect, the Energy Efficiency Directorate envisages applying penalties for non-submission of their respective annual reports by the authorities of the local public administration.

The authorities of the local public administration with a population above 5 000 inhabitants are required under the law to draw up energy efficiency improvement programmes that features also thermal rehabilitation of public buildings; according to the reports these submitted, such measures amount to 12 313 toe.

The NEEAP envisages a consumption reduction target of 35 000 toe for 2018, and the value obtained under this programme by the authorities of the local public administration which submitted information to ANRE amounts to 12 426 toe.

- **Public lighting rehabilitation**

The Swiss-Romanian Cooperation Program aims to plug the economic and social gaps within the enlarged European Union, Focus Area 4 "Improving the environment", and financing is available for the following projects thereunder:

- modern and efficient management of public lighting in City of Suceava;
- modernisation and extension of the public lighting system and modernisation of the lighting system in two buildings of the Cluj-Napoca Municipality, using LED technology;
- LED public lighting in City of Arad;

the sustainable energy administration fund (SEAF) disburses funds for energy efficiency actions in towns located in the poor/underdeveloped regions of Romania:

- public lighting modernization in the towns of Baneasa, Bicaz, Buhusi, Dorohoi, Darabani, Nehoiu, Potcoava, Stefanesti and Ramnicu Sarat;
- construction of a photovoltaic farm in the town of Darabani.

The Energy Efficiency Directorate of ANRE reviewed the energy efficiency improvement programmes submitted by the authorities of the local public administration with a population above 5 000 inhabitants, and determined savings of 2 187 toe.

The NEEAP envisages a consumption reduction target of 9 000 toe for 2018, and the value obtained under this programme by the entities which submitted information to ANRE amounts to 2 982 toe.

➢ **Thermal rehabilitation of buildings (offices, retail spaces)**

The electricity network operators take interest in having their own buildings rehabilitated. Thus, the EEIP submitted by CNTEE Transelectrica SA provides information about the energy efficiency strategy they envisage employing for their own administrative/office and technical buildings, including the following activities:

- execution of thermal insulation works on the buildings' envelopes;
- installation of temperature sensors in rooms;
- installation of thermostat-controlled valves on radiators;
- replacement of classical boilers by condensation boilers, when these are fired by methane gas;
- integration of solar power collectors, considering their potential to produce domestic hot water and help heat up the rooms.

In their 2018 EEIP, Delgaz Grid reported execution of building thermal rehabilitation works in 14 municipalities: Alba Iulia, Comanesti, Deva, Harlau, Hunedoara, Iasi, Onesti, Otelu Rosu, Reghin, Resita, Sibiu, Sighisoara, Tg. Mures and Vaslui. These works consisted mainly in the replacement of the existing heating plants, replacement of the interior heating installations, and installation of the PVC window and door frames. The total investment was of RON 1 064 000 and generated energy savings of 30 toe.

In their 2018 EEIP, ENGIE Romania SA reported the application/commencement of energy efficiency measures in buildings. The investment of RON 334 020 made was expected to generate energy savings of 15 toe.

g) Energy efficiency in transport sector

➢ **Vehicle fleet renewal**

The Financing Guide of the 2017-2019 Programme for fostering the renewal of the national vehicle fleet (generically called "Scrapping" (Rabla)) is approved under the Order No 661/2017 of the Minister of Environment.

For 2018, the scrapping premium set out in the Scrapping Programme for cars older than 8 years is RON 6 500 and is paid for acquisition of a new car that generates not more than 130g CO2/km NEDC, under a combined operation regime, according to the information entered in the Certificate of Conformity (COC). When the amount of the CO2 emissions according to WLTP is entered in COC, the premium is paid for a new motor-vehicle the propulsion system of which generates not more than 145g CO2/km NEDC, under a combined operation regime.

A scrapping premium can be added an eco-bonus, under the conditions listed below:

- For acquisition of a new motor-vehicle equipped with a propulsion system that generates not more than 98g CO2/km NEDC, under a combined operation regime, according to the information written in COC, an eco-bonus of RON 1 000 is granted in 2018. When the amount of the CO2 emissions according to WLTP is entered in COC, for a new motor-vehicle the propulsion system of which generates not more than 110g CO2/km NEDC, under a combined operation regime, an eco-bonus of RON 1 000 is granted.
- For acquisition of a new motor-vehicle equipped with a hybrid propulsion system, an eco-bonus of RON 1 700 is granted.

Therefore, when a beneficiary chooses a car that emits not more than 130/140g CO2/km and falls into the category of conventional hybrids, the Environmental Fund Administration (EFA) finances them RON 8 200 of the total price of the car.

In 2018, under the Scrapping Plus Programme (Rabla), the beneficiaries who acquired an electric or

hybrid electric (plug-in) motor-vehicle, received two types of eco-vouchers from EFA:

- RON 45 000, however not more than 50 % of the sale price, for acquisition of a new pure electric motor-vehicle;
- RON 20 000, however not more than 50 % of the sale price, for acquisition of a new hybrid electric motor-vehicle with external supply source which generates not more than 50g CO2/km NEDC. When the amount of the CO2 emissions according to WLTP is entered in COC, these are paid for a new hybrid electric motor-vehicle which generates not more than 70g CO2/km NEDC, under a combined operation regime.

Eligibility for the Scrapping Plus Programme (Rabla) is not rendered conditional upon scrapping and deregistration of a used motor-vehicle. However, should the beneficiaries retire and deregister a used motor-vehicle, meet the conditions laid down for the Classical Scrapping Programme (Rabla), and acquire an electric vehicle under the Scrapping Plus Programme (Rabla), these may sum up the scrapping premium (of RON 6 500) and the eco-voucher and end up receiving from EFA approximately RON 51 500 for acquisition of a new pure electric motor-vehicle, and approximately RON 26 500 for acquisition of a new hybrid electric motor-vehicle with external power supply which generates not more than 50/70g CO2 /km.

Under the 2018 Scrapping Plus Programme (Rabla), as many as 612 electric motor-vehicles (519 pure electric and 83 hybrid electric) were acquired.

Order No 741 of 13 July 2018 approving the Financing Guide of the Programme for improvement of the air quality and reduction of the greenhouse gas emissions using less polluting motor-vehicles for local public passenger transport, reads as follow at Article 2:

(1) The purpose of the Programme is to help improve the air quality and reduce the greenhouse gas emissions further to using less polluting motor-vehicles for local public passenger transport.

(2) The Programme's objective is to reduce the greenhouse gas emissions by putting into service electric buses, hybrid electric buses, CNG-powered buses and trolleybuses.

(3) The Programme's objective is to acquire new electric buses, new hybrid electric buses, new CNG-powered buses and new trolleybuses using the grants disbursed under the Environmental Fund which is formed by the proceeds obtained from the auctioning of the greenhouse gas (GHG) allowances.

Under the Programme, the Environmental Fund Administration concluded two grant agreements with the Municipality of Bucharest and the Municipality of Brasov, as follows:

- Municipality of Brasov – the grant agreement no. 38/N/GES/28.12.2018 has been approved, with a financing of RON 109 600 000 for acquisition of 32 electric buses and 20 hybrid electric buses;
- Municipality of Bucharest – the grant agreement no. 39/N/GES/28.12.2018 has been approved, with a financing of RON 340 000 000 for acquisition of 100 trolleybuses and 130 hybrid electric buses.

For 2018, NEEAP sets out a consumption reduction target of 100 000 toe, but EFA has not submitted data for the determination of the actual energy savings made further to renewal of the vehicle fleet because this is influenced by a number of factors which are difficult to monitor.

- **Modernisation of urban public transport**

The review of the 11 EEIPs determined an energy saving of 940 toe. The main energy efficiency measure was renewal of the fleet of buses, trolleybuses and trams.

- **Extension of the subway network in Bucharest**

Table 20 - Measures applied and savings obtained from their application

Row No.	Measure applied	Actual energy saving in toe/year				
	Year	2014	2015	2016	2017	2018
1.	LED lightning	Staged-out commissioning	75	125	200	300
2.	Escalator modernisation	Commissioning	500	500	500	500
3.	Modernisation of electrical underground	1 419	1 419	1 419	1 419	1 419

	substations - 10 kV medium voltage installations - 750 Vdc traction installations					
4.	Rolling stock modernisation - Retrofitting of the rolling stock fleet - 15 IVA trainsets - Commissioned in 2013	602	602	602	602	602
5.	Acquisition of 16 trainsets	Commissioning	731	731	731	731
7.	Modernisation of the general ventilation system in the stations and stops along the 1st main line – 6 stations			Commissioning	200	200
8.	Acquisition of 8 trainsets			Commissioning	163.4	163.4
Total						**3,915**

The NEEAP envisages a consumption reduction target of 2 500 toe for 2018, and the figure obtained under this programme amounts to 3 915 toe.

- **Modernisation of rail transport**

SNTF CFR Marfa SA applied the following types of measures:

- Technical and organisational measures due to be implemented in not more than one year, with no or only minimum costs, which do not require major investments. The energy saving obtained by applying the measures is 365 toe/year, while the financial savings amount to RON 1 875 thousand.

- The medium-term measures, due to be implemented during a period of 1 to 3 years, generate energy savings of 12.9 toe/year.

Table 21

Row no.	Measure applied	Actual energy saving in toe/year			
		2015	2016	2017	2018
1	LED light signalling units	0	11	10	10
2	Introduction of economy outdoor lighting in railway stations	0	6	3	3
3	Energy efficiency works on railway operational buildings	0	1 853	940	960
4	Implementation of a system for remote management of electricity and power factor compensation for electric traction substations	0	0	0	0
Total					**973**

- **Modernisation of maritime transport**

The review of the EEIPs received from CN Administrația Porturilor Maritime SA Constanta and Navrom SA found that the following types of energy efficiency measures were put in place.

CN Administrația Porturilor Maritime SA Constanța optimised and rendered more efficient the street and interior lighting systems in the Port of Constanța by replacing the classic lighting fixtures with mercury vapours with LED technology. This resulted into an energy saving of 75 toe.

Navrom SA continued to install equipment for hydrographic and mechanical parameter monitoring, which led to a saving of 201 toe.

The NEEAP envisages a consumption reduction target of 100 toe for 2018, and the value obtained under this programme amounts to 276 toe.

➢ **Modernisation of air transport**

The review of the EEIPs found that the following types of energy efficiency measures were put in place, and generated energy savings or 2 021 toe in 2018:

- Tarom SA - replacement of the old windows and doors with double-glazed systems led to an energy saving of 2.6 toe;
- The Romanian air traffic service administration Romatsa replaced the control valves with thermostat-controlled valves on the heating bodies, which led to an energy saving of 3.4 toe;
- Carpatair airline continued to put in place the measures featured under their Modernisation Program, with energy savings of 102.9 toe;
- Blue Air airline installed Winglet devices on the aircraft wings, which led to an energy saving of 439 toe, while their on-going aircraft fleet internal maintenance programs led to additional 100 toe being saved. Fleet renewal by 14 aircrafts led to an energy saving of 553 toe.
- CN AEROPORTURI Bucharest reworked the thermal insulation of the ventilation pipes, executed thermal/hydro-insulation works on the buildings on the airport's platform, implemented BMS terminals in the office buildings, and replaced the classical lighting system. All of these brought energy savings of 820 toe.

The NEEAP envisages a consumption reduction target of 800 toe for 2018, and the value obtained under this programme amounts to 665 toe.

5. STATUS OF ENERGY AUDITS AND ACCESS OF ENERGY AUDITORS AND ENERGY MANAGERS TO THE AUTHORISATION AND CERTIFICATION SYSTEMS

Authorisation of energy auditors/certification of energy managers is aimed at advancing and further developing a system that ensures availability of audits capable of promote the energy saving potential of the final energy consumer.

The relevant number of energy auditors who get authorised every year is an indication of the degree of energy service market opening, and allows the final energy consumers to have their energy audits undertaken in observance of the legal provisions. By providing information about the authorisation type and the contact data of the persons authorised by ANRE on the website of ANRE, all stakeholders are secured free and unrestricted access thereto.

The minimum transparent and non-discriminatory energy auditing criteria laid down under the Regulation for authorisation of energy auditors are a safeguard for performance of quality audits able to identify energy efficiency improvement measures at the final consumer, and when put in place as such, these can help attain the energy saving targets claimed by Romania in the National Energy Efficiency Action Plans.

In the end of 2018, the certificates/authorisations issued in the field of energy efficiency were as follows:

- 413 energy manager certificates,
- 176 permits issued to energy auditors as natural persons,
- 60 permits issued to energy auditors as legal persons, of which 12 energy auditors as authorised natural persons (PFA),
- 68 companies providing combined energy services (of which 19 authorised natural persons (PFA)).

Breakdown of authorisations and certificates issued in 2018

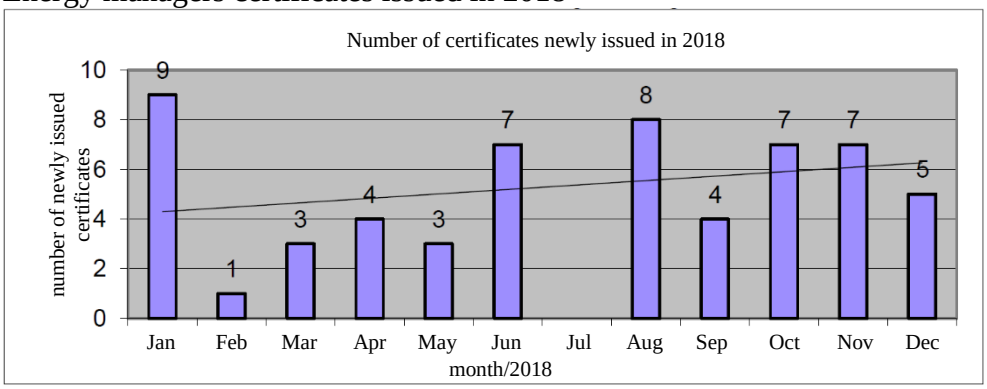
Type of certificate/authorisation issued in 2018	Total	Newly issued certificates/authorisations	Extensions of certificates/authorisations
Energy Managers	101	58	43
Energy auditors as natural persons	28	16	12
Energy auditors as legal persons	11	8	3
Companies providing accredited energy services	54	54	-

Source ANRE

Energy manager certificates

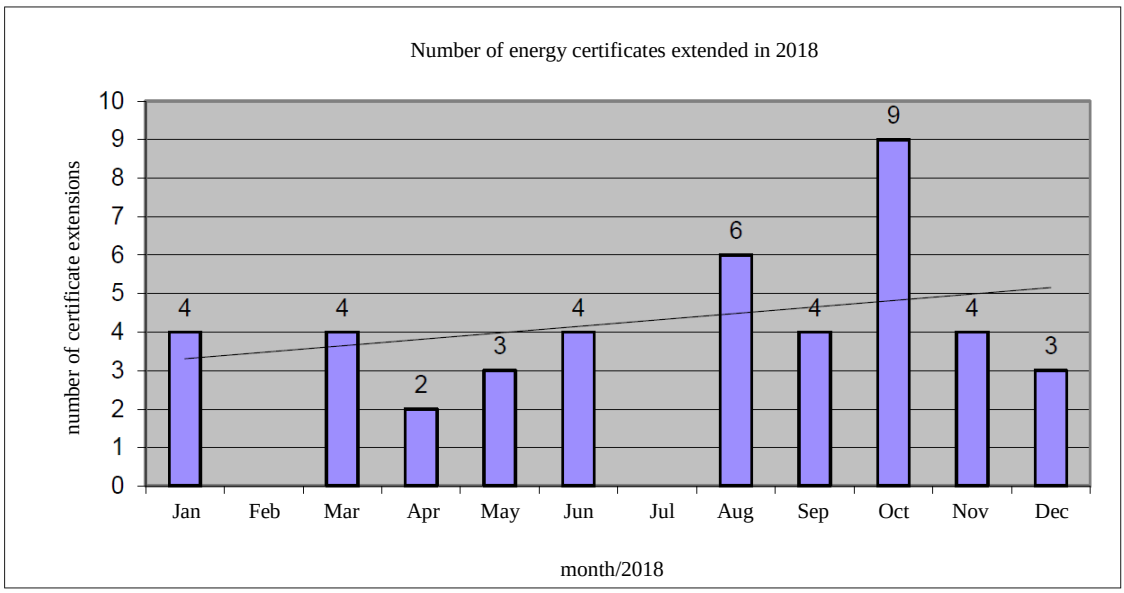
The certification/authorisation/approval activity broken down on months in 2018 looks as follows:

Energy managers certificates issued in 2018



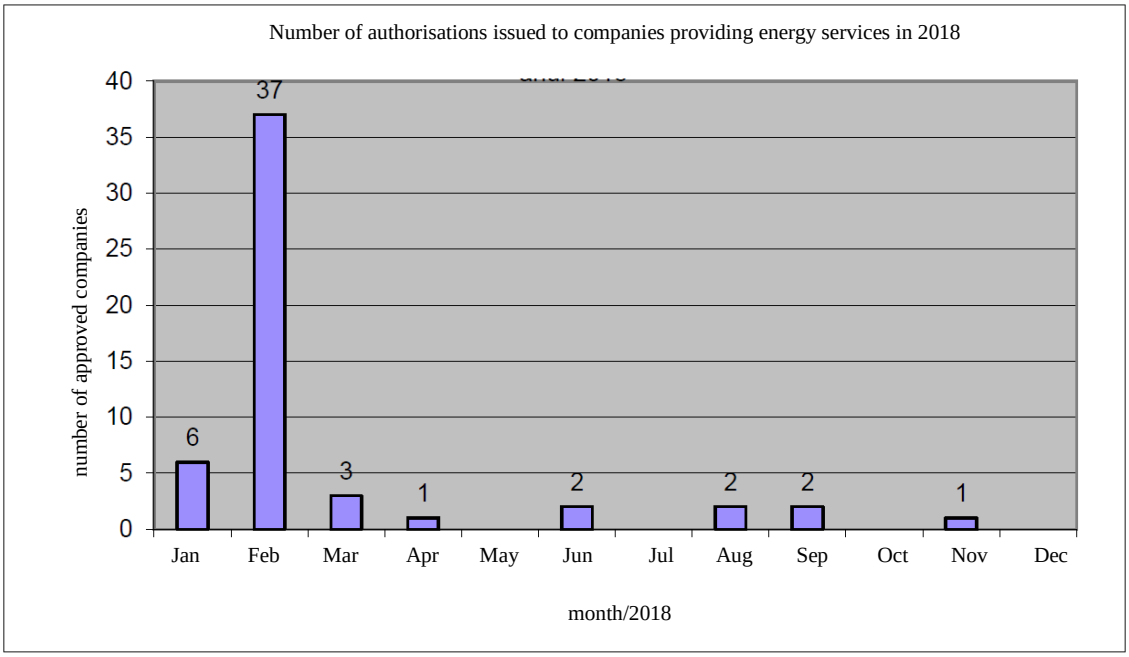
Source: ANRE

Extensions of energy managers certificates in 2018



Source ANRE

Approval/authorisation of companies providing energy services in 2018



Source ANRE

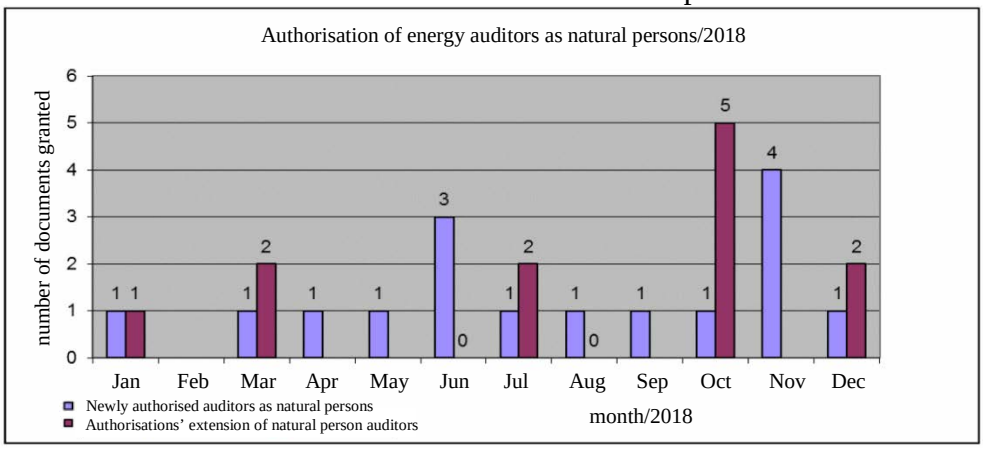
The companies providing energy services that had been approved before the effective date of ANRE Decision No 1111/2017 amending and supplementing ANRE Decision No 2794/2014 were required to apply for authorisation as company providing energy services before the beginning of February 2018. This is the reasons why the abovementioned schedule chart shows a high number of such applications, well above the average of the other months, in February.

Energy auditor authorisations

The work of energy auditors who carry out their activity in the industry, transport or service sectors is regulated under the Regulation for authorisation of industry energy auditors, approved by ANRE Decision No 2794/2014, as amended and supplemented by ANRE Decision No 1111/2017 (the Regulation).

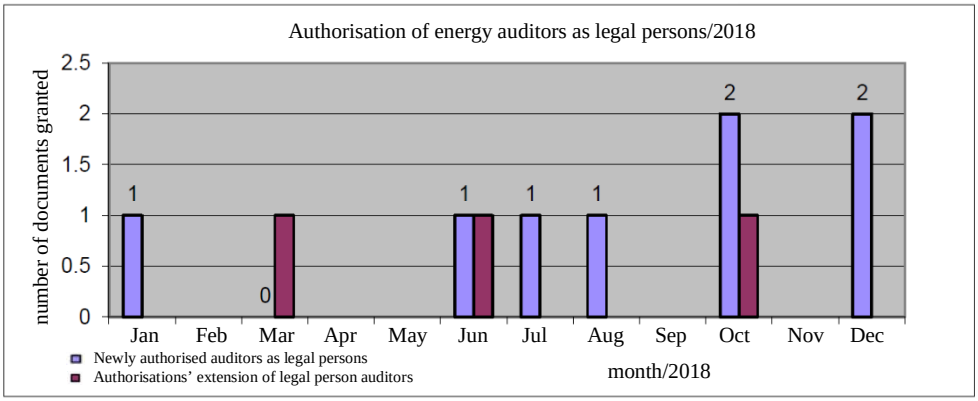
According to the Regulation, energy auditors as legal persons are required to submit to the Authorisation Committee set up in ANRE, before the 30th of January of the year that follows the year under review, their Annual Report on the energy audit work.

Status of authorisations of auditors as natural persons in 2018



Source ANRE

Authorisation of energy auditors as legal persons/2018



Source ANRE

In 2018, 47 energy auditors acting as legal persons undertook energy audits at 330 economic operators. The reports they submitted show that more than 1 500 energy efficiency improvement measures were recommended, totalling estimated energy savings of 251 062 toe, and requiring investments of approx. RON 12 393 414 thousand.

The frequently proposed energy efficiency measures fell into the following categories:
- introducing variable speed drives,
- reducing losses in compressed air networks,
- offsetting the power factor,
- optimizing furnace burning,
- optimizing plant operation and process flows,
- rendering the production hall lighting more efficient,
- rehabilitating the heating networks,
- shifting to more energy efficient engines with variable speed and frequency converters

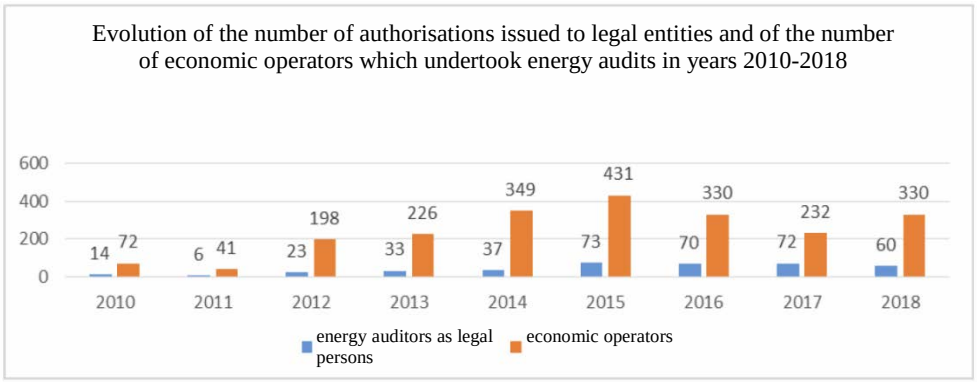
The energy audits undertaken in years **2010-2018** were as follows:

Table 23

Year	Auditors	Economic agents	Number of energy efficiency measures	Estimated energy savings (toe)	Estimated costs (thousand RON)
2010	14	72	275	176 200	1 628 212
2011	6	41	103	112 171	128 813
2012	23	198	564	406 652	1 791 466
2013	33	226	701	196 705	663 684
2014	37	349	432	26 790	1 160 678
2015	73	431	1118	247 611	750 761
2016	70	330	1286	144 818	2 185 336
2017	72	232	1341	145 086	1 139 723
2018	60	330	1500	332 070	12 661 108

Source: ANRE

Comparison between the number of authorisations issued to legal entities and the number of economic operators which undertook energy audits in years 2010-2018



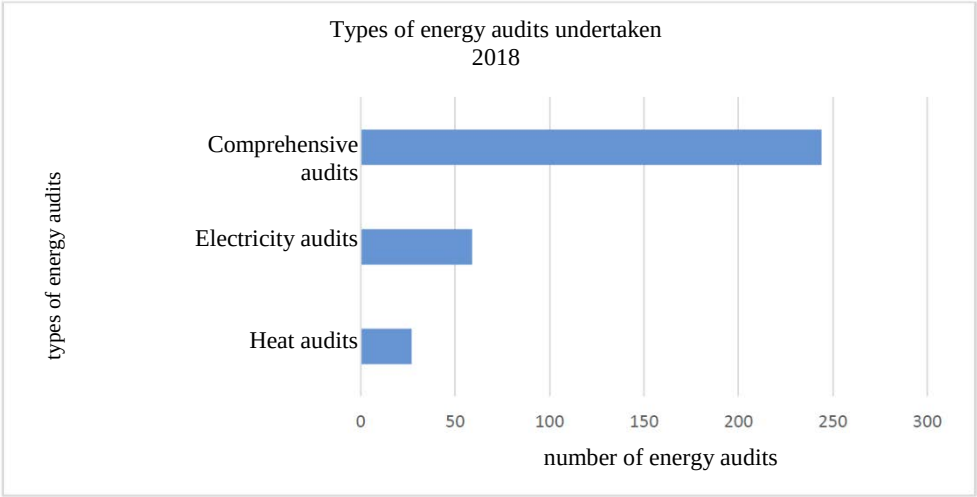
Compared to 2017, the number of economic operators which undertook energy audits went slightly up. This market segment undertook energy audits in 2014 and complied with their requirement introduced by Law No 121/2014 on energy efficiency to undertake an energy audit every 4 years.

But, at the same time, the number of legal entities authorised to conduct energy audits dropped to 60. Because ANRE Decision No 1111/2017 amending and supplementing ANRE Decision No 2794/2014 introduced a minimum of 50 points for extension of the authorisation of the energy auditor as legal person not all the entities authorised in 2017 could maintain their respective authorisations valid.

In 2018, 8 new legal entities applied for authorisation.

The types of energy audits undertaken in 2018 and their breakdown on industries are shown in the charts and tables below.

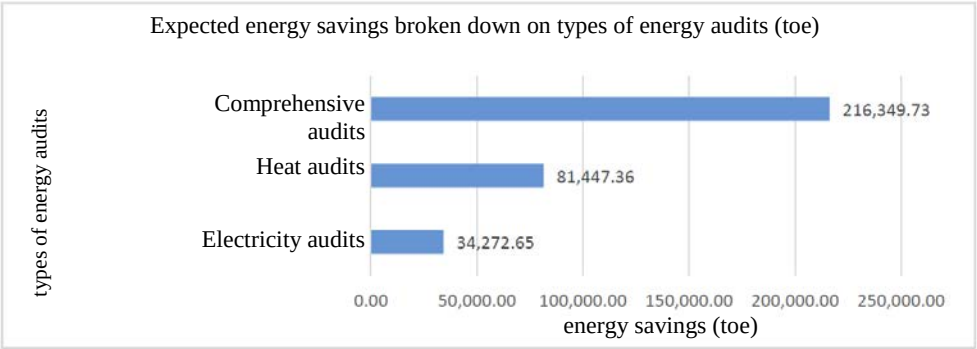
Types of energy audits undertaken in 2018



Source ANRE

This year too, the majority of economic operators opted for performance of comprehensive audits.

Energy savings expected to be obtained, broken down on types of energy audits



Source ANRE

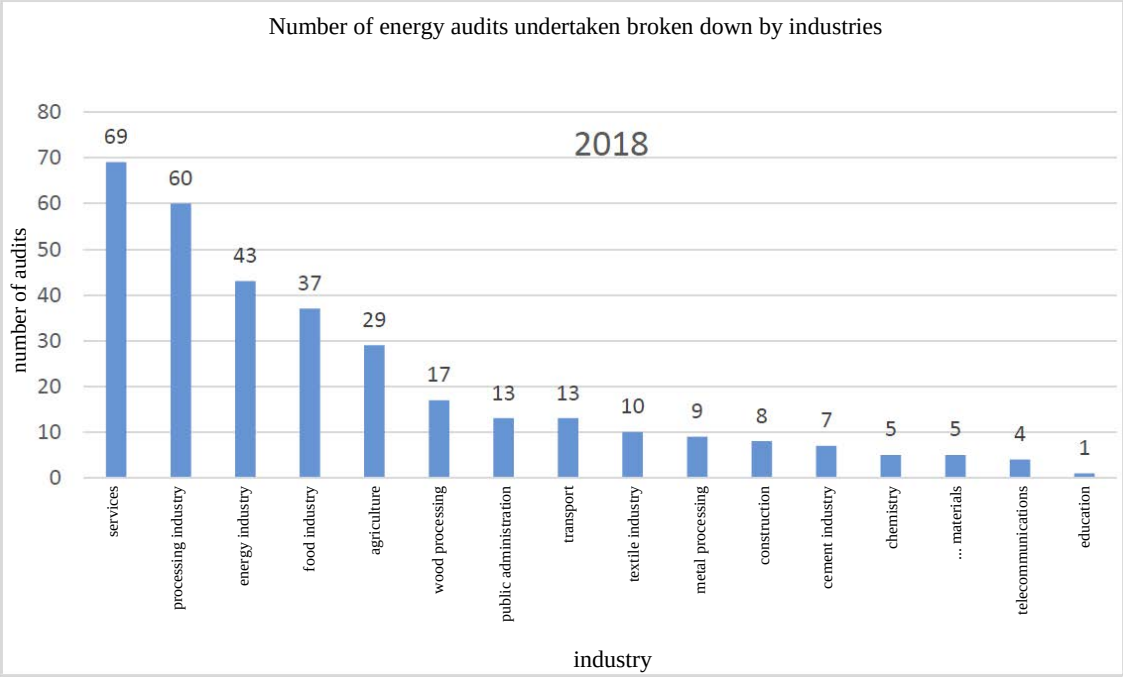
According to the estimates produced by energy auditors, implementation of the energy efficiency measures recommended in the comprehensive energy audits could give rise to aggregate energy savings in excess of 200 000 toe.

The energy savings expected to be obtained should the energy efficiency measures recommended in the heat audit reports be implemented are notably higher than what it could be achieved further to performance of measures recommended in electricity audits. However, the number of electricity audits remains significantly lower than the number of heat audits. Therefore, the energy saving potential is higher in the heat installations.

An overview of the types of energy audits undertaken by authorised natural persons (PFA) or legal entities, together with the estimated energy savings, are shown below:

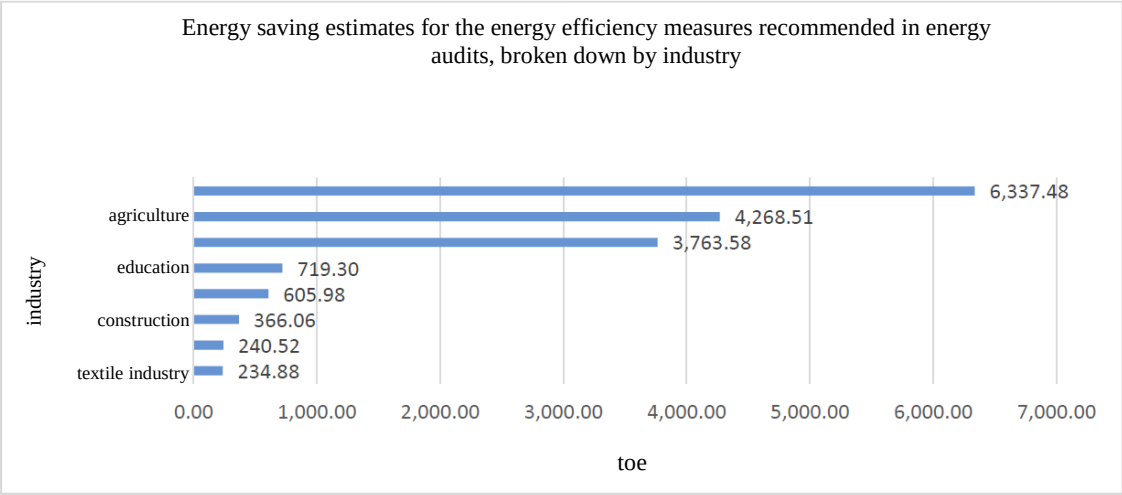
	number of audits			energy savings (toe)		
	Authorised natural person (PFA)	Legal entities	TOTAL	Authorised natural person (PFA)	Legal entities	TOTAL
Heat audits	2	25	27	51.90	81 395	81 447.36
Electricity audits	10	49	59	1 509.12	32764	34 272.65
Comprehensive audits	17	227	244	917.90	215 432	216 349.73
TOTAL	29	301	330	2 478.92	329 590.82	332 069.74

Number of energy audits undertaken broken down by industries



The services are noteworthy because the number of economic operators which complied with Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, over the last three years has increased in terms of energy audit performance. The energy saving potential in this sector is quite high if we consider the estimates produced by energy auditors for their recommended energy efficiency measures.

Energy saving estimates for the energy efficiency measures recommended in energy audits, broken down by industry



Source ANRE

The industries in respect of which energy efficiency measures able to support substantial energy savings in excess of 100 000 toe were identified are energy industry, cement industry and processing industry. It should be noted that these are estimates produced in the energy audits undertaken at 330 economic operators.

The ANRE database contains 854 economic operators with an annual energy consumption in excess of 1 000 toe, and approximately 1 100 economic operators the reported annual energy consumption of which is below 1 000 toe. However, some of them are exempted from performance of energy audits because they have already put in place an energy and/or environmental management system or qualify as small and medium-sized enterprises.

According to the provisions of Article 9(1)(a) of the Law No 121/2014 on energy efficiency, performance of energy audits is mandatory for all types of energy consumers and these audits should substantiate determination and implementation of energy efficiency measures. The energy efficiency improvement programme should feature the recommendations made in energy audits.

The total implementation costs of the energy efficiency measures recommended for the energy and transport sectors range between RON 4 and RON 7 billion, as shown in the chart above (Figure 24).

It should be noted that, in the transport industry, the recommended energy efficiency measures featured acquisitions of Euro 6 motor-vehicles, which raised significantly the investment costs. But the energy savings estimated for this industry were slightly over 3 500 toe.

In the energy industry, implementation of the energy efficiency measures excepted to bring along estimated energy savings in excess of 100 000 toe, cost more than RON 7 billion.

Over the last 3 years, service industry saw an increasing number of companies that undertake energy audits. Thus, 69 entities undertook energy audits that estimated energy savings of 8 500 toe, with investment costs of more than RON 300 000 thousand.

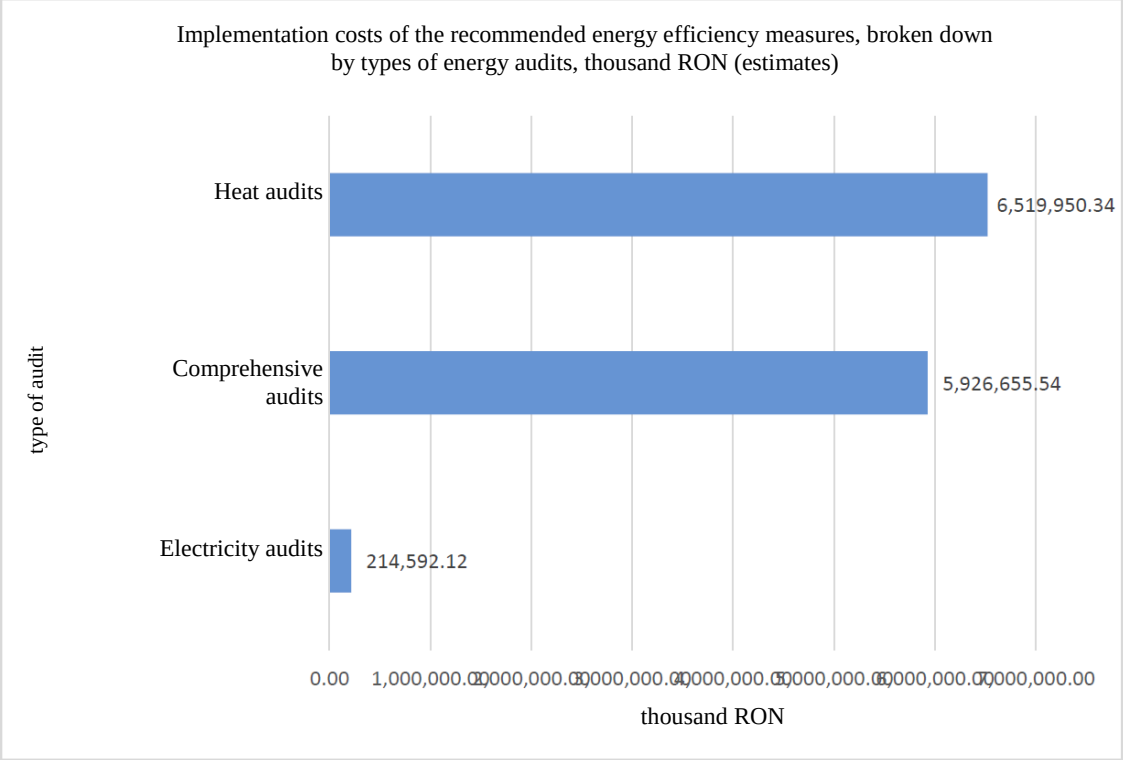
For the processing industry, energy savings of more than 60 000 toe were estimated, the investment costs of which are expected to exceed RON 250 000 thousand.

For the two industries taken as examples above, the costs are close, but the energy saving potential is obviously higher in the processing industry.

In the energy industry, the costs of putting in place the energy efficiency measures recommended by energy auditors are very high because the energy audits recommended costly measures, such as:

- rehabilitating the heating networks,
- acquisition of LED lighting fixtures,
- installing photovoltaic panels,
- installing of microgeneration units,
- introducing variable speed drives.

Estimated costs of the recommended energy efficiency measures, broken down by types of energy audits



Having reviewed the costs estimated for implementation of the electricity audits, we have found that, in 2018, their amounts fell way below the costs required for implementation of the energy efficiency measures recommended during the heat or comprehensive audits, which went as high as more than RON 5 billion.

Companies providing energy services

As far as the work of the energy companies approved/authorised to conclude energy management contracts with economic operators that outsource such service, it is pointed out that, at the end of 2018, 63 companies providing energy services (CESs), of which 19 authorised natural persons (PFA) allowed to conclude energy management contracts, were entered into the database of the Energy Efficiency Department.

Of the 44 legal entities approved to provide energy management services, 13 companies did not conclude energy management contracts and, of the 19 PFAs, 4 persons did not conclude energy management contracts.

The number of contracts concluded by the providers of energy services and by PFAs is shown in the table below, according to the term of the respective contracts and the type of service provider.

Number of management contracts concluded, broken down by contractual term

	Total number of contracts/category	Number of concluded contracts, broken down by the term the contract was concluded for					
		1 year	2 years	3 years	4 years	5 years	Open-ended
Industry SESs	207	129	17	13	11	12	25
Industry PFA	82	55	2	0	0	0	25
Total contracts concluded in the industrial sector	289	184	19	13	11	12	50
Locality SESs	22	17	2	3	0	0	0
Locality PFA	2	2	0	0	0	0	
Total management contracts concluded for localities	24	19	2	3	0	0	0
Total energy management	313	203	21	16	11	12	50

contracts concluded							

Of the 313 energy management contracts concluded in industry, approximately 5 % have as beneficiaries economic operators reporting annual energy consumptions below 1 000 toe, despite the fact that the law does not require them to enter into such contracts. The remaining 95 % are energy management contracts concluded by economic operators reporting annual energy consumptions above 1 000 toe.

Energy savings recorded estimated and actually made, as documented in the reports submitted by the companies and PFA performing energy services

Industry	Companies providing energy services		Authorised natural person (PFA)		SESs+PFA	
	estimated energy savings (toe)	actual energy savings (toe)	estimated energy savings (toe)	actual energy savings (toe)	estimated energy savings (toe)	actual energy savings (toe)
agriculture	596.36	1,046.7	52.9	37.5	649.26	1084.2
energy industry	10 386.21	1 388.13	-	-	10 386.21	1 388.13
metal industry	1 049.1	1 039.86	235.64	217.08	1 284.74	1 256.94
construction	173.9	467.82	181.6	69.85	355.5	537.67
wood processing	209.51	167.37	1 905.23	308.53	2 114.74	475.9
textile industry	439.69	419.52	62	12.2	501.69	431.72
chemical industry	825.94	780.19	500.98	400.98	1 326.92	1 181.17
construction materials	15 142.94	13 742.49	339.24	2.6	15 482.18	13 745.09
food industry	2 149.14	4 315.30	982.96	511.71	3 132.1	4 827.01
transport	3 042.01	10 010.13	1 172	989.50	4 214.01	10 999.63
processing industry	7 317.38	4 040.34	1 372.94	859.09	8 690.32	4 899.43
services	5 937.91	4 699.25	7 616.05	494.11	13 553.96	5 193.36
education			75.2	44.97	75.2	44.97
public administration	12 396.52	1 727.29	2 104	245	14 500.52	1 972.29
cement industry	0.07	0.07	-	-	0.07	0.07
telecommunications	108.72	89.22	-	-	108.72	89.22
TOTAL	59 775.40	43 933.68	16 600.74	4 193.12	76 376.14	48 126.80

Source: ANRE

The companies and authorised natural persons (PFA) providing energy services also reported that implementation of the energy efficiency measures featured in the energy efficiency improvement programmes could provide energy savings of 48 126.80 toe. We point out that these energy savings are reported for the 313 economic operators which outsourced the energy management service and relate to the energy efficiency measures embodied in the reports received from the companies providing energy services, including authorised natural persons (PFA).

Authorisation of legal entities installing and operating heat and hot water cost allocation systems in condominium type of buildings

In accordance with Law No 121/2014 on energy efficiency, as subsequently amended and supplemented, "*the condominium type of properties connected to the district heating system are required to have installed meters by 31 December 2016 in order to itemise the cost of the heating/cooling energy and hot water for of each apartment or space having used for other purposes*". However, should the use of the individual meters **not** be technically feasible or **not** be cost-effective, the law provides **for the requirement to have installed individual cost allocators** *"on all the heating devices in each individual residential unit"*.

In accordance with the provisions of Article V(4) of Law No 225/2016 amending and supplementing Law No 51/2006 on the community public utility services, as subsequently supplemented, read in connection

with Article 14 of Law No 325/2006 on the public heat supply service, as subsequently amended, authorisation of legal persons installing and operating cost allocation systems in condominium type properties was taken over by the Energy Efficiency Department of ANRE.

Before the effective date of Law No 225/2016 amending and supplementing Law No 51/2006 on the community public utility services, as subsequently supplemented, this activity used to be carried out by the National Regulatory Authority for Municipal Services (ANRSC) in accordance with the provisions of the Order No 259/2004 of the President of the National Regulatory Authority for Public Community Management Services approving the Authorisation Rules in the field of installation and operation of heating and hot water cost allocation system in condominium type of properties, as subsequently amended and supplemented.

In this regard, ANRE Order No 53/2017 approved the Regulation for authorisation of legal entities installing and operating heat and hot water cost allocation systems in condominium type of buildings, a piece of regulation that would be adapted to the ANRE procedures and in line with the amendments brought to Law No 225/2016 amending and supplementing Law No 51/2006 on the community public utility services, as subsequently supplemented.

This Regulation aimed at establishing the following by ANRE:

a) the conditions for the issuing, extension, amendment, suspension, withdrawal or issuing of duplicates of the following types of authorisations:
   (i) type I - for installation of heat cost allocation systems;
   (ii) type II - for operation of heat cost allocation systems;
   (iii) type III - for installation of hot water meters used as cost allocators;
   (iv) type IV - for operation of hot water meters used as cost allocators.
b) the procedure for applying for and being issued the types of authorization provided at letter a);
c) the procedure for extension, amendment, suspension or withdrawal of the types of authorization provided at letter a);

This Regulation applies to:

a) Romanian and foreign legal applying to be authorised to install and operate heat and hot water cost allocation systems in condominium type of buildings, in the territory of Romania, in observance of the effective laws and rules;
b) Romanian and foreign legal entities that, on the basis of the authorisations issued to them, install and operate heat and hot water cost allocation systems in condominium type of buildings.

The Regulation further includes provisions concerning:

a) the underlying documentation due to be submitted by applicants to be issued each type of the aforementioned authorisations;
b) the authorisation procedure;
c) the means of paying the authorisation fee;
d) the underlying documentation due to be submitted and the procedure due to be followed for extension, amendment and issuing of duplicates of authorisations;
e) the situations when authorisations are suspended and/or withdrawn;
f) the validity conditions for each type of authorisation;
g) final provisions.

Authorisation of legal entities installing and operating heat and hot water cost allocation systems in condominium type of buildings aims to render more efficient the use of heat and develop the market in energy cost allocation services.

In 2018, the following applications submitted by legal entities to be authorised to install and/or operate heat and hot water cost allocation systems in condominium type of buildings were reviewed:

Received and reviewed applications for authorisation of legal entities installing and operating heat and hot water cost allocation systems in condominium type of buildings

Applications	Resolution of the Authorisation Committee		Total applications
	Approved	Rejected	
New authorisation	6*	9	15

Withdrawal of authorisation for business units	14		14
Authorisation amendment		2	2
Total applications	20	11	31

The Register of legal entities installing and operating heat and hot water cost allocation systems in condominium type of buildings, published on the website of ANRE under the section Energy Efficiency/Information of public interest, provides useful information about the type of authorisation held by these legal entities, the type of cost allocators installed/operated, data about their authorisations (issue date, expiry date), and their contact data.

On 30 March 2019, 20 legal entities are entered in this Register, of which 5 hold authorisations issued by ANRE which are valid throughout Romania (for the type of activities indicated in the Register); the remaining 15 legal entities pursue their business under the authorisations issued by ANRSC, which are valid for their different business units (according to the Register).

CONCLUSIONS

Having reviewed the monitoring of the energy savings obtained in 2018 by putting the measures included in the 2017-2020 NEEAP, the energy saving amounts were seen to have varied. A special remark is required for the programmes falling within the scope of the National Investment Plan, namely Promotion of High Efficiency Cogeneration, Efficiency in the industry benefitting from State aid according to Government Decision No 495/2014, and Bucharest Subway Extension Programme, with essential contributions to the total energy savings achieved in 2018.

- Under the National Investment Plan, NEEAP IV envisages a consumption reduction target of 100 000 toe for 2018, and the value obtained under this programme amounts to 362 938 toe.
- Under the programme Promotion of High Efficiency Cogeneration, NEEAP IV envisages a consumption reduction target of 242 400 toe for 2018, and the value obtained under this programme amounts to 232 372 toe.
- Under the Bucharest Subway Extension Programme, NEEAP IV envisages a consumption reduction target of 2 500 toe for 2018, and the value obtained under this programme amounts to 3 915 toe.
- Under the Programme for Efficiency in the industry benefitting from State aid according to Government Decision No 495/2014, NEEAP IV envisages a consumption reduction target of 66 200 toe for 2018, and the value obtained under this programme amounts to 187 838 toe.