

Romania's Progress Report under Directive 2009/28/EC

Article 22 of Directive 2009/28/EC requires Member States to submit a report to the Commission on progress in the promotion and use of energy from renewable sources by 31 December 2011, and every two years thereafter. The sixth report, to be submitted by 31 December 2021, shall be the last report required.

A Member State's reports will be important for monitoring overall renewable energy policy developments and the Member State's compliance with the measures set out in Directive 2009/28/EC and in its National Renewable Energy Action Plans.

Romania's Progress Report has been drafted in observance of the European Commission recommendations in the „Template for Member State progress reports under Directive 2009/28/EC”.

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding 2 years (2010 and 2009) (Article 22 (1) a of Directive 2009/28/EC)).

Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources

	2009	2010
RES-H&C (%)	23.46	24.22
RES-E (%)	33.46	32.06
RES-T (%)	0.67	0.68
Overall RES (%)	21.75	22.36
<i>Of which from cooperation mechanism (%)</i>	0	0
<i>Surplus for cooperation mechanism (%)</i>	0	0

Calculation details are shown in Annex 4.

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)

	2009	2010
(A) Gross final consumption of RES for heating and cooling	3 789.123	3 975.4
(B) Gross final consumption of electricity from RES	1 469.446	1 522.595
(C) Gross final consumption of energy from RES in transport	33.54	33.13
(D) Gross total RES consumption	5 258.051	5 498.349
(E) Transfer of RES to other Member States	0	0
(F) Transfer of RES from other Member States and third countries	0	0
(G) RES consumption adapted for target (D)-(E)+(F)	5 258.051	5 498.349

The gross final consumption of energy from RES in transport (row C) comes exclusively from the consumption of electricity from RES in transport, included in row B.

Therefore, row D = row A + row B.

Table 1.b: Total actual contribution (installed capacity, gross electricity generation) of each renewable energy technology in Romania to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from RES in electricity

	2009		2010	
	MW	GWh	MW	GWh
Hydro:	6 450	17 360	6 474	17 573
Non pumped	6 358	17 060	6 382	17 324
<1 MW	70	115	76	126
1 MW–10 MW	297	711	315	754
>10 MW	5 991	16 235	5 991	16 444
Pumped	92	300	92	250
Mix	-	-	-	-
Geothermal	0	0	0	0
Solar:	0.050	0.003	0.200	0.020
photovoltaic	0.050	0.003	0.200	0.020
concentrated solar power	0	0	0	0
Tide, wave, ocean	0	0	0	0
Wind:	14.548	9.753	388.608	299.061
Onshore	14.548	9.753	388.608	299.061
Offshore	0	0	0	0
Biomass:	-	5.206	-	69.472
Solid biomass	-	4.959	-	69.227
biogas	0	0.247	0	0.245
bioliquids	0	0	0	0
TOTAL, excluding pumped		17 074.962		17 692.553
Of which in CHP	-	5.206	-	69.472

Note: Calculation details are shown in Annex 1.

The values for the production of electricity in hydropower plants and wind power plants are normalised values

Table 1c: Total actual contribution (final energy consumption) from each renewable energy technology in Romania to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)

	2009	2010
Geothermal (excluding low temperature geothermal heat in heat pump applications)	25.485	24.351
Solar	0	0

Biomass:	3 763.637	3 951.021
<i>Solid biomass</i>	3 762.996	3 950.162
<i>Biogas</i>	0.641	0.859
<i>Bioliquids</i>	0	0
Renewable energy from heat pumps: - of which aerothermal - of which geothermal - of which hydrothermal	0	0
TOTAL	3789.122	3975.372
<i>Of which DH</i>	28.929	44.577
<i>Of which biomass in households</i>	3 394.425	3 526.063

Calculation details are shown in Annex 3.

Table 1d: Total actual contribution from each renewable energy technology in Romania to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe),

	2009	2010
Bioethanol/ bio-ETBE	82.61	110.90
<i>Of which imported</i>	73.58	57.60
<i>Of which Biofuels Article 21.2</i>	0	0
Biodiesel	148.60	142.43
<i>Of which imported</i>	79.43	58.87
<i>Of which Biofuels Article 21.2</i>	0	0
Hydrogen from renewables	0	0
Electricity from renewables	33.54	33.13
<i>Of which road transport</i>		
<i>Of which non-road transport</i>		
Others (as biogas, vegetable oils, etc.) – please specify	0	0
<i>Of which Biofuels Article 21.2</i>	0	0
TOTAL ACTUAL CONSUMPTION	264.76	286.46
TOTAL CONTRIBUTION FOR MEETING THE BINDING 2020 TARGET AND THE INTERIM TRAJECTORY	33.54	33.13

Note: Calculation details are shown in Annex 2.

In the period under examination, biofuels were actually used in transport, in accordance with the national reports sent to the Commission, but no legislative framework was available with respect to the compliance with the sustainability criteria and the verification of such compliance.

When comparing the values in the tables above with the corresponding values in the National Renewable Energy Action Plan (*Planul national de actiune in domeniul energiei regenerabile*, PNAER), the following can be noted:

- - The consumption of electricity from RES was of 1 522.595 ktoe in 2010 (17 692.553 GWh), compared to 1 470 ktow (17 94 GWh) in PNAER. The excess concerned hydropower, which had an actual value

of 17 324 GWh in 2010, compared to the value forecasted in the PNAER, of 16 567 GWh.

- The real value of the gross final consumption of electricity in 2010 was of 4 749.88 ktoe, compared to the value forecasted in the PNAER, of 5 350 ktoe. The lower value of the actual consumption was caused by the impact of the economic crisis.

- In the conditions shown above, the share of the consumption of electricity from RES in the gross final consumption of electricity was of 32.06% in 2010, compared to the value forecasted in the PNAER, of 27.48%.

- - The consumption of energy from RES in transport, in observance of the sustainability criteria in Directive 2009/28/EC, was of 33.13 ktoe in 2010 and came exclusively from the consumption of electricity from RES in transport. In fact, important amounts of biofuels (253.33 ktoe in 2010) were consumed in Romania, but the verification of the compliance with the sustainability criteria was not carried out. In 2011, the legislative framework was modified accordingly.
- - The consumption of energy from RES for heating/cooling was of 3 975.372 ktoe in 2010, way above the forecasted consumption (2 819 ktoe). The high value of this consumption was caused by the high quantity of firewood used by the population (3 526.063 ktoe). As a result, in 2010, the share of the consumption of energy from RES for heating and cooling in the total energy consumption for heating and cooling was of 24.22%, compared to the value forecasted in the PNAER, of 17,26%.
- - At national level, the value of the total consumption of energy from RES in 2010 was of 5 498.349 ktoe, compared to the value forecasted in the PNAER, of 4 529 ktoe. The difference was determined, first of all, by the increased consumption of solid biomass (firewood) in households.
 - In conditions of economic recession, the value of the gross final consumption of energy in 2010 was of 24 586.891 ktoe, compared to 25 863 ktoe forecasted in the PNAER. The low value of the gross final consumption of energy further increased the share of the consumption of energy from RES in the gross final consumption.
 - The share of the consumption of energy from RES in the gross final consumption was of 22.36% in 2010, compared to the value forecasted in the PNAER, of 17,50%.

2. Measures taken in the preceding 2 years and/or planned at national level to promote the use of energy from renewable sources taking into account the indicative trajectory for achieving the national RES targets as outlined in the National Renewable Energy Action Plan. (Article 22(1)a) of Directive 2009/28/EC))

Table 2: Overview of all policies and measures

Name and reference of the measure	Type of measure	Expected result	Targeted group and/or activity	Existing or planned	Start and end dates of the measure
1. System of guarantees of origin for electricity and heating and cooling from	regulatory	the development of the production of	producers of electricity/ heating and cooling from RES	planned	Start date: 1 January 2012

RES (Law No 220/2008, as republished)		electricity/heating and cooling from RES			End date: -
2. Certificates of origin for biomass used as fuel or raw material for the production of energy from RES (Emergency Government Order No 88/2011)	regulatory	meeting the sustainable development principles	producers of biomass used as fuel or raw material for the production of energy from RES	planned	Start date: 1 January 2012 End date: -
3. The establishment of the share of biofuels in diesel and petrol put for sale for the period 2011-2020 (Government Decision No 935/2011)	regulatory	increase of biofuel consumption	fuel producers	planned	Start date: 11 November 2011 End date: 2020
4. The introduction of biofuel sustainability criteria and of the obligation to verify them (Government Decision No 935/2011)	regulatory	meeting the sustainable development principles	fuel producers	planned	Start date: 11 November 2011 End date: 2020
5. Electricity labelling and the provision of information to consumers concerning the structure of primary energy sources used for the production of the supplied electricity and the environmental impact thereof (ANRE Order 69/2009)	soft (information campaign)	increase of sales of electricity produced from RES	electricity consumers	existent	Start date: 3 August 2009 End date: -
6. The improvement of the system of mandatory quotas, combined with the trading of green certificates for E-RES (Emergency Government Order 88/2011)	regulatory	- the increase of E-RES production - observance of the EU legislation on state aid	E-RES producers and suppliers	planned	Start date: phase-in, starting with 19 October 2011 (date of publication in the Official Gazette), until 19 April 2012, deadline established for the drafting of certain regulations End date: -
7. The development of electricity transport and distribution networks in order to ensure the takeover of E-RES (Electricity Transmission Grid Roadmap drafted by TRANSELECTRICA)	investments	ensuring the transport and distribution of electricity from RES, with the safe operation of the NES	- TRANSELECTRICA - E-RES producers	planned	Start date: 2011 End date: 2019
8. The Sectoral Operational Programme "Increase of Economic Competitiveness", Axis 4 "Increase of energy efficiency and safety of supply in the context of combating climate change",	financial	increase of installed capacity in units producing energy from RES and of the generated energy	- public authorities - trading companies	existent	Start date: 2008 End date: 2013

Key Area of Intervention 4.2 "Valorisation of renewable energy resources for producing green energy"					
9. The programme for the increase of production of energy from renewable sources	financial	increase of installed capacity in units producing energy from RES and of the generated energy	legal persons with economic activities		Start date: 6 May 2010 End date:-
10. The programme for the installation of heating systems using renewable energy, including the replacement or upgrade of classic heating systems (the "Green Home" Programme – natural persons)	financial	increase of installed capacity in units producing energy from RES and of the generated energy	population (natural persons)	existent	Start date: 17 June 2010 End date: -
11. The programme for the installation of heating systems using renewable energy, including the replacement or upgrade or classic heating systems (the "Green Home" Programme– legal persons without economic activities)	financial	increase of installed capacity in units producing energy from RES and of the generated energy	territorial administrative units, public institutions and religious establishments	existent	Start date: 20 October 2010 End date: -
12. The possibility to purchase vehicles with an electric and/or hybrid power system in the National Car Fleet Renewal Incentive Programme	financial	increase of the number of electric and hybrid cars sold	- producers and dealers of electric and hybrid cars - natural and legal persons who purchase electric and hybrid cars	existent	Start date: 29 September 2011 End date: -

2.a Evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy. (Article 22(1)e) of Directive 2009/28/EC).

Evaluating and improving administrative procedures for the development of renewable energy, and aligning these procedures to EU standards, has been a permanent concern of decision makers at national, regional and local level, and of the organisations involved. The main actions and measures taken are presented below.

a) Improving the system of mandatory quotas combined with the trading of green certificates

The system of mandatory quotas combined with the trading of green certificates was established as a support mechanism for promoting the production of electricity from RES, by Government Decision No 1892/2004¹, as amended and supplemented. In order to speed up the increase of E-RES production, the Parliament of Romania adopted Law No 220/2008 on the establishment of the system for the promotion of

¹ Government Decision No 1892/2004 on the establishment of the system for the promotion of electricity production from renewable energy sources was published in the Official Gazette No 1056/15 November 2004

energy production from renewable energy sources. Law No 220/2008¹ was amended in 2010 by Law No 139/2010² and republished in its new form in the Official Gazette³. According to the EU law on state aid, the established promotion system has the character of state aid or is likely to constitute state aid, and its application must necessarily have prior authorisation from the European Commission.

To that end, in November 2009, the Romanian authorities (The National Energy Regulatory Authority (ANRE), the Ministry of Economic Affairs, Trade and the Business Environment (MECMA), and the Competition Council) initiated the procedure for the pre-notification to the European Commission of the system for the promotion of electricity from renewable sources established by Law No 220/2008. Subsequently, the amendments and supplements operated by Law 139/2010 were submitted to the European Commission. In July 2010, the Romanian authorities concluded the pre-notification stage and started the notification procedures, and thus, on 3 June 2011, the official notification stage of the system for the promotion of electricity from renewable energy established by Law No 220/2008, republished as amended and supplemented, was also concluded.

- Given the need to correlate Law No 220/2008, republished, as amended and supplemented, with the provisions of EU legislation (including the European Commission's decision in State aid case ref. SA33134 (2011/N) – Romania – “Green certificates for promoting electricity production [sic]”),

The Government of Romania adopted Government Emergency Order No 88/2011⁴. The current support scheme, as provided for by Law No 220/2008, republished, as amended and supplemented, including the amendments and supplements in Government Emergency Order No 88/2011 is detailed in Chapter 3.

b) The financing of projects aimed at developing RES

Ensuring the necessary funding for the performance of energy efficiency projects constitutes an important barrier for persons who want to invest in such projects, irrespective of their legal status (natural persons, companies, public institutions, etc.). The removal of this barrier has been a national priority.

Taking into account the important role of the absorption of European funds in all fields of activity (in particular for the use of renewable energy), the Government took steps to speed up this absorption, including by providing the co-financing component for the projects in question from the state budget.

Special programmes financed by the Environmental Fund were initiated, as described in Chapter 3. These programmes are:

- The programme on increasing energy production from renewable sources (for companies)

¹ Law No 220 of 27 October 2008 on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 743/3 November 2011

² Law No 139/2010 amending and supplementing Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette, Part I No 474/9 July 2010

³ Law No 220/2008, republished, on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 577/13.08.2010

⁴ Government Emergency Order No 88/2011 amending and supplementing Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 736/19.10.2011.

- The programme for installing heating systems using renewable energy, including the replacement or upgrade of classic heating systems (the “Green Home” Programme for natural persons)
- The programme for installing heating systems using renewable energy, including the replacement or upgrade of classic heating systems – for administrative units, public institutions and religious establishments.

The procedures for accessing these funds are those laid down in the applicable EU and national legislation.

2.b Measures for ensuring the transmission and distribution of electricity produced from RES and for improving the framework or rules for bearing and sharing of costs related to grid connections and grid reinforcements. (Article 22(1)f) of Directive 2009/28/EC)..

- The most important law in the field of electricity infrastructure is Law No 13/2007¹ on electricity, as amended and supplemented.

The law establishes the regulatory framework for the performance of activities in the combined heat and power sector.

The main objectives to be achieved by these activities include:

- to ensure that all participants have non-discriminatory and regulated access to the electricity market and the electricity grids of public interest;
- to ensure the interconnected operation of the National Electricity System (NES) with the electricity systems of neighbouring countries and the electricity systems in the Union for the Coordination of the Transmission of Electricity (UCTE);
- to promote the use of new and renewable sources of energy;
- to ensure the safe operation of the National Electricity System;

The law establishes the competences and responsibilities of ANRE, the transmission system operator (TSO) and the distribution operators (DO).

Other legislative acts supplement the provisions of this law, among which:

- Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources, as amended and supplemented;
- Government Decision No 90/2008² on the approval of the Regulation on the connection of all users to the electricity grids of public interest;

ANRE regulations play an important role in the development of the electricity infrastructure. These include:

- The Technical Code concerning electricity transmission grids, as approved by ANRE Order No 20/2004³;
- The Performance Standard for electricity transmission and system services, as approved by ANRE Order No 17/2007¹;

¹ Law No 13/2007, the law on electricity, was published in the Official Gazette, Part I No 51 of 23 January 2007

² Government Decision No 90/2008 on the approval of the Regulation on the connection of all users to electricity grids of public interest was published in the Official Gazette No 109/12 February 2008.

³ ANRE Order No 20/2004 for the approval of the Technical Code concerning electricity transmission grids was published in the Official Gazette No 828/8 September 2004

- The Technical Code concerning electricity distribution grids, as approved by ANRE Order No 128/2008²;
 - The Performance Standard for the electricity distribution service, as approved by ANRE Order No 28/2007³;
 - The Commercial Code concerning the wholesale electricity market, as approved by ANRE Order No 25/2004⁴;

 - The Regulation establishing the solutions for user connection to electricity grids of public interest, as approved by ANRE Order No 129/2008⁵;
 - The Technical Standard “Technical conditions for the connection of wind power plants to electricity grids of public interest”, as approved by ANRE Order No 51/2009⁶.
- TRANSELECTRICA must draft a roadmap for each successive 10 years, with updates every two years, concerning the transmission of electricity in line with the current situation and future development of electricity consumption. The roadmap is submitted for approval to the competent authority (ANRE) and to the competent ministry (MECMA). This is a public document and is posted on TRANSELECTRICA web page.

The roadmap for the development of the electricity transmission grid must provide for:

- covering the power and electricity consumption, in conditions of safety and economic efficiency, in accordance with the national energy policy;
- the correlation of the actions of Transelectrica and of participants on the electricity market with respect to any required service which may have an impact on the safe operation of NES;
- the local opportunities for connection to and use of the electricity transmission grid, as per the forecast of the development of consumption and the need for new installed capacities, for the purposes of efficient and safe operation;
- the establishment of the NES reserve level for the production and transmission of electricity in conditions of peak consumption, in accordance with the size requirements.

In 2008, TRANSELECTRICA drafted an Explanatory Memorandum for the company’s strategy related to the integration of wind power plants in the national electricity system. The study analyses the operational features of wind power plants and the implications thereof for the national electricity system. Among others, the survey shows that:

- In Romania, the problem of connecting wind power plants to NES is currently the fact that requests are concentrated in the Dobrogea area. Taking into

¹ ANRE Order No 17/2007 on the approval of the Performance Standard for the electricity transmission and system services was published in the Official Gazette No 500/26 July 2007

² ANRE Order No 128/2008 approving the Technical Code concerning electricity distribution grids was published in the Official Gazette No 43/26 January 2009

³ ANRE Order No 28/2007 on the approval of the Performance Standard for the electricity distribution service was published in the Official Gazette No 760 of 9 November 2007

⁴ ANRE Order No 25/2004 approving the Commercial Code concerning the wholesale electricity market was published in the Official Gazette No 989/27 October 2004

⁵ ANRE Order No 129/2008 approving the Regulation on the establishment of solutions for the connection of users to the electricity grids of public interest was published in the Official Gazette No 23/12 January 2009

⁶ ANRE Order No 51/2009 on the approval of the Technical Standard “Technical conditions for the connection of wind power plants to the electricity grids of public interest” was published in the Official Gazette No 306/11 May 2009

account the relatively low consumption in that area, the development of the nuclear power plant (4×710 MW), the projects for the construction of certain thermal power plants, and the interconnection links, connecting wind power plants to the electricity transmission/distribution grids is problematic, in light of the capacity of the grids in Dobrogea and the voltage adjustment in the area.

- So far, the requests for the connection of wind power plants to the NES in Transylvania and Moldavia are not particularly problematic from the point of view of grid capacity for power discharge in these areas.

In order to solve all the problems referred to above, an area study is currently underway, aimed at proposing a target grid capable of taking over the entire surplus in the Dobrogea area, using the existent capacities and certain new additions to the electricity transmission grid. The proposed solution must:

- maintain the operational safety of the NES;
- ensure compliance with the technical quality parameters for the transmission and system services;
- provide for the transmission of electricity without grid congestions caused by high variations of the power generated in the wind power plants;
- enable the maximum implementation flexibility for adapting to the uncertainties existent at present with respect the amount of installed capacity and the location thereof.

The Electricity Transmission Grid (ETG) Roadmap for 2010-2014 and indicative for 2019 shows that a characteristic of this stage is the large interest in using the potential of RES: biomass, hydropower in small capacity hydropower plants, solar power, and especially wind power. Investments in E-RES production plants are forecasted, and for some of them the connection contracts or approvals already exist. Possibilities for the discharge of the electric power produced and the transmission thereof to consumption areas are being analysed, as is the impact on the safe operation of the system.

The ETG Roadmap is a complex document, which can be accessed on the website www.transelectrica.ro. The implementation of the measures in this roadmap will lead to the provision of E-RES transmission and distribution. Its main elements which are relevant for E-RES distribution are set out in Annex 4.

- The planning of the electricity distribution grid (EDG) development and upgrading within the NES is made by each distribution operator (DO).

Planning is made based on a future development study, on an average period of 5 years and a maximum period of 10 years, of the electricity grid in question. This study is accompanied by a technical and economic explanatory memorandum. The selected solutions must allow for the development of the installations after this period as well, without essential modifications and with the integration of the main elements of existent grids (the solutions must be self-structuring). The studies are updated on an annual basis.

The medium-term (5 years) roadmap and its annual updates are submitted for approval to the competent authority and constitute public documents.

Based on the roadmap, each DO drafts the annual investment programme for the development and upgrading of the EDG.

The EDG development planning must ensure, among others, the discharge of power from the producers' installation, including from the local distributed production installations.

- Network connection issues are regulated by the Regulation on the connection of users to the electricity grids of public interest, as approved by Government Decision 90/2008¹, as well as by several ANRE regulations.

In accordance with Article 7 of the Regulation, the procedure for the connection of a user to the electricity grid of public interest has the following stages:

- a) the preliminary stage, concerning the documentation and information of the future user;
- b) the submission by the future user of the connection application and of the related documentation in order to obtain the technical connection approval;
- c) the issuance by the grid operator of the technical connection approval, as a connection offer;
- d) the conclusion of the connection contract between the grid operator and the user;
- e) the conclusion of the contract for the execution of works, between the grid operator and a contractor, and the construction of the installation for the connection to the grid; the commissioning of the connection installation;
- f) switching on the power in the user's installation.

The document specifies that the grid operator collaborates with the applicant in order to establish the most favourable electricity grid connection solution from a technical and economic point of view. The applicants thus gain access to information regarding the costs and indicative calendar for grid connection.

In order to connect the users to the electricity grid, the following categories of works are performed, as the case may be:

- a) electricity grid reinforcement works upstream of the connection point, in order to create the technical conditions necessary for the connection of a user;
- b) works for the construction of the connection installation, and of the installations between the connection and delineation points;
- c) works for the construction installations downstream of the delineation point.

The performance of the works in the category referred to under a) are carried out by the grid operator and at its expense. If such works are not provided for in the grid operator's investment programme and their performance is not possible by the date required, the grid operator notifies this to the user, informing the latter with respect to the possible periods for carrying out the works in question.

In such circumstances, the user may opt for one of the following variants:

- to abandon the investment objective at the site in question;
- to postpone the investment objective until the date indicated by the grid operator as the deadline for ensuring the conditions allowing for the connection;
- to bear the cost of the grid reinforcement works upstream of the connection point;
- to accept another solution offered by the grid operator.

¹ Government Decision No 90/2008 for the approval of the Regulation on the connection of users to electricity networks of public interest was published in the Official Gazette No 109/12 February 2008.

If the user opts for bearing the costs for the grid reinforcement works, the expenses incurred are reimbursed by the grid operator in a manner as agreed between the parties.

The works for the construction of the connection installation are borne entirely by the user.

The methodology for establishing the tariffs for the connection of users to electricity grids was approved by ANRE Order No 29/2003¹, as amended by ANRE Order No 54/2008².

According to this methodology, the tariff for the connection to electricity grids (T) represents the total of two components, B and C, i.e. $T = B + C$, where,

B is the component corresponding to the *connection installation*; the size thereof is determined according to the grid type, the *connection length* and the *approved power*,

C is the component corresponding to the acceptance of the works and switching on of the *user's installation*.

It must be stated here that the legislative acts issued in 2008 (Government Decision No 90/2008 and ANRE Order No 54/2008) eliminate the applicant's obligation to bear the costs for the reinforcement of the grid upstream of the connection point.

In the event that, after the construction of the connection installation, other users request the connection to an installation already constructed (and whose financial costs were borne by a certain user), the user in question receives from future connected users a compensation in cash in the first five years since the commissioning of the connection installation. This compensation is established by the grid operator based on a methodology approved by ANRE (ANRE Order No 28/2003³).

- The applicable legislation (Emergency Government Order No 88/2011⁴) provides that for electricity which is subject to the support system provided for by the law, which is contracted and sold on the electricity market, the guaranteed access to the grid is ensured, with the exception of the electricity which is contracted and sold at a regulated price, for which a priority access to the grid is ensured.

The transmission system operator and/or the distribution operators ensure the priority dispatching of E-RES, so that the actual production of E-RES should be as close as possible to the availability of such resources, and they have the right to limit or interrupt the production of E-RES only based on technical and commercial regulations approved by ANRE or in exceptional cases, if such action is absolutely necessary for maintaining stability and meeting the criteria for the safety of the National Electricity System.

¹ ANRE Order No 29/2003 on the approval of the Methodology for establishing the tariffs for the connection of users to average and low voltage electricity distribution grids was published in the Official Gazette No 882/11 December 2003

² ANRE Order No 54/2008 on the amendment of the Order of the President of the National Energy Regulation Authority No 29/2003 on the approval of the Methodology for establishing the tariffs for the connection of users to average and low voltage electricity distribution grids was published in the Of.G. No 433/10 June 2008

³ ANRE Order No 28/2003 on the approval of the Methodology for establishing the compensations in cash between the users connected at different stages, by means of a common installation, to the electricity distribution grids was published in the Of. G. No 880/10 December 2003

⁴ Government Emergency Order No 88/2011 amending and supplementing Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 736/19 October 2011.

3. The support schemes and other measures currently in place that are applied to promote energy from renewable sources (Article 22(1)b) of Directive 2009/28/EC)).

A. The system of mandatory quotas combined with the trading of green certificates (GC) was introduced as a support mechanism for the production of electricity from RES by Government Decision No 1892/2004, as amended and supplemented.

The secondary legislation necessary for the application of this mechanism was approved immediately afterwards.

In order to speed up the increase of E-RES production, the Parliament of Romania adopted Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources.

This law brings a series of amendments to the existent system for the promotion of E-RES, mainly related to:

- the period of applicability of the promotion scheme;
- the number of green certificates granted for 1 MWh of E-RES according to technology type, RES used, etc.;
- the marketing of E-RES;
- the allocation of the amount of money collected from the suppliers who fail to meet the mandatory annual quota of GC purchased.

Law No 220/2008 was amended in 2010 by Law No 139/2010 and republished in its new form in the Official Gazette.

The promotion system established has, according to the EU legislation on state aid, the nature of state aid or is likely to constitute state aid, and its application must necessarily be submitted to the European Commission for prior authorisation.

To this end, in November 2009, the Romanian authorities (ANRE, MECMA, the Competition Council) initiated the procedure of pre-notification to the European Commission of the system for the promotion of electricity produced from renewable sources established by Law No 220/2008. Subsequently, the amendments and supplements made by means of Law 139/2010 were submitted to the European Commission. In July 2010, the Romanian authorities concluded the pre-notification stage and started the notification procedures, and thus, on 3 June 2011, the official notification stage of the system for the promotion of electricity from renewable energy established by Law No 220/2008, republished as amended and supplemented, was also concluded.

Having regard to:

- The European Commission Decision: State aid SA33134 (2011/N) – Romania – „Green certificates for the promotion of electricity”
- the EU provisions in the field according to which this support scheme has the nature of state aid or is likely to constitute state aid
- the necessity to correlate Law No 220/2008, republished as amended and supplemented, with the provisions of EU legislation, including the abovementioned decision
- the need to develop investments in the field of E-RES production,

The Government of Romania adopted Emergency Government Order No 88/2011¹.

¹ Government Emergency Order No 88/2011 amending and supplementing Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 736/19 October 2011.

The current support scheme, as it results from the provisions of Law No 220/2008, republished as amended and supplemented by Government Emergency Order No 88/2011, is the following.

- The system for the promotion of electricity from renewable energy sources applies to the electricity delivered in the electricity grid and/or the consumers, produced from:
 - hydropower used in plants with an installed capacity of at most 10 MW;
 - wind power;
 - solar power;
 - geothermal power;
 - biomass;
 - bioliquids;
 - biogas;
 - landfill gas;
 - sewage treatment plant gas.
- The promotion system applies for a period of:
 - 15 years, for electricity produced in new power plants/units;
 - 10 years, for electricity produced in refurbished hydropower units with an installed capacity of at most 10 MW;
 - 7 years, for electricity produced in wind power plants/units which were also used for the production of electricity on the territory of other states, if used in isolated systems, or commissioned in Romania before the date of application of the promotion system provided for by this law;
 - 3 years, for electricity produced in hydropower plants/units with an installed capacity of at most 10 MW, which are not refurbished.
- The promotion system applies to producers for E-RES, including for the electricity produced during the trial period based on the certification decision issued by ANRE, if the commissioning or refurbishing of plants/units occurs by the end of 2016.
- In case of electricity produced in multi-fuel power plants using renewable and conventional sources, only the portion of electricity actually produced from renewable energy sources, as established based on the energy content related to renewable sources, benefits from the promotion system.
- The promotion system does not apply to:
 - electricity produced from fuels from biomass, industrial and/or municipal waste purchased from imports, irrespective of the power plant's installed capacity;
 - electricity produced in pumped storage units from water that has previously been pumped uphill;
 - electricity produced in power plants using renewable and conventional sources of energy in the same combustion installation, if the energy content of the conventional fuel used exceeds 10% of the total energy content;
 - electricity related to the power plant's grid losses.
- In the case of electricity produced from renewable sources in cogeneration, producers who apply for a promotion system must opt either for the support scheme for the promotion of high-efficiency cogeneration based on the demand of useful heat (according to the provisions of Government

Decision No 1215/2009¹), or for the promotion scheme provided for in the analysed scheme.

- Producers of E-RES from biomass, bioliquids and biogas benefit from the promotion system only if they own certificates of origin for the biomass used as fuel or raw material.
- The national targets concerning the share of electricity produced from renewable sources in the gross final consumption of electricity for years 2010, 2015 and 2020 are 33%, 35% and 38%, respectively. In order to meet these targets, the electricity produced in hydropower units with installed capacity higher than 10 MW is also be taken into account.
- The annual mandatory quotas of electricity from renewable sources of energy benefiting from the promotion system by means of green certificates for the period 2010-2020 are the following: 2010 - 8,3%; 2011 - 10%; 2012 - 12%; 2013 - 14%; 2014 - 15%; 2015 - 16%; 2016 - 17%; 2017 - 18%; 2018 - 19%; 2019 - 19,5%; 2020 - 20%.
- The annual mandatory quotas of electricity from renewable sources benefiting from the promotion system by means of green certificates for the period 2020-2030 is established by the competent ministry and approved by Government Decision and is not lower than the quota established for 2020.
- Producers of energy from renewable sources are granted a number of green certificates for the produced and delivered electricity, as follows:
 - a)
 - 3 green certificates for every 1 MWh produced and delivered, if the hydropower plants are new, or
 - 2 green certificates for every 1 MWh produced and delivered, if the hydropower plants are refurbished;for electricity from hydropower plants with installed capacities of at most 10 MW.
 - b) 1 green certificate for every 2 MWh from hydropower plants with an installed capacity of at most 10 MW, which do not comply with the conditions under a).
 - c) 2 green certificates by 2017 and one green certificate starting with 2018, for every 1 MWh produced and delivered by producers of electricity from wind power;
 - d) 2 green certificates for every 1 MWh produced and delivered by electricity producers from geothermal energy, biomass, bioliquids and biogas
 - e) 1 green certificate for every 1 MWh produced and delivered by producers of electricity from landfill gas and sewage treatment plant gas.
 - f) 6 green certificates for every 1 MWh produced and delivered by producers of electricity from solar power.

For electricity produced in cogeneration units/plans using biomass, bioliquids, biogas, landfill gas and sewage treatment plant gas and

¹ Government Decision No 1215/2009 establishing the criteria and conditions necessary for the implementation of the support scheme for the promotion of high-efficiency cogeneration based on the demand of useful heat was published in the Official Gazette No 748/03 November 2009

qualified by ANRE as being highly efficient, an additional green certificate is granted for each 1 MWh produced and delivered.

- The transmission system operator and the distribution operators must guarantee the transmission and, respectively, the distribution of electricity produced from renewable sources while ensuring the reliability and safety of electricity grids.
- The quantity of electricity for which the obligation to purchase green certificates is established includes:
 - the electricity purchased by suppliers of electricity intended both for their final consumption, and for the sale thereof to end consumers
 - the electricity used for own consumption, other than own grid losses, by an electricity producer
 - the electricity used by a producer for the supply of electricity to consumers connected by means of direct lines to the power plant.
- The suppliers and producers referred to above must purchase on an annual basis a number of green certificates equivalent with the product between the value of the annual mandatory quota for the year in question and the quantity of electricity provided for above, expressed in MWh, which is supplied annually to end consumers.
- The transmission and distribution tariffs do not discriminate between the energy produced from renewable energy sources and that produced from conventional energy sources.
- Producers of electricity from renewable sources of energy and the suppliers trade the green certificates on the centralised green certificate market, as well as on the market for bilateral green certificate agreements. The framework for the trade of green certificates on the green certificate market is be ensured by Societatea Comercială "Operatorul Pieței de Energie Electrică - Opcom" S.A. (*the trading company "Electricity Market Operator", Opcom*), as operator of the electricity market, in accordance with the ANRE regulations.

For the period 2008-2025, the trading value of green certificates on these markets is between:

- a minimum trading value of EUR 27/certificate; and
- a maximum trading value of EUR 55/certificate.

Starting in 2011, the trading values referred to above are indexed annually by the ANRE in accordance with the average inflation index registered in the month of December of the previous year, as calculated at the level of EU27, and officially communicated by EUROSTAT.

After 2025, the trading value of green certificates is that established on the green certificate market, but not lower than the minimum trading value applied in 2025, as indexed annually.

- The suppliers, as well as the producers who fail to meet the annual mandatory quota must pay the equivalent value of the green certificates not purchased to the Environmental Fund Administration, at a value of EUR 110 for each green certificate not purchased, calculated in RON at the average value of the exchange rate established by the National Bank of Romania for the month of December of the preceding year. This value is indexed annually by ANRE in accordance with the annual average inflation

index for the preceding year, as calculated for the Euro Zone and officially communicated by EUROSTAT.

- The producers of E-RES sell the electricity produced on the electricity market, at market price.
- The E-RES produced in power plants with installed capacities of at most 1 MW/plant may be sold to suppliers in whose license area the plants in question are located, at regulated, technology-specific prices. The E-RES sold at regulated prices no longer benefits from green certificates. The suppliers in question must purchase, at the producers' request, the electricity produced in the conditions established by ANRE.
- An economic operator developing a power plant project for the production of E-RES, with an installed capacity higher than 125 MW, which meets the conditions for the application of the promotion system, drafts and submits the documentation necessary for the detailed assessment of the support measure by the European Commission.

The applicant economic operators benefit from the promotion system only after it is authorised by the European Commission.

ANRE monitors the producers who are beneficiaries of the promotion system and drafts publicly available annual reports. If it is found that the parameters specific for each technology are different from those taken into account in the calculation presented for the authorisation of the promotion system, which may lead to overcompensation, ANRE proposes measures for the reduction of the number of green certificates.

The law also contains provisions on the responsibilities and obligations of the transmission operator, of the system operators, of ANRE, of OPCOM, etc. for the promotion of electricity from RES (grid access, take over of produced electricity, issuance and trading of green certificates, the monitoring of the promotion system operation, etc.).

In this context, it must be noted that the mechanism of mandatory quotas combined with the trading of green certificates has been introduced in Romania since 2004 (Government Decision No 1892/2004) and it was already functional in 2008. The secondary legislation had been drafted by ANRE and was in force, the institutional framework had been created and was operational. Law No 220/2008, as amended and supplemented, improves a mechanism that was already in place and operational, in order to speed up the production of electricity from RES. In fact, an essential modification that was introduced was the modification of the number of green certificates per technology and type of renewable source used.

B. The Sectoral Operational Programme “Increase of Economic Competitiveness”, Axis 4 “Increase of energy efficiency and safety of supply in the context of combating climate change”, Key Area of Intervention 4.2 “Valorisation of renewable energy resources for producing green energy”

This programme finances investments for the construction of production capacity for electricity and heat by using the potential of the renewable energy sources of:

- the economic operators (small and medium-sized enterprises) by means of a regional aid scheme

- the local authorities and intra-community development associations, with a view to the provision of a public service (for heat) or for own consumption (including public lighting and public institutions) by means of a co-financing scheme without the application of state aid rules.

The programme is co-financed by the European Commission, the state budget and the investors' own funds.

The maximum value of non-refundable assistance which may be granted to a project, as a percentage of eligible expenditure, is as follows:

- for **small enterprises and micro enterprises: 70%**, with the exception of projects located in the București-Ilfov area, where the maximum value is 60%;
- for **medium-sized enterprises: 60%**, with the exception of projects located in the București-Ilfov area, where the maximum value is 50%;
- for **large enterprises: 50%**, with the exception of projects located in the București-Ilfov area, where the maximum value is 40%.
- For **public authorities and intra-community associations: 98%** for projects which are not income-generating.

The difference up to the total value of the project is covered by the beneficiary. The beneficiary bears, along with its own contribution to the project's eligible costs, the non-eligible costs. Also, beneficiaries must ensure the entire financing of investment expenses incurred for the implementation of the project, until the co-financing is reimbursed.

For the projects for the production of energy by **combustion (cogeneration or separated production of electricity or heat)**, the energy content of the primary fuel used must include on an annual basis a share of at least 80% energy from renewable sources.

Cogeneration projects may only be financed if over 40% of the energy (electricity and heat) produced annually is intended for sale.

The biofuel production activity is only eligible if it is carried out for the purposes of producing energy within the same project.

The total estimated budget allocated to the scheme is EUR 200,000,000 (RON equivalent), of which 88% represents European non-reimbursable funds provided by the European Regional Development Fund, and the rest of 12% represents co-financing funds provided from the state budget.

The programme is carried out in the period 2008-2013.

The scheme was approved in 2007 and became operational in 2008.

Following the call organised in 2008, 12 projects financed within the Regional aid scheme for the valorisation of renewable sources of energy were selected and contracted.

Type of resource	Number of projects	Installed capacity (MW _e and/or MW _t)	Produced energy MWh _e or/and MWh _t	Total value of projects (VAT included) -RON	Total value of approved financing - RON
hydropower	6	10.7365	67 155.45 MWh _e	176 152 507.85	58 424 121.59
biomass	3	5.24 electric 5.102 thermal	40 622.09 MWh _e 40 121.825 -MWh _t	113 330 847.83	51 854 154

wind	3	44	119 674 MWh _e	297 159 637	131 546 477
geothermal	1	44 988.6 thermal	51 902.36 MWh _t	16 686 889.9	13 740 648
photovoltaic	1	0.257	307MWh _e	8 868 552.43	6 185 629
Total approved projects	14	60 2335 MW_e 44 993.702 MW_t	227 758.4MWh_e 40 127.8 MWh_t	612 198 435.01	261 751 029.59

A new call was organised in 2010, but the results have not yet been made public.

C. The programme for the increase of energy production from renewable sources

The programme is financed from the Environmental Fund, and the programme management is ensured by the Environmental Fund Administration. The Financing Guidelines were approved by the Order of the Minister for the Environment and Forests No 614/2010.

Financing may be granted to projects for the construction of installations for the valorisation of energy from renewable sources (wind, solar, biomass, hydro and geothermal power). The company applying for financing must have included in its articles of incorporation the electricity and/or heat production activity.

The financing is granted in an amount of at most 50% of the total eligible value of the project, for the entire territory of Romania, unless the beneficiary's registered office/working point where the project is implemented is located in the București-Ilfov region, where the financing is granted in an amount of at most 40% of the total eligible value of the project.

The maximum amount which may be granted is of up to RON 30 million per project.

Eligible expenditure is deemed to be for:

- a) investments in tangible and non-tangible assets related to the establishment of a new unit, the expansion of an existent unit, the diversification of a unit's production by means of new or additional products, or the fundamental change of an existent unit's production process;
- b) the purchase of fixed assets directly related to a production unit, when the latter was closed or would have been closed in the absence of such a purchase, and the assets are purchased by an independent investor;
- c) the completion of buildings and/or constructions necessary for the location and assembly of the purchased machinery, installations and equipment, with the related fittings – electric installations, natural gas supply installations, heating, ventilation, air conditioning installations, telephone systems, fire fighting and prevention equipment, intranet (tangible assets). The installations referred to above are exclusively for indoor premises;
- d) the purchase of new machinery, installations and equipment necessary for meeting the objectives of this project (tangible assets);
- e) the purchase of technologies, patents, know-how (non-tangible assets);

- f) the completion of water abstraction systems, in the case of micro hydropower plants.

The expenses incurred for the purchase of tangible assets are eligible if the assets purchased are new.

The Environmental Fund Administration organised the first project submission session between 15 June and 15 July 2010. The funds allocated to this session were of RON 440 000 000 initially but, as a result of the interest shown by applicants, they were increased to RON 900 000 000.

D. The programme for the installation of heating systems using renewable energy, including the replacement or upgrade of classic heating systems (the “Green Home” Programme – natural persons)

The programme is financed from the Environmental Fund, and its management is ensured by the Environmental Fund Administration. The Financing Guidelines were approved by the Order of the Minister for the Environment and Forests No 950/2010.

This programme provides to a certain natural person applicant a financing of:

- up to RON 6 000 for the installation of solar panels
- up to RON 8 000 for the installation of heating pumps
- up to RON 6 000 for heating installations using pellets, briquettes, sawdust, as well as any other vegetable, agricultural, wood or forest waste

Eligible expenditure is deemed to be for:

- a) the purchase of installations for the production of heat, including installations for the replacement or upgrade of classic heating systems with systems using renewable energy;
- b) expenses for the assembly and commissioning of the system, the carrying out and checking of trials and tests;
- c) value added tax (VAT).

Only applicants who want to install the equipment in question in private homes may receive financing, blocks of flats (condominiums) being excluded. This is explained by the fact that in case of blocks of flats conflicts may arise between the owners of the apartments.

A first session of project submissions from natural persons took place in 2010 (with the initial deadline 1 June 2010), and the total value of allocated funds was of RON 100 million. 16 300 projects were accepted for financing and the funds were used entirely.

A new session of project submissions was opened in 2011, and over 15 000 applications were submitted.

E. The programme for the installation of heating systems using renewable energy, including the replacement or upgrade of classic heating systems – for territorial administrative units, public institutions and religious establishments

The programme is financed from Environmental Fund, and the management of the programme is ensured by the Environmental Fund Administration. The Financing Guidelines were approved by the Order of the Minister for the Environment and Forests No 1741/2010 and represents the document specifying all the eligibility criteria, as well as the project and expenditure-related criteria, the budget provided and the carrying out of the financing programme.

The territorial administrative units, public institutions and religious establishments may submit financing projects within the programme for the buildings they own or manage.

The programme may include the performance of projects for the replacement or upgrade of classic heating systems with systems using solar, geothermal and wind power, hydropower, biomass, landfill gas, sewage treatment plant gas and biogas or any other systems leading to the improvement of air, water and soil quality.

Non-reimbursable financing, provided by the authority, is granted in an amount of up to 90% of the project's eligible expenditure.

The amount of financing for public institutions may not exceed the value of RON 2 000 000.

The amount of financing for religious establishments may not exceed the value of RON 500 000.

The amount of financing for territorial administrative units may not exceed the following values:

- a) RON 4 000 000 for territorial administrative units with more than 100 000 inhabitants;
- b) RON 3 000 000 for territorial administrative units with a number of inhabitants between 50 000 and 100.000;
- c) RON 2 000 000 for territorial administrative units with a number of inhabitants between 20 000 and 50 000;
- d) RON 1 000 000 for territorial administrative units with a number of inhabitants between 3 000 and 20 000;
- e) RON 500 000 for territorial administrative units with less than 3 000 inhabitants.

Eligible expenditure within the programme is deemed to be the following:

- a) expenditure for carrying out the investment in accordance with the feasibility study (installations, equipment, subassemblies, installation-related constructions);
- b) expenditure for the upgrade of systems, the performance and verification of trials and tests;
- c) value added tax (VAT);
- d) expenditure for consultancy, feasibility studies, technical project, within the limit of 8% of the expenditure for the basic investment.

A first session for the submission of financing files was organised between 15 December 2010 and 31 December 2011. The amount allocated for this financing session was RON 100 000 000.

F. THE POSSIBILITY TO PURCHASE MOTOR VEHICLES WITH AN ELECTRIC AND/OR HYBRID POWER SYSTEM WITHIN THE NATIONAL CAR FLEET RENEWAL INCENTIVE PROGRAMME

The programme for the renewal of the national car fleet (car scrapping programme, also called "*Rabla*" in Romanian) is financed by the Environmental Fund.

This programme concerns the granting of a scrapping premium to owners of cars older than ten years, who opt for the scrapping of these vehicles and their disposal to specially established centres. The scrapping premium is granted in the form of vouchers which may only be used for the purchase of new vehicles.

Starting in 2011, the Ministry of the Environment and Forests, through the Environmental Fund Administration, decided that this programme should include the possibility to purchase electric and hybrid cars. As such, the owners – natural

persons, public institutions and territorial administrative units intending to purchase cars with an electric and/or hybrid power system could register in the programme between 3 October 2011 and 4 November 2011. The programme will again be resumed in 2012.

For producers, the registration session for the validation of those intending to market cars with an electric and/or hybrid power system started on 29 September and ended on 7 October 2011. The registration session for validation does not apply to producers already validated within the National Car Fleet Renewal Incentive Programme for 2011.

The amount allocated to the National Car Fleet Renewal Incentive Programme for the purchase of cars with an electric and/or hybrid power system for 2011 is of RON 5 000 000.

Natural persons, territorial administrative units and public institutions who hand over used vehicles for scrapping within the National Car Fleet Renewal Incentive Programme receive, for 2011, a number up to 4 vouchers, as follows:

- a) 2 vouchers for the purchase of a hybrid car, in exchange for the handover for scrapping of a used car;
- b) 4 vouchers for the purchase of an electric car, in exchange for the handover for scrapping of a used car.

Natural persons, territorial administrative units and public institutions who do not scrap used cars, but who purchase hybrid or electric cars are granted:

- c) a 10% discount, but not more than EUR 1 800 of the sale price of the hybrid car purchased;
- d) a 20% discount, but not more than EUR 3 700 of the sale price of the electric car purchased.

The facilities granted to those who purchase this type of cars are aimed at stimulating the purchase, both by natural persons, and by the central and local public administration authorities, of hybrid and electric cars, with a view to creating a non-polluted environment and observing the European standards concerning pollution.

Table 3: Support schemes for renewable energy

RES support schemes for 2010			Per unit support	Total (M€)
A. The system of mandatory quotas combined with the trading of green certificates	Obligation/quota (%)	Initial quota according to Law No 220/2008:		
		8,3%		
	Present quota:			
	1,566%			
Average certificate price EUR/CV		Euro 55/MWh	37.213	
Penalty		EUR 110/green certificate not purchased	0	
B. Programme for the increase of energy production from renewable sources	Investment subsidies (capital grants or loans)		30 000 000/project	210
C. Programme for the installation of heating systems using renewable energy, including the replacement or upgrade of classic heating systems (the "Green Home" Programme – natural persons)			- RON 6 000 (around EUR1 400)/ applicant for solar panels and for biomass-based heat production installations - RON 8 000 (around EUR 1 860)/ applicant for heating pumps	23,3
D. Programme for the installation of heating systems			- RON 4 000 000 for territorial administrative units with more	23,3

using renewable energy, including the replacement or upgrade of classic heating systems – for territorial administrative units, public institutions and religious establishments			than 100 000 inhabitants; - RON 3 000 000 for territorial administrative units with a number of inhabitants between 50 000 and 100 000; - RON 2 000 000 for territorial administrative units with a number of inhabitants between 20 000 and 50 000; - RON 1 000 000 for territorial administrative units with a number of inhabitants between 3 000 and 20.000; - RON 500 000 for territorial administrative units with less than 3 000 inhabitants.	
Total annual estimated support in the electricity sector				
Total annual estimated support in the heating sector				
Total annual estimated support in the transport sector				

3.1. Information on how supported electricity is allocated to final customers for the purposes set out in Article 3 (6) of Directive 2003/54/EC. (Article 22(1)b) of Directive 2009/28/EC).

The requirements of Article 3(6) of Directive 2003/54/EC (resumed in Directive 2009/72/EC, Article 3(9)) are transposed in Romanian law by the Electricity Labelling Regulation, approved by ANRE Order No 69/2009¹. The regulation contains the following definitions:

electricity labelling – all the activities carried out by an electricity supplier with a view to informing its existent or potential clients, in a transparent way, of the contribution of each source of primary energy in the production of the energy supplied, as well as of the environmental impact;

electricity label – document specifying the structure of primary energy sources used for the production of the electricity supplied and which gives the consumers information on the environmental impact of such sources;

electricity label for regulated tariff consumers – label drafted by ANRE for consumers who do not exercise their eligibility right, which is published on the www.anre.ro website and which suppliers of electricity at regulated prices must send to the consumers in question, to which they supply;

“supplier portfolio” labelling – the labelling of the overall mix of electricity supplied, without specification of types; thus, one single label corresponds to the electricity supplied by a supplier for a given reference period;

“supplier portfolio + type” labelling – a system in which the suppliers are at liberty to also send to their clients labels related to types of electricity. In this case, the supplier must specify on the label the structure of primary sources used for obtaining the type of electricity and the structure of primary sources used for the mix of electricity marketed to the other clients;

¹ ANRE Order No 69/2009 on electricity labelling, 1st Revision, was published in the Official Gazette No Of. G. No 537/3 August 2009

electricity type – offer for the sale of electricity in the reference period made by a supplier and characterised by a structure of primary sources used which may be different from the structure of primary sources related to the total energy marketed by the supplier in question. For example: green electricity type, nuclear-free electricity type, etc;

The supplier sends once a year the electricity label to the consumers it supplies to and, if appropriate, to the suppliers to which it has sold electricity in the reference period.

The labelling reference period is the preceding calendar year.

The information for consumers using regulated tariffs is unique at national level, and does not depend on the primary source portfolio of the suppliers with whom the consumer has signed an electricity supply contract. The electricity label for these consumers is to be published annually on the ANRE website (www.anre.ro) by 15 April and will be edited and sent by the suppliers.

The suppliers must use the “supplier portfolio” labelling system with respect to their eligible consumers and to other suppliers to whom they sell electricity.

The suppliers have the liberty to also use the “supplier portfolio + type” labelling system, for commercial purposes.

The mandatory information comprised in a supplier’s electricity label is:

1. the contribution of each primary energy source in the supplier’s primary energy source portfolio corresponding to the reference period;
2. the environmental impact of the use of the primary sources referred to in paragraph 1 with respect to:
 - a) specific CO₂ emissions resulting from the production of the electricity supplied during the reference period;
 - b) the radioactive waste resulting from the production of the electricity supplied during the reference period;
3. a comparison of the values referred to above with the national averages of the measures in question.

The electricity label model is shown in Figure 1.

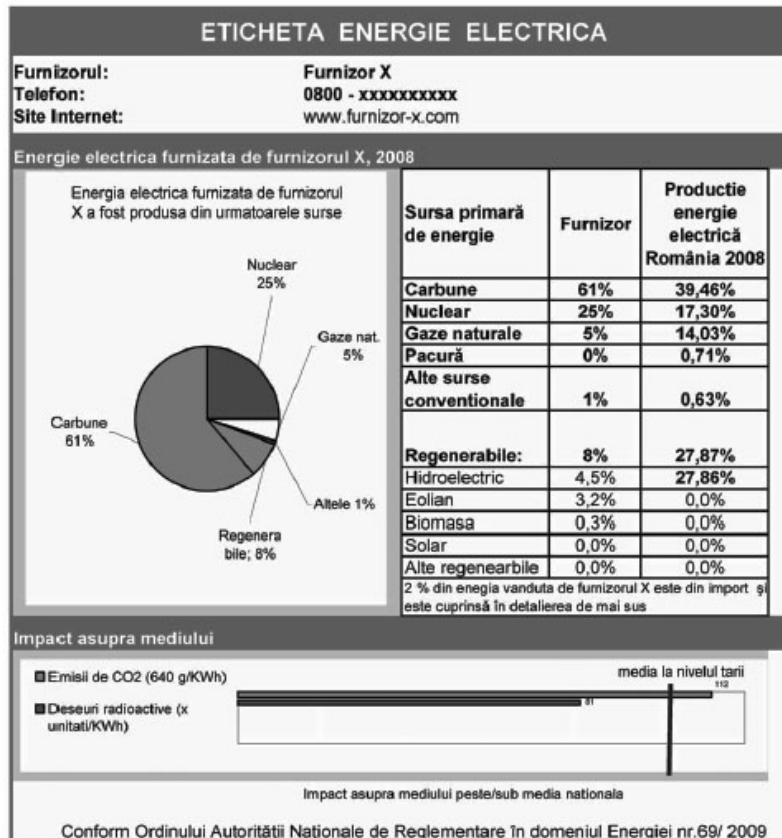


Figure 1

ELECTRICITY LABEL			
Supplier	Supplier X		
Phone	0000-xxxxxxx		
Website	www.supplier-x.com		
Electricity supplied by supplier x, 2008			
The electricity supplied by supplier x was produced from the following sources Coal 61% Nuclear 24% Renewables 8% Natural gas 5% Other 1%	Primary energy	Supplier	Electricity production in Romania, 2008
	Coal		
	Nuclear		
	Natural gas		
	Fuel oil		
	Other conventional sources		
	Renewables		
	Hydropower		
	Wind		
	Solar		
	Other renewables		
	2% of the electricity sold by supplier x was imported and is included in the breakdown above		
CO2 emissions (640g/KWh)	average at national level		
Radioactive waste (x units/KWh)			
Environmental impact above/below national average			
According to the Order of the National Energy Regulatory Authority No 69/2009			

4. Information on how, where applicable, the supported schemes have been structured to take into account RES applications that give additional benefits, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material and ligno-cellulosic material.

Romania makes important efforts and at multiple levels to use the potential of renewable energy. Financing is provided from the state budget for the projects in the Sectoral Operational Plans. The programmes financed by the Environmental Fund

have been initiated and are carried out successfully. The support mechanism for the promotion of E-RES (the system of mandatory quotas combined with the trading of green certificate) through which the financial effort is passed on to the end consumers has been refined. The co-financing by the European Commission of the projects in the Sectoral Plans is very important for Romania's compliance with the indicative trajectory and for meeting the final RES valorisation target. On the other hand, it must be kept in mind that the financial support for investments is granted to those projects which have a proven economic efficiency. Having regard to the stringent necessity to balance the state budget, as well as to the difficulty in increasing the consumers' electricity bill, no support schemes have been developed for investments in high cost technologies.

In particular, municipal waste in Romania has a high degree of humidity and no specialised studies have been carried out to assess potential of biomass (the biodegradable fraction of solid urban waste, including organic waste, and the biodegradable fraction of industrial waste) of being used for energy production.

In the information submitted by Romania in 2011 as a supplement to the PNAER, it was specified that for this reason, the production of primary energy from waste (including the production of fuel from wastes, residues, non-food cellulosic material and ligno-cellulosic material, cellulosic) cannot be forecasted.

5. Information on the functioning of the system of guarantees of origin for electricity and heating and cooling from RES, and the measures taken to ensure reliability and protection against fraud of the system. (Article 22(1)d of Directive 2009/28/EC)).

In Romania, the system for the certification of the origin of E-RES was adopted by Government Decision No 1429/2004¹ approving the Regulation on the certification of the origin of electricity produced from renewable sources. This system became operational as of 1 January 2005.

In accordance with this regulation, ANRE is the body issuing to E-RES producers, upon the request thereof, the guarantees of origin.

The granting of guarantees of origin is done twice a year, only provided that:

- the electricity delivered in the electricity grids is produced from RES;
- at least 10 MWh are delivered each semester;
- the information concerning the electricity produced is accurate;
- measurement systems are in place which ensure the measurement of E-RES.

A guarantee of origin – GO – must contain at least the following information:

- the source of energy from which the electricity was produced, with an indication of the date and places of production, and, for hydropower plants, also including the installed capacity thereof;
- information enabling producers of electricity from renewable sources to prove that the electricity they sell is produced from renewable sources.

The registration of guarantees of origin is made by ANRE in the Sole Register of Guarantees of Origin.

¹ Government Decision No 1429/2004 for the approval of the Regulation on the certification of origin of electricity produced from renewable sources was published in the Official Gazette No 843/15 September 2004.

In order to ensure the accuracy and reliability of the information comprised in the guarantees of origin, Order No 23/2004¹ of the ANRE President approved the Regulation on the supervision of the issuance of guarantees of origin, which sets out, for each stage in the E-RES guarantees of origin issuance process:

- the parties involved and their responsibilities in the performance of each activity in the process for the issuance of the guarantees of origin;
- the operations in the Sole Register of Guarantees of Origin for the tracking thereof.

Law No 220/2008, republished², contains a distinct chapter (Chapter 9) entitled “Guarantees of origin for electricity, heating and cooling produced from renewable sources of energy”

In accordance with Article 24, ANRE drafts the Regulation for the issuance and tracking of the guarantees of origin, to be approved by Government Decision. This Regulation is currently submitted for approval. Until the approval of the new regulation, the application of the system of guarantees of origin for E-RES has been temporarily suspended.

Law No 220/2008 also provides (Article 20 paragraphs (4) and (5)) the obligation of the competent ministry (MECMA) to draft, every two years, a report on how the national targets were met and on the steps taken in order to facilitate grid access for electricity produced from RES, based on ANRE reports. This report details, among others, the operation of the system of guarantees of origin and the arrangements made for ensuring the system’s reliability and protection against fraud.

Government Emergency Order No 88/2011³ amending and supplementing law No 220/2008 requires that, until the national E-RES production targets are met, the marketed E-RES benefiting from the promotion system presented in Chapter 3 be accompanied by the guarantees of origin.

Government Emergency Order No 88/2011 also contains provisions on the certificates of origin for the biomass used as fuel or raw material. According to this order, E-RES producers only benefit from the E-RES promotion system if they hold certificates of origin for the biomass used as fuel or raw material. These certificates of origin are issued by:

- The Ministry of the Environment and Forests for biomass from forestry and related industries, as well as for biomass from industrial and municipal waste
- The Ministry of Agriculture and Rural Development for biomass from agriculture and related industries

The certificates of origin referred to above are issued based on procedures approved by order of the Minister for the Environment and Forests and of the Minister for Agriculture and Rural Development, respectively.

6. The developments in the preceding 2 years in the availability and use of biomass resources for energy purposes (Article 22(1)g) of Directive 2009/28/EC).

¹ ANRE Order No 23/2004 on the approval of the procedure for the supervision of the issuance of guarantees of origin for electricity produced from renewable energy sources was published in the Official Gazette No 928/12 October 2004 and on the ANRE website www.anre.ro.

² Law No 220/2008, republished, on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 577/13 August 2010.

³ Emergency Government Order No 88/2011 amending and supplementing Law No 220/2008 on the establishment of the system for the promotion of energy production from renewable energy sources was published in the Official Gazette No 736/19 October 2011.

Table 4: Biomass supply for energy use

	Amount of domestic raw material (tone)		Primary energy in domestic raw material (ktoe)		Amount of imported raw material from EU (tons)		Primary energy in amount of imported raw material from EU (ktoe)		Amount of imported raw material from non EU (tons)		Primary energy in the amount of imported raw material from non EU (ktoe)	
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)	15296,787	15964	3742,256	3900	0	348	0	82	0	0	0	0
Indirect supply of wood biomass (residues and co-products from wood industry etc.)												
Energy crops (grasses, etc.) and short rotation trees (please specify)	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural by-products/processed residues and fishery by-products	0	0	0	0	0	0	0	0	0	0	0	0
Biomass from waste (municipal, industrial etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Other (please specify)	0	0	0	0	0	0	0	0	0	0	0	0
Biomass supply for transport:												
Common arable crops for biofuels (please specify main types)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)	0	0	0	0	0	0	0	0	0	0	0	0
Other (please specify)	0	0	0	0	0	0	0	0	0	0	0	0

In 2009, domestic wood biomass production (15 695 thousand tons, i.e. 3 838 ktoe) was higher than domestic consumption (15 297 thousand tons, i.e. 3 742 ktoe). Certain amounts of imports, exports and stock variation were registered. Under these circumstances, it was deemed that domestic consumption was covered entirely from domestic production.

In 2010, domestic wood biomass production (15 964 thousand tons, i.e. 3 900 ktoe) was lower than domestic consumption (16 312 thousand tons, i.e. 3 982 ktoe). Certain imports, exports and stock variations were also registered. It was deemed that domestic consumption was covered from the total domestic production, with the difference being covered by imports.

Table 4a. Current domestic agricultural land use for production of crops dedicated to energy production (ha)

Land use	Surface (thousand ha)	
	2009	2010
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (Please specify main types)		
corn grains	2339	2088,6
wheat	2149	n.a.
potatoes	255	241.3
sunflower	766	793.7
rapeseed	420	537.3
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	n.a.	n.a.
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	n.a.	n.a.

7. Information on any changes in commodity prices and land use in Romania in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources (Article 22(1) h) of Directive 2009/28/EC)).

After 1990, the inflation rate in Romania continued to have relatively high values, as shown in the following table:

Table A

	M.U.	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Inflation rate	%	45.70	34.50	22.50	15.30	11.90	9.00	6.56	4.84	7.85	5.59	8.00

It can be noted from the start that after 2003 (the year when firm RES promotion measures were initiated) inflation started to decrease. The increase in 2010 was mainly caused by the VAT increase (from 19% to 24%).

Below, we present information on the development of process in years 2008, 2009 and 2010, as published by the National Institute for Statistics.

Table B

	2008	2009	2010
Inflation rate	7.85	5.59	8.0
Increase of food prices	9.22	3.25	6.5
milling and bakery products	10.56	2.60	5.2
vegetables and canned vegetables	10.72	1.71	22.5
fruit and canned fruit	11.95	-3.23	12.0
edible oil	41.88	-13.76	21.2
meat and meat preparations	4.44	5.95	3.0
milk and dairy products	11.00	5.83	3.3
sugar and sugar-based products	3.07	6.28	5.0
eggs	8.00	13.66	-4.8
alcoholic drinks	2.70	2.91	3.9
Increase of non-food prices	6.36	6.22	9.8
fuel	11.75	4.02	15.4
electricity	3.28	2.45	8.6
natural gas	17.63	1.40	4.2
heat	6.47	10.42	12
furniture	2.41	1.95	1.9
Increase of service fees	8.57	8.97	6.4
urban transportation	9.47	7.73	7.8
intercity transportation	9.50	4.36	4.6

Source: INS – Statistical Yearbook of Romania for 2008 and 2009

INS – Statistical Price Bulletin No 12/2010 for 2010

The variation of prices for agricultural products in the months of December of years 2008, 2009 and 2010 compared to the month of December of the preceding year is shown in Table C.

	[%]		
	2008	2009	2010
Increase of prices for agricultural products	-4.1	1.8	27.1
Increase of prices for vegetable agricultural products	-19.6	0.4	40.7
sunflower	-29.8	3.8	96.1
wheat	-41.3		74.2
potatoes		-3.0	62.0
corn grains	-29.0	-9.3	31.6
Increase of prices for animal agricultural prices	20.0	4.3	4.0

Source: INS – Statistical Price Bulletin No 12/2008, 12/2009 and 12/2010

The development of prices for agricultural products in Romania must be examined in the general context of the development of agriculture in the country. In the centralised economy period, the whole agricultural system was based on cooperatives. In 1990, the old agricultural cooperative organisations were dismantled and the land was returned to former owners. This resulted in a very high number of small agricultural establishments. The old irrigation systems were destroyed and the use of agricultural machinery decreased. The development of final energy consumption in agriculture is indicative thereof. This consumption decreased from:

- 1457 ktoe in 1992 to
- 395 ktoe in 2000 and
- 203 ktoe in 2005.

According to data published by INS in the Statistical Yearbook of Romania, the agricultural area at the end of 2009 was of 14 685 thousand hectares, of which the irrigated agricultural area was of 293.5 thousand ha (2%).

A relatively high number of peasants (frequently older persons without material resources) practiced subsistence agriculture, with results depending on weather phenomena.

Recently, developments were positive (final energy consumption was 385 ktoe in 2009), but significant progress is still expected.

According to provisional results of the General Agricultural Census in 2010, the number of agricultural establishments in Romania was of 3 856 thousand, of which:

- 3 825 thousand establishments without legal personality (individual peasant establishments), 14,3% lower than 2002; the average surface of an agricultural establishment without legal personality was of 1.95 ha
- 31 000 establishments with legal personality, 34.8% more than in 2002; the average surface of an establishment with legal personality was of 190.84 ha.

The same census showed that at national level, the unused agricultural area was of 888 thousand ha, and the temporarily not used agricultural area was of 1 350 thousand ha.

With respect to the use of cultivated land, the developments in the period 2004-2008 are shown in Table D.

Table D

	[thousand ha]						
	2004	2005	2006	2007	2008	2009	2010
Total cultivated area, of which:	8528	8468	7884	7772	7798	7884	n.a.
cereals for grains, of which:	6265	5866	5114	5129	5210	5282	5029,0
wheat	2296	2476	2013	1975	2110	2149	n.a.
corn grains	3274	2628	2520	2524	2441	2339	2088,6
root crop, of which:	298	337	344	320	298	297	n.a.
potatoes	266	285	278	268	255	255	241,3
industrial plants, of which:	1221	1221	1331	1354	1250	1268	n.a.
oil plants, of which:	1197	1205	1298	1340	1239	1254	n.a.
sunflower	977	971	991	836	814	766	793,7
rape	50	88	110	364	365	420	537,3

Source: INS – Statistical Yearbook of Romania

It must be noted that in the period 2004-2009, the area cultivated with rape and intended for the production of biodiesel grew from 50 to 420 thousand hectares, but this increase was not to the detriment of other crops. The total area cultivated in the same time interval decreased from 8 528 thousand hectares to 7 884 thousand hectares.

It is considered that Romanian agriculture offers important opportunities for extensive and intensive development and it is difficult to speak of limitations imposed on food production generated by the promotion of energy crops.

8. Biofuels made from wastes, residues, non-food cellulosic material, and lingo cellulosic material (Article 22(1) i) of Directive 2009/28/EC)).

Table 5: Production and consumption of Art.21(2) biofuels (Ktoe)

Article 21(2) biocombustibili	2009	2010
Production –Fuel type X (please specify)	0	0
Consumption – Fuel type X (please specify)	0	0
Total production Art.21.2.biofuels	0	0
Total consumption Art.21.2. biofuels	0	0
% share of 21.2. fuels from total RES-T	0	0

The production of biofuels from non-food cellulosic material and lingo-cellulosic material has not been introduced in Romania.

9. Estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within your country in the preceding 2 years (Article 22 (1) j) of Directive 2009/28/EC).

In the initial stage (period 2005-2010) there were no explicit provisions in the national legislation with respect to the production of biofuels and bioliquids in sustainability conditions and on the assessment of the impact of this production on the biodiversity of water resources, water and soil quality etc. These provisions were introduced by Government Decision No 935/2011¹.

However, in the same period, the legal framework in the field of sustainable development and biodiversity was drafted and implemented at national level, which

¹ Government Decision No 935/2011 on the promotion of the use of biofuels and bioliquids was published in the Official Gazette No 716/11 October 2011.

ensured the prevention of a possible negative impact of biofuel and bioliquid production.

The main provisions of Government Decision No 935/2011 are the following:

- Fuel suppliers only place on the market petrol and diesel with a biofuel content as follows:
 - a) as of the date of entry into force of the decision (11 November 2011),
 - diesel with a biofuel content of at least 5% by volume;
 - petrol with a biofuel content of at least 4% by volume and at most 5% by volume;
 - b) as of 1 January 2013:
 - diesel with a biofuel content of at least 6% by volume;
 - petrol with a biofuel content of at least 6% by volume;
 - c) as of 1 January 2015:
 - diesel with a biofuel content of at least 7% by volume;
 - petrol with a biofuel content of at least 8% by volume
 - d) as of 1 January 2017, petrol with a biofuel content of at least 9% by volume;
 - e) as of 1 January 2019, petrol with a biofuel content of at least 10% by volume.The Ministry of Economy, Trade and Business Environment is the authority responsible for monitoring the observance of these provisions.
- Only biofuels and bioliquids produced from raw material meeting the sustainability criteria may be placed on the market, irrespective of whether the raw material comes from an agricultural area inside or outside the European Union. These criteria are the following:
 - The reduction of greenhouse gas emission due to the use of biofuels and bioliquids compared to the greenhouse gas emission due to the use of fossil fuels is:
 - a) at least 35%, as of 1 January 2012;
 - b) at least 50%, as of 1 January 2017;
 - c) at least 60%, as of 1 January 2018, for biofuels produced in installations in which production started on 1 January 2017 or after this date.

For biofuels and bioliquids produced in operational installations, these provisions only apply as of 1 April 2013.

An Annex to the Government Decision shows the methodology used for the calculation of the reduction of greenhouse gas emission due to the use of biofuels and bioliquids.

- Biofuels and bioliquids may not be produced from raw materials from the land with a high biodiversity value, namely land that, as of 1 January 2008, had one of the following statuses, whether or not the land continues to have that status:
 - a) primary forest and other wooded land where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed;
 - b) areas designated by the law or by the environmental protection authority for nature protection purposes or for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in the lists drafted by the intergovernmental organisations or by the International Union for the Conservation of Nature and Natural Resources, unless evidence is provided that the production of

the raw material in question did not interfere with those nature protection purposes;

- c) highly biodiverse grassland, such as natural highly biodiverse grassland that would remain grassland in the absence of human intervention and which maintains the natural species composition and ecological characteristics and processes, or highly biodiverse non-natural grassland that would cease to be grassland in the absence of human intervention and which is species-rich and not degraded, unless evidence is provided that the harvesting of the raw material is necessary to preserve its grassland status.
- Biofuels and bioliquids may not be produced from raw materials from land with high carbon stock, namely land that had one of the following statuses, as of 1 January 2008, and no longer has that status, as follows:
 - a) wetlands, namely land that is covered or saturated by water permanently or for a significant part of the year;
 - b) continuously forested areas, namely land spanning more than one hectare, with trees higher than 5 metres and a canopy cover of more than 30% or trees able to reach those thresholds in situ;
 - c) land spanning more than one hectare with trees higher than 5 metres and a canopy cover of between 10% and 30% or trees able to reach these thresholds in situ, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Part C of the Annex which is an integral part of this decision is applied, the conditions laid down in paragraphs 3 and 4 would be fulfilled.

These provisions do not apply if, at the time the raw material was obtained, the land had the same status as before 1 January 2008.

- Biofuels and bioliquids may not be produced from raw materials from land that, on 1 January 2008 was peatland, unless evidence is provided that the cultivation and harvesting of the raw material in question does not involve drainage previously undrained soil.
- Government Decision No 935/2011 repeals Government Decision 1844/2005.
- Government Decision No 935/2011 transposes in the internal legislation:
 - the provisions of Articles 1, 3(4) and 4 of Directive 2003/30/EC of 8 May 2003 of the European Parliament and of the Council on the promotion of the use of biofuels and other renewable fuels for transport;
 - the provisions of Articles 2(m), (n) and (o), 17, 18, 19, 21 and 26(3) of Directive 2009/28/EC of 23 April 2009 of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

10. Net greenhouse gas emission savings due to the use of energy from renewable sources (*Article 22 (1) k) of Directive 2009/28/EC*)).

Table 6: Estimated GHG emission savings from the use of renewable energy (t CO₂eq)

Environmental aspects	2009	2010
-----------------------	------	------

Total estimated net GHG emission saving from using renewable energy	26 156	27 345
- Estimated net GHG emission saving from the use of hydropower, wind and photovoltaic electricity	15 392	15 891
- Estimated net GHG emission saving from the use of biomass for electricity, heating and cooling	10 764	11 454
Estimated net GHG saving from the use of renewable energy in transport	0	0

11. Reports for the preceding 2 years and estimates for the following years up to 2020 concerning the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Member States and/or third countries, as well as estimated potential for joint projects until 2020. (Article 22 (1) I, m) of Directive 2009/28/EC).

Table 7: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries (ktoe),

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production of electricity from RES	-	52.6	0	0	0	0	0	0	0	0	0	0
Actual/estimated excess or deficit production of energy from RES in transport	-	-223.8	-253,1	0	0	0	0	0	0	0	0	0
Actual/estimated excess or deficit production of RES in heating or cooling	-	1156.372	1066	700	731	775	700	642	480	310	0	0
Total	-	982.097	812,9	700	731	775	700	642	480	310	0	0

- The consumption of electricity from RES had a value of 1 522.595 ktoe (17 692.553 GWh) in 2010, compared to 1 470 ktoe (17 094 GWh) in PNAER. The excess mainly concerned hydropower, where the normalised value in 2010 was of 17 324 GWh, compared to the PNAER value of 16 567 GWh. 2010 was an exceptional year from the point of view of weather conditions for the production of hydropower, with an actual value of production of 20,549 GWh. The normalised value for that year is lower, but it is still high. For the following period, normal weather conditions have been taken into account, which will lead to a development of the production/consumption of electricity from RES at the level of the PNAER forecast.
- The legislative framework on the introduction of biofuels in consumption has been developed, is in force and is being applied in Romania. As such, a real biofuel consumption of 253.33 ktoe was registered in 2010. However, the national legislative framework did not comprise explicit provisions on the sustainability criteria, in accordance with the requirements of Directive 2009/28/EC. As such, the amount in question could not be reported with respect to the compliance with the indicative trajectory. This shortcoming was remedied in 2011. Thus, the contribution of biofuels to the compliance with the indicative trajectory

was considered to be null for 2011, and, beginning with 2012, this contribution is considered to be equal to that forecasted in the PNAER.

- - In 2010, the consumption of energy from RES in heating/cooling processes was considerably higher (3975.4 ktoe) than the value forecasted in the PNAER (2 819 ktoe). The difference was determined first of all by the increase of solid biomass (firewood) consumption in households. It is difficult to state whether this increase was determined by:
 - an actual increase of the consumption of solid biomass or
 - an improvement of the discipline with respect to the observance of the legislation on forest management, including the reduction of the quantity of wood waste obtained non-commercially by the population, with a corresponding increase of the wood waste quantities traded officially.

The improvement of INS methodologies for the collection and processing of primary information on the consumption of solid biomass is very likely to have played a certain role in the reporting of the increase of this consumption.

On the other hand, it must be taken into account that legislative regulations entered into force in 2011 on the sustainability criteria for the biomass harvested for energy purposes. It was assumed that the application of these criteria will lead to a certain reduction of the consumption of biomass for the production of heating/cooling (from 3975.4 ktoe in 2010 and 3 900 in 2011 to around 3 700 ktoe in the following years). For the last years of the period under examination (2019-2020), the biomass consumption for the production of heating and cooling taken into account was equal to the one forecasted in the PNAER.

- - At national level, the total consumption of energy from RES in 2010 had a value of 5 498.349 ktoe, compared to the value forecasted by the PNAER, of 4 529 ktoe, mostly due to the fact that the consumption of energy from RES for heating and cooling was considerably higher than the one forecasted by the PNAER. Thus, there was a surplus of production and domestic consumption of energy from RES of 982 ktoe, compared to the value forecasted by the PNAER (and which corresponds to the indicative trajectory). This value will decrease over the following period and, as such, the production and consumption of energy from RES in the last two years (2019-2020) will be at the level of those forecasted by PNAER, without any excess or deficit entailing the need for statistical transfers.

11.1. Statistical transfers, joint projects and joint support scheme decision rules.

Romania considers it will be able to achieve the limit of the overall target established without resorting to transfers from other Member States, and no national procedures have been laid down for the performance of a statistical transfer.

At present, Structural Funds, as well as national programmes, offer important financial support opportunity for the carrying out of investments in the use of RES. It

is estimated that the investments to be carried out as a result will be sufficient for complying with the indicative trajectory of production of energy from RES.

The economic development of our country, together with the support mechanism for the production of energy from RES will enable the increase of the volume of private investments in installations for the production of energy from RES. Consequently, no national procedures for the performance of joint projects have yet been laid down.

The need for joint projects on the national territory will be examined subsequently, depending on the development of the actual valorisation of the national potential. When drafting the procedures for the carrying out thereof, the specific experience existent at that time in the EU will be used to the maximum extent possible. Romania will be able to also use its own joint implementation experience in accordance with the Kyoto Protocol.

12. The way in which the share for biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates. (Article 22 (1) n of Directive 2009/28/EC).

Government Decision No 1470/2004¹ approved the National Waste Management Strategy and the National Waste Management Plan. The time limit referred to in these documents is year 2013.

The National Waste Management Plan contains detailed information on the quantities of municipal and associated waste, and industrial and agricultural waste and the structure thereof.

Subsequently, the Joint Order No 1364/2006² of the Ministry of the Environment and Water Management and No 1499/2006³ of the Ministry of European Integration approved the Regional Waste Management Plans. These plans contain a detailed presentation of the situation at territorial level, in each of the country's eight development regions.

The production of primary energy from waste cannot not be forecasted due to the fact that municipal waste in Romania has a degree of humidity which is still considered high⁴ and no specialised studies have been conducted for the analysis and assessment of the energy potential of the biodegradable fraction in solid urban waste, including organic waste, and of the biodegradable fraction of industrial waste.

¹ Government Decision No 1470/2004 on the approval of the National Waste Management Strategy and of the National Waste Management Plan was published in the Official Gazette No 954/18 October 2004.

² Order No 1364/2006 of the Ministry of the Environment and Water Management for the approval of the regional waste management plans

³ Order No 1499/2006³ of the Ministry of European Integration approving the regional waste management plans

⁴ The implementing plan for Directive 2000/76/EC on the on the incineration of waste, p. 34, presented by Romania in the Environment Chapter 22 with the representatives of the European Commission (Annex 3 to the Complementary Position Paper CoNF – RO 27/04)

ANNEX 1 – Consumption of energy from RES

I. Generation of hydropower

The production/consumption of hydropower in 2009 and 2010 is presented in Table A1.1.

Table A1.1

	2009	2010
C_i [MW], of which:	6 450	6 474
<1 MW	70	76
between 1 and 10 MW	297	315
> 10 MW	5 991	5 991
pumped	92	92
Q_i [GWh], including pumped, of which pumped:	15 807	20 243
	273	288
Q_i [GWh], excluding pumped, of which:	15 534	19 955
<1 MW	104.5	145
between 1 and 10 MW	647.1	868
> 10 MW	14 782	18 942

Source: INS

The production/consumption of hydropower in the period 1995-2009 is presented in Table A1.2.

Table A1.2

	1995	1996	1997	1998	1999	2000	2001	2002
C_i [MW]	5 998	6 038	6 074	6 081	6 082	6 120	6 122	6 242
Q_i [GWh]	16 693	15 755	17 509	18 879	18 290	14 778	14 923	16 046

	2003	2004	2005	2006	2007	2008	2009	2010
C_i [MW]	6 248	6 279	6 289	6 282	6 331	6 362	6 450	6 474
Q_i [GWh]	13 259	16 513	20 207	18 355	15 966	17 196	15 807	20 243

Source: INS

Using the normalisation rule in Annex II of Directive 2009/28/EC, the normalised values of the total hydropower production in 2009 and 2010 were calculated and are shown in Table A1.3.

Table A1.3

	2009	2010

Qnorm [GWh], including pumped, of which pumped	17 360 300	17 573 250
Qnorm [GWh], excluding pumped, of which:	17 060	17 324
< 1 MW	115	126
between 1 and 10 MW	711	754
>10 MW	16 235	16 444

Source: ICEMENERG – OEN

It was found that the structure of normalised production is the same as the structure of actual production. To put it differently, it was considered that the shares of hydropower produced in power plants < 1 MW, between 1 and 10 MW, > 10 MW, of the total hydropower remain the same in case of normalisation as in the case of actual production.

II. The generation of wind power

The installed capacities and the production of wind power are shown in Table A1.4

Table A1.4

	2004	2005	2006	2007	2008	2009	2010
Ci [MW]	0.935	1.32	0.91	3.13	5.222	14.548	388.608
Qi [GWh]	0.142	0.227	0.396	2.524	4.978	9.065	306.348

Source: INS, EUROSTAT

Using the normalisation rule in Annex II of Directive 2009/28/EC, the normalisation values of the production of wind power in 2009 and 2010 were calculated, and are shown in Table A1.5.

Table A1.5

	2009	2010
Qnorm [GWh]	9.753	299.061

Source: ICEMENERG – OEN

III. The generation of solar-photovoltaic power

In Romania, the production of solar-photovoltaic power is at an early stage. The values of this production were:

3 MWh in 2009 (INS data)

20 MWh in 2010 (OEN estimate)

In the period under examination, the applied support mechanism (the system of mandatory quotas combined with the trading of green certificates) provided for the allocation of a green certificate for 1 MWh of solar-photovoltaic power.

Emergency Government Order No 88/2011 (detailed in Chapter 3) provides for the allocation of 6 green certificates for 1 MWh of solar-photovoltaic power. A significant increase of electricity production from this source is to be expected in the following years.

IV. The generation of electricity from biomass and biogas

Official statistics do not give distinct information on electricity produced from solid biomass/biogas/bioliquids.

INS publishes data related to the biomass and biogas quantities used as fuel for the production of electricity.

In this paper, electricity from biomass and biogas was calculated as a ratio between the quantity used as fuel for the production of electricity and the specific fuel consumption for the production of thermal power at national level.

Table A1.6

		2009	2010
1	Fuel consumption in thermal power plants [ktoe]	7 388	6 711
2	Production of electricity in thermal power plants [GWh]	30 448	28 806
3	Specific consumption [toe/MWh]	0.243	0.233
4	Consumption of solid biomass in thermal power plants [ktoe]	1.205	16.130
5	Consumption of biogas in thermal power plants [ktoe]	0.060	0.057
6	Production of electricity from solid biomass [GWh]	4.959	69.227
7	Production of electricity from biogas [GWh]	0.247	0.245
8	Production of electricity from solid biomass and biogas in thermal power plants [GWh]	5.206	69.472

Source: INS – rows 1, 2, 4, 5
row 3 = row 1 / row 2
row 6 = row 4 / row 3
row 7 = row 5 / row 3
row 8 = row 6 + row 7

IV. Gross final consumption of electricity

The calculation of the gross final consumption of electricity in 2009 and 2010 is shown in Table A1.7

Table A1.7 [GWh]

		2009	2010
1	Final consumption	37 606	41 317
2	Electricity consumption in the electricity and heating production sector	6 398	6 808
3	Losses	7 029	7 059
4	Gross final consumption of electricity	51 033	55 184

Source: INS – rows 1, 2 and 3
row 4 = row 1 + row 2 + row 3

VI. The share of the consumption of electricity from RES in the gross final consumption of electricity

Table A1.8

	2009	2010
Production of electricity from RES [GWh], of which:	17 074.962	17 692.553
hydro	17 060	17 324
wind	9.753	299.061
solar-photovoltaic	0.003	0.020
biomass	4.959	69.227
biogas	0.247	0.245
Gross final consumption of electricity [GWh]	51 033	55 184
The share of the consumption of electricity from RES in the gross final consumption of electricity (%)	33.46	32.06

ANNEX 2 – Consumption of energy from RES in transport

I. Biofuel consumption

The legislation in force in 2009 and 2010 (Government Decision No 1844/2005, as amended and supplemented by Government Decision No 456/2007 and Government Decision No 829/2010) requires that:

- diesel fuel placed on the market in 2009 and 2010 had to have a biofuel content of at least 4% by volume.
- between 1 July 2009 and 31 December 2010, petrol placed on the market had to have a biofuel content of at least 4% by volume

The legislation in force in that period did not however explicitly state the sustainability criteria for biofuels and bioliquids, nor any checks on the observance of these criteria. Having regard to the fact that Article 17(1) of Directive 2009/28/EC states that energy from biofuels and bioliquids is taken into account only when sustainability criteria are fulfilled, **in this paper it was assumed that the contribution of biofuels to the compliance with the indicative trajectory was null.** In reality, biofuels were used in Romania in transport, in the period in question.

In this context, it must be stated that the legislation was improved in 2011 by Government Decision No 935/2011. This Government Decision transposes the sustainability criteria in the national legislation and repeals Government Decision No 1844/2005, as amended and supplemented. This will make it possible to take into account the quantities of biofuels and bioliquids in Romania's Progress Report to be submitted in 2013, and to have a more accurate image of the efforts made. The provisions of Government Decision No 935/2011 are detailed in Chapter 9 of this paper.

II. Consumption of electricity from RES in transport

The values of the consumption of electricity in transport in 2009 and 2010 were those shown in Table A2.2.

Table A2.1

		2009	2010
1	Consumption of electricity in transport (ktoe), of which:	119	116,598
1.a	rail transport (ktoe)	72	75.815
1.b	pipeline transport (ktoe)	3	3.071
1.c	other modes of transport (ktoe)	44	37.712
1.c.1	air transport (ktoe)	n.a.	0.770
1.c.2	road transport (ktoe)	n.a.	36.385
1.c.3	ship transport (ktoe)	n.a.	0.557
2	The share of electricity from RES in the total gross final consumption of electricity two years before the year in question (%)	28.19	28.41
3	Consumption of electricity from RES in transport (ktoe)	33,54	33,13
3.a	rail transport (ktoe)	20,297	21,539

3.b	pipeline transport (ktoe)	0.846	0.872
3.c	other transport modes (ktoe)	12.404	10.714
3.c.1	air transport (ktoe)	n.a.	0.219
3.c.2	road transport (ktoe)	n.a.	10.337
3.c.3	ship transport (ktoe)	n.a.	0.158

Source: For rows 1, 1.a, 1.b, 1.c, 1.c1, 1.c2, 1.c3:

EUROSTAT for year 2009

INS for year 2010

For row 2

ICEMENERG - OEN

row 3.a = row 2 * row 1.a

row 3.b = row 2 * row 1.b

row 3.c = row 2 * row 1.c

row 3 = row 3.a + row 3.b + row 3.c

III. Final energy consumption in transport

In accordance with Article 3(4)(a) of Directive 2009/28/EC, for the total amount of energy consumed in transport only petrol, diesel, biofuels consumed in road and rail transport, and electricity are taken into account. The values in question for years 2009 and 2010 are shown in Table A2.2.

Table A2.2

		[ktoe]	
		2009	2010
1	Diesel in road transport	3021	2 946.262
2	Diesel in rail transport	128	144.780
3	Petrol in road transport	1503.470	1 405.743
4	Petrol in rail transport	0	0,634
5	Biofuels	231,21	253,33
6	Electricity	119.038	116.598
7	Total consumption of energy in transport within the meaning of Article 3(4) of Directive 2009/28/EC	5 002.718	4 867.347

Source: EUROSTAT:

rows 1 and 2 for 2009

INS – Energy balance and the structure of energy equipment:

rows 1 and 2 for year 2010

rows 3, 4, 5 and 6 for years 2009 and 2010

ICEMENERG – OEN:

row 7

IV. The share of the consumption of energy from RES in the final consumption of energy in transport

		M.U.	2009	2010
1	Consumption of energy from RES in transport, of which:	ktoe	33.54	33.13
1.a	consumption of electricity from RES	ktoe	33.54	33.13
1.b	consumption of biofuels	ktoe	0	0

2	Final energy consumption in transport	ktoe	5 002.718	4 867.347
3	Share of the consumption of energy from RES in final consumption	(%)	0.67	0.68

It must be stated again that during the period under examination, biofuels were actually used in transport, but there was no legislative framework concerning the compliance with the sustainability criteria and the verification of such compliance. This shortcoming was remedied in 2011.

ANNEX 3 – Consumption of energy from RES for heating and cooling

I. Consumption of energy from wood and wood waste

Firewood and wood waste play an important role in Romania's energy balance, especially for the coverage of the population's heating need. The main elements related to production and consumption are shown in Table A3.1.

Table A3.1 [ktoe]

		2009	2010
1	Production	3 838.215	3 899.894
2	Import	3.466	78.521
3	Export	-49.549	-10.216
4	Stock variation	-49.876	13.865
5	Total domestic consumption, of which:	3 742.256	3 982.064
5.a	consumption in thermal power plants	1.205	16.130
5.b	consumption in the energy sector	3.257	1.354
5.c	losses	0.376	0.190
6	domestic consumption for heating/cooling	3 737.418	3 964.390
7	Consumption in power station for the production of heat	28.897	44.960
8	Final energy consumption, of which	3 734.708	3 906.444
8.1	industry	211.974	249.984
8.2	population	3 394.425	3 526.063
8.3	services	118.263	123.597

Source: INS – Energy balance and the structure of energy equipment

II. Consumption of energy from municipal waste

Due to the content of municipal waste, in Romania it is not used for energy purposes.

III. Consumption of geothermal power and biogas

Romania has geothermal resources in certain areas of the country. A certain amount of biogas is also produced. INS publishes cumulated production and consumption values for geothermal power and biogas. These values are shown in Table A3.2

Table A3.2

		2009	2010
1	total domestic production	25.338	26.155
2	consumption in thermal power plants	0.060	0.057
3	consumption in the energy sector	0.584	1.162
4	consumption for heating/cooling	24.694	24.936
5	district heating	0.655	0.883
6	final consumption	25.485	24.351

7	statistical differences	-1.446	-0.298
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Source: INS for rows 1, 2, 3, 5, 6 and 7

row 4 = row 1 - row 2 - row 3 = row 5 + row 6 + row 7

Note: EUROSTAT publishes the following values for 2009:

Table A3.3

	2009
Geothermal power	
Primary Production	24
Transformation Input - District heating plants	0
Final Energy Consumption	24
Biogas	
Primary Production	1
Transformation Input - District heating plants	1
Final Energy Consumption	0

IV. Direct use of RES in heating and cooling processes

Table A3.4

		2009	2010
1	wood and wood waste	3 734.708	3 906.444
2	geothermal power + biogas	25.485	24.351
3	total	3 760.193	3 930.795

Source: INS for rows 1 and 2

row 3 = row 1 + row 2

V. Use of RES for district heating

Table A3.5

		2009	2010
1	total consumption of primary energy in district heating (ktoe)	2 360.033	2 436.084
2	production in district heating (ktoe)	2 310.278	2 368.783
3	consumption of primary energy from RES for district heating (ktoe), of which:	29.552	45.843
3.1	wood and wood waste	28.897	44.960
3.2	biogas	0.655	0.883
4	gross final consumption of energy from RES (ktoe), of which:	28.929	44.577
4.1	heat produced from solid biomass	28.288	43.718
4.2	heat produced from biogas	0.641	0.859

Source: INS for rows 1, 2, 3.1 and 3.2

row 3 = row 3.1 + row 3.2

row 4 = (row 2 / row 1) * row 3

VI. Gross final consumption of energy from RES in heating/cooling processes

Table A3.6**[ktoe]**

		2009	2010
1	direct consumption of energy from RES in heating/cooling processes	3 760.193	3 930.795
2	gross final consumption of heat from RES (district heating)	28.929	44.577
3	total energy consumption from RES in heating/cooling processes	3 789.122	3 975.372

Source: row 1 = table A3.4, row 3

row 2= table A3.5, row 4

row 3 = row 1+ row 2

VII. Gross final consumption of energy in heating/cooling processes

Table A3.7**[ktoe]**

		2009	2010
1	final energy consumption	22 387.168	22 739.193
2	consumption of electricity in the electricity and heat production sector	550.745	586.001
3	consumption of heat in the electricity and heat production sector	186.583	211.322
4	electricity grid losses	605.045	607.513
5	heat grid losses	444.269	442.862
6	gross final consumption of energy	24 173.810	24 586.891
7	gross final consumption of electricity	3 236.886	3 556.366
8	gross final consumption of energy in transport	4 901.821	4 736.557
9	final consumption of electricity in transport	119.038	116.598
10	gross final consumption of energy for heating and cooling	16 154.141	16 410.566

Source: INS for rows 1, 2, 3, 4, 5, 7, 8, 9

Row 6 = row 1 + row 2 + row 3 + row 4 + row 5

Row 10 = row 6 – row 7 – row 8 + row 9

VIII. The share of the consumption of energy for heating and cooling from RES in the gross final consumption of energy for heating and cooling

	2009	2010
gross final consumption of energy for heating and cooling	16 154.141	16 410.566
total consumption of energy from RES	3 789.123	3 975.3715
the share of the consumption of energy for heating and cooling from RES in the gross final consumption of energy for heating and cooling	23.46	24.22

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Annex 4 – Consumption of RES at national level in the period 2009-2010

Table A4.1

		2009	2010
1	Consumption of electricity from RES	1 469.446	1 522.595
2	Consumption of energy from RES in heating/cooling processes	3 789.123	3 975.372
3	Consumption of energy from RES in transport	33.54	33.13
4	Total consumption of energy from RES	5 258.569	5 497.966
5	Gross final consumption of energy	24 173.810	24 586.891
6	Share of RES consumption in gross final consumption (%)	21.75	22.36

Annex 5 – Electricity Transmission Grid Roadmap for 2010-2014, and indicative for 2019

As a consequence of the opportunities provided by the legislation in force, especially the E-RES promotion system, a high number of applications were submitted to TRANSELECTRICA and to the distribution operator for the approval of solutions for the grid connection of wind power plants, totalling around 30 000 MW by the end of March 2010. Most of these projects are located in Moldavia, Dobrogea and, to a lesser extent, in Banat. The roadmap under considerations states that, given the consumption demand in the National Electricity System and the related investment effort, it should be expected that only a relatively small portion of these projects become reality. In order to determine the actual transmission needs for the following ten years, the production-consumption balance possibilities within the NES must be taken into account, having regard to the technical characteristics of the plants which make up the production farm.

The baseline scenario of the ten-year ETG development analyses was based on the following assumptions regarding the installed capacity in the wind power plants.

- in 2014: 2 500 MW
- in 2019: 3 500 MW

New production capacities in hydropower plants were forecasted at:

- in 2014: 360 MW in hydropower stations
- in 2019: 500 MW in hydropower stations
1000 MW in pumped storage hydropower unit

In case of higher installed capacities in wind power plants, in accordance with the latest PNAER estimates or even above, the grid development needs will increase, decisively important in this respect being the geographical location of the new plants, on which the grid operator has no decision power or does not have information with sufficient time in advance.

The studies conducted by consultancy companies on the ETG operation regimes for 2019 and the update of the ETG Roadmap for 2014-2019 led to the identification of the investments needed in order to ensure the ETG connection of the new E-RES production plants and the safe operation of the system.

Compared to the electricity transmission grid configuration in 2010, the following new elements were taken into account from the beginning, determined by the initial assumptions concerning the connection to the ETG of certain new plants and the projects for the increase of the interconnection capacity:

2014:

- new station, Tariverde (400 kV), input-output connection to the 400 kV Aerial Energy Line Constanța Nord – Tulcea Vest, for the discharge of wind power plant production;
- new station, Rahmanu (400 kV), input-output connection to 400 kV Aerial Energy Line Isaccea-Dobrudja, for the discharge of wind power plant production;
- Input-output connection to Medgidia station (400 kV) for the 400 kV Aerial Energy Line Isaccea-Dobrudja, in order to ensure the stable operation of the wind power plant connected to the Rahmanu station (400 kV);
- Porțile de Fier II station (220kV), with Aerial Energy Line Porțile de Fier I and Aerial Energy Line Cetate – for the safe discharge of power from hydropower plant Porțile de Fier II.

2019:

- New station, Stupina (400 kV), input-output connection to 400 kV Aerial Energy Line Isaccea-Varna – for the discharge of wind power plant production;
- Input-output connection in the Medgidia station (400 kV) for 400 kV Aerial Energy Line Isaccea-Varna, in order to ensure the stable functioning of the wind power plant connected to Stupina station (400 kV);
- New station, wind power plant (400 kV) in Mehedinți County, connected through a new 400 kV Aerial Energy Line to the Resița station;
- Shift to 400 kV of the axis Timisoara-Săcălaz-Calea Aradului-Arad – for the discharge of power from wind power plant and the increase of exchange capacity with Serbia and Western Europe;
- Tarnița station (400 kV), 400kV Aerial Energy Line Tarnița-Mintia and 400 kV Aerial Energy Line Tarnița-Gădălin – for the connection to the grid of the Tarnița pumped storage hydropower unit (1000 MW);
- 400 kV Aerial Energy Line Suceava (RO) – Bălți (Republic of Moldova);
- 400 kV Aerial Energy Line Resița (RO) – Pancevo (Serbia).

With respect to new wind power plants, having regard to the high number of requests, a priority modelling was carried for those with a connection contract, and also additional calculations were made in order to identify discharge limits per areas, also taking into account those wind power plants with a connection approval, and even with only a completed study.

Calculations showed that having regard to the future commissioning of two new nuclear units (units 3 and 4) at the Cernavoda Nuclear Plant (in Dobrogea, an area where most wind power projects are also developed), there is a need to consolidate the electricity transmission corridors from Dobrogea to other areas.

System analyses identified the optimal solutions for consolidating these corridors and for ensuring the distribution of the electricity from RES. The investments taken into account include:

- 400 kV d.c. Aerial Energy Line Smardan – Gutinas;
- 400 kV d.c. Aerial Energy Line Cernavodă – Stalpu, with an input-output circuit connected to Gura Ialomiței and with a shift to operational voltage 400 kV of the Aerial Energy Line Stalpu-Teleajen-Brazi V, which operates at 220 kV;
- 400 kV Aerial Energy Line 400 kV Suceava – Gădălin, etc.

Annex 6 – Net greenhouse gas saving due to the use of energy from RES

A. Net greenhouse gas saving due to the use of biofuels in transport

In the period under examination (years 2009 and 2010) significant quantities of biofuels were used in Romania in transport (231.21 ktoe in 2009 and 253.33 ktoe in 2010). However, there was no legislative framework on the compliance with the sustainability criteria and the verification of such compliance. In these circumstances, the contribution of biofuels to the compliance with the indicative trajectory was considered to be null. Details are shown in Chapter 1 of this paper. As such, greenhouse gas saving due to the use of biofuels is also considered to be null. It must be noted that in 2011 the legislative framework was completed. It will be therefore possible to report an amount of biofuels for transport and net greenhouse gas savings in the future Progress Report.

B. Net greenhouse gas saving due to the use of electricity produced from hydropower, wind power and photovoltaic power

Hydropower has an important share in Romania's energy balance. Along with hydropower, there are increasing amounts of wind power, as well as smaller (but also increasing) amounts of solar-photovoltaic power. Details are shown in Table 1.b of this paper. The total amounts of electricity from hydro, wind and photovoltaic power were of 17 069.756 GWh in 2009 and 17 623.081 in 2010, in normalised values. These amounts were produced with no greenhouse gas emissions.

It is impossible to assess which would have been the structure of electricity production if this quantity had not been produced from the sources specified and which would have been the CO₂ emissions in the power plant which had produced the quantity of electricity in question.

It was assumed that this amount would have been produced in classical thermal power plants in a structure observing the current national structure and at a current performance. According to ANRE data (Report for the Monitoring of the E-RES Promotion System in 2010), the average value of the specific CO₂ emission (without the energy from renewable sources and without nuclear energy) was of 901.7 g CO₂/kWh between 2007 and 2009 in Romania.

It is considered that each kWh produced from the said sources (hydro, wind and photovoltaic power) leads to a reduction of CO₂ emissions by 901.7 g CO₂.

Table 1

	M.U.	2009	2010
Hydro, wind and photovoltaic power	million kWh	17 069.756	17 623.081
Specific CO ₂ emission reduction	kg CO ₂ /kWh	0.9017	0.9017
Total CO ₂ emission reduction	thousand tons CO ₂	15 392	15 891

C. Net greenhouse gas saving due to the use of biomass for the production of electricity, heating and cooling

Important amounts of biomass are used traditionally in Romania for energy purposes (especially in case of the rural population, for heating, food preparation and household hot water). This biomass is represented by wood and agricultural waste. According to the data provided by the National Institute for Statistics, the amounts of biomass for the production of heat and electricity (measured in energy units) were: 3 742.256 ktoe in 2009 (only from domestic production), 3 982 ktoe in 2010 (of which 3 900 from domestic production and 82 ktoe imported from the UE). For the calculation of CO₂ emissions resulting from the combustion of these amounts, the specific value recommended in Annex II of the document Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling (SEC(2010) 65, SEC(2010) 66) was used. This value is of 1 g CO₂eq/MJ. The values of total emissions resulted are shown in Table 2.

In order to calculate the reduction of CO₂ emissions resulting from the use of biomass, an assumption must be made with respect to the fuel which could/should have been used instead of biomass. Such an assumption is difficult and risky, as wood waste is traditionally used in Romania. It is assumed that this fuel would have been methane gas (this hypothesis is purely theoretical)

Table 2

	M.U.	2009	2010
Biomass consumption	ktoe	3 742.256	3 982
	MJ	156.688 x 10 ⁹	166.726 x 10 ⁹
Specific CO ₂ emission	g CO ₂ /MJ	1	1
Total CO ₂ emission when using biomass for energy	thousand tons CO ₂	156.688	166.726
Specific CO ₂ emission from CH ₄ combustion	g CO ₂ /MJ	69.7	69.7
Total emission from CH ₄ combustion	thousand tons CO ₂	10 921	11 621
Reduction of CO ₂ emissions due to the use of biomass	thousand tons CO ₂	10 764	11 454

ANNEX 7 – ACTUAL AND ESTIMATED EXCESS AND/OR DEFICIT (-) CONSUMPTION OF ENERGY FROM RES COMPARED TO THE INDICATIVE TRAJECTORY, WHICH COULD BE TRANSFERRED IN/FROM OTHER MEMBER STATES AND/OR THIRD COUNTRIES (KTOE)

Ref No		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
A	Consumption of energy from RES according to the indicative trajectory, of which											
A1	Electricity	1470	1660	1838	2026	2229	2367	2481	2544	2599	2654	2699
A2	Biofuels	223.8	253.1	283	308.9	335.4	363.3	385.7	410.9	438.1	468.2	489.2
A3	Heating/cooling	2819	2834	3000	2969	2925	3000	3058	3220	3390	3707	4038
B	Actual (2010)/estimated consumption (2011-2020) of energy from RES, of which											
B1	Electricity	1522.6	1660	1838	2026	2229	2367	2481	2544	2599	2654	2699
B2	Biofuels*	0	0	283	308.9	335.4	363.3	385.7	410.9	438.1	468.2	489.2
B3	Heating/cooling	3975.4	3900	3700	3700	3700	3700	3700	3700	3700	3707	4038
C	Actual/estimated excess or deficit consumption of energy from RES	982.097	812.9	700	731	775	700	642	480	310	0	0
C1	Actual/estimated excess or deficit consumption of energy from RES	52.6	0	0	0	0	0	0	0	0	0	0
C2	Actual/estimated excess or deficit consumption of energy from RES in transport	-223.8	-253.1	0	0	0	0	0	0	0	0	0
C3	Actual/estimated excess or deficit consumption of energy from RES for heating and cooling	1156.372	1066	700	731	775	700	642	480	310	0	0

* In 2010 and 2011, biofuels were actually used in transport, in accordance with the national reports sent to the Commission (286.46 ktoe in 2010). There was however no legislative framework on the compliance with the sustainability criteria and the verification of such compliance.

ACRONYMS

ANRE	Autoritatea Nationala de Reglementare in domeniul Energiei (<i>The National Energy Regulatory Authority</i>)
TCA	Technical Connection Approval
WPP	wind power plant
NPP	nuclear power plant
GC	green certificate
E-RES	electricity produced from renewable sources of energy
GO	guarantee of origin
GD	Government Decision
INS	Institutul National de Statistica (<i>National Institute for Statistics</i>)
AEL	Aerial Electrical Line
MECMA	Ministerul Economiei, Comertului si Mediului de Afaceri (<i>The Ministry of Economy, Trade and Business Environment</i>)
DO	distribution operator
Gov.O	Government Order
EGO	Government Emergency Order
TSO	transmission system operator (=TRANSELECTRICA)
EDG	electricity distribution grid
ETG	electricity transmission grid
EU	European Union
NES	National Electricity System
RES	renewable energy sources
TRANSELECTRICA	Compania Nationala de Transport al Energiei Electrice TRANSELECTRICA SA (<i>The National Electricity Transmission Company, TSO</i>)
TVA	Value Added Tax

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