Third Progress Report on the Promotion and Use of Energy from Renewable Sources in Greece

Submitted under Article 22 of Directive 2009/28/EC

2016

PREFACE

Greece's commitments towards the higher penetration of RES in the Greek energy system have been translated into a series of regulatory initiatives and support programs, placing the exploitation of RES as a key driver towards sustainable development and ensuring of energy supply.

Ministry of Environment and Energy (MEE) considers this progress report as a part of the comprehensive national energy planning to 2020 and beyond whereas RES increased penetration, energy efficiency improvement at end-use and cost effectiveness of the energy mix is of high importance and that it exhibits both the progress and commitment towards the 2020 RES targets.

The present progress report is submitted under Art. 22 of Directive 2009/28/EC and it discusses all issues regarding the progress of RES penetration in the Green energy system, whether this concerns statistical reporting of renewable energy production and final consumption, or in regards to adoption of measures to support RE deployment in all relevant sectors.

This report prepared under the supervision of Directorate for Renewable Energy Sources and Electricity of the MEE in collaboration with the competent authorities of General Secretariat for Energy and Mineral Raw Materials of the MEE and the technical and scientific support by the Centre for Renewable Energy Sources and Saving (CRES), according to Art. 27 of Law 4062/2012.

1. Sectoral and overall shares and actual consumption of energy from renewable sources in 2013 and 2014 *(Article 22 (1) a of Directive 2009/28/EC))*.

The penetration of RES in the gross final energy consumption (GFEC) increased 14% in 2014 compared with 2012 surpassing the respective projected penetration of the National Renewable Energy Action Plan (NREAP). As described in the 2nd progress report the main parameter shifting the overall share of RES in GFEC higher than expected was the use of RES for heating purposes in the final energy consumption, and, in specific, the residential sector. Specifically, in the last five years a significant increase in the use of biomass has been observed due to the final consumers' shift to biomass as a cheaper fuel to meet their heating needs and the consequences of the economic recession in the households' income. Nevertheless, the consumed quantities of biomass in households decreased by 9% in 2014 compared with the corresponding 2012 levels. Moreover, the solar thermal systems have steadily attained an important position in RES applications for domestic hot water production, while the penetration of heat pumps for space heating has exhibited a significant growth rate in the last two years leading to an increase of 65% in 2014 compared with 2012. The penetration of RES for heating already stands at 26.9% in 2014 surpassing even the corresponding indicative target for 2020, as presented at the NREAP (20%). The utilization of RES for heating purposes increased 15% in 2014 compared with 2012.

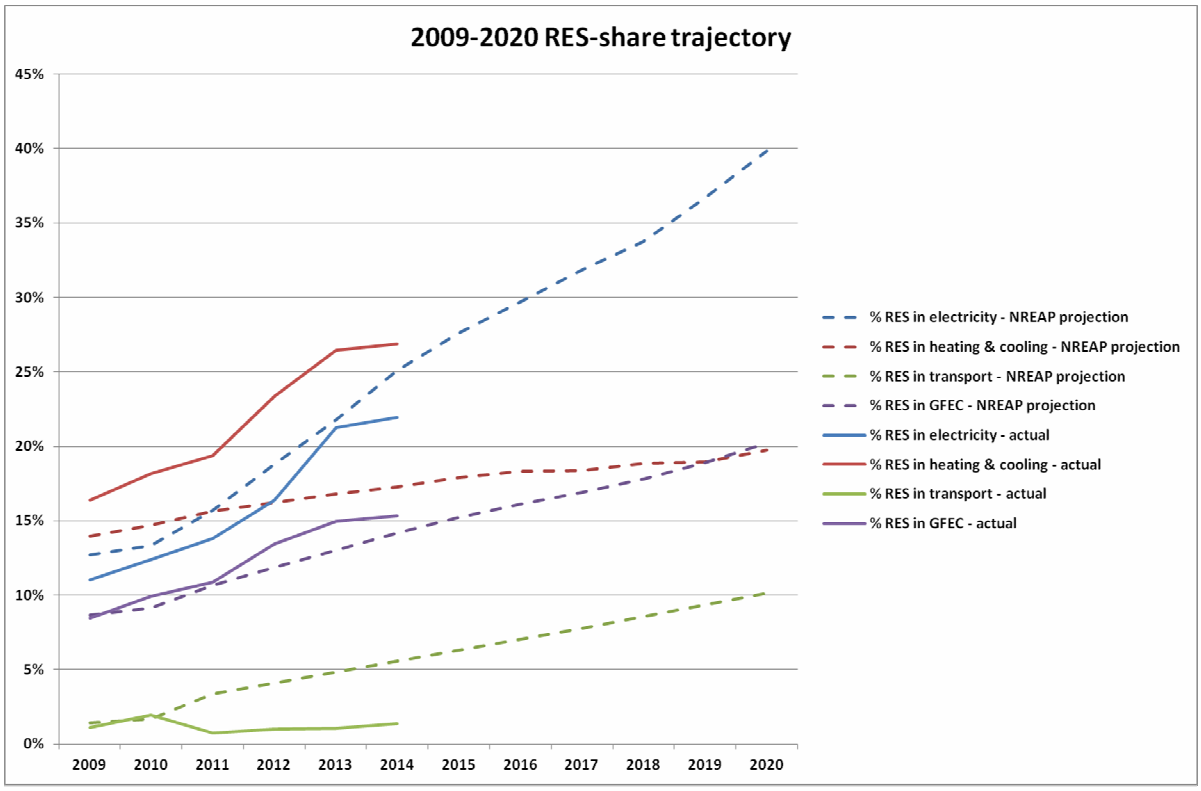

Figure 1: RES share trajectory from 2009 to 2020.

Regarding the penetration of RES in gross final electricity consumption, a significant increase has undoubtedly been observed (34% in 2014 compared with 2012). However a small offset from the projected figures for 2014 in the NREAP is evident (see Figure 1). Although the total installed capacity surpassed the installed capacity projected in NREAP in 2013, a deceleration was observed in 2014, while the RES electricity mix was differentiated significantly from the NREAP projections with the main share in the RES installed capacity being attained by photovoltaic stations instead of wind farms. It is worth mentioning, that according to the preliminary estimations for the 2015 the RES share in gross final electricity consumption has increased to approximately 24.5%.

Although in the field of electricity generation from RES focus has been placed on both technologies (i.e. wind farms and photovoltaics) that have significant potential and high commercial maturity, the sector of photovoltaics has attracted particularly high investing interest, leading to a rapid growth, well over their estimated development until 2013.

This tendency was mainly attributed to the adoption of a favourable support scheme, the reduction of PV projects' development cost and the adoption of different policy measures with regard to the streamlining of the licensing procedure (exemptions for the obligation of obtaining certain licenses for smaller-scaled installations).

Nevertheless, the penetration of photovoltaics remained stable in 2014 (increased less than 1%) due to the changes in the support scheme and the provision of lower feed-in-tariffs. No significant change in total penetration of photovoltaics has been recorded due to the introduction of net metering in the end of 2014.

Finally, even if the penetration of RES in transport increases with a smooth rate a significant deviation from the foreseen target has been observed.

Moreover, it has to be mentioned that the targets (in principle in absolute values per technology) set for the penetration of renewable energy in the national energy system in 2020 may be revised in the near future, in the framework of the upcoming national energy roadmap to 2030 and the assessment of the national energy mix. The new plan, in view of the urgent need for a more cost-effective energy mix, will consider, among others, the degree of effectiveness of implemented policies, the actual penetration of specific RES technologies in the last years, the development of investment costs for all RES technologies, as well as the consequences of the economic recession both in shaping the energy demand of end use sectors and in the investing environment. To this end, it is worth mentioning that the actual final energy consumption in Greece in 2014 was approximately 15.5Mtoe, while the respective projection in NREAP reached 21Mtoe.

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

	2013	**2014**
RES-H&C[2] (%)	26.47%	26.85%
RES-E[3] (%)	21.24%	21.92%
RES-T[4] (%)	1.04%	1.37%
Overall RES share[5] (%)	14.99%	15.32%
Of which from cooperation mechanism[6] (%)		
Surplus for cooperation mechanism[7] (%)		

[1] Facilitates comparison with Table 3 and Table 4a of the NREAPs.
[2] Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1)b) and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. The same methodology as in Table 3 of NREAPs applies.
[3] Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1)a) and 5(3) of Directive 2009/28/ECdivided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.
[4] Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)c) and 5(5)of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.
[5] Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.
[6] In percentage point of overall RES share.
[7] In percentage point of overall RES share.

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)[8]

	2013	2014
(A) Gross final consumption of RES for heating and cooling	1,311.4	1,355.7
(B) Gross final consumption of electricity from RES	1,072.6	1,108.3
(C) Gross final consumption of energy from RES in transport	28.0	37.0
(D) Gross total RES consumption[9]	2,411.9	2,501.0
(E) Transfer of RES to other Member States	0.0	0.0
(F) Transfer of RES from other Member States and 3rd countries	0.0	0.0
(G) RES consumption adjusted for target (D)-(E)+(F)	2,411.9	2,501.0

***Table 1b*: Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in Greece to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity[10]**

	2013		2014	
	MW	GWh	MW	GWh
Hydro[11]:	3,238.0	4,614.8	3,389.0	4,806.4
non pumped	2,539.0	4,234.7	2,690.0	4,442.3
<1MW	33.0	108.4	35.0	120.9
1MW–10 MW	187.0	555.7	185.0	540.9
>10MW	2,319.0	4,081.9	2,470.0	4,281.9
pumped	0.0		0.0	
mixed[12]	699.0	511.2	699.0	501.3
Geothermal	0.0	0.0	0.0	0.0
Solar:	2,579.0	3,648.1	2,596.0	3,791.9
photovoltaic	2,579.0	3,648.1	2,596.0	3,791.9
concentrated solar power	0.0	0.0	0.0	0.0
Tide, wave, ocean	0.0	0.0	0.0	0.0
Wind:	1,809.0	4,052.9	1,978.0	4,152.4
onshore				
offshore				
Biomass[13]:	46.0	216.4	47.0	219.7
solid biomass	0.0	0.0	0.0	0.0
biogas	46.0	216.4	47.0	219.7
bioliquids	0.0	0.0	0.0	0.0
TOTAL	7,672.0	12,532.3	8,010.0	12,970.3
of which in CHP				

[8] Facilitates comparison with Table 4a of the NREAPs

[9] According to Art.5(1)of Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

[10] Facilitates comparison with Table 10a of the NREAPs.

[11] Normalised in accordance with Directive2009/28/EC and Eurostat methodology.

[12] In accordance with new Eurostat methodology.

[13] Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

***Table 1c*: Total actual contribution (final energy consumption[14]) from each renewable energy technology in Greece to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources <u>in heating and cooling</u> (ktoe)[15]**

	2013	2014
Geothermal (excluding low temperature geothermal heat in heat pump applications)	11.5	11.7
Solar	187.0	191.8
Biomass[16]:	986.1	984.2
solid biomass	969.1	969.5
biogas	17.0	14.8
bioliquids	0.0	0.0
Renewable energy from heat pumps:	126.8	168.0
- of which aerothermal		
- of which geothermal	118.9	157.5
- of which hydrothermal	7.9	10.5
TOTAL	1,311.4	1,355.7
Of which DH[17]		
Of which biomass in households[18]	821.4	792.2

***Table 1d:* Total actual contribution from each renewable energy technology in Greece to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources <u>in the transport sector</u> (ktoe)[19],[20]**

	2013	2014
Bioethanol/ bio-ETBE		
Of which Biofuels[21] *Article 21.2*		
Of which imported[22]		
Biodiesel	23.0	30.0
Of which Biofuels[23] *Article 21.2*	23.0	30.0
Of which imported[24]		
Hydrogen from renewables		
Renewable electricity	5.0	6.9
Of which road transport	3.0	3.5
Of which non-road transport	2.0	3.4
Others (as biogas, vegetable oils, etc.) – please specify		
Of which Biofuels[25] *Article 21.2*		
TOTAL	28.0	37.0

Although for the period 2013-2014 compliance with the sustainability criteria for biodiesel was not verified, the provisions for the allocation of biodiesel including tax controls and data collected by the information system fuel stats (see 49 of Table 2) provide information for the connection of raw materials used with the final product (biodiesel) that was produced and consumed in Greece.

Given the fact that biofuels produced from wastes and residues need only to fulfil the criterion of article 17(2) and the fact that GHG saving for waste vegetable oil/animal fat and cotton seed biodiesel is 88% and 80% respectively, according to the typical values in part A of Annex B of law 4062/2012, the reported amounts could be regarded as quasi-compliant with the sustainability criteria.

[14] Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.
[15] Facilitates comparison with Table 11 of the NREAPs.
[16] Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.
[17] District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).
[18] From the total renewable heating and cooling consumption.
[19] For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.
[20] Facilitates comparison with Table 12 of the NREAPs.
[21] Biofuels that are included in Article 21(2) of Directive 2009/28/EC.
[22] From the whole amount of bioethanol / bio-ETBE.
[23] Biofuels that are included in Article 21(2) of Directive 2009/28/EC.
[24] From the whole amount of biodiesel.
[25] Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

2. Measures taken in the preceding 2 years and/or planned at national level to promote the growth of energy from renewable sources taking into account the indicative trajectory for achieving the national RES targets as outlined in your 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. Type and content of the electricity sales contract from solar thermal plants (with energy storage) on non-interconnected power grid, according to par. 3, Art. 12, L.3468/2006, as applicable (MD ΑΠΕΗΛ/Α/Φ1/ οικ.171302/29.01.2016, OG B 271/11.02.2016)	Regulatory		Energy administrative authorities, solar thermal plants	Complementary to NREAP	2016
2. Type and content of the electricity sales contract from hybrid plants (with energy storage) on non-interconnected power grid, according to par. 3, Art. 12, L.3468/2006, as applicable (MD ΑΠΕΗΛ/Α/Φ1/ οικ.185028/ 15.12.2015, OG B 3832/23.12.2015)	Regulatory		Energy administrative authorities, hybrid plants	Complementary to NREAP	2015
3. Invitation for the participation in 2016 biodiesel allocation οικ. 184157/30.11.2015, OG B 2601/2015)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2016
4. HEDNO's Infrastructure Action Plan approval, according to European Commission's 2014/536/ΕΚ/14.08.2014 decision and implementation of the Management Code for Power Distribution Systems on non- interconnected islands (RAE 389/2015, OG B 2542/25.11.2015)	Technical		Energy administrative authorities, energy companies/ producers, end users,	Complementary to NREAP	2015
5. Law 4342/2015, Part C, production licenses and connection security payments (OG A 143/ 09.11.2015)	Regulatory		Energy companies/ investors, public administration, energy administrative authorities	Complementary to NREAP	2015
6. Law 4336/2015, paragraph B, Memorandum of Understanding for 3-year program of EFS (OG A 94/ 14.08.2015)	Regulatory		Public administration	Complementary to NREAP	2015-2018
7. Allocation of biodiesel for the year 2015 in accordance with the provisions of art. 15A of law 3054/2002 οικ. 176374/18.5.2015 (OG 911/2015)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2015
8. Requirements for providing information at the sales point for biofuel blends (MD 1/2012, OG B 1288/11.4.2012 as amended by MD 33749, OG B 623/2015)	Regulatory		End users, public administration, retailers	Complementary to NREAP	2012
9. RES Net Metering installations' framework according to L.3468/2006, Art.14A (MD ΑΠΕΗΛ/Α/Φ1/οικ.24461/ 30.12.2014, OG B 3583/31.12.2014)	Regulatory		PV and small wind plant investors, PV plant owners, end users	Complementary to NREAP	2014
10. Allocation of Special Levy for the domestic electricity consumption in areas with operating RES installations (MD ΑΠΕΗΛ/Α/Φ1/ οικ. 23840/23.12.2014, OG B 3583/31.12.2014)	Regulatory/ Financial		End users[26], Local administration	Complementary to NREAP	2014
11. Law 4315/2014, Art. 54 concerning reviving of installation licences subjecting to judicial judgement (OG A 269/ 24.12.2014)	Regulatory		Energy companies/ investors, public administration	Complementary to NREAP	2014-2015
12. Invitation for the participation in 2015 biodiesel allocation οικ. 23327/19.12.2014, OG B 3549/2015)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2015

[26] Residents in areas with RES installations.

13. Amendment of the Transaction Code of Electricity Market, regarding accounting issues of the Special Account for RES (RAE 625/2014, OG B 3305/2014)	Financial		Public administration, energy administrative authorities	Complementary to NREAP	2015
14. Law 4296/2014, Art. 8 concerning priority of licencing of specific RES and Biomass, Biogas or Biofuel installations (OG A 214/ 02.10.2014)	Regulatory		Energy companies/ investors, public administration	Complementary to NREAP	2014
15. Law 4281/2014, Art. 210 concerning Ministry's RES electronic registry (OG A 160/ 08.08.2014)	Regulatory		Public administration, energy administrative authorities	Complementary to NREAP	2014
16. Allocation of biodiesel for the year 2014 in accordance with the provisions of art. 15A of law 3054/2002 Δ1/Α/οικ.13316/7.8.2014 (OG B 2220/2014)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2014
17. Law 4277/2014, Art. 47 concerning financial resources of special RES account of L.4001/2011, Art. 143(OG A 156/ 01.08.2014)	Financial		Public administration, energy administrative authorities	Complementary to NREAP	2014
18. Invitation for the participation in 2014 biodiesel allocation (MD Δ1/Α/οικ.6769/14.04.2014, OG B 937/2014)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2014
19. Law 4254/2014 "Support and development measures of Greek economy in the context of implementation of Law 4062/2012 and other provisions" (OG A 85/07.04.2014)	Regulatory/ Financial		Public administration, energy administrative authorities, energy companies/ investors, producers	Complementary to NREAP	2014
20. Supplementation of RAE 560/2013 referring to "IPTO's Ten-year Development Program of Hellenic Electricity Transmission System 2014-2023" (RAE 77Α/2014, OG B 556/2014)	Technical		Energy administrative authorities, energy companies/investors, end users,	Complementary to NREAP	2014-2023
21. Specification of criteria and methodology for the allocation of biodiesel (JMD Δ1/Α/οικ. 2497, OG B 253/8.2.2013 and its modification Δ1/Α/οικ. 4075/5.3.2014 (OG B 586/2014))	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013-
22. Management Code for Power Distribution Systems on non-interconnected islands (RAE 39/2014, OG B 304/11.02.2014)	Technical		Energy administrative authorities, energy companies/ producers	Complementary to NREAP	2013
23. IPTO's Ten-year Development Program of Hellenic Electricity Transmission System 2014-2023 (RAE 560/2013, OG B 3297/2013)	Technical		Energy administrative authorities, energy companies/ producers, end users,	Complementary to NREAP	2014-2023
24. Law 4203/2013 "Arrangement of topics on Renewable Energy Sources and other provisions" (OG A 235/01.11.2013)	Regulatory		Investors, end users, public administration	Complementary to NREAP	2013-2020
25. Solid biomass fuels for non-industrial use - Requirements and testing methods (MD 198, OG B 2499/04.10.2013)	Regulatory		End users, biomass production companies	Complementary to NREAP	2013-2020

26. Technical regulation for storage and transport of biofuels at oil refineries and oil products facilities (Δ3/Α/οικ. 15225, OG B 2055/23.8.2013)	Regulatory		Public administration, biofuel producers/importers, refineries, wholesalers	Complementary to NREAP	2013
27. Determination of the coefficients related to the allocation methodology of the Special Levy, as defined in Article 143, par. 2, case c of L.4001/2011, for the second semester of 2013 (RAE, 323/2013, OG B 1784/24.07.2013)	Financial		Investors, end users, public administration	Complementary to NREAP	2013
28. Allocation of 92,000 kiloliters of biodiesel for the year 2013 in accordance with the provisions of art. 15A of law 3054/2002 (JMD Δ1/Α/οικ. 11750/14.6.2013, OG B 1452/14.6.2013)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013
29. Supplementation to MD Υ.Α.Π.Ε./Φ1/1289/9012 which amended the special program for the deployment of photovoltaics up to 10kW on buildings and especially roofs (MD Υ.ΑΠ.Ε./Φ1/1506/οικ. 10662, OG B 1310/30.05.2013)	Financial		Investors, public administration	Complementary to NREAP	2013-2020
30. Law 4146/2013 "Establishment of a friendly developmental environment for strategic and private investment and other provisions" (OG A 90/18.04.2013), as amended by Art.68 of Law 4155/2013 (OG A 120/29.05.2013): Provisions for tax incentives for all RES technologies and investment subsidies for hydro, pumped hydro, hybrid, biomass and biogas stations	Financial		Investors, public administration	Complementary to NREAP	2014-2020
31. Law 4152/2013 "Urgent measures for implementing laws 4046/2012, 4093/2012 and 4027/2013" (OG A 107/09.05.2013): Section I - Arrangements concerning Renewable Energy Sources	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
32. Amendment of the special program for the deployment of photovoltaics on buildings and especially roofs (MD Υ.Α.Π.Ε./Φ1/1289/9012, OG B 1103/02.05.2013)	Financial		Investors, public administration	Complementary to NREAP	2013-2020
33. Amendment of MD Υ.Α.Π.Ε./Φ1/οικ.2262/31.01.2012 concerning the feed-in tariffs for electricity produced by photovoltaics, as applicable (MD Υ.Α.Π.Ε./Φ1/1288/9011, OG B 1103/02.05.2013)	Financial		Investors, public administration	Complementary to NREAP	2013-2020
34. Invitation for the participation in 2013 biodiesel allocation (MD Δ1/Α/οικ.3008/18.2.2013, OG B 335/2013 as amended by Δ1/Α/οικ. 5206/14.3.2013, OG B 626/2013)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2013
35. Additional obligations for the environmental licensing of electricity and thermal energy production units using biogas from anaerobic digestion of biomass (MD οικ. 166640, OG B 554/08.03.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
36. Law 4123/2013, Art. 24 concerning PV connection contracts, guarantees and farmer PV plants (OG A 43/19.02.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2015
37. Law 4122/2013 "Energy Performance of Buildings - 2010/31/EC Directive Transposition and other provisions" (OG A 42/19.02.2013)	Regulatory		Energy auditors, energy companies, end users, public administration	Complementary to NREAP	2013-2020
38. Assessment based on the energy efficiency criterion for granting a production license to geothermal power plants (MD 120/2013 OG B 240/08.02.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2021
39. Supplementing 1291/2011 RAE decision regarding the margin for the deployment of photovoltaics in Evia (RAE, 2/2013, OG B 240/08.02.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
40. Standard Environmental Commitments (SEC) for RES projects classified in category B of group 10 "Renewable Energy" of Annex X of MD 1958/2012 (MD 3791, OG B 104/24.01.2013)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
41. Determination of the coefficients related to the allocation methodology of the Special Levy, as defined in Article 143, par. 2, case c of L.4001/2011, for the first semester of 2013 (RAE, 1/2013, OG B 14/10.01.2013)	Financial		Investors, end users, public administration	Complementary to NREAP	2013
42. "Demonstration projects utilizing Renewable Energy and Energy Saving measures in new, under construction or existing buildings, gyms and swimming pools, belonging to public authorities and municipal enterprises" Program (NSRF 2007-2013)	Financial		Public administration, public authorities, planners	Complementary to NREAP	2013-2015

43. Law 4093/2012 "Approval of the Medium Term Fiscal Strategy Program 2013 - 2016 - Urgent Measures for implementing L.4046/2012 and the Medium Term Fiscal Strategy Program 2013-2016" (OG A 222/12.11.2012): Section I.2 - Arrangements concerning RES and CHP	Regulatory		Investors, public administration	Complementary to NREAP	2012-2016
44. Licensing for the production and trade of biofuels or bioliquids (MD Δ2/A/22285/9.11.2012, OG B 2998/12.11.2012)	Regulatory		Public administration, biofuel producers/importers	Complementary to NREAP	2012
45. Modifications on provisions regarding the electricity transactions code (MD 771, OG B 2673/02.10.2012): RES registry development and maintenance by the Electricity Market Operator	Regulatory		Electricity Market Operator	Complementary to NREAP	2012-2020
46. Suspension of the licensing procedure and the issuance of grid connection offers for photovoltaic plants due to having met the targets set by the MD A.Y./F1/oik.19598 (MD Υ.Α.Π.Ε. /Φ1/2300/οικ.16932, OG B 2317/10.08.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2012-2020
47. Amendment of the special program for the deployment of photovoltaics up to 10kW on buildings and especially roofs (MD Υ.Α.Π.Ε./Φ1/2302/οικ16934, OG B 2317/10.08.2012)	Regulatory/ Financial		Investors, public administration	Complementary to NREAP	2012-2020
48. Procedure for granting grid access to groups of small-scaled RES producers in cases where there is no sufficient local medium- or low-voltage grid capacity (RAE, 787/2012, OG B 2655/28.09.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2012-2020
49. Management system of data and information for the surveillance of production, refining, storage, import, export and transport of crude oil semi-processed and final oil products (MDΔ1/B/7364, OG B 1116/10.4.2012 as amended by Δ1/οικ. 16421 OG B 2328/16.8.2012)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2012
50. Determination of the coefficients related to the allocation methodology of the Special Levy, as defined in Article 143, par. 2, case c of L.4001/2011, for the period August 2012-June 2013 (RAE, 698/2012, OG B 2325/16.08.2012)	Financial		Investors, end users, public administration	Complementary to NREAP	2012-2013
51. Amendment of MD Υ.Α.Π.Ε./Φ1/2262 regarding the feed-in tariffs for electricity produced by photovoltaics (MD Υ.Α.Π.Ε./Φ1/2301/οικ.16933, OG B 2317/10.08.2012)	Financial		Investors, public administration	Complementary to NREAP	2012-2020
52. Determination of the share of contribution to ERT SA according to article 14 of L.1730/1987, which is a resource of the Special Account of Article 40 of L2773/1999 (MD Υ.Α.Π.Ε. /Φ1/2303/οικ.16935, OG B 2317/10.08.2012)	Financial		Investors, public administration, Electricity Market Operator	Complementary to NREAP	2012-2020
53. Peloponnesus: Declaration of power grid as congested for absorption of RES electricity load and ascertainment of safe RES load limits (RAE 699/2012)	Technical		Energy administrative authorities, investors	Complementary to NREAP	2012
54. Specification of raw materials for biofuels whose contribution is double counted towards RES targets (JMD ΔΙ/Α/οικ. 10839, OG B 1667/16.5.2012)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2012
55. Bureau for the Monitoring of Sustainability of Biofuels and Bioliquids (JMD Δ1/Α/οικ. 10838, OG B 1661/15.5.2012)	Regulatory		Public administration, economic operators, biodiesel producers, refineries, wholesalers	Complementary to NREAP	2012
56. Amending and supplementing MD 1958/2012 (MD 20741/12, OG B 1565/08.05.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
57. Environmental licensing of electricity and thermal energy production units using biogas from biomass anaerobic digestion (Circular οικ. 1604.81/03.04.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
58. Law 4062/2012 "Utilization of the former Airport at Elliniko - HELIOS Project - Promoting the use of energy from renewable sources (Transposition of Directive 2009/28/EC) - Sustainability criteria of biofuels and bioliquids (Transposition of Directive 2009/30/EC)" (OG A 70/30.03.2012)	Regulatory		Investors, end users, public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2012-2020

59. Modification of the JMD ΦΒ1/Ε2.1/244/6/26.01.2011 for the implementation of the "Energy Efficiency at Household Buildings" Program (MD ΦΒ1/2.1/5332/238 OG B 675/07.03.2012): Eligible interventions including the installation of RES systems in buildings	Financial		End users, energy companies, energy auditors, public administration	Complementary to NREAP	2012 until program budget per region has been spent
60. Supreme Chemical Council decision 316/2010 transposing directive 2009/30/EC and setting specifications for gasoline-bioethanol blends (OG B 501/29.02.2012)	Regulatory		Public administration, biofuel producers, refineries, wholesalers	Complementary to NREAP	2012
61. Law 4042/2012 "Protection of the environment through criminal law - Transposition into national law of Directive 2008/99/EC – Framework for the production and the treatment of waste - Transposition into national law of Directive 2008/98/EC – Arrangement of issues related to the Ministry of Environment, Energy and Climate Change" (OG A 24/13.02.2012)	Financial		Investors, end users, public administration	Complementary to NREAP	2012-2020
62. Amendment of the special program for the deployment of photovoltaics up to 10kW on buildings and especially roofs (MD Υ.Α.Π.Ε. /Φ1/οικ.2266, OG B 97/31.01.2012)	Financial		Investors, public administration	Complementary to NREAP	2012-2020
63. Feed-in tariffs for electricity produced by photovoltaics (MD Υ.Α.Π.Ε. /Φ1/οικ.2262, OG B 97/31.01.2012)	Financial		Investors, public administration	Complementary to NREAP	2012-2020
64. Projects and activities classification into categories/subcategories according to their potential environmental impacts as well as into groups of similar projects-activities (MD 1958/12, OG B 21/13.01.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2013-2020
65. Modification on the MD 9154/28.02.2011 regarding the special terms for the deployment of photovoltaics and solar systems on fields and buildings (MD οικ.52911, OG B 14/11.01.2012)	Regulatory		Investors, public administration	Complementary to NREAP	2012-2020
66. Allocation of 132,000 kiloliters for the year 2011 in accordance with the provisions of art. 15A of law 3054/2002 (JMD Δ1/Α/17970/29.7.2011, OG B 1700/29.7.2011)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2011
67. Invitation for the participation in 2011 biodiesel allocation (MD Δ1/Α/13972/16.6.2011, OG B 1307/16.6.2011)	Regulatory		Public administration, biodiesel producers/importers, refineries, wholesalers	Complementary to NREAP	2011-2012
68. Report under article 19 (2) of directive 2009/28/EC on the promotion on the use of energy from renewable sources	Regulatory		Public administration, biofuel producers/importers, refineries, wholesalers	Complementary to NREAP	2012-2020
69. Reinforcement of the interconnection capacity with neighbouring countries (increase of NTC on the existing interconnections + new interconnection with Turkey). Further actions and projects for the integration of the electricity system into the European grid through western Balkans	Technical		Investors, public administration, planners	Existing/ planned in NREAP	2010-2020
70. Development of storage facilities in the interconnected system by exploiting hydro pumping system at existing large hydro plants and new installations (public consultation RAE)	Technical		public administration, planners	Planned in NREAP	2014-2020
71. 10-year Plan for the Development of the Electricity Transmission System, elaborated by the System Operator	Technical		Investors, public administration	Complementary to NREAP	2014-2023
72. Interconnection of Cyclades with the mainland by 2017	Technical		Investors, public administration	Complementary to NREAP	2014-2022

* Indicate if the measure is (predominantly) regulatory, financial or soft (i.e. information campaign).
**Is the expected result behavioural change, installed capacity (MW; t/year), energy generated (ktoe)?
***Who are the targeted persons: investors, end users, public administration, planners, architects, installers, etc? or what is the targeted activity / sector: biofuel production, energetic use of animal manure, etc)?
**** Does this measure replace or complement measures contained in Table 5 of the NREAP?

2.1. Please describe the progress made in 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))*.

The legislative amendments in Greece during the last two years aimed mainly to address the issues that brought up by the rapid growth of the RES projects during the previous period and especially their impact on the figures of the Special Account of Art.143, L.4001/2011 for compensation of RES projects. Moreover, limited legislative interventions were made in certain areas, in compliance with the trajectory of RES deployment towards 2020.

As the PV installations had exceeded the projection for installed PV capacity in 2020 since 2014, suspension of the licensing procedure for new PV plants applications had been imposed (MD Υ.Α.Π.Ε./Φ1/2300/οικ.16932/10.08.2012) with the exemption of installations under the Special Program for the deployment of PVs up to 10kW on buildings, and especially roofs. With L.4254/2014 this suspension was abolished. Moreover, new boundaries for the period 2014-2020 were introduced concerning (a) capability of PV installing capacity for the period of 200MW per year and (b) an additional one-off 300MW capacity for fast truck PV projects.

In order to protect the figures of the Special Account of Art.143, L.4001/2011 from further worsening, L.4254/2014 provided boundaries after 01.01.2014 for installed capacity of: (a) solar thermal (100MW for interconnected, 10% of system installed capacity for non-interconnected islands), low-temperature geothermal (50MW), biomass (40MW) and biogas power units (50MW). Installations that exceed the aforementioned boundaries should be compensated not by the FiT scheme price scale but according to the Power Exchange Code Manual of Art.120, L.4001/2011.

With Art. 210 of L.4281/2014 the Directorate for Renewable Energy Sources and Electricity of the MEE is obliged to maintain an E-Registry of RES power stations data to support e-licensing. MD ΥΑΠΕ /Φ1 /οικ.24840 (OG B 1900, 03.12.2010) was abolished.

With L.4296/2014, priority was given to licencing of RES power generation projects related to biomass, biogas or biofuel of solid waste management bodies, RES of general land improvement organizations, of non-profit development or social organizations and for irrigation purpose of the Organization for the Development of Crete. This special provision, which expired at 31.12.2015, aimed to the promotion of projects with significant added value for the Greek agriculture areas, the waste management in an environment-friendly way and the contribution to the achievement of national RES targets. In areas declared congested by RAE decision, in terms of grid capacity, L.4296/2014 provide connection priority by the grid administrator to RES power generation projects related to biomass, biogas or biofuel of solid waste management bodies, RES of general land improvement organizations, of non-profit development or social organizations and for irrigation purpose of the Organization for the Development of Crete.

Net metering was introduced with MD ΑΠΕΗΛ/Α/Φ1/οικ..24461/ 30.12.2014 (OG B 3583/31.12.2014), according to the provision of Art.14A of L.3468/2006, in order to promote the simultaneous generation and consumption in the source, providing also capability to switch from the Special Program for the deployment of PVs up to 10kW on buildings and especially roofs. The measure favoured by the significant drop in the compensation prices of PV generation mentioned above. TSO started receiving applications for Low Voltage on 08.05.2015 and for Medium Voltage on 30.10.2015. There are limits for the nominal capacity

of each net metering PV installation: up to 50% of the contracted consumption of the installation, and up to 100% especially for non-profit institutions and public bodies. There is also a total limit of 500kW per installation. For non interconnected islands a special limit of 10kW is provided for all islands except Crete, where the same limit has been set at 20kW. Especially for public bodies the relevant limits are 20kW and 50kW respectively.

L.4342/2015 extended the lease contracts for exploration rights and management of high temperature geothermal fields that were valid at 31.12.2014, for 5 years after their expiration date (Art. 30). Moreover:

- Art. 27 amended the sub-paragraph I.2 of L.4152/2013 which regulated the framework of the annual levy for the right to maintain a production license for power generation, as several issues surfaced during implementation of the latest, especially the need to further determine the administrative procedures, the exemption in cases of areas with saturated power grids and the provision to expand the measure for smaller-scaled RES projects that exempt from the obligation of obtaining production licence.
- Art. 34 transposed the deadline from January 1st, 2015 to February 1st, 2016 for RES projects with bidding connection offers to deposit the necessary guarantee, as the majority did not respond in time due to the difficult financial situation and the subsequent lack of finance for mature projects by the banking system. It also provided a cost reduction of the guarantee by 30% for those who responded in time to the deposition of their guarantee from January 1st, 2015 until November 9th, 2016.
- In Art. 67, concerning the difficulties caused by the capital controls, that were imposed on June 2015, a special provision was included that actually expanded the duration of installation licenses and/or bidding connection offers issued until March 31st, 2016.

The Management Code for Power Distribution Systems of Non-Interconnected Islands issued with OG B 304/11.02.2014 (RAE decision 39/2014), complementing the secondary legal framework that regulates programming, operating and transaction issues in the stand-alone systems, as provided by L.4001/2011. The aim of the Code's implementation is to promote further penetration of RES and high efficiency CHP in the isolated non interconnected systems, enhancing the participation of various RES technologies and hybrid power stations, in accordance with the relevant legal projections and requirements, in order to achieve a RES share of 50-60% in the systems of non-interconnected islands.

Additionally, Hellenic Electricity Distribution Network Operator (HEDNO) took action in order to clarify which of the inactive RES installations' connection agreements that has expired, correspond to real, mature projects ready to activate. In June 2015, HEDNO announced that according to L.4152/2013 the aforementioned connection agreements will be terminated and put a deadline of one (1) month for investors that are still interested to submit complete readiness folder for activation. The same deadline applied for the numerous existing applications for accession to the Special Program for the deployment of PVs up to 10kW on buildings and especially roofs, in the systems of non-interconnected islands that had not been able to utilize for a long time due to limited RES penetration capability of the isolated systems.

Also, since January 2014 HEDNO accept applications for connection offers for biomass, biogas or biofuel plants, with production license or exemption from obtaining production license, in the non interconnected islands.

Regarding biofuels and bioliquids, law 4062/2012 fully transposed Directive 2009/28/EC into the Greek legislative framework, setting the regulatory grounds for statistical transfers, joint projects, joint support schemes, sustainability criteria for biofuels and bioliquids and verification of compliance, calculation of the biofuels and bioliquids impact on GHG emissions. The public consultation of the draft Joint Ministerial Decision that sets the requirements and the procedures for the certification and verification of compliance with the sustainability criteria and specifies the ways of demonstrating compliance, the reporting items and the economic operators with reporting obligations has been concluded and the JMD is expected to be published before the end of the first semester of 2016. Moreover, more than half of the producers/traders of biofuels have been certified by a voluntary scheme.

2.2. Measures in ensuring the transmission and distribution of electricity produced from renewable energy sources and in 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)).

At the end of 2014 Independent Power Transmission Operator (IPTO) and HEDNO proceeded to issuing of bidding connection offers for residual power capacity of 46.78 MW in the congested power grid of Peloponnesus (RAE 699/2012).

3. Support schemes and other measures currently in place that are applied to promote energy from renewable sources and report on any developments in the measures used with respect to those set out in your National Renewable Energy Action Plan. (Article 22(1)b) of Directive 2009/28/EC)).

Feed in Tariff Scheme (FiT)

Until 31.12.2015, in terms of compensation prices for electricity from RES, the main support scheme in Greece was based exclusively on the principle of FiT compensation price scale, as initialized by L.3468/2006 and significantly reviewed lately with L.4254/2014. As mentioned in the previous Progress Report, the rapid cost reduction of PVs combined with disproportionally high FiT had led to a significant growth of the PV installed capacity in the years 2011-2013, due to the high profit margin of such investments. This led to an increase of the required amount that had to be paid back to RES producers, as foreseen by the guaranteed FiT scheme, and therefore a gradually increasing deficit appeared in the RES Special Account, through which the payments to RES producers are realized. In order to ensure the sustainability of the RES Special Account, additional measures have been launched, as described in the Second Progress Report.

L.4254/2014 amended the FiT scheme for the existing PV, wind, small hydro (of up to 15MW_e) and CHP installations, mainly by recalculating the FiT compensation prices that were confirmed in the PPAs already signed. Also, the compensation prices of the FiT scheme for the projects with posterior PPAs were amended as well for all available RES, except PV, and CHP categories (in the case of PV, FiT compensation prices were regulated by M.D. Υ.Α.Π.Ε./Φ1/1288/9011). The concept was to readjust the economic performance of the existing plants by reducing their IRR in a more reasonable level without threatening their

viability. The new FiT configuration was based on the specific technology of each project, the procurement and installation cost during the time of connection to the power grid, the plant size and the economies of scale achieved, the potential public investment subsidies and the operating time of the installation. Moreover, RES and CHP projects were divided into two main categories according to whether they were publicly subsidized by more than 20% of the whole budget (considered with public subsidies) or not (considered without public subsidies), introducing different FiT scales for each category.

Special care was provided for (a) the installations of the Special Program for the deployment of PV of up to 10kW on buildings and especially roofs and those with installed capacity of up to 20kW, as these cases shouldn't be tackled strictly as profit-oriented investments, because of the relatively higher investment cost compared to similar PV projects, and (b) for PV plants of up to 100kW owned by professional farmers,

The aforementioned RES prices were also valid for projects with PPAs signed through the transition period up to introduction of the new RES support scheme, which will be valid retroactively from 01.01.2016. Greece is obliged to prepare and notify the new support scheme to the European Commission according to the provisions of the Guidelines on State aid for environmental protection and energy 2014-2020 (2014/C 200/01).

As a result of the lower compensation prices for new projects, many RES, especially PV projects in different stages in licensing procedure, were postponed or cancelled, as depicted to the expansion figures of RES during that period.

Under the same law, obligatory discounts were imposed on the payments for 2013 electricity generation from PV plants, according to the connection date (34% for those that were connected up to 31.12.2009, 35% for those of period 2010-2011, 37% for those of year 2012 and 37.5% for those of year 2013) .

The Special Levy for GHG emissions reduction, which constitutes one of the revenues of the RES Special Account, was being reassessed every six months by RAE in order to ensure the sustainability of the RES Special Account. However, since L.4254/2014 that was put in force on April 1st, 2014 and provided significant reductions in compensation prices, halting the rise in the RES Special Account's deficit, the Special Levy is being reassessed annually according to Art. 32 of L.4111/2013, which amended Art. 143 of L.4001/2011. Since 2011, the Special Levy was increased significantly from 1.84 €/MWh to 9.32 €/MWh in the first semester of 2013 and 19.73 €/MWh in 2014. The following table presents the breakdown of the Special Levy for GHG emissions reduction per end consumer category (RAE decisions 1/2013, 323/2013, 175/2014, 465/2015). Art. 17 of L.4324/2015 suspended implementation of RAE 772/2014, which provided increase of the Special Levy for 2015. In total the revenues of the Special Levy have amounted to 591.95 M€ for the year 2013, whereas they are estimated at 985.67 M€ for the year 2014.

Table 3.i. Readjustment of the Special Levy for GHG emissions reduction per end consumer category

End consumer category	Special Levy for GHG emissions reduction (€/MWh)		
	01.01.2013 – 31.03.2014	01.04.2014 – 31.12.2015	2016
High voltage consumers	1,79	2,23	2,41
Medium voltage consumers with consumption >13MWh	8,87	2,31	2,48
Medium voltage consumers – agricultural	6,97	10,83	10,12
Medium voltage consumers with consumption <13MWh	8,87	12,77	10,12
Low voltage consumers – agricultural	7,33	11,39	10,69
Low voltage consumers – residential	20,80	26,30	24,87
Low voltage consumers – other	21,77	30,89	28,21

In addition, as already mentioned in the Second Progress Report, to ensure the financial sustainability of the RES Special Account and eliminate its deficit, a number of additional emergency measures were taken, aiming either at increasing the revenues or decreasing the outflows of the Account. The measures that are still valid today include the following:

- A Special Levy of 2€/MWh is imposed to electricity produced by lignite and is directly attributed to the RES Account (L.4001/2011, as amended by L.4042/2012).
- Until 2015, the total amount of revenues from the auctioning of the rights of the greenhouse gas (GHG) emissions was attributed to the RES Account (L.3468/2006 as amended by L.4001/2011 and L.4062/2012). In the period 2016-2020, at least 50% of the total amount of auctioning revenues will be attributed to the RES Account, according to Directive 2003/87, as applicable, and MD Η.Π. 54409/2632/2004 (OG B' 1931/27.12.2004), as amended by MD Η.Π. 57495/2959/Ε103 (OG B' 2030/29.12.2010). For the period 2016-2020 it will be determined at 60% by law, as it has been announced.

Also, a corrective action regarding the revenues of the RES Special Account from the RES electricity sales in the wholesale market was applied by L.4152/2013. Specifically, RES electricity sales are realized on either the electricity wholesale market clearing price or the average variable cost of thermal power plants, whichever the highest. This action resulted to more than 83M€ cumulative revenues in 2013, since its application in May 2013, and more than 34M€ in 2014. In total from the beginning of 2013 until the end of 2014 the revenues from the RES electricity sales have amounted to 1.162 M€, whereas the estimation for the period 2015-2016 exceeds 1.217 M€.

On the other hand, measures taken to decrease the outflows of the Account and still valid today refer to the following:

- Readjustment of feed-in tariffs for the energy produced by PV plants for new entrant producers (MD Υ.Α.Π.Ε. /Φ1/οικ.2262/31.01.2012, MD Υ.Α.Π.Ε./Φ1/2301/ οικ.16933/10.08.2012, MD Υ.Α.Π.Ε./Φ1/1288/9011/02.05.2013). The following table presents the evolution of the FiTs for PVs according to the period in which a power purchase agreement was signed and, with law 4093/2012, according to the period the station was put into operation.

Table 3.ii: Evolution of the FiT for PV

Year			Guaranteed Feed in Tariff (€/MWh)			
			Interconnected System		Non-Interconnected islands	
			>100kW	<=100kW	>100kW	<=100kW
2009	Period in which a Power Purchase Agreement was signed	February 2009 –July 2009	400,00	450,00	450,00	500,00
		August 2009 – January 2010	400,00	450,00	450,00	500,00
2010		February 2010 – July 2010	400,00	450,00	450,00	500,00
		August 2010 – January 2011	392,04	441,05	441,05	
2011		February 2011 – July 2011	372,83	419,43	419,43	
		August 2011 – January 2012	351,01	394,89	394,89	
2012		February 2012 – July 2012	292,08	328,60	328,60	
	Period in which the station started operation	August 2012 – January 2013	180,00	225,00	225,00	
2013		February 2013 – July 2013	95,00	120,00	100,00	
		August 2013 – January 2014	95,00	120,00	100,00	
2014		February 2014 – July 2014	90,00	115,00	95,00	
		August 2014 – December 2014	90,00	115,00	95,00	
2015			1,1x $avgSMP_{n-1}$*	1,2 x $avgSMP_{n-1}$	1,1 x $avgSMP_{n-1}$	

* $AvgSMP_{n-1}$: The average system marginal price of electricity of the previous year

- Apart from the above FiT readjustment, the significant readjustment of FiT that took place consecutively since January 2012 for the installations under the Special Program for the deployment of PVs up to 10kW on buildings, and especially roofs (MD Υ.Α.Π.Ε. /Φ1/οικ.2266/31.01.2012, MD Υ.Α.Π.Ε./Φ1/2302/οικ16934/10.08.2012, MD Υ.Α.Π.Ε./Φ1/1289/9012/02.05.2013) is still valid. In specific, the current guaranteed FiT for such installations is 110€/MWh and will be decreasing 5€/MWh annually until 2019.

Nevertheless, the following emergency measures have been expired or suspended:

- The Special Solidarity contribution (SSc), that was proportional to the electricity produced and injected to the grid, was imposed to RES producers and attributed to the RES Special Account (L. 4093/2012) with the exemption of installations under the Special Program for the deployment of PVs up to 10kW on buildings, and especially roofs. The SSc obligation ended on 30.06.2014.
- The share (25%) of the levy to ERT SA according to article 14 of L.1730/1987, which was a resource of the Special Account of Article 40 of L.2773/1999 (MD Υ.Α.Π.Ε. /Φ1/2303/οικ.16935, OG B 2317/10.08.2012), is no longer attributed due to the suspension of operation of ERT SA in February of 2014. Although ERT SA has been reconstituted in 2015, the relevant provision has not come into force anew.
- The suspension of signing the grid connection contract and power purchase agreement of new PV plants until the end of 2013 (L.4152/2013) (excluding installations under the Special Program for the deployment of PVs up to 10kW on buildings, and especially roofs), has expired too.
- The suspension of the licensing procedure for new PV installations that had been imposed (MD Υ.Α.Π.Ε. /Φ1/2300/οικ.16932/10.08.2012) (excluding installations under the Special Program for the deployment of PVs up to 10kW on buildings, and especially roofs) was abolished by virtue of L.4254/2014. Εδώ ίσως πρέπει να αναλυθεί η αλλαγή στα FIT με το ν.4254/2014, που έγινε για τη βιωσιμότητα του Ειδικού Λογαριασμού.

The revenues from each emergency measure since its respective application are presented in the following table:

Table 3.ii: Cumulative revenues of emergency measures to ensure the financial sustainability of the RES Special Account

Measure	Beginning/amendment of measure	Cumulative revenues (M€)	
		2013-2014	2015-2016 (est.)
Lignite special levy	February 2012	91.88	86.00
GHG rights auctioning	March 2012	278.19	276.51
ERT S.A. levy contribution	August 2012/ February 2014	49.43	-
Special Solidarity contribution (SSc)	November 2012/ May 2013/ April 2014	517.24	-

The aforementioned structural measures along with the reform of the support scheme for RES by virtue of L.4254/2014 were expected to ensure the viability of the RES Special Account and to contribute to the establishment of a secure investment environment in view of the achievement of the 2020 targets. Although the deficit of the Special Account amounted to almost 604 M€ in the end of 2013, it was reduced to almost 84 M€ at the end of 2015. Despite the rapid decrease of the deficit, the Operator of Electricity Market (LAGIE) predicts that additional measures might be needed as it seems that in the second half of 2016 an upward trend is visible for various reasons. Among these a reduction of the expected revenues from the auctioning of the rights of the greenhouse gas (GHG) emissions, as their price decreases, reduced revenues from Special Levy for GHG emissions reduction and an increase of the outflows to RES electricity producers are expected.

Table 3.iv, presents the total financial support offered in 2014 and 2015 to RES plants, through the FiT scheme. It is worth mentioning that RES power plants on the non-interconnected islands continued to act beneficially to the total power generation cost, due to the high operation cost of diesel units, although the total RES support considering balance from electricity sales, from negative outcome as shown in the previous progress report, was balanced in 2014 and turned positive in 2015 by 31.57 M€.

***Table 3.iv*: Support schemes for renewable energy**

RES support schemes year 2014: Feed-in tariffs	Total support from FIT scheme (M€)	Total support from FIT scheme excluding SSc (M€)	Total RES support considering balance from electricity sales (M€)[27]
Interconnected system			
Wind	266.7		
Small hydro plants	61.8		
Biogas/Biomass	21.6		
PV (incl. PV in buildings roofs for the whole country)	1,170.8		
Total interconnected system	**1,520.9**	**1436.8**	**1,056.04**
Non-interconnected islands			
Wind	68.8		
Small hydro plants	0.0		
PV	92.3		
Total non-interconnected islands	**161.1**	**153.8**	**0.49**
Total RES-E annual support			**1,056.53**

[27] The electricity sales are adjusted after having estimated the part of the electricity sales attributed to high efficiency cogeneration

RES support schemes year 2015: Feed-in tariffs	Total support from FIT scheme (M€)	Total support from FIT scheme excluding SSc (M€)	Total RES support considering balance from electricity sales (M€)
Interconnected system			
Wind	339.4		
Small hydro plants	61.5		
Biogas/Biomass	23.3		
PV (incl. PV in buildings roofs for the whole country)	1,102.7		
Total interconnected system	**1,526.9**	**1,526.9**	**1,124.76**
Non-interconnected islands			
Wind	73.8		
Small hydro plants	0.03		
PV	88.2		
Total non-interconnected islands	**162.03**	**162.03**	**31.57**
Total RES-E annual support			**1,156.33**

General outline of the new RES support scheme, effective from the January 1st, 2016

The proposed new support scheme considers and adopts the requirements and provision described under the EC State Aid Guidelines for Environmental Protection and Energy (EEAG) 2014-2020, in particular the provisions presented in the section 3.3., and aims to contribute to the further sustainable growth of the RES sector in Greece in order to achieve the national energy targets foreseen under the Renewable Energy Directive (2009/28/EC) with the optimum balance in terms of costs and benefits for the society.

In specific, the proposed new support scheme, effective from the 1st of January 2016, will be based on the introduction of a new type of operating aid granted for the electricity generation from RES in the form of a premium, in addition to the market price whereby the generators sell their electricity directly in the market. The foreseen premium will be granted for a certain period of time that will be required until the full depreciation of the specific RES plants and will be based on a differential value that will consider the revenues accrued from their direct participation in the electricity market.

The proposed new support scheme will constitute the operational framework for the electricity generation of the RES plants, while at the same time considering the current transitory regime of the domestic electricity market to a new electricity market model. The new RES plants should be subjected to specific obligations based on their direct participation in the electricity market, which upon the activation of the new electricity market model would have the form of standard balancing responsibilities. During the transitory period towards this new electricity market, is considered to provide incentives (in the form of bonuses and penalties) to the new RES plants in order to optimize their hourly generation forecasts. Considering the absence of an intraday market, the latter mechanism could contribute to reducing the overall balancing services that need to be provided by the other electricity market participants. The new RES plants that are going to be granted support under the proposed premium, even if they are put into operation before the full transition to the new electricity market model, will be required to fully uptake the foreseen market obligations upon the completion and operation of the new electricity market model.

All new RES plants for electricity generation will receive aid under the new support scheme, while at least initially RES plants with an installed capacity up to 500 kW, except for electricity from wind energy where an installed capacity up to 3 MW applies, will have the right to choose to receive the granted aid in the form of fixed guaranteed price (FiT). The duration for the provision of operating aid is going to follow the general accounting rules in relation to the time period under which a RES plant can be fully depreciated and therefore will be kept at 20 years.

Moreover, from the 1st of January 2017 the Greek State intends to adopt competitive bidding processes for granting the relevant RES operating aid. The feasibility of the adoption of such competitive bidding process will be analyzed and assessed on the basis of existing and expected market conditions for the different RES technologies in Greece, especially after considering and evaluating the issues presented in the EEAG 2014-2020 article 126. In order to support this assessment, at least one round of a competitive bidding process, equal to at minimum 5% of the new installed RES capacity in the period 2015-2016, will be conducted within 2016. However, already from 2016 all the new Photovoltaic plants above the threshold of the 500kW, will be only entitled for support under the new scheme on the basis of a successful and awarded bid during such a competitive bidding process. The generalized adoption of competitive bidding processes from 2017 will be decided on until the end of 2016 on the basis of the above-mentioned assessment.

Subsidies on investment

In accordance to the Programming Period 2014-2020, the Ministry of Economy, Development and Tourism has announced that a new investment law is being prepared and will be put into consultation in the spring of 2016. The existing legal framework, as far as RES investments are concerned, provides subsidies only to hydro, pumped hydro, hybrid, biomass and biogas stations for all the investment plans submitted since 01.01.2014 (L.4146/2013, as amended through Art.68 of L.4155/2013). However, all RES technologies are eligible for tax incentives.

Biodiesel allocation

According to the provisions of law 3054/2002, as amended by law 4062/2012 biodiesel quantities are allocated every year, after a relevant call for tenders and an evaluation and allocation procedure, to stakeholders, producers or importers, who are interested in participating in this quota system. Through the evaluation procedure which is based on specific criteria and a specified formula (see 21 of Table 2), raw materials like energy crops, agro-industrial by-products (cottonseed) and wastes (animal fats and used vegetable oils) are approved for biofuel production. Moreover, motives are provided for financing research in the field of advanced biofuels and special provisions are set to prevent fraud in the used cooking oil and animal fat trade.

According to the relevant Ministerial Decision of the Ministry of Finance, the Ministry of Environment, Energy and Climate Change and the Ministry of Rural Development and Food (see 21 of Table 2), a specific quantity of pure biodiesel is allocated to beneficiaries in order

to achieve the mandatory percentage of biodiesel blended in diesel of 7%. The allocated quantity corresponds to 85% of the biodiesel that is anticipated to be consumed throughout the year. The remaining 15% is free marketed among refineries, wholesalers and biodiesel producers or importers.

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

The provisions of Article 3(6) of Directive 2003/54/EC are met by virtue of laws 3426/2005 and 4001/2011, as it was described in the first progress report for RES.

4. Please provide information on how, where applicable, the support 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?) (Article 22 (1)c of Directive 2009/28/EC)).

The FiT support scheme has been set up considering the higher cost of those RES technologies that may have additional benefits, as it was described in detail in the first progress report for RES.

Moreover, as regards biodiesel allocation, biodiesel quantities are allocated every year through an evaluation procedure which is based on specific criteria and a specified formula, according to the provisions of the JMD Δ1/A/2497 (see 21 of Table 2).

One of the criteria is the participation of biodiesel producers or importers in research programs relevant to the production of biofuels, bioliquids or biogas whose contribution is double counted towards RES targets, i.e. produced from raw materials that are specified in JMD Δ1/A/οικ. 10839 (see 54 of Table 2). This criterion allocates 4.75% of the total quantity of biodiesel to the beneficiaries.

Another criterion is based on the quantities of used cooking oil and animal fat that the beneficiaries use for the production of biodiesel. This criterion allocates 12.5% of the total quantity of biodiesel to the beneficiaries.

5. Please provide 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)).

The functioning of the system of guaranteed of origin for electricity and heating and cooling from RES was described in the first progress report for RES.

The following tables present statistical data regarding the information that is kept in the electronic registry information system and refer to the period 2013-2014 (source: Hellenic Electricity Market Operator - LAGIE S.A.).

Table 5.i: **Statistical data of the GoO system for the period 01/01/2013-31/12/2014**

Issued GoO (MWh)	**PV**	**Wind**	**Hydro**	**Total**
Q1/2013	11,865	188,637	2,652,781	2,853,283
Q2/2013	6,189	873,112	4,491	883,792
Q3/2013	14,484	0	5,562	20,046
Q4/2013	4,727	0	11,890	16,617
Q1/2014	9,362	0	4,025,827	4,035,189
Q2/2014	19,363	637,290	5,336	661,989
Q3/2014	15,005	0	5,235	20,240
Q4/2014	120,798	260,696	25,047	406,541
Total	**201,793**	**1,959,735**	**6,736,169**	**8,897,697**
Cancelled GoO (MWh)	**PV**	**Wind**	**Hydro**	**Total**
Q1/2013	15,098	336,388	3,475	354,961
Q2/2013	21,732	0	5,188	26,920
Q3/2013	12	0	9,252	9,264
Q4/2013	11,870	188,637	2,249,781	2,450,288
Q1/2014	6,189	873,112	4,491	883,792
Q2/2014	15,766	0	10,448	26,214
Q3/2014	1,549	84,495	3,989	90,033
Q4/2014	7,428	0	3,594,759	3,602,187
Total	**79,644**	**1,482,632**	**5,881,383**	**7,443,659**
Transferred GoO (MWh)	**PV**	**Wind**	**Hydro**	**Total**
Q1/2013	0	0		0
Q2/2013	0	0	403,000	403,000
Q3/2013	0	0		0
Q4/2013	0	0		0
Q1/2014	0	0		0
Q2/2014	0	0	429,688	429,688
Q3/2014	0	0		0
Q4/2014	0	0		0
Total	**0**	**0**	**832,688**	**832,688**

Table 5.ii: **New entrants of plants at the GO register**

	PV		**Wind**		**Hydro**		**Total**	
	number	**MW**	**number**	**MW**	**number**	**MW**	**number**	**MW**
Q1/2013	21	2.09	1	24	0	0	22	26.1
Q2/2013	21	22.17	2	60	0	0	23	82.2
Q3/2013	5	1.7	0	0	0	0	5	1.7
Q4/2013	14	16.17	0	0	0	0	14	16.2
Q1/2014	8	8	2	4.2	1	2	10	12.3
Q2/2014	39	90	13	169.9	5	19.15	52	259.7
Q3/2014	21	2	1	25.5	0	0	22	27.4
Q4/2014	6	4	2	46	0	0	8	50.2
Total	**135**	**146.2**	**21**	**329.6**	**6**	**21.2**	**156**	**475.8**

6. Please describe 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)).

Table 4: Biomass supply for energy use

	Amount of domestic raw material (*)		Primary energy in domestic raw material (ktoe)		Amount of imported raw material from EU (*)		Primary energy in amount of imported raw material from EU (ktoe)		Amount of imported raw material from non EU(*)		Primary energy in amount of imported raw material from non EU (ktoe)	
	2013	**2014**	**2013**	**2014**	**2013**	**2014**	**2013**	**2014**	**2013**	**2014**	**2013**	**2014**
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	664,265	588,069	211.7	188.4	191,685	138,736	65.2	47.2	31,606	17,430	10.8	5.9
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**	66,382	59,776	24.2	22.5	14,317	19,406	6.2	8.3	1,957	1,479	0.8	0.6
Energy crops (grasses, etc.) and short rotation trees *(*please specify*)*												
Agricultural by-products / processed residues and fishery by-products **	1,832,632	1,858,977	637.2	651.4								
Biomass from waste (municipal, industrial etc.) **		25736		8.4								
Others (please specify)	172,979,626	171,600,970	88.5	87								
Biomass supply for transport:												
Common arable crops for biofuels *(*please specify main types*)*												
Energy crops (grasses, etc.) and short rotation trees for biofuels *(*please specify main types)												
Others (please specify)	73,002 tonnes of cotton seed, 236 tonnes of cotton oil, 16,678 tonnes of used cooking oils and animal fats	91,475 tonnes of cotton seed, 23,895 tonnes of used cooking oils and animal fats	23.0	30.0	357 tonnes of used cooking oils and animal fats	456 tonnes of used cooking oils and animal fats	<0.9	<0.9	1,284 tonnes of used cooking oils and animal fats	428 tonnes of used cooking oils and animal fats	0.9	<0.9

* Amount of raw material if possible in **m3 for biomass from forestry** and in **tonnes for biomass from agriculture and fishery and biomass from waste**

** The definition of this biomass category should be understood in line with table 7 of part 4.6.1 of Commission Decision C (2009) 5174 final establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC

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

Land use	Surface (*ha*)	
	2013	**2014**
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) *(*Please specify main types)	78,460	80,491
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	-	-
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	-	-

7. Please provide information on any changes in commodity prices and land use within your Member State in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources? Please provide where available references to relevant documentation on these impacts in your country. (Article 22(1) h) of Directive 2009/28/EC)).

The main commodities used for energy production during the years 2013 and 2014 are saw dust and chips, fire wood, rice husks, exhausted olive cakes, fruit kernels, pellets for heating and sunflower/rapeseed seeds for biodiesel production.

Table 7.i presents an estimation of the weighted average price of the aforementioned commodities from 2009 to 2014. However, it only serves as a rough indication of the development of market prices.

***Table 7.i:* Commodity prices (in €/t)**

fuel (€/ton)	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Forest residues (Saw dust, chips etc.)[28]	36.52	41.79	29.77	20.43	22.96	11.88
Fire wood – imports[29]	50.69	44.65	56.55	76.86	65.90	68.71
Fire wood – primary production[30]	18.07	18.07	18.07	19.37	20.34	21.35
Rice – cotton husks[28]	6.83	1.56	0.17	4.12	14.63	13.33
Exhausted olive cakes[28]	43.66	57.04	60.75	63.31	77.13	82.66
Fruit kernels[28]	50	75	75	75	75	80
Pellets - imports[29]	112.46	147.22	149.80	178.54	168.63	167.35
Pellets - primary production[28]	195.00	180.00	186.42	179.86	196.09	231.58

The prices of forest residues, as recorded in questionnaires sent by CRES to several biomass users have exhibited a slight decrease. Firewood and exhausted olive cakes recorded a relative increase of prices in the period 2011-2014, while the firewood imports prices increased the period 2011-2012 and decreased in the following years. In any case the firewood imports prices depend on the countries of origin.

When biomass exploitation investments start, as a consequence of the favourable legal framework for bioenergy production, imports of firewood are expected to rise, while exhausted olive cakes may be exploited locally rather than exported.

The prices of imported pellets have also recorded a relative increase in the years 2009 to 2012, while a decline has been observed the following two years in relation with 2012. Finally, sunflower seed prices ranged from 40-45 €/t.

The harvested area allocated to the oil crops grown in Greece for biofuel production is depicted in the following table.

Table 7.ii: Harvested area allocated to oil crops grown for biofuel production (ha)

	2013	**2014**
Sunflower seeds	70,217	67,638
Rapeseed	4,152	3,865
Cardoon	282	148
Soya	1,972	2,158
Other	-	0.5
Total	**76,623**	**73,810**

[28] Primary research based on questionnaires conducted by CRES
[29] National Statistical Services (ELSTAT)
[30] General Secretariat of Forests, Ministry of Environment, Energy and Climate Change

8. Please describe the development and share of 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)[31]**

Article 21(2) biofuels[32]	2013	2014
Production – Biodiesel from cottonseed oil	8.0	9.7
Consumption – Biodiesel from cottonseed oil	8.0	9.7
Production – Biodiesel from used cooking oils and animal fats	15.0	20.3
Consumption – Biodiesel from used cooking oils and animal fats	15.0	20.3
Total production Art.21.2.biofuels	23.0	30.0
Total consumption Art.21.2. biofuels	23.0	30.0
% share of 21.2. fuels from total RES-T	82.2%	81.3%

9. Please provide information on the 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. Please provide information on how these impacts were assessed, with references to relevant documentation on these impacts within your country. (Article 22 (1) j) of Directive 2009/28/EC)).)

No specific study has been performed to gauge the impact of the production of biofuels and bioliquids on biodiversity, water resources, water and soil quality within Greece so far. However as it was concluded in the reply to the request of additional information in the framework of EU Pilot 3306/12/ENER no significant impact is expected due to the small scale energy crops cultivated in the country and the appropriate legislation issued and applied.

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

For the calculation of net greenhouse gas emission savings from the use of renewable energy other than solid and gaseous biomass and biofuels (i.e. hydro, wind, PV, solar thermal, geothermal and heat pumps), the methodology used was based on the emission factors that were presented in the national Annual Inventory Report, submitted in 2015 under the Convention and the Kyoto Protocol for greenhouse and other gases for the years 1990-2013.

The estimation of GHG emissions presented in the aforementioned report was based on the methods described in the IPCC Guidelines, the IPCC Good Practice Guidance, the LULUCF Good Practice Guidance and the CORINAIR methodology. The emission factors used derived from the above-mentioned methodological sources with special attention paid in selecting the emission factors so as to better reflect practices in Greece. Furthermore, emission factors were also obtained from installation specific information contained in EU ETS annual verified submissions.

The methodology used to calculate the net greenhouse gas emission savings from the use of renewable energy, other than solid and gaseous biomass and biofuels, in the current report is as follows.

[31] Please see notes below Table 1.d.

[32] Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material.

***Table 10.i.* Utilised emissions factors**

	CO2	CH4	N2O
	t/TJ	kg/TJ	kg/TJ
Public Electricity and Heat Production			
Liquid Fuels	75.60	3.00	0.600
Solid Fuels	123.43	1.00	1.500
Gaseous Fuels	55.63	1.00	0.100
Manufacturing Industries and Construction			
Liquid Fuels	83.91	1.816	3.555
Solid Fuels	94.32	1.000	1.500
Gaseous Fuels	55.57	1.000	0.091
Other Sectors			
Liquid Fuels	72.44	3.171	2.28
Solid Fuels	99.18	1.000	1.50
Gaseous Fuels	55.57	1.000	0.10
Transport			
Liquid Fuels	73.17	13.544	2.70
Gaseous Fuels	55.65	65.539	2.56

For the calculation of net GHG saving from the use of renewable electricity (other than solid and gaseous biomass) the shares of coal, oil and gas in electricity in the total consumption of fossil fuels are firstly estimated. The amount of fossil fuels used in the national electricity mix that would produce the same amount of electricity is actually produced by RES is calculated next. The estimated primary energy saved is, then, allocated to each fuel (liquid, solid and gaseous fuels), according to the predefined shares, and is finally multiplied with the aforementioned emission factors.

A similar approach is followed for the estimation of net greenhouse gas emission savings due to the use of renewable energy sources, other than solid and gaseous biomass and biofuels, in heating and transport.

For the calculation of net greenhouse gas emission savings from the use of solid and gaseous biomass and biofuels, the methodology used is as follows.

- For biofuels: In accordance with Article 22(2) of Directive 2009/28/EC.
- For electricity and heat the weighted fossil fuel emission factors are again estimated on the basis of the emission factors for liquid, solid and gaseous fossil fuels (as presented in the national Annual Inventory Report, submitted in 2015 under the Convention and the Kyoto Protocol for greenhouse and other gases for the years 1990-2013).

Table 6 presents the estimates for GHG emission savings from the use of renewable energy in 1000t CO2eq, as estimated according to the approach described above.

***Table 6:* Estimated GHG emission savings from the use of renewable energy (1000t CO2eq)**

Environmental aspects	2013	2014
Total estimated net GHG emission saving from using renewable energy[33]	18,897	17,041
- Estimated net GHG saving from the use of renewable electricity	14,614	12,585
- Estimated net GHG saving from the use of renewable energy in heating and cooling	3,952	4,066
- Estimated net GHG saving from the use of renewable energy in transport	331	390

It should be noted that the estimated net GHG savings from the use of renewable electricity are higher in 2013 compared with 2014 due to the higher electricity production from hydropower (6,375 GWh in 2013 compared with 4,595 GWh in 2014). Obviously, the utilization of normalized values will lead to almost equal estimations about the GHG savings.

[33] The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) 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) l, m) of Directive 2009/28/ EC)).

The estimated excess production, which could be used for transfer to other MS, was submitted in the Greek NREAP (Table 9 of the Greek NREAP) and it is presented in the following table. Moreover, table 7 presents the actual RES excess for the period 2010-2014, compared to the RES indicative trajectory prepared in 2009.

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 in Greece (ktoe)[34],[35]**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual excess production	138	202	320	242	195						
Estimated excess production	257	408	513	686	812	856	842	737	743	683	529

11.1. **Please provide details of statistical transfers, joint projects and joint support scheme decision rules.**

No developments have been made so far on statistical transfers, joint projects and joint support scheme decision rules.

12. Please provide information on how 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)).

The energy produced from waste (municipal, industrial etc.) corresponds exclusively to biogas primary production deriving from landfill and sewage sludge biogas plants. Until now, no RDF/SRF are exploited for electricity production in Greece and thus no requirement has arisen to estimate the share for biodegradable waste in the reported figures.

[34] Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up 2020. In each report Member State may correct the data of the previous reports.

[35] When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. –x ktoe).