REPUBLIC OF CYPRUS

MINISTRY OF COMMERCE, INDUSTRY AND TOURISM

Reply of the Republic of Cyprus to a letter from the Directorate-General for Energy of the European Commission relating to clarification questions about the National Renewable Energy Action Plan 2010-2020

With regard to the letter from the Directorate-General for Energy of the European Commission under ref. D(2011)102445 dated 9.2.2011 and for the assessment of the National Action Plan of Cyprus by the competent Commission departments to be completed, the following clarifications are provided to the questions made in the said letter:

Table 3:

(a) It seems that the figures for renewable energy in transport (RES-T) are wrong. These should be corrected. (Table 4b gives RES-T shares, which seem to be correct). If they are correct: The indicated RES-T share of 4.9% for 2020 would be below the minimum target of 10% set by the Directive.

(b) Figures for RES minimum trajectory (ktoe) do not match with the calculations of the Commission services. They should be corrected.

Reply:

(a) As stated in page 13 of the official Greek template for the National Action Plan (page 12 of the English version) published on the European Union website, which has been used by the Republic of Cyprus, "*the calculation of compliance with the target set out in Article 3(4) differs from the calculation of transport's contribution to the Member State's overall national target for renewable energy*".

The 4.9% RES-T share recorded is the contribution of transport in the overall target of 13% RES in the gross final consumption of energy for 2020 and is lower than 10% because the energy consumption not only in road transport but also in the aviation and shipping sectors has been counted towards the denominator. Moreover, to determine the 10% share of transport, the guidelines provided for in page 13 of the Template have been followed. More specifically, it is laid down that *"for the transport target, not for the overall target:*

*- Among petroleum products, only petrol and diesel count towards the **denominator**. This means that the kerosene/ jet fuel used in aviation and the fuel oil used in shipping do not count (though the diesel used by some trains and some inland waterway vessels does),*

*- Biofuels from wastes, residues, non-food cellulosic material and lingo-cellulosic material count **double** towards the **numerator**,*

- Electricity from renewable sources used in **road** vehicles counts **2.5** times towards the **numerator** and the **denominator**.

(b) According to the official Greek Template for National Action Plan published on the European Union website, which has been used by the Republic of Cyprus as the basis for drafting the National Action Plan, the figures requested were the RES minimum trajectory as a percentage and the RES maximum trajectory in (ktoe). Therefore, the figures in the last row of Table 3 relating to the RES trajectory (ktoe) sent by the Republic of Cyprus in the Action Plan is the RES maximum trajectory in ktoe, not the minimum one.

If the figure requested in Table 3 is RES minimum trajectory (in ktoe) and the difference from the Greek version of the template is due to an error in translation, the RES minimum trajectory (ktoe) is cited below to be integrated in the Action Plan of the Republic of Cyprus.

	2011-2012	2013-2014	2015-2016	2017-2018	2020
As part B of Annex I of the Directive (S=share)	**S2005+20% (S_{2020}-S_{2005})**	**S2005 +30% (S_{2020}-S_{2005})**	**S2005 + 45% (S_{2020}-S_{2005})**	**S2005 +65% (S_{2020} –S_{2005})**	
RES minimum trajectory (%)	**4.92**	**5.93**	**7.45**	**9.47**	**13.0**
RES minimum trajectory (ktoe)	**87.1**	**108.7**	**141.5**	**185.3**	**263**

Table 4b

Figures should be indicated in ktoe for "(J) Expected RES contribution to transport for the RES-T target".

Reply:

Figures in ktoe for "(J) Expected RES contribution to transport for the RES-T target" are as follows:

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(I) Expected RES contribution to transport for the RES-T target: (C)+(2.5-1)x(H)+(2-1)x(I)	0	16.15	17.58	13.2	20.95	22.72	24.55	35.60	46.67	57.75	68.85	77.12

Provision of information (Q4.2.5)

While the plan states that no such scheme exists currently (and is in development), the plan also states that the Cyprus Institute of Energy publishes a list of certified installers. It should be explained what this certification is, if related to RES installer schemes in Cyprus.

Reply:

As referred to in paragraph 4.2.5(c), there are currently no certification / qualification schemes in place in Cyprus for small-scale RES installers currently. The list of installers referred to in paragraph 4.2.5.(d) as published on the website of the Cyprus Institute of Energy provides only information about the installers and the firms installing RES in Cyprus. For the time being, that list is not linked to certification or qualification schemes for small-scale RES installers. When the certification or qualification plan is completed, the list to be published will provide information only about certified / qualified small-scale RED installers.

Grid development (Q4.2.6)

More detailed information should be given on the role and the development of intelligent networks, information technology tools and storage facilities [4.2.6 (c)]. What will be done and how? Are there concrete steps foreseen?

Reply:

The Distribution Network Owner is encouraged to implement, on a pilot basis, a system of intelligent AMI architecture meters, which will combine all necessary technologies from the consumer to the central management systems, with a two-way flow of information, which will render the network capable of offering all operating and metering capacities required as per Mandate M/441 of the European Commission. Through the pilot project, technologies of automatism of the Low and Medium voltage grid will be tested so that intelligent network technologies are gradually applied. Upon completion of such pilot project to cover 3 000 intelligent meters, which is expected to be completed in September 2012, a relevant cost-benefit analysis report will be drafted, based on which the strategy for the integrated installation of intelligent meters by 2020 and the effective development of intelligent networks, searching for synergy solutions among the integrated solutions, will be discussed. Moreover, the possibility to cover the needs of the Municipalities and Communities relating to the recording and invoicing of water consumption as a support activity that will boost the benefits of using the aforementioned promising technologies will be explored. In full cooperation with the EEGI (European Electricity Grid Initiative), the European Task Force for Smart Grids and the activities of DSO's Directors Gathering, Cyprus aims at cooperating in order to develop the necessary infrastructure that will

boost and support the penetration of electricity generation and use technologies that will support the EU's policy on sustainable development and will meet the targets set by the EU.

Grid operation (Q4.2.7)

How is it ensured that system operators *report to the competent regulatory authority* about measures curtailing electricity from renewable sources and about the corrective measures to be taken to minimise these curtailments [4.2.7 (d)]?

Reply:

Until recently, RES contribution to the total electricity generation in Cyprus was marginal and did not exceed 1%. The Republic of Cyprus, responding to the national targets set relating to the penetration of electricity from RES, managed, on February 1st1st 2011, to safely integrate in the Electricity System the first Wind Park at the "Orites" site, having capacity of 82MW, standing for approximately 6% of the installed capacity of the System.

As a result of the low penetration of electricity from RES into the System, there has not been, currently, any substantial need to take measures to curtail electricity generation from RES, which benefits, pursuant to the applicable law, from preferential treatment as regards the allocation of the power generated. Moreover, the Support Schemes provide priority to the interconnection of all RES technologies and potential disconnection thereof may be made only if there are serious technical problems affecting the operation and security of the electricity system. For that reason, any restriction to the electricity generation from RES must be fully justified by the system managers to the Energy Regulatory Authority and take place only when the secure operation of the Electricity System is adversely affected.

Future expansion of the penetration of electricity generation from RES in Cyprus Electricity System may create a need to take measures to safeguard the secure and smooth integration of other RES producers as well.

For the time being, the operating behaviour of the first Wind Park is thoroughly assessed under the supervision of the Energy Regulatory Authority and ways to ensure the maximum possible integration of electricity generation from RES in the System of Cyprus and to safeguard, at the same time, the secure and reliable operation of the System are explored.

Taking any measures to curtail electricity generation from RES by the competent system managers is subject to established regulations, while the active involvement and intervention of the Energy Regulatory Authority is required. The Energy Regulatory Authority closely monitors the penetration of electricity generation from RES and, wherever required, takes all indicated measures to ensure the adequacy of generation, under secure and reliable conditions, as well as the smooth penetration of electricity generation from RES (considering the size and the security

of the small and isolated system of Cyprus). Any measures to be taken in the future to potentially curtail electricity generation from RES must be examined, consulted with and approved by the Energy Regulatory Authority in cooperation with all bodies involved.

District heating development (Q4.2.9):

Cyprus does not foresee that district heating or cooling systems will contribute to meeting 2020 targets. This should be clarified, as there is support envisaged for district heating in the Renewable Energy and Energy Conservation Fund.

Reply:

As stated both in paragraph 4.2.9 and in paragraph 4.4(b), no district heating and cooling systems exist currently in Cyprus. However, since the study on the cogeneration potential carried out in compliance with Directive 2004/8/EC has resulted that a 60MW heat load district heating potential exists close to the electricity generation stations and since the same study has shown that the implementation of such a project will not be sustainable without any financial support, it has been regarded that a provision for financial support should be made for the exploitation of the heat load of such electricity generation stations, which remains unexploited to date. At the current phase, it is estimated that, despite the financial support that may be provided, such potential will not contribute to meeting the 2020 target.

Electricity support schemes (Q4.3):

Are there projections for the expenditure under the support scheme? In other words, is there an understanding of the quantities of energy from the different technologies that will be produced as a result of the support scheme incentive? Does this match or differ from the projected technology contributions in Table 10?

Reply:

The cited projected technology contributions in Table 10 fully match the quantities of energy to be produced from the various technologies thanks to the support scheme incentives. In other words, it has been assessed that the minimum trajectory for achieving a 16% RES penetration share in the electricity generation by 2020 will be achieved only if financing can be provided. The reason for that is that both the island character of Cyprus and the small-scale investments (low capacity RES) that can be implemented in Cyprus raise significantly the cost of implementing the investments. As a result, at the current phase, such an investment cannot be sustainable without any financial support.

Heating support schemes (Q4.4):

The Renewable Energy and Energy Conservation Fund can support RES heating and cooling. Further information should be provided on the budget allocated to RES heating since 2009 and what is forecasted to be funded up till 2020.

Reply:

Even though the template for the National Action Plans did not require that the amounts granted under the Support Schemes be provided, the information requested is, nevertheless, cited below:

In the framework of Support Schemes for the promotion of RES in the heating and cooling sectors, €5 537 213 were granted in 2009 to 6 183 beneficiaries in the following categories:

- • eating/ cooling using a heat pump with an earth heat exchanger.
- Installation and/or replacement of solar heating and/or cooling systems
- Installation and/or replacement of central active solar systems for heating water
- Heat production using biomass

For the same categories, the Special Fund granted €3 519 544 in 2010 to 847 beneficiaries.

When the National Action Plan was approved by the Ministerial Council, the fact that the Support Schemes for all three sectors (electricity, heating/cooling, transport) would continue until 2020, as described in the National Action Plan, was taken into account. Moreover, the cost to be incurred by the Special Fund for the Plans' implementation with a view to achieve the target was calculated.

Biofuels support schemes (Q4.5):

The template should be respected and all requested information consistent with the level of ambition for renewable energy in transport should be provided. What are the concrete obligations/targets per year (per fuel or technology)? They should refer to the period until 2020, as the reference period for the action plan.

Reply:

In question 4.5, the template was strictly respected and all necessary information about the Support Schemes for the use of renewable energy in transport was provided. More specifically, in pages 85-86 of the National Action Plan in the Greek language (the respective pages in the text translated in English are 84-85), the name and a short description of the support schemes for encouraging RES in transport are provided. Then the implementation bodies in each scheme and the supervisory authorities are cited. The obligations/ targets per type of fuel or per technology per year from 2010 to 2020 included are presented in detail in Table 12 of the National Action Plan of the Republic of Cyprus. Relating to the other questions concerning the measures taken to

ensure the necessary budget to achieve the target, the long-term security and reliability, as well as the time limits for revising the schemes, it has been stated that those described relating to the specific questions in section 4.3 (pp. 61-63 and pp. 68-69 of the Greek National Action Plan) will apply.

Biomass supply (Q4.6.1):

It seems that primary energy from domestic biomass supply in 2020 (table 7a last column) and from imports would not allow to achieve the final energy consumption from biomass projected in tables 10, 11 and 12 for 2020 (80 ktoe). This should be clarified, taking into account that due to efficiency of energy conversions, primary energy production should be higher than final energy consumption.

Reply:

Tables 10, 11 and 12 project that final energy consumption from biomass in 2020 will be around 80 ktoe. This quantity stands for 12.3 ktoe from biomass for electricity generation, 30.16 ktoe from biomass for heating/cooling and 37.8 ktoe from biofuels in transport.

The reason for which it seems that domestic and imported biomass may not be sufficient to attain the target of final consumption of energy from biomass in 2020 is that Table 7a presents **only** the estimated domestic potential in biomass for purposes of heating / cooling. Therefore, Table 7a and the text below the Table did not regard the quantities of domestic ad and imported biomass related to the generation of electricity and its use in biofuels in transport.

If the data requested in Table 7a was the domestic biomass to be used in all three sectors: electricity, heating / cooling and transport, then the revised Table 7a is given below.

Table 7a: Estimated biomass domestic supply in 2015 and 2020

Sector of origin		2015		2020	
		Expected amount of domestic resource (tn)	Primary energy production (ktoe)	Expected amount of domestic resource	Primary energy production (ktoe)
A) Biomass from forestry	1. Direct supply of wood biomass from forests and other wooded land for energy generation	4 500 – 5 500	1.6-2.0	4 500 – 5 500	1.6-2.0
	2. Indirect supply of wood biomass for energy generation	8 000 – 10 000	2.9-3.6	8 000- 10 000	2.9-3.6
B) Biomass from agriculture and fisheries	1. Agricultural crops and fishery products directly provided for energy generation	500	0.1 8.4*	500	0.1 0.6*
	2. Agricultural by-products/processed residues and fishery by-products for energy generation	2 500	1.0 4.5** 7.2***	5 000	1.9 6.0** 12.3***
C) Biomass from waste	1. Biodegradable fraction of municipal solid waste including biowaste (biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants)	7 000 – 9 000	3.1-4.0	10 000-15 000	4.5-6.7
	2. Biodegradable fraction of industrial waste (including paper, cardboard, pallets)	800	0.5	1 400	0.8
	3. Sewage sludge	7 000 – 9 000	2.2-2.8	15 000-18 000	4.6-5.6

*** Biodiesel for biofuel production**
**** From biogas coming from animal farm waste and used for heat production**
***** From biogas coming from waste and used for electricity generation**

As regards the imported biomass, in addition to the estimated quantities cited in the National Action Plan that regarded imports of biomass for heat generation only (i.e., 2.52 ktoe from the biodegradable fraction of industrial waste, 6.8 – 7.7 ktoe from imported sludge and 11.02 ktoe from imported RDF for the year 2020), it is expected that 14.7 ktoe of bioethanol and 22.6 ktoe will be imported for the production of biofuels. The needs in biomass for electricity generation are expected to be covered exclusively with domestic resources.

Biomass mobilisation (Q4.6.2):
Question:

In the question on degraded land the number is not given. The answer should be completed.

Reply:

The area of degraded land in Cyprus is assessed at approximately 113 992 decares.

Question:

The plan mentions that the policy supports production of biogas from animal farm waste, urban waste and landfills for the production of electricity and heating. However, from Table 11, no energy consumption from biogas in the heating and cooling sector is indicated. This should be clarified.

Reply:

In Table 11, the quantities cited in the National Action Plan of the Republic of Cyprus regard the total amount of biomass for heat generation. The revised Table 11 is given below, including, in addition to the total quantity of biomass, the estimates for the quantity of biogas, as well as the solid biomass, to be consumed per year by 2020.

Table 11: Estimation of total contribution (final energy consumption) expected from each renewable energy technology in Cyprus to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling for the period 2010-2020 (ktoe)

	2005	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Geothermal (excluding low temperature geothermal heat in heat pump applications)	-	-	-	-	-	-	-	-	-	-	-	-
Solar	41.27	59.02	61.50	64.55	68.15	71.67	75.14	78.43	81.63	84.71	87.66	90.47
Biomass	4.2	18.30	19.24	20.36	21.63	22.92	24.20	25.45	26.67	27.37	29.03	30.16
Solid	4.2	16.30	16.74	17.36	18.13	18.92	19.7	20.95	21.67	22.87	23.53	24.16
Biogas	-	2.0	2.5	3.0	3.5	4.0	4.5	4.5	5	5	5.5	6.0
Biofuels		-	-	-	-	-	-	-	-	-	-	-
Renewable energy from heat pumps: -of which aerothermal -of which geothermal - of which hydrothermal	0	0.34	0.58	0.82	1.08	1.34	1.61	1.88	2.16	2.43	2.70	2.97
TOTAL	45.47	77.66	81.32	85.77	90.85	95.93	100.95	105.76	110.46	115.01	119.39	123.60
Of which in DH	-	-	-	-	-	-	-	-	-	-	-	-
Of which biomass in households	1.77	6.96	7.35	7.82	8.36	8.90	9.43	9.94	10.45	10.94	1 1 .41	11.87

During the preliminary study of the translation in English of the Greek text of the National Action Plan, material differences have been identified, are recorded and will be sent to the European Commission upon completion of the study of the text.

Energy Service
Ministry of Commerce, Industry & Tourism
File No: 4.2.15.20.21.1
Date: 13.04.2011