

**Grand Duchy of Luxembourg**

**Progress report pursuant to Article 22 of Directive 2009/28/EC  
on the promotion of the use of energy from renewable sources**

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

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

	2009	2010
RES-H&C <sup>2</sup> (%)	4.60 %	4.97 %
RES-E <sup>3</sup> (%)	4.10 %	3.80 %
RES-T <sup>4</sup> (%)	2.15 %	2.04 %
Overall RES share <sup>5</sup> (%)	2.93 %	2.95 %
<i>Of which from cooperation mechanism<sup>6</sup> (%)</i>		
<i>Surplus for cooperation mechanism<sup>7</sup> (%)</i>		

The development of energy from renewable sources in 2009 and 2010 in Luxembourg shown above is mainly based on the statistical data derived from the SHARES model (Table 1), which have also been communicated to Eurostat.

In the NREAP (Table 3), Luxembourg indicated an overall share of renewables of 2.2 % for 2010. The excess of 0.75 % compared the NREAP was caused in particular by the high share of renewables in heating and cooling (estimated to amount to 2.1 % in the NREAP). A major industrial enterprise using biomass to cover part of its heating requirements mainly accounts for this development.

<sup>1</sup> Facilitates comparison with Table 3 and Table 4a of the NREAPs.

<sup>2</sup> 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.

<sup>3</sup> 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/EC) divided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.

<sup>4</sup> 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.

<sup>5</sup> Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

<sup>6</sup> In percentage points of overall RES share.

<sup>7</sup> In percentage points of overall RES share.

**Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)<sup>8</sup>**

	<b>2009</b>	<b>2010</b>
(A) Gross final consumption of RES for heating and cooling	48	56
(B) Gross final consumption of electricity from RES	23	24
(C) Gross final consumption of energy from RES in transport	43	42
(D) Gross total RES consumption <sup>9</sup>	114	122
(E) Transfer of RES <u>to</u> other Member States		
(F) Transfer of RES <u>from</u> other Member States and 3rd countries		
(G) RES consumption adjusted for target (D)-(E)+(F)	114	122

As already illustrated in Table 1, the gross final energy consumption from renewable sources for heating and cooling is considerably higher than the consumption anticipated in the NREAP for this sector (NREAP: 25.5 ktoe). This leads to a higher overall consumption of energy from renewable sources.

The data in Tables 1a) to 1d) are based on measured values as opposed to the data in Table 1 (SHARES model).

In 2010, there was neither a transfer of energy from renewable sources from Luxembourg to other Member States nor a transfer of energy from renewable sources from other Member States and third countries to Luxembourg.

<sup>8</sup> Facilitates comparison with Table 4a of the NREAPs

<sup>9</sup> 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.

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

	2009		2010	
	MW	GWh	MW	GWh
Hydro <sup>11</sup> :	34	106	34	108
non pumped	34	106	34	108
<1MW	2	6	2	8
1MW–10 MW	32	100	32	100
>10MW	0	0	0	0
pumped <sup>12</sup>	1,134	834	1,134	1,468
mixed <sup>13</sup>	0	0	0	0
Geothermal	0	0	0	0
Solar:	26	20	29	21
photovoltaic	26	20	29	21
concentrated solar power	0	0	0	0
Tide, wave, ocean	0	0	0	0
Wind:	43	63	44	55
onshore	43	63	44	55
offshore	0	0	0	0
Biomass <sup>14</sup> :	17	78	17	84
solid biomass	8	25	8	28
biogas	9	53	9	56
bioliquids	0	0	0	0
<b>TOTAL<sup>15</sup></b>	120	267	124	269
of which in CHP	9	53	9	56

Overall, the installed capacity, as well as the overall production from renewable energy sources, has increased compared to the NREAP.

The elevated production figure in 2010 for the pumped storage power station was caused by an extraordinarily high utilisation of the pumped storage power station. The yield from wind energy (55 GWh in 2010) is slightly lower than the value anticipated in the NREAP (60 GWh) despite an increase in installed capacity. This was due to bad wind conditions. The yield from biomass and the installed capacity of biomass is higher than anticipated in the NREAP. This is due in particular to the fact that the biogas sector developed better than expected (56 GWh compared to the 44 GWh estimated in the NREAP; this corresponds to an increase in electricity generation of approx. 27 %).

<sup>10</sup> Facilitates comparison with Table 10a of the NREAPs.

<sup>11</sup> Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

<sup>12</sup> **Compared to the NREAP, these values also include the non-pumped capacity.**

<sup>13</sup> In accordance with new Eurostat methodology.

<sup>14</sup> Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

<sup>15</sup> **Without pumping electricity.**

In the NREAP, the overall capacity for 2010 was estimated to amount to 113 MW (without the pumped storage power station). The actual installed capacity in 2010 exceeded the estimated capacity by close to 10 %. In terms of total production (excluding pumping electricity), only a minor surplus (just under 3%) was achieved in 2010 compared to the value estimated in the NREAP.

**Table 1c: Total actual contribution (final energy consumption<sup>16</sup>) from each renewable energy technology in Luxembourg to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)<sup>17</sup>**

	2009	2010
Geothermal (excluding low temperature geothermal heat in heat pump applications)	0	0
Solar	0.7	0.9
Biomass <sup>18</sup> :	46.1	54.4
<i>solid biomass</i>	39.9	47.9
<i>biogas</i>	6.2	6.5
<i>bioliquids</i>	0	0
Renewable energy from heat pumps:		
- of which <i>aerothermal</i>	0.8	1.0
- of which <i>geothermal</i>		
- of which <i>hydrothermal</i>		
<b>TOTAL</b>	<b>47.6</b>	<b>56.3</b>
<i>Of which DH<sup>19</sup></i>	0.9	0.9
<i>Of which biomass in households<sup>20</sup></i>	15.1	18.9

The final energy consumption in heating and cooling from biomass is twice as high as estimated in the NREAP (NREAP 2010: 18.8 ktoe). This is due to the presence of a major industrial enterprise in the biomass sector (wood processing) that uses biomass to cover part of its heating requirements.

<sup>16</sup> Direct use and district heat as defined in Article 5(4) of Directive 2009/28/EC.

<sup>17</sup> Facilitates comparison with Table 11 of the NREAPs.

<sup>18</sup> Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

<sup>19</sup> District heating and / or cooling from total renewable heating and cooling consumption (RES-DH).

<sup>20</sup> From the total renewable heating and cooling consumption.

**Table 1d: Total actual contribution from each renewable energy technology in Luxemburg to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)<sup>21, 22</sup>,**

	2009	2010
Bioethanol/ bio-ETBE	1	1
<i>Of which Biofuels<sup>23</sup> Article 21.2</i>	0	0
<i>Of which imported<sup>24</sup></i>	1	1
Biodiesel	41	41
<i>Of which Biofuels<sup>25</sup> Article 21.2</i>	0	0
<i>Of which imported<sup>26</sup></i>	41	41
Hydrogen from renewables	0	0
Renewable electricity	2	2
<i>Of which road transport</i>	0	0
<i>Of which non-road transport</i>	2	2
Others (as biogas, vegetable oils, etc.) – please specify	0	0
<i>Of which Biofuels<sup>27</sup> Article 21.2</i>	0	0
<b>TOTAL</b>	44	44

The share of energy from renewable sources in transport corresponds to the estimates made as part of the NREAP. However, the figures stated in the NREAP were based on the assumption that bioethanol/bio-ETBE would account for a larger share, while the share of biodiesel would be smaller. However, these shares are hard to predict, since mineral oil companies are free to decide on how to fulfil the required blending quotas for biofuels.

<sup>21</sup> Facilitates comparison with Table 12 of the NREAPs.

<sup>22</sup> For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph. **In 2009 and 2010, biofuels were not required to comply with sustainability criteria.**

<sup>23</sup> Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

<sup>24</sup> From the whole amount of bioethanol/bio-ETBE.

<sup>25</sup> Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

<sup>26</sup> From the whole amount of biodiesel.

<sup>27</sup> 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  
Only policies and measures where a change has occurred vis-à-vis the NREAP are listed.**

<b>Name and reference of the measure<sup>28</sup></b>	<b>Type of measure*</b>	<b>Expected result**</b>	<b>Targeted group and or activity***</b>	<b>Existing or planned</b>	<b>Start and end dates of the measure</b>	<b>Changes compared to the NREAP</b>
1. The reduction of possible administrative hurdles is to be revised.	Regulatory	Increase in the installed capacity and the energy generation from RE	Public administration	Exists in part already	Start: January 2010 End: December 2012	End: June 2012  A grand-ducal regulation ( <i>Règlement grand-ducal</i> ) is currently in the regulatory procedure stage and envisages a partial simplification of the Luxembourg <i>commodo-incommodo</i> procedure (authorisation procedure); this will also affect the renewable energies.

<sup>28</sup> The reference numbers of the measures follow those used in the NREAP.

<p>2. At a local municipal level, the extent to which the integration of renewable energies and energy efficiency can be tied into the municipal building regulations is to be revised.</p>	Regulatory	Increase in the installed capacity and the energy generation from RE	Local authorities	Planned	Start: September 2010 End: December 2011	<p>On 1 August 2011, a new law entered into force:</p> <p>The Act of 28 July 2001 amending the Amendment Act of 19 July 2004 on municipal management (<i>Loi du 28 juillet 2011 portant modification de la loi modifiée du 19 juillet 2004 concernant l'aménagement communal</i>) newly introduced the rational use of energy and the use of renewable energy sources as an aim of municipal policy-making.</p>
<p>5. The promotion of renewable energies in the context of the construction of residential property will be intensified as of July 2012 by tightening energy efficiency standards (tendency towards stricter requirements for overall energy efficiency rather than for heat insulation).</p>	Regulatory	Increase in the installed capacity and the energy generation from RE	Consumers	Planned	Start: July 2012	<p>In May 2012, a new grand-ducal regulation will enter into force: renewable energy sources will be promoted by tightening energy efficiency standards for the construction of residential property (stricter requirements for the overall energy efficiency and for heat insulation). Furthermore, it is envisaged that energy efficiency will be increased step-by-step in 2015 and 2017 with a view to achieving the 'nearly zero-energy building' defined in Directive 2010/31/EU.</p>
<p>6. The extent to which guides, templates for tender texts and supply contracts for central supply systems from renewable energies can be beneficial to the development of these systems is to be revised. Documents to this effect are currently being prepared.</p>	Informative, regulatory, further training	Change in attitude; increase in the installed capacity and the energy generation from RES	Consumers, planners, craftsmen, builder-owners	Exists in part already	Start: September 2010 End: May 2012	<p>Corresponding documents are currently being prepared. End: December 2013</p>



10. <i>Myenergy</i> is currently developing (until 2012) a comprehensive network of infopoints so that each citizen in Luxembourg has local access to a point of contact for questions in the areas of energy efficiency and renewable energies.	Informative	Change in attitude; increase in the installed capacity and the energy generation from RES	Citizens	Exists largely already	Start: January 2009	The development of the comprehensive network of infopoints is progressing according to schedule and is to be completed by 2012.
16. A review is being undertaken how the information on the net benefits, the costs and energy efficiency of plants and systems which use renewable energy sources for heating, cooling and electricity can be best made public to the end users. The relevant documents are currently being prepared.	Informative	Change in attitude	Consumers	Exists in part already	Start: September 2010 End: May 2012	The relevant documents are currently being prepared. End: December 2013
18. First pilot projects for intelligent networks and meters have already been initiated by various system operators. These are to be evaluated in order to, among other things, be able to take decisions on further steps to improve the integration of renewable energy in the power supply network. A study of intelligent networks and meters has been completed. The system operators are consulting with the regulatory authority to organise a nationwide expansion of intelligent networks and meters.	Infrastructure	Change in attitude	System operators	Exists in part already	Start: 2009	A study on intelligent networks and meters has been completed. In cooperation with the regulatory authority, the system operators have been organising since 2011 a nationwide expansion of intelligent networks and meters. In the course of 2012, the set targets for intelligent meters will be tied into the legislation on the liberalisation of the electricity sector.
20. It is to be revised if an adjustment in the currently applicable regulations with regard to the allocation of costs for connections and technical adaptations is needed for the power supply network infrastructure.	Regulatory	Increase in the installed capacity and the energy generation from RES	Public administration	Planned	Start: January 2011 End: August 2012	End: August 2012

23. Implementation of the sustainability criteria for biofuels and other bioliquids into Luxembourg law.	Regulatory	Change in attitude	Public administration, mineral oil companies	Exists	Start: January 2010 End: February 2011	On 5 March 2011, a new grand-ducal regulation entered into force: The Grand-Ducal Regulation establishing sustainability criteria for biofuels and bioliquids of 27 February 2011 ( <i>Règlement grand-ducal du 27 février 2011 fixant les critères de durabilité pour les biocarburants et bioliquides</i> ) governs the sustainability criteria for biofuels and other bioliquids.
24. Investment assistance for private individuals in the area of electricity and heating generation from renewable energy sources is granted. This assistance is to be adjusted to the targets within the framework of the implementation of this plan.	Financial, regulatory	Increase in the installed capacity and the energy generation from RES	Private individuals	Exists	Start: 2001	A revised assistance programme will enter into force as of 2013. The existing programme was revised mainly on the basis of the development trajectories for the respective renewable energy sources targeted in the NREAP.
29. Feed-in payments for electricity from renewable energy sources. The amount and structure of the feed-in payments are currently being adjusted within the framework of the implementation of this plan.	Financial, regulatory	Increase in the installed capacity and the energy generation from RES	Plant operators	Exists	Start: 1994	The revised system is expected to enter into force in early 2013. The development trajectories for the respective renewable energy sources indicated in the NREAP were mainly applied for the purpose of revising the existing programme.
30. There is currently an obligation in effect for all diesel and petrol fuels which should lead to an increased use of energy from renewable sources in the transport sector. The admixture requirement was supplemented by the sustainability criteria contained in Directive 2009/28/EC.	Regulatory	Increase in the energy generation from RES	Mineral oil companies	Exists	Start: 2007	The admixture requirement was supplemented by the sustainability criteria contained in Directive 2009/28/EC (see also measure no 23).

34. Assistance is being granted for the production and feed-in of biogas.	Financial, regulatory	Increase in the installed capacity and the energy generation from RES	Investors	Planned	Start: 2010 Entry into force: in early 2011	On 26 December 2011, a new grand-ducal regulation entered into force: the Grand-Ducal Regulation on the production, compensation and marketing of biogas of 15 December 2011 ( <i>Règlement grand-ducal du 15 décembre 2011 relatif à la production, la rémunération et la commercialisation de biogaz</i> ) provides for the first time for assistance (in the form of feed-in tariffs) for the production and processing of biogas as well as for its feed-in into the natural gas grid.
35. Forest mobilisation, especially in privately owned forests, is to be improved. To this end, concrete work and analyses have been initiated with associations of private forest owners.	Financial, cooperative, infrastructural	Increase in the installed capacity and the energy generation from RE	Private forest owners	Planned	Start: September 2011 End: December 2012	To this end, concrete work and analyses have been initiated with associations of private forest owners.

\* 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.a 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).**

As part of the transposition of Directive 2009/28/EC, the removal of potential administrative barriers in all sectors is to be reviewed. In doing so, the affected ministries and administrations, and where appropriate, local authorities will be involved. A number of authorisation procedures are currently being reviewed with a view to their efficiency as part of the drive to simplify administrative procedures. The implementation of necessary simplifications identified, in particular within the context of *commodo-incommodo* and nature conservation legislation, has been planned for the near future. A grand-ducal regulation is currently in the regulatory procedure phase and envisages partial simplification of the Luxembourg *commodo-incommodo* procedure (authorisation procedure), which will also affect renewable energy.

**2.b Please describe the 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).**

Article 5 of the Electricity Market Act (*Loi modifiée du 1er août relative à l'organisation du marché de l'électricité*) governs the access of electricity from renewable energy sources to the public electricity grid, as well as the rules for the bearing and sharing of costs related to grid connections and grid reinforcements. In the course of adapting the above-mentioned legislation to Directive 2010/72/EU, the Ministry of Economics and Foreign Trade has initiated an amendment of Article 19 of the Electricity Market Act, which is to give electricity from renewable energy sources even better access to the public electricity grid.

**3. Please describe the 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).**

The existing measures were described in detail in the NREAP. Therefore, only new developments in connection with these measures are described below.

In regard to 4.2.10 of the NREAP: Biofuels and other bioliquids – sustainability criteria and verification of compliance (Articles 17 to 21 of Directive 2009/28/EC)

The Act establishing excise duties and equivalent taxes on energy products, electricity, manufactured tobacco products, alcohol and alcoholic beverages of 17 December 2010 (*Loi du 17 décembre 2010 fixant les droits d'accise et les taxes assimilées sur les produits énergétiques, l'électricité, les produits de tabacs manufacturés, l'alcool et les boissons alcooliques*) establishes an admixture requirement for all diesel and petrol fuels. Hence, in 2011, biofuels had to account for at least 2 % of all fuels, calculated by reference to the

calorific value of the fuels. This percentage was left unchanged at 2 %, compared to the year 2010.

- Upon introduction of the Grand-Ducal Regulation establishing the sustainability criteria for biofuels and bioliquids of 27 February 2011 (*Réglement grand-ducal du 27 février 2011 fixant les critères de durabilité pour les biocarburants et bioliquides*), the admixture requirement was supplemented by the sustainability criteria for biofuels and bioliquids established by Directive 2009/28/EC. In accordance with these provisions, biofuels and bioliquids marketed in Luxembourg which contribute to national target compliance must comply with the prescribed sustainability criteria. If the sustainability criteria are not met, the biofuels and bioliquids in question are not granted the tax exemption under the Act establishing excise duties and taxes of similar effect on energy products, electricity, manufactured tobacco products, alcohol and alcoholic beverages of 17 December 2010.

#### In regard to 4.3. NREAP: Financial support

##### Investment assistance for agricultural operations

- Investment assistance for agricultural operations is subject to a maximum scheme size. Eligible are only installations which generate electricity and heating on the basis of combined heat and power, whose production capacity does not exceed the annual average equivalent and the combined production of electricity and heat of the agricultural operation. Installations with a higher capacity are eligible for financial assistance as part of a subsidy scheme for enterprises. This amendment of the national assistance policy is a consequence of a decision of the European Commission (Commission Implementing Regulation No 679/2011 of 14 July 2011 amending Regulation (EC) No 1974/2006 laying down detailed rules for the application of Council Regulation (EC) No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD).

##### Support and compensation of biogas production and feed-in of biogas into the gas grid:

- Biogas fed into the gas grid is compensated at 0.065 €/kWh. The level of compensation depends on the date on which the output of the installation was first fed into the gas grid (degressive tariff structure as of 2014), and is paid for a period of 15 years. Centres that seek to make benefit from this tariff must register in a register maintained by the regulatory authority; registration ensures payment of this feed-in tariff for a total production of 10,000,000 m<sup>3</sup> per year. Furthermore, the regulation established all necessary technical and administrative criteria for the production, feed-in and marketing of the biogas fed into the gas grid.

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

The Grand-Ducal Regulation on the generation of electricity based on renewable energy sources of 8 February 2008 (*Règlement grand-ducal du 8 février 2008 relatif à la production d'électricité basée sur les sources d'énergie renouvelables*), promulgated in Mémorial A No 16 of 12 February 2008, deals with the compensation for feeding electricity from renewable energy sources into the grid. Assistance for electricity from renewable energy sources is secured by a system of feed-in tariffs. The generated electricity is fed into the public grid, accepted and paid for by a system operator and marketed by the latter.

The Luxembourg regulatory authority issues guarantees of origin for electricity generated from renewable energy sources that benefit from a feed-in tariff. In accordance with the Grand-Ducal Regulation on the compensation mechanism as part of the organisation of the electricity market of 31 March 2010 (*Règlement grand-ducal du 31 mars 2010 relatif au mécanisme de compensation dans le cadre de l'organisation du marché de l'électricité*), promulgated in Mémorial A No 59 of 19 April 2010, the regulatory authority is permitted to sell the guarantees of origin. The revenue is paid into the above-mentioned compensation scheme to reduce costs. Electricity providers who acquire the guarantees of origin with the purchase are permitted to use these guarantees for the purposes of their electricity declaration according to the Grand-Ducal Regulation of 21 June 2010 concerning the labelling system of electricity (promulgated in Mémorial A No 98 of 30 June 2010). The electricity declaration must be made available to each electricity customer.

**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).**

There are currently no such specific applications in Luxembourg. As specified in Directive 2009/28/EC, the contribution made by these 'second-generation' biofuels can be considered to be twice that made by other biofuels (Article 21(2)). We wish to make note of the fact that the existing provisions are continuously being verified and adapted, where appropriate, in order to take new market developments into account or to promote them. However, in general, installations that generate renewable electricity can be supported by investment assistance awarded specifically for a certain installation in accordance with the project in question. Financial assistance is also available for innovation and research projects.

**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).**

Chapter II of the Grand-Ducal Regulation on the generation of electricity based on renewable energy sources of 8 February 2008, promulgated in Mémorial A No 16 of 12 February 2008, governs the system of guarantees of origin.

The regulatory authority (Luxembourg Institute of Regulation) issues the guarantees of origin and monitors their application. We wish to add that the regulatory authority has introduced the ECS system (European Energy Certificate Scheme) with a single electronic certificate that corresponds to an international standard and is governed by the 'Principles and Rules of Operation'.

The regulatory authority, a member of the AIB (Association of Issuing Bodies), offers stakeholders an opportunity to take part in the system of electronic administration of the certificates by opening an account in the Luxembourg register through the ‘Grexel Systems’ technology platform.

**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)	
	Year 2009	Year 2010	Year 2009	Year 2010	Year 2009	Year 2010	Year 2009	Year 2010	Year 2009	Year 2010	Year 2009	Year 2010
<i>Biomass supply for heating and electricity:</i>												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**												
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**												
Energy crops (grasses, etc.) and short rotation trees (please specify) <b>Main types: Miscanthus, Sudan grass. No data for silage maize and industrial rapeseed 2009; Main types: Silage maize, Miscanthus, Sudan grass. No data for industrial rapeseed</b>	11463,98	716,40	2,90	0,30	-	-	-	-	-	-	-	-

Agricultural by-products / processed residues and fishery by-products **													
Biomass from waste (municipal, industrial etc.) **													
Others (please specify)													
<b>Biomass supply for transport:</b>													
Common arable crops for biofuels (please specify main types) <b>Main type: industrial rapeseed</b>	No data	No specific data collected											
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)													
Others (please specify)													

\* Amount of raw material if possible in **m<sup>3</sup>** 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

The data on the availability of biomass in Luxembourg have not undergone a significant change vis-à-vis the data used to compile the NREAP.

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

Land use	Surface (ha)	
	2010	2009
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (Please specify main types) <b>Main type: silage maize</b>	No specific data collected	731
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	No specific data collected	No specific data collected
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types) <b>Main types: Miscanthus, Sudan grass</b>	50	0



**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).**

No changes in commodity prices and land use were recorded in the referenced period. Among other things, this is due to the small size of Luxembourg, as well as to the fact that commodity prices are dictated by an international market and hence only have a marginal impact, if at all, on the land use.

**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).**

Currently, no biofuels are being produced in Luxembourg. The blending quota is met entirely with imported biofuels. No sustainability criteria applied in 2009 and 2010. Data on the imported 'second generation' biofuels were not collected specifically.

**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 impact of the production of biofuels and bioliquids on biodiversity, water resources or water quality and soil quality has been detected so far in Luxembourg. As mentioned before, no biofuels are being produced in Luxembourg at present. Moreover, the areas of land used are very small; in 2007, rapeseed, which is suitable for energetic purposes, was grown on 1,182 ha. This accounts for less than 1 % of the overall agricultural land in Luxembourg.

**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).**

**Table 6: Estimated GHG emission savings from the use of renewable energy (t CO<sub>2</sub>eq)**

Environmental aspects	2009	2010
<b>Total estimated net GHG emission saving from using renewable energy<sup>29</sup></b>	no data	141,900
- Estimated net GHG saving from the use of renewable electricity	no data	no data
- Estimated net GHG saving from the use of renewable energy in heating and cooling	no data	900
- Estimated net GHG saving from the use of renewable energy in transport	no data	141,000

**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).**

**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 Luxembourg (ktoe)<sup>30, 31</sup>**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	0	0	-44.8	-22.8	-37.8	-9.8	-45	-21.6	-74.5	-39.2	-66.1	-92.9

The figures provided in Table 7 are identical to those of Table 9 of the NREAP.

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

As indicated in the NREAP, Luxembourg had to resort to the cooperation mechanisms contained in Directive 2009/28/EC in order to meet its targets. The estimates and explanations provided in the NREAP still apply. Luxembourg has made various efforts to engage in talks with countries willing to cooperate, as well as to explore and advance potential cooperation options.

<sup>29</sup> 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.

<sup>30</sup> 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 to 2020. In each report Member State may correct the data of the previous reports.

<sup>31</sup> When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).

The option of statistical transfers as well as possibilities for joint projects are being discussed as part of the consultations with the other countries; it should be noted, however, that joint projects may require a more extensive period of preparation and implementation. On the basis of the insights gained in the consultations it transpired that statistical transfers will be easy to implement as they require less complex selection and approval procedures.

The status of the consultations depends on the willingness to cooperate of the respective partner countries. No definite decision on a statistical transfer or a joint project has been taken as yet.

**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 various shares in wet waste (in tonnes) are calculated on the basis of on-site surveys (in the years 1992, 1994, 2001, 2004/2005 and 2009) and projected towards the overall volume of waste.

Subsequently, the total volume of wet waste is converted into dry waste on the basis of the wet waste coefficients. This dry waste is then converted into energy quantities on the basis of the calorific values of the respective waste category. The respective biodegradable portion of the waste category in question is then determined by reference to its portion of biodegradable carbon content. In this way the share of renewable energy of the waste is determined. This portion is then transferred to the generation of electricity in order to calculate the share of renewable electricity generated using waste.