
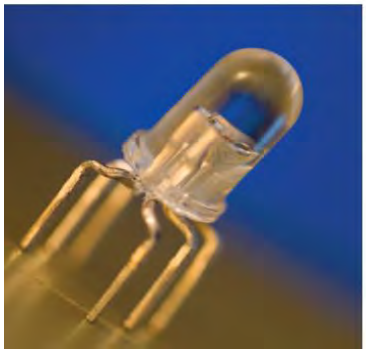


Assessment of climate change policies as part of the European Semester

Country Report Luxembourg

20 January 2015

A report submitted by ICF Consulting Services
in association with

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to DG Climate Action

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Contents

1 Short Summary

Luxembourg is highly dependent on energy import and is therefore one of the most vulnerable EU member state in terms of security of energy supply. To meet this challenge Luxembourg has developed a well interconnected network with its neighbouring countries. In 2014, the Luxembourg grid operator signed an agreement with the Belgian grid operator in order to merge the gas markets of the two countries. This is a first amongst two EU member states and represents an important milestone towards the aim of a single EU gas market.

More than half of Luxembourg's GHG emissions stem from the transportation sector, 70% of which are linked to fuel export. The main reason for this phenomenon is Luxembourg's geographical position as a transit country and, more importantly, fuel taxes that are well below those of neighbouring member states. In line with the Commission's recommendations Luxembourg is looking for ways to reform the taxation of energy products for transport. However the government is taking a very prudent approach as any reform would considerably impact its revenue.

The Luxembourg non-ETS target under the Effort Sharing Decision (ESD) is -20% (compared to 2005) and non-ETS emissions were only reduced by 5.2% between 2005 and 2013 which is below the interim target of -6.3%. According to the latest national projections submitted to the Commission and taking into account existing measures, the 2020 target is expected to be missed by a large margin of 23 points.

Legislative election were organised in Oct 2013 in Luxembourg and a new coalition was put in place in Dec 2013. The green party is part of this new coalition, which will probably influence the country's future climate and energy policies. In its government agreement, the new government confirmed its support to the second National Climate Action Plan which was approved in 2013 and put sustainable transport and mobility issues at the top of its agenda.

2 Climate and energy policy priorities

Luxembourg's energy import dependency is one of the highest in the EU, reaching 96.8% in 2010. This share has been stable in the last decade as Luxembourg has very little domestic production and imports the vast majority of its energy sources. The diversification of primary energy sources is very limited with 89% of Luxembourg gross inland consumption being provided from oil (representing 63%) and gas (representing 26%). Renewable energy only represented 3% of the energy consumption (European Commission, 2011). This share has increased substantially since 2002 when it was only 1% of the energy mix but remains relatively far from the 11% objective for 2020. The share of renewables is the highest in electricity generation – 35%. Almost all of this comes from hydro power, with marginal quantities of electricity produced from biomass, waste, wind and solar power. The share of renewables in heat generation is 4% from biomass, wood and biogas, partially imported. The dependence on imports makes Luxembourg one of the most vulnerable countries in the EU in terms of security of energy supply. However its networks are well interconnected with the neighbouring countries and there are contracts in place to ensure the necessary supply in case of disruption (European Commission, 2013).

Legislative elections were organised on 20 Oct 2013 in Luxembourg. These elections were supposed to be organised in May 2014 together with the European elections but had to be brought forward following the withdrawal of the Luxembourg Socialist Workers' Party from the government. This led to the resignation of the Prime Minister Jean-Claude Juncker. Following the election a new government entered into force on the 4 Dec 2013 bringing together the Democratic Party, the Luxembourg Socialist Workers' Party and the Greens. The new government's programme is focused on improved management of public finances, sustainability of policies, promoting growth, sustainable development and social cohesion, the fight against unemployment, and societal progress (National Reform Programme 2014, 2014).

The governmental programme (Programme gouvernemental, 2014) presents its priorities in more details. In terms of climate and energy policies the key elements of this programme include:

- the government wants to transpose the second National Climate Action Plan, which was published in 2013, as soon as possible and implement it over the next three years;
- the government will study how to decouple its own spending from the fuel sales' revenue;
- in the framework of the upcoming tax reform, the government will study the impacts of various taxes and subsidies on its sustainable development objectives;
- the government wants to source 11% of Luxembourg's national energy consumption from renewable energy sources by 2020;
- the government wants to review its framework supporting biofuels (supposed to achieve a 10% quota in the fuel consumption by 2020) in order to better reflect the social and environmental impacts of various biofuels; and
- the government considers transport and mobility as a key issue and will create a new department in charge of these policies.

The key tool on which the Luxembourg government will build to achieve its climate and energy ambitions is the second National Climate Action Plan (NCAP). This plan was adopted in May 2013 and contains 51 measures aiming to reduce non-ETS GHG emissions in Luxembourg by 20% until 2020 compared to 2005. The NCAP contains measures in the area of transportation, construction, renewable energies, industry, awareness raising, consulting and energy training. Based on the existing measures, the government forecast a gap of 11.3 Mt CO_2e for the period 2013-2020. With additional measures, the gap would still be of 7.5 Mt CO_2e. Most of the measures set out in the NCAP will be financed by the Climate and Energy Fund established in 2004. This Fund is mainly replenished from the revenue of a tax on transport fuel (known as *Kyoto-cents*) and of a share (40%) of the annual ownership tax [1] which is based on the CO_2 performances of vehicles.

As stated in the National Reform Programme it is difficult to forecast the costs of the measures which will be needed to achieve the GHG emission reduction objective. The government is planning to fill the emission gap by purchasing emission offsets from the international market. Depending on the price per the tonne of CO_2 this could represent an important cost, particularly because the government announced its intention to only purchase "Gold Standard" verified emission reduction credits. In total the budget of the Climate and Energy Fund for the period 2014-2017 will amount to 530 million EUR. The climate share of this budget is split as follows: : around 108 million EUR for national policies and measures, 156 million EUR for the purchase of emissions allowances and 30 million EUR to finance mitigation in developing country through for example Fast Start project. In addition the Climate Pact supporting climate mitigation measures at local level has a total budget of 110 million EUR for the period 2013-2020[2].

3 GHG trends and projections

Luxembourg reduced its total GHG emissions by 13% between 2005 and 2013. The share of GHG emissions not covered by the European Emission Trading Scheme (EU ETS) is around 84%, which is significantly above the EU28 average (see Table 1).[3]

[1] This tax is in place since 1 Jan 2007 and has to be paid annually for all the vehicles registered in Luxembourg. The amount of the tax is based on the CO_2 performance of the vehicle combined with the nature of its engine (diesel or other). For older car the tax takes the engine capacity into account. The scheme was slightly modified in 2013 with the introduction of a minimum annual tax of 30 EUR for all vehicles and the withdrawal of the 50 EUR discount for vehicles with a diesel engine emitting less than 10 mg of fine particles per km (ACL, 2015 and Administration des douanes et accises, 2014).

[2] The Climate Pact is presented in more details under section 4.2.

[3] The European Environment Agency has developed a complex methodology to measure progress on the Non-ETS/ESD targets of all EU Member States. This report uses the figures derived on this basis. A detailed explanation and the underlying absolute amounts are contained in Annexes 1-3 of the EEA report No 6/2014

Table 1 Key data on GHG emissions

		National data				*EU28*
		2005	**2011**	**2012**	**2013**	***2013***
Total GHG emissions	Mt CO_2eq	13.1	12.1	11.8	11.4	*4 539*
Non-ETS emissions	Share in total emissions	80%	83%	83%	84%	*58%*

Source: EEA 2014a; EEA 2014c

By 2020, Luxembourg has to decrease its emissions not covered by the EU ETS by 20% compared to 2005, according to the Effort Sharing Decision (ESD). The latest data for 2013 show that Luxembourg missed its annual allocation interim target under the ESD for the year 2013 by 1.1 percentage points (see figures in Table 2. National projections indicate that the country will miss its 2020 target by about wide margin of 23 percentage points with existing measures (WEM) and by still significantly by 15.9 percentage points with additional measures (WAM) (EEA 2014a).

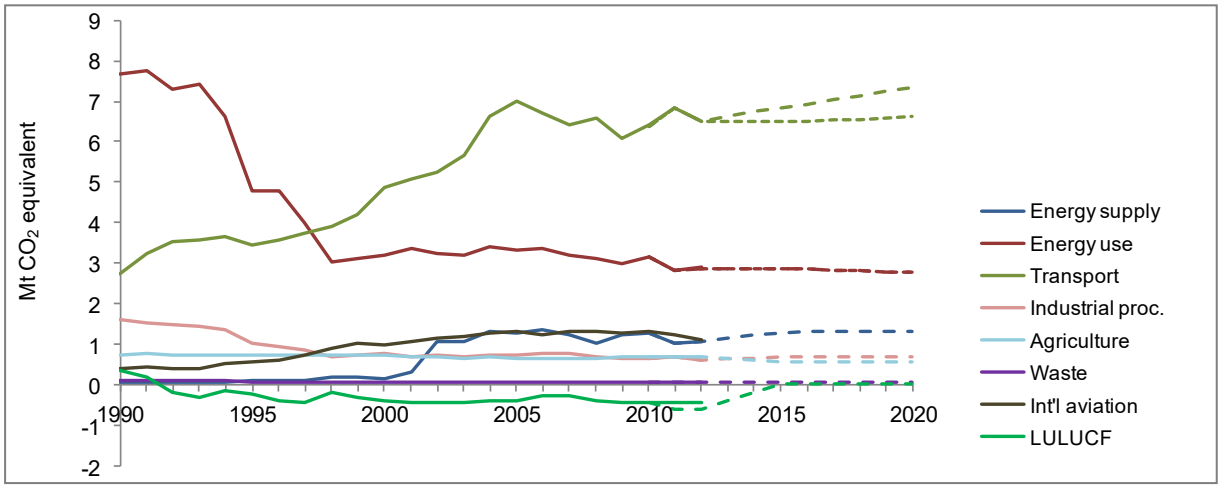
Table 2 Non-ETS emission targets, trend and projections

		Compared to base year
2013	ESD interim target	- 6.3%
	ESD emissions	- 5.2%
2020	ESD target	- 20.0%
	ESD projections WEM	+ 3.0%
	ESD projections WAM	- 4.1%

Source: EEA 2014a

GHG emissions are mainly created by the transport sector and by direct fuel consumption (e.g. households for heat generation). They are followed by the energy industry and international aviation. Projections indicate that by 2020 emissions from transport will increase further under the scenario with only the existing measures, while emissions from other sectors will remain relatively constant.

Figure 1 GHG trends and projections by sector



Source: EEA 2014a. Dashed lines indicate the WEM projection, dotted lines the WAM projection.

"Trends and projections in Europe 2014. Tracking progress towards Europe's climate and energy targets for 2020" available at http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2014/

4 Policy development

This section covers significant developments made in key policy areas between January and December 2014. It does so through two different perspectives: 1) progress on the policies communicated under the National Reform Programme; and 2) developments in the identified national priority sectors and policy areas.

4.1 Key policies as outlined in the National Reform Programme

Member states prepare National Reform Programmes (NRPs) each April outlining the country's progress and the key policies and measures to achieve targets under the EU 2020 Strategy. These key policies and measures are summarised in the following table and their current status is provided.

Table 3 Key policies and measures as outlined by the NRP 2014

Regulation to adapt feed-in tariffs to support renewable energy	
Status in the NRP	A regulation to adapt feed-in tariffs was introduced into the regulatory procedure in mid-2013. The final stages of this work will be pursued in 2014.
Status as per Dec 2014	The regulation on the generation of electricity using renewable energy sources was amended on 8 Aug 2014 and the new feed-in-tariffs were introduced.
Description of policy	This initiative is discussed in more details under section 4.2.3.

Implementation of a national shared and interoperable smart metering infrastructure	
Status in the NRP	In 2012, a legislation was submitted to schedule the roll-out of a national shared and interoperable infrastructure of smart meters. The start of the general implementation of smart meters is set for 1 Jul 2015 at the latest. The Luxembourg government wishes the smart metering equipment to be used by at least 95% of end users of electricity by the 31 Dec 2018 and by 95% of end users of natural gas by 31 Dec 2020.
Status as per Dec 2014	A public consultation on the technical and organisation specifications of the deployment of the smart metering system was hold in 2014.
Description of policy	This initiative is discussed in more details under section 4.2.3.

Review of the regulations on the energy performance of household buildings and functional buildings	
Status in the NRP	A draft regulation for determining the upcoming phases of the energy performance of commercial buildings was being drafted at the time of the National Reform Programme. The regulatory procedure in this area was planned for 2014.
Status as per Dec 2014	The amended regulation was passed on 26 May 2014.
Description of policy	This initiative is discussed in more details under section 4.2.3.

Finalisation of the Transportation Sector Plan (PST)	
Status in the NRP	In 2013, PST documents were finalised initially, but the national election results made it necessary for the PST to be modified again in early 2014 so that the Grand Duchy PST regulation can take effect.
Status as per Dec 2014	The PST was presented to the parliament in May 2014. It was then submitted for public consultation. Following this public consultation the government council decided on 28 Nov 2014 to remove the requirements making the PST and other sectoral plan mandatory from the regulatory process.
Description of policy	This initiative is discussed in more details under section 4.2.5.

Preparation of a regulation related to the public infrastructure for electric mobility	
Status in the NRP	The regulation on the organisation of the electricity market was amended in 2012 and fixes the framework for the development of electro-mobility. This will be followed by another regulation related to the public infrastructure for electric mobility. This second regulation was supposed to be submitted into the regulatory proceedings in early 2014.
Status as per Dec 2014	On 28 Nov 2014 the government council approved the draft regulation related to the public infrastructure for electric mobility.
Description of policy	This initiative is discussed in more details under section 4.2.5.

4.2 National policy priorities

The below sub-sections provide updates on key existing and new policies in priority sectors and policy areas of relevance to the energy and climate targets under the Europe 2020 strategy[4]. Each sector or policy area contains information on the most important policy instruments in operation or development.

An important measure which continued in 2014 and proved to be successful is the **Climate Pact**, which was established by law on 13 Sep 2012 and launched in Jan 2013. The Climate Pact provides the opportunity for municipalities wishing to improve their climate policies to seek the support of the State through the signing of an agreement. Each participating municipality is committed to the implementation of a quality management system regarding its energy and climate policy (European Energy Award ®). Moreover, the municipality shall adopt an energy accounting system for its infrastructure and facilities. In exchange, the State provides financial support and technical assistance to the participating municipality. The municipality can become members of the pact since 1 Jan 2013 and have until 31 Dec 2020 to join. On 22 May 2014, the second edition of Climate Pact was initiated. Since its launch in 2013, 94 municipalities joined the programme. The total budget allocated to the Climate Pact is of 110 million EUR for the period 2013-2020. The financial aid provided by the State under this programme is as follows:

- a fixed annual grant of 10,000 EUR for operating expenses;
- the State bears the cost of fees of internal and external climate consultants;
- a variable annual subsidy, called the Climate Pact Bonus and varying between 5 EUR to 35 EUR per inhabitant with a ceiling of 10,000 inhabitants, is granted to communities that have achieved one of the three certification levels;
- the financing of municipal projects through the environmental protection funds, for which budget resources will be increased;

[4] The Consortium jointly with DG Clima identified these based on identified challenges in Country Profiles (EEA, 2014), share of sectors in total GHG emissions, and Country Specific Recommendations (2014). DG Clima has identified additional relevant issues to be reviewed for some or all Member States, including country specific energy challenges.

- the State covers the administrative and technical assistance costs under the “Climate Pact” project provided by Myenergy.lu (Gouvernement.lu, 2014 and National Reform Programme, 2014).

4.2.1 Environmental Taxation

In Luxembourg the implicit tax rate on energy was EUR 181 per ton of oil equivalent in 2012, slightly above EU average (Eurostat, tsdcc360). Similarly, the share of environmental tax revenues in overall tax revenue was 6.2% in 2012 and was therefore close to the EU average (Eurostat, ten00064). The same holds true for a comparison of environmental tax revenues with GDP, which amounted to 2.4% in 2012 (Eurostat, ten00065).

The Luxembourg government is currently working on a reform of its tax system in order to improve its efficiency. The government’s objective is to have a new fiscal regime in place by early 2017. As part of this reflection, the government will study how to review the taxation of energy products in the transport sector. This review will be discussed in more details in section 4.2.5.

4.2.2 Energy Efficiency

Within the EU28, Luxembourg has the seventh least energy-intensive economy. Energy intensity declined by 16% from 2005 to 2012 (Eurostat, tsdec360), while the final energy consumption dropped by 7% from 2005 to 2012, with the reductions coming mainly from the industrial and residential sectors (Eurostat, tsdpc320). Luxembourg is currently on track to meet its indicative EU energy efficiency target (EEA 2014a).

Following the publication of the second NCAP, the government of Luxembourg has put different measures in place to improve the energy efficiency of buildings and industry. Although Luxembourg did not yet publish its National Energy Efficiency Action Plan, which was due on the 30 Apr 2014, different policy developments have been identified in the past year.

The government developed a **new scheme requiring the energy providers to support and achieve energy savings amongst their consumers**. In line with the Energy Efficiency Directive, this mechanism aims to improve energy efficiency amongst households. The savings can be achieved in all energy sources including petrol, heating oil, gas and electricity. The energy providers can support their customers themselves or through a third party as long as they are able to prove that they offered an incentive for the implementation of the energy saving measure. This incentive could for example take the form of technical assistance or a financial contribution. The set of eligible energy saving measures is flexible and include among others: thermal envelope for building (walls, windows, roofs, slabs); heat production; mechanical ventilation appliances; office equipment; lighting systems; cross-industrial techniques (motors, pumps, ventilation, compressed air, boilers, refrigeration); energy management systems and transport (e.g. car replacement) (Myenergy.lu, 2014).

In 2014, the government continued its legislative work to prepare the **introduction of a smart metering system** in Luxembourg. The objective is to promote active participation of the consumers in the market and to provide them with reliable and real-time or close to real-time information on their energy consumption and the associated energy tariffs. Smart meters will also provide electricity and gas suppliers with more precise data on the actual consumption and consumption peaks. This should allow them to offer variable tariffs based on real-time prices. Based on this more accurate information it is expected that the consumers can then adapt their behaviour in order to reduce or shift their consumption. The Luxembourg government started to work on this with the Luxembourg Regulation Institute (ILR) in Apr 2009 when a first analysis of the potential impact of smart metering in Luxembourg was realised. This was followed by other studies and the establishment of a working group composed by the managers of the electricity and gas distribution network and the ILR. In 2012, a legislation was submitted to schedule the roll-out of a national shared and interoperable infrastructure of smart meters. The start of the general implementation of smart meters is set for 1 Jul 2015 at the latest. The Luxembourg government wishes the smart metering equipment to be used by

at least 95% of end users of electricity by the 31 Dec 2018 and by 95% of end users of natural gas by 31 Dec 2020 (ILR, 2014 and National Reform Programme, 2014).

In 2014, the ILR organised a public consultation on the technical and organisational specifications of the deployment of the smart meters. In addition, the government is paying a lot of attention to the protection of the personal data which will be collected through this new system (ILR, 2014a and ILR, 2014b). A study realised in 2011 (Schwartz and Co S.A., 2011), revealed that the implementation of the smart metering system in Luxembourg would cost 6.6 million EUR over the next 20 years. The implementation of the system would in the first years increase the electricity and gas bills of end users but after a few years the electricity and gas costs would decrease and pass below the prices of the scenarios without smart meters by 2021/2022[5]. This decrease is linked to the expected lower electricity and gas consumption associated with the introduction of smart meters. The expected impact on GHG emission is relatively small and amounts to 6,700 tonnes of CO_2 per year. The detailed assumptions behind this figure is not detailed in the study. It should also be noted that there still exist uncertainties about the long-term behavioural effects of smart meters.

In the building sector, the government continued its efforts to **review its regulations on the energy performance of homes and functional buildings** in line with the EU Energy Performance of Building Directive. On 26 May 2014 a regulation (Legilux, 2014) amended the different regulations and introduced the following changes:

- the concept of nearly zero energy consumption building was introduced as well as the deadline to reach this standards. In Luxembourg all new homes and functional buildings will have to meet such standards as from 1 Jan 2019. In that prospects the Grand-Ducal regulation goes beyond the European requirements which states that nearly zero energy consumption standards shall apply from 1 Jan 2019 in public buildings and from 1 Jan 2021 for all other buildings;
- the regulation introduce new rules regarding the energy performance of buildings which are rented, sold or renovated; and
- finally the regulation provides provisions on feasibility studies, the publicity of energy performance certificates and the periodic inspection of energy performance certificates (Global Legal Insight, 2014).

In addition the government introduced a new service to support the evaluation of the heating system within Luxembourg houses called the **"Heizungscheck"** in Oct 2014. The Heizungscheck consists in a simple and practical evaluation of the design of a heating system combined with the provision of recommendations on how to improve the energy efficiency of the system and hence reduce its energy consumption and the associated costs. It is estimated that modern heating installations can reduce energy consumption by 30% compared to old installations. In collaboration with the industry association, the certified heating system installers have been trained on how to deliver the Heizungscheck. This system exists in parallel to the energy passport, which considers the energy needs of buildings. It will be managed by Myenergy.lu (Gouvernement.lu, 2014).

In the field of cogeneration, the alignment of national regulations to Directive 2004/8/EC dated 11 February 2004 relating to the promotion of cogeneration on the basis of the useful heat demand in the internal energy market was achieved by Grand Duchy regulation. In the future, the government intends to further support the development of cogeneration based on renewable energies as a priority over cogeneration activities based on fossil fuel sources (National Reform Programme, 2014).

4.2.3 Renewable Energy

The share of renewables in gross final energy consumption was 3.1% in 2012, which is above the indicative 2012 target of 2.9% set out by the Renewable Energy Directive (RED). The average annual growth rate was 11.3% between 2005 and 2012. Thus, an annual growth rate of 15% is needed

[5] This is assuming an introduction of the smart meters in 2012.

between 2013 and 2020 to reach the 2020 target of 11% (EEA 2014a). The share of renewable electricity generation in final electricity consumption increased from 3.2% to 4.6% between 2005 and 2012, while the share of renewable heating increased from 3.6% to 5.0% (Eurostat, SHARES 2014).

The key development in the area of renewable energy concerns the adoption of the revision of the **feed-in-tariff for renewable energy** which was announced in July 2013. On 8 August 2014, an amendment to the Grand Ducal regulation on the generation of electricity using renewable energy sources (Règlement grand-ducal relatif à la production d'électricité basée sur les sources d'énergie renouvelables) was adopted by the Luxembourg government. According to the new regulation, the future applicants for the feed-in tariff will benefit from the increased tariff rates for most renewable technologies. The biggest increase of tariff rates can be observed for hydro power (+56% - from 12.5 EUR ct to 18 EUR ct per kWh depending on the plant capacity), biogas (+31% - from 15.3 EUR ct to 19.2 EUR ct per kWh depending on the plant capacity), and sewage gas (+44% - from 14.3 EUR ct to 16.3 EUR ct per kWh depending on the plant capacity), but also the rates for wind power (+13% 9.2 EURct per kWh) and solid biomass (+11% - from 11.8 EUR ct to 13.8 EUR ct per kWh depending on the plant capacity) have been raised. Given the decreasing investment costs for photovoltaic technologies the new regulation confirms the progressive decrease of the feed-in-tariffs for solar energy installations with a maximum capacity of up to 30 kWp (electricity from PV installations ≤ 30 kW which fed into the grid during 2014 received a tariff amounting to 26.4 EUR ct per kWh). Geothermal is the only technology which does not benefit from a feed-in tariff. According to the vice Prime Minister and Minister for the Economy, Étienne Schneider, the new regulation will give an important impulse for the sustainable use of renewable energy sources (Gouvernement.lu, 2014 and RES-LEGAL, 2014).

In addition to the feed-in-tariff different **funding schemes** are in place in Luxembourg to support renewable electricity generation. The most recent ones include:

- Support to solar energy installations with a capacity of less than 30 kWp. This subsidy was established in 2012 and amounts to 20% of the eligible costs, subject to a maximum of 500 EUR per kWp; and
- Support to companies investing in renewable electricity generation through investment grants. This grant system was introduced in 2010. Grants may cover up to 45% of the additional costs arising from the use of renewable energy as compared to non-renewable sources, with a potential additional 20% for small enterprises and 10% for SMEs (RES-LEGAL, 2014).

The recent 2020 Keep on Track report (Spitzley, et al., 2014) identified a series of **investment barriers** for the renewable energy sector in Luxembourg. The key barriers include:

- the lack of clear strategy to achieve renewable energy targets;
- the lack of sectoral plans for the development of renewable energies, which especially hinders the growth of the wind, solar and biomass sectors. For example no governmental development plan identifying favourable areas for the installation of wind parks was published yet. This only allows large companies to enter this market as they have the resource to identify the most interesting sites; and
- the stop-and-go policy for the support of solar energy with several modifications to the feed-in-tariff in the last decade.

For the heating and cooling sector the key barrier identified is the lack of information and communication regarding the most adapted renewable energy technologies for Luxembourg. For example the relatively poor profitability of solar thermal systems in Luxembourg is not sufficiently communicated. From an administrative perspective, the handling of application for subsidies is considered as overburdened. This is combined with a perceived lack of communication on the existing support schemes for the production of solar heat. Finally there is a lack of certification of installers regarding several renewable energy technologies (Spitzley, et al., 2014).

4.2.4 Energy Networks

With respect to energy networks, the key development in 2014 was the signature of a cooperation agreement between Creos Luxembourg and Fluxys Belgium on the 22 May 2014. This agreement was signed in cooperation with the ILR and the Belgian Electricity and Gas Regulation Commission (CREG) and aims to **integrate the Belgian and Luxembourg gas markets**. The objective of the two grid operators is to merge the two national markets by the end of 2015. This is however subject to the approval of the regulatory authorities of both countries as regards the modalities under which a Belux market would operate. These modalities would notably create a joint venture which would be in charge of managing the rules and mechanisms relating to the balancing of the integrated market. In practice, Creos Luxembourg and Fluxys Belgium would remain the operator of their respective networks (Fluxys Belgium, 2014 and Global Legal Insight, 2014).

Practically the integration of two gas markets means that the “entry-exit” tax which usually apply on gas when it crosses a state border will be removed. The Zeebrugge Trading Point will become the trading point of the Belux market. The new market will represent a total consumption of close to 20 billion cubic meter per year and more than 70 gas providers. This will increase the competition on the market and should therefore benefit end users. This will also improve the security of supply of Luxembourg (Fluxys Belgium, 2014a).

As stressed by the former Belgian state secretary for the environment, Melchior Wathelet, the integration of the Belgian and Luxembourg gas markets would represent the first merger between two EU member states gas markets. This represents an important milestone for the creation of an EU single gas market (Fluxys Belgium, 2014).

4.2.5 Transport

GHG emissions as well as energy consumption from transport more than doubled between 1990 and 2012, but decreased slightly between 2005 and 2012. While some progress in reducing transport emissions has been achieved since 2005, there has been a slight upward trend in 2010/11. The proportion of transport emissions in Luxembourg’s total emissions has however steadily increased to 50% in 2012. Average emissions for newly registered cars are high in Luxembourg with a level of 133.4 g CO_2/km. This value is the eleventh highest in the EU and has decreased by 21% between 2005 and 2012, at a rate close to the EU average of 22% (Eurostat, tsdtr450). Fuel taxation in Luxembourg is below the EU average. The road fuel excise duties on diesel are the seventh lowest among EU member states and the excise duties on petrol are the eleventh lowest (EEA 2014b).

Transport is the most challenging sector with regard to GHG emissions in Luxembourg. In Luxembourg no registration tax applies. The ownership tax is based on CO_2 emissions only, or engine capacity for older cars (ACEA 2014). Additionally, Luxembourg levies a time-based road toll for HDVs with a weight over 12t (CE Delft 2012). The second Climate Action Plan gives priority to the improvement of public transport networks, the improvement of spatial planning, the promotion of soft mobility (i.e. waling and cycling) and the promotion of electric mobility. It also envisages restructuring the transportation tax system, possibly including a revision of the vehicle tax, a reform of the company cars taxation and the gradual adjustment of tax rates on transport fuels. However, the Climate Action Plan only commits to analyse possible actions and does not formulate concrete measures (EEA, 2014a). This section will look at potential concrete measures in more detail.

The new government consider transport and mobility as a key issue and announced its intention to create a new department dedicated to mobility and transport. The government also confirmed the implementation of the **sustainable mobility strategy** (MoDu) as a priority. MoDu was developed by different departments (including the Planning Department, the Directory for planning and mobility and the Ministry of sustainable development and infrastructure) in 2011-2012. Modu’s objective is to integrate the different measures to meet the mobility challenges into an integrated approach centred on public transport (Département des transports, 2014).

In parallel to the MoDu strategy, the government is working on a **Transport Sector Plan** (PST). The PST is in a way the regulatory counterpart to the MoDu strategy. Both document focus on public transport and have the same objectives, namely increase the modal share of soft mobility in the country's daily communing from 13% in 2013 to 25% in 2020 and increase the modal share of public transport in the country's motorised traffic from 14.5% in 2013 to 25% in 2020 (EEA, 2014a; Gouvernement.lu, 2013 and Luxemburger Wort, 2013). The PST will set the regulatory framework for different projects and measures introduced by the MoDu strategy. The key ones include:

- the mapping and preparation of corridors for the rail and road infrastructure projects;
- the implementation of a parking management system; and
- the promotion of sustainable mobility (Département de l'aménagement du territoire, 2014).

As noted in the 2014 National Reform Programme, the PST documents were initially finalised in 2013 but following the results of the national election, the new government decided to work further on its development in 2014. On 21 May 2014, the PST was presented to the parliament together with the landscape sector plan and the housing and economic activities zone sector plans. These different plans strengthen the role of territorial development and aim to establish a more compact urban planning, a good mix of functions and activities and a reduction in traffic demand. This was followed by a public consultation during the summer 2014 which involved the local authorities, the Higher Council for Regional Development (Conseil Supérieur de l'Aménagement du Territoire - CSAT), and the public. Following this consultation the government council decided on 28 Nov 2014 to remove the PST and other sectoral plan from the regulatory process. This decision was based on the ground that some provisions of the draft regulation were considered as too rigid, lacking flexibility and lacking adequate knowledge of the targeted communities. Moreover some provisions were considered as imprecise. Additionally the draft regulations faced formal opposition from the State Council targeting among other the impact of some of the proposed projects on private properties. This decision will allow the government to modify the regulatory framework as required to ensure that the project can be implemented in a transparent way (Gouvernement.lu, 2014c).

Another initiative regarding the efficiency of road transport is the development of **cross-border mobility scheme** (schema de mobilité transfrontalière - SMOT) between Luxembourg and its neighbouring countries. The SMOT's objective is to facilitate the mobility of the population living close to the borders through the development of soft measures (e.g. public transport tariff and alternative communication means), the organisation of public transport services and the development of infrastructure project (e.g. rail project and park and ride facilities). Based on the success of the SMOT with France, a similar process was undertaken with Belgian and German partners. In 2013, protocols were signed with Wallonia, the Rhineland Palatinate and the Sarre regions. Despite the media attention dedicated to the Walloon-Luxembourg SMOT signature in Jan 2013, different Belgian media stressed in Jan 2014 that no progress was made on this file (Bodeux, 2014). In Apr 2014, a parliamentary answer provided by the Belgian Minister in charge (M. Henry), indicated that a study had been launched to analyse how to implement the SMOT at the end of 2013 and the objective was to have the scheme ready by Jan 2015 (cdH Wallonie, 2014).

As stated above, the government mentioned in the second NCAP the possibility to review the transportation tax system. **Fuel taxation** in Luxembourg is below the EU average and represent a significant revenue source for Luxembourg. This is mainly due to the important fuel export to neighbouring countries. The new government committed to analyse how to decouple its own spending from the fuel sales' revenue. Hence they will launch an economic feasibility study in order to evaluate the medium and long term impact of a major structural decrease in the sale of fuel to non-residents. This work in the area of taxation of energy products is part of the more general work on a reform of the complete tax regime (National Reform Programme, 2014).

Another part of the Luxembourg strategy towards sustainable transport is **the support to electric mobility**. The objective is to have 10% of the car fleet powered by electric engine by 2020. This represent around 40,000 cars. In order to achieve this objective, the government uses two different tools. On one hand it provides subsidy for electric and electric hybrid plug-ins vehicles on the other hand it supports the development of the infrastructure required to charge the vehicles.

Regarding the **subsidy**, the government approved on 13 Dec 2013, a one year extension of the CAR-e scheme through the end of 2014. This grant – worth 5,000 EUR – applies to new vehicles (private and utility) powered exclusively by an electric motor, as well as for electric hybrid plug-ins, provided that they release less than 60 g CO_2/km travelled. The government clearly communicated that the CAR-e subsidy would not be prolonged beyond 31 Dec 2014 (CAR-e.lu, 2014).

In terms of **infrastructure**, the government published in 2011, together with ILR, a technical and economic study on the development and implementation of electric mobility in Luxembourg (Schwartz and Co, 2011). The result of this study underpinned the 10% objective presented above. The report suggests developing a targeted public infrastructure in the range of 570 to 1,000 charging points by 2020. This would imply a budget of 7.2 to 12.5 million EUR. The annual operating costs would then represent between 0.9 and 1.4 million EUR by 2020. Following this study the regulation on the organisation of the electricity market was amended in 2012 and fixes the framework for the development of electro-mobility. It sets that the grid managers will be responsible for the development of the infrastructure and the costs will be financed by private electricity users. The government plans to build 850 charging points by 2020. Key developments in this file during 2014 include:

- discussion with the electricity grid operators in order to define the specifications of the charging points' network;
- proposition to modify the traffic law in order to guarantee parking places for electric cars; and
- the development of pilot projects in different part of the country to test the system (Ducat, 2014 and National Reform Programme, 2014).

On 28 Nov 2014, the government council approved the draft regulation related to the public infrastructure for electric mobility. The objectives of this regulation are to:

- define the functionality and the technical specification of the public infrastructure for electric mobility;
- define the number of charging points;
- set the general calendar and procedures for the deployment of the infrastructure; and
- define which installation, operation and maintenance services will have to be provided by the managers of the electricity distribution networks.

Following this regulation a detailed implementation plan will be developed in collaboration with the electricity grid managers, the local authorities and the owners of the parking spaces in order to define the number of charging points per commune and their exact location (Ministère d'État, 2014).

5 Policy progress against Country Specific Recommendations (CSRs) issued 2013

The EU Commission provides Country Specific Recommendations (CSRs) for each member states for consideration and endorsement by the European Council. The recommendations are designed to address the major challenges in relation to the targets of the EU 2020 Strategy. In the following table, the CSRs relevant for climate change and energy are listed, and their progress towards their implementation is assessed.

Existing CSRs	Progress
Develop a comprehensive framework and take concrete measures to meet the 2020 target for reducing GHG emissions from non-ETS activities, especially through the taxation of energy products for transports.	The Luxembourg government developed a comprehensive NCAP as well as different strategies and initiatives to decrease the GHG emissions from non-ETS activities. The new government committed to study how to decouple its own spending from the fuel sales' revenue and hence envisages how to review the taxation of energy products for transport. However, the

	government is taking a very prudent approach and no concrete steps have been identified regarding the implementation of this tax reform. No concrete steps are expected before 2017.

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