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Assessment of climate change policies in the context of the European Semester

Country Report: Luxembourg



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The report provides an overview of current emission trends and progress towards targets as well as policy developments that took place over the period May 2012 to January 2013.

The content of the report represents the state of knowledge in February 2013, specific updates were made adding the latest official greenhouse gas emission data by the European Environment Agency (EEA).

Please feel free to provide any comments or suggestions to the authors through the contacts listed above.

Short summary

- **Background:** *The promotion of renewable energy and energy efficiency are priorities for the government, and other climate policies are also on the political agenda.*
- **GHG target:** *Luxembourg was not on track regarding its ESD targets: The 2011 non-ETS emissions were above of the 2013 emission allocation and according to the latest national projections the country is expected to miss its 2020 target with existing and additional measures.*
- **Policy development:** *The second national action plan for reducing carbon emissions has not yet been completed, and a national adaptation plan is also still in the works. Recent policy changes include improved energy performance standing for buildings but also restrictions on FiT support for PV installations and restrictions on subsidies for the purchase of emissions-efficient vehicles.*

I Background on climate and energy policies

Climate change is well understood and discussed in Luxembourg's small but highly educated population, and several mitigation measures are being undertaken in the country. However, neither the "2nd national action plan for the reduction of CO₂ emissions" nor the "climate change adaptation plan" listed in Luxembourg's 2012 National Reform Programme as items to be completed before 2013 have been issued yet (as of February 2013). Hence there have been no recent updates to national climate change measures and targets.

As far as energy policy goes, renewable energy generation and energy efficiency are priorities according to the Ministry of Economy (GovLux 2012a). Current support systems, such as the promotion of low energy households and appliances ("oekotopten") as well as grants for efficiency and renewable generation, are set to continue. The government plans on working together with the Building and Public Works Administration to elaborate annual refurbishment plans of public buildings to improve their energy performance (MDDI 2013a). As far as non-ETS activities are concerned, a law regulating waste management in Luxembourg was published in March 2012. Additionally, excise taxes on fuels have recently been increased, but fossil fuels still benefit from reduced VAT rates. Luxembourg is a land-locked country that experiences a lot of cross-border transit, and lower fuel prices contribute to "fuel tourism," where drivers come to the country to purchase fuels at lower prices.

In 2010 and 2011, the government of Luxembourg initiated a round table on environment and climate, gathering stakeholders such as NGOs, trade unions, employer organisations, local authorities and government representatives. The aim of this "Environment Protection and Climate Partnership" was to establish a long-term strategy for sustainable development in Luxembourg. The consultation round was meant to lead to formulation of several broad policies, including preparation of an updated national action plan for the reduction of carbon dioxide emissions (the first national action plan was published in 2006), preparation of a national climate change adaptation plan, and an

agreement with local authorities fostering collaboration to tackle climate change. As mentioned above, the first two items were to have been accomplished in 2012 but have not been – the process did produce a draft “climate pact” with the communes that was adopted by the government and entered into force in January 2013. The consultation also led to a list of 35 priority measures for the government to address, particularly in the area of mobility and public transport, that was approved by the government as a bundled “climate package” in May 2011.

Although the topic of “green growth” is not discussed much in Luxembourgish media, the government promotes it as a concept and takes it into consideration in policy-making. For example, it is fostering the development of green sectors through establishment of special economic activity zones like one in Kockelscheuer that is dedicated to companies in the environmental technology sector. The First Green Business Summit was organized in Luxembourg in March 2011 (Wort.lu 2011). Moreover, Luxembourg and Switzerland aim to work together on the implementation of business networks in Luxembourg in order to improve energy efficiency (MECE 2012a).

2 GHG projections

Background information

In 2011, Luxembourg emitted 12.1 Mt CO₂eq (UNFCCC inventory 2011), 6% less than in 1990. More than half of total emissions come from transport - emissions in this sector have almost tripled between 1990 and 2011. This is due to an overall increase in road transport in Europe and “fuel tourism” from neighbouring countries driven by the country’s low fuel tax. The second most emitting sector is energy use: emissions were reduced significantly in the 1990s and were 64% lower in 2011 than in 1990. In contrast, emissions from energy supply were on the rise until 2010, accounting in 2011 for 8% of total emissions compared to only 0.3% in 1990. Luxembourg is highly dependent on oil, gas and electricity imports due to its small size – thus, renewable power generated in Luxembourg rather replaces imports of electricity than domestic fossil generation from other sources. Emissions from industrial processes dropped between 1990 and 2011 by more than 40% reflecting the closure of some companies and also some changed processes in the iron and steel industries (UNFCCC inventory 2011, EEA 2012c, UNFCCC 2012).

Progress on GHG target

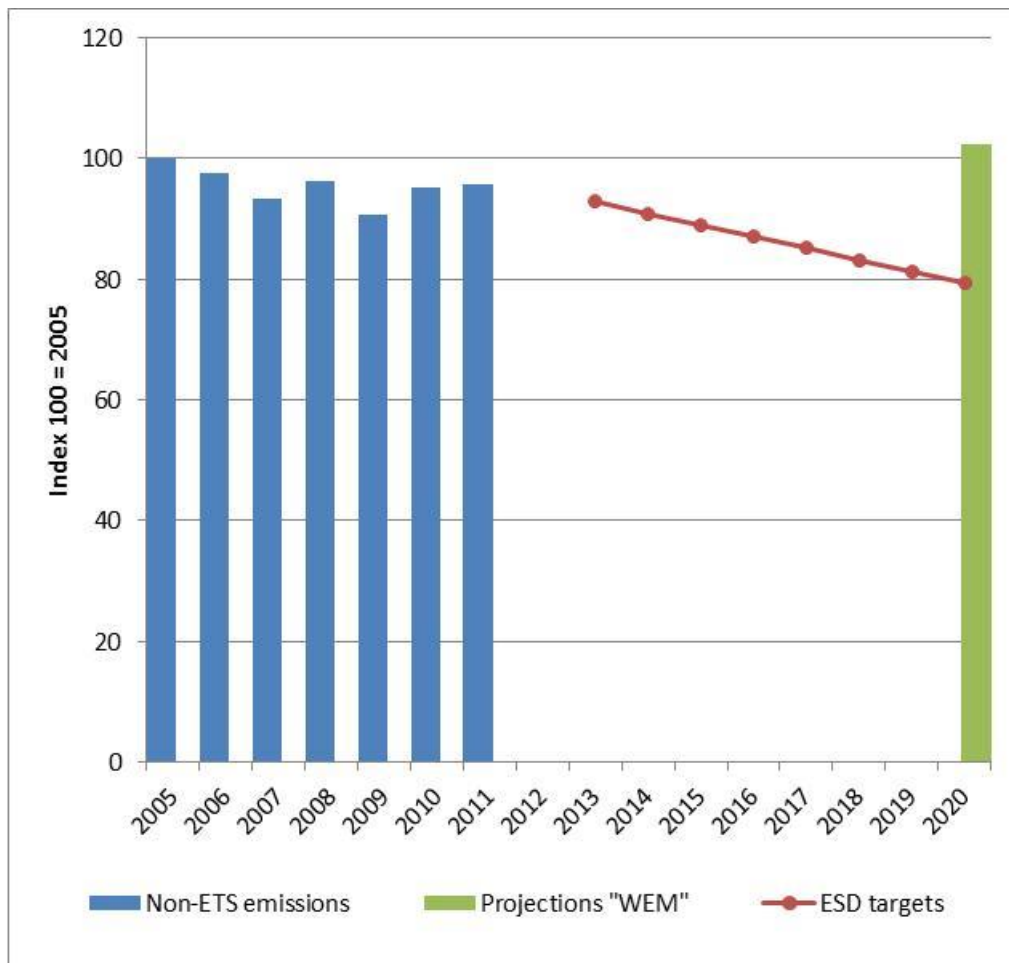
There are two sets of targets to evaluate: 1) the Kyoto Protocol targets for the period 2008-12 (which has just ended) and 2) the 2020 targets for emissions not covered by the EU ETS.

Under the Kyoto-Protocol the emission reduction target for Luxembourg for the period 2008-2012 has been set to minus 28% based on 1990 for CO₂, CH₄ and N₂O and on 1995 for F-gases. The latest available greenhouse gas data (for the year 2011) show that Luxembourg’s emissions have decreased on average by 8.1% compared to the Kyoto base year (EEA 2013a). This shows that Luxembourg may not meet its Kyoto target through domestic emissions reductions directly.

By 2020, Luxembourg needs to reduce its emissions not covered by the EU ETS by 20% compared to 2005 according to the Effort Sharing Decision (ESD) ⁽¹⁾. According to the latest available data Luxembourg is not on track to meeting its target at present. Emissions in 2011 were 3% above the Annual Emissions Allocation (COM 2013) for the year 2013. Furthermore, national projections show that Luxembourg is likely to increase its non-ETS emissions by 3% by 2020 compared to 2005 in a scenario with existing measures, or to reduce its emissions by 0.5% in a scenario with additional measures ⁽²⁾ (EEA 2013b).

Figure 1 shows Luxembourg’s non-ETS emissions until 2011, targets under the ESD for the period 2013-2020 and the projections with existing measures for 2020.

Figure 1: Non-ETS emission trends and projections compared to the ESD targets



Source: EEA. Projections are based on 15/04/2013 draft GHG inventory submissions under the UNFCCC and MS projections submitted

¹ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020.

² Calculations are based on domestic emissions only, without accounting for possible use of flexibility options. The 2020 targets and 2005 non-ETS emissions are all consistent with 2013-2020 ETS scope, i.e. they take into account the extension of the ETS scope in 2013 and the unilateral inclusion of installation in 2008-2012.

Table I: GHG emission developments, ESD-targets and projections (in Mt CO₂eq)

	1990	2005	2010	2011	ESD target*		2020 Projections**	
					2013	2020	WEM	WAM
Total	12.9	13.1	12.3	12.1				
Non-ETS emissions (% from 2005)		10.5	10.0	10.0 -4%	9.7 -7%	8.1 -20%	10.4 3%	10.1 0%
Energy supply (% share of total)	0.036 0.28%	1.2 9%	1.2 10%	1.0 8%				
Energy use (w/o transport) (% share of total)	7.6 59%	3.3 25%	3.2 26%	2.8 23%				
Transport (% share of total)	2.7 21%	7.0 54%	6.4 52%	6.8 57%				
Industrial processes (% share of total)	1.6 13%	0.7 5%	0.7 5%	0.7 6%				
Agriculture (% share of total)	0.7 6%	0.7 5%	0.7 6%	0.7 5%				

Source: UNFCCC inventories; EEA (2013b); COM (2013), Calculations provided by the EEA and own calculations.

* The ESD target for 2013 and for 2020 refer to different scopes of the ETS: The 2013 target is compared with 2011 data and is therefore consistent with the scope of the ETS from 2008-2012; the 2020 target is compared to 2020 projections and is therefore consistent with the scope of the ETS from 2013-2020. Non-ETS emissions in 2005 for the scope of the ETS from 2013-2020 amounted to 10.1 Mt CO₂eq.

** 2013 projections with existing measures (WEM) or with additional measures (WAM).

Legend for colour coding: green = target is being (over)achieved; orange = not on track to meet the target

Total greenhouse gas emissions (GHG) and shares of GHG do not include emissions and removals from LULUCF (carbon sinks) and emissions from international aviation and international maritime transport.

National projections of GHG emissions up to 2020, summarised by the EEA, need to be prepared by the Member States in accordance with the EU Monitoring Mechanism ⁽³⁾ every two years, and the latest submission was in 2013. The projections need to be prepared reflecting a scenario that estimates emissions reductions in line with policies and measures that have already been implemented (with existing measures, WEM), and an additional scenario that reflects developments with measures and policies that are in the planning phase (with additional measures, WAM) may also be submitted.

In the following two tables, these measures - as outlined by Luxembourg as basis for their projections as of April 2011 ⁽⁴⁾ - have been summarised with a focus on national measures and those EU instruments expected to reduce emissions the most ⁽⁵⁾. An update on the status of the policies and measures is included in order to assess the validity of the scenarios.

³ Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

⁴ The respective policies and measures were not available at the time of the preparation of this country report. Thus, policies and measures as outlined in April 2011 are given here.

⁵ The implementation of the EU-ETS has not been included. Other EU Directives have only been considered if they have been outlined in the projections as one of the main instruments to reduce GHG emissions.

Table 2: Existing and additional measures as stated in the 2011 GHG projections

Existing Measures (only important national measures; w/o EU legislation)		Status of policy in January 2013
Energy	Support scheme for renewable electricity (feed-in tariff) offered for windmills, hydraulic installations, biomass or biogas	Ongoing. The current feed-in tariffs are based on the Grand-Ducal Regulation of 8 February 2008 on the production of electricity based on renewable energy sources. In November 2012 an amendment was published. From 1 January 2013 onwards, PV systems will only be supported with a peak power of $\leq 30\text{kWp}$ installed on the outer envelope of a building or above an impermeable parking or traffic area can benefit from a FIT.
	Financial incentives for energy efficiency and usage of renewable energy sources in the residential building sector	Ongoing. Refurbishment works in order to improve the energy performance of residential buildings older than 10 years are financially supported. Moreover, from 1 January 2013, a financial support is allocated for works aiming at meeting the requirements of passive and low-energy houses according to the energy passport (Passeport Énergétique).
Energy Efficiency	More restrictive energy efficiency standards for new or renovated residential buildings	Ongoing. The energy passport (passeport énergétique) is a quality label for the energy performance of new or renovated residential buildings. Its legal basis is the Grand-Ducal Regulation of 30 November 2007.
	Financial incentives for the renovation of existing residential buildings older than 10 years	Ongoing. Refurbishment works in order to improve the energy performance of residential buildings are financially supported.
	Financial incentives for low-energy residential buildings construction	Ongoing. From 1 January 2013, financial support is allocated for works aiming at meeting the requirements of passive and low-energy houses according to the energy passport (Passeport Énergétique).
	Voluntary Agreement between the Union of Luxembourg's Enterprises (FEDIL) and the Government on energy efficiency in the industrial sector	Ongoing. Covers the period from 2001 to 2016. Currently, 56 companies are participating in the programme.
	Financial incentives for buying low energy electrical appliances (fridges, freezers or combined fridge-freezers).	Stopped. The financial incentive "PRIME Cool" was not renewed after 31 December 2011.
Transport	Vehicle tax reform	Ongoing. From 1 January onwards, modifications include the introduction of a minimum annual fee of €30 for certain vehicle categories powered exclusively by an electric motor or an engine powered by a fuel cell as well as for all vehicles subject to a tax of less than € 30. The € 50 tax reduction for diesel vehicles emitting fine particles less than or equal to 10 mg / km has also been removed. Hybrid vehicles with a piston engine associated with an electric motor or a fuel cell are charged according to the fuel regime (petrol or diesel).

Financial incentive (payment) for the purchase of passenger cars with low CO ₂ emissions	Partly ongoing. From 1 January 2013 onwards, the financial reward "prime CAR-e" is only granted for electric cars as well as for vehicles emitting less than 60g/km CO ₂ .
Raising excise duties on gasoline & diesel ("Kyoto Cent")	The amount of the Kyoto Cent in 2008 was €ct 2/L for gasoline and €ct 2.5/L for diesel. Although not called the Kyoto Cent, the excise duties on both gasoline and diesel were raised once again in 2012. From January 2013, the value for gasoline is at € 0.516/l for leaded gasoline and between € 0.462/l and € 0.464/l for unleaded gasoline depending on the amount of sulphur. The value for diesel is between € 0.335/l and € 0.338/l, depending on the amount of sulphur.
Obligation of a certain percentage of biofuels in the fuel mix (transposition of directive 2003/30/EC on biofuels)	Ongoing. The Law of 18 December 2009 introduces an obligation for oil companies releasing petrol and diesel for consumption to meet a specific quota of biofuels per year.

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, April 2011.

Additional Measures (only important national measures; w/o EU legislation)		Status of policy in January 2013
Energy	Promotion of renewable energy projects - Progressively introduce the potentials identified in a LUXRES study on the renewable energy potential in Luxembourg (2007).	Implemented. According to LUXRES study (2007), the renewable potential could be increased to 4.5% of the final consumption by 2020. The government adopted plans, laws, regulations, financial incentives to reach 11% renewable share in gross final energy consumption by 2020 (National Renewable Energy Action Plan 2010; Lacave 2011).
	Extension of financial incentives for the renovation of existing residential buildings, including the usage of renewable energy sources and for low-energy residential building refurbishment	Implemented. From 1 January 2013, a new financial support is allocated for refurbishment works aiming at meeting the requirements of passive and low-energy houses according to the energy passport (Passeport Énergétique).
Energy Efficiency	Program encouraging the modernisation of heating systems: Setting more stringent minimum energy efficiency standards for heating equipment in residential buildings	Implemented. From 1 January onwards, the financial support allocated for energy refurbishments in houses older than 10 years may be increased by the allocation of a bonus from 10 to 30% based on the level of heat expenditure of the house (Grand Ducal Regulation of 12 December 2012).
	Update of energy efficiency standards for non-residential buildings: More restrictive energy efficiency standards for new or renovated non-residential buildings	Implemented. From 1 July 2012 onwards, new standards for energy performance of non-residential buildings require higher energy performance and higher thermal isolation.
	Further promotion of low energy electrical appliances	Not implemented. The financial incentive "PRIME Cool" was not renewed after 31 December 2011.

Transport	Improving modal split in Luxembourg: Defining actions & measures to reach a passenger split 25/75 between public & private transport	Partly ongoing. The construction of a tramway-line is planned in the city of Luxembourg, which will contribute to reaching the 25/75 Modal Split.
	Further increase of excise duties on gasoline & diesel: Gradually reduce emissions from road fuel sales by bridging the price gap with neighbouring countries	Partly implemented. The Government announced in 2012 an increase of the excise duty on gasoline and in 2013 the increase of excise duty for diesel. Luxembourg's excise tax on diesel of € 0.335 still lags behind those of neighbouring countries (BG: € 0.43, FR: € 0.43, and DE: € 0.47).
	Evaluation of fiscal arrangements for company cars: Reviewing fiscal measures in place for company cars with the aim of increasing the share of low emission vehicles in this fleet	No reliable information was available on future measures at this point. Since 1 January 2012, the benefit in kind of company cars is calculated among other according to their amount of CO ₂ emissions.

Source: Reporting of MS in accordance with Decision No 280/2004/EC about their GHG emission projections up to 2020, April 2011.

3 Evaluation of National Reform Programme 2012 (NRP)

In April of each year, Member States are required to prepare their National Reform Programmes (NRPs), which outline the country's progress regarding the targets of the EU 2020 Strategy. The NRPs describe the country's national targets under the Strategy and contain a description of how the country intends to meet these targets. For climate change and energy, three headline targets exist: 1) the reduction of GHG emissions, 2) the increase of renewable energy generation, and 3) an increase in energy efficiency (⁶).

In the following table, the main policies and measures as outlined in the NRP of April 2012 (⁷) have been summarised, and their current status (implemented, amended, abolished, or expired) is given, with specifics on latest developments.

⁶ There are specific targets for all MS by 2020 for non-ETS GHG emission reductions (see section 2) as well as for the renewable energy share in the energy mix by 2020 (see section 4, renewable energies). Specific energy efficiency targets will be defined (or revised) by the MS until the end of April 2013 in line with the methodology laid out in Article 3 (3) of the Energy Efficiency Directive (Directive 2012/27/EU).

⁷ All NRPs are available at: http://ec.europa.eu/europe2020/documents/related-document-type/index_en.htm

Table 3: Main policies and measures as outlined in the NRP, April 2012

Finalise 2nd national action plan for CO₂ emissions reductions	
Status as stated in the NRP	First half of 2012
Status as per Jan 2013	According to the Ministry of Environment, the national action plan is currently being finalised and should be submitted to the Government Council by the end of February 2013
Description of policy or measure	The group "Partnership for the Environment and the Climate," founded in 2010, brings together representatives of the government, unions, employers, and NGOs to plan climate policy and set objectives. Synthesizing the work of the partnership, the government published a "climate package" of 35 priority measures in May 2011. The main purpose of the Partnership is to draw up Luxembourg's 2nd national action plan for reducing CO ₂ emissions.
Provide an attractive public transportation offer that motivates users to choose it for carrying out a large number of their trips	
Status as stated in the NRP	Objective 3 of the <i>MoDu</i> strategy for sustainable mobility presented in April, 2012 – most objectives are aimed at reaching mobility targets by 2020
Status as per Jan 2013	The Ministry of Sustainable Development announced in June 2012 the construction of a tramway-line in the city of Luxembourg to begin in 2014. According to a Luxembourgish newspaper, the tramway project is currently undergoing an environmental impact assessment. The first construction phase is expected to cost €320 million
Description of policy or measure	The overall goal of the public transportation objective in the <i>MoDu</i> strategy is for 25% of motorized transport trips to be made using public transportation by 2020.
Reform of feed-in tariffs in the form of a Grand Ducal regulation	
Status as stated in the NRP	To be presented in 2012
Status as per Jan 2013	In November 2012 an amendment to the Grand Ducal Regulation of 8 February 2008 on the production of electricity based on renewable energy sources was published. From 1 January 2013 onwards, PV systems will be supported only with a peak power of ≤ 30kWp installed on the outer envelope of a building or above an impermeable parking or traffic area.
Description of policy or measure	During 2011, the government analyzed the amount and structure of feed-in tariffs regarding electrical production on renewable energy sources. Based on the outcome of this analysis, reform was foreseen.

Form a working group to coordinate an electric mobility project

Status as stated in the NRP First half of 2012

Status as per Jan 2013 No reliable information regarding this working group was available at the time of writing.

Description of policy or measure The Luxembourg Regulatory Institution carried out a technical-economic study in 2011 to implement electric mobility on the national level, which made specific recommendations on e.g. infrastructure, financing, and operation of the system. The working group is intended to bring together the government, the communes, companies and other key players to jointly take the mobility project further.

Amend existing regulations concerning energy performance in residential buildings

Status as stated in the NRP Was "in the regulation pipeline" in early 2012

Status as per Jan 2013 New Grand Ducal regulation published in the Official Journal on 11 May 2012.

Description of policy or measure The amendment alters a 2007 regulation on building energy performance by shoring up requirements for new buildings and additions to existing buildings. As amended, the requirements are an implicit incentive to implement renewable energies—all new construction beginning after 1 July 2012 must in principle use renewable energies. Furthermore, the regulation now prescribes mandatory publication of information regarding energy performance when leasing or selling buildings.

Create regulation on the production of electricity based on cogeneration

Status as stated in the NRP Was being drafted in early 2012

Status as per Jan 2013 Grand Ducal regulation on the production of electricity based on high-efficiency cogeneration was published on 31 December 2012 in the Official Journal.

Description of policy or measure The purpose of the regulation is to align national cogeneration rules with those of the EU (directive 2004/8/EC) and to set rules for connecting cogeneration installations to Luxembourg's electricity grid as well as a system for guaranteeing the origin of power produced at cogeneration facilities.
The main component of the December regulation regards remuneration for electricity producers that operate cogeneration facilities. The remuneration is available for facilities with a capacity between 1 and 1,500 kW that inject electricity into the grid.

Continuation of voluntary agreement for companies to improve energy efficiency from 2011-2016

Status as stated in the NRP Ongoing; interest group *myenergy* to take over coordination of this programme.

Status as per Jan 2013 According to *myenergy*, 56 companies are now participating in the programme.

Description of policy or measure The government established the agreement to solicit commitment of firms to improve efficiency and use of renewable technologies. Signatory companies commit to implementing an energy management system and establishing an action programme to conserve energy.

Set a schedule for introducing smart meters in both electricity and gas distribution networks

Status as stated in the NRP No timeline indicated

Status as per Jan 2013

The Ministry of Economy and electric and gas system operators announced plans for smart meters in October 2012. The Economic Interest Group formed by the grid operators shall work together with the Luxembourg Regulatory Authority and the Ministry of Economy to define the best strategy for the development of smart meters in the country.

Description of policy or measure

The government carried out a study on the introduction of smart meters in early 2011 in coordination with grid distribution managers, the results of which informed the smart meter plan. The laws of 7 August 2012 amending the laws of 1 August 2007 on the organization of electricity markets and natural gas have set the following key dates for the introduction of smart meters: From July 2015 onwards, households will be equipped with smart meters when a new power or gas contract is signed, such that by 2020, 95% of Luxembourg's connections to the grid will be via smart meter. The implementation will be carried out by the seven grid operators serving the region (Creos, Sudgaz, Sudstrom, Electris, Ville de Diekirch, Ville d'Ettelbruck et Ville de Dudelange).

4 Policy development

This section covers significant developments made in key policy areas between May 2012 and January 2013. It does not attempt to describe every instrument in the given thematic area. The time-frame was chosen based upon the release of the National Reform Programmes (in the section above) in April 2012, which contain the status quo for policy on most topics.

Environmental Taxation

Luxembourg's implicit tax rate on energy declined slightly from a peak in 2007 to reach 175 € per tonne oil equivalent in 2009, which was the eighth-highest among EU Member States (Eurostat 2013). Despite relatively low energy intensity, this high tax rate allowed Luxembourg to receive energy tax revenues equal to 2.2% of GDP in 2010, mainly from fuel charges (2.1% of GDP—third-highest in the EU). However, this percentage declined from 2004 to 2010. Luxembourg received no revenues from pollution taxation in 2010 (Eurostat 2012).

In Luxembourg, excise duties on mineral oils are collected on the one hand on behalf of the Belgium-Luxembourg Economic Union (UEBL) established between the Grand Duchy of Luxembourg and Belgium. On the other hand, Luxembourg also collects autonomous excise duties on mineral oils not forming part of the common receipts of the UEBL. In this regard, the Grand-Ducal Regulation of 17 December 2010 ⁽⁸⁾ fixing the autonomous excise rates applicable to energy products was amended through two consecutive

⁸ Règlement grand-ducal du 17 décembre 2010 fixant les taux applicables en matière de droits d'accise autonomes sur les produits énergétiques.

regulations increasing the excise rate of diesel oil from January 2012 ⁽⁹⁾ and from August 2012 ⁽¹⁰⁾. As far as gasoline is concerned, no modifications of the excise rates were introduced since January 2011. Consequently, the rates of excise duties on gasoline and diesel as published by the customs administration are as follows: between € 0.462 and € 0.516 per litre for gasoline and € 0.335 and € 0.338 per litre for diesel (ADA 2013). The Government increased the excise rates for diesel in order to reduce the budget deficit by € 270 million for 2013 (GovLux 2012d).

Luxembourg has no explicit carbon tax in place. However, the implicit tax rate on energy per tonne CO₂ is at €94, the highest in EU-OECD and well above the EU-OECD average of €59 (OECD 2013). This high rate can be mainly explained by the dominance of the transport sector in Luxembourg's CO₂ emissions. Diesel and petrol used for transport are responsible for 2/3 of Luxembourg's energy-related CO₂ emissions (see OECD 2013). The minimum rates for these fuels apply a relatively high value to each tonne of CO₂. Therefore, the dominance of transport fuels raises the average costs for CO₂ in Luxembourg, when compared to other EU MS, although Luxembourg levies taxes at or only slightly above the specified minimum rates. Diesel accounts for 80% of the fuels used in transport, but tax rates are the lowest in the EU and only slightly above the minimum rate set out in the Energy Tax Directive, even after the recent increases, including a climate change tax of €25 per 1000 litres. Petrol is taxed above the minimum rate, at €462 to €464/1000 litres, including a climate change tax of €20 per 1000 litres. This rate is well below neighbouring MS and the lowest rate applied in the EU-15, next to ES (European Commission 2013; OECD 2013).

Vehicle taxes are below the EU average but partly based on CO₂ emissions. No registration tax applies. The annual circulation tax is based on CO₂ emissions only, or engine capacity for older cars. The tax is calculated taking into account CO₂/km, fuel type, and an exponential factor. The tax rate is low compared to other EU MS. Luxembourg levies a time-based road toll for HDVs above 12t called the Eurovignette, in conformity with Directive 93/89/EEC of 9 February 1994. The rate is at €1,250 per year for HDVs (ACEA 2012, CE Delft 2012).

Energy Efficiency

The energy intensity of Luxembourg's economy declined faster than the EU average between 2005 and 2010 and was the seventh-lowest among EU MS in 2010. Meanwhile, final energy consumption in 2010 was 7% higher than the 2001-2005 average and was buoyed primarily by increased energy use in the iron and steel sector (Eurostat 2013).

Government efforts to promote energy efficiency focus mainly on buildings, with various initiatives to reduce energy use in the residential sector. One such measure was passed on 11 May 2012, in the form of a new Grand-Ducal regulation published in the official journal. It amends existing standards for energy performance of residential buildings in Luxembourg, with the new provisions applying from 1 July 2012 onwards (CML 2012a). The new standards require higher energy performance (measured as annual primary

⁹ Règlement grand-ducal du 16 décembre 2011 fixant les taux applicables en matière de droits d'accises autonomes sur les produits énergétiques

¹⁰ Règlement grand-ducal du 21 juillet 2012 fixant les taux applicables en matière de droits d'accises autonomes sur les produits énergétiques.

energy consumption of the building) and higher thermal insulation (measured in terms of annual heat consumption of the building). In accordance with the prescriptions of the European Directive 2010/31/EU, Luxembourg thereby aims to achieve a target of “nearly zero-energy buildings” for public buildings by 2019 and for private buildings by 2021 (MECE 2012b). As per the regulation, real estate advertisements and sellers of residential buildings must now by law provide information on buildings’ level of energy efficiency.

Another recent energy efficiency measure came in the form of a December 2012 Grand Ducal regulation updating support for energy efficiency and renewable energies in the residential sector for the period 2013-2016 (MDDI 2012). Efficiency and renewable energy efforts for existing buildings received subsidies previously, but now the level of financial support depends on the energy performance result: the more efficiency upgrades that are undertaken, the higher the support. The amount of support lies between €10 per m² and €52 per m² according to the type of refurbishment works. Subsidies for new buildings have also been made dependent on energy performance.

Several energy efficiency programmes target cooperation and sharing of best practices, both within Luxembourg and with its neighbours. In October 2012, the country’s Chamber of Trade and Energy Agency launched a new training programme called “Energie fir d’Zukunft+” aimed at informing construction companies about building energy performance standard: in 2013, the programme will focus mainly on existing standards for passive houses (CML 2012b). In the same cooperative vein, Luxembourg’s Minister of Economy and Trade and Switzerland’s Federal Councillor for Environment, Transport, Energy and Communication signed a memorandum of understanding on 24. May 2012 setting up a framework for bilateral cooperation in energy matters, particularly efficiency measures. Luxembourg’s energy information organisation “*myenergy*” and its Swiss counterpart, a trade association on energy issues (Energie-Agentur der Wirtschaft) will establish networks on efficiency among companies in Switzerland and Luxembourg. On the level of local cooperation, the Ministry of Sustainable Development of Luxembourg in January 2013 created the Climate Pact (“Pacte Climat”), which offers technical and financial support to municipalities for their climate and energy policies. By signing an agreement with the national government, municipalities pledge to implement climate change mitigation measures in several sectors, such as construction, energy distribution, and mobility management in exchange for state funds (Pacte Climat 2012).

Renewable Energy

Between 2005 and 2010, renewable energy consumption as a proportion of total consumption doubled in Luxembourg to 2.8%, which is still a long ways off the 11% target for 2020. The proportion of renewably generated electricity was 3.1% in 2010, below values in previous years (Eurostat 2013).

The government is pursuing what opportunities it has to promote renewable energy production: during the conference “Clean technologies: An engine for sustainable economic growth” held in June 2012, the Luxembourg Minister of Economy and Trade stated that environmental technologies are being prioritised in Luxembourg, including the conversion of biomass into energy, the production of biofuels, energy storage technologies, and renewable micro-generation plants (GovLux 2012b). The amendments to subsidies for supporting residential renovation in the period 2013-2016 include guidelines on upgrading buildings to contain renewable energy technologies in addition to

increased efficiency. Technologies eligible for the subsidy include wood-fuelled boilers and geothermal heat pumps.

In November 2012 an amendment to the Grand Ducal Regulation of 8 February 2008 on the production of electricity based on renewable energy sources was published. From 1 January 2013 onwards, PV systems will be supported with feed-in tariffs only if they have a peak power of less than 30kWp and are installed on the exterior of a building or above an impermeable parking or traffic area.

A new wind farm was inaugurated in Binsfeld, in the North of Luxembourg, in October 2012. The 5 turbines with total capacity of 11.5 MW are estimated to generate 23 gigawatt hours annually, roughly 10% of the wind energy production planned in Luxembourg's national action plan for renewable energies. The facility is expected to provide electricity to circa 5,000 households and avoid the emission of 15,000 tons of GHG (MECE 2012c).

Energy Networks

During the conference on clean technologies held in June 2012 in Luxembourg, smart grids and energy storage technologies were identified as some of the priority sectors to be developed in order to foster economic growth in the country. Moreover, the Memorandum of Understanding signed in May 2012 between Luxembourg and Switzerland foresees closer cooperation of both countries in the field of electricity grids (smart grids and smart metering) (MECE 2012a).

Transport

Transportation emissions significantly increased from 1990 to 2005. From 2005 to 2010 they dropped slightly but increased again from 2010 to 2011. Since 2005 the sector is responsible for more than 50% of all emissions (see Table 1). This shows the need to adequately address emissions from transport. But even though fuel charges have recently been increased in Luxembourg, other transport taxation is netting only the equivalent of 0.2% of GDP in revenues in 2010; the third-least in the EU (Eurostat 2012). The efficiency of newly registered vehicles improved between 2005 and 2011, but at 142.1 g CO₂/km driven they were still 2.5% above the EU average (EEA 2012e).

During the conference on clean technologies held in June 2012 in Luxembourg, sustainable mobility as well as biofuels were designated as some of the priority sectors to be developed in order to foster economic growth in the country. Within the context of the current discussions on biofuel use in the European Union, however, Luxembourg's Minister of Energy appealed in July 2012 for the formulation of stricter sustainability criteria for the production biofuels in order to reach the European targets. The minister cited negative consequences of biofuel production on the price of food concerns over allocating land to biofuel cultivation (GovLux 2012a).

Luxembourg's main transport sector climate policy is a bonus for low-emitting vehicles (called "prime CAR-e"), in form of a one-time only reward granted upon purchase of an emissions-efficient vehicle. A significant portion of it has been cancelled starting 1 January 2013. The previous reward amounted to € 750 for vehicles emitting less than 100g CO₂/km and to € 1,500 for vehicles emitting less than 90g CO₂/km, and is now only applicable for vehicles registered before 31 December 2012. However, the bonus of € 5,000 for electric cars as well as for vehicles emitting less than 60g/km CO₂ has been renewed for 2013 (Car-e.lu 2013).

Waste

In March 2012, a law regulating waste management in Luxembourg was published. According to this law, the Administration of Environment of the Ministry of Sustainable Development shall establish a national waste management plan. No further information could be found on the current status of the plan as of February 2013. The law also foresees the introduction of municipal taxes to help cover the costs incurred by the municipalities for waste management. A tax on household waste shall also be introduced depending on the weight and volume of waste produced. No by-laws were published yet.

5 Policy progress on past CSRs

As part of the European Semester, Country Specific Recommendations (CSRs) for each MS are provided by the EU Commission in June of each year for consideration and endorsement by the European Council). The recommendations are designed to address the major challenges facing each country in relation to the targets outlined in the EU 2020 Strategy. In the following table, those CSRs that are relevant for climate change and energy that were adopted in 2012 are listed, and their progress towards their implementation is assessed.

Existing Country Specific Recommendations	Progress
<p>Ensure that the targets for reducing greenhouse gas emissions from non-ETS (Emissions Trading System) activities will be met, in particular by increasing taxation on energy products</p>	<p>Although excise duties on gasoline and diesel were increased in 2012, their amount remains low compared to Luxembourg's neighbouring countries. The low excise duties, combined with low overall VAT rates help explain why fuel prices are lower than in neighbouring countries - also contributing to "fuel tourism".</p> <p>No new specific action has been taken (or is foreseen) to impose transport taxation based on environmental performance. Incentives for the purchase of emissions-efficient cars have been restricted and now apply to a smaller group of automobiles than they previously did.</p> <p>New energy performance standards were promulgated for residential and non-residential buildings, and an extension of subsidies for residential building renovation includes the option of including heating system renovation for additional funds. Additionally, a new waste management plan foreseeing taxes on waste disposal is being considered, but no decisions have yet been made.</p>

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