



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

National plan for smart, sustainable and inclusive growth Luxembourg 2020

National Reform Programme
of the Grand Duchy of Luxembourg under the European semester
2017



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ACRONYMS

AAQE	Annual Allocations of Emissions Quotas
ADEM	Employment Development Agency
AIP	Professional Insertion Activities
ALJ	Local Youth Action
BNL	National Library of Luxembourg
BTS	Vocational Training Certificate
CES	Economic and Social Council
CFE	Financial Contributions by the State
CRP	Public Research Centre
CTIE	Centre for Information Technologies of the State
DIRD	Gross domestic expenditure on R&D
DSGE	Dynamic Stochastic General Equilibrium
ERA	European Research Area
ETS	Emission Trading Scheme
EU	European Union
FEAD	Fund for European aid to the most deprived
FEDER	European Regional Development Fund
FNR	National Research Fund
ESF	European Social Fund
GDP	Gross Domestic Product
GES	Greenhouse Gases (GHG)
HPC	High performance Computing
IBBL	Integrated Biobank of Luxembourg
ICT	Information and communications technologies
IGSS	Inspectorate General for Social Security
ILR	Luxembourg Regulatory Institution
KTOE	Kilo-tonne oil equivalent
LCSB	Luxembourg Centre for Systems Biomedicine
LFS	Labour Force Survey
LIH	Luxembourg Institute of Health
LIS	Luxembourg income study
LISER	Luxembourg Institute of Socio-Economic Research
LIST	Luxembourg Institute of Science and Technology
LLL	Lifelong learning
MIP	Macroeconomic Imbalance Procedure
MODU	Sustainable Mobility Strategy
MTO	Medium term budget objective
NEET	Not in Education, Employment or Training
NRP	National Reform Programme
OAI	Order of Consulting Architects and Engineers
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
PSL	Sector Housing Plan
R&D	Research and Development
RDI	Research-Development-Innovation
REVIS	Social Inclusion Revenue (REVIS)
RMG	Guaranteed Minimum Income
RTO	Research and Technology Organisation
SME	Small and Medium-sized Companies
SGP	Stability and Growth Program
SNJ	National Youth Service
SSM	Minimum wage
SYVICOL	Syndicate of Cities and Towns in Luxembourg
STATEC	National Institute of statistics and economic studies
UEL	Union des entreprises luxembourgeoises (Employer's Organisation)

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1. Introduction

Economic activity in the European Union (EU) is firmly on track for a well-anchored recovery and is showing good resilience. The EU's Gross domestic product (GDP) is now higher than before the crisis and investment has resumed its forward path. The recovery is creating more jobs, unemployment has continued to fall and in parallel, the employment rate is higher than the one recorded in 2008. A certain level of progress has thus been observed in the EU, signalling resilience and improvement of the economic and social situation. Notwithstanding, GDP and productivity growth remain below their full potential and investment is still lower than prior to the crisis. Furthermore, the consequences of this crisis, such as the social impact, the high levels of public and private indebtedness that weigh on investment and the high proportion of non-performing loans are still deeply entrenched. Other major sources of change include globalisation as well as demographic and technological mutations, including digitization. While it is the responsibility of the EU to establish an appropriate environment in terms of improvements in regulations and policy guidance, Member States must also take required steps. Consequently, Member States must redouble their efforts on the three elements of the virtuous triangle of economic policy: boosting investment, pursuing structural reforms and ensuring responsible fiscal policies.

In Luxembourg, a number of well-oriented indicators regarding economic activity and employment emerged at the end of 2016, and early 2017 they are still holding relatively firm. Many indicators therefore present a decisively optimistic reading of the economic situation in the short and medium term. Nevertheless, potential growth has slackened and the country's productivity has grown only slightly. Luxembourg is also facing a certain number of challenges, including the long-term sustainability of public finances, climate change and economic diversification. The government feels therefore that the way forward is to support the economic recovery by taking advantage of favourable economic conditions, while continuing to pursue responsible fiscal policies, increasing investment and implementing structural reforms. The National Reform Program (NRP) for Luxembourg covers these topics and challenges from a long and medium term perspective. This 2017 edition of the NRP both reviews the implementation status of measures announced previously and addresses the 2016-2017 Council recommendations, while taking on Luxembourg's national objectives for 2020, the priorities of the Annual growth survey and the country specific recommendations relating to the Euro zone. It also addresses Luxembourg's country report that has been published by the European Commission at the end of February¹.

On the macroeconomic front, Luxembourg is once again one of the Member States that is not subject to an in-depth review under the alert mechanism for the macroeconomic imbalance procedure (MIP). No macroeconomic imbalance has been detected, although a certain number of indicators remain above the thresholds.

From the perspective of microeconomics and employment, the structural pillars for long-term growth are still education and training, R&D and innovation, efficient use of resources, social cohesion and inclusion² and gender equality as a cross-disciplinary objective. The government organised a series of events in November 2016 related to qualitative growth, entitled "*Wéi e qualitative Wuesstem fir eist Land?*" ("*What kind of qualitative growth for our country?*")³. In addressing this issue, at the end of 2016, the government has presented the results of a strategic study conducted by Jeremy Rifkin entitled "*The Third Industrial Revolution*"⁴, which has the

¹ For more details see: https://ec.europa.eu/info/european-semester_fr

² On the social level, this NRP is also consistent with the National Social Report (NSR).

³ For more details see: <http://www.gouvernement.lu/6490921/14-qualitative-wuesstem>

⁴ For more details see: <http://www.troisiemerevolutionindustrielle.lu/>

objective of preparing Luxembourg for a constantly mutating environment via a long-term vision. The government selected this strategic study as a general guideline for the country's future development. Luxembourg already has available solid foundations for facing challenges of the future. Major actions have been taken over the last decade in the areas of ICT, logistics and energy. At present, the challenge is to accelerate existing momentum in these key sectors and to prepare for convergence of ICT, renewable energies and transport within a digital and intelligent network. Also making the economy and society aware of and prepared for the megatrends of the future is key in order to conceive an economic development that is sustainable on the medium and long term. The legislative, regulatory and technical measures to be undertaken, as well as any flagship projects to carry out, are currently being discussed in various platforms⁵. A strategic monitoring committee has been set up in early 2017 under the direction of the Minister of the Economy in order to coordinate the implementation of measures, some of which have already been approved by the government⁶.

As regards fiscal policy, the NRP goes hand in hand with healthy and viable public finances as formulated in the Draft Budgetary Plan (DBP) and the Stability programme (SGP). The tax reform announced in 2016 has entered into effect at the beginning of 2017. It aims to strike a balance between households and companies as well as fiscal sustainability. Furthermore, the government prioritizes investments, aiming a higher level than that of the Euro area average, while fully adhering to its governmental programme objectives of keeping gross public debt below 30% of GDP and complying to the medium-term objective.

The government has once again closely involved Parliament and social partners in the 2017 European semester with the objective of bolstering transparency and promoting national ownership of the process:

- Parliament has been involved in the European semester week that has taken place at the end of April, focusing on the government's statement concerning the economic, social and financial situation of the country.
- Social partners have especially been involved in the national social dialogue process that has taken place under the aegis of the Economic and Social Council (CES). This involves an annual cycle of regular consultations, which started in 2014, and seeks to cultivate regular social dialogue throughout the year in order for social partners to be able to submit their viewpoints to the government⁷.

In conclusion, the coordinated set of NRP measures accompanied by a responsible fiscal policy set out as part of the SGP, together with the strengthening of governance on the national level, should provide Luxembourg with the structure to consolidate the foundations of a smart, sustainable and inclusive growth.

⁵ For more details see: <http://www.gouvernement.lu/6493575/14-schneider-rifkin>

⁶ For more details see: <http://www.gouvernement.lu/6691354/01-revolution-industrielle>
<http://www.gouvernement.lu/6852097/30-reunion-etude-rifkin>

⁷ For more details see: <http://www.ces.public.lu/fr/semestre-europeen-2017.html>

2. The macro-economic scenario for 2017-2021

2.1 Macro-economic perspectives for the period covered by the program

It is essential that measures included in the NRP take into account the constraints of the macroeconomic environment and the medium-term fiscal strategy that stem from them. Implementing the NRP as a whole thus falls under the same economic hypotheses involving macroeconomic projections as those of the Stability and Growth Programme (SGP).

According to STATEC⁸ Luxembourg posted real GDP growth in volume of 4.2% in 2016. Medium-term macroeconomic forecasts call for growth in volume of 4.4% in 2017 and of 5.2% in 2018, with medium-term growth around 2.9% on average yearly for the 2019-2021 period. Potential growth is estimated at above 3% for 2017-2021.

For the long term, the government has aligned its main economic assumptions on the macroeconomic scenario used for Luxembourg in the *Working Group on Ageing Populations and Sustainability* of the EU Economic Policy Committee and on its most recent report on ageing⁹.

2.2 The macro-economic impact of structural reforms

Over recent years, major efforts have been made in Luxembourg in the area of evaluating reforms. An econometric DSGE (Dynamic Stochastic General Equilibrium) model, called the *Luxembourg structural model* (LSM), has been developed that will better simulate macro and micro-economic impacts of structural reforms. Some characteristics of the model make it particularly well adapted to analysing economic policies implemented by Luxembourg. It integrates the economic specificities of Luxembourg, especially the particular functioning of the labour market that assimilates residents and cross-border workers, the importance of negotiations between unions and companies, and the fact that Luxembourg is a small, extremely open economy.

An initial version of the LSM was widely used in reviewing the consequences of structural policies. However, this initial version was not appropriate for studying the consequences of the extreme level of Luxembourg's specialization in its cluster of financial activities. The development of a new version, known as LSM2, addresses this concern. The LSM2 model, including the banking sector for Luxembourg, was introduced in June 2012. However, it should not be forgotten that there is no ideal structure for an institutional macro-econometric model¹⁰.

⁸ For more details see: <http://www.statistiques.public.lu/catalogue-publications/conjoncture-flash/2017/PDF-Flash-03-2017.pdf>

⁹ For more details see: http://europa.eu/epc/working_groups/ageing_en.htm

¹⁰ For more details see: <http://www.gouvernement.lu/4105035/modele-structurel-luxembourgeois-lsm>

3. Implementation of country specific recommendations

In July 2016 the Council adopted two recommendations on Luxembourg's SGP and NRP for the period 2016-2017. This chapter describes the measures implemented in Luxembourg to address these recommendations.

3.1 *The long-term sustainability of public pensions*

“Ensure the long-term sustainability of public pensions by increasing the effective retirement age, by limiting early retirement and increasing incentives to work longer, and by aligning the statutory retirement age to changes in life expectancy.”

The various social security systems are regularly analysed to ensure that they are well managed strategically and viable in the long term. It is with this aim that the reform of the general retirement pension scheme, which entered into effect on January 1, 2013, stipulates that the Inspectorate General for Social Security Administration (IGSS) performs an analysis of the scheme's financial situation every five years. The objective of this reform was to adjust the replacement rate of pensions to life expectancy and to plan for regulating mechanisms if financial resources are inadequate. Accordingly, the government has undertaken a series of measures intended to make up of for the gap between legal and effective retirement ages, by means of an active policy to facilitate the conditions for maintaining older employees on the job.

As the overall analysis of the general retirement scheme had to be done in 2017, the government decided to include in its agenda an initial evaluation of the impact of the reform in 2016. Accordingly, the government decided to set up a Pensions Group, whose task is to check the links of newly introduced provisions, especially those of the readjustment mechanism, within the legislative period and based on actuarial opinions established by the IGSS. In 2016, the government approved the establishment of the working group and assigned it the task of discussing the financial sustainability of the scheme and of formulating an opinion on the need to implement any adjustments. This working group is made up of experts from the various ministries and professional chambers. The actuarial report of the IGSS on the financial situation of the general retirement pension scheme was presented to the working group and the press in December, 2016¹¹. One important element included an update of the long-term budgetary forecasts showing estimates relating to changes in pension scheme expenditures, broken down into specific categories and simulations of set scenarios. The IGSS simulations confirm that the mechanisms introduced in the pension insurance reform of 2012 are exerting a positive impact on the long-term financial situation of the general retirement pension scheme. Depending on the moderating coefficient of adjustment used in the event of a deficit, the impact of the reform amounts to a decrease in expenditures, as a percentage of GDP, of between 2.5 and 3.8 percentage points in 2060. The report confirms how important it is not to depend solely on the current high level of reserves in the compensation fund. It is important to take advantage of the accumulated reserves to tackle corrective mechanisms at an early stage, not only regarding inflows but also benefits paid. Accordingly, with a current surplus of €926 million in 2015, the compensation reserve of the scheme rose to €16.54 billion on 31 December 2015. The compensation reserve has more than doubled since 2006. At December 31st, 2012 it stood at €12.64 billion. Currently the compensation reserve represents 4.37 times the amount of benefits paid out annually. This ratio was 3.24 in 2006 and 3.90 in 2012. The working group, which has met twice in the meantime, will engage in regular exchanges throughout this year and will subsequently present its conclusions and recommendations to the government.

¹¹ For more details see: <http://www.gouvernement.lu/6548714/02-bilan-assurance-pension>

In an effort to extend the working lives of contributors, the government instituted a reform of the professional classification scheme for persons with partially incapacitated persons. The central objective of this reform is to keep reclassified persons at work, especially older persons, while providing adequate protection for those who are most vulnerable. The modifications that took effect on January, 1st 2016 in the area of professional reclassification aim at accelerating procedures, a more thorough preservation of individual rights in external reclassification and the creation of conditions conducive to internal reclassification. The concept is based on supporting companies in their efforts to improve working conditions, by making experts available, by emphasizing internal reclassification, i.e. within a worker's same company, in external reclassification efforts, and above all, improving reinsertion of reclassified persons into a job. The reform seeks to prioritize internal reclassification by introducing an obligation of management to internally reclassify persons in all companies employing at least 25 persons. Regarding external classification, the law introduces new methods, such as a protective status for employees reclassified externally, and it will henceforth be possible to assign externally reclassified job seekers to public service works. In the same way, the reclassification procedure is facilitated and accelerated and there will be a periodic re-evaluation of reclassified employees. Furthermore, the new system will reduce long-term unemployment – numerous long-term job seekers were reclassified externally – and it will make the reclassification system more efficient.

According to the latest available figures, the reform had a positive impact on the number of persons reclassified externally without a job and who consequently registered with the Employment Development Agency (ADEM). In this way, the number of jobseekers who had been externally classified fell¹² by 12% between January 2016 and January 2017. This also had a positive impact on the number of older jobseekers given that half of externally classified jobseekers are older than 50. On the basis of the first conclusions regarding the implementation of the law, the idea that a certain number of issues be adjusted with the close cooperation of the social partners is under review.

The professionalization placement programme¹³ and the professional reinsertion contract¹⁴ are two new measures that have become applicable since 2016, intended for job seekers at least 45 years old, those who have been reclassified externally or those with the status of disabled worker. The first measure is a work placement with a maximum period of six weeks that gives job seekers the opportunity to highlight their professional capabilities within a company. The second measure offers job seekers the possibility of improving their knowledge and professional capacities within a company for a maximum period of 12 months. These measures are intended for companies that can provide a real opportunity for hiring people on permanent contracts.

In August 2015, the government submitted a draft law on modifications to the early retirement¹⁵ systems including the solidarity, progressive and early retirement systems of shift and night workers, excluding adjustments. This reform focuses more on employees with difficult jobs and therefore takes more into account the working conditions of employees, while favouring the retention of older workers in companies. More precisely, the draft law will abolish the early retirement-solidarity system and the adaptation of other early retirement systems, except for the adjustment scheme, which is meant to prevent older workers from losing their job for economic reasons and join the unemployment rolls with few prospects of professional reinsertion. The reform should take effect in the summer of 2017.

¹² Falling from 2,587 in January 2016 to 2,273 in January 2017.

¹³ For more details see: <http://www.adem.public.lu/fr/demandeurs-demploi/beneficier-mesures-aides/mesures-emploi/stage-professionnalisation/index.html>

¹⁴ For more details see: <http://www.adem.public.lu/fr/demandeurs-demploi/beneficier-mesures-aides/mesures-emploi/Contrat-reinsertion-emploi/index.html>

¹⁵ Parliamentary file no. 6844.

As management of the age pyramid within a company is a key factor in keeping older workers on the job, the government has taken the initiative to establish a legislative mechanism in the area that preserves a broad margin of manoeuvre for the social partners to take sector-specific issues into account and to adapt approaches that assimilate specific problems of individual companies. The draft law that introduces a package of measures in the area of age policy¹⁶, which is currently in the legislative procedure, will require employers with more than 150 employees to draw up an age management plan bearing on at least three of the following points: recruitment of older workers, anticipation of changes in professional careers, improvement of working conditions, access to continuing education and training and transmission of skills and knowledge. Financial initiatives are being included for the companies in this group, as well as for those companies not required to draw up plans but who voluntarily apply an age management plan. This project will be rounded out by a new disposition in the November, 28th 2014 agreement with the trade unions that stipulates combining retirement with a part-time job.

In order to support and improve lifelong learning (LLL), a key factor in maintaining employees on the job, especially older ones, the government will progressively implement the measures of the white paper on the national strategy for lifelong learning¹⁷. There are eight of these measures, including the adaptation of the LLL mechanism to the life cycle of the learner and diversity in Luxembourg society, and the development of quality in the area of adult training. Continuing education and the requalification mechanisms must be adapted to the new realities arising from the digitalization of the economy. New initiatives, which could include a right to individual training for all employees and independent workers, will be discussed with the social partners.

Nursing care insurance (long term care) is one of the fundamental pillars of the social security system in Luxembourg. Nursing care insurance was instituted by the law dated 19 June 1998 as the 5th pillar of Social Security and its purpose is "*to bear the cost of services in kind of assistance and care for dependent persons provided (...) within the home or in a nursing care establishment as well as technical support and alterations in the home*". Currently, the nursing care insurance scheme supports over 13,500 persons and must now be modernised to meet the challenges of a constantly changing population and to continue to guarantee fair access to high quality services¹⁸. The major reform objectives begun are based on better individualization of the quality services offer that meets the daily requirements of each person, the improvement of quality by clear standards and criteria with adequate checks and balances, the simplification of procedures and the strengthening of the system with regard to societal change and in compliance with the fundamental principles of the basic 1998 law. Furthermore, the project plans for the implementation of tools for better monitoring the entire nursing care insurance system and consequently better anticipation of future changes. Accordingly, the system is better prepared to continue to ensure the future success of high quality care. The draft law of the reform was submitted to Parliament in July 2016 and is currently in the legislative procedure¹⁹. Its entry in effect is planned for January, 1st 2018.

3.2 Economic development in the business services sector and bottlenecks that hamper housing investment

“Remove barriers to investment and innovation that limit economic development in the business services sector. Address bottlenecks that hamper housing investment.”

¹⁶ Parliamentary file no. 6678.

¹⁷ For more details see: <http://www.men.public.lu/catalogue-publications/adultes/informations-generales-offre-cours/livre-blanc-lifelong-learning/131025-s3l-livreblanc.pdf>

¹⁸ Presentation of the key elements of the reform: http://www.mss.public.lu/actualites/2016/07/art_ass_dep/index.html

¹⁹ Parliamentary file no. 7014.

3.2.1 Economic development in the business services sector

This recommendation aims to reduce the obstacles to private investment and innovation that will free up growth potential. While public investment in Luxembourg, as a percentage of GDP, exceeds the EU average, private investment is less significant.

The government recently took a series of measures, with others under way, in order to spur private investment in Luxembourg:

- The law dated July, 23rd 2016²⁰ stipulates the introduction of a simplified limited liability company (S.à.r.l.s). Based on the observation that raising the minimum required capital is often considered a difficult obstacle to overcome, the purpose of this measure is to stimulate entrepreneurship by making it easier starting a company through reduced establishment costs, making the establishment process simpler, more rapid and efficient and above all, by considerably reducing the current capital requirements. Therefore, access to this corporate vehicle will provide a legal structure to entrepreneurs who are physical persons by offering them not only protection in terms of liability and protection of their own assets but also in terms of better visibility. Since January 17th, 2017 the first company establishments had taken place and by March, the S.à.r.l.s. establishments have exceeded the sole proprietorships company creations by 89%. Before being able to evaluate the actual impact, it will be appropriate to monitor how these figures evolve in 2017.
- In continuation of efforts in the area of administrative simplification implemented in recent years, the government had decided to further develop areas of activity contributing to achieving the ambition of a high quality public service that meets the expectations of users, citizens and companies. In this perspective, an inter-ministry platform was implemented that was assigned the task of working toward reducing administrative complexity by means of a systematic *screening* of procedures. It was charged with monitoring political dialogue begun in 2012 with the various stakeholders including the UEL, SYVICOL and the OAI as part of a round table discussion on accelerating investment. The “Omnibus”²¹ draft law was announced on this occasion to achieve the grouping of all legislative modifications needed to implement the planned actions into a single law. This law serves various legislative texts in the sense that its purpose is to provide numerous modifications to eleven existing laws and to repeal two Grand-ducal decrees. The objective of this law is to simplify and shorten procedures relating to territorial development in 105 municipalities and the protection of nature, water and property. Beyond these proposals and modifications, this can be used to launch a new way of evaluation regulations. Among the principal simplification efforts there appear above all measures to reduce procedural delays that are likely to reduce the cost of processing files, both on the applicants and administration sides. Other measures include efforts to dematerialise processes and the transition towards digitalisation, as well as abandoning procedures that are no longer viable. This “Omnibus” law dated 3 March 2017, which takes effect on 1 April 2017, is a first, decisive step in the direction of systematic screening of all administrative procedures and a new cross-functional approach institutionalised via the implementation of a political and administrative inter-ministry platform presided over by the Minister of Civil Service and Administrative Reform²².

²⁰ The Law dated 23 July 2016 amending the following, with a view to instituting as simplified closely held company: 1. The amended law dated 10 August 1915 on commercial companies, and 2. The amended law dated 19 December 2002 concerning the companies trade register and accounting processes and annual financial statements of companies.

²¹ Parliamentary file 6704. This measure also relates to the second part of recommendation no. 2: see Chapter 3.2.2 “Bottlenecks to housing investment”.

²² For more details see: <http://www.gouvernement.lu/6859416/03-kersch-einfach-letzebuerg>

- Immigration is one of the pillars of Luxembourg's economy, which has been traditionally very open to migrant workers and foreign investment. Luxembourg is particularly affected by a shortage of highly qualified labour, due to the size of its financial centre and the predominate weight of service companies whose activities are situated in an international environment. The main purpose of the immigration law²³ voted in February 2017 is to transpose two European directives seen in the context of the EU immigration policy, 2014/36/EU and 2014/66/EU. It also stipulates the creation of a new category of national residence permit. These provisions relating to the authorization of residence for "investors" are part of the policy for economic diversification, promotion of entrepreneurship and repositioning of the financial centre. The law seeks to attract new high quality investors that want to invest in such undertakings as taking over or starting companies, family office type investment structures or management of large holdings. The law sets out the conditions for granting "investor" residence permits, as well as the formalities prior to obtaining them, in the manner of other types of residence permits. The residence permit that is valid for an initial period of three years is accompanied by a monitoring mechanism, as no later than 12 months after it is granted compliance with commitments made by holders simultaneous to the investment are reviewed, such as keeping or creating jobs, the appropriate materials or investment over a set period.
- Despite the national objective of strengthening RDI in Luxembourg companies, private investment in R&D remains overall beneath the national objective for 2020, expressed as a % of GDP. Implementing certain flagship projects should provide a leverage effect²⁴, including the implementation of a new law approved at the end of March 2017, whose purpose is to renew aid schemes for research, development and innovation.

With particular regard to the economic development in the services sector, according to the 2017 country report of the European Commission, Luxembourg is the EU country that has the most restrictive regulations in the area of business services and concerning the establishment of retail sales. The government agrees that challenges exist, but feels that this analysis should be more balanced. As an example, statistics of the Ministry of the Economy reveal a large majority of foreign operators in the services sectors concerned, principally coming out of the EU. Around 80% of the total number of approvals of establishment are granted to foreigners, who are foreign residents/cross-border workers. This indicates that the environment in Luxembourg must be more attractive in an international comparison. In addition, an analysis of the flows shows that Luxembourg has a high growth rate for its establishment surface areas. For example, growth in surface area for businesses of between 17-25 square kilometres per year since 2009 has been recorded, over 90% of applications were approved and these highly positive figures illustrate that the sector is prospering²⁵.

The government recently took a series of steps, with others under way, to facilitate the economic development in the services sector in Luxembourg.

- In 2015, the government eliminated certain requirements relating to the holding of capital and voting rights by architects and engineers. In 2016, the government decided to remove the fixed rates in public procurement for architects and engineers and announced a certain number of

²³ Draft law no. 6992 amending 1) the amended law dated 29 August 2008 on the free movement of persons and immigration, 2) amended law dated 28 May 2009 concerning the Retention Centre, 3) the law dated 2 September 2011 regulating access to the professions of craftsman, retail trade, industrial operator and certain independent professions.

²⁴ See Chapter 4.2 The R&D objective and the key measures for achieving it.

²⁵ MINISTRY OF THE ECONOMY, Rapport d'activité 2015 - Volume 1, Luxembourg, March 2016
For more details see: <http://www.gouvernement.lu/5925873/2015-rapport-activite-economie.pdf>

simplification measures in the area of recognition of professional qualifications, especially for accessing the teaching profession.

- While it is not currently planned to deregulate the architectural profession, the government recognizes the need to ensure that legal requirements are effectively applied in compliance with European requirements under the regulations revision process that is now under way²⁶. In this sense, the law²⁷ to transpose changes brought on by directive 2013/55/EU aligned requirements in the area of professional qualifications, especially for architects. The law now conforms to the requirements of directive 2005/36/EC in the area. Furthermore, the law dated 13 December 1989 on the organisation of architectural and consulting engineers is ready for discussion in parliamentary commissions²⁸. The government is in the process of reviewing the opportunity and need to review the texts that were submitted. Modifications are to be proposed at the end of 2017.
- One of the flagship measures of the 4th SME plan, adopted in 2016, consists in a reform of the right to establish. The government recognizes the importance of regularly adapting the right of establishment to socio-economic realities and to technical changes, but stresses that the legal requirements in terms of professional qualifications are an advantage that improves the chances of success to company directors who wish to do business in Luxembourg. Exercising the identification of regulated professions and the mutual evaluation by Member States of their regulatory systems for access to professions led to identifying a series of professions where the proportion of current requirements will be reconsidered. Solutions implemented by other Member States will also inspire reflections of Luxembourg with regard to the right of establishment. It should be emphasised that the requirements that will be maintained should ensure a high level of consumer protection as well as safety and public health. Work on a pre-draft law will begin in the second half of 2017 and a draft law is anticipated for the first half of 2018.
- The government has adopted measures for improving the operational environment of retail trade. In December 2016, a new law on sales, pavement sales and misleading²⁹ advertising has aligned legislation in the area of unfair business practices with European requirements. Accordingly, the prohibition on at-loss sales was eliminated, as well as the authorisation schemes that allowed this type of sale in certain cases. Furthermore, rules regarding publicity now reflect European rules in the subject.
- Work on the modernisation of legislation in the area of approvals for shopping centres (hyper markets) have been initiated. The government is currently exploring two options, either full liberalisation, or at the very least a substantial raising of the threshold triggering a procedure for special authorisation. In the latter case a single threshold would be used. The objective would have a dual procedure. It would in the first place provide comfort to applicants in their processes by involving the concerned national and local authorities from the beginning. Secondly, a reliable and ongoing statistical statement relating to commercial space in operation could be drawn up if an obligation of annual notification were in place. The first informal consultations have taken place and a pre-draft law will be presented in the first half of 2017.

²⁶ See the national action plan adopted by the Government Council on 15 January 2015 as part of the transposition of Article 59 of Directive 2005/36/EC.

²⁷ Law dated 28 October 2016 relating to recognition of professional qualifications.

²⁸ Draft law no. 6795 amending the law dated 13 December 1989 on the organisation of the professions of architect and consulting engineer.

²⁹ Law no. 7038 dated 23 December 2016 on sales, pavement sales and misleading and comparative advertising.

- The government had authorized the extension of store opening hours to Sundays and legal holidays in the capital during a test period, which ended in September 2016. Beginning in April and up till at least early November 2017, shops in certain sections of the capital will again be able to open on Sundays up until 19h00 via a new exemption granted by the government. During this period, an intensive monitoring effort will be carried out in working groups to identify any problems and to streamline the operational part. Lastly, it is nonetheless under consideration to adapt the opening hours scheme to economic realities and to improve competition conditions on the Luxembourg market. These measures should benefit small local stores, tourist-related trade and promote craft trades. A substantial loosening of rules relating to craftsmen, family owned micro-businesses and souvenir shops is being considered, as is setting up a unique scheme for trade related to the transportation of persons, especially in service stations, railroad stations and airports.
- A large number of Luxembourg companies are facing recurrent problems to supply with their supplier of choice in the EU's internal market due to territorial supply constraints. Many producers and wholesalers force companies to obtain supplies with subsidiaries or platforms determined by their distribution network. Free access to suppliers with better prices for Luxembourg companies is often refused as a result of this. This represents a triple penalty for companies: with regard to prices as they are denied supply at the best price, regarding the supply of products and services as availability is limited and finally with regard to efficiency regarding customer service, inadequate training mandated by distributors and other issues. In November, 2015 the Benelux states signed a political recommendation relating to territorial supply constraints in their nations. The Benelux countries sought to carry out a clear analysis of the issue present in the supply chain of retail markets in the Benelux and to formulate appropriate solutions. A joint investigation³⁰ addressing companies, coordinated by the Secretary General of the Benelux, was launched at the end of 2016 and an analysis of responses received is set for 2017.

3.2.2 Bottlenecks to housing investment

According to the updated dashboard of the alert mechanism report for the macroeconomic imbalance procedure (MIP) in November 2016, housing prices in Luxembourg, already at high levels, are moving upward faster. Changes in the price of housing are largely driven by economic fundamentals. The report notes that several factors, such as the size of net migratory flows, vitality of the labour market and low financing costs are pushing up demand for housing, while supply remains relatively limited³¹.

The government programme³² of 2013 recognises that housing prices have attained unknown levels in recent years. The supply of buildable lots and housing cannot keep up with demand. The driving force behind this rapid upsurge in prices of housing is the cost of land. The first objective of the government is to control changes in price on the real estate market by increasing the number of housing units and buildable lots. From this perspective, the government is acting on the supply of building lots and to invigorate the supply of social housing and affordable residential units, while simultaneously revising administrative procedures concerning construction and housing with the objective of simplifying and shortening them.

More specifically, the government is acting in the following areas:

³⁰ For more details see: <http://www.benelux.int/fr/rto>

³¹ For more details see: https://ec.europa.eu/info/sites/info/files/2017-european-semester-alert-mechanism-report_fr_1.pdf

³² For more details see: <http://www.gouvernement.lu/3322796/Programme-gouvernemental.pdf>

- The draft law amending a provision in the area of direct taxation³³, which was approved in June 2016, is one of the initiatives offered by the government in the housing sector. Its objective is to invigorate the supply side of the housing market by promoting the supply of built and unbuilt land and it should allow a sharp increase in land available for housing. This measure is an opportunity to act on the supply of lands and housing units. More accurately, the objective here is to, over eighteen months, temporarily create a tax climate that is favourable to the sale of land and housing. Taxation on capital gains from real estate sales has been reduced to one quarter of the overall rate for the period between July, 1st 2016 and December 31st, 2017. The scope of the measures is limited to transactions carried out on built and unbuilt property that is part of the private assets of taxpayers.
- The recent reform of municipal finances³⁴ approved in December 2016 has two major objectives, namely to guarantee financing of municipalities by unallocated and stable income and to implement new criteria for fair and transparent equalisation to mitigate disparities amongst municipalities. The reform takes into account territorial development objectives, stimulates the merging process amongst municipalities and job creation and incites municipalities to create social rental housing. One of the major innovations of this is the unification of distribution criteria to municipalities. While the previous system included distribution criteria for income stemming from the Communal Financing Fund (FCDF) and other equalising criteria for income originating with the Communal Commercial Tax (ICC), certain of these criteria no longer reflected reality and others were no longer justified. The reform of municipal finances introduces unique and transparent redistribution criteria to distribute the assets of the Overall Municipal Finances Fund (FDGC). Introducing these new criteria will significantly reduce disparities amongst municipalities. The distribution of the assets of the FDGC will be done as follows. Each municipality receives a fixed allocation of between €0, for municipalities with fewer than 1,000 inhabitants, and €300,000 for municipalities with over 3,000 inhabitants. The allocation for municipalities with between 1,000 and 3,000 inhabitants varies progressively from €0 to €300,000. The balance of the Fund's assets is then distributed according to five criteria: adjusted population (82%), salaried jobs (3%), socio-economic index (9-10%), social housing (0-1%) and adjusted surface area (5%).
- "Baulückenprogramm" to provide existing buildable land within locales: One of the current measures of the government is to make developed lots belonging to the government available on the market. An architectural competition for the design and construction of rental housing on government-owned land was recently launched. The projects submitted to this competition are currently being judged. After this, other promotional measures to incite private landowners to put their unbuilt property on the market will be programmed.
- Reform of the Housing and Habitat Development Fund ("*Fonds pour le Développement du logement et de l'habitat*"): In February 2017, the State Council issued an opinion on the parliamentary amendments concerning the draft law no. 6916 on the reorganisation of the public institution under the name "Housing Fund". This complementary notice is currently under review in a parliamentary commission. The new law on the reorganization of the Housing Fund is to take effect on July, 1st 2017.

³³ Parliamentary file no. 6983.

³⁴ Draft law no. 7036 on the establishment of a Fund for overall allocations to municipalities and amending 1. The amended law of 1 March 1952 amending certain provisions relating to direct taxes; 2. The amended law of 30 June 1976 on 1. Establishment of an unemployment fund; 2. Regulation of the granting of full unemployment benefits; 3. The amended law of 22 December 1987 concerning the budget of receipts and expenditures of the State for 1988; 4. The amended law of 6 February 2009 on the organisation of basic education.

- Preparation of a new Housing Pact (“*Pacte Logement*”) concept with municipalities: Meetings of the inter-ministry working group to make specific proposals recently took place and other meetings are set to take place in upcoming months. The current Housing Pact with municipalities will end in 2021.
- Introduction of the development contract (“*Baulandvertrag*”): The introduction of the development contract for the preparation of building lots by owners within a set timescale, with penalties attached such as reclassification of the land in question, will be determined shortly, during the reform of July, 19th 2004 legislation on municipal development.
- Modification of legislation concerning regional development and its implementation: In order to support furnishing a supply of housing that is sufficient and is suited to changes in the population, the sector master plan for housing (PSL) seeks to set aside 500 hectares of area, including brownfield development projects, to complete projects intended as a priority for housing. A pre-emptive right is being planned for use by the State and municipalities of concerned regions for acquiring land located in priority PSL housing areas. Furthermore, cooperation agreements between the State and municipalities and municipal syndicates can be concluded with a view to co-financing the implementation of these housing projects. Prior to launching the procedure for draft sector plans, the new law on regional development, which will serve as an overall reshaping of legislation in the area, must enter in effect. Since its submission in Parliament in September 2016, the law on regional development is currently undergoing the legislative procedure.

4. Progress achieved in national objectives for the Europe 2020 strategy

The European Council decided on the new Europe 2020 strategy at its June, 2010 meeting, confirming the five major EU objectives that will make up the common goals steering EU Member State action in the areas of promoting employment, improving conditions for innovation and R&D, achieving objectives in the area of climate change and energy, improving education levels and promoting social inclusion, essentially by reducing poverty. Each Member State had to determine its national objectives reflecting these European objectives. Luxembourg is determining its national objectives for 2015-2020 and a series of measures to implement them as part of its NRP.

Table 1: National objectives determined by Luxembourg in April 2017

		European Objective 2020	Luxembourg 2020 Objectives
Priority 1 “Smart growth”	<i>Objective 1</i>	“ (...) raising combined public and private investment levels in this sector to 3% of GDP ”	2.3-2.6%
	<i>Objective 2</i>	“ (...) reduce school drop-out rates to less than 10%”	Sustainable under 10% (a)
		“ (...) increasing the share of 30-34 years old having completed a university degree or equivalent level of studies to at least 40%”	66% (b)
Priority 2 “Sustainable growth”	<i>Objective 3</i>	“ (...) reduce greenhouse gas emissions by 20% (...)”	Reduction of GHG outside of the EU ETS by -20% compared to 2005, i.e. emissions of around 8,145 Mt CO2 in 2020 (c)
		“ (...) increase the share of renewable in final energy consumption to 20%”	11% (c) Average 2015-2016 5.45%)
		“ (...) move towards a 20 % increase in our energy efficiency”	Use of final energy of 49.292 GWh i.e. 4.292 ktoe
Priority 3 “Inclusive growth”	<i>Objective 4</i>	“ (...) raise to 75 % the employment rate for women and men aged 20-64”	73%
	<i>Objective 5</i>	“ (...) lift at least 20 million people out of the risk of poverty and exclusion”	Reduce the number of persons under the threat of poverty or social exclusion by 6,000 by 2020 (d)

Notes:

(a) National data will also be used as measurement tools because the indicator calculated by Eurostat based on the Labour Force Survey (LFS) is not totally representative of Luxembourg. Statistics must be provided that better distinguish persons having attended Luxembourg schools in order to be able to assess the quality of the national education system for the national resident population and to provide information about the capacity of the Luxembourg school system to educate young people.

(b) Luxembourg intends that this indicator provide data on the capacity of the national education system to educate young people who can earn post-secondary school diplomas rather than it being a reflection of post-secondary qualifications requirements of the labour market. In Luxembourg there is a strong disparity according to the birth country; according to Eurostat, the rate for foreign residents is near 60% and that of native citizens is just under 40%, while in neighbouring countries the difference among the two populations is much less marked. Furthermore, the proportion of university degrees is higher among natives than among foreign born persons.

(c) With regard to greenhouse gases and renewable energies, strict national objectives were already in place prior to the launching of the Europe 2020 strategy. For the post-Kyoto 2013-2020 period, only the sectors outside of

EU ETS are targeted by objectives set amongst Member States. This emissions reduction objective excluding ETS is stated for 2020 as compared to the 2005 level.

(d) With regard to methodology, the indicator used under the Europe 2020 strategy does not take the demographic factor sufficiently into account at the national level. In fact, Luxembourg's demographics are very dynamic, even during difficult times, such that the relative nature of the indicator used as a percentage of population inevitably gives rise to an increase in the absolute number of persons concerned.

4.1 The Employment objective and the key measures for achieving it

European Objective: “aiming to raise to 75% the employment rate for women and men aged 20-64, including through the greater participation of young people, older workers and low-skilled workers and the better integration of legal migrants”

4.1.1 National Target

Luxembourg's objective for 2020 is to achieve an employment rate of 73%. According to the latest available data, Luxembourg came very close to this intermediate objective with an employment rate of 70.7% in 2016. The increase in the employment rate is also due to wider participation of women in the labour market. Accordingly, the percentage of women in domestic employment advanced from 37.9% in 2005 to 40.5% in 2016, an increase of 2.6 percentage points in a decade. This increase is more significant for the employment rate of women, which rose from 58.4% in 2005 to 65.0% in 2016.

Table 2: Statistics of the labour market in Luxembourg

	2005	2010	2013	2014	2015	2016
Domestic employment	287,178	337,406	362,361	371,489	381,316	393,036
Part of cross-border workers	41.2 %	44.3 %	44.2 %	44.2 %	44.5 %	44.9 %
Part of women	37.9 %	39.3 %	40.4 %	40.5 %	40.6 %	40.5 %
Total employment rate [20-64]	69.0 %	70.7 %	71.1 %	72.1 %	70.9 %*	70.7 %
Employment rate: Men	79.4 %	79.2 %	78.0 %	78.4 %	76.7 %*	76.1 %
Employment rate: Women	58.4 %	62.0 %	63.9 %	65.5 %	65.0 %*	65.0 %
Employment rate: Youths [20-24]	44.0 %	35.5 %	35.4 %	33.3 %	44.1 %*	40.7 %
Employment rate: Youths [25-29]	81.3 %	81.5 %	76.0 %	81.0 %	80.9 %*	82.1 %
Employment rate: Seniors [55-59]	46.8 %	55.7 %	54.7 %	58.1 %	55.9 %*	57.1 %
Employment rate: Seniors [60-64]	12.7 %	20.1 %	22.9 %	23.1 %	16.5 %*	17.7 %
Unemployment rate	4.6 %	4.6 %	5.9 %	6.0 %	6.5 %*	6.3%

Source: STATEC, Eurostat-LFS

Note: *break in series in 2015 for employment rate and unemployment rate

4.1.2 Key measures

In addition to the measures that are part of the implementation of EU Council's recommendations in the area of employment³⁵, the government continued its efforts to achieve the national objective. These efforts focus particularly on supporting job seekers who seek professional insertion, targeting

³⁵ See Chapter 3.1 – Country specific recommendation no. 1.

vulnerable groups, especially the young, women, seniors and persons with specific needs. To achieve this, national employment policy promotes high quality, sustainable and inclusive jobs, and supports measures and actions designed to eliminate precariousness and poverty, thus seeking to obtain improved living conditions and a sustainable social model. The various measures and actions are prepared and implemented in close coordination with the concerned ministries and departments to ensure a concerted horizontal approach that promotes the synergies between the various measures.

In attempting to facilitate the insertion of women into jobs, it is essential to emphasize promoting reconciliation between professional and family life, for example providing child care services, day nurseries, full-time schooling, etc. Under the 2015-2018 Action plan for gender equality, the law dated 15 December 2016 strengthens the principle of equal salaries by gender³⁶. Awareness campaigns and positive actions in this area will be implemented to eliminate barriers to employment and to ensure equality.

The personalized process for job seekers was fully rolled out in December 2015. Since the launch of the personalized process, over 50,000 persons have been profiled and 42,000 collaboration agreements signed between job seekers and ADEM. Currently, 78% of registered job seekers have been profiled³⁷. ADEM is using this new method of operations to improve the quality of support provided to job seekers, to manage a constantly increasing number of cases and to personalise the follow-up of job seekers in order to get them permanently into the labour market as rapidly as possible.

In March 2016, JobBoard was launched, which seeks to increase the opportunities for job seekers and employers to meet and to encourage self-reliance among those seeking work³⁸. In addition, the employer department of ADEM and the permanent dialogue with the private sector under the “Companies are partners for employment” programme is useful in better adapting ADEM offers to company requirements, especially training.

The Youth Guarantee programme³⁹, officially launched in June 2014, has been continuously developed and improved, especially regarding the launching mechanism for NEETs, youths who are not in jobs, not in school, not in training programmes and not in an academic course. Of the young people who enrolled in the programme, 86% received high quality job offers⁴⁰. The ADEM youth services have extended their scope to age 30.

Job-seekers from immigrant communities often do not have a good command of at least one of the languages used in Luxembourg. To assist with this, ADEM has developed its internal language training offer and developed partnerships externally to offer job-seekers more courses. In close coordination with the competent public authorities and the private sector, ADEM is also pursuing skills evaluation programmes for refugee job seekers⁴¹.

Training for job seekers is a priority area of the employment policy. ADEM will continue to work closely with companies to produce multiple targeted training programmes that counter skills deficits

³⁶ Law dated 15 December 2016 on changes in the Labour Code; amendment of Article 2 of the amended law dated 21 December 2007 on regulation of the financing of political parties <http://legilux.public.lu/eli/etat/leg/loi/2016/12/15/n2/jo>

³⁷ ADEM figures dated 12 January 2017.

³⁸ Presentation of the JobBoard: http://www.adem.public.lu/fr/actualites/adem/2016/03/JobBoard_presentation/index.html

³⁹ For more details see: <http://jugendgarantie.lu/>

⁴⁰ ADEM figures dated 31 August 2016.

⁴¹ See Frame 1. relating to applicants for international protection at the end of Chapter 4.

on the labour market and give the perspective of a specific job. ADEM has formed partnerships with the major training institutions in Luxembourg to this end⁴².

Lastly, the implementation of measures and actions that were developed to sustainably promote professional insertion, keeping people employed and social inclusion are supported by the new operational programme for 2014-2020 of the European Social Fund (ESF)⁴³.

4.2 The R&D objective and the key measures for achieving it

European Objective: "*improving the conditions for research and development, in particular with the aim of raising combined public and private investment levels in this sector to 3% of GDP (...)*"

4.2.1 National Target

The implementation of an effective RDI policy for both the public and private sectors is a priority for the Luxembourg government. The government has set a range of between 2.3% to 2.6% of GDP (0.7%-0.9% for the public sector) as a national objective for R&D intensity for the year 2020.

R&D investment in Luxembourg at 1.3% of GDP in 2015 remains weak in comparison to the EU average of 2%. The decrease in R&D expenditures by companies over recent years is in particularly strong contrast with the intensity of public R&D comprising the public sector and higher education, which has multiplied by five over the past fifteen years. However, as also noted by the European Commission in its recent 2017 country report for Luxembourg, the relatively weak level of R&D expenditure by companies may be at least partly due to the presence of a major financial sector in Luxembourg (representing 25% of GDP) and the low level of investment intensity that characterizes its activities. It is therefore useful for Luxembourg, more so than for other countries, to analyse the principal R&D indicators in greater detail by branch of economic activity⁴⁴. According to STATEC, R&D intensity as a percentage of gross added value was at 7.3% in 2013 in industrial activities in Luxembourg, as in Belgium, and in a respectable position behind the Scandinavian countries and Germany, between 8.2% and 11.6%. With a low level of R&D intensity in non-financial services at 0.6%, Luxembourg is comparable to Germany at 0.9% and Malta at 0.6%. In financial services, Luxembourg performs less well with 0.1%, like the majority of other countries that were compared and which also feature low R&D intensity in this branch of the economy, with the exception of the Scandinavian countries, which range between 1.6 and 4.0%.

In this context, it must not be forgotten that R&D only constitutes an input indicator and that an equally important indicator is output, which encompasses innovation, marketing of new products, implementation of new procedures, etc. Luxembourg performs generally better in this area. For example, Luxembourg ranks fourth in the EU in the European Commission's Innovation Output Index⁴⁵.

⁴² *House of Training*, *Chambre des Métiers*, *Luxembourg Lifelong Training Center* (Chambre des Salariés), Institut national d'administration publique (INAP).

⁴³ See Ch. 5.

⁴⁴ Source: STATEC, Eurostat (2013, NACE Rev. 2) - Industries: Sections C-E - Commerce and Non-financial services: Sections G à J, L à N – Financial Services: section K. The selection of countries for comparison is based on the following criteria: countries adjacent to the Benelux, countries of a similar size or comparable in terms of financial centre (CY, EE, IE, and MT), Scandinavian countries (DK, FI, and SE).

⁴⁵ Source: http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=output

4.2.2 Key measures

a. Measures for achieving the nation's target in public research

A structure based on six priorities was adopted in 2012 by Member States in order to make the European Research Area (ERA) a reality. Generally speaking, the government is aligning its national RDI policy more along the lines of ERA. The government is presenting a national strategy based on the priorities of the ERA roadmap for mid-2017.

- Improve the effectiveness of research systems

The economic crisis of recent years has had a major negative impact on private sector R&D expenditures in Luxembourg. Expenditures in the public sector have continued to increase. The percentage of public research in Luxembourg rose from 7.5% of all expenditures in 2000 to nearly 50% in 2015. Intensity of public R&D investment is now near the national objective of 0.7% to 0.9% of GDP. This change is one consequence of the political actions of governments since 1999, including the setting of objectives for the development of research intensity articulated by expenditures objectives, the establishment of a National Research Fund (NRF) and the University of Luxembourg, and the introduction of multi-year agreements.

Table 3: Changes in gross domestic expenditures and in intensity of research by sector

Year	Public research (In euros, mn.)	Intensity (€/GDP)	Private research (In euros, mn.)	Intensity (€/GDP)	Total In euros, mn.	Total (€/GDP)
2000	27.5	0.12	337.0	1.45	364.5	1.66
2005	64.0	0.21	408.0	1.38	472.0	1.59
2006	78.5	0.24	485.0	1.45	563.5	1.69
2007	96.6	0.26	495.0	1.35	591.6	1.61
2008	136.8	0.36	482.0	1.28	618.8	1.64
2009	149.6	0.42	470.7	1.30	620.3	1.72
2010	203.7	0.52	400.0	1.01	603.7	1.53
2011	215.2	0.51	416.2	0.99	631.4	1.50
2012	251.0	0.58	310.4	0.71	561.4	1.29
2013	287.8	0.62	317.9	0.68	605.7	1.30
2014	291.4	0.59	338.4	0.69	629.8	1.28
2015	328.7	0.66	342.4	0.69	671.1	1.35

Source: www.statistiques.public.lu

In 2015, there were 5,594 research staff units, of which 2,647 were researchers, strictly speaking. The growing trend over the years is likely to continue, especially because of the planned development of the University of Luxembourg and the public research centres as part of the development of the Cité des Sciences at Esch-Belval.

Table 4: Changes in researchers and research staff by sector

	2005		2007		2009	
	R&D staff	o/w researchers	R&D staff	o/w researchers	R&D staff	o/w researchers
Companies	3,662	1,696	3,671	1,522	3,318	1,371
Public research	729	531	934	679	1,393	1,025
TOTAL	4,391	2,227	4,605	2,201	4,711	2,396
	2011		2013		2015	
	R&D staff	o/w researchers	R&D staff	o/w researchers	R&D staff	o/w researchers
Companies	3,387	1,518	2,913	1,001	3,129	1,033
Public research	1,804	1,313	2,062	1,502	2,465	1,614
TOTAL	5,191	2,831	4,975	2,503	5,594	2,647

Source: www.statistiques.public.lu

The NRF programmes are a reflection of the government's desire to concentrate the national effort in RDI on a limited number of priority areas with high development potential, while continuing to pursue an inter-disciplinary approach, which strengthens synergies between the University and the public research centres: CORE (€18.3 million/32 projects in 2016); INTER (€4 million/12 projects in 2016). The interface between the financing instruments of public and private research continues to promote RDI projects and programmes supporting various priority sectors of the economy. Accordingly, the pilot programme '*Industrial Partnership Block Grant*' (IPBG; NRF) (€2.7 million/1 project in 2016), which was launched in 2016, promotes cooperation between public research institutions and Luxembourg companies that are active in RDI by financing doctoral and post-doctoral positions. The CORE-PPP (8) and AFR-PPP (38) projects received financing of €5.4 million in 2016. The objective of introducing collective training-research aid is to attract the best doctorate students to a structured research and training programme. The 2016 tender of this PRIDE programme is financing 135 doctorate candidates for a total amount of €25.2 million.

An external study of the impact of the CORE, INTER, PEARL and ATTRACT programmes of the NRF carried out in 2016 by the Swiss agency INTERFACE was introduced in January 2017. In 2016, the government also contracted an external evaluation of the University of Luxembourg. This external evaluation highlighted the university's research activities. The results of this evaluation will be useful in strengthening research governance and in preparing the next development contract for the 2018-2021 period.

The geographical regrouping of the teaching and research activities and the incubators within the *Cité des Sciences* at Belval was key in promoting synergies between public research entities and in facilitating PPP. The joint recruitment of highly qualified scientists will tighten links between players in research and will promote international visibility accordingly. Shared recruitment of outstanding professors is planned for 2016 and 2017 between the University of Luxembourg and the Public Research Centres (PRC). In the same context, in October 2016, a cooperation agreement was concluded between the University of Luxembourg⁴⁶ and four research institutions for joint doctoral training. In December 2016, the NRF, the University of Luxembourg and the three PRC set up a national agency for all scientific research that it baptized LARI. The National Composite Centre – Luxembourg was launched in 2016. Public and private research entities have pooled their skill sets through the intermediary of a technological platform established in LIST in order to invigorate the development of innovative materials.

⁴⁶ LIH, LIST, LISER, Max-Planck-Institute Luxembourg for International, European and Regulatory Procedural Law (MPI).

- Streamline transnational cooperation and concurrent actions

Financing has been allocated for bilateral and multilateral cooperation with the ERA countries through the NRF's INTER programme, which promotes cross-border cooperation. The NRF has concluded agreements with 17 financing agencies abroad in ten different countries. Luxembourg is participating in eight ERA-Net programmes, including NORFACE, MATERA, MERANET, NEURON, ERA-SysApp, ERA-CoSysMed, HERA and ERA-Age. For Luxembourg researchers, it is essential to work in a network, something that is accomplished by participation in such programmes as COST (*European Cooperation in S&T*), ERCIM (*European Research Consortium in IT & Mathematics*), ESF *Research Networking Programmes*. Luxembourg is participating in the PRIMA initiative⁴⁷ (Euro-Mediterranean partnership for RDI) along with 14 other countries, expected to begin in 2018.

In 2016 Luxembourg joined ELIXIR and EATRIS, two European infrastructures in the biomedical sector on the ESFRI roadmap. Luxembourg is also participating in the major SHARE and DARIAH research infrastructures. At the national level, the *Cité des Sciences* provides high technology installations and a research-g geared environment to all national RDI players.

- Opening of the labour market for researchers

With a view to contributing to the development of scientific human resources, the government is continuing its efforts to promote the career perspectives and geographic and inter-sector mobility of researchers. The objective of the PEARL programme (€6.7 million and two projects in 2016) is to recruit the best senior researchers in Luxembourg, whereas the ATTRACT programme (€5.7 million and three projects in 2016) seeks to attract promising young researchers to the country's public research institutions. The PRIDE programme grants subsidies to a consortium of doctorate candidates in a high quality research, training and interdisciplinary programme. The AFR and PRIDE programmes comply with the principles supported in the European Charter for Researchers and the Code of conduct for the recruitment of researchers. The University of Luxembourg is actively involved in the implementation of the general Doctoral Education Framework policy to encourage and prepare doctorate candidates at the beginning of their careers.

- Promoting gender equality and integration of gender in research content

Women researchers and scientists are still under represented and this phenomenon is particularly pronounced in the highest level jobs and functions. In 2012, only 24% of research positions in Luxembourg were occupied by women, although the annual rate of increase in this area was nearly 10%, the second highest in the EU⁴⁸. Two women were appointed Director General and Acting Director General at LISER and LIH respectively. Women represent 50% of governors at the Boards of governors and scientific councils, which puts Luxembourg at the head of Member States, together with the Netherlands and Sweden. Although in the European average of students and doctoral candidates there exists parity between men and women, with even a slightly greater number of women, in higher academic functions the imbalance constitutes a real challenge. The highest academic rank of Full Professor or equivalent boasts a percentage of 20% for women on the average in Europe, while in Luxembourg the figure is 17%, a figure that is increasing constantly.

In order to catalyse access of a large number of women to high level scientific jobs, the NRF has set its objective at double the number of candidates of the under-represented gender in its two PEARL and ATTRACT instruments, by requiring that 40% of ATTRACT projects and 30% of PEARL projects be

⁴⁷ PRIMA is dedicated to improving RDI cooperation in the Mediterranean countries to allow development of innovative solutions for sustainable food systems and for water resources in the Mediterranean basin.

⁴⁸ Source: SHE

submitted by women. At the University of Luxembourg, one of the duties of a Gender Equality Committee is to promote women in R&I and academic careers and promoting women in research.

- Streamline the dissemination, accessibility and transfer of scientific knowledge

The second edition of ‘*Assises de la recherche*’ was held in December 2016, an event bringing players in research, the economy and civil society together to discuss knowledge and technology transfer. The Proof of Concept (POC) programme of the NRF (€2 million and six projects in 2016) offer financing to public research organisations in order to help them render their research ideas more attractive to investors. Complementing the POC, the support programme for knowledge transfers and innovation KITS (FRN), which was launched in 2015 and 2016, provides competitive financing to public research organisations in Luxembourg to attract and integrate highly qualified professionals in the area of knowledge transfer. Through the RESCOM: Scientific Events programme, the NRF finances scientific conferences and monographs that disseminate the results of research. In order to further increase access to publications and data, the Luxembourg university library will be transformed into a national open access office in Luxembourg. In accordance with its new policy, the NRF requires that scientific publications resulting from projects granted after 1 January 2017 be to published in Open Access, which formerly was not mandatory, and provides financial support to cover additional costs.

- Bolster the international dimension of ERA

The government encourages mobility of researchers and seeks to strengthen integration of Luxembourg players in European and international scientific collaboration, for example via the H2020 community programme. The NRF, through the INTER and the INTER-Mobility program (€1.5 million and 14 projects in 2016), is part of over eight international research networks like EUROSTARS, with €300,000 and one project in 2016, that offers multilateral research opportunities with scientists in some forty countries throughout the world. In November 2016, the NRF and National Research Foundation of Singapore signed a joint financing agreement for collaborative research projects that seek to strengthen research collaboration.

b. Measures for achieving the nation's target in private research

Although the government is actively seeking to bolster technological skills and understanding through knowledge in the private RDI sector, private expenditure in R&D remains below the national objective for 2020.

By implementing flagship projects in addition to existing measures, this trend should reverse itself and relaunch RDI expenditures in the private sector:

- Implementation of the new law to promote RDI⁴⁹: the reform includes significant motivation for companies of all sizes to cooperate with public and private entities in innovating in products and services as well as in the production process. It also broadens the scope of public aid available, in particular with the implementation of a scheme dedicated to research infrastructure that should lead to closer collaboration with companies and with the scientific community. In addition, it includes a scheme to reinforce innovation in SME. The draft law was approved at the end of March 2017. The former law focused only on two of the nine aid schemes, which explains the drop in funded projects.

⁴⁹ Draft law n0. 6854 to 1. Renew the aid schemes for research, development and innovation; 2. The tasks of the National Agency for the Promotion of Innovation and Research; and amending the amended law dated 5 June 2009 relating to the promotion of research, development and innovation.

- High performance Computing and big Data enabled applications (HPC): The objective of this partnership project with France, Italy and Spain is to develop an HPC infrastructure and a world class portfolio of Big Data applications. Four major areas were in focus for 2016: involving private partners in Luxembourg that are stimulated by the implementation of industrial user consortia; launching of several studies whose purpose is to establish a skills centre and big data; set up technical working groups and begin designing innovative technical solutions; continue the labelling of the Project of Common European Interest (IPCEI). This project should provide significant leverage for research activities and on the digitalization of the Luxembourg economy, a theme taken up in the study carried out on the ‘Third Industrial Revolution’.
- National Composites Centre Luxembourg: This is a centre whose operational concept is based on close cooperation between public and private players. Half of the financing, totalling €100 million, will be provided through private funds. The centre began its activities at the end of 2016 with staff recruiting, setting up equipment and identifying research projects. All players in the sector, public and private, are working in close cooperation on this project. Its activities should provide significant leverage in this sector.
- Additive Manufacturing: This initiative was launched by the Cluster Materials and Production Technologies. The initial studies and surveys for identifying industrial requirements were launched in 2016.
- Industry 4.0: A project initiated in 2016 with the support of the Cluster Materials and Production Technologies. At this stage, there was an initial identification of RDI projects that could be launched in this framework. This project is being considered as a pilot application as part of the HPC project.
- Joint Research Programme: In cooperation with the NRF, the objective of this programme currently being developed is to promote solid public-private partnerships on a long-term basis between Research and Technology Organisations (RTO) and industries in areas deemed priority by the government.

In addition to these flagship projects, new measures were taken and actions pursued to relaunch RDI activities over the long term and to stimulate investment in knowledge capital:

- The Luxembourg Intellectual Property Institute (IPIL): The missions of the Luxembourg Institute of Intellectual Property (GIE)⁵⁰ were laid out at its establishment in August 2014⁵¹. In addition to its crucial role of coordinating the implementation of public policy with regard to intellectual property, IPIL will be able to support the proper management of research and innovation projects. In this way, the patent information research and technological and competition watch departments are permanently updated with technical and competition information related to a particular domain and form a strategic and operational aid for those submitting innovative projects. Using specific and highly qualified services will avoid duplicating research carried out elsewhere, will determine prior art and identify trends and technical development in a particular area, monitor new technology development and monitor innovation activities of competitors.
- The clusters, whose activity should stimulate synergies and emulation amongst members by promoting networking between the public and private sectors, open innovation and exchange of technologies. The Luxembourg Cluster initiative is active in the following themes: Biohealth,

⁵⁰ Federate involved players, develop and offer support and assistance services to companies, players in research, public institutions and all other interested entities, develop and furnish training programmes and promotion and awareness activities and carry out projects and studies to advise the government.

⁵¹ For more details see: <http://www.gouvernement.lu/3891246/01-conseil-gouvernement>

Eco-Innovation, ICT, Materials & Production technologies, Space, Automotive Component and Wood (a cluster newly established in 2016).

- Supporting start-ups continued through the establishment of the ICT Digital Tech Fund dedicated to innovative companies, with public and private commitments amounting to €20.3 million. The Fit4Start programme continued with two editions in 2016 and a coaching and start-up financing programme in the ICT sector beginning from the start phase. With regard to host structures, two of the House of Biohealth buildings boasting an operational area of 10,000 sq. m are available to start-ups working in the health sector. Technoport, the national incubator, now includes a Fab Lab XL hosted on platform 1535°, which both integrates a share of new digital manufacturing techniques and develops ties with the creative industries sector. The Luxembourg House of Financial Technologies, developed through a PPP, provides the space necessary for the development of the *Luxembourg* Fintech ecosystem.
- Support to SME and encouraging innovation are reinforced through the implementation of a series of SME support programmes focusing on the innovation spirit. These programmes are managed with the help of Luxinnovation: the *Fit4Digital* program, whose objective is to digitally transform companies (a programme reserved for VSB); the *Fit4Innovation* program, with the objective of helping SME improve their level of competitiveness to free up resources for innovation; the launch of the Inno4growth programme, an innovation support programme conceived to help SME transition from the ideas to marketing phase and to grow through innovation via value creation projects; support for companies in participating in the SME instrument of the Horizon 2020 programme; the innovation Club as a forum for exchange of perspectives with regard to key factors for innovation success, as well as the emergence of new ideas.
- With regard to activities promoting and supporting innovation, the following measures were put in place: an innovation portal that centralises all information concerning RDI⁵²; a site was developed that includes all innovative solutions originating in Luxembourg that is intended to promote the use of innovative solutions in public contracting; the magazine FOCUS promotes research and innovation in Luxembourg internationally; domestically, the site www.H2020.lu offers a full panorama of European programmes and provides guidance for players who want to participate in this arena. As a national contact point, Luxinnovation advises and supports researchers and companies, it stimulates them to participate in several training and information workshops such as Horizon 2020 Day as well as the Fit4 Horizon2020 measure intended to promote Luxembourg participation in European programmes by covering a part of the costs of preparing a project proposal.
- The finalisation of a smart specialization strategy in which the emphasis is placed on diversification in the economy, while concentrating on a limited number of specific sectors such as industry, eco-technologies, logistics, health technologies and ICT should be introduced in the first half of 2017.

4.3 The climate change and energy objective and the key measures for achieving it

European Objective: “reducing greenhouse gas emissions by 20% compared to 1990 levels; increasing the share of renewables in final energy consumption to 20%; and moving towards a 20% increase in energy efficiency”

⁵² For more details see: www.innovation.public.lu

4.3.1 National greenhouse gas emissions target

4.3.1.1 National target

This climate change and energy objective is based on European Council decisions within the context of the “Climate and Energy Package” of March, 2007, which put greenhouse gas (GHG) reductions for Luxembourg at 20% by 2020 with relation to the year 2005 in the sectors not covered by the EU Emissions Trading System (ETS)⁵³.

In accordance with EU regulation 525/2013 the latest inventory of Luxembourg's GHG emissions covers the period between 1990 and 2015. It indicates that in 2015 total emissions amounted to 10.3 million tons of CO₂-equivalent, excluding international aviation and land use, land use change and forestry (LULUCF), some 487,000 tons of CO₂-equivalent fewer than 2014. Emissions have even decreased with respect to the record year of the decade, 2005, by 2.69 million tons of CO₂-equivalent, a drop of 20.8%, which brings them to the lowest levels since 2001.

Table 5: Changes in GHG emissions, excluding LULUCF for select years (in million tons of CO₂e)

	1990	1995	1998	2000	2005	2010	2012	2013	2014	2015	2015/ 2005	2015 / 2014
Production and distribution of electricity and heat	0.06	0.12	0.18	0.15	1.30	1.26	1.09	0.73	0.71	0.49	-62.1%	-30.4%
Industrial production	7.91	4.37	2.09	2.18	2.13	1.95	1.82	1.75	1.78	1.74	-18.0%	-2.3%
Road transport: national fleet	0.86	1.05	1.17	1.23	1.44	1.61	1.63	1.63	1.69	1.70	18.0%	0.6%
Road transport: exports of road fuels	1.69	2.24	2.67	3.57	5.68	4.87	4.91	4.78	4.41	3.98	-29.9%	-9.8%
Households, retail and services	1.32	1.40	1.56	1.63	1.63	1.66	1.52	1.54	1.36	1.54	-5.4%	13.5%
Agriculture	0.75	0.73	0.74	0.72	0.66	0.70	0.67	0.68	0.69	0.71	6.5%	2.2%
Other sources	0.14	0.14	0.17	0.15	0.12	0.12	0.11	0.11	0.11	0.10	-18.2%	-6.6%
Total GHG emissions, excluding LULUCF	12.73	10.05	8.58	9.62	12.96	12.15	11.75	11.21	10.76	10.27	-20.8%	-4.5%

Source: Ministry of Sustainable Development and Infrastructures, submission dated 15 March 2016

For the second post-Kyoto 2013-2020 period, only the sectors outside of EU ETS are targeted by objectives set amongst Member States. For Luxembourg, this emissions reduction objective excluding ETS amounts to 20% for 2020, compared to 2005 levels. This objective is to be met along a linear trajectory for which the starting point, in 2013, is comprised of average emissions excluding ETS for the years 2008-2010. Here, the economic crisis effect exercises a clear negative impact on Luxembourg, lowering its budget of emissions for 2013 and beyond.

These yearly budgets are represented by annual allocations of emissions allowances (AAQE). Thus, for 2020, emissions outside ETS should be limited⁵⁴ to 8,145 million tons of CO₂.

⁵³ Appendix II of 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. Also see Chapters

⁵⁴ In view of the adjustment under Article 10 of Decision 406/2009/EC as published in European Commission Implementing Decision 2013/634/EU dated 31 October 2013. Amount stated using GWP from the fourth IPCC report in effect used in submitting inventories in 2015.

According to the latest projections given to the European Commission in March 2016, the government estimates that, for the 2013-2020 period, a possible "emissions reserve" of 0.9 million tons of CO₂e could be released in a central scenario, with current measures. Over this 8 year period, 2013-2014 inventories and 2015-2020 forecasts show that it is only in 2018 that the Luxembourg government should record an "emissions deficit" with regard to its AAQE.

Table 6: Indicative trajectory for GHG emissions, excluding LULUCF & ETS under EC decision 406/2009/EC (in million tons of CO₂e)

	2005	2008	2009	2010	2013	2014	2015	2016	2017	2018	2019	2020
Total GHG emissions, excluding LULUCF	12.96	12.11	11.57	12.15	11.21	10.76	10.27	10.34	10.32	10.30	10.30	10.34
Civil aviation emissions (Domestic flights)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ETS emissions confirmed in CITL	2.60	2.10	2.18	2.25	1.85	1.92	1.66	1.76	1.75	1.74	1.73	1.71
Total GHG emissions, excluding LULUCF and ETS –ESD version	10.36	10.01	9.39	9.90	9.37	8.84	8.61	8.58	8.58	8.57	8.57	8.63
Annual emissions allowances – Decision 2013/162/EU					9.81	9.61	9.41	9.20	9.00	8.79	8.59	8.38
Contribution to the adaption of ETS processes under Art. 10 of ESD					0.28	0.27	0.27	0.26	0.25	0.25	0.24	0.24
Annual adjusted emissions allowances under Article 10 of Decision 2013/634/EU					9.54	9.34	9.14	8.94	8.74	8.54	8.34	8.14
Deficit (+) or reserves (-) of emissions compared to annual emissions allowances					-0.17	-0.50	-0.53	-0.36	-0.17	0.02	0.23	0.48
Deficit (+) or reserves (-) of emissions compared to annual emissions allowances - aggregate 2013-2020												-1.00

Source: Ministry of Sustainable Development and Infrastructures (based on the 2016v2 submission - 2005 to 2014 - and revised projections dated 15 March 2016 - 2015 to 2020)

Remarks: The ETS emissions found in the CITL come from the European Environmental Agency's *EU Emissions Trading System (ETS) data viewer* of the European Environmental Agency <http://www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer>. The "annual emissions allocations" are published in Appendix I of Commission Decision 2013/162/EU dated 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and the Council (ESD). Data adjusted for Article 10 of Decision 406/2009/EC were published in an Implementing Decision 2013/634/EU dated 31 October 2013.

In this case, the use of external credits should no longer be necessary. However, "reserve" or "deficit" calculations are highly uncertain due to their sensitivity to anticipated changes for a particular source of emissions, namely road transportation that represents almost two thirds of total emission, excluding ETS.

4.3.1.2 Key measures ⁵⁵

The government has access to a broad range of instruments to achieve the reduction of GHG emissions not pertaining to SEQE in accordance with existing rules. In particular, the second action plan to reduce CO₂ emissions contains numerous measures relating to transportation, building, energetic efficiency and renewable energies, to industries, to information and awareness campaigns, to consultancy and energy training. However, this second action plan will soon be four years old. With the new commitments suggested by the Commission to the Member States for 2030, Luxembourg will be preparing a third Action Plan to reduce CO₂ emissions in 2017. This plan will also incorporate a longer term perspective of objectives up until 2050 with a view to full decarbonisation of the Luxembourg economy.

In the area of transport, the government seeks a genuine change of paradigm through the implementation of actions and projects proposed through its overall sustainable mobility (MoDu) strategy. Works that just started for the commissioning of a new tramway system in Luxembourg City are emblematic of this change. MoDu aspires to the development of public transportation, to more intense use of the soft mobility concept and to the establishment of a near real time Public

⁵⁵ Also see chapters 4.3.2 and 4.3.3

Transport Telematics System. This strategy, with the Transportation Sector Plan (PST) that covers it, recommends a series of other measures such as the installation of a high capacity and high frequency transport system in the capital, the promotion of electric-based mobility or the introduction of an ecological mobility label for companies.

With regard to residential buildings, apart from the implementation of sector-based housing, an ambitious schedule has been prepared for progressively strengthening requirements in terms of energy performance in new buildings and residences. Accordingly, beginning from January, 1st 2017 all new residential construction must generally meet the AA energy class standard, which is the nearly-zero energy use building standard, making Luxembourg one of the precursors in the EU to require this type of criterion. As energy retrofitting is often quite expensive, the government set up a "climate bank" in 2017. This initiative is part of a "climate bank and sustainable housing bonus" published at the end of 2016, through which the government has implemented new mechanisms to simultaneously promote sustainable construction, energy-efficient renovation of residential buildings and renewable energies in the housing sector. In particular, this involves the following measures:

- "climate bank": a climate loan at a reduced interest rate and a zero interest climate loan for the most disadvantaged households that seeks to promote sustainable energy-efficient renovation even more and prepare for energy insecurity.
- reform of the *PRIME House* financial aid scheme: new, more attractive bonuses to promote the construction of sustainable housing and sustainable energy renovation.
- a certification system for sustainability of new housing (LENOZ): this certificate reflects the level of sustainability ultimately achieved by housing units.

With regard to administrative buildings, the government intends to progressively reinforce energy performance requirements for new administrative buildings. Luxembourg intends to establish new financing methods to achieve progressive improvement on all existing construction and has already established an inventory of central government buildings impacted by the European energy efficiency directive.

Numerous measures seeking to promote energy efficiency, as well as the use and production of renewable energies, are being implemented actively. A review of the potential of renewable energies in Luxembourg was finalised at the end of 2016 and by the end of the year, Luxembourg will have a new global energy strategy. This is part, as is the revision of the second Action Plan for reducing CO₂ emissions, of the framework of the future energy EU, and specifically, of the integrated national plans in the area of energy and climate for the period 2021-2030.

Industrial entities that are susceptible to emitting substantial GHG quantities are involved in the Community Emissions Trading Scheme. Furthermore, the government has set up a system of energy audits in large corporations and is encouraging ecotechnologies.

Through the Climate Pact, the government is offering technical and financial support to municipalities in an effort to reinforce their role as models in climate policy, to reduce greenhouse gas emissions and their energy bills and to stimulate investment on a local and regional level and, since 2016, to ensure improved air quality. The Climate Pact has been highly successful, as illustrated by the participation of nearly all municipalities. In 2017, the circular economy concept will be incorporated.

4.3.2 The renewable energies objective

4.3.2.1 National target

Directive 2009/28/EC dated April, 23rd 2009 for promoting the use of energy produced from renewable resources calls for Luxembourg achieving an 11% share of energy from renewable sources in its gross final consumption for 2020 as well as an objective of 10% share of fuel energy from renewable resources in the transport sector for 2020.

The indicative trajectory for 2015-2016 of energy produced by renewable sources as a percentage of final consumption amounts to 5.45%. The share of renewable energy in final consumption amounted to 4.99% for 2015. The contributions to this objective by the various sectors were 6.18% for electrical energy and 6.90% for heat and cooling production. The portion of renewable energy used in transportation came to 6.49%. With regard to keeping to the trajectory, Luxembourg must achieve an average rate of 5.45% for 2015 and 2016. During 2015, Luxembourg experienced accelerated growth in the production of renewable energies, such that the intermediate indicative objectives for 2015 and 2016 will likely be surpassed.

4.3.2.2 Key measures

The national action plan in the area of renewable energies sets out three areas for achieving the national objective in this domain:

- Developing renewable energy within the country by means of producing electricity and heat/cooling from renewable sources.
- Adding biofuels into fuels for use domestically as well as developing public and private electric mobility.
- Use of the cooperation mechanisms, primarily through statistical transfers and joint projects with other Member States and third countries

A description of these measures, as well as the schedule for implementing them, is described in the National renewable energy action plan. The principal recent actions taken as part of these measures that have an impact on the development of renewable energies are mentioned hereafter.

a. Expansion of renewable energies on national territory

In the area of the support mechanism for biogas production facilities that inject biogas in the natural gas grids, the draft Grand-ducal regulation introduced at the end of 2014 into the regulatory procedure for increasing remuneration of existing plants was approved by the European Commission for state aid. Accordingly, the new regulation on production, remuneration and marketing of biogas went into effect in 2016⁵⁶.

In the domain of energy performance of residential buildings, as of 2017, new residential buildings must generally meet the highest energy performance class of A-A, which corresponds to the nearly zero energy use building standard. The new requirement levels also contain an implicit incentive to implement renewable energies.

In addition, the government has implemented new financial instruments for the development of renewable energies and regulations corresponding to this went into effect in 2016⁵⁷. Beginning in 2016, this regulation aims at adapting grants for operating process to be allocated to the new

⁵⁶ Grand Duchy regulation dated 15 December, 2011 concerning the production, income and marketing of biogas.

⁵⁷ The Grand Duchy regulation dated 1 August 2016 regarding electrical production based on renewable energy sources.

electricity production facilities that use renewable energies for fuel and that produce nominal electrical power in excess of 500 kW, or greater than 3 MW or 3 wind power production units. Consequently, these new plants will no longer receive the feed-in tariff, but rather a market premium to be added to the market price of their production. In addition, these plants will be subject to balancing responsibilities and to a new framework intended to avoid encouraging the production of electricity during periods of negative market pricing.

In 2016, the European Commission also obliged Luxembourg to adapt its regulations concerning electricity production based on renewable energy sources to fully align with the requirements stipulated in the new European guidelines in the area of State aid. The adaptation requested consists in introducing provisions to avoid discrimination of imported green electricity by promoting stronger cooperation between EU Member States to achieve shared understanding of the possibilities and challenges in developing renewable energy on the electricity markets. Consequently, a new draft regulation to modify the existing regulation was introduced into the regulatory procedure in November 2016.

Furthermore, in 2016 the government, with the support of consultants, prepared an update of the study of the potential of renewable energies in order to determine progress achieved and achievable of the various renewable energy production sectors that should revise the potential of the various technologies by 2030.

b. Mix of biofuels in fuel available for consumption.

By way of an amendment to the amended law dated December, 17th 2010 setting the excise and other taxes on energy products, electricity, manufactured tobacco products, alcohol and alcoholic beverages, the percentage of biofuels added to gasoline and diesel fuel was increased to 5.15% for 2016. Directive 2009/28/EC will make it mandatory to include a minimum of 10% of biofuels in all gasoline and diesel for transportation use by 2020, with the result that percentages of biofuels in fuel will increase continually. The contribution of biofuels produced from waste, residue, non-food cellulosic material or from ligno-cellulosic material is considered equivalent to double that of other biofuels. In 2016 the minimum rate of biofuels to add into petrol or diesel for road use available for marketing and originating from waste, residue, non-food cellulosic material or from ligno-cellulosic material amounted to 30%. It should be noted that the method of calculating the percentage of the biofuels rate was modified in 2016 in order to ensure a minimum presence of biofuels in the transport sector.

c. Electric mobility

A technical-economic study carried out by the government and the *Institut Luxembourgeois de Régulation* (ILR) resulted in producing a shared national concept for implementing electric mobility in Luxembourg. The conclusions of this study are in a law determining the major principles for the development of electro-mobility in Luxembourg⁵⁸. On the basis of this study, the government set the objective of installing some 800 public charging stations for electric powered vehicles by 2020. A Grand-ducal regulation⁵⁹ determining the functionalities and technical specifications, the number of charging stations to install, the overall scheduling and the organization of a charging infrastructure for electric vehicles in Luxembourg was published in 2015. In February 2016, an overall plan indicating locations of stations was published that determines which Park and Ride and ride sharing facilities to equip with charging stations, as well as the number of terminals to install in them. It also determines the number of public charging terminals to install in each municipality at public and private parking locations. The first of these 800 public charging stations were installed

⁵⁸ The law dated 7 August, 2012 amending the law dated 1 August, 2007 relating to the organization of the electricity market.

⁵⁹ Grand Duchy regulation dated 3 December 2015 relating to public infrastructure linked to electric mobility.

by the network managers at the end of 2016. The implementation of the shared central system to manage data regarding these charging stations is planned for the first half of 2017. Apart from these 800 public slow and accelerated charging stations that will be installed by the network managers, the government is currently evaluating viable strategies for providing the financing for a rapid charge infrastructure on motorways and other strategic areas in Luxembourg.

d. Mechanisms for cooperation

The government is in contact with a certain number of Member States likely to exceed their objectives, with a view to discussing possibilities for cooperation. Discussions and negotiations were pursued in 2016. A final decision for completing a statistical transfer and a shared project has not yet been made but is expected in 2017. Nonetheless, the achievement of the 2020 objective will occur by resorting to the maximum levels of national potentials.

4.3.3 National energy efficiency objective

4.3.3.1 National target

Luxembourg has set the objective for energy efficiency of annual final energy use not to exceed 49,292 GWh by 2020, i.e. 4,239.2 ktoe, or 52,111 GWh and 4,481.6 ktoe of primary energy⁶⁰. Apart from the energy efficiency objective, Luxembourg also set an energy savings objective of 5,993 GWh to be achieved by December, 31st 2020 by means of a system of obligations in the area of energy efficiency set up in 2015. A Grand-ducal regulation relating to the functioning of the obligations mechanism relating to energy efficiency was established in August 2015. This regulation obliges providers of electricity and natural gas for end customers in Luxembourg to achieve the above-cited energy savings between 1 January 2015 and 31 December 2020.

Although the energy savings objective is not related to the energy efficiency objective in the sense that it is totally independent of changes in annual final energy use, the obligations mechanism in the area of efficiency is one of the primary instruments that should be contributing to achieving the energy efficiency objective. In 2015, use of final energy in Luxembourg amounted to 46.356 GWh and is therefore beneath the energy efficiency threshold set for 2020. With regard to the energy efficiency obligation mechanism, a period of two years must elapse before it will be possible to evaluate the impact of this mechanism introduced newly in 2015.

4.3.3.2 Key measures

A draft regulation amending the Grand-ducal regulation of November, 30th 2007 concerning energy performance in residential buildings has been published. It seeks to modify certain provisions relating particularly to:

- opening up the field to persons authorised to prepare feasibility studies
- the introduction of an accurate definition of “residential building with near-zero energy use”
- the modification of minimum requirements related to protection against summer heat
- clarification of benchmark energy surface area
- the introduction of the possibility of taking into account a portion of electricity produced by photovoltaic equipment
- adaptation of the calculation methodology for overall requirements
- alignment of the energy requirement calculated on the basis of recorded energy use

⁶⁰ In application of Article 3 of EU directive 2012/27/EU relating to energy efficiency. The energy efficiency objective for 2020 is therefore no longer expressed percentages but rather in absolute values of final energy used.

A draft Grand-ducal regulation amending the amended Grand-ducal regulation dated 31 August 2010 relating to energy performance in administrative buildings was published in 2016 and relates to the modification of certain technical details and opening up the field of persons authorised to perform feasibility studies. Work leading to a definition of “administrative buildings with near zero energy use” and for determining a schedule for increasing requirements in the area of energy performance continued in 2016.

In general, studies were carried out in order to be able to take into account certain “new technologies” in the methodology for the overall calculation of residential and administrative buildings, as well as studies for incorporating the new DIN V 18599 standard in the regulations governing administrative buildings.

The government also pursued the long-term strategy for launching investments in the renovation of the nation's residential and retail buildings, both public and private, under EC directive 2012/27/EC. This strategy, which was integrated into the third action plan for energy efficiency, includes a series of workshops on different themes related to energy renovations. Specific actions came out of these workshops that will be transposed progressively.

As part of its rational use policy for energy, the government continued to promote adherence to voluntary agreements with the industrial sector covering the period 2011-2016. The purpose of this agreement is to further solicit the commitment of participating companies to improving energy efficiency and to implement new and renewable energy sources. Companies signing the agreement further commit to implementing an energy management system that identifies potential improvements in energy efficiency and establishes an action program to produce a package of measures to achieve this potential. The economic interest grouping *myenergy* is taking over the coordination and follow up roles of data provided by companies, as well as information dissemination, consulting and awareness responsibilities. At the end of 2016, discussions were carried out with a view to a new voluntary agreement in early 2017.

Intelligent metering systems that determine a framework and schedule for the roll-out of a national shared and interoperable infrastructure of intelligent metering were submitted for legislation. These systems promote active participation of consumers on natural gas and electricity markets based on a shared central system used to communicate data through a single common system, for electricity and natural gas at a minimum. The framework and schedule were incorporated into legislative texts. The overall launch of this system was put off one year. This type of intelligent metering equipment must be in use by at least 95% of end users of electricity by December, 31st 2019, and by 90% of end users of natural gas by December, 31st 2020. The government closely monitored preparations for the installation process of intelligent meters in Luxembourg, carried out in concert with the gas and electric companies and coordinated by the ILR. Beginning on July, 1st 2016, network managers accordingly began installation of a smart meter for all new connections to their grids, as well as the progressive replacement of existing meters with a smart meter at each final customer's location.

With regard to this, it should also be mentioned that in September 2015, the government, the Chamber of Commerce and IMS Luxembourg jointly embarked on a strategic study entitled “The Third Industrial Revolution Strategy”, in close collaboration with the US economist Jeremy Rifkin and his staff of experts. This process was part of the continued open societal innovation approaches that seek to make the existing economic model more sustainable and interconnected for future generations. The study was completed and presented in November 2016. The government decided to make the summary report of this strategic study a general guideline for future development of the country and decided to transpose a certain number of specific projects through the use of new or

existing platforms. Consequently, with regard to what deals more specifically with the Energy section, it was decided to set up the *Energiezukunft Lëtzebuerg* platform that seeks to thematically situate all strategic aspects of energy transition for the medium and long term, as well as to implement the Internet of Energy in Luxembourg. The ambition sought by this platform goes beyond the simple transition to an entirely sustainable energy system; it seeks to use this transition to save energy by combining it intelligently with technical and commercial innovations. The platform will also take into account the “Building”, “Mobility” and “Smart Economy” pillars of the strategic study. The primary tasks of the platform are split into two parallel work processes, the first consisting in developing and finalising a proposal for a national energy strategy and the other in solidifying the implementation of measures identified by the strategic study, especially in the area of smart energy infrastructure, as well as the national Internet of Energy that leads Luxembourg toward a digitised and intelligent energy network.

4.4 The Education objective and key measures for achieving it

European Objective: *"improving education levels, in particular by aiming to reduce school drop-out rates to less than 10% and by increasing the share of 30-34 years old having completed tertiary or equivalent education to at least 40%"*

4.4.1 Early school leavers objective

4.4.1.1 National target

Luxembourg is aiming at the European benchmark criteria and has set a national objective of sustainably maintaining the dropout rate below 10%.

In 2015, Luxembourg registered an average school dropout rate of 9.3%. These figures are based on the Labour Force Survey (LFS), which are founded on the entire population of Luxembourg and include a high percentage of residents who were not educated in the Luxembourg school system. LFS figures are subject to wide divergence from year to year due to the limited sampling for a small country. The national study done by the government complements that of the LFS in that it identifies students who leave their schools without earning a diploma or final certification, either during or at the end of the academic year. The dropout rate changes more than the average monthly number of young people who leave school, which has been around 140 students for four consecutive years. The increase in the dropout rate is due to the methodology used in calculating a future group. The average monthly number is calculated on the number of students who left school during a given academic year. Data stemming from an analysis of the national study indicates that non-natives are over-represented with relation to Luxembourg nationals. Students who face the greatest risk of dropping out are those in the lower cycles of secondary technical education (9th grade and insertion classes) and those in vocational training. The most unequivocal indicator of an imminent dropout is an academic lag of at least two years. A total of 22.1% of persons leaving school did so because of academic failure and 48.7% because they couldn't find an apprentice slot or couldn't accede to the training they sought.

Table 7: 2003-2015 Rate of young people leaving school nationally

Year	Students entering 7th/VIIth grade	Theoretical dropout rate	Average number of dropouts per month
2003-2004	5,128	17.2 %	165
2005-2006	5,161	14.9 %	135
2006-2007	5,455	9.4 %	110
2007-2008	5,454	11.2 %	161
2008-2009	5,588	9.0 %	141
2009-2010	5,604	9.0 %	138
2010-2011	5,473	9.0 %	157
2011-2012	5,499	9.2 %	140
2012-2013	5,625	11.6 %	137
2013-2014	5,513	13.0 %	143
2014-2015	5,207	13.5 %	136

Source: Ministry of National Education, Children and Youth

4.4.1.2 Key measures

The government has set up a national strategy regarding early school leavers that takes into account the varied mix of the student population and of the multilingual education and training system. It includes measures for early childhood, extending through the end of secondary education. Three major projects were launched that focus on accommodating early childhood classes, modernising primary schools and modernising secondary education.

- Early childhood: A multi-language education programme for children aged one to four will be introduced into nursery schools beginning from September 2017 to support young children in their language development and to prepare them for the multi-lingual surroundings of academics in Luxembourg.
- Primary school: In September 2016 a series of proposals for legal texts were submitted to the government council that redefine a primary school that seeks to modernise itself, one that works closely with the student population, is anchored in its region and has the tools and resources to change. They stipulate that outside of introducing development plans for school establishments (PDS), supplementary resources and skills should be extended to accommodate children with specific requirements.
- Secondary education: Midway into 2016, the government council approved seven draft bills and two draft Grand-ducal regulations defining the shape of modern secondary schools that work in closer proximity to students and are better prepared to face the challenges of modern society. With this reform, the national education system seeks to promote diversity in the academic offering and the independence of secondary schools. The measures, which particularly focus on preventing students from leaving school and promoting academic success, are the following: A differentiating aspect for basic and advanced courses is introduced in language and mathematics in the lower cycle of secondary technical education. Students who follow studies in these areas at a level suited to their profile will have better chances of success. In order to better assimilate the diversity of talents of students and to better prepare them for university studies that are becoming increasingly specialised, the new structure of sections in the upper classes of traditional secondary education will allow for new combinations of branches of instruction depending on school profiles.
- Vocational training: In the wake of the initial adjustments in 2016, a more in-depth reform of vocational training has begun in 2017. The main objective of the reform is to improve the skill

sets and success rates of students. Special features of the reform include a revision of the curriculum, an adjustment of evaluation procedures and introducing remedial measures.

Lastly, the integration of children from immigrant families remains a challenge for schools in Luxembourg. Upon their arrival in the country, families are supported by the competent department of the national education system. There exist reception and integration classes in primary and secondary education. Secondary education offers training in specific linguistic schemes and as part of the effort to diversify academic programmes, the first international public school opened its doors in September 2016. The above-cited measures were also useful in efficiently integrating young applicants for international protection⁶¹.

4.4.2 Tertiary education objective

4.4.2.1 National target

The national objective consists of ensuring that 66% of the working population between the ages of 30 and 34 receive university education and earn university degrees between now and 2020. This objective was set at the time when two out of three jobs in Luxembourg require higher education training.

4.4.2.2 Key measures

The highlight of the 2014-2015 academic year was the implementation of a reform of the State aid scheme for higher education⁶² through which the components of financial aid are broken down into different categories: basic bursary, mobility grants, social bursary and family-based bursary. In contrast to previous legislation, the new system has a modular structure that introduces an element of social selectivity. As with prior legislation, an anti-overlap mechanism is present to avoid discrimination between the various target groups. The financial aid is moveable in the sense that Luxembourg students are free to choose the nature and country of their studies. A revision of some of the provisions of the law dated 24 July 2014 was completed for the 2016-2017 academic year. It exerted a budgetary impact on the following points:

- Mobility grants: An increase of the semester amount for mobility grants from €1,000 to €1,225, which will have an annual impact based on academic year 2014-2015 figures of €4.8 million.
- Social bursaries: Increase of the semester amounts of bursaries based on social criteria of an average of 20.8%, resulting in an annual impact of €5.4 million. A social bursary may be granted where families with prospective students have incomes lower than the minimum wage (SSM) or for non-qualified persons, from 1 to 1.5, from 1.5 to 2, from 2 to 2.5, from 2.5 to 3, from 3 to 3.5 and from 3.5 to 4.5 times the minimum wage for non-qualifiers.
- Eligibility: The information provided in terms of eligibility for higher education studies will from now on make students eligible for financial aid who are pursuing studies outside of the Member State that recognises the academic programme as covered by its higher education system. The definition of eligibility of programmes for financial aid is fitted to that used for registering a grade, diploma or certificate in the registry of higher education qualifications as recommended in the law dated 28 October 2016 relating to recognition of professional qualifications. In this way, students cannot register diplomas or certificates in the above-mentioned registry if they were refused a financial aid grant from the State.
- Disabled students: Furthermore, students with acknowledged disabilities may now obtain bursaries or loans for a maximum number of two additional semesters per cycle with relation to

⁶¹ See Frame 1. relating to applicants for international protection at the end of Chapter 4.

⁶² The law dated 24 July 2014 on State financial aid for higher education.

current regulations for B.A.s, M.A.s and Doctorate studies, and for a maximum number of four additional semesters compared to current regulations for studies of a single cycle.

- Use of an indexing system for the various bursaries: Beginning with the academic year 2017-2018, the amounts of the various bursaries, i.e. basic bursary, mobility grants, social bursary and family-based bursary, will vary proportionately to changes in the threshold for sliding wage scales (inflation) as calculated by STATEC.

Table 8: Table of financial aid awarded since the 2009-2010 academic year

Academic year	Total number of students receiving aid	Total amount paid out as grants, in Mn €	Amounts granted as loans in Mn €
2009/2010	8,562	14.8	55.0
2010/2011	13,324	83.8	87.1
2011/2012	14,382	90.8	94.0
2012/2013	15,587	98.7	102.5
2013/2014 ⁶³	25,205	154.3	161.6
2014/2015 ⁶⁴	25,594	91.4	177.0
2015/2016	26,156	96.2	182.8

Source: Ministry of Higher Education and Research

Another way of achieving the national objective is to expand the offer of public and private higher education possibilities. The number of accredited professionally oriented short-cycle higher education programmes “*Brevet de technicien supérieur*” (BTS) was 24 for the 2016-2017 academic year, with a total of 762 students. In addition to this, since 2013-2014 a short-cycle higher education programme has been in place as preparatory classes to competitive examinations for entry into the major French business schools. Furthermore, 23 accredited courses that are offered in private higher education institutions were offered for the academic year of 2016-2017.

For several years, the requirement and opportunity to develop a medical training course at the University of Luxembourg has been under discussion. Since its establishment in 2003, the university has offered a programme of studies in medicine limited to the first year of the first cycle. Luxembourg has concluded bilateral agreements with some universities in order to reserve a fixed contingent of slots for students who have successfully completed the first year at the University of Luxembourg in view of pursuing medical studies at partner universities. However, these agreements have been called into question because numerous universities in other countries are trying to limit the number of foreign students. Following these recent developments, the government intends to expand university medical training offerings in Luxembourg and to contribute to sustainably furnishing doctors in Luxembourg.

The government continues to implement a strong policy regarding higher education and research in terms of financial resources. Financial contributions for the operational side of the University of Luxembourg have increased considerably. State allocations for the functioning of the university increased from €72 million in 2009 to €101.6 million in 2012, then to €154.1 million in 2016. At the beginning of the 2015-2016 academic year, a total of 2,000 students and some 1,600 researchers and research personnel for the University of Luxembourg and the PRCs began work at the Belval site. The Bachelor’s program in the Law college took place for the first time at the Belval site

⁶³ The significant increase in aid for the 2013-2014 academic year is due to European Court of Justice Decision C-20/12 making the children of cross-border workers eligible for grants.

⁶⁴ The decrease in bursary amounts paid out for the academic year 2014-2015 is explained by the entry into effect of the new legislation.

beginning with the 2016-2017 academic year, with some 1,000 additional students who joined the 2,000 already there. Investments for finalising construction and fitting out work of these new higher education and research infrastructures at the Belval site continued with a total investment of some €800 million between 2010-2019. The total number of students enrolled at the University also increased over 25% between the 2009-2010 and 2016-2017 academic years.

Table 9: Total number of students at the University of Luxembourg by academic year

Year	Number of students
2012/2013	6,308
2013/2014	6,231
2014/2015	6,309
2015/2016	6,189
2016/2017	6,153 (p)

Source: Ministry of Higher Education and Research

4.5 The social inclusion objective and key measures for achieving it

European Objective: *"promoting social inclusion, in particular through the reduction of poverty, by aiming to lift at least 20 million people out of the risk of poverty and exclusion. The population is defined as the number of persons who are at risk-of-poverty and exclusion according to three indicators (at-risk-of-poverty; material deprivation; jobless household), leaving Member States free to set their national targets on the basis of the most appropriate indicators, taking into account their national circumstances and priorities."*

4.5.1 National Target

The government supports the conclusions of the European Council in this objective⁶⁵ through measures that contribute to increasing women's and single-parent families' employment rate in order to arrive at a 73% employment rate objective in 2020. Access to employment creates the type of conditions that promote social inclusion and constitute a rampart from which to react against poverty and social exclusion, both for individuals and society in general.

4.5.2 Key measures

The government continued to take steps intended to modernise family policy by promoting employment, especially for women, and keeping people in jobs so that parents can have financial independence. The parental leave reform was approved in October 2016 and the new parental leave system entered into effect on December, 1st 2016. This reform aims at the following objectives: promoting reconciliation between family and professional life, creating a strong relationship between parents and children, better addressing requirements of parents and increasing the percentage of fathers who benefit from it in order to promote equal opportunities. It also aims to increase the number of persons in general who benefit from the reform. In the area of the policy for fighting social exclusion, the draft law related to the Social Inclusion Revenue (REVIS), was submitted to Parliament in January 2017. With this project, the government seeks to reorganize the Guaranteed Minimum Income (RMG) mechanism. The four objectives of this reform are to specify a social inclusion approach, to establish a coherent system of stabilization, social activation and professional reinsertion policies, to act against child and single parent family poverty and to simplify administrative procedures. Achieving the national objective is supported by the measures

⁶⁵ The government set the objective of reducing the number of persons threatened by poverty or social exclusion in Luxembourg at 6,000 people in 2020. Yet, with regard to methodology, the AROPE indicator does not include the demographic factor and Luxembourg's population continues to increase significantly, even during crisis periods, such that the relative nature of the indicator, as a percentage of population, inevitably leads to an increase in the absolute number of persons concerned.

described below, and by measures outlined in the national objectives for employment and education:

- Continue the policy of providing socio-educational welcoming structures to children: The number of authorized places in socio-educational welcoming structures for children 0-12 years old was 53,110 at December, 31st 2016. Luxembourg therefore has widely exceeded its national objective of 35,000 places in 2015.

- Making beneficiary parents aware of the Guaranteed Minimum Income (RMG) mechanism for using welcome centre cheques. Luxembourg achieved its national objective, since the awareness campaign with the target population was successful (see above).

- Increasing activation rates as part of the guaranteed minimum income (RMG) mechanism: The number of professional insertion activities (PIA) set by the National Social Action Services (SNAS) has continually increased since 2007⁶⁶ and the administrative statistics indicate a stabilizing of the number of persons not exempted from PIA⁶⁷. The activation rate for 2016 stayed at 61.8% compared to 59,1% in 2015, below the rate of 64.3% targeted for 2020, and support for achieving the object by all possible means is still recommended. The draft law establishing the REVIS seeks to increase the activation of beneficiaries of this aid, which replaces the RMG. The draft law stipulates a budget of €15.8 million to finance staff running the programme at assigned agencies who will implement activation measures under REVIS.

- Promote measures favouring the transition of young people from academic to professional life and those motivating them to return to school: The government delved into the problematic of disadvantaged young people through the Youth Guarantee/Activation Section mechanism coordinated by the National Youth Service (SNJ), particularly young people with NEET profiles (Not in Education, Employment or Training). In this framework, a total of 1,400 young people took advantage of SNJ offers, i.e. information sessions, practical workshops and volunteer programmes in 2016. The short-term European volunteer service, which is financed by Erasmus+, is a project that gives young people with fewer opportunities to try an international mobility experience. SNJ pursued its research on the NEET phenomenon. The organisation's study will be complete in 2017 and will provide specific recommendations for implementing public policies to help young people risking social marginalization. The annual budget allocated to SNJ transition measures is estimated at €3 million.

- The Social Aid law: During 2016, the 30 Social Offices gave out a total of €3.3 million in non-repayable financial aid. The measure will be allocated an annual budget of approximately €18 million, 50% of which is furnished by the State and 50% by the communes.

- Social exclusion related to housing and the national strategy to counter homelessness: In 2014, the government continued its coordination of the implementation of a national strategy to counter homelessness and exclusion linked to housing for 2013-2020. In 2016, inter-ministry collaboration to combat exclusion related to housing among young people and support of innovative projects for long-term homeless people involving an integrated centre for aged homeless persons and a low threshold day reception centre. A qualitative "Housing first" project showed positive results and a participatory study on consolidating the "Housing first" concept was initiated. A mid-term evaluation of the implementation of the national strategy was carried out by the government in the second half of 2016.

⁶⁶ 2007: 835; 2015: 1.520 ; 2016: 1.564

⁶⁷ 2007: 1.288; 2015: 2.573 ; 2016: 2.529

- Fund for European aid to the most deprived (FEAD): In Luxembourg, FEAD is used to respond to food and basic needs-related distress situations. The annual implementation report shows that total eligible public costs amounted to around €100,000 for procuring foodstuffs and to €54,000 for basic needs-related items. In Luxembourg, 9,243 persons, 54% of whom were women and 46% men, divided into 3,515 households, received food and basic needs-related items.

Frame 1: Reception of refugees and applicants for international protection in Luxembourg

With the arrival of refugees in Luxembourg, a mandate for setting up an emergency plan for processing applicants for international protection (AIP) was granted to the High Commission for National Protection (HCPN) by the government. The HCPN carries out its work together with the Luxembourg Reception and Integration Agency (OLAI), which organises the reception of refugees and applicants for international protection. It recently received an added contingent of staff and works in close cooperation with a large number of players. The process expresses a concern for implementing a responsible and solidarity driven migratory policy in order to guarantee adequate supervision and to take on the cost of each refugee arriving on Luxembourg territory. The government council approved the emergency reception plan involving the implementation of new arrivals reception centres in the short and medium term.

In 2016, the government ensured the implementation/increase of several services whose shared objective is to promote the social integration of refugees in Luxembourg and to prepare them for the labour market. This involves the following initiatives:

- “Luxembourg Centre for Integration and Social Cohesion” of the Luxembourg Red Cross: Support of municipalities and social offices in their task of helping people with political refugee status become self-sufficient.
- “Furniture Structure” of the National Committee for Social Defence (CNDS): Making furniture available to vulnerable persons, including refugee families and implementing activation measures that include persons who have the status of refugee.
- “Sorting Centre” of *Spëndchen* asbl: Collection and redistribution of clothing and implementation of activation measures that includes persons who have obtained the status of refugee.
- “Social Housing Agency” of the Foundation for Housing Access: Increase in the capacities and management of an inventory of housing made available by the government for refugee families.

In close coordination with the competent public authorities and the private sector, the ADEM is also pursuing skills evaluation programmes for refugee job seekers. These persons can benefit from training programmes through ADEM and external partners under the national “employment” objective.

The measures described under the national “education” objective in the early school leavers section for children of immigrants were also used in the efficient integration of young applicants for international protection. An “Assisted Integration Process” has been set up for adult applicants and beneficiaries of international protection. This unit lays the groundwork for integration during the first weeks following the arrival of persons on Luxembourg territory. It works off the principle that properly prepared integration is based on two elements: learning the national and administrative languages and understanding how daily life functions in Luxembourg.

5. Use of structural funds

5.1 Coordination with structural funds

Coordination between the NRP and the structural funds is required because the Europe 2020 strategy also has a Community action program. Projects developed and supported by Community financing under the structural funds heading are asked to contribute to meeting the objectives of the Europe 2020 strategy. With regard to the FEDER portion of the 2007-2013 Regional Competitiveness and Employment programme (RCE), efforts to support European and national objectives determined by Luxembourg have been made, particularly from the Priority 1-Objective 1 and Priority 2-Objective 3 standpoints. The RCE FEDER programme represents public eligible commitments and investments of € 85 million, of which €21.8 million in Community funds amassed during the period of 2007-2013 concerning the priorities of the Luxembourg NRP and the Europe 2020 Strategy. These investments, in line with NRP objectives, correspond to 83.2% of the FEDER CRE envelope for Luxembourg for the period of 2007-2013. In this way, 50 projects were co-financed in the area of RDI by FEDER with an amount of €15.3 million and 13 projects in the area of renewable energy with an amount of €6.4 million.

The themes and programmes for European Territorial Cooperation were hammered out on the basis of the Europe 2020 strategy. With regard to the trans-national and inter-regional projects slated for Luxembourg participation that were approved by the INTERREG A, B and C programmes, the main areas of intervention in the R&D innovation domain, with thirteen projects under FEDER totalling €2.6 million, and Climate Change and Energy areas of climate, environment and transportation, with twenty-two projects garnering total grants of €5.0 million, an amount approved in favour of the Luxembourg partner.

The operational programme of the European Social Fund (ESF) for the 2007-2013 programming period was already a key priority of the European strategy for employment and focused on vulnerable persons such as the young, older persons, women and persons far from the labour market. The financial breakdown amongst the three programme bases, sustainable inclusion in the labour market - 38.4% of the initial envelope; increasing adaptability of employees and companies - 38.4% of the initial envelope; increase in human capital - 19.2% of the initial envelope, was modified in 2011 and upon extension of the programme in 2015. These modifications sought to better align ESF investments with the objectives of the Europe 2020 strategy in application since 2010 with Luxembourg's previous country specific recommendations and with changing requirements in the labour market in Luxembourg. The modifications were especially beneficial to projects targeting young people and people who are very far from the labour market.

5.2 Financing priorities for the period 2014-2020

Under the common strategic framework for 2014-2020 and in accordance with European Commission recommendations, the FEDER Management Authority decided to concentrate its interventions on two priority areas focusing on thematic objectives No. 1 "Strengthening research, technological development and innovation" and No. 4 "Supporting the shift towards a low-carbon economy in all sectors". In addition, it has been decided to use an Integrated Territorial Investment (ITI) based on themes in the two areas in compliance with regulations and sustainable urban development concepts. The areas of intervention recommended by Luxembourg are consistent with the European Commission's position and will ensure continuity with the current programming period, which is already in line with the Europe

2020 strategy. The operational programme "Investment for Growth and Employment" for the period 2014-2020 was adopted by the European Commission on 15 December, 15th 2014. An initial tender for projects was launched in 2015, of which 11 were selected up until February 2017, amounting to €25.6 million, with FEDER financing €10.3 million, which may be divided into two areas as follows:

Table 10: Call for projects – projects chosen (February 2017)

	Total cost (€ mn)	FEDER (€ mn)
Area 1 "Improve research, technological development and innovation"	11.4	4.6
Area 2 "Support the transition to a low carbon emissions economy in all sectors"	14.2	5.7
Total	25.6	10.3

Source: Ministry of the Economy

Lastly, the implementation of measures and actions that were developed to sustainably promote professional insertion, keeping people employed and social inclusion are supported by the new operational programme for 2014-2020 of the European Social Fund (ESF). The new operational programme puts greater focus on young people under 30, including those from an immigration background, the Youth Guarantee, people who are far removed from the labour market in view of strengthening social inclusion and job seekers and employees over 45. Accordingly, ESF projects focus particularly on new businesses such as ITC and green jobs and on entrepreneurship.

6. Institutional issues and the role of stakeholders

6.1 National ownership

With a view to increasing transparency and encouraging assimilation on the national level, the government closely involved Parliament and social partners in the European semester in 2017:

- Parliament was involved in the European Semester week that took place at the end of April, 2017 focusing on the government's statement concerning the economic, social and financial situation of the country. The government presented the NRP and SGP documents to Parliament prior to submitting them to the European Commission.
- The social partners were again involved as part of the national social dialogue that took place under the aegis of the Economic and Social Council (CES). In February 2017, the new annual consultation cycle was inaugurated by an initial meeting. During the second meeting in March, discussions focused on the main messages to take from the 2017 country report for Luxembourg, which was published by the European Commission, as well as the priorities for drawing up the NRP⁶⁸.

6.2 Communication

Diverse studies have shown that the resistance to structural reforms is linked to the fact that uncertainty regarding expected future benefits of reforms is often greater than the uncertainty regarding costs incurred. The government attaches particular interest to this challenge and intends to pursue its efforts.

Progress achieved as part of the implementation of the Luxembourg 2020 strategy should have effective follow-up, reporting and evaluation processes. Diverse structural indicators used prepare a quantitative follow-up of the Lisbon strategy had a tendency of not taking adequate account of the specific circumstances surrounding Luxembourg. The Tripartite Coordination Committee considered that it would be opportune to publish a "Competitiveness scoreboard" on an annual basis. The latest version of this publication in 2016 provides a detailed update of Luxembourg's position relative to the other EU Member countries⁶⁹. After ten years of use, it was clear that an updating of this national control panel was in order. Over the years, several indicators have lost their relevance and others have been replaced by new indicators of better statistical quality or could not be updated. A revision of this national scoreboard was recently prepared within the Economic and Social Council, which adopted its opinion on the national system of indicators⁷⁰ unanimously in July 2016. The revision will make up the new structured and modernized scoreboard for Luxembourg, which should be operational in 2017.

⁶⁸ For more details see: <http://www.ces.public.lu/fr/semestre-europeen-2017.html>

⁶⁹ MINISTRY OF THE ECONOMY, 2016 Competitiveness Report, Perspectives de politique économique n°31, Luxembourg, October 2016. For more details see:

For more details see: <http://www.gouvernement.lu/6360474/ppe-031-fr.pdf#page=66>

⁷⁰ CONSEIL ECONOMIQUE ET SOCIAL, Avis - Le système d'indicateurs national, Luxembourg, 2016

For more details see: <https://ces.public.lu/fr/avis/politique-generale/2016-indicateurs.pdf>



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