



THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG

National Plan for a Green, Digital and Inclusive Transition

*National Reform Programme
of the Grand Duchy of Luxembourg
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Foreword

The COVID-19 pandemic has hit the world hard, including Luxembourg, in both economic and social terms. The outlook published in last year's National Reform Programme (NRP) and Stability and Growth Programme (SGP) raised fears of a massive decline in economic growth in Luxembourg. In a very uncertain context, the forecasts predicted a decline in GDP of 6%, or at worst 12%. Seen in this light, the 1.3% decline calculated according to the most recent STATEC estimates for the year 2020 appears to be a good performance. It should be remembered that the economic and financial crisis of 2008-2009 spurred a decline of 4.4% in 2009.

Thanks in particular to the unprecedented support efforts for businesses and workers, and notably the "Stabilisation Programme" and the "*Neistart Lëtzebuerg*" package of measures, the recession in 2020 appears to be much lower than initially expected and a rise in unemployment has been significantly contained, but the pandemic and the health restrictions have had serious consequences on daily life, moral and physical health as well as on habits and behaviour, both in terms of consumption patterns and interpersonal relations.

Many factors have helped limit the negative impact of the pandemic on the country's economy. First and foremost, a reliable and modern digital infrastructure has enabled rapid and widespread use of teleworking. A largely service-based economy proved to be an undeniable asset.

The management of the health crisis and in particular the application of a strategy based on large scale testing and the setting up of sufficient capacities for tracing contact cases have undoubtedly limited the restrictions compared to neighbouring countries. Nevertheless, some sectors remain heavily impacted by the restrictions that remain in place. The hotel and catering sector in particular is suffering, but also tourism and all companies contributing to the events sector. Overnight stays fell by 44.9% in November 2020 compared to November 2019. Air traffic decreased by 78.1% in Q4 compared to Q4 2019. These figures alone demonstrate the impact of the crisis on these companies.

However, the consequences remain limited in terms of bankruptcies, proof that the successive implementation of emergency aid, which has been continuously updated, has indeed proved its worth. Only the number of liquidations rose sharply in 2020.

Despite the pandemic, Luxembourg remains an attractive, job-creating economy. During the crisis period, Luxembourg is the only country in the European Union, together with Malta, where the employment rate did not decline. On the contrary, employment continued to grow by 2.1% in 2020.

The government did not wait until the end of the crisis to start efforts to revive the economy. The COVID-19 programme of assistance to businesses for sustainable investments has been remarkably successful, with almost 200 cases processed, helping to stimulate investments. The energy efficiency renovation assistance programme has helped the construction sector.

This pandemic, which is undoubtedly one of the greatest trials of recent times, should not overshadow the many other long-term challenges facing our country. The structural challenges of the pre-Coronavirus era, such as those related to the pension system, employment of the elderly, skills development or access to housing, remain topical issues. In addition, the energy transition and climate change pose further challenges.

It is all the more important to continue to address the challenges of sustainable development, whether in the areas of poverty, health, education, inequality, but also climate and resource protection,



consumption and production patterns. All this should also contribute to making society more resilient to possible future shocks. For example, the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda, adopted at the 2015 UN Summit, have been integrated into the NRP for the first time. These aim to end poverty, promote prosperity and well-being for all, protect the environment and tackle climate change. This document aims to establish that actions taken in the NRP are in line with the SDGs, while monitoring progress and ensuring closer coordination of national efforts.

At the same time, the many challenges we currently face should be seen as opportunities to accelerate the transition to a decarbonised and socially more equitable economy. In this context, the government continues to encourage private investment with a range of measures put in place over the last few years to pursue an ambitious pace of public investment supporting the dual green and digital transition as well as a sustainable and inclusive recovery.

The citizen well-being is at the centre of government policy. To this end, the government is paying particular attention to the scoreboard called “PIBien-être”, developed by the Economic and Social Council (ESC) and the High Council for Sustainable Development (CSDD). The scoreboard allows to go beyond traditional indicators, such as the growth of gross domestic product or the development of employment and unemployment. Levers for improving well-being include, for example, work-life balance, quality of the environment, safety, interpersonal relationships, education and training, housing, employment, and income and wealth. These criteria are taken into account in order to assess the impact of policies on citizen well-being in a regular and holistic manner.

The various government actions to address the challenges posed by the COVID pandemic, structural issues and sustainable development obviously also apply to the different areas of the PIBien-être.

The following pages aim to summarise the NRP in terms of the dimensions of the PIBien-être. Each dimension of the PIBien-être is associated with the measures taken in the NRP corresponding to that measure. The PIBien-être concept demonstrates not only its usefulness in calculating an alternative GDP to the standard one, but also its capacity to integrate many dimensions allowing a policy focused on the citizen well-being.

Dimensions of the PIBien-être and the NRP: coherence amongst policies

The broader concept of the PIBien-être was developed by the Economic and Social Council (ESC) and the High Council for Sustainable Development (HSSD) in order to better measure societal progress from a long-term perspective beyond traditional indicators. The concept of the PIBien-être can also be useful to check the consistency of the policies described in the NRP with the objective of maintaining or even increasing everyone's well-being.

By following this approach, it is clear that most of the measures contained in this NRP fall within one or more dimensions of the PIBien-être. While this is a purely qualitative exercise, it does provide a check on the alignment of the NRP with the PIBien-être concept. The following pages briefly present the different dimensions of the PIBien-être by matching the respective NRP measures as examples.

Income and wealth, the first dimension of the PIBien-être, puts limits to purchasing power and as such has a major impact on several dimensions of everyday life. Against this backdrop, the government has been implementing a number of measures and actions for several years with the aim of increasing the income of the poorest people, countering the increase in the risk of poverty rate and avoiding the marginalisation of a part of the population. Among other things, the government is continuing its efforts to diversify the economy and create high value-added jobs and is supporting the development



of the social economy by focusing its efforts on three strategic areas: “Getting to know the social and solidarity economy better”, “Equipping social and solidarity economy enterprises” and “A change of scale”. In recent years, the government has implemented several measures to fight poverty and is planning to do more. These include adapting the social parameters of the social inclusion income, renewing and increasing of the cost-of-living allowance and overhauling of the rent subsidy that came into force in 2018. Of course, these measures have to be seen in conjunction with measures implemented in other areas, such as employment, education and skills development, which undoubtedly play a key role in income and poverty.

The COVID-19 pandemic characterised 2020, producing a negative impact on income levels and poverty risk in Luxembourg. The lockdowns, unavoidable to relieve the health system and guarantee adequate care, “generated a 16% drop in income for residents” according to STATEC. This makes it all the more important to pursue a sustainable and inclusive recovery that benefits everyone.

With regard to **employment**, a cornerstone of personal development and of vital importance for psychological and physical well-being, the COVID-19 pandemic and related control measures have exerted a particularly heavy impact on the labour market and have created economic insecurity for a large number of workers.

In order to preserve as many jobs as possible during the pandemic, the government introduced the measure of short-time work in the event of force majeure during the crisis period. From July 2020, i.e. after the crisis period, the government decided to gradually switch from the force majeure short-time working scheme “COVID-19” to a structural short-time working scheme with the intention of maintaining support for the most vulnerable sectors. This aid remains by far the most widely used, with almost €1 billion allocated as advances to companies. In addition to this measure, other crisis-related initiatives have been put in place, such as supporting the development of remote work through the modification of taxation for cross-border employees as well as by introducing aid for investment in infrastructure aimed at setting up a remote work system. In addition, the government has decided to extend certain active employment policy measures such as opening up the Professional Training Course to job seekers under 30 years of age and making the Reinsertion-Employment Contract and the aid for the recruitment of older unemployed persons eligible to job seekers between 30 and 45.

As the employment of older people is also an important issue, since 2016 the government has put in place a number of measures including the implementation of a reform of the vocational reclassification system and early retirement schemes. In addition, a scheme to combat long-term unemployment and making a vocational training course and a re-employment contract for older job seekers possible have also been created.

The dimension of **education and skills development** is essential for the development of the individual's personality and identity, as well as his or her physical and intellectual capacities. It contributes to personal fulfilment while promoting social and professional integration and offers disadvantaged adults and children a path for escaping poverty. It is therefore an essential tool for economic, social and cultural development.

In this area, the government is continuing its efforts to combat early school leaving and to support success in education and developing lifelong skills, by implementing a series of measures based on three areas of action: prevention, intervention and the strengthening of skills in the context of lifelong learning. As for higher education, the government is continuing its efforts to create a favourable environment for expanding the range of public and private higher education programmes, as well as consolidating an ethos of quality in the sector based on European standards, in particular through a



revision of the law on the organisation of higher education provided for in the government programme. The government continues to implement its policy for higher education and research on the financial resources level. Accordingly, financial contributions for the operation of the University of Luxembourg have increased considerably from €72 million in 2009 to €215.6 million in 2021.

In the context of the health crisis, educational institutions have been closed on several occasions in order to reduce the number of new infections. During these periods, home-based education was introduced with the support of teaching staff. However, it is extremely important to ensure continuity of education and follow-up of schoolchildren and students as much as possible in order to avoid dropping out. Aiming to mitigate the risks inherent in the transition period between secondary school and working life or higher education, which have increased by the economic consequences of the COVID-19 pandemic, the government has set up the *Diplom +* programme. This two-semester continuing education programme offers them the opportunity to increase their expertise and interpersonal skills and to acquire or reinforce transversal skills useful in both professional and student life, improving their chances of finding a job or succeeding in their future higher education studies. In the same context, the government has deployed a range of measures and financial aid to ensure that young people may be enrolled in vocational training and to support them in the transition to working life. These include the FIT4VET programme, the extension of the deadline for signing new apprenticeship contracts and solutions for young people who have difficulty finding an apprenticeship position.

Housing, an important component of the PIBien-être and a vital need for human beings, remains, due to the significant upward trend in its prices, a theme regularly on the agenda of political and media discourse in Luxembourg.

The fact is that, despite a multitude of positive actions carried out by previous governments, the supply of housing and land available for construction remains largely insufficient in relation to the growing demand from citizens. One area in which the government continues to act is through its increasing efforts to create affordable public housing. Priorities for public action will focus, among other things, on a complete overhaul of the amended law dated 25 February 1979 on housing assistance and the system of subsidies for creating housing, invigorating the push from creating social housing and affordable housing, making building land available, implementing the 'State-Municipality' housing pact 2.0, combating land speculation and improving price transparency in the rental market.

The COVID-19 brought on strong repercussions in the economic and social sphere, which did not spare the housing sector. This is hardly surprising, as the potential impact of a loss of income also affects the ability to buy, to pay rent already due or to make mortgage payments, with possible repercussions on landlords and an increased negative impact on society.

In order to alleviate tenants in emergency situations due to financial loss caused by the health crisis such as reduced income, unemployment, etc., the government decided to introduce several support measures. For example, it was decided to move forward the planned adjustment of the rent subsidy tables in order to adjust the scale of reference rents and the ceilings in use. In addition, in order to protect tenants for whom a rent increase would constitute an additional burden that would be difficult to overcome, the government decided on a temporary freeze of residential rents in May 2020, which was subsequently extended until 30 June 2021. Thirdly, as part of the suspension of deadlines in jurisdictional matters, in March 2020 the Government decided to suspend evictions in matters relating to residential leases. In order to encourage landlords to reduce business rents under commercial leases, the government has introduced a tax allowance corresponding to twice the amount of rent



reduced, up to a maximum of €15,000. This measure will help to alleviate possible cash flow problems of businesses and support them during the first months of recovery.

The COVID-19 pandemic has inevitably emphasised the importance of a resilient and well-functioning **health system**, which is essential for the well-being of the population, but also for economic progress, confidence in government and social cohesion.

The health crisis has had a profound impact on the health system and highlighted its weaknesses. The increased burden on the health system, and in particular on hospitals, but also the fears expressed by some citizens of going to the doctor, could have negative effects on the health of the population. Nor can we overlook the increased difficulties in obtaining supplies of all types of goods and services, including those important to the health system, which are based on a variety of reasons ranging from supply not meeting demand to export restrictions and border closures.

As a result, the government has taken a number of measures to ensure the capacity of the health system to respond to the health crisis as well as to counter possible future crises. One of the things the government decided to do was to create a health reserve to strengthen the capacity of the health system, and to set up a large-scale PCR test and contact tracing system as well as a COVID-19 epidemiological monitoring and reporting system. In order to contribute to maintaining the number of doctors in practice thereby strengthening the resilience of the health system, a Bachelor in Medicine is running at the University of Luxembourg since the start of the academic year 2020-2021 and three courses in medical specialisations for students holding a Master's degree in Medicine will be offered as of September 2021 in neurology, oncology and general medicine.

In addition, the government continues to encourage and promote the development of the HealthTech sector, a sector in the front line in the context of the COVID-19 pandemic, one example of which is the creation of an incubator exclusively dedicated to health technologies as part of the extension of the House of Biohealth in Esch-Belval. This bio-incubator is intended to accelerate the economic impact of investments in developing public biomedical research in Luxembourg. In addition to obtaining fully equipped laboratory space, the hosted companies will receive professional support in terms of business development specific to the HealthTech sector. This sector is a pillar of the economic diversification strategy in which the House of Biohealth plays a key role to ensure sustainable growth.

Reconciling professional and personal life incorporates the notions of lack of time and burnout as well as the problems that arise from it. Research shows that the inability to balance work and rest is linked to a feeling of not being in control of one's workload and not having enough energy to meet one's goals and personal commitments. The inability to achieve this balance can reflect poor quality of life. Moreover, work-life balance is a motivating factor for employees and becomes a decisive factor in retaining and attracting talent.

Against this backdrop, reconciling work and family life will remain a priority target of the government, which will respond to the need for flexibility of families and companies through an ambitious policy on the level of work organisation, social transfers and fiscal policy.

The impact of the pandemic on the work-life balance is difficult to assess as the effects differ greatly between economic sectors: for example, in life-sustaining sectors, it is likely that this balance has deteriorated. Another important aspect is the accelerated transition from face-to-face work to teleworking. While providing more flexibility to employees and, in some cases, being a prerequisite for continued operation, telework could have negative effects on the work-life balance by implying permanent reachability. While telework can contribute positively to environmental protection, it can



affect the local economy, especially the hotel and catering industry and local commerce, which depends on the influx of workers into their offices.

Finally, **environmental protection** plays a key role in well-being as it not only has substantial effects on health, both in terms of the quality and availability of food, water and clean air, but also in terms of exposure to potentially hazardous substances in general. This area is playing an increasingly important role, particularly in the context of the European Semester where the Sustainable Development Goals have recently been integrated. The government has implemented a number of measures in this area and plans to add more. These measures include the global strategy for sustainable mobility (MoDu 2.0), introducing a carbon tax, encouraging electric mobility, continuing efforts in the field of sustainable buildings and energy performance, as well as developing renewable energy. These elements, along with many others, are also part of a broader context, which is further specified in the National Climate Energy Plan (NCEP) and the third National Plan for Sustainable Development (NPSD).

In addition, the government is continuing its efforts towards a sustainable recovery by promoting and underpinning the circular economy. A new aid scheme to stimulate investment in the COVID-19 era has been created as part of the “*Neistart Lëtzebuerg*” package. In particular, this aid scheme enables substantial support for projects related to the circular economy. In the same context, in February 2021, the government presented the national “Circular Economy” strategy, whose objectives include accelerating the rollout of the circular economy on the national and regional levels and positioning Luxembourg as a centre of expertise and an international leader in this field. In addition, the government supports the development of the “Product Circularity Data Sheet (PCDS1)” which aims to promote the circular properties of products, by establishing a data sheet as well as its standard and audit framework. In order to position Luxembourg as a future centre of excellence and innovation in terms of the circular economy, a study entitled “Supporting the Emergence of Circular Business Models (SECBM)” is being carried out to identify the key points that will enable a more consistent development of the circular economy at financial and economic level.

The environmental impact of the COVID-19 pandemic containment measures, such as the lockdown and shutting down a significant part of economic activity, is still difficult to determine precisely. These measures, coupled with the overall reduction of activities and travel, including air travel, are likely to have positive environmental effects.



Income and wealth

Diversification of the economy
Support for the social economy
Increase of the REVIS
Renewal and increase of the cost-of-living allowance

Employment

Introduction of the measure of short time work for instances of force majeure
Support for the development of remote work
Extension of certain active employment policy measures

Education and skills development

Continued efforts to combat early school leaving
Continued efforts to further develop and improve higher education
Support for skills development in particular via the "future skills" program and the organization of the round table on future skills "Skilldësch"



Housing

Complete overhaul of the law on housing assistance and the system of subsidies for creating housing
Invigoration of the creation of social and affordable housing
Mobilisation of building land
Fight against land speculation

Health system

Strengthening of the capacity of the health system
Establishment of an epidemiological monitoring and reporting system
Establishment of a new cycle of medical studies
Development of the Healthtech sector

Reconciliation of professional and private life

Continuation of a policy meeting the flexibility needs of families and businesses through an ambitious policy in terms of the organization of work, social transfers and tax policy

Environment

Global strategy for sustainable mobility (MoDu 2.0)
Introduction of a carbon tax
Encouragement of electric mobility
Continued efforts in the field of sustainable buildings and energy performance
Development of renewable energy



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ACRONYMS

ADEM	Employment Development Agency
ALJ	Local Youth Action
ASBL	Non-Profit Organisation
BTS	Vocational Training Certificate
CePAS	Psycho-Social and Scholastic Assistance Centre
CES/ESC	Economic and Social Council
CIP	Professional Initiation Classes
CNCD	National Council for Sustainable Construction
CNFPC	National Centre for Continuous Vocational Training
CNP	National Productivity Board
DESI	Digital Economy & Society Index
DSGE	Dynamic Stochastic General Equilibrium
ERA	European Research Area
ENAD	National School for Adults
FEAD	Fund for European aid to the most deprived
ERDF	European Regional Development Fund
FEDIL	Federation of Luxembourg Industrial Operators
FNR	National Research Fund
FNS	National Solidarity Fund
RRF	Recovery and Resilience Facility
ESF	European Social Fund
GHG	Greenhouse Gases
GIE	Economic Interest Group
HPC	High Performance Computing
AI	Artificial Intelligence
IFEN	Institute of National Education Training Programmes
IFSB	Institute for Training in the Construction Industry
IGSS	General Inspectorate of Social Security
NIPA	National Institute for Public Administration
INFPC	National Institute for the Development of Continuous Vocational Training
IPIL	Institute of Intellectual Property of Luxembourg
LENOZ	Luxembourg Sustainability Certificate for Residential Buildings
LIH	Luxembourg Institute of Health
LISER	Luxembourg Institute of Socio-Economic Research
LIST	Luxembourg Institute of Science and Technology
LLL	Lifelong learning
LSA	Luxembourg Space Agency
LSM	Luxembourg structural model
MODU	Sustainable Mobility Strategy
NEET	Not in education, employment or training
NZEB	Nearly zero-energy buildings
OECD	Organisation of Economic Cooperation and Development
SDG	Sustainable Development Objective
MTO	Medium Term Objective
ONIS	National Office for Social Inclusion
PAG	General Development Plan
PAN	National Action Plan
PDAT	Master Programme for Spatial Planning
MIP	Macroeconomic Imbalance Procedure



GDP	Gross National Product
SME	Small and Medium-sized Enterprises
NPSD	National Plan for Sustainable Development
NECP	Integrated National Energy and Climate Plan
NRP	National Reform Programme
DBP	Draft Budgetary Plan
PPP	Public-Private Partnership
RRP	Recovery and Resilience Plan
SGP	Stability and Growth Programme
PSL	Sectoral Housing Plan
R&D	Research and Development
R&I	Research and Innovation
TDI	Research-Development-Innovation
REVIS	Social Inclusion Revenue
RPGH	Severely Disabled Persons Allowance
SCRIPT	Technological Innovations Coordination Service
SePAS	Psycho-Social and Scholastic Assistance Centre
SNCI	National Credit and Investment Institution
SNHBM	<i>Société Nationale des Habitations à Bon Marché</i>
SSM	Minimum wage
STATEC	National Institute of Statistics and Economic Studies
STEM	Science, Technology, Engineering, and Mathematics
ICT	Information and Communications Technology
TIR	Third Industrial Revolution
VSE	Very Small Enterprises
VAT	Value Added Tax
EU	European Union
UEL	Union des entreprises luxembourgeoises (Employer's Organisation)



1. Introduction

After experiencing seven consecutive years of growth, the European economy has been severely affected by the COVID-19 pandemic and its restrictions on social life and economic activity. According to initial estimates from early 2021, economic activity in the European Union fell sharply in 2020. However, forecasts point to a strong rebound in activity in 2021 and 2022. Beyond the short term, the uncertainty of the outlook will remain high as long as the pandemic has a negative impact on the economy. In addition to the unprecedented implications of the COVID-19 pandemic, there is a harsh external environment threatened by looming risks, including geopolitical instability coupled with trade uncertainties.

Like the entire European Union, Luxembourg has not been spared by the pandemic causing numerous human losses and leading to the third major economic, financial and social crisis of this century. Despite unprecedented support efforts for businesses and workers, Luxembourg economic activity recorded a significant decline in 2020 according to initial estimates, although much less than initially estimated. The extraordinary support efforts, in particular the “Stabilisation Programme” and the package of measures, baptised “*Neistart Lëtzebuerg*”, have helped to significantly cushion the impact on the labour market and the economy. Forecasts for 2021 and 2022 point toward a strong economic rebound.

At the national level, and in accordance with the 2021 Annual Sustainable Growth Strategy as well as the Council's Country-Specific Recommendations, the government is continuing its efforts in the fight against the pandemic, to support and promote an inclusive and sustainable recovery and to stimulate the competitiveness of the economy. This is reflected, among other things, in the continuous efforts for the implementation of key strategies among which the Third Industrial Revolution (TIR) strategy retained a general orientation for the future development of the country. The efforts at the national level should address the challenges facing the country, dealing both with those identified in the above-mentioned publications and those generated by the strong growth of the country in the past.

On the macroeconomic level, Luxembourg is again among the EU Member States not subjected to an in-depth review under the alert mechanism of the Macroeconomic Imbalances Procedure (MIP).

On the microeconomic and employment side, education and training, R&D and innovation, efficient use of resources, social cohesion and inclusion alongside gender equality as a cross-functional goal, continue to act as the structural pillars of sustainable development and long-term growth. In order to further stimulate the transition towards a model of sustainable and inclusive economic growth, the government is continuing its reflections on the diversification of the economy, productivity, real and perceived well-being as well as new technologies, including digitization.

The government continues to pursue an ambitious pace of public investment. In the law on the national budget (2021), as presented in October 2020, direct and indirect investments amount to 4.3% of GDP, which clearly represents a rate that is significantly higher than the average rate of 3.7% over the period 2015-2019. The 2021 national budget is a “solidarity and sustainable recovery budget” providing for significant investments, particularly in the areas of the environment and the climate. About 20% of non-COVID-19 investment spending in 2020 was made in the interests of environmental and climate protection. The measures focus mainly on solidarity, affordable housing and a sustainable and competitive economy.

The government has again involved the Parliament and social partners in the European semester discussions, with a view to enhancing transparency and fostering national ownership:



- The Parliament has been involved with the presentation of the NRP, the RRP and the SGP in April
- The social partners have been involved in the national social dialogue under the auspices of the Economic and Social Council (ESC). In March 2021, discussions focused on the economic, financial and social situation as well as the main priorities and on progress in preparing the RRP, NRP and SGP.

To conclude, the coordinated set of measures of the National Reform Programme (NRP) and the Recovery and Resilience Plan (RRP), accompanied by a responsible fiscal policy defined within the framework of the Stability and Growth Programme (SGP), combined with the strengthening of governance at the national level, should enable Luxembourg to lay the groundwork for the green, digital and inclusive transition as well as to implement its Sustainable Development Goals (SDGs) with regard to the challenges facing the country.



2. Macroeconomic background and scenario for 2021-2025

2.1. Macroeconomic aspects for the programme period

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

Macroeconomic forecasts indicate real GDP growth of +4.0% in 2021 and 2022, as well as medium-term growth of +2.6% on average in the period 2023-2025.

Table 1: Change in economic growth and job creation for 2020-2025

	2020	2021	2022	2023	2024	2025
Growth in GDP (as a %)	-1.3	4.0	4.0	2.7	2.6	2.6
Total domestic employment (as a %)	2.0	1.7	2.8	2.4	2.2	2.2

Source: SGP (2021)

For the long term, the government has aligned its main economic assumptions with those in the macroeconomic scenario adopted for Luxembourg by the Working Group on Ageing Populations and Sustainability of the EU Economic Policy Committee and of its most recent report on ageing¹.

2.2. Macroeconomic 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 in order to better simulate macro and microeconomic 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 takes into account residents and cross-border workers, the importance of negotiations between unions and companies, and the fact that Luxembourg is a small, very 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 high level of Luxembourg's specialization in financial services. The development of a new version, known as LSM2, addresses this concern. The LSM2 model including the banking sector for Luxembourg was introduced in 2012. Still, one must not lose sight of the fact that there is no ideal structure for an institutional macroeconomic model².

¹ For more details see: https://europa.eu/epc/working-group-ageing-populations-and-sustainability_en

² For more details see: http://odc.gouvernement.lu/fr/domaines-activite/Outils-evaluation_competitivite/modele-structurel-luxembourgeois-lsm.html



3. Political responses to the major economic challenges

Responses to the COVID-19 pandemic led to a temporary adaptation of the European Semester to coordinate it with the Recovery and Resilience Facility (RRF). This includes replacing the European Semester country reports by European Commission assessments of the substance of the Recovery and Resilience Plans (RRPs), as well as suspending country-specific structural recommendations in 2021 for those Member States that have submitted such plans.

The Recovery and Resilience Plan takes into account, inter alia, the country-specific recommendations for 2019-2020 as well as those for 2020-2021. In order to ensure a high degree of coherence between the Recovery and Resilience Plan and the National Reform Programme, the latter also covers both periods. As the recommendations addressed to Luxembourg for the two years partly overlap, they are dealt with together in the rest of the document.

On 25 March 2020, the government presented a coherent and substantial economic stabilisation programme, designed to support the national economy in the best possible manner during these times of crisis. This programme incorporates both existing and new measures and is based on an analysis of the requirements of economic actors. In addition to a multitude of ministerial departments and public administrations, it involves the banking sector as well as the National Credit and Investment Institution (SNCI).

The stabilisation programme was supplemented on 20 May 2020 by a package of support measures, known as “*Neistart Lëtzebuerg*”, whose objective is to lay the foundations for a new start for the Luxembourg economy following the COVID-19 health crisis. The three priorities of this package are to encourage greater employment, to support those companies in the most affected sectors and to promote a sustainable and inclusive economic recovery.

These two instruments bring together a large part of the measures that Luxembourg has implemented in response to the crisis. Over time, the range of measures has been adapted to changes in the pandemic and the economic crisis in order to best help those in need. These and other stand-alone measures are described below. An overview and further information on certain COVID-19 grants can be found on the website of the Ministry of the Economy.³

3.1. Fight against the pandemic, budgetary policy and the health system

The Council of the European Union recommends that Luxembourg take action to “*take all necessary measures, in line with the general escape clause of the Stability and Growth Pact, to effectively address the COVID-19 pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment. Improve the resilience of the health system by ensuring appropriate availability of health workers. Accelerate reforms to improve the governance of the health system and e-health.*”

3.1.1. Fighting the pandemic, supporting the economy and underpinning recovery

In order to minimise the number of deaths and the adverse effects of the disease on human health, in March 2020 the Luxembourg government decided to restrict travel, limit professional activities and cancel all non-essential activities. These far-reaching restrictions affect the population, businesses and the economy as a whole. In the meantime, these measures and restrictions have been adapted several times as the pandemic has developed. Although the pandemic is primarily a health threat to citizens and workers, it also inevitably has a major impact on the economy. Thus, in addition to public health

³ For more details see: <https://meco.gouvernement.lu/fr.html>



measures, the government has implemented a series of measures to keep essential businesses running, to encourage and ensure the production of items relevant to the fight against COVID-19, to assist businesses and to support citizens in these difficult times.

Specifically, in order to ensure that life-sustaining sectors do not suffer from labour shortages, the government has implemented the following measures:

- Making it possible to increase maximum working hours in the health sector, including hospitals and medical laboratories, in the care sector and for staff in residential facilities for minors placed under a custody order

Extend the maximum working time to 12 hours per day and to 60 hours per week, with the agreement of the staff delegations. This temporary derogation ended on 1 January 2021.

- During the periods of total suspension of activities, some ten education and care structures provided supervision services for the children of health sector staff
- Making it possible to refuse or cancel leave in essential sectors of activity

Allowing employers to refuse requests for leave during the crisis period (from 18 March to 24 June 2020), and to rescind leave already granted.

- Making it possible to increase working hours for certain student contracts in essential sectors

Extending the weekly duration of fixed-term contracts with students to 40 hours over a period of four weeks or one month.

- Increasing the rate of reimbursement to companies for employee absences during periods of quarantine or isolation

Employers and self-employed persons affiliated to the Employers' Mutual Insurance Association ("*Mutualité des Employeurs*") usually benefit from a reimbursement rate during periods of incapacity for work of their employees, or of the self-employed themselves, of up to 80%. However, in order to financially support companies whose employees have to be in quarantine or isolation, the rate has been increased to 100% for these specific periods. This measure is applied retroactively to 1 July 2020 and does not affect the financial absenteeism of contributions when filing with the Employers' Mutual Insurance.

Against a background dominated by the pandemic, the demand for items relevant to the fight against COVID-19 has increased significantly. In order to meet the growing need for these items, the government has decided to implement the following measures:

- Financial support for companies with an investment or R&D project for products to help combat the health crisis⁴

As part of the economic stabilisation programme, on 8 April 2020 the government approved an aid scheme to support both industrial research and experimental development projects, and investment projects for producing and developing products to help combat the COVID-19 health crisis. This aid scheme was added to the panoply of aid to companies set up under the economic stabilisation programme. This aid scheme has been extended until 30 June 2021.⁵

⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/08-fayot-covid19-aide.html

⁵ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/11-novembre/13-delles-fayot-tanson-mesures.html



- Investment aid for producing items relevant to the fight against COVID-19⁶

In order to meet the growing need for protective masks and hydroalcoholic gel, the government decided to support companies that reorient their production lines to manufacture these essential items during a health crisis. This financial support was limited to the period of the health crisis.

- Implement a platform for matching supply and demand of personal protective equipment⁷

With a view to connecting supply and demand for personal protective equipment produced and supplied by Luxembourg companies, the platform www.EPI-COVID19.lu has been launched by the national agency for the promotion of innovation, Luxinnovation, in collaboration with the wedo.lu team of the *Fédération des artisans*. This platform, which functions as an evolving directory with secure access for users, aims to bring together all information relating to the production and supply of personal protective equipment (PPE) such as protective masks and disinfectants.

- Support for start ups⁸

In order to support the Luxembourg start-up ecosystem, on 9 April 2020 the government, in collaboration with Luxinnovation, launched a tender for proposals under the name “StartupsVsCovid19”. Aimed at young innovative companies, the call for proposals focuses on the development of innovative technological products or services designed to limit or even overcome the economic, health or societal effects of the crisis linked to the COVID-19 pandemic.

In order to provide the best possible support and protection to the population, especially to low-income people who have been particularly affected by the crisis, the government has decided on the following measures:

- Suspension of eviction proceedings and pending evictions for residential leases as well as those relating to commercial leases⁹

At its Government Council of 25 March 2020, the government adopted a Grand Ducal Regulation suspending time limits in judicial matters and adapting certain other procedural arrangements. These urgent and immediate measures aim to avoid the spread of the COVID-19 virus while safeguarding the rights and interests of litigants, while the Judicial Administration has put in place measures at this stage of the pandemic in order to both guarantee reduced but functional service and to safeguard as far as possible the health of all employees.

One of the provisions introduced the suspension of evictions with regard to residential leases. This measure prevents people from being rendered homeless during the crisis, which would be particularly inhumane. The deadlines for the execution of evictions in relation to commercial leases have also been suspended, as have those for seizures of property and forced sales. With the entry into force of the law of 19 December 2020 on the temporary

⁶ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/06-soutien-entreprises.html

⁷ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/18-plateforme-protection.html

⁸ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/04-appel-startup.html

⁹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/03-mars/26-délais-juridictionnelle.html



adaptation of certain procedural processes in civil and commercial matters, carrying out evictions ordered for residential leases has been suspended until 31 March 2021 inclusive.

- Increase in the state's coverage of legal aid fees¹⁰

In order to ensure access to justice for people who do not have sufficient income, the law provides for the payment of legal aid enabling them to defend their rights and interests in the Grand Duchy of Luxembourg.

In order to support lawyers and trainee lawyers working under the legal aid scheme, the Government Council of 20 May 2020 took the decision to increase hourly rates for lawyers' services provided under the legal aid scheme by 10%, as provided for in Article 9 of amended Grand Ducal Regulation dated 18 September 1995. The new rates apply to the services provided by lawyers as from 2 August 2020, the date on which the Grand Ducal Regulation dated 29 July 2020 came into force.

- Extension of the family leave scheme in the context of the health crisis

Family leave has been extended to assist parents who are unable to provide care for their dependent children up to the age of 12 – or up to the age of 18 in the case of a child with a disability – by other means during the period when schools and educational and care facilities are closed. Similarly, cases of isolation or quarantine of a child due to COVID-19 also qualify for this measure. Parents of a child vulnerable to COVID-19 are also eligible. This scheme - which guarantees an income for eligible parents - is entirely at the expense of public institutions and will be extended for as long as the health crisis requires.

The purpose of the bill amending the Act dated 22 January 2021, adopted by the Government Council on 17 March 2021, is to extend exemptions for family leave. It has been in force since 21 January 2021, and extends up until 17 July 2021 inclusive. Its purpose is to maintain quick reactivity to the consequences that the current situation may have for parents of vulnerable children and to the problems of childcare that may arise for parents of children under thirteen when schools or childcare facilities close.

As part of the measures designed to alleviate the impact of the health crisis on the economic fabric and in particular on young people in training, the government has deployed a range of measures and financial aid schemes aimed at guaranteeing that young people enter vocational training and supporting them in the transition to working life.

- Extending the deadline for signing new apprenticeship contracts to 31 December 2020.
- Financial support for training organisations that maintain existing apprenticeships or even create new apprenticeships to ensure that young people get into vocational training.
- Putting in place measures to ensure continuity of teaching and apprenticeships, as well as access to examinations in the 2019-2020 school year.
- Granting of partial unemployment to apprentices (measure extended to the end of 2020 for apprentices in sectors that are locked down).
- Providing solutions directly to young people experiencing difficulties in finding apprenticeship positions. To overcome the lack of apprenticeship positions, the National Centre for

¹⁰ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/08-aout/03-tanson-assistance-judiciaire.html



Continuous Vocational Training (CNFPC) can take over an employer's training programme during the first year of certain CCP (Vocational capacity certificate) courses.

- High schools may also offer full-time vocational training classes as needed to compensate for the lack of apprenticeship positions in companies. They then provide both school education and employer training programmes.
- Offering the 'Fit4VET' programme in the CNFPC to students who had not found an employer training programme by 31 December 2020 and who cannot enter under other measures such as employer training courses organised for certain occupations in the CNFPC.

In addition, in order to mitigate the economic consequences of the COVID-19 crisis, which constitutes an unprecedented challenge for the Luxembourg economy, the government has taken the following support measures:

- Recovery and solidarity fund for companies¹¹

On 22 July 2020, the Chamber of Deputies adopted the bill to set up a recovery and solidarity fund. With the creation of the "Recovery and Solidarity fund", the government intends to encourage and maintain employment as well as to support businesses in the catering, tourism, events, culture and entertainment sectors. Any business in these sectors that has suffered a loss of turnover of at least 25% between June and November 2020 compared to the same period in 2019 can get a monthly grant, the amount of which is calculated on the basis of the number of employees and self-employed persons in a business.

- Restart aid for shop-based retail trade

The bill to set up a recovery and solidarity fund, adopted on 22 June 2020, also aimed to set up an aid scheme for retail businesses. This aid scheme in favour of retail trade companies is intended only for retail trade companies which have been obliged to stop their activities due to the ban on retail trade imposed by the Grand Ducal Regulation of 18 March 2020 or which have suffered a loss of turnover of at least 50% between 15 March 2020 and 15 May 2020, which have not received short-time working subsidies for the month for which the aid in question is requested and which have not laid off persons for economic reasons. The amount of the grant was €1,000 per employee for July, €750 per employee for August and €500 per employee for September. This aid may not exceed €50,000. A separate application had to be submitted for July, August and September 2020.

- Aid for the revival of culture and artistic creativity and for sports activities^{12,13}

As part of the package of support measures aimed at paving the way for a new start for the Luxembourg economy following the COVID-19 health crisis, on 27 May 2020 the government presented several measures aimed at reviving culture and artistic creation in Luxembourg.

At a press conference on 4 June 2020, the government presented the system of specific financial aid to persons participating in sports as part of the SPORT recovery plan in response to COVID-19.

- *Fit 4 Resilience* Programme¹⁴

¹¹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/07-juillet/23-nouvelles-aides-financieres.html

¹² For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/05-mai/27-tanson-relance-culture.html

¹³ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/06-juin/04-msp-relance-sport.html

¹⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/05-mai/28-fayot-fit4resilience.html



On 28 May 2020, the government and Luxinnovation launched “Fit 4 Resilience”, a new programme to support companies in their post-COVID-19 recovery. This programme is part of the “*Neistart Lëtzebuerg*” national economic recovery policy. The aim of this programme is to support companies in analysing the way they have been impacted by the crisis sparked by COVID-19, in order to identify opportunities to reinvent themselves and relaunch their activities in a more resilient way, for example by integrating a more digital, circular and regional approach. Applications are open until 31 December 2021.

- Increased coverage of the financing needs of young innovative companies¹⁵

In order to support young innovative companies during the COVID-19 crisis period, the government has decided to increase the maximum rate of co-financing applied from 50% to at least 70% for any young innovative company receiving grants. This temporary support measure will remain in force at least until 30 June 2021.

- Aid to stimulate investment in the COVID-19 era¹⁶

On 22 July 2020, the Chamber of Deputies approved the government's bill implementing a new aid instrument aimed at companies that have suffered from the impact of the COVID-19 crisis. As part of the “*Neistart Lëtzebuerg*” package of measures, the new financial aid aims to encourage companies to carry out economic development, digitalisation or environmental protection projects with high subsidy levels (up to 50% of eligible costs). With an aid intensity of up to 50% of eligible costs for a maximum of €800,000 of aid per project, the new scheme relies heavily on higher amounts of investment aid than in normal times, especially for projects dealing with the development of the circular economy.

While this investment aid was initially scheduled to expire on 30 June 2021, it will now be extended until the end of the year. On 2 April 2021, the Government Council adopted the draft law providing for this extension. The maximum aid intensity is maintained at a maximum of 50% of eligible costs, however the maximum aid amount per company is increased to €1,800,000 for applications submitted after the entry into force of the draft law.¹⁷

- Recovery aid¹⁸

The recovery aid, whose basic act is the law dated 19 December 2020, is aimed at companies in the tourism, hotel and catering, events, culture, entertainment, retail trade in shops, including personal care, and managers of continuing vocational training organisations. It is linked to the condition that the company has suffered a loss of monthly turnover of at least 25% compared to the same month in 2019 and is calculated on the basis of the number of employees and self-employed persons in the company. The amount of the subsidy is €1,250 per self-employed person and per active employee in the month for which the aid is requested, and €250 per fully unemployed employee in the month for which the aid is requested. The extension of the stimulus package up to and including June 2021 came into force on 24 March 2021.¹⁹ It should be noted that the recovery aid and the aid for costs not covered are mutually exclusive.

¹⁵ For more details see: <https://guichet.public.lu/fr/entreprises/financement-aides/aides-recherche-developpement/rdi/aide-entreprises-innovantes.html>

¹⁶ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/07-juillet/22-aides-investissements.html

¹⁷ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/04-avril/06-regimes-aides-covid19.html

¹⁸ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/12-decembre/17-couts-non-couverts.html

¹⁹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/03-mars/24-aides-entreprises.html



3.1.2. Fiscal policies and debt sustainability

In its coalition agreement, the government committed itself to complying with the medium-term budgetary objective (MTO) throughout the legislative period and to consistently ensuring that the public debt remains below 30% of GDP at all times.

Following the activation of the severe economic recession clause, the Government has relied on budgetary flexibility to take all necessary measures to effectively combat the pandemic. The Government is continuously monitoring its fiscal policy stance and plans to pursue prudent fiscal positions over the medium term when economic conditions permit. Further details on fiscal policy and debt sustainability are provided in the Stability and Growth Programme 2021.

3.1.3. Health care system

The COVID-19 pandemic has highlighted the particular importance of a resilient and well-functioning health system. In order to ensure the capacity of the health system to respond to the health crisis as well as to be able to counter possible future crises, the government has taken several measures, including strengthening the health workforce base as well as further developing the infrastructure.

- In this context, it was decided to set up a reserve of healthcare professionals. Through this mechanism, private doctors or any person practising a health profession on a private basis can join this reserve through a fixed-term government employee contract.
- In addition, a general practitioner on-call line ensuring on-call availability for nursing homes from 8 p.m. to 7 a.m. has been set up and new COVID-specific rates for the care of COVID patients have been introduced. This on-call line has been made permanent. An agreement organising the continuity of general medical care in accommodation and care facilities for evening, night, weekend and public holiday replacements was signed by the Ministry of Health, the Ministry of Family Affairs, Integration and the Greater Region, COPAS²⁰ and AMMD²¹ on 28 September 2020.
- In order to strengthen the capacity of the health system, the government decided to acquire additional respirators for intensive care units, to increase capacity in terms of personal protective equipment, PCR tests and critical drugs, and to set up a plan to increase hospital capacity.
- At the end of April 2020, the government presented the lockdown exit strategy, supported by a large-scale PCR testing and contact tracing system, which allowed Luxembourg to accompany the gradual lifting of lockdown restrictions in a closer and more informed manner. The overall objective was to avoid a second wave of infected persons in the context of coming out of lockdown, and thus having to renew lockdown measures. The Large-Scale Test 2.0 project, which started in September 2020, was co-financed by the European Union through the React-EU programme, which will be managed by the ERDF Managing Authority of the Ministry of Economy. The EU regulation for this programme was adopted on 23 December 2020.
- Also, “COVID” primary care consultation centres as well as a COVID epidemiological monitoring and reporting system have been set up.

²⁰ COPAS represents service providers who offer assistance and care services to elderly, sick, mentally ill or disabled people, either at home or in an institution.

²¹ The Association of Doctors and Dentists.



In 2019, the Ministry of Health presented the conclusions of a study that consisted of a listing of the quantitative (available health personnel resources) and qualitative (training, skills, etc.) health and medical professions at national level. One of the main conclusions of this study highlighted the vulnerability and dependence of Luxembourg on health professionals from neighbouring countries. Furthermore, it was noted that Luxembourg is not in a position to ensure the long-term health care of its population in Luxembourg with domestic health profession certifications alone, in particular the nursing professions. In order to develop university medical studies in Luxembourg²² and to improve the attractiveness of the medical and health professions, a series of measures have been put in place to respond to future public health challenges:

- Creation of an inter-ministerial committee made up of representatives of the Ministry of Health, the Directorate of Health, the Ministry of Family Affairs, Integration and the Greater Region, the Ministry of Social Security, the Ministry of National Education, Children and Youth and the Ministry of Higher Education and Research, responsible for recommending measures to ensure that the training of health professionals is in line with scientific and technical progress and to meet the future public health challenges facing Luxembourg;
- Recasting and updating of the missions and allocations of health professionals practising in Luxembourg (nursing professionals, profession of caregivers, etc.)²³
- Reform of the training of health professions in Luxembourg, e.g. creation of new health professions, organisation and implementation of a Bachelor of Sciences in certain categories of the nursing field;
- Launch in 2021 of a wide campaign to enhance and promote the health professions.

3.2. Effects of the crisis on employment

The Council of the European Union recommends that Luxembourg take action to “mitigate the employment impact of the COVID-19 crisis, with special consideration for people in a difficult labour market position.”

The COVID-19 pandemic forced the government to take multiple measures and impose far-reaching restrictions affecting the population, businesses and the economy as a whole. The resulting economic crisis has put employment at risk. This is also reflected in the number of job seekers. On 31 January 2021, the number of available resident job seekers registered with ADEM was 19,882. Compared to January 2020, this is an increase of 3,406 people or 20.7%. The seasonally adjusted unemployment rate calculated by STATEC is 6.3%. In addition, the number of resident job seekers receiving full unemployment benefits rose by 1,679 or 20% year-on-year to 10,066. During January 2021, employers reported 2,792 vacancies to ADEM, a decrease of 36%. As of 31 January 2021, ADEM had 6,582 vacancies on file. Thus, over one year, the number of available positions has fallen by 14.4%.

To mitigate the effects of the health crisis, the government is devoting its full attention to maintaining employment and has approved a series of measures to this end since the beginning of the crisis, in March 2020, as described below.

- Partial unemployment for reasons of force majeure during the crisis period (18 March to 24 June 2020)

²² For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiques/2020/01-janvier/24-developpement-etudes.html

²³ For more information on this project, please refer to the contribution under “COMPONENT 1B: Improving the resilience of the health system” of the Luxembourg Recovery and Resilience Plan.



Avoiding redundancies by having the State pay the salaries of employees through the Employment Fund, who receive 80% of their wages. The short-time working scheme “for cases of force majeure - Coronavirus” provided for front-loading, or a system of advance payments to applicant companies, with after-the-fact payment of the compensation actually due to the companies on the basis of statements.

- Increasing the short-time working allowance to 100% of the unskilled social minimum wage (SSM-NQ)

Avoiding the precariousness of employees paid at SSM-NQ rates by increasing the amount of the short-time working allowance to 100% of the SSM-NQ, as an exception to the normal compensation rate of 80%.

- Gradual transition from the “COVID-19” partial unemployment scheme to the structural partial unemployment scheme, a simplified scheme for the worst hit sectors (from July 2020, and extended until 30 June 2021)

The various short-time working schemes have been continuously adapted to best reflect the health and economic situation and to take into account the measures decided by the legislature in the fight against the spread of the virus, while preparing for the end of the crisis. Companies thus benefit from a simplified structural partial unemployment scheme for the most vulnerable sectors, partly conditional on the development of a basic recovery plan or a job retention plan.

- Doubling of the cost-of-living benefit for the year 2020²⁴

On 20 May 2020, the government adopted an amendment to the regulation granting the cost-of-living benefit in order to provide beneficiaries double the amount provided in 2020.

The aim of this amendment was to provide specific support to low-income households who have been affected particularly negatively by the COVID-19 crisis. People employed in sectors in which incomes are often at or slightly above minimum wage level in particular have been negatively affected by the short-time working scheme and the resulting loss of revenue.

- Extension of entitlement to unemployment benefit

Extension of the duration of unemployment benefit entitlements, whether initial or extended, for the duration of the state of crisis (3 months).

- Extension of residence permits for third-country nationals

During the state of crisis, visas and residence permits of third-country nationals that have expired remain valid.

- Modification of lump-sum allowance for domestic expenses, expenses for assistance and care due to a state of dependence and for childcare expenses

Increase the flat-rate allowance from €5,400 to €6,750 in the 2020 fiscal year for taxpayers who employed a household helper for the period from April to December 2020 to perform domestic tasks in their home.

- Modified taxation of teleworking for Belgian, French and German border workers

²⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/05-mai/20-allocation-vie-chere.html



Enable frontier workers to work from home during the crisis without their remuneration being taxed in their home country.

- Bilateral agreements to ensure that, for teleworking frontier workers, the applicable social security legislation does not change

Under EU rules (regulation EC 883/2004), above a certain threshold insured frontier workers who work remotely from home must be registered in their country of residence. In order to avoid such a change, which would spark a considerable administrative and financial burden for all concerned, agreements have been concluded between Luxembourg and France, Belgium and Germany to derogate from this rule. Thus, cross-border teleworkers continue to be registered with the Luxembourg social security system. This measure is currently in force until 30 June 2021, but an extension will be considered depending on how the health crisis evolves.

- Support for investment in infrastructure to implement teleworking.

Support companies that invest in tools to enable their employees to work remotely.

- Support measures for self-employed professional artists and intermittent performers and employees in the cultural sector

Granting additional social measures, guaranteeing subsidies for cancelled projects and granting partial unemployment to employees in the sector.

- The law dated 20 June 2020 on the introduction of leave for family support as part of the fight against the COVID-19 pandemic.

Leave for family support is a form of paid leave for employees and self-employed persons who are required to take care of their relatives in the time periods during which care facilities for disabled or elderly people are closed due to the ongoing pandemic. Its aim is to ensure that people in this situation are not forced to use up their annual leave to take care of their relatives.

The law dated 23 November 2020 amending the law dated 20 June 2020 on the introduction of leave for family support in relation to the COVID-19 pandemic extended leave for family support until 24 May 2021.

A bill is currently being prepared to make leave for family support permanent after 24 May 2021.

- Financial compensation procedure for care providers

The government has introduced a procedure for financial compensation for the loss of earnings and additional costs that care providers have suffered through no fault of their own because of the regulatory measures taken during the COVID-19 health crisis.

- Extension of certain active employment policy measures

Temporary extension ranging from 24 July 2020 to 31 December 2021 of certain active employment policy measures to categories of job seekers previously excluded or relaxation of the terms for granting them:



- Opening of aid for the recruitment of older unemployed persons to job seekers aged between 30 and 45; easing of the terms for granting aid in the event of a job retention plan, declaration of bankruptcy or judicial liquidation;
 - Professional training course: open to job seekers under 30 years of age who have been registered with ADEM for at least one month;
 - Professional reinsertion contract: open to job seekers aged between 30 and 45; increase in state aid for certain categories of beneficiaries, including job seekers at least 45 years old, those in outplacement, those with the status of disabled worker or those belonging to the under-represented sex.
- Skills round table for future areas of expertise²⁵

Analyse requirements in skills, identify the most promising professional fields, determine a training action plan and implement it. The round table periodically assembles the social partners (Ministry of Education, Ministry of Labour, companies and trade unions) beginning from autumn 2020 onwards and should result by 2022 in the development of a set of specifically designed training pathways, or skills bridges.

The government also plans to commission the OECD to carry out a study on the future skills requirements of the Luxembourg labour market.

- “Future Skills” programme²⁶

ADEM's training programme for job seekers on benefits. The training course aims to facilitate the professional reintegration of the participants by focusing on the transversal skills required by the labour market (“soft skills”, digital skills and project management skills). The training is followed by a 6-month in-house practice in the public sector (OTI).

A second phase of the programme plans for carrying out sector analyses of labour and skills requirements and offering strategic workforce planning support to companies affected by the digital transition.

- “Digital Skills” training voucher²⁷

The “Digital Skills” training voucher consists of offering, during the year 2021, partially unemployed persons access to digital training, in order to support them in the digital transition of the economy and jobs.

- *Diplom +*

The “*Diplom +*” training programme for young people who need a helping hand in the transition from high school to working life or higher education. The economic consequences of the COVID-19 pandemic have increased the risks inherent in this transition period. The time it takes to find a first job is likely to be longer due to fewer job opportunities in the labour market. Young people who were considering higher education may face new restrictions on international mobility imposed by some countries. This two-semester continuing education

²⁵ For more information on this project, please refer to the contribution under “COMPONENT 1A: Skilling, Reskilling et Upskilling » Recovery and Resilience Facility of Luxembourg.

²⁶ For more information on this project, please refer to the contribution under “COMPONENT 1A: Skilling, Reskilling et Upskilling » Recovery and Resilience Facility of Luxembourg.

²⁷ For more information on this project, please refer to the contribution under “COMPONENT 1A: Skilling, Reskilling and Upskilling” of the Luxembourg Recovery and Resilience Plan.



offers them the opportunity to increase their skills and competences, to acquire or reinforce transversal skill useful in both professional and student life, thus improving their chances of finding a job or succeeding in their future higher education studies. It also avoids a possible unfortunate gap in a person's curriculum.

Box 1: Making the social and solidarity economy a player in a fair and responsible recovery

Social entrepreneurship is built on the basis of a social and societal need that the entrepreneur has identified and to which he or she provides a solution through his or her economic activity. It is therefore this capacity for social innovation specific to the social and solidarity economy that will make it possible to mitigate the negative consequences of the pandemic while creating quality jobs to meet the specific needs of a local or regional population.

Moreover, Social and Solidarity Economy (SSE) enterprises have a strong potential to further promote sustainable development, in particular the circular economy. Thus, the fundamental principles of the SSE, the principle of non-profitability, democratic management and social utility or general interest, can contribute in a different way to the development of the circular economy in all areas by putting the human being back at the centre of the economy.

The ability to respond in a flexible and innovative way to societal needs that emerge and evolve over time has given increasing importance to social entrepreneurship, not only at the European political level, but also among entrepreneurs who seek through their economic activity to achieve social or societal objectives that have not yet been met.

Social and solidarity-based entrepreneurship is thus an important lever likely to strengthen our societies and our economic fabric in a sustainable and responsible manner and contribute to a rapid recovery of our economic and social model while improving it.

In order to further support the development of the SSE in Luxembourg, the Government will focus its efforts on three strategic areas:

- Better understanding of the social and solidarity economy
- Equipping social and solidarity economy enterprises
- Changing scale.

The **first approach** consists in identifying, raising awareness and training in the social and solidarity economy, starting at secondary school age.

In 2020, social and solidarity entrepreneurship became part of the mini-enterprise programme implemented with *Jonk Entrepreneuren Luxembourg* on a national scale to raise awareness of social entrepreneurship among young people. Pupils who created an SSE mini-company can benefit from personalised support and even use supervised co-working space to bring their project to fruition.

In addition, ad hoc courses in social entrepreneurship for secondary education will be developed in partnership with the SCRIPT (Educational and Technological Research and Innovation Coordination Service).

During 2021, a portal for the Social and Solidarity Economy will be created to bring all the information and news relating to this rapidly evolving branch of the economy in a single location.

Finally, a representative survey will be carried out among the resident population to better understand the expectations related to the SSE economic model and will allow the MTEESS to better target its actions.



The **second approach** aims at providing the actors of the social and solidarity economy sector with adequate tools to be able to achieve their full potential.

To this end, the idea is to improve the legal framework to stimulate existing entrepreneurs as well as new business creators to opt for social entrepreneurship or to develop. A bill to reform the legislation on the Social Solidarity Economy will be tabled in the first quarter of 2021.

In addition, and in order to ensure appropriate advice for all project leaders, a tailor-made support service coordinated by the Ministry of Labour, Employment and the Social and Solidarity Economy (MTEESS), the Social and Solidarity Economy Department, will operate as a public service. It will be entirely free of charge and will be accessible to any person or enterprise wishing to engage in social entrepreneurship and social innovation. In addition, SSE enterprises can be hosted and supported at the House of Social Economy and Social Innovation during the launch and consolidation phase of their activities.

The IMPULS social entrepreneurship training programme, carried out in partnership with Nyuko, will be continuously improved to enable project leaders to bring their social enterprise idea to fruition with a solid entrepreneurial background, personalised advice from specialised coaches and support from mentors during the launch phase.

The **final approach**, “scaling up”, is based on the assumption that the social economy will be able to develop to its full potential if it takes advantage of the opportunities offered by the EU's internal market and digitalisation.

An initial study on the potential of the Social Solidarity Economy in the framework of the circular economy in the Greater Region will be carried out in 2021.

In order to achieve economies of scale and thus aim for maximum profitability, raw materials are probably not revalued according to their full potential, but according to the cost/benefit relationship in the classic channels. However, sorting and recycling are activities that require little or no skilled labour. Therefore, for social enterprises that seek to build pathways to integration for people in difficulty, they represent a tremendous opportunity. SSE enterprises are locally based and can therefore be a legitimate driver for cross-border cooperation in the Greater Region.

3.3. Employment rate of older people and long-term sustainability of the pension system

The Council of the European Union recommends that Luxembourg take action to *“increase the employment rate of older workers by enhancing their employment opportunities and employability. Improve the long-term sustainability of the pension system, including by further limiting early retirement.”*

3.3.1. Employment rate of older people

The new mechanism to combat long-term unemployment, which has been in effect since July 2017, aims to support the creation of new jobs in the municipality, para-public or social services sector that correspond to real needs. These jobs must be new, not targeting replacement of staff and, above all, not creating situations of unfair competition compared to the private sector. Specific measures are aimed at job seekers aged 50 and over. Since the programme was launched, 80% of the beneficiaries of this mechanism are 50 years or older.

The reform of the professional reclassification system, in effect since 1 January 2016, aims at accelerating procedures, achieving a more thorough preservation of individual rights in external reclassification and creating conditions conducive to internal reclassification. The concept was 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. On the basis of the first conclusions drawn from the implementation of the 2016 law, and in close consultation with the social partners, adjustments were made to certain points of this reform by means of the law of 24 July 2020), in force since 1 November 2020.

The professionalization placement programme²⁸ and the professional reinsertion contract²⁹ are two measures that have become applicable since 2016. They are intended for job seekers at least 45 years old, those in outplacement or those with the status of disabled worker. The first measure is a work placement with a maximum period of six weeks giving 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 the context of the pandemic, these measures have been temporarily extended (from 24 July 2020 to 31 December 2021) to categories of job seekers previously excluded³⁰.

The reform of the early retirement schemes³¹, including the solidarity, progressive and early retirement systems of shift and night workers, excluding adjustments, in effect since December 11th, 2017, aims to target more employees with difficult jobs, consequently placing greater emphasis on the working conditions of employees, while favouring the retention of older workers in companies. More precisely, the law abolishes the early retirement-solidarity system and has modified other early retirement systems. In principle, the last applications for early retirement can be submitted in the first half of 2021.

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 learning³². 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.

3.3.2. Long-term sustainability of the pension system

The various foundations of social security are regularly monitored in order to ensure that the services provided are in line with the needs of the insured and that their financial sustainability is assured over a given period, which varies depending on each of the pillars of the system. In recent years, the monitoring mechanisms have been strengthened or extended by specific legislative provisions introduced in the reforms. This applies in particular to the pension insurance and long-term care insurance schemes, which require foresight in the medium and long term by the very nature of their services.

The results of the analyses carried out through the existing mechanisms or on an ad hoc basis are discussed with the social partners and other stakeholders to ensure good strategic management and long-term sustainability of each pillar.

With regard specifically to the general pension insurance scheme, whose legislative reform entered into effect on 1 January 2013, the legislation provides that the General Inspectorate of Social Security

²⁸ For more details see: <https://adem.public.lu/fr/demandeurs-demploi/aides-financieres-mesures/mesures-emploi/stage-professionnalisation.html>

²⁹ For more details see: <https://adem.public.lu/fr/demandeurs-demploi/salaries-capacite-travail-reduite/aides-mesures/mesures/contrat-reinsertion-emploi.html>

³⁰ See the section on the effects of the crisis on employment.

³¹ Law dated 30 November 2017 <http://legilux.public.lu/eli/État/leg/loi/2017/11/30/a1032/jo>

³² For more details see: <https://men.public.lu/fr/publications/formation-adultes/informations-generales/livre-blanc-lifelong-learning.html>



(IGSS) analyse the financial situation of the scheme every five years in the middle and end of the 10-year coverage period. One of the aims of the reform was to adjust the replacement rate of pensions to life expectancy and to plan for regulating mechanisms if financial resources are inadequate, as well as to reduce the gap between legal and effective retirement ages, by means of an active policy to facilitate the conditions for maintaining older employees in employment.

The next IGSS actuarial review of the general pension insurance scheme will take place at the end of this year. In this review, the IGSS will update its forecasts for financing the system. Once the report is available, it will be submitted to the government and discussed with all stakeholders, mainly the social partners, to draw conclusions.

This is in line with the government's desire to involve the social partners in fundamental discussions that concern the whole of society. It should be noted in this respect that the last IGSS actuarial assessment presented on 2 December 2016³³ had been discussed within a group of experts appointed by all stakeholders. This group had been set up by the government in place between 2013 and 2018. Thus, the analysis of the general scheme carried out in 2016 based on the IGSS actuarial balance sheet regarding the financial situation of the general pension insurance scheme presented on 2 December 2016³⁴, concludes³⁵ that the general pension insurance scheme is in a rather comfortable financial position.

Indeed, consecutive surpluses have resulted in the accumulation of a compensation reserve which, in May of 2019, corresponded to 4.81 times the amount of annual pay out, well above the minimum required level of 1.5 times the amount of annual pension benefits. The medium-term forecasts and the long-term actuarial projections confirm that the current overall contribution rate of 24% makes it possible to comply with the stipulations of Article 238 of the Social Security Code until the end of the current coverage period extending from 2013 to 2022.

The report also highlights the fact that while the impacts of the 2012 pension insurance reform, which went into effect on 1 January 2013, on the financial situation of the scheme are still not fully apparent, and actuarial projections confirm that the mechanisms introduced by the pension insurance reform will have a positive effect on the financial situation of the general retirement system over the long term.

With regard to long-term care insurance, which currently has just under 15,000 beneficiaries, the government has undertaken a reform to modernise this pillar in order to meet the challenges of demographic change and to continue to guarantee fair access to quality benefits³⁶. The main objectives of the reform³⁷, which took effect on 1 January 2018, consist in better individualisation of the offer of quality services that meet the daily needs of each person, an improvement in quality by standards and clear criteria with adequate controls, simplification of procedures and consolidation of the system in the light of societal developments and in compliance with the fundamental principles of the basic 1998 law.

In addition, the reform provides for tools to better monitor the entire system of long-term nursing care insurance, thus allowing better anticipation of future changes and financial equilibrium of the

³³ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2016/12-decembre/02-bilan-assurance-pension.html

³⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2016/12-decembre/02-bilan-assurance-pension.html

³⁵ The Pensions Group report is available by going to the following link: <https://gouvernement.lu/fr/publications/rapport-etude-analyse/igss/rapport-du-groupe-de-travail-pensions/2018/rapport-du-groupe-de-travail-pensions.html>

³⁶ To review the key elements of the reform, please go to: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2016/06-juin/21-schneider-copas.html

³⁷ Law dated 12 July 2017.



system. This involves drawing up analyses and reports on the quality of the services provided (Long-term care insurance assessment and control administration) and by setting a balance between the level of the packages established with the reform and the real needs in terms of essential acts of life (IGSS), the first report of which was produced in 2019³⁸.

This step is part of the government's effort to involve social partners and more broadly all stakeholders to the widest extent possible in developing and implementing the various reforms through concerted action by all parties. The aim of this approach is to ensure that the reforms are also driven as much as possible by the stakeholders and to continue to ensure access to quality benefits in the future while maintaining a proper financial balance of the various social security pillars. Indeed, in addition to the financial balance which will obviously be maintained, the level of benefits of each pillar is just as essential, be they in terms of pensions, health care (health insurance) or long-term care (long-term care insurance).

This priority is in line with the United Nations' sustainable development objectives³⁹, and more specifically with those aimed at ensuring that all protected persons have access to accessible and high-quality social security benefits. This also applies to pensions, the level of which must allow all beneficiaries to live in dignity, particularly pensioners who had a low income throughout their lives.

The same applies to benefits aimed at maintaining a certain degree of independence for beneficiaries who need support from a third party (dependency situation).

3.4. Corporate liquidity and investment-related economic policy

The Council of the European Union recommends that Luxembourg take action to *“ensure effective implementation of measures supporting the liquidity of businesses, in particular SMEs and the self-employed. Front-load mature public investment projects and promote private investment to foster the economic recovery. Focus investment on the green and digital transition, in particular on sustainable transport and buildings, clean and efficient production and use of energy, contributing to a progressive decarbonisation of the economy. Foster innovation and digitalisation, in particular in the business sector.”* and *“focus economic policy related to investment on fostering digitalisation and innovation, stimulating skills development, improving sustainable transport, and increasing housing supply, including by increasing incentives and lifting barriers to build.”*

3.4.1. Business liquidity

The extensive restrictions arising from the COVID-19 pandemic aimed at minimising the number of deaths and the adverse effects of disease on human health have brought many economic activities to a halt. In order to avoid a liquidity crisis, in which otherwise healthy companies might not have the liquidity to meet their commitments, the government put in place several support measures. Most of these measures were included in the Stabilisation Programme and the 'Neistart Lëtzebuerg' package.

- Emergency aid of €2,500 for the self-employed⁴⁰

The self-employed play an essential role for the Luxembourg economy and are also affected by the COVID-19 pandemic. In order to support them financially, on 8 April 2020 the government approved a draft Grand Ducal Regulation aiming at setting up a certified emergency allowance of €2,500. Eligibility for this support measure is subject to several conditions. The applicant must be experiencing temporary financial difficulties due to the

³⁸ Long-term care insurance: Forecast analysis report, IGSS, 2019: <https://igss.gouvernement.lu/fr/publications/rapport-previsionnel-2019/2019/rapport-analyse-previsionnel.html>

³⁹ Luxembourg 2030: Third National Plan for Sustainable Development, December 2019: <https://environnement.public.lu/dam-assets/documents/developpement-durable/PNDD.pdf>

⁴⁰ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/08-aide-independants.html



consequences of COVID-19, must employ less than 10 people and his professional income used as a basis for calculating social security contributions must not exceed 2.5 times the minimum social wage.

- Additional direct aid for self-employed persons depending on their income^{41, 42}

The government had decided to strengthen the support mechanism for self-employed persons affected by the financial consequences of the COVID-19 pandemic. On 6 May 2020, the Government Council approved a draft Grand Ducal Regulation aimed at introducing a new, one-off, non-reimbursable financial aid for persons in this category. The amount of the new aid varies according to the bracket of taxable income in which the person falls, these amounts being fixed at €3,000, €3,500 and €4,000. This aid is in addition to the certified emergency allowance set up by Grand Ducal Regulation dated 8 April 2020 for self-employed workers. It will also benefit insurance brokers and agents who were excluded from the scope of the first aid. Furthermore, the aid can be granted regardless of the number of persons employed by an independent operator. It is conditional upon not receiving a professional income exceeding the threshold of 2.5 times the minimum social wage.

From 29 January 2021, self-employed persons can apply for a new, one-off, financial grant for themselves. The amount of the new aid varies according to the bracket of taxable income in which the person falls, these amounts being fixed at €3,000, €3,500 and €4,000. After the creation of two emergency allowances for the self-employed, the government has decided to introduce a third direct non-repayable grant.

- Direct aid in the amount of €5,000 for micro-enterprises that have ceased their activities due to a government decision

In order to reinforce the immediate financial support to micro and small enterprises, generally the most vulnerable to unforeseeable events such as COVID-19, on 25 March 2020 the Government Council approved a draft Grand Ducal Regulation aiming at introducing a non-refundable aid of €5,000 to enterprises with less than 10 employees forced to cease their activity as stipulated by the amended regulation of 18 March 2020.

- Additional direct aid of €5,000 for micro-enterprises and direct aid of €12,500 for companies with between 10 and 20 employees⁴³

On 22 April 2020, the Government Council approved two draft Grand Ducal Regulations aimed at introducing new financial support measures for micro and small commercial and craft enterprises.

Companies employing between 10 and 20 people will be eligible for a one-off allowance, which amounts to a lump sum of €12,500.

In addition, the lump-sum amount of €5,000, which was created by Grand Ducal Regulation of 25 March 2020, will be extended to companies with less than 10 employees that are forced to close or halt their activities and that, without having been subject to such a measure, suffer a loss of at least 50% of revenue between 15 April 2020 and 15 May 2020.

⁴¹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/05-mai/06-indemnité-indépendants.html

⁴² For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/01-janvier/08-indemnité-indépendants.html

⁴³ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/22-indemnités-entreprises.html



A €5,000 indemnity will also be granted to businesses with fewer than 10 employees that have not been allowed to restart their business or that, although allowed to restart, suffer a loss of at least 50% of their turnover during the period from 15 April 2020 to 15 May 2020.

- Aid in the form of a repayable advance⁴⁴

In order to strengthen the measures supporting companies in temporary financial difficulty, the government has introduced a capital grant in the form of a repayable advance aimed at meeting companies' liquidity needs. This aid scheme is an additional measure that complements the instruments already in place to support businesses and self-employed persons in difficulty following the economic crisis triggered by the Coronavirus pandemic.

Large, medium and small enterprises as well as the self-employed can benefit from this measure. The maximum amount of aid, which takes the form of a repayable advance, is €800,000 per company or group of companies. This advance can cover up to 50% of the eligible costs, including personnel costs and rents for the period from 15 March to 15 May 2020. In the case of self-employed professional activity, the income is assimilated to personnel costs, provided that the person is registered with the social security system as a self-employed person.

The aid scheme for companies in temporary financial difficulties was extended for a period of four months as part of the “*Neistart Lëtzebuerg*” support package. Reimbursable advances could thus be requested for the company's personnel costs and rent charges for the months falling within the period from 15 March to 15 September 2020. Companies that had already received a repayable advance for their costs over this period can apply for an additional repayable advance to cover part of their costs for the period from 15 May to 15 September 2020. This gives them additional flexibility to meet liquidity needs. The law stipulates that an application for aid must be submitted by 1 June 2021.

- Aid for costs not covered⁴⁵

The law of 19 December 2020 introduced a granting of aid to contribute to the costs of companies whose business is seriously affected by the COVID-19 crisis. This aid is aimed at any company belonging to the tourism, hotel and catering, events, culture, entertainment or shop retail sectors and related sectors, as well as managers of continuing vocational training organisations and physical training centres. The aid is granted in the form of monthly capital grants calculated on the basis of the non-covered costs to enterprises which, during all or part of the period between 1 November 2020 and 30 March 2021, have suffered a loss of monthly revenue of at least 40% compared with the corresponding month in 2019. The maximum aid intensity is 70% of eligible uncovered costs for medium and large enterprises and 90% of eligible uncovered costs for micro and small enterprises. In addition, the amount of aid may not exceed €20,000 per month for a micro-enterprise, €100,000 per month for a small company or €200,000 per month for a medium-sized or large enterprise. The extension of the stimulus package for uncovered costs up to and including June 2021 came into force on 24 March 2021.⁴⁶ It should be noted that the recovery aid and the aid for costs not covered are mutually exclusive.

⁴⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/03-pme-aide-covid19.html

⁴⁵ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/12-decembre/21-covid19-soutien-entreprises.html

⁴⁶ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/03-mars/24-aides-entreprises.html



- Moratorium granted by some banks on the repayment of existing loans

As part of the economic stabilisation programme, it has been agreed that certain banks in Luxembourg may postpone the repayment of loans to enable companies in difficulty to better cope with cash flow difficulties.

- Payment of an advance on extended family leave allowances⁴⁷

In order to prevent an abrupt reduction in employers' liquidity as a result of the existing obligations to pay a refund of wages to the parents concerned, the Joint Social Security Centre paid an advance on the cash benefits for extraordinary family leave for the months of March, April and May 2020 to employers who had applied for it. This temporary measure is no longer in force. Reimbursements will be made as usual by the Employers' Mutual Insurance Association on the basis of the social security administration statement of account, after the relevant declarations of incapacity for work and wages.

- State guarantee scheme for new bank loans for a maximum of 6 years⁴⁸

On 21 April 2020, the government signed an agreement framing the regime of State-guaranteed loans with representatives of several banks to promote the economy of Luxembourg against the backdrop of the COVID-19 pandemic. Under this new scheme, which was announced on 25 March 2020 as part of the economic stabilisation programme and introduced by the law of 18 April 2020, the State guarantees bank loans granted to companies up to a total of €2.5 billion. In order to cover their immediate working capital and investment needs, companies can apply to their bank to take out a loan of up to 25% of their turnover, which will be guaranteed by the State up to 85%. As a result, the participating banks, which retain a 15% risk share, can grant a larger number of loans, and for higher amounts. In total, the banks can now grant guaranteed loans to companies affected by the crisis up to a maximum of €2.94 billion. These state-guaranteed loans are part of the government's package of measures to help the economy overcome the current crisis. This government guarantee scheme has been extended until 30 June 2021.⁴⁹

- Loosening of repayment terms for SNCI loans and credits⁵⁰

In the context of the COVID-19 pandemic and the repercussions it is likely to have on Luxembourg companies, the *Société Nationale de Crédit et d'Investissement* has decided to suspend the repayment of capital for the 31/03 and 30/06 due dates for all direct and indirect loans.

- "Special Crisis Financing (FSAC)" via the company's bank and the SNCI⁵¹

The SNCI has set up a "Special Anti-Crisis Financing - FSAC" in an amount of up to €400 million, corresponding to a total leverage effect of nearly €700 million, including bank financing. This instrument is intended for Luxembourg SMEs and large companies with an establishment authorisation under the law dated 2 September 2011 with a view to financing any exceptional needs arising in the context of the COVID-19 crisis, for financing decisions taken until 31 December 2020. The financing is done indirectly through the client's usual bank - the SNCI finances up to 60% of the need, provided that the bank finances 40%. The SNCI share of FSAC

⁴⁷ For more details see: <https://ccss.public.lu/fr/actualites/2020/07/13.html>

⁴⁸ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/21-gramegna-banques.html

⁴⁹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/11-novembre/13-delles-fayot-tanson-mesures.html

⁵⁰ For more details see: <https://www.snci.lu/news/publications/moratoire-prets/>

⁵¹ For more details see: <https://www.snci.lu/news/publications/covid-19-financement-special-anti-crise/>



amounts can vary between €12,500 and €10 million. The SNCI disbursement is made without further formalities upon request by the client's bank. The maximum duration of the FSAC is 5 years with an initial grace period on capital repayment of a maximum of two years.

- Five-year financing in favour of the SME mutual societies and mutual societies for sureties (SNCI)

To enable the mutual societies of professional chambers to extend the guarantees provided to SMEs.

- “Special SME Anti-Crisis Guarantee” by the SNCI in collaboration with banks active in business financing⁵²

As of 5 May 2020, the Special Anti-Crisis Guarantee for SMEs set up by the SNCI was declared operational. This is an indirect guarantee instrument granted through commercial banks to support financing by banks to cover the exceptional financing requirements brought on by the COVID-19 crisis.

- Strengthening of measures to support exports and international development (Office du Ducroire - ODL)⁵³

In order to further support companies that export and prospect internationally, including to markets affected by the COVID-19 pandemic, the ODL has put in place the following measures to reinforce its support to Luxembourg companies:

- Increase of the guaranteed percentage of limits and contracts issued during the crisis in the framework of export insurance;
- Collaboration with the *Mutualité de Cautionnement* with the implementation of an insurance for guarantees issued by the mutual society, thus enabling them to increase their capacity;
- Flexibility of the “Bank Credit Insurance” product, which allows banks to partially reduce the risk of non-repayment of the loans they grant to Luxembourg exporters to develop their international activities. In this context, the ODL will also make the conditions applicable to this product more flexible, in particular by increasing the percentage of insurance possible and by broadening the definition of eligible bank credits;
- Increasing the percentage of insurance in the framework of its bank guarantee insurance product, which is aimed at Luxembourg exporters' banks to insure the guarantee line granted by the bank, and including import guarantees in the scope of the insurance;
- Reduction of the time limit for making a claim, which will speed up compensation to companies reporting a claim;
- Reduction of the time limit for reimbursement of paid invoices in the context of financial aid activity.
- Reinsurance programme for private credit insurers. Under this reinsurance programme, credit insurers undertake to keep the credit limits used in the 12 months preceding 1 March 2020 intact as far as possible until the end of 2020. In this way, trade relations and

⁵² For more details see: <https://www.snci.lu/news/publications/covid-19-garantie-speciale-anti-crise-pme/>

⁵³ For more details see: <https://odl.lu/en/covid-19/>



flows can be maintained. In exchange for this commitment, the ODL, acting on behalf of the State, will re-write the risks underwritten by the credit insurers.

- Fiscal measures to support businesses and the self-employed in the face of the COVID-19 pandemic⁵⁴

In response to the crisis caused by the spread of COVID-19, the Government has decided to implement several tax measures to benefit legal entities and individuals. The main objective of these measures is to alleviate the financing and liquidity needs of companies and self-employed people who are strongly impacted by the current economic restrictions.

- Cancellation of the advance tax payments for the first two quarters of 2020

In terms of direct taxes, tax advance facilities and payment deadlines were granted to businesses and self-employed persons. More specifically, legal entities and natural persons engaged in an activity generating commercial profit, agricultural and forestry profit or profit from the exercise of a liberal profession, who encounter liquidity problems due to the COVID-19 pandemic, can make a request to cancel the advance tax payments for the first two quarters of 2020. This applies to (corporate) income tax and municipal business tax.

- A four-month tax payment period

In addition, the same persons were able to apply for a four-month payment period for taxes falling due after 29 February 2020. This payment period will not entail interest on arrears and concerned municipality income tax, municipal business tax and wealth tax.

- Postponement for filing tax returns

The deadline for filing tax returns has been extended to 30 June 2021. This decision applies to both legal entities and natural persons. The deadline for submitting, revoking or amending an individual tax application is extended to the same date.

- Early refund of VAT

In the area of indirect taxes, the Registration, Domicile and VAT Administration refunded all VAT credit balances below €10,000 as from 17 March 2020. This is a measure that helped meet the cash flow needs of approximately 20,000 companies established in the Grand Duchy.

- Tax relief for landlords who waive a fraction of the rent due from tenants during the 2020 calendar year⁵⁵

In order to encourage landlords to reduce business rents under commercial leases, the government has introduced a tax allowance corresponding to twice the amount of rent reduced, up to a maximum of €15,000. This measure helped alleviate possible cash flow problems of businesses and support them during the first months of recovery. On 2 April 2021, the Government Council approved a bill to extend the tax rebate in 2021.

- Targeted social security measures in the interests of insured persons and employers⁵⁶

⁵⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/03-mars/17-mesures-fiscales-covid19.html

⁵⁵ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/05-mai/20-neistart-relance.html

⁵⁶ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/04-avril/20-mss-covid.html



On 3 April 2020, after consultation with the social partners, the government decided on a series of measures aimed at mitigating some of the effects of the COVID-19 pandemic in terms of incapacity for work due to illness and late payment of social security contributions. These include a suspension of the calculation of the 78 weeks of incapacity for work and assuming financial responsibility for financial compensation in the event of work incapacity.

- Suspension of the calculation of the 78 weeks for work incapacity

The legislation stipulates that an employee may not exceed 78 weeks of incapacity for work due to illness in a reference period of 104 weeks. To take account of the exceptional situation caused by the spread of COVID-19, the government decided to neutralise the days of incapacity for work due to illness in the calculation of the 78-week limit since the beginning of the crisis. Specifically, the days of incapacity for work between 18 March 2020 and the end of the state of crisis are not used in calculating this limit.

- Full coverage of the financial compensation by the National Health Fund (CNS) only in case of illness and partial resumption for therapeutic reasons

The normal mechanism of legal retention of remuneration is waived for incapacity to work solely on account of illness (and partial return to work for therapeutic reasons) and the CNS assumes responsibility for compensating sick employees from the first day of illness.

- Measures concerning social security contributions in the context of the COVID-19 crisis⁵⁷

In view of the impact of COVID-19 on companies and self-employed persons in Luxembourg, the government has taken a series of measures to support companies and self-employed persons by offering them more flexibility in managing the payment of social contributions.

Therefore, the CCSS (Joint Social Security Centre) implemented the following temporary measures as from 1 April 2020:

- Suspension of default interest for late payments (extended until 30 June 2021);
- Suspension of enforcement of contributions (extended until 30 June 2021);
- Suspension of the enforcement of fines by bailiffs;
- Suspension of fines to be assessed employers who are in arrears with their declarations to the CCSS.

These measures will enable employers who find themselves in a financially precarious situation as a result of the COVID-19 crisis to better manage the payment of their social security contributions in the coming weeks, without having to fear administrative sanctions.

While it is obvious that all social security contributions must still be settled, employers can nevertheless better organise their cash flow, in combination with other economic measures introduced in the context of the COVID-19 crisis.

3.4.2. Front loading of mature public investment projects

With regard to public investment, the government is pursuing an ambitious pace of public investment. In the law on the national budget (2021), direct and indirect investments amount to 4.3% of GDP, a rate significantly higher than the average rate of 3.7% over the period 2015-2019. About 20% of non-

⁵⁷ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2020/03-mars/19-cotisations-sociales.html



COVID-19 investment spending in 2020 was made in the interests of environmental and climate protection. In line with the European Union's ambition to foster the dual green and digital transition, Luxembourg's multi-annual financial programming foresees an overall envelope of €2.6 billion over the period 2021-2024 for investments in the field of mobility and climate, with a focus on the continued development of public transport and soft mobility. In addition, Luxembourg is planning numerous measures to further the digitalisation of the Luxembourg economic fabric. A total of around €1 billion is planned for the period 2021-2024 to further strengthen skills, infrastructure, competitiveness and continuous training in this area. The 2021 budget also includes a range of measures related to solidarity, affordable housing and a sustainable and competitive economy.

3.4.3. Private investment, digitalisation and innovation

In order to further encourage private investment, particularly in the areas of digitalisation and innovation, the government has taken a number of measures over the past few years and the government programme includes a further series of measures.

Even before the COVID-19 pandemic, digitisation had already emerged as a key strategic axis for increasing the efficiency of available resources and reducing environmental impacts and socio-economic disparities. The current crisis has dramatically accelerated digitalisation in the areas of work, education, administrative procedures and trade. Moreover, digitalisation is also playing an increasingly important role in health areas such as the public health system, with the development of remote consultations. This has incited the government to devote particular attention to digital development.

Indeed, a broader digital integration of the Luxembourg economy has been a major priority of the government for years and the government programme repeatedly mentions actions related to the field of digitalisation. In the Digital Economy & Society Index (DESI)⁵⁸, a European Commission report on the digital economy and society whose most recent edition was published in 2020, Luxembourg ranks 10th in the EU. Luxembourg is one of the leading countries for connectivity and human capital, while use of the Internet, in terms of integration of digital technologies by businesses and public digital services, the country ranks somewhat lower. Luxembourg therefore has a solid foundation for responding to future challenges as significant efforts have been continuously implemented over the last decade, although further efforts are still to be made in the area of digital integration of businesses and digital public services.

The government that took office at the end of 2018 created the Ministry of Digitalisation⁵⁹ whose main strategic pillars are digital government, digital inclusion, administrative reform and new technologies. This ministry solidifies the government's desire to place digital transformation at the heart of its initiatives.

In view of the advances brought about by the introduction of new technologies and the importance of data, the main objective of the Ministry of Digitalisation is the success of digital government. This aims to promote more participatory, innovative and flexible forms of governance, with objectives that go beyond the electronic management of on-line public services. Today, interoperability, accessibility, security and cross-functional operations are at the heart of the transformation towards digital government.

⁵⁸ For more details see: <https://ec.europa.eu/digital-single-market/en/desi>

⁵⁹ For more details see: <http://legilux.public.lu/eli/État/adm/agd/2018/12/05/b3633/jo> & <https://digital.gouvernement.lu/fr.html>



Therefore, in order to strengthen Luxembourg's support for the transition to digital government, the ministry commissioned a study on the digital government of Luxembourg, the “Digital Government Review of Luxembourg”, from the Organisation for Economic Cooperation and Development (OECD).

In order to facilitate the daily life of public administrations, citizens and businesses, the main objective of a large part of the activities of the Ministry of Digitalisation, which supervises the State Information Technology Centre (CTIE), is to strengthen Luxembourg's digital transformation through the digitalisation and simplification of administrative procedures in a user-friendly and secure environment⁶⁰. To this end, on 5 February 2021 the government in council approved its e-governance strategy 2021-2025, which focuses on the following six principles, namely “once only”, digital by default, transparency, inclusion and accessibility, reliability and security and interoperability/standardisation. These principles guide the public administration in its continued efforts to develop an innovative and efficient digital administration. Moreover, in February 2020, the Ministry of Digitalisation announced the inception of digital governance in Luxembourg by creating an inter-ministerial committee for digitalisation.

One of the ministry's other major challenges is digital inclusion. This means making digital opportunities available to all. Against this backdrop, the Ministry of Digitalisation has set up an inter-ministerial working group to discuss the current state of initiatives underway or planned by the various ministries with a view to launching the first national action plan for digital inclusion for the period 2021-2025.

In May 2019, the government presented the strategic vision on artificial intelligence and the strategy on the data economy. The government's AI strategic vision is inspired by the policy principles issued by the European Commission. In October 2019, an inter-ministerial coordination committee for the AI vision was set up by the government. At the same time, in order to promote the use of AI within the public administration, in November 2019 the government launched a call for projects aimed at public entities for experimentation projects in AI and data science, which it baptised AI4Gov. The initiative foresees the development of new services in order to become more efficient and which in the long run will therefore be less costly, and the development of new internal services or services for citizens that until now could not be achieved without AI.

At the beginning of 2020 a total of 14 projects were assembled, proposed by seven administrations demonstrating an interest in these technologies and in AI and data science themes. A jury composed of internal experts from the State and external experts from the private sector analysed these applications from the point of view of their maturity, innovation potential and use of AI. In 2020, a selection of six projects were allotted technical assistance through a call for support from external service providers, with the aim of producing a functional prototype that could be used by government employees internally or the general public externally. These projects were started in 2020 and will be completed in the first quarter of 2021 with concrete, quantifiable and presentable results. In December 2020, a new call for projects was launched by the AI4Gov committee.

Consequently, on 20 November 2020, the government implemented a key element of its strategic vision for AI by launching a public consultation on the perception of AI among the population and societal actors.

Other initiatives launched by the Ministry of Digitalisation in 2020 include:

- Governance of the National Interoperability Framework (NIF)

⁶⁰ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2019/06-juin/24-hansen-digitale.html



The NIF aims to provide a general framework for public actors falling under its scope to achieve a higher level of interoperability.

A high level of interoperability is a central and indispensable element for effective, sustainable and reliable progress on the path of digital transformation and for a modern, efficient and effective administration that defines users, their requirements, expectations and essential conditions as a fundamental priority.

After the approval in 2019 by the Government in Council of the National Interoperability Framework, the Ministry of Digitalisation presented a governance of interoperability system in the public sector at the end of 2020 to facilitate the effective implementation of the NIF principles and recommendations.

- Pilot projects in the framework of the Public Sector Blockchain (PSBC)

While Distributed Ledger Technology (DLT) is mainly used in the financial sector at present, this technology can also be used for monetary issues outside that area. A mere fraction of the potential applications that will be of interest to the public sector include digital identification, proof of land ownership and supply chain management. With this in mind, at the Infrachain Summit 2019, the Minister for Digitalisation announced the creation of a Public Sector Blockchain (PSBC). This project enables the government to develop a series of new blockchain applications reserved for the public sector as well as applications involving interactions between the public and private sectors.

In this context, a number of projects have resulted from the launch of the PSBC, such as the deployment by the CTIE of an initial solution for official recording of certain information access logs in order to be able to better guarantee the integrity of this data. A collaborative project between the Ministry of Digitalisation, the Ministry of Higher Education and Research (MESR) and a bank was launched in 2020 to digitise and simplify the granting of student loans.

The Ministry of Digitalisation is also involved at European level in the European Blockchain Partnership (EBP), which is setting up a European Blockchain Service Infrastructure (EBSI). This distributed infrastructure at European level will enable the launch of interoperable and cross-border services, such as data legalisation and support for digital identity.

The Ministry of Digitalisation has also established a consortium with Infrachain, the Luxembourg Institute of Science and Technology (LIST) and the Interdisciplinary Centre for Security, Reliability and Trust (SnT) of the University of Luxembourg to submit an initial EBSI use case implementation project in Luxembourg under the 2020 CEF Telecom - Blockchain call for projects.

- Implementation of the public enquiry platform⁶¹

In 2020, the Ministry of Digitalisation continued the development of a national electronic platform dedicated to public enquiries.

The project has several objectives: centralised on-line availability and increased visibility of information about public enquiry procedures, facilitation of citizens' participation in projects subject to public enquiry and dematerialisation of these administrative procedures. The portal was launched at a press conference in January 2021.

⁶¹ For more information on this project, please refer to the contribution under "COMPONENT 3B: Modernisation of the Public Administration" of the Luxembourg Recovery and Resilience Plan.



Following the official launch of the platform in January 2021⁶², a gradual integration of the other public enquiry procedures, including those identified at municipal level, is being planned.

- Launch of the GovTech Lab

On 26 November 2020 the GovTech Lab was launched at a virtual press conference. The GovTech Lab (GTL) enables the Ministry of Digitalisation and the CTIE to accelerate the innovation of digital public services through open innovation.

GTL has three main missions: Firstly, it aims to accelerate innovation in the State through calls for challenges and calls for solutions on a bi-annual basis. Secondly, GTL seeks to create a GovTech community by setting up specialised events, positioning itself as the exchange platform par excellence in the area of digital requirements, new technologies and innovative solutions within the State. Finally, GTL holds the ambition of becoming the reference and meeting place for government officials interested in GovTech.

- Development of new functionalities for citizens on MyGuichet.lu

- eTracking

eTracking can be used to trace the movements of a form sent by mail to an administration. It is an intermediate phase allowing citizens to track their paper application electronically until the process is digitised.

- Setting up appointments⁶³

A new functionality available since 2019 that citizens can use to make an appointment with an administration. This functionality was a huge success during the COVID crisis because it encouraged compliance with health measures and gave more flexibility.

- Gouvcheck app

The application can be used to verify the authenticity of an official document and the integrity of its data, such as a vaccination certificate, by means of a QR code.

- Digitalisation of government correspondence (eDelivery)⁶⁴

Eventually, the interactive platform MyGuichet.lu will be positioned as a true governmental electronic mailbox, with the aim of offering citizens and businesses an end-to-end digital experience. Users will be able to choose between continuing to receive government mail in paper form or receiving it in electronic form by subscribing to the eDelivery functionality.

- CTIE infrastructure redesign and collaboration tools to enable teleworking in the civil service

Telework in the civil service requires a different way of organising work such that staff working remotely are fully integrated into their teams and are fully aware of the decisions

⁶² For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/01-janvier/07-enquetes-publiques.html % <https://enquetes.public.lu/fr.html>

⁶³ For more information on this project, please refer to the contribution under “COMPONENT 3B: Modernisation of the Public Administration” of the Luxembourg Recovery and Resilience Plan.

⁶⁴ For more information on this project, please refer to the contribution under “COMPONENT 3B: Modernisation of the Public Administration” of the Luxembourg Recovery and Resilience Plan.



taken during their physical absence from the office. Exchanges by e-mail and telephone are not sufficient, they must be replaced by multi directional communications in real time.

Adaptations in terms of:

- Redesigning the infrastructure for remote connections to meet the new realities in the field
- Expanding the range of collaborative messaging, audio and video conferencing platforms
- Standardised framework for the development of intranet sites
- Deployment of a DataWarehouse and BI platform

This big data platform aims to facilitate data analytics within the public administration and to visualise it in order to engage in data reporting & visualization on a specific situation and to allow the detection of trends in due time. It gives decision-makers in-depth knowledge of their data for taking strategic decisions, carrying out a priori simulations or evaluating impacts after the fact.

In order to be able to accompany Luxembourg's craft enterprises in the challenges resulting from digitalisation, the *Fédération des Artisans*, the *Centres de Compétences de l'Artisanat* and the IFSB have created the *Centre de Compétences Digitaalt Handwierk (Digi-HW)*. This is positioned in the context of the *PRO Artisanat* Pact launched by the Ministry of the Economy, particularly in its fourth section, which concerns digitalisation in craft enterprises within the framework of the “*Artisanat 4.0*” programme as well as within the framework of the Digital Skills Bridge project, launched by the Ministry of Labour. It positions itself as a benchmark partner for craft enterprises for the development and implementation of strategic processes in the field of digital transformation. The Centre for Skills and Luxinnovation have signed an agreement confirming the cooperation between the two entities. The Digi-HW Skills Centre serves as a contact point for craft enterprises within the framework of the “Fit4Digital” programme, with the strategic, organisational and administrative support of the Centre for Skills.

Within the framework of the EuroHPC Joint Undertaking and in line with the digital economy strategy, which aims to develop a sustainable and reliable digital economy, Luxembourg plans to acquire a supercomputer (called “Meluxina”) that will accompany the digital transition of the economy and offer companies new opportunities to innovate and remain competitive in an increasingly digital world.⁶⁵ Bringing a supercomputer in Luxembourg is also one of the priority measures of the Rifkin strategy for the third industrial revolution, which places digitalisation and the use of data at the centre of economic and social development. This supercomputer will focus on the needs of users. It will be dedicated to applications in research, personalised medicine and eHealth projects, but also to the requirements of companies, in particular SMEs and start-ups. A specific skills centre will guide and support companies with limited skills in this field to facilitate access to and use of Meluxina's capabilities.

In addition to these numerous efforts in the field of digitalisation, the 5G strategy was presented for the first time in September 2018.⁶⁶ This Luxembourg national strategy is part of the European Commission's 5G action plan and the European roadmap for the introduction of 5G, which aimed for its first deployment in 2020. It was developed after consultation with many interested stakeholders,

⁶⁵ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2019/06-juin/14-schneider-meluxina.html

⁶⁶ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2018/09-septembre/13-5g.html



following a meeting of the Digital Luxembourg infrastructure group on this topic in July 2017. Implementation of this strategy continued in 2020⁶⁷.

The Ministry of Culture is actively contributing to the digital, inclusive and innovative transition with the implementation of a digital strategy for the national cultural heritage (SNPCN), developed in collaboration with the state cultural institutes (libraries, archives, museums, etc.) in charge of collecting, documenting, preserving and promoting this heritage. Within the framework of this strategy, which has a budget of €660,000 for 2021, a Competence Network brings together digital specialists from the various cultural institutes. It serves to create synergies between process participants, notably through exchanges of information, determining common frameworks, transfer of knowledge and development of common projects.

As the COVID-19 pandemic has greatly disrupted the way the sector works, this digital transformation of cultural heritage institutions is more relevant than ever. One of the strategic objectives is to share cultural heritage data widely and to optimise its dissemination and reuse, notably in a scientific analysis environment and by developing a semantic authority data platform, which was initiated in 2019. Other projects concern the modelling and interoperability of data, legal issues related to their publication and the innovative use of artificial intelligence (including participation in the AI4GOV initiative).

In parallel, the Ministry of Culture is investing in the digital transformation of cultural institutes in order to standardise and optimise data life-cycle management processes and to support the development of digital skills. These initiatives are in line with the National Research and Innovation Strategy, the Digital Luxembourg strategy as well as the work of the Expert Group on Digital Cultural Heritage and Europeana (DCHE) of the European Commission.

In recent years, the government has taken multiple measures to increase investment in the areas of Research, Development and Innovation (RDI), economic diversification and investment support:

In 2009, the Ministry of Economy launched its “ecotechnologies” action plan to promote the ecotechnologies sector as a diversification branch for the Luxembourg economy. The aid scheme is one of the instruments designed by the Ministry of the Economy to encourage private companies to implement environmental protection and rational use of natural resources beyond the prescribed thresholds. The Environmental Protection Act, which came into force on 15 December 2017, includes 5 additional aid measures in addition to the 6 measures taken over from the previous law, including:

- investment aid for projects promoting the energy efficiency of buildings
- investment aid for the remediation of contaminated sites
- investment aid for efficient heat and cooling networks
- investment aid for recycling and reuse of waste
- investment aid for energy infrastructure.

In addition, this law is the tool to support companies in meeting the objectives promoted by the Integrated National Energy and Climate Plan (NECP) set up by the government.

⁶⁷ For more details see: <https://smc.gouvernement.lu/fr/dossiers/5G/5G0.html>



The implementation of the space policy reflects the government's desire to diversify the economy by actively supporting the development of a “new space” industry. This relies on the experience gained in Luxembourg by one of the world leaders in the satellite communications sector. Through the [spaceresources.lu](http://www.spaceresources.lu) initiative⁶⁸, Luxembourg is projecting itself into the future space economy, the development of which will be facilitated thanks to the use of available resources in space. By adopting a law in July 2017, which aims to clarify the question of the appropriation of the resources that can be collected in space and to set up a system of authorization and supervision of these activities⁶⁹, Luxembourg has positioned itself as a European hub for the exploration and use of space resources. By founding the Luxembourg Space Agency⁷⁰ in 2018, Luxembourg has endowed itself with a dynamic structure of support for its space policy. This five-pillar programme addresses the specific needs of the sector: intensified support for sustainable development of companies, including the facilitation of access to space; implementation of the required policy and financing instruments; development of national talent in space systems and their commercialisation; the implementation of measures to facilitate recruitment and implementation of a promotion and communications strategy for LSA and the Luxembourg spatial ecosystem. This pioneering approach has already made it possible to reap the economic benefits in the short-term following the establishment of new space companies in Luxembourg.

In 2020, the implementation of the [SpaceResources.lu](http://www.SpaceResources.lu) initiative took a major turn with the launch of the European Space Resources Innovation Centre (ESRIC), in partnership with the European Space Agency (ESA) and the Luxembourg Institute of Science and Technology (LIST). Based in Luxembourg, ESRIC is positioned as a catalyst for public-private partnerships. Its ambition is to become an internationally recognised centre of expertise in the scientific, technical, commercial and economic use of space resources for human and robotic exploration, but also in the creation of a future space economy. ESRIC will focus in particular on the development of research and development in the field of space resources. It will also contribute to the diversification and development of the national economy by supporting business initiatives and start-ups related to space resources through an incubator, and by facilitating technology transfers between space and terrestrial industries.

The health technology sector is one of the pillars of the diversification strategy of the Luxembourg economy. Against this backdrop, the Minister for the Economy announced the creation of a first incubator exclusively dedicated to health technologies as part of the extension of the House of Biohealth in Esch-Belval at a press conference in January 2021. This bio-incubator is intended to accelerate the economic impact of investments in developing public biomedical research in Luxembourg. In addition to the provision of fully equipped laboratory space, the hosted companies will receive professional support in terms of business development specific to the HealthTech sector.⁷¹

In April 2021, the Minister of Economy announced the launch of a call for proposals in the field of health technologies, in partnership with the National Research Fund (FNR). In this context, a new digital platform, www.research-collaboration.lu, has been specially initiated by Luxinnovation in order to submit project ideas. A Memorandum of Understanding between the three stakeholders has been concluded to formalise this collaboration. The objective of this call for proposals is to stimulate collaborative R&D projects through public-private partnerships (PPP).⁷²

⁶⁸ For more details see: <http://www.spaceresources.public.lu/en.html>

⁶⁹ For more details see: <http://legilux.public.lu/eli/État/leg/loi/2017/07/20/a674/lo>

⁷⁰ For more details see: <https://space-agency.public.lu/en.html>

⁷¹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/01-janvier/21-fayot-biohealth.html

⁷² For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/04-avril/01-appel-projets-technologies-sante.html



With a view to promoting the establishment, acquisition, extension, modernisation and rationalisation of companies offering the required guarantees of viability, which are well managed and form part of the country's economic structure, a support scheme for SMEs which will make investment efforts was established by the Law dated 9 August 2018 relating to an aid scheme for small and medium-sized enterprises⁷³. This aid scheme offers additional ways to assist and support SMEs in their creation, development or reorientation phases. The Grand Ducal Regulation dated 12 October 2018 that sets out the nomenclature of expenditure and companies eligible for the aid scheme⁷⁴ provided for by law was subsequently adopted. The aid scheme for SMEs is part of Luxembourg's economic diversification strategy. Entrepreneurship in Luxembourg has benefited from a wide range of support instruments over the last few years, but financial support remains a key element in helping new businesses make the initial investments.

The government will analyse introducing tax measures to encourage investments by private individuals in innovative companies. In addition, the government will explore the possibility of introducing tax incentives for investments that meet the goals of sustainable development and climate transition. The benefits of such investments will be proportionate to the taxable income and risks taken by these taxpayers.

Regarding industry, R&D efforts and investments, including energy efficiency, will be encouraged to stabilise modern state-of-the-art industrial activity.

A venture capital fund dedicated to investments in the space sector was launched in early 2020 on the basis of a public-private partnership (PPP). This fund, named "Orbital Ventures", was launched in January 2020 and succeeded in assembling nine private and public investors for its initial closing, with a total commitment of €70 million. It will acquire stakes in space companies with the objective of developing innovative technologies and products or services in the space sector in order to foster their emergence in Luxembourg, thus developing and rounding out the national ecosystem.

The reform of bankruptcy and controlled management legislation will be completed as soon as possible⁷⁵. This reform will be implemented by focusing on prevention initiatives aimed at companies in difficulty and on collaboration between all the administrations concerned. In this context, fostering business creation must also depend upon diminishing the fear of failure as the main obstacle to entrepreneurship. Here, the legislation on the right of company establishment and its application must be reviewed in order to offer a second chance to entrepreneurs emerging from a period of entrepreneurial failure. This revision of this legislation will have to take into account strict repression of fraudulent bankruptcies.

In the field of research, the government is pursuing its objectives by implementing an ambitious public research policy. In general, the government aims to align its national RDI policy more closely with that of the European Research Area (ERA). Following the adoption of a Commission communication on a new European Research and Innovation Area and the Council conclusions in December 2020, discussions are currently underway to revitalise this common ERA by making it more specific and effective for all scientific actors and more visible for citizens. Synergies between the new ERA and the European Education Area (EEA) and the different industrial ecosystems should be further exploited. Particular emphasis is placed on closer coordination at national, regional and European level to

⁷³ For more details see: <http://legilux.public.lu/eli/État/leg/loi/2018/08/09/a882/jo>

⁷⁴ For more details see: <http://legilux.public.lu/eli/État/leg/rgd/2018/10/12/a954/lo%20>

⁷⁵ For more details see: <https://gouvernement.lu/dam-assets/documents/actualites/2018/12-decembre/Accord-de-coalition-2018-2023.pdf>



maximise the impact of investments, achieve common policy objectives and bridge the R&I divide across the EU.

In December 2019, the government approved the 'National Research and Innovation (R&I) Strategy for Luxembourg' in order to increase the efficiency of the research system⁷⁶. This strategy describes the national research priorities (four research areas: Industrial and Service Transformation / Personalised Healthcare / 21st Century Education / Sustainable and Responsible Development), the implementation of which places special emphasis on interdisciplinary projects, and sets the general framework for implementing targeted development of the scientific ecosystem. In developing the strategy, the 17 United Nations Sustainable Development Goals were also taken into account. The implementation of the strategy will involve, among other things, mission-oriented research targeting societal challenges in line with sustainable development goals in the priority areas defined above.

Following the mid-term review of the multi-annual agreements between the State and public research institutions, the State's financial commitment for the years 2020 and 2021 was increased by €7 million for 2020 and €9 million for 2021. The health crisis has led to a new revision of these multi-annual agreements to take into account the activities related to COVID-19 carried out by the University, the public research centres and the National Research Fund.

The process of drawing up the 2022-2025 agreements has been launched and these agreements will include a section common to the various public research institutions for the first time. This joint chapter aims to determine a number of joint research initiatives, which will focus on specific missions having a direct impact on society, the economy and industry and the public sector. These missions will be set in the context of the national recovery and resilience plan, which they will aim to support and strengthen. The joint chapter will also aim to encourage interdisciplinary research and the development of common infrastructures and policies between the different public research institutions. As such, it is an additional instrument to address the challenges identified by the Organisation for Economic Co-operation and Development (OECD) in its review of Luxembourg's innovation policy in April 2015.

A performance-based institutional bonus has been introduced. An additional amount is supposed to reward research teams and groups that are successful in the EU's Framework Programme for Research and Development, the largest research programme in Europe and a highly competitive one. By introducing this objective performance reward element, the quality and excellence of research institutions and the international dimension are clearly bolstered, and accordingly address one of the recommendations of the 2016 OECD report.

⁷⁶ For more details see: <https://gouvernement.lu/dam-assets/documents/actualites/2020/02-fevrier/25-mesr-strategie-recherche-innovation/mesr-strategie-recherche-innovation.pdf>



Table 2: State allocations included in the multi-annual agreements and the founding contract

(In € millions)	2018	2019	2020	2021	Total 2018-2021
University (Including Medical school)	176.33	190.24	211.01	225.31	802.89
LIST	42.90	45.04	48.55	51.36	187.85
LIH	33.02	35.85	39.60	43.26	151.73
LISER	11.01	11.50	12.90	14.00	49.41
FNR	64.80	64.79	66.79	69.03	265.41
Bonus	/	4.50	7.00	7.00	18.50
Total:	328.06	351.92	385.85	409.96	1475.79

In addition, the National Research Fund (FNR) has prepared a strategy and action plan for public research for the period 2018-2021 based on the OECD recommendations. Scientific excellence will remain the key criterion in all FNR schemes, but it will be coupled with strategic considerations and will focus more on generating economic and societal impact through research.

The National Research Fund has developed different thematic and structural funding instruments to support research projects in Luxembourg's priority areas. The AFR PhD grant scheme, for example, is one of the longest-running funding programmes of the FNR and now only funds the training of doctoral candidates. The CORE programme is the FNR's main programme for funding research projects and aims to stimulate scientific excellence in the priority areas determined by the national research and innovation strategy. ATTRACT and PEARL aim at attracting junior researchers (between 2 and 8 years' experience post-doctorate) respectively leading researchers from abroad in fields strategically relevant for Luxembourg. The FNR's INTER and INTER Mobility programmes are designed to foster international cooperation and exchanges between research groups in Luxembourg and abroad. The PRIDE programme aims to support the development of a critical mass in certain fields of research and technological development by allocating a block of doctoral grants to a consortium of researchers united around a coherent research and training programme.

The National Research Fund continues its efforts to optimise the dissemination, accessibility and transfer of scientific knowledge through the JUMP Programme, which aims to make innovative research results from public research institutions more attractive to potential investors by offering financial support until commercialisation or market launch. With the intent of strengthening partnerships between researchers and businesses and industry, several funding programmes have been established by the FNR, such as BRIDGES (formerly CORE-PPP), Industrial Fellowships (formerly AFR-PPP), the Industrial Partnership Block Grant as well as the JUMP and KITS (Knowledge and Innovation Transfer Support) programmes. The KITS programme provides competitive funding to Luxembourg research institutions to attract and integrate knowledge transfer specialists (TTO).

In addition, the National Research Fund supports and coordinates open data activities aimed at strengthening the link between science and society and raising awareness of research, notably through the PSP, FNR Awards, RESCOM and Open Access Fund initiatives.

In the context of the management of the COVID-19 pandemic, the National Research Fund has set up a funding instrument "FNR COVID19", aiming at providing initial (co-)funding to projects addressing the current and future challenges of COVID-19. Fifty-five projects were selected with total funding of €7.5 million, including Luxembourg state participation of €0.8 million in Coalition for Epidemic Preparedness Innovations (CEPI) and €0.8 million in the international COVID-19 Therapeutics Accelerator initiative.



Transnational cooperation is partly supported by bilateral agreements between the National Research Fund and various foreign partners to support projects between researchers based in Luxembourg and abroad (e.g. ANR, BELSPO etc.). The FNR is also a member of a number of research networks and associations offering multilateral research opportunities (e.g. EUROSTARS, COST, Science Europe, ENRIO etc.). It also participates, together with 11 other national and regional research funds, in the international Weave (Multilateral Lead Agency Agreement) initiative, which aims to facilitate the submission of collaborative research projects involving researchers from up to three countries or regions. The first calls for projects under this new initiative will be launched in 2021.

The INITIATE programme is designed to support the initiation and development of strategic R&I project ideas that will contribute to making Luxembourg internationally competitive in priority areas.

In order to optimise the dissemination, accessibility and transfer of scientific knowledge, the National Library of Luxembourg, as part of its mission as a national documentation platform and service provider for documentation centres and public sector libraries, has continuously increased and will continue to develop its offer of digital scientific publications accessible on-line. It actively supports the transformation towards Open Access through the activities of the Luxembourg Consortium, together with public research entities and the National Research Fund. In order to optimise the dissemination and accessibility of scientific knowledge, it concluded a framework agreement with the University of Luxembourg in 2019, as well as cooperation contracts with the National Research Fund, the *Institut des formations de l'éducation nationale* (IFEN) and the *Service de coordination de la recherche et de l'innovation pédagogiques et technologiques* (SCRIPT) of the Ministry of Education.

Science and technology are often approached in an abstract or academic way. In this context, the Luxembourg Science Centre was created, with the aim of putting theory into practice through a fun and interactive approach that appeals to a public of all ages in order to encourage and promote research for everyone, stimulating young people through school visits. The ERDF project "Luxembourg Science Centre" co-finances the exceptional scientific and technological equipment of six experimentation stations. The project "Discovering trades and professions", which enables pupils to discover how science interacts with trades and professions from fields as varied as catering, automation and mechatronics, was co-financed through the ESF.

In order to encourage and make the link between basic and applied research, the Luxembourg Institute of Health (LIH) and the *Centre Hospitalier de Luxembourg* (CHL) have created the Luxembourg Clinical and Translational Research Centre, a joint entity bringing together researchers from both entities. This project is co-financed by the ERDF. The Luxembourg Clinical and Translational Research Centre (LCTR) is currently active in research projects related to COVID-19.

In an effort to encourage, stimulate and strengthen private research, the government is continuing to promote RDI in the private sector, reinforcing technological skills, access to public research and the digitisation of businesses via specific measures.

The coming into force of the new RDI Promotion Act in June 2017 gives the government access to a series of tools to effectively support businesses in their RDI process. This law allows action on companies of all sizes as well as at different levels of the innovation chain. It also makes it possible to reinforce SME innovation via a specific regime. In addition, it offers a strong incentive for the establishment of collaborative research between companies and with public players. Finally, companies can pool their efforts to create research synergies based on the scientific community via the research infrastructure scheme. Support for innovative start-ups is again available, which is an essential lever in the policy of support for the start-up ecosystem.



In addition to these tools, the development of a digital economy strategy published in 2019 aims at coordinating innovation and infrastructure implementation policies in order to ensure a trust-based secure data economy. This data-driven innovation strategy is fully in line with the framework set up by the Third Industrial Revolution (TIR) in Luxembourg but also responds to the framework of Sustainable Development Goal 9 - SDG9, by reducing the digital divide and promoting access to information and communication technologies. It will be important to identify areas of development and innovation in the priority sectors that are underpinned by data processing. Certain flagship projects and measures already in place have been incorporated into this strategy, which should boost spending in private sector RDI:

- High Performance Computing (HPC) and big data enabled applications: Luxembourg's access to HPC capabilities falls within the framework set by the digital economy strategy. The selection of the Luxembourg application by EuroHPC is worth 35% of the acquisition costs of a Petaflop machine hosted in Luxembourg, based on a modular and innovative architecture using European technologies. In parallel, the implementation of a skills centre, which will be managed by the independent company LuxProvide and whose mission is to support companies throughout the value chain, particularly SMEs, leading to the exploitation of their data and to developing the necessary skills in the field of High-Performance Computing, simulation and Big Data, is in line with the national strategy for the implementation of the HPC and Big-data enabled applications infrastructure.
- Industry 4.0: with the support of Luxinnovation, a business awareness campaign was conducted to guide them towards data exploitation and enhancement.
- The Digital Innovation Hub (L-DIH), a partnership between the Ministry of Economy, FEDIL, Luxinnovation, the Chamber of Commerce, the Luxembourg Institute of Science and Technology and the National Research Fund, is a support element for data-driven innovation strategy, offering companies access to expertise in digital strategy, technology implementation, training and digital knowledge management.
- The Fit4Digital programme, whose objective is to ensure the digital transformation of companies (programme reserved for VSEs), and an SME support programme carried out with the support of Luxinnovation.
- Joint Research Programme: In cooperation with the FNR, 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 and industries in areas deemed priority by the government. The first proposals for projects should be launched in 2021.
- A study was launched to assess Luxembourg's ability to foster the development of cooperative, connected and autonomous mobility. Completed in 2020, the first phase established the state of play in terms of governance, infrastructure, authorisation procedure and accessibility to mobility data. The second and third phases are planned for 2021 and will establish the objectives and the action plan to achieve them respectively - in coordination with the relevant key entities.
- In order to promote the circular economy, the government supports the development of the Product Circularity Data Sheet (PCDS1), which aims to promote the circular properties of products, by establishing a data sheet as well as its standard and auditing framework. These three elements are key to the success of such an undertaking, which is currently supported by more than 50 companies from 12 different countries. All these entities are working on the progress of the project in a co-creation process to assimilate the opinions of players from different value chains.



The method for determining and exchanging such a circular data set for each product will ensure that the confidentiality of commercially sensitive data is complied with, without representing a prohibitive administrative burden for companies. On the other hand, the initiative will reduce current costs and maintain the value of products, components and materials.

- In order to position Luxembourg as a future centre of excellence and innovation in terms of the circular economy, a study called “Supporting the Emergence of Circular Business Models (SECBM)” is being prepared to identify the key points to enable a more consistent development of the circular economy at a financial and economic level. The different points raised by the study will be debated with the help of a committee of private and public decision-makers.

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

- The tasks of the Luxembourg Intellectual Property Institute (IPIL)⁷⁷ were determined upon its establishment under the form of an Economic Interest Group in 2014⁷⁸. In addition to its crucial role of coordinating the implementing public policy with regard to intellectual property, IPIL has been operational since 2015 and is able to support the proper management of research and innovation projects. Accordingly, in addition to support for the proper management of intellectual property in research projects, the patent information search and technological or competitive monitoring services keep it constantly updated with technical information in a particular area and provide strategic and operational support for all purveyors of innovative projects. The use of these specific and highly specialised services makes it possible to avoid duplicating research already carried out elsewhere, determine prior art and identify trends and technical developments in a particular field, to monitor new developments in a technology and to monitor competitors' innovation activities. In addition, the 2018-2023 government programme stresses that intellectual property rights must be taken into account in a cross-functional manner, particularly as part of the digital innovation strategy for the development of a sustainable, data-driven and trust-based economy. The government insists on the need to encourage companies and stakeholders to integrate intellectual property aspects into their R&D strategies and to enable them to value their products, so that these efforts result in competitive advantages that ultimately benefit the entire Luxembourg economy.
- The Luxembourg Cluster initiative is active in the following themes: *Healthtech, Eco-Innovation, ICT, Materials & Manufacturing, Automobility, Wood and Creative Industries*. It should stimulate synergies and ambition amongst its members, strengthen links between business and research, and promote innovation and technology exchange. A reform carried out in 2019 aimed at setting up cross-sector management of clusters makes it possible to improve their visibility and their impact on Luxembourg companies, in particular with the implementation of flagship projects resulting from an ideation process between representatives of industry, research and public administrations.
- Supporting start-ups continued through the Fit4Start coaching and start-up financing programme, which has been stepped up, with 30 participating start-ups compared to 10 in 2017. The mechanism has, since, diversified beyond the ICT sector, five start-ups in the Biotech sector and five from the Space sector were also able to use it as from their start-up phase. At the same time,

⁷⁷ Federate the actors involved, develop and offer support and support services for companies, players in the research field, public institutions and any other interested public, develop and provide training as well as promotional and awareness-raising activities and conduct projects and studies to advise the government.

⁷⁸ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2014/08-aout/01-conseil-gouvernement.html



Luxembourg is continuing to support the implementation of hosting infrastructures dedicated to start-ups in strategic sectors such as Biotech and Ecotech. The ICT Digital Tech Fund dedicated to innovative companies, with public and private commitments amounting to €20.3 million, made its first investments. For better visibility, the website *startupluxembourg.com* lists the various players in the Luxembourg ecosystem.

- Support for SMEs and incentives for innovation are strengthened through the implementation of a chain of programmes to support SMEs in adopting the innovation mentality: the Fit4Innovation programme and its Inno4Growth and Fit4Circularity segments contributes to helping SMEs to gain in competitiveness in order to free up resources for innovation, support for companies to participate in the “SME instrument” of the Horizon 2020 programme, the Innovation Club as a forum on the key success factors of innovation, as well as on emerging new ideas. In 2017, RDI projects were implemented by companies that had never had such projects before participating in the Fit4Innovation programme.
- The following measures have been implemented to promote and support innovation: the innovation portal, which centralises all RDI information,⁷⁹ including a section on innovative solutions originating in Luxembourg designed to encourage the use of innovative solutions in public contracts.
- *Post-Covid ideation process*: The objective of this process, launched by Luxinnovation, is to assess the consequences of the health crisis on companies, help them develop an action plan and increase their resilience in the future. An analysis of the situation was carried out through interviews with 54 company managers, analysis of several sources of information, strategic papers, market analysis and mega trends. The focus is on Business Model Innovation, compatible with RDI-IOs and Covid-IOs support.
- An EPI-Covid19.lu platform was set up at the beginning of the pandemic. The objective is to optimise the distribution of available equipment in Luxembourg. Luxinnovation is in charge of managing the platform.
- Reinforcement of the principle of matching funds, introduced for the first time in the 2018-2021 multi-annual agreements in order to stimulate the participation of public research organisations in the European Horizon 2020 framework programme, to broaden and generalise it so as to boost collaboration between the public and private sectors and to encourage private investment in research projects at higher levels of technological maturity.

3.4.4. Green Transition

In the coalition agreement 2018-2023, the government reaffirmed that the United Nations' Agenda 2030 serves as a guideline for Luxembourg's future development and that the Paris Agreement is the basis for the government's climate action to confront the threat of climate change, in the context of sustainable development and the fight against poverty. In the same framework, the government has decided that it will provide the necessary resources to finance projects that promote sustainable development in Luxembourg. Taking into account the cross-cutting nature of the 2030 Agenda, the aim will be to ensure the realisation of innovative projects allowing for the creation of synergies between the dimensions of economic, social and environmentally sustainable development and to promote research in the field of sustainable development, in particular systemic thinking and impact assessment.

⁷⁹ For more details see: www.innovation.public.lu



Circular economy

The 2018-2023 Government Programme promotes the transition from the current linear economy to a circular, efficient and renewable economy that operates within the limits of ecosystems.

The application of circular economy (CE) principles is considered a key instrument for the implementation of a number of sustainable development goals of the 2030 Agenda, related to natural resource management and climate action as well as responsible production and consumption or innovative industry and sustainable cities. The CE has become the guiding principle for many policies aiming at sustainable management of our resources while creating socio-economic value. The European Commission's Green Economic Recovery Plan following the COVID-19 crisis places CE at the centre of the strategies to be adopted. At the national level, CE is one of the red threads of the coalition agreement 2018-2023 and CE principles have guided, among others, the elaboration of Luxembourg's Integrated National Energy and Climate Plan (NECP) for the period 2021-2030 and are at the basis of the recent "*Null Offall*" strategy which supports the transposition of the EU directives of the circular economy package into national law⁸⁰.

In February 2021, four ministries (Economy, Environment, Climate and Sustainable Development, Energy and Spatial Planning and Finance) presented the new "Circular Economy" strategy for Luxembourg, which aims at accelerating the implementation of CE in the Luxembourg economy⁸¹. The strategy has three major elements:

- It identifies methods and tools for three key levers of state action to stimulate innovations, which are a) regulation and standards, b) financial aspects (e.g. incentives in the form of subsidies or taxes), c) knowledge management with education, training, public research, as well as digitalisation and support by information and communication technologies (ICT), notably for data management.
- It offers a methodology for activating processes and tools in a number of key economic sectors, through specific projects that are driven by public entities, but co-created with key stakeholders.
- It provides for close and continuous consultation mechanism between the ministries hosting the strategy, as well as for communication tools to support the implementation project leaders.

Spatial planning

In the same way as energy, economic, construction and mobility policies, spatial planning policy is able to play a central role in conceiving and implementing actions to promote, develop and consolidate the transition to climate neutrality. Its role of anticipation, initiation, organisation and coordination is exercised in its cross-sector coordination function, both horizontally and vertically. In this respect, spatial planning supports the implementation of the United Nations Agenda 2030 in the sense of sustainable development of all parts of the national territory.

Within this framework of conception, implementation and monitoring, spatial planning policies are set out on three levels: national, local (regional and (inter)municipal) and international (cross-border and European), the latter being imposed by the size of the territory combined with long-term economic attractiveness.

⁸⁰ For more details see: <https://environnement.public.lu/fr/offall-ressourcen/null-offall-letzebuerg.html>

⁸¹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2021/02-fevrier/08-strategie-economie-circulaire.html



The development/planning and form of urbanisation of the territory have a major impact on the climate balance. Diffuse urbanisation in rural areas requires its residents to use various modes of transport, mainly motorised, and also contributes to soil sealing, which is often irreversible. It is therefore important to bring these residents closer to their places of work in order to limit their daily travel while developing decarbonised, circular and resilient urban formats. Urbanisation that intelligently mixes the different functions of life - housing - work/education - shopping - leisure - and is adapted to soft mobility would both reduce emissions resulting from mobility needs and improve the quality of life of inhabitants.

As part of the revision of the Master Programme for Spatial Planning (PDAT) - which sets out an integrated strategy for sector policies with an impact on territorial development and provides guidelines, political objectives and measures of the government and the municipalities - the preparation of territorial visions ("*Landesplanerische Leitbilder*") was initiated for the country's three urban agglomerations: the Nordstad, the agglomeration of the Centre and the region of the South. In order to facilitate subsequent implementation of the objectives, measures and projects identified in the territorial visions, they are drawn up in close consultation with the municipalities concerned by means of State-municipal conventions of territorial cooperation. The aim of these visions is to promote sustainable and innovative urban development and to ensure an efficient use of land by reconciling urban and economic development, an adequate offer of public services as well as a social and functional mix. The visions currently being developed are certainly also intended to provide the best possible support for the major transitions underway and to come: climate, energy, digital and ecological. Finally, the strategic orientations and objectives set out in the three territorial visions will also be integrated into the future new Master Programme for Spatial Planning (PDAT).

In addition, due to its geographical position surrounded by three large countries and due to its labour needs extending the catchment area beyond its own national borders, it is essential for a country like the Grand Duchy of Luxembourg to take into account the cross-border dimension when determining its strategic orientations and its territorial development policies. It is with this in mind that an urban-architectural and landscape consultation *Luxembourg in Transition* (CI-LiT) - Territorial visions for the decarbonised and resilient future of the Luxembourg functional region was launched in June 2020 as part of the revision of the PDAT. It aims to gather strategic proposals for spatial planning and to produce ecological transition scenarios for the Grand Duchy of Luxembourg and its functional region by 2050. The CI-LiT, which is expected to be completed by the end of 2021, is a process that has from the outset encouraged the formation of international multidisciplinary teams from diverse backgrounds (professionals, universities and research institutes with expertise in the fields of spatial planning, urbanism, landscape and architecture, the environment, as well as the human and social sciences) for a new transitional and resilient approach to the territory. Through this, and following the end of the consultation in December 2021, spatial planning policy will be able to develop its own zero-carbon strategy, extending it across borders where possible.

The four sectoral master plans relating to "Housing", "Landscapes", "Transport" and "Economic activity zones" came into force on 1 March 2021. The sectoral master plans (PS) are implementing regulations of the law of 17 April 2018 on spatial planning, which aim to implement the spatial planning policy as defined in the Master Programme for Spatial Planning (PDAT). Their purpose is to frame territorial development in a sustainable manner on a national scale, and they correspond to the four main fields of action of spatial planning, namely: urban and rural development, the economy, transport as well as the environment and natural resources.



Mobility

Because of its impact on the environment, society and the economy, mobility remains a government priority. Efficient and sustainable mobility is not only essential for the Luxembourg economy, but is also indispensable in view of the objectives of reducing greenhouse gas emissions by 2030, as well as for the quality of life of all those who live and work in Luxembourg.

In addition to measures in favour of sustainable mobility, the government is committed to improving energy efficiency, notably through the National Strategy for Energy Renovation of Buildings, and to promoting the production and use of renewable energy.

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 (MoDu2.0) strategy. The ongoing works for the commissioning of a tramway in Luxembourg City are emblematic of this change. MoDu 2.0 aspires to developing public transport and a more attractive infrastructure for active mobility. This strategy is supported by the “Transport Sector Plan” (TSP). In addition, both promoting the development of electric mobility and introducing a green mobility label for companies was advocated.

As provided for in the governmental programme, free use of trains, trams and buses nationwide was introduced in the first quarter of 2020 (29 February 2020). Rates for cross-border transport will be reduced after consultation with the neighbouring SNCB, DB and SNCF networks. Rates will also be reduced on the RGTR transportation network “RegioZone”. This will benefit not only residents but also cross-border residents.

In addition, the government is planning ambitious investments in railway infrastructure between 2018 and 2023 amounting to €2.21 billion. In addition, the CFL railroad company (*Société Nationale des Chemins de Fer Luxembourgeois*) has concluded the largest rolling stock purchase contract in the history of railways, amounting to €360 million, which will be delivered during the period 2022-2024. Investments in the tram amount to €390 million in the period 2018-2023.

At the same time, the national RGTR bus network is undergoing a complete reform. The objectives of the reorganisation of the RGTR network are to prioritise and optimise regional bus routes, to improve services on Sundays and public holidays and to improve evening circulation. In addition, the government is pursuing a “no-emission” objective by 2030 by introducing electric buses on the national RGTR bus network. As far as urban buses are concerned, the city of Luxembourg, with 40% co-financing from the ERDF, has acquired ten 100% electric buses.

In order to promote the use of public transport by making mobility more pleasant, more efficient and more economical, the government implemented a telematic information system in near-real time for public transport.

In the interests of reducing greenhouse gas emissions and protecting the climate, and following an initial increase in excise duty on road fuel in May 2019, the government introduced a CO₂ tax on fossil fuels at the beginning of 2021, amounting to €20 per tonne of CO₂. The budgetary revenues from this excise tax increase will be used for measures to support the energy transition and measures to promote social equity.

Through a modification to existing legislation, the rate of biofuels mixed with gasoline and diesel has been set at 7.70% for 2020 and remains unchanged for 2021. Directive 2009/28/EC stipulates that in 2020, it will be mandatory to include a minimum share of 10% of biofuels in the total consumption of gasoline and diesel for transportation, so that the share of biofuel will have to be continuously



increased. The contribution of biofuels produced from waste, residue, non-food cellulosic material or from lignocellulosic material is considered equivalent to double that of other biofuels. In 2020, the minimum rate of these “double counted” biofuels to be added in gasoline and diesel was 50% and remains at the same level for 2021. However, this rate will have to increase continuously and reach 25.6% in 2030, according to the forecasts of the National Energy and Climate Plan (NECP).

In order to encourage the purchase of electric vehicles, the government has decided to increase the purchase subsidies for 100% electric cars and vans. Thus, a 60% increase in the subsidies granted for 100% electric cars and vans (€8,000 instead of €5,000) is granted for vehicles ordered between 11 May 2020 and 31 March 2021. The purchase premiums for plug-in hybrid vehicles have not been increased and remain at €2,500.

Similarly, the government is encouraging the purchase of 100% electric quadricycles, motorbikes and mopeds, as well as pedal-assisted bicycles and cycles by doubling the current incentives from 25% to 50% of the cost of the vehicle excluding VAT up to a maximum amount of €1,000 for 100% electric quadricycles, motorbikes and mopeds and a maximum amount of €600 for pedal-assisted bicycles and cycles. This applies to vehicles ordered, bicycles and pedelecs purchased between 11 May 2020 and 31 March 2021.

Against the backdrop of a sustainable economic recovery and with a view to achieving the objectives set out in the National Energy and Climate Plan (NECP), the Government Council agreed on 24 March 2021 to the draft Grand Ducal Regulation amending the amended Grand Ducal Regulation dated 7 March 2019. The purpose of this draft Grand Ducal Regulation is to extend and strengthen the aid scheme for zero- or low-emission vehicles until 31 March 2022.

In Luxembourg, the government and network managers monitored the installation of 800 public charging stations for electric cars as well as for chargeable hybrid electric cars (plug-in hybrid cars). The first of these 800 public charging stations, called “Chargy”, were installed at the beginning of 2017. As of January 2020, 456 “Chargy”⁸² charging stations have been installed across the country. When charging their electric or plug-in hybrid cars, subscribers consume about 130,000 kWh per month, which is equivalent to driving about 800,000 km fully electric per month.

In January 2021, the first public fast charging stations, called “SuperChargy”, were installed in Luxembourg. Provided by the distribution network operators, a rollout of 88 fast charging stations (160-320 kW) for 100% electric cars is planned to take place gradually through to 2023.

In addition to establishing a network of “Chargy” public charging stations and fast charging stations, on 21 August 2020 the government introduced a support scheme for the installation of private charging stations, which, like all households in the Grand Duchy, are powered by green electricity. Luxembourg is now promoting the establishment of a dense and practical network of charging solutions and is becoming one of the forerunners in Europe. The amount allocated is between €750 and €1,650 depending on the type of installation and may not exceed 50% of the purchase price (excluding VAT).

Sustainable buildings and energy performance of buildings

Directive 2010/31/EU of the European Parliament and of the Council dated 19 May 2010 on the energy performance of buildings reformulates the existing Directive (2002/91/EC) and provides a new “nearly zero energy use” standard for all new buildings for 2021 (2019 for public buildings). The “Nearly Zero Energy Building” (NZEB) legislation came into force on 1 January 2017 through the Grand Ducal

⁸² For more details see: <https://chargy.lu/>



Regulation dated 23 July 2016 amending the amended Grand Ducal Regulation dated 30 November 2007 concerning energy performance in residential buildings, which is the energy performance standard required for new residential buildings. NZEB energy efficiency standards generally correspond to buildings of the AA energy classes (thermal insulation and energy performance classes). The new requirement levels also contain an implicit incentive to implement renewable energies. For new functional buildings, the requirement for a near-zero energy building standard will be introduced on 1 January 2021.

With regard to administrative buildings, the transposition of this aspect is being finalised. An amendment to the Grand Ducal Regulation entered into force in April 2019 and a draft Grand Ducal Regulation concerning the energy performance of administrative buildings is underway to modify the methodology for calculating energy efficiency that incorporate new technical developments, and to reinforce the requirements of the NZEB, the new energy performance standard required for new administrative buildings.

The new Grand Ducal Regulation for the NZEB standard for functional buildings is accompanied by new software for calculating the energy performance of functional buildings, simplifying the calculation and establishing energy performance certificates based on the Grand Ducal Regulation.

With regard to residential buildings, apart from the implementation of the sectoral housing plan (PSL), an ambitious schedule has been prepared for progressively strengthening requirements in terms of energy performance in new buildings and residences. Accordingly, since 1 January 2017 all new residential construction is now generally required to 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 the cost of housing in Luxembourg has risen sharply in recent years and energy renovation needs to be promoted further, 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, sustainable energy-efficient renovation of existing residential buildings and enhancement of 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.
- Certification system for sustainability of new housing (LENOZ): this certificate reflects the level of sustainability ultimately achieved by housing units.

In the framework of the “*Neistart Lëtzebuerg*” programme, the government has increased the financial aid for energy renovation (“PRIME House”) with the aim of encouraging sustainable energy renovation of housing by applying a 50% increase to the subsidies granted for the renovation of the various construction elements of a building’s thermal envelope, as well as for energy advice. This applies to renovation projects initiated between 20 April 2020 and 31 March 2021. Subject to the finalisation of the regulatory procedure, this aid scheme will be extended until the end of 2021.

Similarly, an increase in financial support for the promotion of heating systems based on renewable energy (“PRIME House”) has been approved by the government in order to promote heating systems



based on renewable energy by applying a 25% increase to the subsidies granted for solar thermal installations, heat pumps, wood-fired boilers and connections to a heating network, with an increase of the bonus for the replacement of a boiler that runs with fossil fuel. This applies to systems ordered between 20 April 2020 and 31 March 2021. Subject to the finalisation of the regulatory procedure, this aid scheme will be extended until the end of 2021.

The government has also pursued its long-term strategy to mobilize investment in the renovation of the national supply of public and private residential and commercial buildings under Directive 2012/27/EC. This strategy emphasizes the following points: priority for complete, highly energy-efficient renovations; affordability of energy renovation measures; improved coordination between energy policy and protection of heritage; promoting sustainable construction and the circular economy.

These guidelines are constantly taken into account in project development, awareness-raising and information policy, as well as in legal or regulatory adjustments in the field of building renovation.

In addition to these, around 35 measures to reduce legal and financial barriers have been discussed and implemented in the context of the work of the National Council for Sustainable Construction (CNCD). Priority was given to the following measures: removal of obstacles at the level of building managers, introduction of a compulsory renovation reserve fund for condominiums, adaptation of decision-making quorums for the implementation of renovation measures (introduction of a simple majority for condominium decisions), with municipalities playing a pioneering role in the field of building renovation through climate pacts, financial aid, logistical aid, competitions, etc.. verification of the application of the reduced VAT rate of 3% for buildings that are 10 years old (instead of 20 years old), promoting energy renovation of the building stock by simplifying the administrative procedures of the “climate loan” and a programme for replacing oil in old buildings.

This ambitious long-term renovation strategy will increase the rate of renovation (by 3% per year), as well as the extent of renovation (“deep renovation”), so that by 2050 all existing houses will meet the net zero emissions target.

The government continues to promote energy efficiency in residential buildings (renovations and new construction) through the ERDF “Infopoints” and “Stand-Fairs” projects, carried out by the MyEnergy Economic Interest Grouping (GIE). It provides free energy advice to individuals on request. After visiting the various municipalities, the MyEnergy consultants inform households about possible measures and the subsidies to which they may be entitled.

In the course of 2020, a new directorate was created within the Ministry of Energy and Spatial Planning with the task of federating national entities through the themes of “sustainable construction and the circular economy”, through a systemic and participatory approach. Particular attention is paid to the sustainable management of stocks and flows of materials in relation to the building and health related to indoor air quality in buildings, while integrating the principles of energy efficiency and renewable energy. A major project of the directorate for the 2021-2022 period will be the redesign of the national “Guide to Sustainable Construction and Renovation”, in close collaboration with the Resource Centre for Technologies and Innovation in Construction (CRTI-B) and other key public and private actors in the construction sector. The guide will be produced in digital form and will provide stakeholders with an up-to-date compilation of regulations, good practices and innovations in sustainable construction. Particular attention will be paid to new challenges arising from intelligent materials management, such as healthy construction, modularity, deconstruction, reuse, digitalisation, materials passports, etc.



Production and use of clean and efficient energy

The national action plan in the area of renewable energies covering the period 2011-2020 set 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.

The measures, as well as the planned schedule, are described in this action plan. The principal recent actions taken as part of these measures that have an impact on the development of renewable energies are outlined below:

The amended Grand Ducal Regulation of 1 August 2014 on the production of electricity based on renewable energy sources set up a remuneration system in the form of feed-in tariffs and market premiums for the production of electricity based on renewable energy sources, while taking into account the requirements set out in the European Commission's Guidelines on State aid for environmental protection and energy for the period 2014-2020 (hereinafter the "Guidelines").

The latest amendment of the Grand Ducal Regulation entered into force on 6 October 2020 and aims at refining the current provisions and improving existing framework in order to accelerate the rollout of installations based on renewable energy sources in the country, also by opening up solar installations categories up to a power level of 200 kWp to all natural and legal persons (before only cooperative and civil societies could bid) and thus targeting SMEs in particular. The category for installations above 200 kWp and below 500 kWp is still reserved for cooperatives and non-profit organisations.

An initial call for tenders for large-scale photovoltaic installations was launched in February 2018 and resulted in the award of 15.16 MWp out of 20 MWp tendered. Estimates predicted an annual production of about 14 GWh for this first tender. In the end, 13.9 MWp of capacity was realised and all plants were feeding in 2020.

The second tender was launched in September 2019 and resulted in an award of 30.78 MWp out of 40 MWp tendered.

A third call for tenders was launched on 19 November 2020 and also provides for the allocation of a total of 40 MW.

After an in-depth analysis of the initial experiences, a multi-annual tender calendar has been established to give more predictability to the market players and thus to meet the ambitions of the National Energy and Climate Plan. This indicative timetable provides for minimum quantities to be allocated until 2023, with the possibility of increasing quantities.

Directive 2009/28/EC provides for cooperation mechanisms to enable Member States to achieve their objectives through cooperation mechanisms. In 2017, Luxembourg was the first EU member state to conclude two statistical transfers with Lithuania and Estonia. In 2019, Luxembourg acquired a total amount of energy from renewable sources of 1,100 GWh from the two countries (550 GWh from each of them) to meet its 2017-18 interim target (see above). The quantities needed to reach its national



target of 11% by 2020 have been achieved. It should be stressed that Luxembourg is the first country to use the cooperation mechanisms to ensure the achievement of its national objectives, which is a clear signal for increased European cooperation in the field of renewable energies.

In addition to cooperation agreements, Regulation 2018/1999 on the governance of the Energy Union and climate action provides for an EU renewable energy financing system.

This system establishes the option for Member States to participate in financing renewable energy production projects in one or more Member States or to host such projects on its territory. An EU-wide tendering system will select renewable energy installation projects for support under the system. Luxembourg submitted its call for expressions of interest on 10 February 2021.

With the adoption of the Integrated National Energy and Climate Plan (NECP)⁸³ by the Government Council in its 20 May 2020 meeting, the objectives of the National Renewable Energy Action Plan have been recast. The following figures reflect the different objectives:

- GHG emissions: National climate target -55% GHG by 2030 compared to 2005;
- Renewable energy: Share of renewable energy in gross final energy consumption of 25%;
- Energy efficiency: Energy efficiency improvement target of 40-44% by 2030 (compared to EU PRIMES (2007) for 2030).

The voluntary agreement between the industrial sector, represented by FEDIL, the Luxembourg government and My Energy G.I.E. was first established in 1990 and seeks to improve energy efficiency in Luxembourg industry. The current agreement was concluded for the period 2017 to the end of 2020 and includes the participation of about 50 companies from the industrial and services sectors. Provided they meet certain requirements and achieve the objective of a 7% improvement in a general energy efficiency indicator (compared to the 100% reference of the average of 2014 and 2015), within the framework of Directive 2003/96/EC dated 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, the participating companies will be awarded a tax reduction on electricity and natural gas. This voluntary agreement will be continued, broadened and extended beyond 2020 in order to attract more business, especially in the area of SMEs. Better communication and cooperation between the member companies will help to identify and exploit potential synergies in the field of energy efficiency. An in-depth evaluation of the current Voluntary Agreement will serve as a basis. This Voluntary Agreement will generate energy efficiency targets that are still very ambitious in order to encourage companies to implement the energy saving measures identified in the energy audits, providing them with the necessary assistance and additional resources for financing and implementing projects.

Luxembourg has continued monitoring the widespread installation of smart joint metering by gas and electricity network operators. Since 1 July 2016, grid operators have been installing a smart meter for each new connection to their grids, and progressively replacing existing meters of each of their customers. As of end 2020, approximately 318,000 smart electricity meters and 91,000 smart natural gas meters had been installed nationwide. The target of 95% of meters was reached by early 2020, as provided for by law. Regarding natural gas, 85% of meters were replaced by the end of 2020, while the replacement of at least 90% of the old meters, as provided for by law, will continue up until 31 December 2021.

In order to strengthen positive impact eco-urbanism at the neighbourhood level, an “Eco-urbanism Guide” is being finalised that promotes sustainable construction, renewable energy, circular economy,

⁸³ For more information on this project, please refer to the contribution under “COMPONENT 2A: Decarbonisation of transport” and “COMPONENT 2B: Sustainable buildings” of the Luxembourg Recovery and Resilience Plan.



resource efficiency and carbon neutrality as well as collaborative and participatory processes. By proposing a reference framework and innovative concepts, the guide is aimed at all participants involved in neighbourhood development who wish to create neighbourhoods that can be described as eco-neighbourhoods (“*éco-quartiers*”). The aim of the guide is to ensure consistency in the use of the term “*éco-quartier*” in the Grand Duchy of Luxembourg. As a spatial planning tool, it also aims to play a role in achieving the Sustainable Development Goals (SDGs) set out in the third National Plan for Sustainable Development (NPSD).

3.4.5. Skills development

The Luxembourg labour force is atypical in an international comparison. Indeed, domestic employment is currently composed of approximately 45% of non-resident cross-border workers and the balance is composed in almost equal parts of national residents and foreign residents with an immigrant background. The Luxembourg economy is therefore largely dependent on a non-native workforce and their skills, to ensure its development, whether it be cross-border workers or foreigners setting up residence in Luxembourg. For Luxembourg, because of its relatively small size, there is both a quantitative need for foreign labour, as the country does not have enough workers to satisfy the demand for labour, and a qualitative need, i.e. for skills that Luxembourg itself cannot provide. Over the years, this phenomenon has become increasingly important and the shortage of labour with the skills in demand has become increasingly evident, such that it is often cited by companies in Luxembourg as one of the major obstacles to their development.

To this end, the government has started to develop a new roadmap for talent attraction, development and retention in 2019. The aim is not only to attract talent from abroad to Luxembourg, but also to accelerate the development of expertise at national level. For this purpose, a working group has been mandated in consultation with the social partners to reflect on a coordinated national strategy to attract and retain talent, as well as on how to develop skills locally in the future. Various measures have already been taken in this context: the revision of the regulatory framework concerning immigration procedures, communication campaigns and participation in specialised recruitment fairs.

In order to respond to the constant increase in the number of pupils, which requires school infrastructures that are equal to the challenge so as to create the best possible conditions for stimulating pupils' motivation and learning, to diversify academic programmes in all regions of the country and to offer quality training courses that meet the different needs of pupils, the government has developed an ambitious school infrastructure programme⁸⁴. Accordingly, the government is investing €1.3 billion in establishing two new schools, eight new building projects for existing schools and five extension / redevelopment projects. There are also 40 ongoing school infrastructure projects.

Together with other Government and private stakeholders, the Department of Media, Telecommunications and Digital Policy (“SMC”) promotes innovation through communications infrastructure and digital technologies such as Artificial Intelligence, Blockchain, 5G and quantum technology⁸⁵.

To help remedy the challenge of the digital skills shortage, SMC, through the Digital Luxembourg initiative, and in close cooperation with the key ministries of National Education, Childhood and Youth, of Labour, Employment and the Social and Solidarity Economy, of Higher Education and Research, for Digitalisation and the University of Luxembourg, and also with the private sector, is encouraging and co-financing numerous digital skills education and training projects. This “digital skills” strategy is

⁸⁴ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/articles/2019/07-juillet/04-bausch-meisch-infrastructure.html

⁸⁵ For more information on this project, please refer to the contribution under “COMPONENT 3A: Promoting a data-driven economy” of the Luxembourg Recovery and Resilience Plan.



intended to be cross functional, on a “whole-of-government” basis, so as to initiate or support extra-curricular or professional training that corresponds to the needs of key socio-professional segments.

During the period 2019-2021, Luxembourg has adapted its digital skills policy by focusing more on so-called 'advanced' digital skills, such as know-how in artificial intelligence and 5G. More importantly, the current state of crisis has impacted learning patterns so that the demand for innovative on-line training has increased.

In cooperation with the *Institut de formation de l'Administration Publique* (INAP), AI Academy training courses were set up for the benefit of decision-makers in the public sector. As of 2021, training courses will be rolled out dealing with the general principles of artificial intelligence, such as www.elementsofai.lu (see below), as will training courses on assimilating ethical criteria when choosing AI solutions in public sector applications. In December 2020, the government launched a generic training programme on the basics of artificial intelligence lasting from February to April 2021. The training www.elementsofai.lu is based on a platform created by the Finnish technology institute Reaktor and the University of Helsinki and has already proven itself in several EU countries. Digital Luxembourg, the Ministry of Education and Youth and the INAP, together with the University of Luxembourg and its Competence Centre, have decided to cooperate with the Reaktor Institute in order to offer this course to all students in the University, higher education students (BTS) and high school students aged between 16 and 19, as well as to a public of private and public professionals (INAP); the Luxembourg programme differs from a simple on-line course through personalised support with an examination and a certificate of participation.

Since January 2020, SMC/Digital Luxembourg, together with the Ministry of Higher Education and Research, have been cooperating on an initiative in the field of advanced digital skills: the German *Bundesministerium für Bildung und Forschung* (Ministry of Education and Research), as part of its major project “KI-Campus (*Campus für Künstliche Intelligenz*)”, is offering Luxembourg's specialised training institutions the opportunity to participate in calls for ideas for innovative training courses in the field of artificial intelligence.

The 2020 call for ideas resulted in an eligible Machine Learning course, developed by the University of Luxembourg Competence Centre and co-financed by Digital Luxembourg and the Ministry of Higher Education and Research.

In December 2020, the government decided to create a national platform for services and innovation in the field of learning in a digital environment, the Luxembourg Media and Digital Design Centre, which will take the form of an economic interest grouping (EIG). The grouping, acting under the supervision of the ministers responsible for higher education and national education, in collaboration with the Luxembourg Institute of Science and Technology (LIST), will be responsible for offering hosting services, strategic advice, information monitoring, pedagogical design, creation of customised content, engineering services, information and training to entities or stakeholders in both the public and private sectors. As such, it aims to channel national efforts in terms of e-learning strategy or in terms of digital training, by recommending common solutions to service seekers to the extent possible.

Since 2019, the “Digital Skills and Jobs Coalition Luxembourg” (DSJC), a real flagship programme for promoting digital skills initiated by the European Commission, has been steered by Digital Luxembourg, together with the Chamber of Commerce and Chamber of Trades. Its aim is to bring together all the country's digital skills stakeholders and to promote digital skills projects.



In 2021, there will be nearly 60 members in the digital coalition. The events for DSJC members and other interested parties focused on the following themes: *Upskilling and Reskilling, Remote working and learning, Skills in AI and Digital skills: state of play.*

With regard to the fight against early school leaving and, more generally, achieving success in education and developing lifelong skills, the government has implemented a series of measures based on three areas of action, namely prevention, intervention and the strengthening of skills in the context of lifelong learning.

Regarding the first area of action, in 2020, the government continued its efforts to promote the academic success of an increasingly heterogeneous population, where the linguistic and socio-economic background is critical to student success⁸⁶.

Reform projects in early childhood education and care and early childhood care (introduction of the multilingual education programme), care for children with special needs and at the secondary education level have been under way since the 2017-2018 school year, continuing into the 2018-2019 school year.

In secondary education, a series of laws was approved in 2017 to set the contours of a modern high school.

The government is continuing to diversify the range of education on offer in state schools in order to better adapt it to the heterogeneous profile of its population, by creating new forward-looking courses, adapting the language offer and innovating in terms of teaching:

- The European and international school offer in public education has been developed and now includes international, European, French-speaking and English-speaking classes and a German-Luxembourg school, as well as classes with a specific language regime.
- New training courses in sectors that provide numerous job opportunities are being set up in secondary schools. These courses assimilate technological developments in electronics and robotics. These include training for technicians in “Smart Technologies” (Smart and Green Energy, Smart Home, electromobility, Internet of Things, communication networks, etc.) or training for technicians in mechatronics, which offers a wide range of skills in mechanics, electricity, electronics, IT, hydraulics and pneumatics.

The acquisition of digital skills is systematically embedded in basic and secondary education. The development of coding skills and computational thinking are introduced in the STEM (science, technology, engineering, and mathematics) subjects in particular. Currently being tested in pilot elementary schools, coding will be extended to all classes in cycle 4 from September 2020 in the mathematics course; it will then appear in cycles 1 to 3 in the various school subjects, in a cross-curricular manner. From September 2021, a new 'Computer Sciences' course will be included in the timetable for all classes below general secondary education.

- The range of French- and English-language courses will be expanded in the field of vocational training.

In the second action area the goal is to intervene as soon as a situation occurs that could potentially lead to a student abandoning studies. Two courses of action are recommended: the projects set up by services of the Ministry of Education, Children and Youth are involved in these: intervention and

⁸⁶ See the OECD PISA results.



individualized monitoring of a student in difficulty and / or intervention at the level of an entire class, or even of a school.

Fifteen high schools offer vocational induction classes (CIP) at the beginning of the school year to young pupils who do not meet the criteria for access to higher classes of general secondary education or vocational training. Similar classes also accept minors who have already left the school system to enable them to undertake or get back into training courses.

The Psycho-Social and Scholastic Assistance Centre (CePAS) and the Psycho-Social and Scholastic Assistance Service (SePAS), which are present in most of the country's secondary schools, together offer a wide range of measures to combat dropping out of school.

The local youth offices (ALJ) are part of the National Youth Service (SNJ) and have the task of supporting young people in their transition to working life. They are aimed at young people who are still in school but who are about to leave without a specific orientation, who have left the school system without a diploma, who want to (re-)enter school or vocational training and who want to become active.

The National School for Adults (ENAD) is aimed at young people who have dropped out of school without obtaining certification or who can't find an apprenticeship, offering them a new chance of success in the mainstream school system.

The government takes into account the constant evolution of the world of work and societal challenges when addressing the third area of action, lifelong learning, and is pursuing its efforts to develop a national lifelong learning offer accessible to all and at any age. This means giving everyone the opportunity to acquire basic skills, to adapt their skills continuously, to acquire a higher level of qualification ("upskilling") or to obtain a new qualification ("reskilling"). It is equally important to help young people who have dropped out of school and adults who do not have a recognised qualification to find training that meets their needs and enables them to complete their course or to reorient themselves. A priority will therefore be to qualify more people on the job through continuing education and training, second route qualifications, partial qualifications and the validation of experience, or upskilling.

Within the framework of a national skills strategy, inclusive digital education and lifelong learning, it has been found that several reforms and investments are required to expand the supply, quality and participation of adults in training. With the *Universités Populaires*, the national education system intends to create centres for lifelong learning for adults, for the purposes of professional promotion and integration, for socio-professional integration or for the promoting active citizenship. The *Universités Populaires*, located in the south, centre and north of the country, will house the digital learning hub and the National Language Institute in addition to the Adult Education Service, the Vocational Training Service and its National Centre for Continuing Vocational Training. The development and equipment of these *Universités Populaires* will spur accelerated implementation of new flexible and digital forms of learning. The *Universités Populaires* were defined and established by an amendment to the Adult Education Act 1991.

In the field of continuing vocational training, the National Centres for Continuing Vocational Training (CNFPC) are to be brought closer to the working world in collaboration with the Employment Development Agency (ADEM), in order to adapt or supplement their offerings. Training courses leading to qualifications are being expanded to accommodate more learners in courses adapted to their needs and the requirements of their employers. The National Institute for the Development of Continuing Vocational Training (INFPC) is currently evaluating the courses it helps to promote.



A quality process will be introduced to ensure the quality and permeability of adult and continuing education. The platform www.lifelong-learning.lu, which focalises continuing education and adult education and training programmes in Luxembourg, will be restructured to allow a personalised search according to a learner's objectives. To promote access and participation of adults in lifelong learning, a service for advice, guidance and support for adults in the field of training will be set up under the responsibility of the Adult Education Service. This service will be a complement to the Guidance Centre's programmes.

In terms of higher education, the government is continuing its efforts to create a fertile ground for expanding the supply of public and private higher education programmes, as well as for developing quality in the sector based on European standards, particularly through a revision of the law on the organisation of higher education provided for by the government 2018-2023 programme. This revision of the law will aim at optimising the governance of the professionally oriented higher education programmes leading to the "*Brevet de technicien supérieur*" (BTS) and reviewing the accreditation and monitoring procedures for BTS programmes as well as for private higher education institutions and their programmes in Luxembourg. At the beginning of the 2020-2021 academic year, seven programmes offered by two private higher education institutions were accredited. For the same reference period, the number of accredited BTS courses is 29, offered in 12 high schools serving a total of 880 students.

As for the University of Luxembourg, it should be noted that an initial cycle of medical studies leading to a Bachelor's degree, which started in 2020, will contribute to the sustainability of the supply of doctors in Luxembourg. An additional protocol on scientific and university cooperation, signed in 2018 with the government of the French Republic, provides for inter-university cooperation at the level of Master's programmes in medicine and for hospital-university cooperation in the framework of basic medical training and specialisations.

In January 2020, an inter-ministerial committee was set up to recommend measures to ensure that the training of health professionals is adapted to scientific and technical progress and to meet the future public health challenges that Luxembourg will have to face, to determine what is required to introduce a Bachelor's level diploma for certain categories of nurses and to evaluate the financial, legal and regulatory consequences. The results of the committee's work are expected in the first half of 2021.

In the new multi-annual establishment contract between the University of Luxembourg and the government, which covers the institution's objectives for the period 2018-2021, the University commits to obtaining accreditation of several Bachelor and Master degree programmes in order to provide and support a high-quality education experience that corresponds to the trends in innovation.

The "*Interdisciplinary Space Master*" programme launched by the University in September 2019 will train students in the skills and entrepreneurial spirit needed in the space sector. The programme integrates the project approach to a large extent thanks to dedicated facilities such as the LunaLab (which simulates lunar conditions), the Zero-gravity chamber, the Satcomlab or the Cubesat lab.

The government continues to implement its policy for higher education and research on the financial resources level. Accordingly, financial contributions to the functioning of the University of



Luxembourg have grown considerably. The State's allocation for the functioning of the University increased from €72 million in 2009 to €215.6 million⁸⁷ in 2021.

The government also continues to promote inclusion in higher education. It particularly seeks to increase the percentage of students with disabilities graduating from higher education. The amended law of 27 June 2018 on the organisation of the University of Luxembourg thus introduced a commission for reasonable accommodations, aimed at putting in place a series of reasonable accommodations for students with special educational needs.

The number of students enrolled at the University of Luxembourg has been stable for several years.

Table 3: Total number of student registrations at the University of Luxembourg by academic year (excluding incoming exchange students)

Year	Number of students
2012-2013	6,308
2013-2014	6,231
2014-2015	6,308
2015-2016	6,062
2016-2017	6,020
2017-2018	6,277
2018-2019	6,293
2019-2020	6,714*
2020-2021	6,783*

Source: Ministry of Higher Education and Research, University of Luxembourg. Table available at: <https://gd.lu/9NF4K>

*provisional figure

In the context of the COVID-19 pandemic, the government has decided on several measures, two of which, the Future Skills Round Table ('*Skillsdësch*') and the FutureSkills Programme, focus on analysing skills needs, identifying the most promising occupational areas and facilitating professional reintegration. A third measure concerns the *Diplom +* training programme for young people who need a helping hand in the transition from high school to working life or higher education. Finally, at the beginning of 2021 the government launched the Digital Skills training voucher project for employees relegated to short-time working.⁸⁸

3.4.6. Housing supply

The new government notes that house prices continue to rise steadily, despite a multitude of positive actions by previous governments. To remedy this, it will have to invigorate low-cost public housing programmes, particularly rental housing. To achieve this goal, the 2018-2023 government programme plans to launch a concerted public action and private initiative as an adequate response. The priorities of public action will focus on the following points:

- A complete overhaul of the amended law of 25 February 1979 on housing assistance and the system of subsidies for creating housing, with an increase of resources for augmenting the supply of low-cost rental housing;
- Invigoration in the process of creating affordable housing construction by public developers;

⁸⁷ Amount excluding annual financial contributions from the State under the multi-annual agreement between the State and the University of Luxembourg, 2018-2021 - Medicine
For more details see:

https://www.fr.uni.lu/universite/documents_officiels/convention_pluriannuelle_entre_l_État_et_l_universite_du_luxembourg_2018_2021_medicine

⁸⁸ See section 3.2 on the effects of the crisis on employment.



- Providing more building plots;
- Bolstering current resources to increase the supply side, to include land use plans, municipal development and protection of the environment;
- Development of a new 2.0 “State-Municipalities” Housing Pact aiming to better support municipalities wishing to implement a housing development strategy⁸⁹;
- Better quality of urban areas, quality of life and social cohesion in neighbourhoods, as well as improving quality in construction and energy projects, to include the habitat biology in general;
- Preventing land speculation and improving price transparency in the rental market.

Municipalities will be more involved in reducing the shortage of housing alongside the two existing public players, the *Fonds du Logement* and the *Société Nationale des Habitations à Bon Marché* (SNHBM). To support the municipalities, special units will be established within the Ministry of Housing to advise municipalities in managing their own subdivision projects. The *Klimapakt* model will serve as a guide, by providing the municipalities with more professional housing advisers, while combining this approach with the know-how of private initiatives.

With regard to making land available, the pre-emption right of the State, municipalities and public developers will be analysed and, if needed, simplified and modified as required. The point is to generalize the right of pre-emption at a price set at the moment when a subsidized project is carried out in either the public or private sphere when a given property is sold. Overall, available land potential for residential development in the near future is sufficient for the creation of a significant number of dwellings. Therefore, the requirement is to better identify factors in the way of project development and improve the incentives to sell for owners. Only in the medium and long term it will be necessary to make additional land available provided that it is developed in the short term and in accordance with planning objectives.

The government’s programme provides for acquiring land slated for housing will be established. Since then, the Ministry of Housing has set up a land evaluation unit composed of representatives of the Ministry of Housing, the Ministry of Finance and representatives of the *Fonds du Logement* and SNHBM for possible acquisition. In this way, the state was already able to acquire a few parcels in the 2019 and 2020 budget years. From 2020 onwards, the State has set up a special fund to support housing development, through which it intends to pursue its active policies of land acquisition and development of affordable housing units. Capital gains and profits on sales of land to the State or a municipality for private citizens are always exempt from income tax.

The property tax reform, which will act to counter land speculation, will be linked to the overhaul of the “new generation” General Development Plans (PAG). The reform of the property tax system will prove to be an opportunity to replace and simplify the system of the municipal tax on unoccupied property or property not allocated for the construction of certain buildings.

In order to meet the challenge of mobilising reserves of land for building, the Spatial Development Observatory (SDO) has implemented the *Raumplus* project. One of its tasks is to establish a qualitative overview of the reserves of land for building in the municipalities by actively involving the stakeholders at the municipal level. The active participation of the local authorities is essential because their

⁸⁹ For more information on this project, please refer to the contribution under “COMPONENT 1C: Increasing the supply of affordable and sustainable public housing” of the Luxembourg Recovery and Resilience Plan.



knowledge of the terrain ensures a qualitative assessment of the areas, such as their current use, the condition of their facilities, the obstacles to their development or their availability in the long term. This information is essential for action and for developing strategies and targeted measures to mobilise the reserves.

Concerning the social rental management tool (GLS), the State has increased its financial participation as from 2021 so that it corresponds more closely to the real requirements of the actors in the field. This system has two major objectives: firstly, putting unoccupied housing to use and secondly, access to affordable housing for low-income households.

In view of the strong increase in rental market prices in recent years in Luxembourg, it is necessary to exert better control over changes in rents and rental costs. The recent study carried out by LISER for the *Observatoire de l'Habitat* showed that in 2018, around 18,000 households among the 40% of the population with the lowest standards of living spend more than 40% of their disposable income on renting accommodation. The government wants to contribute to providing better protection to the lowest income households by better regulating tenants' rights. Accordingly, the recast of the tenancy law brings several changes to the current law, the key elements of which include:

- Better regulation of agency fees and rental guarantees
- Facilitating co-tenancy and strengthening the rights of the contracting parties
- Clarifying the methods for determining amounts of capital invested
- Clarifying the rent ceiling for furnished accommodation, including furnished rooms
- Abolition of the concept of luxury accommodation
- Clarification of the categorization of a lease contract for leases that are extended

As part of the reform of the Housing Benefit Act 1979, the government intends to introduce a fairer system for setting rents for tenants of state-subsidised housing for low-income households. The current calculation method, which dates back to 1979, presents a series of inconsistencies that render it no longer suitable to the composition of households currently seeking affordable housing. This is particularly detrimental to single-parent households and individual households. Another objective of the reform is to harmonise how rents for subsidised housing are determined, regardless of the developer of the project.

The concept of a social landlord has been introduced, who will be the entity in charge of managing affordable rent dwellings that are least in accordance with the terms of a social lease. The social landlord must have both the approval of the Ministry of Housing and allocated housing units from a social developer to act in this capacity.

In order to respond to the emergency situations of tenants with financial losses, due to the health crisis caused by the pandemic, the government decided to put in place several support measures.

Firstly, following the lockdown measures affecting many economic sectors due to the COVID-19 pandemic and the increasing number of people at risk of experiencing a loss of income, it was decided to move forward the entry into force of the planned adaptation of the tables relating to rent subsidies annexed to the amended Grand Ducal Regulation dated 9 December 2015 laying down the conditions and procedures for granting the rent subsidy to 1 April 2020. In the current state of crisis, adapting the scale of reference rents and the ceilings used for the rent subsidy is an adequate response to the economic restrictions faced by tenants with low incomes.



Secondly, in order to protect tenants for whom a rent increase that would place an additional burden on them, the government had decided on a temporary freeze on residential rent rates. In November, the government decided to extend the temporary freeze on rent increases, initially in force until the end of the year, by 6 months, i.e. until 30 June 2021.

Thirdly, as part of the suspension of deadlines in jurisdictional matters, on 25 March 2020 the Government decided to suspend evictions in matters relating to residential leases. This measure prevents people from being rendered homeless during the crisis.

3.5. Regulated professional business services

The Council of the European Union recommends that Luxembourg take action to “*reduce barriers to competition in regulated professional business services.*”

In the Luxembourg SBA Fact Sheet (November 2017)⁹⁰, the European Commission noted that the Luxembourg business services sector has recently experienced exceptional growth, with management & consulting, legal and accounting services acting as the main drivers. According to the *SBA Fact sheet (2019)* for Luxembourg, « *the steady increase in the number of registered firms is a clear reflection of the attractive business environment in Luxembourg. In 2018, the total number of registered businesses was 35,113, an increase of 4.1% on the previous year.* »⁹¹. A comparison of the average annual growth rate of the number of companies engaged in professional, scientific and technical activities (Nace Rev.2 M) between 2011 and 2018 shows a higher rate in Luxembourg than the EU-27 average⁹². Business services in Luxembourg continue to enjoy a favourable business environment that promotes added value creation and employment. In Luxembourg, many foreign companies are established or even provide services on a daily basis within the country. In addition, many entrepreneurs rely on the recognition of their professional qualifications on the basis of European rules. The authorisations for the establishment of companies in Luxembourg reflect a picture close to the structure of its population with 47% foreign residents and its workforce, featuring more than 70% foreigners, including both foreign residents and cross-border workers. Luxembourg is clearly among the most open economies in the EU. These factors make it necessary to put into perspective the message that barriers to competition are significant in Luxembourg. Moreover, the government is of the opinion that regulations, for example in the area of professional training or conditions of access to regulated professions, make sense insofar as they are aimed not only at ensuring quality services, but also at guaranteeing the safety of users.

With a view to improving the business environment by reducing regulatory barriers, the government is continuing to adapt the regulations governing access to commercial, craft and self-employed professions.

The bill transposing Directive 2018/958 of the European Parliament and of the Council dated 28 June 2018 on a proportionality test prior to adopting a new regulation of professions was submitted to the Chamber of Deputies at the beginning of October 2019⁹³. Once in force, this new law will impose a proportionality review on any new provision regulating the access and exercise of regulated professions. The purpose of this test is to review the proportionality of a desired provision and may thus reduce regulation of professions in the long term.

⁹⁰ EUROPEAN COMMISSION, 2017 SBA Fact Sheet Luxembourg, November 2017, p.3: “Professional activities is another sector which has experienced outstanding growth recently. In 2012-2016, SME employment in professional activities rose by 19.2% and SME value added increased by 42.9%. The main growth drivers were the sub-sectors management and consulting (for SME value added), and legal and accounting (for SME employment).”

For more details see: <https://ec.europa.eu/docsroom/documents/26562/attachments/19/translations/en/renditions/native>

⁹¹ EUROPEAN COMMISSION, 2019 SBA Fact Sheet Luxembourg, November 2019, p.3:

For more details see: <https://ec.europa.eu/docsroom/documents/38662/attachments/19/translations/en/renditions/native>

⁹² For more details see: https://ec.europa.eu/eurostat/databrowser/view/sbs_na_sca_r2/default/table?lang=fr

⁹³ For more details see: <https://chd.lu/wps/portal/public/Accueil/TravailALAChambre/Recherche/RoleDesAffaires?action=doDocpaDetails&id=7478>



It is planned to table a bill reforming the right of establishment in the Chamber of Deputies in summer 2021. With a view to systematic “deregulating” of professions, this new draft law seeks to promote and facilitate access to the profession by creating a framework adapted to the current business world. This work was conceived on the basis of the criteria laid down in Directive (EU) 2018/958 regarding a proportionality test. With the aim of considerably simplifying its legal framework, the key element of this reform is the introduction of three new lists of professions established according to required professional qualifications:

- List A - Professional qualifications resulting from a master craftsman certificate.
- List B - Professional qualifications resulting from a professional aptitude certificate.
- List C - Without diploma.

The rules on accountants and auditors will be reviewed as a result of the changes being considered to the right of professional establishment.

3.6. Anti-money laundering and the tax system

The Council of the European Union recommends that Luxembourg take action to “ensure effective supervision and enforcement of the anti-money laundering framework as regards professionals providing trust and company services, and investment services. Step up action to address features of the tax system that facilitate aggressive tax planning, in particular by means of outbound payments.”

3.6.1. Anti-money laundering

The national legal and regulatory framework on anti-money laundering was modernised and strengthened in 2020 through a series of laws and regulations, including the provisions related to the supervision of trust and company service providers (TCSP).

The law of 25 March 2020 amending the law of 12 November 2004 on the fight against money laundering and terrorist financing, as amended, strengthens the provisions of the law of 12 November 2004 on the professional obligations of trust and company service providers (TCSP) and investment services, in particular with regard to due diligence obligations. It also strengthens the supervisory and sanctioning powers of the supervisory authorities and self-regulatory bodies responsible for supervising the TCSP and investment services in the context of anti-money laundering and combating the financing of terrorism (AML/CFT).

The law of 25 March 2020 establishing a central electronic data retrieval system related to payment accounts and bank accounts identified by IBAN and safe-deposit boxes held by credit institutions in Luxembourg introduces the obligation for all TCSP to register with their respective supervisory authority or self-regulatory body under the supervision of which they fall by virtue of Article 2-1 of the law of 12 November 2004. This new obligation is specifically aimed at improving the effectiveness of (AML/CFT) supervision of the TCSP and the implementation of the entire AML/CFT framework. Finally, it adds to the existing licensing obligations for the purpose of market entry controls for these professionals as well as for the purpose of prudential supervision. It also establishes the obligation for supervisory authorities and self-regulatory organisations to coordinate establish and maintain a single list of all TCSP. This list shall inform the supervisory authority or the self-regulatory body in charge of AML/FT supervision with regard to each entity on the list. This list will also provide greater transparency in verifying whether or not a given professional is authorised to carry out TCSP activities.



The law of 10 July 2020 establishing a Register of Fiduciary Contracts and Trusts establishes a central register of beneficial owners of trusts and fiduciaries to which TCSP have access in the context of implementing customer due diligence measures.

The law of 25 February 2021 amending the law of 12 November 2004 on combating money laundering and terrorist financing, as amended, further strengthens the provisions of the amended law dated 12 November 2004 by introducing provisions relating to the verification of the professional standing of those TCSP that have not already been verified due to any licence, registration or authorisation issued by a supervisory authority or a self-regulatory body to conduct business operations falling within the scope of the 2004 law.

Grand-ducal Regulation of 14 August 2020 amending Grand-ducal Regulation of 1 February 2010 providing details on certain provisions of the law of 12 November 2004 on the fight against money laundering and terrorist financing, as amended adjusts the Grand-ducal Regulation of 1 February 2010 following the transposition of the AMLD5 directive by aligning terminology, avoiding redundancies and clarifying certain provisions applicable to TCSP.

Financial Sector Supervisory Commission (CSSF) Regulation No. 20-05 of 14 August 2020 amending CSSF Regulation No. 12-02 of 14 December 2012 on the fight against money laundering and terrorist financing adjusts the CSSF Regulation No. 12-02 of 14 December 2012 following the transposition of the AMLD5 directive by aligning terminology, avoiding redundancies and clarifying certain provisions applicable to TCSP and investment services subject to the supervision of the CSSF.

The Regulation of the *Commissariat aux Assurances* (Luxembourg Insurance Supervisor - CAA) No. 20/03 of 30 July 2020 relating to the fight against money laundering and terrorist financing replaces and repeals CAA Regulation No. 13/01 following the transposition of the AMLD5 directive by aligning the terminology, avoiding redundancies and specifying certain provisions applicable to TCSP under CAA supervision.

The understanding of money laundering and terrorist financing risks emanating from the TSCP sector as well as the supervision of TCSP have been strengthened in 2020.

One of the notable measures is the update of the National Risk Assessment of Money Laundering and Terrorist Financing (ML/FT), strengthening the understanding of inherent ML/FT risks, including those emanating from the TCSP and investment services sector and identifying areas where defences need to be further strengthened. The National Risk Assessment for 2020 was published on 14 December 2020.

In addition, CSSF conducted and published as a report on 20 July 2020 producing a ML/FT risk analysis of specialised professionals of the financial sector (specialised PFS) which provide services to companies and trusts. It analysed the specific money laundering/terrorist financing risks of Specialised PFS providing such services. Specialised PFS must reflect the results and conclusions of this assessment in their internal procedures so that these remain appropriate to effectively mitigate ML/TF risks. Other entities supervised by the CSSF must also take into account and use the results and conclusions of this assessment in case they provide TCSP services.

The Prevention Committee is in the process of conducting a vertical risk assessment on terrorist financing which also involves TCSP and which will be published shortly. In addition, an assessment of ML/FT risks related to Luxembourg legal entities and legal arrangements in the sector is in planning.

Furthermore, it should be recalled that all professionals providing services to companies and trusts as defined in Article 1, paragraph 8 of the amended law of 12 November 2004 are subject to continuous



supervision in the area of anti-money laundering by the supervisory authority or self-regulatory body under the supervision of which they by virtue of Article 2-1. The supervisory and sanctioning powers of the supervisory authorities and self-regulatory bodies were strengthened by the Law dated 25 March 2020.

Furthermore, the supervision and implementation of the effective anti-money laundering framework in relation to trust and company service providers supervised by self-regulatory bodies has been strengthened. For example, between 2019 and 2020, the self-regulatory body in charge of accountants carried out 21 inspections covering 92 professionals under its supervision, which represents 23% of member entities. The self-regulatory body in charge of auditors inspects between 20 and 25 of the 90 professionals subject to supervision each year. As regards the supervision of lawyers, it should be noted that in total, between 2016 and 2020, the two Bar Associations carried out 74 on-site inspections, covering 67 law firms, which means that a total of 1,455 individual lawyers were subject to ML/FT control. It should also be noted that only a limited number of lawyers act as TCSP and therefore a clear distinction must be made between those acting as TCSP, which are subject to ML/FT measures, and those acting only in litigation, which are not. Comparing the number of checks carried out to the total number of lawyers is methodologically inadequate and in fact misleading.

Other projects to strengthen AML/CFT supervision are to be launched in 2021. For example, work will be undertaken to enable the Luxembourg Business Register (LBR) to make better use of the data at its disposal, mainly in the context of the national assessment of money laundering and terrorist financing risks. In addition, discussions on a further strengthening of the regime applicable to TCSP will be launched with a view to consolidating the legal regime applicable to them.

3.6.2. Tax system

Measures to combat aggressive tax planning

Luxembourg has long been committed to the fight against tax fraud and tax evasion. For several years now, Luxembourg has regularly strengthened its tax legislative framework with far-reaching measures aimed at countering aggressive tax planning.

More specifically, Luxembourg has a framework for the effective exchange of tax information which guarantees administrative cooperation between tax authorities at European and international level and enables effective action against tax fraud and tax evasion. This framework is the result of the transposition of several administrative cooperation directives (DAC 1, 2, 3, 4 and 5) which incorporate globally agreed standards of tax transparency. The DAC 6 directive allowing the automatic exchange of information on certain aggressive cross-border tax planning schemes has just been transposed into Luxembourg law. By its deterrent and preventive effect, the reporting of information on aggressive tax planning arrangements is likely to contribute effectively to efforts to create a fairer tax environment. This exchange framework will be complemented by DAC 7 Directive, which, in addition to certain clarifications to administrative cooperation in general, will provide for reporting obligations against sellers in the sharing and on-demand economies from 1 January 2023.

The transposition during 2018 and 2019 of the ATAD 1 and ATAD 2 directives containing anti-avoidance provisions has led to the introduction and reinforcement of certain mechanisms in Luxembourg law to fight aggressive tax planning. In this context, one can mention in particular the substantial strengthening of the anti-hybrid rules which aim at counteracting the effects of tax schemes consisting in taking advantage of inconsistencies between two or more tax systems.

In addition, the Multilateral Convention on the Implementation of Tax Treaty Measures to the Prevent Base Erosion and Profit Shifting - BEPS mechanism, the “Multilateral Instrument” or “MLI”, was ratified



in 2019 by Luxembourg. By introducing a number of minimum standards, including the “Principal Purpose Test” rule in the double taxation conventions concluded by Luxembourg, the Multilateral Instrument specifically strengthens the Luxembourg legal framework in the context of the fight against aggressive tax planning structures that are based on treaty shopping.

In recent years, Luxembourg has also adapted certain provisions of Luxembourg tax law in addition to the measures mentioned above in order to counteract certain types of undesirable behaviour. More specifically, in 2018, adjustments were made to two legislative provisions whose interpretation by taxpayers may have favoured base erosion and profit shifting practices, or even led to the non-taxation of certain types of income. Both amendments contribute to strengthening the level of protection against aggressive tax planning within the internal market. These two measures result in Luxembourg requiring a taxpayer to prove that another State also recognises a permanent establishment before granting an exemption on the basis of the applicable double taxation convention, and in eliminating the tax-exempt exchange or conversion of loans into shares⁹⁴ (paragraph 16(5) of the Tax Adjustment Act and article 22bis of the Luxembourg tax law - L.I.R.).

Moreover, with the objective of fighting certain tax planning structures, since 1 January 2019 Luxembourg has been applying enhanced control mechanisms on the basis of an administrative circular vis-à-vis jurisdictions included on the list of non-cooperative jurisdictions of the Code of Conduct (business taxation) (7 May 2018, L.G. - A no. 64).

Measures targeting outbound payments

With regard to the issue of outgoing payments as mentioned in recommendation 4, the law dated 10 February 2021 amending the amended law dated 4 December 1967 on income tax should be described more specifically.

Aimed at putting an end to tax planning practices that attempt to exploit certain provisions of the tax system in relation to outbound payments, the measure is a direct response to the recommendation of the Council of the European Union that Luxembourg “address the features of the tax system that may facilitate aggressive tax planning, in particular through outbound payments”⁹⁵.

Consisting in denying the deduction for tax purposes of interest or royalty expenses for Luxembourg resident taxpayers through a related company established in a country or territory that is non-cooperative for tax purposes and is included in the European Union's list of non-cooperative jurisdictions for tax purposes (Annex I), the measure contributes to combating certain aggressive tax planning structures which result in outbound interest and royalty payments made by Luxembourg-based companies to such jurisdictions avoiding taxation or being taxed at a low level because such payments - in particular to jurisdictions which do not operate a corporate tax regime or which apply zero or close to zero nominal corporate tax rates - are otherwise not subject to any taxation, or are only taxed at a low level, in the recipient's jurisdiction⁹⁶. The effectiveness of this measure in dealing with low or double non-taxation situations stems from the adjustment of the Luxembourg tax base by adding back the amount of interest or royalty payments made to the jurisdictions in question, thus significantly reducing any incentive for a resident taxpayer to set up financing structures involving such jurisdictions.

All of the above measures, which are already applicable in Luxembourg law, as well as the measure introduced by the law dated 10 February 2021 constitute an adequate and decisive response by

⁹⁴ Amendments to paragraph 16(5) of the Tax Adjustment Act and Article 22bis of the amended Act dated 4 December 1967 on income tax through PL 7318.

⁹⁵ Council Recommendation dated 9 July 2019 on the National Reform Programme of Luxembourg for 2019 and the Council Opinion on the Stability Programme of Luxembourg for 2019.

⁹⁶ See also in this sense the European Commission's 2020 Report for Luxembourg, published on 26 February 2020 in the context of the 2020 European Semester.



Luxembourg to Recommendation 4. These measures will be supplemented in future by the implementation in Luxembourg law of more specific measures aimed at resolving residual instances of tax base erosion and profit shifting and ensuring that companies operating internationally pay at least an effective minimum tax (pillar 2) resulting from the global agreement currently being negotiated at OECD level⁹⁷.

⁹⁷ For more information on this project, please refer to the contribution under “COMPONENT 3C: Promoting a transparent and fair economy” of the Luxembourg Recovery and Resilience Plan.



4. Progress towards the Sustainable Development Goals (SDG)

At the 2015 UN Summit on Sustainable Development in New York, the Heads of State and Government, including the Prime Minister of Luxembourg, adopted 17 Sustainable Development Goals (SDGs) to end poverty, promote prosperity and well-being for all, protect the environment and address climate change. This 2030 Agenda for Sustainable Development is universal in nature and applies to all developing and developed countries. It was intended to pave the way for a new development paradigm for the next 15 years, with a focus on leaving no one behind.

In December 2019, the new European Commission, which took office in autumn 2019, presented a new growth strategy: the European Green Deal⁹⁸. The Green Deal for Europe is a roadmap to make the EU economy modern, competitive and resource-efficient by turning climate and environmental challenges into opportunities in all policy areas and ensuring a just and inclusive transition for all. Furthermore, the new strategy is more closely aligned with the sustainable development goals of the 2030 Agenda for Sustainable Development, which entered into force on 1 January 2016. Countries will need to mobilise to end all forms of poverty, combat inequality and tackle climate change⁹⁹. Eurostat monitors progress in this context at EU level through a set of indicators¹⁰⁰. Beginning with the 2019-2020 cycle, the UN Sustainable Development Goals (SDGs) have been integrated into the European Semester. The European Commission assessed the progress of Member States in implementing the SDGs via the framework of the 2020 Country Reports.

This NRP takes into account the priorities of the new 2021 annual strategy for sustainable growth published in September 2020 and as such can contribute to leading these policies toward the SDGs by ensuring monitoring of progress achieved and closer coordination of the efforts made at national level. In this context, it is worth recalling that at the end of 2019, the government adopted the third National Plan for Sustainable Development (NPSD)¹⁰¹, which is the main instrument for implementing the SDGs in Luxembourg. The NPSD links national policy with Luxembourg's international commitments and establishes a direct relationship with the ten priority areas of action that Luxembourg has identified with regard to the challenges facing the country. This chapter draws heavily on the NPSD.

4.1. SDG 1 – End poverty in all its forms everywhere

Luxembourg's society is based on diversity. A considerable part of the population is not of Luxembourg nationality, an element to which great importance is attached in the policy of social cohesion. One of the government's priorities is to strengthen this cohesion by working against all types of social exclusion and discrimination, by actively combating poverty and by promoting social and professional inclusion. The government's objective is to support the implementation of social convergence through the principles set out in the European social rights framework, which aims to improve the living conditions of our citizens and implement a series of measures to counteract opposite trends.

⁹⁸ For more details see: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_fr

⁹⁹ For more details see: <https://www.un.org/sustainabledevelopment/fr/development-agenda/>

¹⁰⁰ For more details see: <https://ec.europa.eu/eurostat/web/sdi/overview>

¹⁰¹ For more details see: https://gouvernement.lu/fr/actualites/toutes_actualites/communiqués/2019/12-decembre/20-conseil-gouvernement.html



Table 4: SDG 1 indicators of assessment

Indicator	Assessment unit	Year	Value
People at risk of poverty or social exclusion	% of the population	2019	20.6
People at risk of income poverty after social transfers	% of the population	2019	17.5
Severely materially deprived people	% of the population	2019	1.3
People living in households with very low work intensity	% of 0–59-year-olds	2019	7.5
In work at-risk-of-poverty rate	% of persons aged 18 years and older	2019	12.1
Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames of floor	% of the population	2019	15.4
Self-reported unmet need for medical examination and care	% of persons aged 16 years and older	2019	0.2
Population having neither a bath, nor a shower, nor indoor flushing toilet in their household	% of the population	2019	0.1
Population unable to keep home adequately warm	% of the population	2019	2.4
Overcrowding rate	% of the population	2019	7.1

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Status:

Regarding the first sustainable development objective, the monitoring table shows that Luxembourg ranks above the EU average for most indicators. However, the fight against poverty remains a challenge that the government pays particular attention to. The government maintains a strong commitment to the most vulnerable populations with a combination of supportive measures. Investments in families and children will continue with a particular emphasis on benefits in kind. Although these benefits in kind are not reflected in the at-risk-of-poverty rate, their impact on the standard of living of households is significant.

Examples of key strategies and measures:

- Promotion of women in politics and business
- Promotion of affordable housing construction by public developers
- Modernisation of tenancy legislation to better control rises in rent and to protect tenants
- Distribution of food and basic necessities to people in situations of severe material deprivation
- Introduction of measures to reintegrate unemployed or inactive people into the labour market and increase their work intensity

Box 2: Focus on some specific measures implemented in the areas of social inclusion and living conditions of citizens

The government has implemented the following measures, aiming to strengthen social cohesion and inclusion, and combating poverty.

- Renewal of the cost-of-living benefit for 2021 and a 10% increase over the initial amounts for 2020

In order to combat the phenomenon of “working poor” and to target social transfers properly, on 20 November 2020 the Government Council approved a cost-of-living benefit for 2021 via a draft regulation of the Government in Council. While the main objective of this regulation is to renew the allocation of a cost-of-living benefit to low-income households for 2021, it was also decided to increase the maximum amounts of the cost-of-living benefit by ten per cent compared to the initial



amounts of 2020. Additionally, since 2018, in order to increase the number of potential beneficiaries of the cost-of-living benefit and to reach more low-income families (working poor), family allowances, the back-to-school allowance and the birth allowance are no longer taken into account in determining the overall annual incomes of households.

- Integration

Regarding the inclusion of all residents, the Ministry of Family Affairs, Integration and the Greater Region has continued to strengthen its initiatives in the areas of social integration and living together. Ever since the creation of the new department for integration in January 2020, integration programmes have been digitalised to ensure access to training and information even during the health crisis. Numerous pilot projects have been launched under the National Action Plan (NAP), and the Asylum, Migration, Integration Fund (AMIF) calls for the development of innovative projects to combat all forms of exclusion, poverty and discrimination. Close collaborations have been established with many municipalities that are committed to setting up a Communal Integration Plan and signing a Pact for Living Together. These actions will improve the local and regional framework for reception and integration of people, while also targeting the most disadvantaged populations. A communication strategy has been developed in the field of integration in order to raise the awareness of all actors involved and to reach even the most remote of households. A study on racism has been launched, and seeks to provide a comprehensive overview of the situation in Luxembourg. Finally, the work on drafting a new law on integration has begun with the help of a broad written consultation that reunited more than 60 opinions from stakeholders in the field and through a series of four focus groups that allowed for in-depth discussions of certain key elements of this new law. Combating all forms of exclusion and poverty will be the fundamental principle of this law.

- Creation of an employment inclusion assistance activity

The law dated 1 August 2019 supplements the Labour Code by creating action to facilitate the inclusion of disabled employees and employees undergoing external reclassification in matters of employment. It aims to facilitate their integration into the labour market, and above all to keep people employed, particularly those who have the status of disabled employee, by means of the “assistance for inclusion in employment”. Specifically, the law provides that disabled employees, those undergoing external reclassification, and their employers, can request assistance from ADEM. The goal of this assistance will be to support the inclusion of employees within the company. The assistance focuses not only on the needs of employees, but also on those of their employers and their colleagues within the company. The establishment of the “employment inclusion support” activity will help in reducing the unemployment rate of those who are granted the status of disabled employee.

- Disability Action Plan 2019-2024

With the ratification of the United Nations Convention on the Rights of Persons with Disabilities in 2011, Luxembourg has been committed to progressively implementing the provisions of the Convention. The coalition agreement 2018-2023 of the Luxembourg government includes a new national action plan for the implementation of the Convention on the Rights of Persons with Disabilities (CRDPH) for 2019-2024 that lists 29 priorities, 55 objectives and 97 specific actions that the responsible ministries have committed themselves to carrying out. It was approved on 21 December 2019 by the Council of Government.

In order to implement this national action plan, the Ministry of Family Affairs, Integration and the Greater Region initiated various actions in 2020 and 2021, including:



- preparing an easy-to-read and -understand version of the action plan and a video animation with the theme: “inclusion concerns us all! “ to raise awareness in the general public of the issues in the action plan;
 - developing an awareness-raising campaign for the general public to inform them about the needs and skills of people with disabilities, and to encourage them to become more involved in volunteering work;
 - conducting a survey to identify the specific needs of people with disabilities in all areas;
 - creating an accessible communication centre for everyone, one that promotes different forms of alternative communication and which will also become an information and training centre for people with and without disabilities.
- Social inclusion income (REVIS)

In matters of fighting poverty and social exclusion, the law dated 28 July on the social inclusion income (REVIS) has been in force since 1 January 2019 and provides for a sharing of skills between the Employment Development Agency (ADEM), the National Office for Social Inclusion (ONIS) and the National Solidarity Fund (FNS). Regarding this principle and among beneficiaries who are of working age (between 18 and 64 years), 31% are deemed fit for the labour market and are registered as job seekers with the ADEM (3,888 persons), 42% receive intense follow-up support from the ONIS in order to meet their specific needs in terms of stabilisation, social and professional activation (5,248 persons) and 27% have no specific follow-up, as they are either full-time employees, pensioners, or deemed unfit for any activation for medical reasons (3,458 people).

Beneficiaries who fall within the competency of ONIS receive individualised follow-up support by regional agents in the social offices. (40) Forty per cent of them are directed towards “community service” type measures and, despite the ongoing health crisis, the number of such measures has increased since the implementation of the law, now amounting to 1,433 in December 2020 (compared to 1,393 of such measures in December 2019). The introduction of REVIS aims to increase the activation of all beneficiaries within a household to the extent that in 35 households, two adults participate in such measures simultaneously. Exemptions from the measures listed above account for 48% of beneficiaries, but these persons are referred to stabilisation or preparation measures, particularly in the areas of (vocational) training.

An evaluation of the system, particularly in regard to the achievement of the objectives of the law and the operation of the services concerned, is planned after a period of three years, and the relevant preparations are under way.

- Adaptation of the SSM, REVIS and RPGH schemes

As of 1 January 2019, the minimum social wage (SSM), social inclusion income (REVIS) and income for severely disabled people (RPGH) increased by +2.8 % following enactment of the law dated 15 December 2020.

- Social welfare aid law

In 2020, the 30 social welfare offices provided a total of €4,059,052 in non-refundable financial assistance. Funding for this measure included an annual budget of approximately €22 million (50% of which are provided by the State and 50% by the municipalities).

- European Fund for Aid to the Most Deprived (FEAD):



In Luxembourg, FEAD enables to respond to situations involving a lack of food or basic material goods. A total of 12,579 people representing 5,331 households received food aid and basic material assistance.

- Homelessness and housing exclusion

Luxembourg adopted the European Typology of Homelessness and Housing Exclusion (ETHOS) and therefore refers to the problem of homelessness in its broadest sense, covering all housing situations that can be considered inadequate.

On 18 January 2013, the government adopted the National Strategy on Homelessness and Housing Exclusion for the period 2013-2020. The strategy provides a framework for action for governmental institutions to combat all forms of homelessness and housing exclusion. It advocates a comprehensive approach that takes the social, psychological and medical needs of homeless persons into account, and which is based on the “Housing First” principle, a model that Luxembourg continues to develop.

The government programme foresees a final external evaluation of this strategy as a basis for determining what measures should be sustained. To this end, the Ministry of Family Affairs, Integration and the Greater Region has commissioned the public research institute LISER to carry out a final evaluation of the strategy. The evaluation will verify implementation of the actions recommended in the strategy and achievement of objectives, analyse the effects of this implementation, draw conclusions, and provide recommendations.

In general, the range of accommodation facilities for adults has evolved significantly in recent years. The number of people who can be accommodated with structures (financially) supported by the Ministry of Family Affairs, Integration and the Greater Region has more than quadrupled between 2012 and 2020. This increase is due to the implementation of new projects and the increase in capacity in existing facilities.

In 2019, the new building for the Winter Action, a humanitarian action set up by the government in 2001 to prevent homeless people from suffering from hypothermia during periods of extreme cold, opened its doors with an increased accommodation capacity. In 2021, the range of low-threshold facilities will be supplemented by a night shelter specifically for women. In addition, a concept for a care home for ageing homeless people is under development.

- Revision of the law and the Grand Ducal Regulation on gerontological care

A “gerontological reception” supplement may be paid under certain conditions to persons admitted to integrated centres for the elderly and care homes, but whose personal resources are insufficient to cover the cost of accommodation and personal needs. The government's 2018-2023 programme includes a review of gerontological care. Draft legislation is currently being prepared.

- Reference budget

The reference budget is the monthly minimum budget a certain type of household needs for all the goods and services necessary to live decently and to participate actively in society. The different basic needs are grouped into different categories. In order to determine this minimum budget, STATEC implemented the project “Household requirements - towards a reference budget” between 2013 and 2016 on behalf of the Ministry of Family Affairs, Integration and the Greater Region. In 2019, the existing categories were revised, and new ones were added. Particular attention was paid to the creation of a category dedicated to early childhood, which provides the ministry with indications to better target policies in favour of families with children. In 2021, the project will be rounded out with a category dedicated to the needs of the elderly.



- Reconciliation of work and family life

Making periods of parental leave more flexible and improving its modalities, as well as a substantial increase in the parental leave allowance were introduced in the reform of 1 December 2016, and have been very successful. Prior to this reform, the education allowance and the maternity allowance were abolished in order to promote employment, especially female employment, and job retention. These measures support the financial independence of both parents and thus act against the risk of poverty. The desired positive effects in terms of reconciliation of work and family life, equal opportunities and time that parents, especially fathers, are available for raising their children, have been achieved thanks to these reforms. The figures concerning parental leave show that the reform of parental leave is particularly favourable to men. In the past, the majority of parental leave was taken by women. In 2018, near gender parity was achieved with 4,875 women on parental leave compared to 4,721 men on parental leave (in absolute numbers). In 2019, men outnumbered women by 10%. This trend, whereby fathers benefit from the scheme on an equal footing with mothers, continued into 2020. Indeed, 5,802 men took parental leave in 2020, compared to 5,084 women. This shows that men wish to be more actively involved in their child's upbringing and that couples are increasingly sharing family responsibilities.

4.2. SDG 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Quality education is of paramount importance, both for the individual and for society at large. It is a cornerstone of inclusive, sustainable and intelligent development. Consequently, the government is pursuing an objective of promoting educational achievement and lifelong skills development in general.

Table 5: SDG 4 indicators of assessment

Indicator	Assessment unit	Year	Value
Early leavers from education	% of 18–24-year-olds	2019	7.2
Participation in early childhood education	of population aged from 4 years to entering school	2018	96.1
Underachievement in reading	% of students aged 15	2018	29.3
Tertiary educational attainment	% of 30–34-year-olds	2019	56.2
Employment rates of recent graduates	% of 20–34-year-olds	2019	89.4
Adult participation in learning	% of 25–64-year-olds	2019	19.8

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Nationally¹⁰², Luxembourg has selected a set of indicators, including the following indicator which is not included in the Eurostat set of indicators, but which is relevant for monitoring the implementation of SDG 4:

Indicator	Assessment unit	Year	Value
Certification rate	%	2016	89.4

¹⁰² For more information, please refer to the 3rd National Plan for Sustainable Development: <https://environnement.public.lu/content/dam/environnement/documents/developpement-durable/PNDD.pdf>



Source: Eurostat, Ministry of the Environment, Climate and Sustainable Development

Status:

As regards Luxembourg's performance in this area, apart from the indicator from the PISA study on insufficient reading literacy, the monitoring indicators show generally favourable performance.

Examples of key strategies and measures:

- Promoting quality in early childhood education and care
- Promoting multilingual education to prepare for schooling and integration into a multilingual and multicultural society
- Diversification of school programmes in public education, to better respond to the multiple profiles of pupils
- Diversification of academic orientations in secondary education to better meet the requirements of the labour market
- Continued efforts to combat academic failure and drop-outs
- Lifelong learning - Development of a *Université Populaire*
- Increasing the number of training courses targeted at job seekers to address skills shortages in the labour market and to provide a concrete employment perspective

4.3. SDG 6 – Ensure availability and sustainable management of water and sanitation for all

As an essential element for life and the balance of flora and fauna, the importance of water is undeniable. The guarantee of clean water and sanitation managed in a sustainable manner is therefore of major importance. Accordingly, the government applies particular focus to the preservation and improvement of water resources and to promoting their sustainable use.

Table 6: SDG 6 indicators of assessment

Indicator	Assessment unit	Year	Value
Population having neither a bath, nor a shower, nor indoor flushing toilet in their household	% of the population	2019	0.1
Population connected to at least secondary waste water treatment	% of the population	2017	97
Biochemical oxygen demand in rivers	mg of O ₂ by litre	n.a.	n.a.
Nitrate in groundwater	mg of O ₃ by litre	n.a.	n.a.
Phosphate in rivers	mg of PO ₄ by litre	n.a.	n.a.
Bathing sites with excellent water quality	% of bathing sites with excellent water quality	2019	70.59
Water exploitation index	% of average long-term available water (long-term annual average - LTAA)	2017	2.92

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Nationally¹⁰³, Luxembourg has selected a set of indicators, including the following indicators which are not included in the Eurostat set of indicators, but which are relevant for monitoring the implementation of SDG 6:

¹⁰³ For more information, please refer to the 3rd National Plan for Sustainable Development: <https://environnement.public.lu/content/dam/environnement/documents/developpement-durable/PNDD.pdf>



Indicator	Assessment unit	Year	Value
Percentage of natural surface water bodies having achieved a “satisfactory” ecological status	%	2021	51.2
Total phosphate content <0.3 mgP _{tot} /litre	measuring units of the nitrate directive network	2016-2019	75
Hydric stress index	%	2018	5.7
Efficiency of water usage	Thousands of cu m/€ million	2018	1.1

Source: Ministry of the Environment, Climate and Sustainable Development

Status:

Total water use averages around 132,000 m³/day (2018), of which around 121,000 m³/day are distributed by public drinking water supply networks (municipalities, inter-municipal associations). Some 11,000 m³/day are taken by declared private water catchments.

From the 132,000 m³ of water per day, the largest use category is that of households (60% of average consumption), followed by the services/industrial sector (23%) and agriculture (9%). Of the 23% of the services/industrial sector, 9% are large consumers (> 8,000 m³/year), 7% are industries/tertiary sector with consumption below 8,000 m³/year and 7% use water from private catchments. Loss through leakage represents an average of 10%.

Securing the supply of drinking water is not limited to the search for and exploitation of new drinking water resources or the construction of new infrastructures (the new SEBES water treatment plant and potabilization of water drawn from the Moselle). For this reason, the government has also made it a priority to protect existing water resources, in particular by setting up protection zones, and to promote savings in water consumption. Currently, water catchments for human consumption, which supply 62,000 people, are out of service due to agricultural pollution. Water is a precious commodity that requires careful management in terms of both quantity and quality. In 2015, the rate of connection of the population to a water treatment system was close to 97%, but none of the surface water bodies achieved a classification as “good” with regard their chemical content. It should be noted that between the 2009 and 2015 assessment campaigns, a change in methodology was applied to the chemical status assessment method. The two series are not comparable for this status. The assessment of the status of bodies surface water in 2019 shows that none of the 102 natural surface water bodies can be classified as having good water quality. Three of the six bodies of groundwater are classified as having poor water quality.

Examples of key strategies and measures:

- Preservation and improvement of water quality and promotion of sustainable water use, in particular by applying the amended Law of 19 December 2008 on water
- Public consultation for the elaboration of the Third Management Plan for the parts of the international river basin districts of the Rhine and the Meuse located on Luxembourg territory (2021-2027)
- Development and presentation of the Nature Pact with the municipalities¹⁰⁴

¹⁰⁴ For more information on this project, please refer to the contribution under “COMPONENT 2C: Protection of the environment and biodiversity” of the Luxembourg Recovery and Resilience Plan.



4.4. SDG 7 – Ensure access to affordable, reliable, sustainable and modern energy for all

Improving energy efficiency and promoting renewable energy sources are the foundations of Luxembourg's climate policy and energy transition. The government continues to encourage measures that reduce energy dependency and create growth and employment, such as energy renovations of existing buildings and the use of ecological building materials. In addition, in order to better protect the environment and the climate, the government has set itself the goal of substantially increasing the share of renewable energy sources in energy consumption.

Table 7: SDG 7 indicators of assessment

Indicator	Assessment unit	Year	Value
Primary energy consumption	million tonnes of oil equivalent (Mtoe)	2019	4.5
Final energy consumption	million tonnes of oil equivalent (Mtoe)	2019	4.4
Final energy consumption in households per capita	kgoe	2019	744
Energy productivity	€ per kgoe	2019	11.45
Greenhouse gas emissions intensity of energy consumption	Index, 2000 = 100	2019	65.9
Share of renewable energy in gross final energy consumption	%	2019	7.05
Energy import dependency	% of imports in gross available energy	2019	95.13
Population unable to keep home adequately warm	% of the population	2019	2.4

Source: Eurostat, Ministry of the Environment, Climate and Sustainable Development

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Status:

Luxembourg's performance in this sustainable development objective is lower than the EU average. However, compared to last year's results, some indicators such as energy productivity or final energy consumption show improvements while others, such as the share of renewable energy, have fallen since then. It should be further noted that Luxembourg will reach its target of 11% renewable energy by 2020.

Examples of key strategies and measures:

- Adoption of the integrated National Energy and Climate Plan (NECP)¹⁰⁵
- Introduction of a carbon tax on 1 January 2021, accompanied by a social compensation measure via a tax credit increase resulting in lower taxes on the income of low-income households
- Adaptation of the tools that are part of the “Climate Bank and Sustainable Housing” package (aid scheme for promoting sustainability, rational use of energy and renewable energy in housing)

¹⁰⁵ For more details see: <https://environnement.public.lu/fr/actualites/2020/05/pnec.html>



- ‘PRIME House’ grants for energy advice, sustainable energy renovation measures and technical installations using renewable energy sources (with an increase in grant amounts from 20 April 2020 and 31 December 2021)
- Zero interest climate loan
- Mobilisation of energy efficiency through the Energy Efficiency Obligation Mechanism, which obliges natural gas and electricity suppliers to generate energy savings for consumers by offering financial and non-financial support
- Promotion of rational use of energy and renewable energies that are specific to each municipality by means of municipal subsidies apart from state subsidies
- Renewal and increase of the cost-of-living allowance
- Planned revision of the 1979 law on housing assistance
- Application of the system to avoid cutting off electricity and natural gas supply due to unpaid bills, in cooperation with the social offices
- Assistance to households with precarious fuel resources aiming at supporting households, raising awareness and providing information about energy saving potentials and subsidising the replacement of energy consuming household appliances
- Introduction of free public transport in Luxembourg from 1 March 2020
- Continuation of the Climate Pact 2.0 with the municipalities

4.5. SDG 8 – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

The debate on the future development of the country calls for a more qualitative and inclusive economic growth, i.e. one that consumes fewer resources and provides quality jobs that will ensure a decent life for all in the future. The government has been committed to this path for several years by reflecting on the transformation of the economy in a cross functional manner through the “Third industrial revolution” process, which has mobilised all levels of society. In addition, reconciling work and family life will remain a priority target of the government, which will respond to the need for flexibility on the part of families and companies through an ambitious policy on the level of work organisation, social transfers and fiscal policy.

Table 8: SDG 8 indicators of assessment

Indicator	Assessment unit	Year	Value
Real GDP per capita	€ per capita, chain-linked volumes (2010)	2020	81,290
Investment share of GDP	% of GDP	2018	16.81
Resource productivity	€ per kg, chain-linked volumes (2010)	2019	3.88
Young people neither in employment nor in education and training	% of 15–29-year-olds	2019	6.5
Employment rate	% of 20–64-year-olds	2019	72.8
Long-term unemployment rate	% of labour force	2019	1.3
Gender gap for the population inactive due to caring responsibilities	Percentage points (pp) of 20–64-year-olds	2019	19.9
People killed in accidents at work	number per 100,000 employees	2018	4.22
In work at-risk-of-poverty rate	% of the population	2019	12.1

Source: Eurostat



Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Status:

In 2020, real GDP per capita stood at €81,290. At the same time, the employment rate increased, albeit still below the EU average, while the long-term unemployment rate decreased slightly to 1.3% and the gap between men and women inactive due to family responsibilities decreased (-2.3 pp).

Examples of key strategies and measures:

- Further implementation of the Digital Economy Strategy
- Further development and refinement of Youth guarantee programme, especially regarding the launching mechanism for NEETs, youths who are not in employment, not in education, not in training programmes and not in an academic course.
- Extension of ADEM's youth services to young people up to the age of 30 since 2018
- Support for the professional integration of job seekers targeting vulnerable groups, especially youth, women, seniors, persons with specific needs and the long-term unemployed.
- Renewal of the partnership between the *Union des entreprises luxembourgeoises* (UEL) and ADEM for a further 3 years (2021-2023) in order to better adapt ADEM's programmes, particularly training, to the needs of companies.
- Support for the creation of new jobs in the municipal, para-public or social sector for job seekers who have been registered with ADEM for at least 12 months through the scheme to combat long-term unemployment ("back-to-work jobs" - EMI), which has been in force since July 2017, and the introduction of specific measures aimed at job seekers over 50
- Facilitating reconciliation of work and family life through the reform of parental leave and paternity leave
- Reinforcing the principle of equal pay for men and women through the law dated 15 December 2016
- Implementation of the "VISION ZERO"¹⁰⁶ national strategy for the prevention of accidents at work aimed at a maximum reduction of potential sources of risk in order to avoid serious and fatal accidents.

4.6. SDG 9 – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Strengthening the links between business and research is essential to support innovation and employment in the sectors of the future. The government has considerably increased its research budgets and also wishes to stimulate private research through a range of measures, which is still insufficient. The government will continue to promote the use of public transport and electromobility in all sectors. In this respect, the national strategy for sustainable mobility 'MoDu 2.0' includes some fifty measures that all mobility players must help to implement.

Table 9: SDG 9 indicators of assessment

Indicator	Assessment unit	Year	Value
Gross domestic expenditure on R&D	% of GDP	2019	1.19
Human resources in science and technology	% of labour force aged 25-64	2019	63.7
R&D personnel	% of labour force	2019	1.94

¹⁰⁶ For more details see: <https://visionzero.lu/fr/>



Patent applications to the European Patent Office	Number	2019	427
Share of busses and trains in total passenger transport	% of total land transport, in passenger-km	2018	17.1
Share of rail and inland waterways in total freight transport	% of total land freight transport, in tonne-km	2018	15.7
Average CO2 emissions per km from new passenger cars	g of CO ₂ per km	2018	131.4

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Status:

Gross domestic expenditure on R&D has increased slightly compared to last year but remains significantly below the EU average. As regards human resources working in science and technology and R&D personnel, both have increased compared to the previous period and staff levels are now above the EU average.

In addition, progress has been made with regard to the share of rail and water-borne transport in freight transport, which increased between 2012 and 2017.

Examples of key strategies and measures:

- Supporting companies in their RDI efforts, in particular by using a series of tools introduced by the law on the promotion of RDI
- Continued encouragement of R&D efforts by industrial companies, particularly in the area of energy efficiency
- Continued implementation of the National Research and Innovation (R&I) Strategy for Luxembourg
- Continued implementation of the strategy for sustainable mobility (MoDu 2.0)
- Adaptations of the financial aid scheme “*Clever fueren*” for promoting electric and active mobility

4.7. SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable

The infrastructure and activities on Luxembourg’s small national territory are becoming increasingly dense. The demographic and economic developments make themselves known on several levels: constantly rising property prices, lack of land, air pollution, overtaxed infrastructure, increasing pressure on agricultural land, etc.

Table 10: SDG 11 indicators of assessment

Indicator	Assessment unit	Year	Value
Overcrowding rate	% of the population	2019	7.1
Population living in households considering that they suffer from noise	% of the population	2019	20.2
Exposure to air pollution (PM2.5)	µg/cu. m	2019	10.2
Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames of floor	% of the population	2019	15.4
Population reporting occurrence of crime, violence or vandalism in their area	% of the population	2018	11.2



People killed in road accidents	number of persons killed	2018	36
Share of busses and trains in total passenger transport	% of total land transport, in passenger-km	2018	17.1
Settlement area per capita	sq. m	2018	565.2
Recycling rate of municipal waste	% of total waste generated	2019	48.9
Population connected to at least secondary waste water treatment	% of the population	2019	97

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Nationally¹⁰⁷, Luxembourg has selected a set of indicators, including the following indicators which are not included in the Eurostat set of indicators, but which are relevant for monitoring the implementation of SDG 11:

Indicator	Assessment unit	Year	Value
"Artificialized areas"	% of land	2016	14.3
Waste produced per inhabitant	kg/inhabitant	2015	625

Source: Ministry of the Environment, Climate and Sustainable Development

Status:

The estimated use of public transport stagnated in 2018 compared to the previous year and amounted to 17.1%. On the other hand, exposure to air pollution by fine particles (PM2.5) reached its lowest level in the last 10 years at 10.2 µg/m³. The amount of municipal waste per capita was close to 680 kg/inhabitant in 2000. Fifteen years later, this has increased to 791 kg/capita. The recycling rate of municipal waste has been steadily increasing between 2000 and 2016 and has since stabilised at a high level (48.9%).

Examples of key strategies and measures:

- Redesign of the Land Use Master Plan
- Entry into force of the Master Programme for Spatial Planning
- Draft law on soil protection and management of polluted sites
- Development of the National Soil Protection Plan
- Preparation of the Air Quality Plan
- Development of the National Air Pollution Control Programme (NAPCP)

4.8. SDG 12 – Ensure sustainable consumption and production patterns

Consumption patterns and production, being the source of resource and energy consumption, must be designed as sustainably as possible, also with regard to the production and management of waste, in order to maintain or even improve the quality of life of citizens, to protect the environment and to enable economic progress. In this context, the government wishes to make the circular economy and short circuits a key sector of the economy to improve Luxembourg's ecological footprint.

Table 11: SDG 12 indicators of assessment

Indicator	Assessment unit	Year	Value
Consumption of hazardous chemicals	millions of tonnes	n.a.	n.a.

¹⁰⁷ For more information, please refer to the 3rd National Plan for Sustainable Development: <https://environnement.public.lu/content/dam/environnement/documents/developpement-durable/PNDD.pdf>



Resource productivity	€ per kg, chain-linked volumes (2010)	2019	3.88
Average CO2 emissions per km from new passenger cars	g of CO2 per km	2018	131.4
Energy productivity	€ per kgoe	2019	11.45
Circular material use rate (CMR)	% of material input for domestic use	2019	11.9
Generation of waste excluding major mineral wastes	kg per person	2018	2,278
Gross value added of the environmental goods and services sector	% of GDP	2018	2.43

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Status:

The intensity of material consumption in relation to GDP has been relatively stable since 2010 and in 2019 was at a comparatively high level (€3.88 per kg). Amounts of waste produced have tended to decrease since 2010. Following a certain level of stability in figures between 2008 and 2012, gross value added of the environmental goods and services sector has shown an upward trend since that period. Compared to the previous period, resource productivity, energy productivity, the circular material use rate, the amount of waste generated (except for major mineral waste), as well as the GVA of the environmental goods and services sector have all significantly improved. In contrast, the average CO₂ emissions per kilometre from new passenger cars increased by 4.4 g CO₂ per kilometre.

Examples of key strategies and measures:

- Development and presentation of the strategy for a circular economy in Luxembourg
- Continued implementation of the National Waste and Resource Management Plan (PNGDR) and the “Null Offfall Lëtzebuerg” strategy
- Development of the wood cluster
- Continued implementation of the National Organic Farming Plan
- Introduction of sustainability criteria in public procurement

4.9. SDG 13 – Take urgent action to combat climate change and its impacts

Climate change is an ongoing crisis that requires immediate action. Luxembourg is increasingly aware of the consequences of climate change through the increase in average temperature, the amount and distribution of precipitation and a greater frequency of extreme weather events. In this context, the government decided in the coalition agreement 2018-2023 “... to do its utmost to comply with the Paris Agreement and to take into account the conclusions of the 1.5°C special report of the Intergovernmental Panel on Climate Change (IPCC). “As a result, it has committed to a 55% reduction in greenhouse gas emissions by 2030 compared to 2005 levels, as well as to the long-term goal of climate neutrality, which is to achieve “zero net emissions” in Luxembourg, by 2050 at the latest.

Table 12: SDG 13 indicators of assessment

Indicator	Assessment unit	Year	Value
Greenhouse gas emissions	Index, 1990 = 100	2019	84.4
Greenhouse gas emissions intensity of energy consumption	Index, 2000 = 100	2019	65.9
Mean near-surface temperature deviation	temperature deviation in °C, compared to the average for 1850-1899	2018	n.a.
Climate related economic losses	in € million (current prices)	2017	n.a.



Contribution to the international 100bn USD commitment on climate related expending	in € million (current prices)	2019	51.74
Population covered by the Covenant of Mayors for Climate & Energy signatories	million people	2019	0.023
Share of renewable energy in gross final energy consumption	%	2019	7.05
Average CO2 emissions per km from new passenger cars	g of CO ₂ per km	2018	131.4
Global mean ocean surface acidity	pH value	2018	n.a.

Source: Eurostat, Ministry of the Environment, Climate and Sustainable Development

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Status:

Both greenhouse gas emissions and greenhouse gas emission intensity decreased compared to the previous period. Similarly, the contribution to the USD 100 billion international commitment for climate-related expenditure was increased compared to last year, but remained below the 2016 level. Population covered by the signatories of the Covenant of Mayors for Climate and Energy has remained constant. In contrast, the share of renewable energy in gross final energy consumption and the average CO2 emissions per kilometre from new passenger cars deteriorated over the same period.

Examples of key strategies and measures:

- Adoption of the integrated National Energy and Climate Plan (NECP)¹⁰⁸
- Entry into force of the amended Climate Act dated 15 December 2020
- Continuation of the Climate Pact 2.0 with the municipalities
- Entry into force of the amended Climate Act of 15 December 2020
- Continued implementation of the strategy for sustainable mobility (MoDu 2.0)
- Participation in international climate finance processes

4.10. SDG 15 – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

In its overall approach to spatial planning, the government takes nature into account in the overall development of the country because degraded natural conditions generate enormous social and economic losses.

In this context, the National Plan for Nature Protection (NPNP) is the strategic instrument for implementing a nature protection policy. It defines the strategic priorities and avenues of approach for this policy. A key objective of the NPNP is the restoration of at least 15% of degraded habitats and biotopes and their services. The plan also targets the creation of around 1,900 hectares and the improvement of 2,400 hectares of habitats and biotopes by 2021. In the long term, the plan aims to create more than 10,200 hectares and improve more than 600 hectares of habitats and biotopes. The government also wants to protect groundwater and restore watercourses to their natural condition. It wants to maintain the national forest area and ensure sustainable management.

Table 13: SDG 15 indicators of assessment

Indicator	Assessment unit	Year	Value
Share of forest area	% of total area	2018	35.5
Biochemical oxygen demand in rivers	mg of O ₂ by litre	n.a.	n.a.

¹⁰⁸ For more details see: <https://environnement.public.lu/fr/actualites/2020/05/pnec.html>



Phosphate in rivers	mg of PO ₄ by litre	n.a.	n.a.
Soil sealing index	Index, 2006 = 100	2015	105.6
Estimated soil erosion by water	sq. km	2016	61.4
Surface of terrestrial sites designated under Natura 2000	sq. km	2019	702
Common bird index	Index, 2000 = 100	n.a.	n.a.
Grassland Butterfly Index	Index, 2000 = 100	n.a.	n.a.

Source: Eurostat

Remarks: Colour of the values (number): red = LU level below the EU average; orange = LU level equal to the EU average; green = LU level above the EU average

Nationally¹⁰⁹, Luxembourg has selected a set of indicators, including the following indicators which are not included in the Eurostat set of indicators, but which are relevant for monitoring the implementation of SDG 15:

Indicator	Assessment unit	Year	Value
Percentage of agricultural and forest areas	% of land	2016	85.1
Percent of territory designated as protected areas for biodiversity	% of land	2015	27.0
Conservation status of habitats	% favourable	2013	25.0
Number of species on the red list for birds	Number of species	2014	66
Number of taxa on the vascular plant blacklist	Number of taxa	2013	9

Source: Ministry of the Environment, Climate and Sustainable Development

Status:

The common bird index and the grassland butterfly indicator are only presented as an aggregate at EU level. With regard to Luxembourg data, since the 1990s, the assessments of the conservation status of birds indicate 54 “degraded” (36%), 11 “stable” (7%), 15 “fluctuating” (10%), 40 “improved” (27%) and 29 “unknown” (19%). Accordingly, 66% of bird species cannot be classified as existing in a stable or improved conservation status. Short-term trends in bird populations show that 28% of species are currently still in 'decline', 17% are in a 'fluctuating' (i.e. uncertain) trend and 21% are in an 'unknown' trend. Only 13% indicate that their population trend is currently “stabilised” and 21% show an “improvement”. A total of 66% of the species therefore have a current population trend that is neither stabilised nor improved. Concerning the other indicators, the soil sealing index and the estimate of soil erosion by water have remained relatively stable. The surface area of terrestrial sites designated under Natura 2000 remained unchanged compared to the previous period.

Examples of key strategies and measures:

- Continued implementation of the National Nature Conservation Plan (NPNP)
- Development and presentation of the Nature Pact with the municipalities

4.11. Luxembourg Sustainable Finance Roadmap

The implementation of the various SDGs nevertheless requires innovative approaches to financing in support of sustainable development. To this end, a Luxembourg Sustainable Finance Roadmap was developed jointly by the Luxembourg Government, financial market actors, civil society and the United Nations Environment Programme (UNEP) Finance Initiative already in 2018. Since then, Luxembourg has made considerable progress towards creating a more sustainable financial system. The first recommendation of the roadmap was to create a coordination entity for sustainable finance in Luxembourg, leading to the launch of the Luxembourg Sustainable Finance Initiative (LSFI) in 2020.

¹⁰⁹ For more information, please refer to the 3rd National Plan for Sustainable Development: <https://environnement.public.lu/content/dam/environnement/documents/developpement-durable/PNDD.pdf>



The LSFI is jointly governed by the Ministry of Environment, Climate and Sustainable Development, the Ministry of Finance, and Luxembourg For Finance and the High Council for Sustainable Development. This is a non-profit association that designs and implements Luxembourg's strategy for sustainable finance (the "Strategy"), adopted in February 2021. Beyond that, it raises awareness, promotes and helps develop sustainable finance initiatives in Luxembourg. It has also been designated as the advisory body for the coordination of European and national regulations and initiatives concerning sustainable finance, such as the taxonomy.

- Raising awareness and promoting the concept: Promote existing and upcoming sustainable finance initiatives and integrate sustainability into Luxembourg's financial culture.
- Unlocking the potential: Coordinating and accompanying the Luxembourg financial centre in taking impact producing actions to develop sustainable finance.
- Measuring progress: Collecting and analysing data on the Luxembourg financial industry to measure and monitor its progress in main streaming sustainability.

The Strategy is aligned with the Government's coalition agreement for 2018-2023 and the objectives set out in the NSDP, the climate law and the NECP. At the international level, the Strategy is in line with the actions to be taken both in the UN Agenda 2030 and the Paris Agreement as well as the EU climate policy plan.

LSFI will organise multiple conferences and workshops on sustainable finance in close collaboration with the Luxembourg financial sector in order to contribute to educational actions pertaining to sustainable finance as well promoting and developing the financial centre. Beyond that, one of the first actions of LSFI will be to set up a voluntary national climate risk assessment of financial portfolios in order to raise awareness of climate risks and to help financial institutions collect relevant data in order to modify their investment strategies and harmonise them with the Paris Agreement and other actions.

The importance of the EU Regulation 2020/852 dated 18 June 2020 on taxonomy, which establishes a reference framework for defining which economic activities can be considered environmentally sustainable, should be highlighted. An economic activity can only be considered as such if it not only contributes to an environmental objective, but also complies with other minimum requirements, in particular with the respect of human rights.

An economic activity can only be considered environmentally sustainable if it meets the following four cumulative criteria:

1. It makes a substantial contribution to at least one of the following six environmental objectives:
 - a. Climate change mitigation
 - b. Adaptation to climate change
 - c. Sustainable use and protection of water and marine resources
 - d. Transition to a circular economy
 - e. Pollution prevention and control
 - f. Protection and restoration of biodiversity and ecosystems
2. It does not significantly undermine any of the other five environmental objectives



3. It complies with minimum safeguards such as the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights
4. It meets quantitative or qualitative technical criteria (in progress)

In addition, there is a review clause that allows for extending the taxonomy to the social dimension of sustainability at a later stage.

European taxonomy therefore clearly takes a cross-cutting approach to the definition of sustainability and will serve as a reference for all European legislation related to sustainability.



5. Use of Structural Funds

5.1. Coordination with structural funds

Coordination between the NRP and the Structural Funds has become necessary for the period 2014-2020 as the Europe 2020 strategy also has a Union action programme. Projects developed and supported by Union financing under structural funds for the period 2014-2020 are called upon to contribute to meeting the objectives of the Europe 2020 strategy.

5.1.1. Implementation of the “Investment for Growth and Employment” programme (2014-2020)

European regional development fund (ERDF)

One year after the entry into force of the various cohesion policy regulations, the European Commission approved the ERDF Operational Programme (OP) on 15 December 2014 covering the period 2014-2020.

The ERDF Operational Programme, whose budget allocation is €19.5 million, with an estimated total cost of €48.2 million, focuses equally on two thematic objectives: strengthening research, technological development and innovation and the transition to a low-carbon economy in all sectors, in line with the objectives set out in Regulation (EU) 1303/2013 and closely linked to the objectives of the Europe 2020 strategy.

In accordance with the regulation above, the Managing Authority ensures that the “integrated territorial investment” system is implemented. The City of Dudelange was designated as “Intermediate Body”, on the recommendation of the auditing body (General Inspectorate of Finance) by ministerial decision in December, 2016, whose delegation of competence was limited to the selection of “ITI” area projects only, with a budget set at €1.2 million. The urban strategy of the City of Dudelange and the guide “Method and selection criteria” are integral parts of the agreement.

The City of Dudelange has selected two projects to form part of its urban strategy:

- “Validation of the deep geothermal potential in Dudelange by medium depth drilling” of the Housing Fund;
- “Development of a Shared Space, *Niddeschgaas* in Dudelange” from the “City of Dudelange”.

As of 31 December 2020, 26 projects were chosen and approved.

A complete list of projects can be consulted on the Internet¹¹⁰.

Table 14: Financial contracts by area

Priority area		2014-2020	
		TOTAL COST	ERDF contribution
Priority area 1:	Improve research, technological development and innovation a. Improving research and innovation (R&I) infrastructure b. Fostering business investment in R&I	24,183,851.56	9,673,540.62
Priority area 2:	Support the transition to a low carbon emissions economy a. Promoting the production and distribution of energy from renewable sources	20,843,186.18	8,337,274.48

¹¹⁰ For more details see: <https://fonds-europeens.public.lu/fr/programmes/ice-2014-2020/ice-volet-feder.html>



	b. Supporting energy efficiency and the use of renewable energy in public infrastructure c. Supporting low-carbon development strategies, including the promotion of sustainable multi-modal-urban mobility		
Technical assistance	Technical assistance to the programme	2,340,288.00	1,170,144.00
Total		47,367,325.74	19,180,959.10

Source: Ministry of the Economy

European Social Fund (ESF)

The entry into force of the ESF programme is based on EU Regulation 1303/2013 of the European Parliament and of the Council dated 17 December 2013. This acted as vector for implementing the programme on “Investing for Growth and Jobs” for the period 2014 to 2020 with a budget allocation of €40 million coming equally from the European Social Fund and national public funds. The programme aims to combat unemployment with this budget, including youth unemployment, by strengthening the skills and competences of young people and job-seekers, especially those with an immigrant background, and by seeking a better match between supply and demand in the labour market. In addition, this programme also seeks to strengthen social inclusion, combat poverty and improve equal access to lifelong learning.

The ESF programme focuses on three approaches:

1. Support sustainable professional integration: This approach is broken down into two investment priorities:
 - The first one allows access to employment for job seekers and inactive persons, in particular the long-term unemployed and those furthest from the labour market, also through local employment initiatives and support for occupational mobility. This investment priority supports measures and actions to increase the skills and knowledge of job seekers in order to improve their integration into the labour market, in particular for those aged 45 and over.
 - The second aims at the sustainable integration into the labour market of young people, in particular those who are not in employment, education or training, including young people at risk of social exclusion and those from marginalised groups. Under this investment priority ESF supports developing operations and monitoring of the Youth Guarantee, as well as measures for young people under 30 apart from those covered under the Guarantee. As the Guarantee is wide-ranging, it covers employment, education and inactive young people.
2. Bolster the Social Inclusion Revenue: The main focus of this approach is on active inclusion, including promoting equal opportunities, active participation and improved employability. The best way to fight social exclusion is to promote sustainable integration into the labour market. In order to support these efforts, Luxembourg devotes ESF allocations to measures and actions aimed at social inclusion and more specifically at the activation of people furthest from the labour market.

In the context of the current pandemic, a sub-priority has been created which covers part of the expenses of partial unemployment due to the suspension of certain activities to avoid the spread of the virus by tapping the unused budgets of ongoing projects.

3. Promote the acquisition of new skills. This approach seeks better equality of access to lifelong learning for all age groups in a formal, non-formal or informal setting. Its focus is upgrading



the knowledge, skills and competences of the workforce and promoting flexible learning pathways including vocational guidance and validation of acquired competences. The Luxembourg government is pursuing a consistent policy of economic diversification. Accordingly, the State devotes ESF allocations to support lifelong learning in order to improve the adaptability of the workforce to future challenges and to help older workers remain in employment.

Table 15: Budget per avenue of approach

Priority area		2014-2020	
		TOTAL COST (In € millions)	ESF contribution (in € millions)
Priority area 1:	<p>Support sustainable professional integration</p> <p>a. Access to employment for job seekers and inactive persons, in particular the long-term unemployed and those furthest from the labour market, also through local employment initiatives and support for occupational mobility.</p> <p>b. The second aims at the sustainable integration into the labour market of young people, in particular those who are not in employment, education or training, including young people at risk of social exclusion and those from marginalised groups, in particular by implementing the Youth Guarantee.</p>	20.16	10.08
Priority area 2:	<p>Social Inclusion Revenue</p> <p>a. The main focus of this approach is on active inclusion, including promoting equal opportunities, active participation and improved employability.</p> <p>b. The best way to fight social exclusion is to promote sustainable professional integration. In order to support these efforts, Luxembourg devotes ESF allocations to measures and actions aimed at social inclusion and more specifically at the activation of people furthest from the labour market</p>	10.97	5.49
Priority area 3:	<p>Promote the acquisition of new skills.</p> <p>With this approach, a better equality of access to lifelong learning for all age groups in a formal, non-formal or informal setting is possible. The focus is on upgrading the knowledge, skills and competences of the workforce and promoting flexible learning pathways including vocational guidance and validation of acquired competences. The Luxembourg government is pursuing a consistent policy of economic diversification. Thus, Luxembourg devotes ESF allocations to support lifelong learning in order to improve the adaptability of the workforce to future challenges and to help older workers remain in employment.</p>	7.17	3.59
Technical assistance	Technical assistance to the programme	1.81	0.90
Total		40.11	20.06

Source: Ministry of Labour, Employment and the Social and Solidarity Economy

5.1.2. A budget for recovery: REACT-EU

A new EU instrument was created to counter the COVID-19 pandemic, baptised “REACT-EU”. The European Parliament and the Council adopted the proposal for a “React-EU” regulation on 23 December 2020, granting a financial allocation for 2021 in the amount of €139.8 million to



Luxembourg, providing that this financial allocation be invested and managed by the following three European Funds:

- European Regional Development Fund (ERDF), under the authority of the Ministry of the Economy
- European Social Fund (ESF), under the authority of the Minister of Labour, Employment and Social and Solidarity Economy
- European Fund for European Aid to the Most Deprived (FEAD), under the authority of the Ministry of Family Affairs, Integration and the Greater Region.

After consultation, the managing authorities of the respective funds propose the distribution and allocation of these financial resources as follows:

- An amount of €69.67 million for ERDF: The ERDF Managing Authority recommended allocating most of the financial envelope, i.e. €30 million, to the “Large Scale Testing - Phase 2” project, managed by the Ministry of Health, thus covering half of the expenditure related to this project. Around €10 million will be used to co-finance the COVID-19 vaccine. The European Commission has been negotiating vaccines with different suppliers. It is expected that EU Member States will procure directly from the Commission, in proportion to their populations, once the vaccines have been validated and approved for marketing by the relevant health authorities. Agreements in principle with the Ministry of Health were signed in January 2021.

Finally, in line with the government's ambition to support the green transition, around €30 million should be used to co-finance a green project. The ERDF managing authority plans to finance the City of Luxembourg's electric buses and the charging stations for them.

The amount allocated to the ERDF will be the subject of the creation of a new avenue for its operational programme, which will therefore be modified during the first quarter of 2021. A validation by the Monitoring Committee and the adoption of this modification by the European Commission is planned for April-May.

- An amount of €69.67 million for ESF, which will allocate its part to the financing of short-time work; the ESF Managing Authority recommended using almost €70 million in the framework of the REACT-EU programme to co-finance the short-time work scheme in Luxembourg. As a flagship measure to support companies affected by the health crisis, the state pays the compensation allowance during the period of partial unemployment, which in principle corresponds to 80% of the salary of the employee concerned, or even 100% for the minimum social wage.
- The FEAD is allotted €0.46 million to address applications for assistance from the most deprived households, which were particularly affected by the COVID-19 health crisis.

5.1.3. Implementation of European territorial cooperation programmes (INTERREG)

The European territorial cooperation programmes (known as INTERREG) for the period 2014-2020 have also contributed with their thematic vectors to the objectives of the Europe 2020 strategy. The three INTERREG programmes that apply to the territory of Luxembourg are:

- The cross-border programme INTERREG Greater Region, with an ERDF budget of approximately €140 million for the period 2014-2020.



- The cross-border programme INTERREG North-West Europe, with an ERDF budget of approximately €396 million for the period 2014-2020.
- The interregional INTERREG Europe programme, with an ERDF budget of €359 million for the period 2014-2020.

The cross-border, transnational and interregional cooperation projects with Luxembourgish beneficiaries, which were approved in the INTERREG Greater Region, North-West Europe and Europe programmes, were mainly in two fields of intervention:

- 21 projects in the field of innovation and research with financial support of approximately €12.7 million (ERDF contribution + national co-financing) for Luxembourg beneficiaries;
- 33 projects in the field of climate change and energy with a financial support of about €35 million (ERDF contribution + national co-financing) for Luxembourg beneficiaries.

5.2. Financing priorities for the period 2021-2027

5.2.1. European regional development fund (ERDF)

Table 16: Financial contracts by area

	Total cost (in € millions)	ERDF contribution (in € millions)
Area 1 “Improve research, technological development and innovation”	22.58	9.03
Area 2 “Support the transition to a low carbon emissions economy in all sectors”	10.60	4.24
Area 3 “Just Transition Fund”	12.88	5.15
Technical assistance	2.12	1.06
Total	48.18	19.48

Source: Ministry of the Economy

For the Common Strategic Framework 2021-2027, the ERDF Managing Authority has decided to focus its action on two priority areas in accordance with the recommendations of the European Commission, which take up thematic objectives No. 1 “A smarter Europe through innovation and intelligent economic transformation” and No. 4 “A greener, lower carbon Europe”. In addition, it was agreed to use an Integrated Territorial Investment (ITI) feeding on the themes of the two areas in compliance with regulations and sustainable urban development concepts.

This area will be able to invest in the following domains:

- Strengthening research and innovation (R&I)
- Reaping the benefits of digitalisation for citizens, businesses and governments
- Promoting the growth and competitiveness of SMEs

Area 2 includes investments in the following areas

- Promoting energy efficiency measures
- Promoting measures for energy from renewable sources
- Developing smart energy systems, networks and storage equipment at local level
- Promote the transition to a circular economy



- Improving biodiversity, strengthening green infrastructure in urban areas and reducing pollution

Area 3 takes over the “Just Transition Fund” with €5.15 million, representing 59% of the total financial package for the Just Transition Fund allocated to Luxembourg. This area will be able to invest in the following domains:

- Investments in research and innovative activities to promote the transfer of advanced technologies
- Investments in technology and infrastructure deployment for affordable clean energy, CO2 reduction and energy efficiency
- Investments in renewable energy
- Digitalisation, digital innovation and digital connectivity
- Circular economy

The areas of intervention recommended by Luxembourg are consistent with those of the European Commission and will ensure continuity with the current programming period, which is already in line with the Europe 2020 strategy. The operational programme for the period 2021-2027 will be submitted to the European Commission for approval in April-May 2021.

5.2.2. European Social Fund + (ESF+)

Table 17: Financial agreement by area (version not yet validated)

	Total cost (in € millions)	ESF contribution + Total cost (in € millions)
AP 1: A future with jobs for all	22.45	8.98
AP 2: Social and active inclusion for all	11.1	4.44
AP 3: Combating material deprivation	1.31	1.18
AP 4: Access to employment, inclusion and skills development for all and those affected by the climate transition “Just Transition Fund	7.47	3.73
AP: Technical assistance	2.64	1.08
Total	44.99	19.43

Source: Ministry of Labour, Employment and the Social and Solidarity Economy

For the common strategic framework 2021-2027, the ESF+ programme is in line with the strategic objective of a social Europe implementing the European social rights pillar. The choice of priority areas (PA) is based on this logic.

The first objective “a future in employment for all” is based on the idea that everyone should have access to employment. This involves mainly unemployed people of all ages, but also young people who are still at school or in training, as well as salaried persons.

According to Eurostat¹¹¹, the unemployment rate for young people aged 15-24 has increased by 51.9% in one year, reaching a rate of 26.7% in June 2020. At the same time, the EU (27) average is 16.8%. Although the unemployment rate of young people in relation to the population as a whole remains low, this ratio is 3.1% in Luxembourg, whereas the European average is 2.0%. This score places

¹¹¹ For more details see: <https://ec.europa.eu/eurostat/fr/web/products-datasets/product?code=tipslm80>



Luxembourg at the bottom of the Euro zone¹¹². Luxembourg must therefore especially promote youth employment.

The second priority area is dedicated to “social and active inclusion for all”. This objective aims at active inclusion in order to make better progress in equal opportunities. It seeks to improve the employability and social integration of disadvantaged people at risk of poverty or social exclusion, including the most disadvantaged and children.

Luxembourg is the country in the Euro area where the at-risk-of-poverty rate increased the most between 2005 and 2018, with an average increase of +2.2%, compared to +0.7% per year for the Euro area¹¹³.

There is a correlation between poverty and joblessness: the poverty rate is four times higher for an unemployed person than for an employed one. Having a job does not totally immunise one against the risk of poverty. In 2020, 13.4% of people in employment in Luxembourg are at risk of poverty.

The poverty rate affects different strata of the population differently. Single-parent families are the most vulnerable (40.7%), followed by families with more than two children (30.4%) and then single people (27.8%)¹¹⁴. In 2018, more than half of the individuals at risk of poverty were at risk of poverty in at least two of the last three years¹¹⁵.

The third area is dedicated to the “fight against material deprivation”. With its 2018-2023 government programme, Luxembourg will continue its social inclusion policy in order to provide people at risk of poverty and exclusion with the necessary resources to enable them to participate fully in economic, social and cultural life.

The work and social cohesion report published by STATEC¹¹⁶ shows that in 2019, 17.5% of the population was at risk of poverty, 1.2% is in a situation of severe material deprivation and 8.4% live in households with very low work intensity.

The risk of poverty or social exclusion affects the under-17s the most (25.4%), 21.6% of 18–64-year-olds are affected and 9.5% of the over-65s are concerned by this risk. Foreigners, and mainly non-EU residents, are still more affected than nationals.

This area will allow the partial continuation of the 2014-2020 FEAD programme¹¹⁷.

The fourth priority area focuses on “access to employment, inclusion and skills development for all those affected by climate transition”. It includes the Just Transition Fund (see also section 5.2.2 below). Luxembourg bases its climate action policy on the Paris Agreement. In its 2018 coalition agreement, the government commits itself to implementing the UN conclusions set out in its “Towards a pollution-free planet” report¹¹⁸.

The 2030 Agenda of the United Nations with its Sustainable Development Goals serves as a guideline for the future development of Luxembourg¹¹⁹. To follow this agenda, Luxembourg wants to develop the National Plan for Sustainable Development (NPSD) for 2030.

¹¹² “Social Panorama 2020”, *Chambre des salariés de Luxembourg*, May 2020.

¹¹³ *Chambre des salariés luxembourgeois* “Panorama social 2020”, page 60.

¹¹⁴ *idem*

¹¹⁵ *idem*

¹¹⁶ For more details see: <https://statistiques.public.lu/catalogue-publications/analyses/2020/PDF-Analyses-06-2020.pdf>

¹¹⁷ For more details see: <https://fonds-europeens.public.lu/fr/fonds-europeens/fead.html>

¹¹⁸ For more details see: <https://papersmart.unon.org/resolution/uploads/k1708348f.pdf>

¹¹⁹ For more information on the guideline, see page 167 of the coalition agreement 2018.



The first field of action of this plan is “to ensure social inclusion and education for all”¹²⁰ with the priorities of cohesion and the fight against exclusion and discrimination as well as giving everyone the opportunity to access work.

The fight against climate change has become a priority of Luxembourg's policy and Luxembourg wants to make this fight an opportunity to create new jobs, to innovate and to develop its competitiveness. Finding such new jobs implies a thorough reflection on the skills that these future jobs will require and the training required.

5.2.3. Just Transition Fund

The total allocation of the Just Transition Fund for Luxembourg amounts to €9.26 million for the period 2021-2027. Considering the preliminary opinion of the European Commission in the framework of the 2020 Country Report for Luxembourg as well as the expectations regarding territorial impacts in Luxembourg, a recommendation for a specific area to this fund in the respective ERDF and ESF+ operational programmes has been made for the period 2021-2027.

In the framework of the ERDF operational programme, the following areas of intervention are proposed:

- Investments in research and innovative activities to promote the transfer of advanced technologies
- Investments in technology and infrastructure deployment for affordable clean energy, CO₂ reduction and energy efficiency
- Investments in renewable energy
- Digitalisation, digital innovation and digital connectivity
- Circular economy

Under the ESF+ Operational Programme, the following areas of intervention are recommended:

- Upskilling and reskilling of workers and jobseekers
- Job-search assistance to jobseekers
- Active inclusion of job seekers

Investments earmarked for the Just Transition Fund are based on the guidelines of the “Territorial Just Transition Plan for Luxembourg” which, considering the measures set out in the Integrated National Energy and Climate Plan for Luxembourg (NECP) for the period 2021-2030, is supposed to designate the territory in Luxembourg that is hardest hit by the economic and social consequences resulting from the transition. The economic and social consequences concern particularly the expected loss of jobs in the sectors using fossil fuels as well as the need to transform the production processes of industrial installations with the highest greenhouse gas intensity.

Due to a concentration of industrial activities releasing high volumes of greenhouse gases and the presence of a large number of brownfield sites to be converted, the plan provides for a primary concentration of JTF resources on the southern region of the Grand Duchy, while guaranteeing eligibility of the entire national territory, which constitutes a single NUTS 3 level region. The plan specifies the challenges of the southern region and recommends a number of proposals necessary to

¹²⁰ All information on the NPSD is available on: <https://environnement.public.lu/fr/actualites/2018/septembre2018/pnndd.html>



advance economic diversification with a view to a transition to a climate-neutral economy. This plan will be submitted to the European Commission for approval together with the ERDF and ESF+ operational programmes for the period 2021-2027.



6. Institutional issues and the role of stakeholders

6.1. National ownership

With a view to increasing transparency and encouraging national ownership, the government closely involved Parliament and social partners:

- the government presented the NRP, the RRP and SGP to Parliament before submission to the European Commission at the end of April.
- The social partners have been involved in the national social dialogue under the auspices of the Economic and Social Council (ESC). In March 2021, discussions focused on the economic, financial and social situation as well as the main priorities and on progress in preparing the RRP, NRP and SGP.

6.2. Communication

Diverse studies have shown that the resistance that forms 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 national specificities surrounding Luxembourg. In 2003, the Tripartite Coordination Committee decided that it would be opportune to publish a national “Competitiveness scoreboard” compiling several key indicators in a single document on an annual basis. The Observatory of competitiveness has since updated this national scoreboard up until 2016. After more than ten years of use, a revision proved necessary. A revision was therefore undertaken with social partners in the Economic and Social Council (ESC)¹²¹, which in 2016 unanimously adopted its opinion on the national system of indicators that constitute the new modernised and structured dashboard. The results of this new national indicator system were presented for the first time as part of the latest Competitiveness report¹²² in the fall of 2017. This new dashboard is based on 67 indicators, including 41 entirely new ones, which are grouped into the three categories of the economy, social action and the environment. In the latest edition published in the autumn of 2020, Luxembourg ranked fourth and belonged to the group of “high performing” EU countries. It ranked 12th in economy, 2th in social and 6th in the environment¹²³.

¹²¹ CES, *Le système d'indicateurs national, Avis, 8 juillet 2016* (ESC, The National Indicators System, Opinions, 8 July 2016)

For more details see: <http://www.ces.public.lu/content/dam/ces/fr/actualites/2016/07/2016-indicateurs.pdf>

¹²² MINISTRY OF THE ECONOMY, *Le système d'indicateurs national, in the 2017 Competitiveness Report, Perspectives de politique économique n°33*, Luxembourg, October 2017.

¹²³ For more details see: <https://odc.gouvernement.lu/fr/publications/rapport-etude-analyse/perspectives-politique-economique/ppe-036.html>



For more information, please contact:

Ministry of the Economy
19-21 Boulevard Royal
L-2449 Luxembourg

observatoire@eco.etat.lu
<https://odc.gouvernement.lu>

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