EUROPEAN
COMMISSION

Brussels, 18.6.2021
SWD(2021) 159 final

COMMISSION STAFF WORKING DOCUMENT

Analysis of the recovery and resilience plan of Luxembourg

Accompanying the document

Proposal for a COUNCIL IMPLEMENTING DECISION

on the approval of the assessment of the recovery and resilience plan for Luxembourg

{COM(2021) 332 final}

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1. EXECUTIVE SUMMARY

Luxembourg was one of the Member States less severely hit by the economic consequences of the COVID-19 crisis. Real GDP fell by 1.3% in 2020 (compared with 6.1% in the EU as a whole), with GDP in the fourth quarter of 2020 outpacing its pre-crisis level. The rebound in GDP growth is expected to reach 4.5% in 2021, followed by 3.3% in 2022. Job creation continued in 2020, with employment expanding by 2.0% (against 3.6% in 2019), mainly sustained by unprecedented government support. Accordingly, the general government balance deteriorated sharply, as in other Member States, flipping from a surplus of 2.4% of GDP in 2019 to a deficit of 4.1% of GDP in 2020. Luxembourg should return to a close-to-balance position by 2022, provided current vaccination trends and economic developments gain traction. Public debt is expected to peak from 22% of GDP in 2019 to 27% in 2021 and to slightly decrease subsequently.

Despite its overall good performance, Luxembourg's economy faces a set of interconnected challenges. It is among the most advanced in the EU in terms of GDP growth dynamics, sound public finances, living standards, productivity, and connectivity. Nevertheless, challenges exist in several areas and are intertwined. Concerning the high level of corporate income taxation revenues, they could come under pressure due to changes in the international corporate tax. Challenges to the labour market include growing skills shortages, also in strategic sectors such as healthcare. Furthermore, house prices have been increasing strongly in recent years, reflecting limited supply in the face of strong demand, bringing about a lack of affordable housing. Although the health system fared comparatively well in coping with the unprecedented pressures from the pandemic, the crisis has shown that a more resilient health system would not only help manage potential future shocks, but also help tackle more structural challenges, such as population ageing. In addition, fighting aggressive tax planning is essential to avoid the distortion of competition between firms operating in the single market. Finally, Luxembourg faces significant money laundering risks.

Luxembourg has requested EUR 93.4 million of non-repayable support, equivalent to 0.15% of 2019 GDP and close to the maximum financial contribution allocated to Luxembourg under the Recovery and Resilience Facility (EUR 93.5 million). Luxembourg did not request any loan. The recovery and resilience plan of Luxembourg is expected to contribute significantly to the green and digital transition, while the components related to skills, health, housing and governance also significantly support cohesion and growth potential in the long term. The plan is structured along eight components aimed at tackling Luxembourg's structural issues, which the COVID-19 crisis evidenced and exacerbated. Measures included in the plan complement the national economic measures introduced by Luxembourg in 2020 under the COVID-19 Economic Stabilisation Programme and the Recovery Programme (Neistart Lëtzebuerg), and are consistent with the 2021 National Reform Programme and the Stability Programme. The plan includes a number of measures totalling EUR 183.1 million, but specifies that they will also be financed by national funds, which brings the Recovery and Resilience Facility (RRF) contribution to EUR 93.4 million (51% of the total estimated costs of all measures mentioned in the plan), while the national budget will fund 46%, and other EU instruments are expected to fund the remaining 3% of the total estimated cost.

The plan pursues the general objective of the Facility to promote the Union's economic, social and territorial cohesion and is balanced in its response to the six policy pillars referred to in Article 3 of the Regulation[1]. Considering all reforms and investments envisaged, taking the specific challenges and the financial allocation of Luxembourg into account, the plan represents to a large extent a comprehensive, and adequately balanced response to the economic and social situation. The green and digital pillars with respectively 60.9% and 31.6% of the plan's estimated total cost, are well above the minimum allocation targets set out in the Regulation. The plan also includes coherent measures on digital skills and public services, clean transport and biodiversity as axes for recovery, which are expected to contribute to "smart, sustainable, and inclusive growth" and "social and territorial cohesion". Finally, the pillar on social cohesion is also well addressed, notably by strengthening the resilience of the healthcare system, by improving the functioning of the housing market and by improving digital inclusion through the skills programmes and digitalisation of the public administration. The latter component rightly differentiates between firms and citizens, each one with a dedicated virtual platform, which is in line with the user-centric approach described in the strategy. This structure is expected to better address the user's needs, to promote digital inclusion in the society and digital integration in the business sector. The RRF also contributes to an ambitious R&I investment component, which is part of a larger EU project in cooperation with other Member States, with high potential to foster Luxembourg's economic diversification and private investment in the long run.

The plan is expected to contribute to addressing a significant subset of country-specific recommendations issued to Luxembourg in 2019 and 2020. Given the small RRF maximum financial contribution available to Luxembourg, the structure of the plan, including the national and other EU co-financing, allows the investment measures to cover a wider range of policy areas, with measures aimed at improving the health system's resilience, labour market inclusion, labour supply, and investment in the green and digital transitions. The plan is expected to also contribute to addressing the shortage of affordable housing and the sustained increase in housing prices. It is expected to contribute to the green transition through investments in renewable energy generation, sustainable transport, and natural environment and biodiversity. The plan's support to skilling programmes and to research and innovation in the field of communication technologies are key to foster growth in the long term and develop resilience against the backdrop of technological changes. It also offers opportunities for economic diversification and business investment. The measures to foster digital inclusion, such as digital training programmes and digital public services, also address vulnerabilities identified in previous country reports and country specific recommendations, and monitored through the Social

[1] Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility (hereafter 'the RRF Regulation').

Scoreboard. On anti-money laundering (AML) and counter terrorist financing (CTF), the plan includes a combination of measures to improve the quality of information in the Business Register, to assess potential flaws in risk mitigation procedures, and to strengthen the oversight framework for trust and company service providers. However, the plan does not adequately address features of the tax system that facilitate aggressive tax planning, in particular by means of outbound payments. The plan includes a training programme with a dedicated target for older workers which should help improve their employability and their participation in the labour market although it would be more effective in combination with other policy instruments available for the purposes of achieving a more sustainable and inclusive growth as well as the long-term sustainability of the pension system, and ultimately the sustainability of public finance.

The green transition is a key priority, with 60.9% of the total allocation of the plan contributing to the climate objective. The assessment against the principle of 'do no significant harm' provides reassurance that the implementation framework will prevent any significant harm. The plan includes a systematic assessment of each measure against the principle of 'do no significant harm', for each of the six environmental objectives within the meaning of Article 17 of the Taxonomy Regulation[2], which allows to assess that all measures will comply with the principle. One out of the three pillars of the plan is fully dedicated to the green transition, and a renewable energy project also contributes to it. Overall, 60.9% of the total allocation in the plan contributes to the climate objective. The measures set out in the plan follow up to and are consistent with the orientations outlined in Luxembourg's National Energy and Climate Plan (NECP), and they focus prominently on sustainable mobility and renewable energy generation, in line with two of the European flagships included in the Commission's Annual Sustainable Growth Strategy, the 'Recharge and refuel' and 'Power up' flagships. The plan includes a component to support natural environment and biodiversity protection and restoration. Due to the limited maximum financial contribution under the RRF, the plan focuses on addressing certain challenges and, for instance, energy renovation of buildings does not feature prominently in any investment measure. Most measures described in the plan are expected to have a lasting impact towards the green transition.

The recovery and resilience plan is expected to largely contribute to the digital transition of Luxembourg with a broad and cross-cutting approach. Digital measures cover research and innovation, deployment of new technologies, digitalization of the public administration, territorial institutional and social cohesion, which are expected to engage the private sector in the transition. Investments are also planned in digital skills, digital connectivity, and eHealth. In particular, measures aiming at improving digital inclusion of the population and workers as well as the digitalisation of SMEs have the potential to increase productivity growth[3]. The plan

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[2] Regulation (EU) No 2020/852

[3] Bauer, P., Fedotenkov, I., Genty, A., Hallak, I., Harasztosi, P., Martínez-Turégano D., Nguyen D., Preziosi, N., Rincon-Aznar, A., Sanchez-Martinez, M., Productivity in Europe – Trends and drivers in a service-based economy,

dedicates more than 31.6% of its total allocation to the digital transition. The main projects contributing directly to this target are various investments consisting in the digitalisation of several public administrations and the health system, and the support to innovation in communication technologies. The measures are also aligned with various European initiatives like the EU Digital Strategy, the EU Skills Agenda, the European Education Area and the Digital Education Action Plan. The measures in the plan are also aligned with two out of six European flagships included in the Commission's Annual Sustainable Growth Strategy: Modernise, that concerns the digitalisation of the public administration and Reskill-upskill, which focuses on education and training to support digital skills.

Luxembourg's plan has the potential to have a lasting impact by contributing to bringing about structural changes. The impact assessment presented in the plan is of a qualitative nature, given the limited size of Luxembourg's maximum financial contribution. In this light, the plan is expected to contribute to the national strategies aiming to provide an adequate response to the health crisis, and to paving the way for a sustainable, digital and resilient economy. The envisaged measures are expected to help Luxembourg in diversifying its economic activity, creating new investment opportunities, and embarking on a more resilient growth path. Specific actions aim at strengthening the administration and institutions, in particular in relation to the digital transition. The measures aimed at bolstering the participation and skills of the labour force, the functioning of the housing market, and the digitalisation of the broad public administration are expected to have the greatest longer-term impact, notably on labour supply and skills, improving job creation, labour productivity and investment, therefore paving the way for a more sustainable, resilient and inclusive economic growth.

The justifications provided by Luxembourg supporting the estimated total costs of the recovery and resilience plan are to a sufficient extent plausible and reasonable, in line with the principle of cost-efficiency and commensurate to the expected national economic and social impact. Luxembourg provided sufficient information and evidence that the amount of the cost of the reforms and investments to be financed under the Facility is not covered by existing or planned Union financing.

Finally, the Luxembourg recovery and resilience plan contains measures for the implementation of reforms and public investments, which, to a large extent, represent coherent actions. The eight components form a coherent package of investments and reforms, both within the components and between the components. The overall quality of milestones and targets is satisfactory. The description of milestones and targets in each component of the plan is generally clear and realistic. In particular, the targets and milestones are clear and specific enough to track progress in the implementation of reforms and investments.

EUR 30076 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-10610-4, doi:10.2760/469079, JRC119785.

Table 1 details the assessment criteria ratings developed in this Staff Working Document that led to the approval of the Luxembourg recovery and resilience plan under the RRF Regulation.

Table 1. Summary of the recovery and resilience plan of Luxembourg assessment for the 11 criteria set by the RRF Regulation.

(1) Balanced Response	(2) CSRs	(3) Growth, jobs…	(4) DNSH	(5) Green target	(6) Digital target	(7) Lasting impact	(8) M & T	(9) Costing	(10) Control Systems	(11) Coherence
A or B	A	A	A	A	A	A or B	A or B	A or B	A	A or B
A	A	A	A	A	A	A	A	B	A	A

2. Recovery and resilience challenges: scene-setter

2.1. Macroeconomic outlook and developments since the 2020 country report

The macroeconomic scenario underpinning Luxembourg's stability programme and the recovery and resilience plan (plan) projects real GDP growth of 4.0% in 2021 after a limited decline of 1.3% in 2020 caused by the COVID-19 crisis. The relative resilience of the Luxembourg economy in 2020 was linked to the support measures of the Luxembourg's government and the large service sector of the economy, which allowed a quick switch to teleworking[4]. Growth is projected to reach 2.6% in the medium term. Inflation is expected to pick up to 1.8% in 2021 and after to trend towards the ECB objective of an inflation rate close to 2%. Regarding the labour market the Luxembourg authorities forecast a gradual increase in unemployment which would reach 7.5% in 2025 after a small improvement in 2022.

The Commission forecasts a similar macroeconomic scenario for 2021 and 2022 as Luxembourg's government. As a larger share of the population is getting vaccinated, remaining restrictions should be gradually lifted from the second quarter of 2021. The increase in private consumption allowed by the easing of restrictions and the high level of savings, combined with the strong fundamentals of the Luxembourg economy, will fuel renewed economic growth. Real GDP is forecast to grow by 4.5% in 2021 and by 3.3% in 2022. GDP has reached its pre-crisis level already in the last quarter of 2020.

In 2020, annual HICP inflation declined to 0.0%, mainly reflecting the large drop in oil prices and the introduction of free public transport in March 2020. In 2021, the expected increase of inflation to 2.1% is supported by higher oil prices and the introduction of a carbon tax. Service inflation is projected to increase over the period but remains below the 2019 inflation rate due to

[4] Sostero M., Milasi S., Hurley J., Fernández-Macías E., Bisello M., Teleworkability and the COVID-19 crisis: a new digital divide?, Seville: European Commission, 2020, JRC121193.

lower expected wage growth in 2021. Inflation is expected to moderate to 1.6% in 2022, as energy prices stabilise.

The government's short-term work scheme has supported employment levels and protected household income. The short-term work scheme has cushioned about 62% of the shock in household market incomes in 2020[5]. However, an expected increase in bankruptcies should lead to an increase in unemployment. The strong employment growth of recent years is expected to slow down from above 3% to about 2% in 2021. The growth in employment is expected to be outpaced by the growth of the labour force, pushing the unemployment level close to 7.4% in 2021. The slowdown in the labour market is expected to limit wage growth in 2021. The labour market situation is forecast to improve in 2022 in line with the growing economy.

Poverty and inequality have increased in recent years despite the positive impact of social transfers. In 2018, Luxembourg registered one of the highest increases in income inequality in the EU. This was partly due to housing market developments, namely soaring house and rent prices and a limited supply of affordable housing. The overall risk of poverty or social exclusion rose to 21.9 % in 2018, reaching the EU average. The newly implemented 'Revenu d'inclusion sociale', a benefit replacing the minimum guaranteed revenue as of 2019, as well as the cost-of-living allowance introduced in 2021, are expected to improve social inclusion.

In 2020, the general government balance deteriorated sharply, due to the COVID-19 crisis, as in other Member States, flipping from a surplus position in 2019 to a deficit of 4.1% of GDP. According to the Commission's 2021 Spring Forecast, the general government balance is expected to improve to a deficit of 0.3% of GDP in 2021 and of 0.1% in 2022. Public debt is expected to increase from 24.9% of GDP in 2020 to 27.0% in 2021 and to slightly decrease to 26.8% in 2022. According to the Commission's 2020 debt sustainability monitor, debt is expected to reach only 17.9% of GDP in 2031. Hence, Luxembourg's debt continues to be on a sustainable path and has a low medium-term risk. However, the long-term sustainability risk is high, driven by the projected increase in age-related expenditure. The Luxembourg authorities' debt projections are slightly more conservative, with a debt level of 28.4% of GDP in 2023 and 27.6% in 2025.

The macroeconomic and fiscal outlook continues to be affected by high uncertainty related to the COVID-19 pandemic and its economic consequences. The macroeconomic scenario of the plan is plausible and similar to the one outlined in the 2021 budget, national reform programme, stability and convergence programme and has been developed by the statistical

[5] See Christl, M, De Poli, S., Figari, F., Hufkens, T., Leventi, C., Papini, A. and Tumino, A. (2021) "The cushioning effect of fiscal policy in the EU during the COVID-19 pandemic", JRC Working Papers on Taxation and Structural Reforms, 02/2021 (forthcoming at https://ec.europa.eu/jrc/en/thematic-research-fiscal-policy/jrc-working-papers-taxation-and-structural-reforms).

office (STATEC). Minor differences between the latest Commission forecast and the macroeconomic scenario underpinning the plan are linked to the most recent data on employment and tax revenue.

In the 2021 macro imbalances procedure (MIP) no imbalances were identified for Luxembourg. In the updated scoreboard, which includes figures until 2019, the growth of unit labour costs, the increase in house prices and the private sector debt indicators were above the indicative thresholds. Following the COVID-19 crisis in 2020, the increase in unit labour costs is expected to slow down in 2020 and 2021 (2.6% and -0.2% in the Commission's Spring forecast vs 3.0% in 2019). However, house prices and private sector debt are expected to continue to increase. The private sector debt-to-GDP ratio is very high, at 319%, and mainly reflects the high corporate debt, above 250% of GDP in 2019. However, this figure is the result of Luxembourg's role as a global financial centre and the cross-border intra-group lending. Household debt stabilised in 2019 at 66% of GDP and is well below both the fundamental and prudential benchmarks. Still, Luxembourg's high level of household debt as a percentage of disposable income and the increasing pressure on house prices caused by the low supply of new houses require a continued monitoring of mortgage credit growth and household indebtedness. Overall, the Commission did not consider it necessary to carry out further in-depth analysis in the context of the 2021 MIP.

Table 1. Comparison of macroeconomic developments and forecast

	2019	2020		2021		2022		2023	2024	2025	2026
	COM	COM	RRP	COM	RRP	COM	RRP	RRP	RRP	RRP	RRP
Real GDP (% change)	2.3	-1.3	-1.3	4.5	4.0	3.3			2.6	2.6	2.6
Employment (% change)	3.6	2.0		1.9		2.0					
Unemployment rate	5.6	6.8	6.8	7.4		7.3				7.5	
HICP inflation	1.6	0		2.1	1.8	1.6					2.0
General government balance (% of GDP)	2.4	-4.1	-4.1	-0.3		-0.1					0.4
Government debt (% of GDP)	22.0	24.9		27.0		26.8		28.4		27.6	
Source: [Commission Spring Forecast 2021] (COM); Recovery and Resilience Plan (RRP)											

2.2. Challenges related to sustainable growth, cohesion, resilience and policies for the next generation

Despite its overall good performance, Luxembourg's economy faces a set of interconnected challenges. It is among the most advanced in the EU in terms of GDP growth dynamics, sound public finances (reflected in the AAA credit rating with a stable outlook), living standards, productivity, and connectivity. Nevertheless, challenges exist in several areas and are intertwined.

The high level of corporate income taxation revenues and large contribution from the financial services sector reflect Luxembourg's international position as a global financial hub. Yet, ongoing changes in the international corporate tax system are likely to put pressure on Luxembourg's revenues from corporate income tax, especially at a time when the public finances are impacted by the current crisis. Environmental tax revenues are below the EU average and have decreased over the last years, before the introduction of a CO_2 tax from 2021. Luxembourg could therefore explore options to diversify its fiscal revenues and foster inclusive growth. This could include measures to help curb house price inflation, which has increased inequality and risks lowering the country's attractiveness to skilled workers who are crucial to the economy. In light of population ageing projections for Luxembourg, the low average retirement age puts the pension system under pressure. This would require phasing out early retirement schemes and other fiscal incentives, which favour early retirement. Measures that increase employment opportunities, notably through life-long learning schemes, would also help improve the long-term sustainability of the pension system.

Productivity is not perceptibly higher today than 20 years ago, and in the last 5 years the country has fallen nine positions in the IMD[6] World Competitiveness Yearbook ranking. Luxembourg is among the most competitive countries in international comparisons. However, price competitiveness is being eroded and might lower the country's attractiveness for firms and skilled workers, on whom the economy is highly dependent. The National Productivity Board annual report 2019, published in March 2020, summarised the views of the IMF, the OECD and the European Commission on Luxembourg's productivity and, in this light, proposed potential aspects of productivity to analyse in future reports, in the perspective of possible policy actions. Business investment in R&D remains low and appear insufficient to significantly foster productivity growth. Increased and more coordinated public and private investments in R&D, coupled with stronger linkages between the public research ecosystem and the private sector, could play a key role in stimulating growth and easing the transition to a data-driven and green economy.

Challenges to the labour market include growing skills shortages. Ensuring the availability of skilled workers is among Luxembourg's main challenges, including in strategic sectors such as healthcare. Total domestic employment continued to grow in 2020. Yet, the overall employment rate remains below the EU average, due to the early retirement age of the older population and the very high inactivity rate of the young (around 70%) due to their longer stay in education. Moreover, upskilling and reskilling of workers and jobseekers will have to play a

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[6] https://worldcompetitiveness.imd.org/rankings/wcy

more important role at all education levels, while the share of jobs requiring higher education has raised significantly over the last decade and face increasing labour shortages.

The lack of affordable housing is one of the main challenges faced by Luxembourg. House prices have been increasing strongly in recent years, mainly due to limited construction, in the face of strong demand. The issue of affordable housing is exacerbated by the current crisis and is the main reason of the relatively high level of household debt in terms of disposable income. A key opportunity to embark on a sound recovery and resilience path is to increase the public supply of affordable housing and to deploy a clean and efficient public transport system, which can satisfy sustainability standards and connectivity needs across the country. In this respect, the Summit of Greater Region[7] plays also a role in addressing most of the country's interregional challenges. Other opportunities for territorial cooperation include technological diffusion and economies of scale from joint research projects, natural resources management, or regional value chains, including under the 2021-2027 European territorial cooperation programmes supported by the ERDF.

Luxembourg's health system fared comparatively well in coping with the unprecedented pressures from the pandemic. However, the crisis has shown that a more resilient health system would not only help manage potential future shocks, but also help tackle more structural challenges, such as population ageing. The latter is reflected in the projected increases in public spending in the health sector. Therefore, reforms and investment should prioritise systemic issues, such as: (i) addressing the lack of resident healthcare professionals (which may affect the resilience of the healthcare system); (ii) scaling up e-health; (iii) improving governance based on better health information systems; (iv) moving towards more community-based care integrated services; (v) responding to the needs of the growing population with long-term conditions; and (vi) more preventive approaches.

Luxembourg faces significant money laundering risks, and in 2020, the Council recommended that Luxembourg take action to ensure the effective supervision and enforcement of the anti-money laundering framework for professionals providing services to trusts and companies, as well as investment services. Money laundering risks are related to the high inflows of foreign direct investment and the presence of complex legal structures with foreign sponsors. These risks are reflected in the national risk assessment, particularly in relation to professionals that provide services to companies and trusts or investment services. Weaknesses in the application of the anti-money laundering framework by these professionals result in inadequate risk analyses and a low level of reporting of suspicious activities. The intensity of supervision of these professionals is inadequate to remedy these shortcomings. The quality of the information

[7] http://www.granderegion.net/Institutions/Le-Sommet-en-detail/Sommet2

provided in the national register of beneficial owners, and the effectiveness of the register need to be monitored over time.

Fighting aggressive tax planning is essential to avoid the distortion of competition between firms operating in the single market. Despite the size of Luxembourg's financial sector, the high level of dividend, interest and royalty payments as a percentage of GDP suggests that the country's tax rules are used by companies that engage in aggressive tax planning. Given the cross-border nature of aggressive tax planning, it is important to combine action at the national level with coordinated action at the EU level. This coordination has taken place through various fora: adoption of Directives by the Council, Code of Conduct group, and the European Semester.

2.3. Challenges related to the green and digital transition

Green dimension

The recovery and resilience plan should contribute to the green transition and at least 37% of the financial allocation needs to contribute to climate objectives. The measures in the plan shall contribute to achieving the 2050 climate neutrality objective, and the 2030 energy and climate targets, taking into account Member States' national energy and climate plans. They should also contribute to meeting environmental targets for waste, water, pollution control, sustainable mobility, biodiversity protection and restoration, marine and water resources, and support the transition to sustainable food systems as well as to a circular economy as appropriate, while ensuring that nobody is left behind.

Climate and energy challenges

Despite Luxembourg's strong ambition, significant challenges persist to achieve the green transition. Further investment is needed in sustainable transport, renewable energy and energy efficiency, and to increase the supply of sustainable and affordable housing.

Luxembourg still has the highest greenhouse gas (GHG) emissions per capita in the EU, despite a relatively less carbon-intensive economy. Luxembourg's economy is now less carbon-intensive than the EU average[8], following the country's transformation since the 1970s from an industrial (iron and steel) economy to a service-focused economy[9], and thanks to efficiency gains. However, and despite a sharp decrease in recent years, in 2019, Luxembourg remained the EU country with the highest GHG emissions per capita[10]. Transport is the main

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[8] 214 gCO_2eq per euro of GDP according to preliminary data for 2019, compared to 282 gCO_2eq per euro of GDP at EU level.
[9] In Luxembourg, services account for 87.3% of total GDP in 2019, compared to 72.9% for the EU – European Commission (2020). National accounts and GDP, https://ec.europa.eu/eurostat/statistics-explained/index.php/National_accounts_and_GDP#Gross_value_added_in_the_EU_by_economic_activity
[10] 20.4 tCO_2eq, more than double the EU average (8.4 tCO_2eq) – European Commission (2020). EU Climate Action Progress Report 2020, https://ec.europa.eu/clima/sites/clima/files/strategies/progress/docs/com_2020_777_en.pdf

source of emissions (50% in 2018[11]), reflecting Luxembourg's position as a logistical hub and its large cross-border commuting workforce (45% of its total workforce), who contribute to the GHG emissions level, but are not counted as part of the population[12].

Before the pandemic, Luxembourg was set to miss its climate and energy targets for 2020. The country will need additional measures to reach 2030 climate objectives. According to preliminary data, in 2019, Luxembourg missed its GHG emissions reduction target under the Effort Sharing Regulation of 18% compared to 2005 levels, by 9 percentage points, and, without additional measures, is also expected to miss its 2030 objective (40% reduction compared with 2005) by 24 percentage points. Luxembourg would need to continue its efforts to achieve its binding target to reach a renewable energy share of 11% by 2020 and will probably continue to use cooperation mechanisms to transfer renewable energy statistics. It is also at risk of not fulfilling its 2020 energy efficiency target.

In May 2020, Luxembourg adopted an ambitious National Energy and Climate Plan and, in December 2020, a Climate Protection Law aiming for climate neutrality by 2050, increasing Luxembourg's 2030 targets (to reduce GHG emissions by 55% compared to 2005 and reach a 25% renewable share) and setting targets in several sectors[13]. To reach climate neutrality, Luxembourg will need to strongly reduce emissions in the transport and building sectors.

To make progress on these targets, significant investment is needed to increase energy efficiency for both households and businesses. Luxembourg needs to invest in particular in energy efficient construction (and creating links to address the persistent undersupply of housing) and the renovation of residential buildings, as well as in energy efficient production processes and business models, in line with the recently updated EU industrial strategy[14].

The development and use of renewable energy needs to be accelerated, as does the integration of renewables in the energy mix through modernised networks and better integration of sectors. Luxembourg needs to support renewable energy-based systems in buildings and businesses. It needs to invest in renewable energy generation both domestically and through cooperation projects with other Member States[15]. Luxembourg should also explore the possibility of decarbonising the steel sector through renewable hydrogen. Investment in infrastructure should also support the increase in renewable electricity, improve the flexibility of

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[11] As a % of total greenhouse gas emissions (without land use, land use change and forestry – LULUCF, with international aviation). Source: https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer

[12] 44.5% of emissions from sectors not covered by the EU Emission Trading System come from non-resident road transport (cross-border commuters, cars and heavy goods vehicles in transit, 'fuel tourism'); 32.5% come from the sale of fuels to heavy goods vehicles in transit (source: Ministry of Environment).

[13] Economidou, M., Ringel, M., Valentova, M., Zancanella, P., Tsemekidi Tzeiranak, S., Zangheri, P., Paci, D., Ribeiro Serrenho, T., Palermo, V. and Bertoldi, P., National Energy and Climate Plans for 2021-2030 under the EU Energy Union, EUR 30487 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-27013-3, doi:10.2760/678371, JRC122862.

[14] Communication from the Commission "Updating the 2020 New Industrial Strategy: Building a stronger Single Market for Europe's recovery", COM(2021)350 final, 5.5.2021.

[15] Notably in the North Sea, and through EU cooperation mechanisms (Luxembourg already engaged in agreements for statistical transfers with Lithuania and Estonia, and could further benefit from the new EU Renewable Energy Financing Mechanism)

the energy grid, and strengthen and expand electricity transmission and distribution lines, both domestically and with neighbouring countries.

The table below gives an overview of Luxembourg's objectives, targets and contributions under Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action.

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (%)	-10%	-20%	-40%	More ambitious national target of -55%
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	9.1%	11%	25%	Sufficiently ambitious (The result of the RES formula is 22%)
	National contribution for energy efficiency:				
	Primary energy consumption (Mtoe)	4.46	4.48	3.61	N/A
	Final energy consumption (Mtoe)	4.35	20% 4.24	40-44% 3.06	Sufficient
	Level of electricity interconnectivity (%)	X	270%	400%	N/A

Sources: Assessment of Luxembourg's final national energy and climate plan, SWD(2020) 915 final. Forecast for primary energy consumption in 2030 communicated by Luxembourg to the Commission in December 2020.

Mobility

Mobility issues weigh significantly on Luxembourg's environmental sustainability, as transport is responsible for almost half of national GHG emissions, reflecting Luxembourg's position as a logistical hub and its large cross-border commuting workforce**.** With low fuel taxes and very high housing prices, the massive and increasing numbers of cross-border commuters that strongly rely on private cars contribute to road traffic congestion. This impacts air quality, causes productivity losses and can eventually damage Luxembourg's attractiveness.

Luxembourg's mobility strategy was recently revamped. The country expanded its 2018 'Modu 2.0' strategy to include ambitious projects and large budgetary investments, and outlined a cross-border approach in the last quarter of 2020. It also made all public transport (bus, tram, train) free of charge as of 1 March 2020, to increase its attractiveness. The effects of this measure, including on air quality, still need to be assessed.

Significant investment is needed to improve the connectivity and mobility of the transport network. Of particular importance are projects to improve tram connections and to continue to add lines to the network in the coming years, and progress on projects to create a multimodal corridor (such as the planned line between the southern area of the capital and Esch-Belval by 2030). Projects supporting the trans-European transport network (TEN-T) infrastructure, including completing the modernisation of the Brussels-Luxembourg-Strasbourg railway link by 2022, would also be useful. Improving infrastructure maintenance, multimodal terminals and their connection to the main networks, and telematic applications should remain a priority. Other priorities include rolling out the European Train Control System on the entire network, constructing a new line between Luxembourg and Bettembourg, and extending the Luxembourg station. Modernising the rolling stock is also important.

There is also a need for longer-term investment in the electrification of transport. New grants and extensions to existing support schemes could help speed up the development of charging infrastructure for cars and buses, including private electric charging stations. Subsidies to purchase e-cars, e-bikes and regular bicycles could also support sustainable mobility objectives.

Environmental taxation

Luxembourg's share of environmental taxes in total government revenue from taxes and social contributions remains the lowest in the EU, at 4.4 % in 2019. Taxes on energy represent 90% of total environmental taxes revenues. The low taxation on combustion fuels in transport attracts cross-border petrol buyers (Luxembourg collects 61% of its energy tax revenues from non-residents) and makes it more difficult to achieve energy and climate goals.

Luxembourg is taking steps to increase transport fuel taxation, but the price gap with neighbouring countries remains significant. Luxembourg has recently introduced a carbon tax on diesel, petrol, mazout, and gas of EUR 20 per tonne of CO_2 from 2021, which is set to increase to EUR 30 by 2023. Tax revenues should amount to more than EUR 140 million in 2021, and they are planned to be used to support households in need and to invest in the clean energy transition. Nevertheless, the fuel tax gap with neighbouring countries remains, which encourages heavy-duty vehicles in transit, daily cross-border commuters and residents in border regions to refuel in Luxembourg, going against incentives to shift to more sustainable transport modes.

Other green issues

Luxembourg's large financial sector can support the green transition by taking a leading role in the growing sustainable finance market. Luxembourg's Sustainable Finance Strategy, which was launched in February 2021, aims to support the financial sector in its transition towards sustainability, and to further position Luxembourg as an international hub for sustainable finance. Eco-innovation and circular economy policies can also support job creation and help diversify the economy.

Digital dimension

The recovery and resilience plan should contribute to the digital transition and at least 20% of the financial allocation needs to contribute to digital objectives. The measures in the plan should, inter alia, contribute to the digital transformation of the economic and social sectors (including public administration, public services, and the justice and health systems). The objective of the measures in the plan refers to improve, not only the competitiveness, but also the resilience, agility and security of companies and public actors, all while ensuring inclusiveness.

Luxembourg is among the EU leaders in connectivity with high coverage of next-generation access networks, and the country needs to invest in digital skills and the digitalisation of the broader economy. The implementation of 5G is challenging, because of strict town planning, and environmental and territorial requirements. There is also a significant shortage of ICT specialists, and hence a need to invest in digital skills. Deploying digital technologies in the broad business sector, including SMEs, would contribute to productivity growth. The e-Administration, with its provision of online public services, has a huge potential.

Luxembourg ranks 10th in the European Commission's Digital Economy and Society Index (DESI) for 2020. However, digital integration in the business sector remains below the EU average, despite the high level of digital infrastructure and workers' qualification in Luxembourg, which are among the highest in the EU. Luxembourg introduced several digital measures to deal with the COVID-19 crisis, including for the health system, economic sectors, supply and demand for personal protective equipment, education and remote learning.

Luxembourg scores well above the EU average on human capital, but it needs to address the shortage of ICT specialists to increase its technological edge. Irrespective of a high digital skill level among the broad population and a high number of ICT specialists, Luxembourg has a significant shortage of ICT specialists and needs to invest in digital skills. 67% of companies that recruited or tried to recruit ICT specialists in 2020 reported difficulties in filling vacancies, significantly above the EU average of 55%. While Luxembourg has one of the most enabling digital environments in the EU, with a commitment and accompanying efforts to deploy digital technologies, and a well-developed infrastructure, digital learning would yield long-term economic benefits. Luxembourg also plans to boost advanced digital skills in areas such as artificial intelligence (AI). The national AI strategy to boost skills and competencies and to provide opportunities for life-long learning in the area should be updated to include details on the budget and an implementation plan.

Luxembourg needs to develop a coherent and comprehensive approach that maximises the capacity of new technologies and strategically directs all available resources towards addressing the country's main challenges. Luxembourg could consider further developing high-performance computing (HPC) capacity, including through actions on HPC scientific & industrial applications, fostering SME uptake of HPC, and strengthening the national HPC Competence Centre with advanced education and training activities. Luxembourg should also consider joining efforts with other Member States in HPC multi-country projects (for example on digital policies and health).

Luxembourg is a frontrunner on very high-capacity networks connectivity in Europe (ranking third in DESI). However, it lags behind in 5 G deployment. An auction for 5 G use in July 2020 resulted in a significant share of the spectrum awarded in two out of the three pioneer bands. The adopted 'Gigabit society by 2025' strategy to deploy 5 G in all major cities and along important transport networks is unlikely to be reached without significant investment.

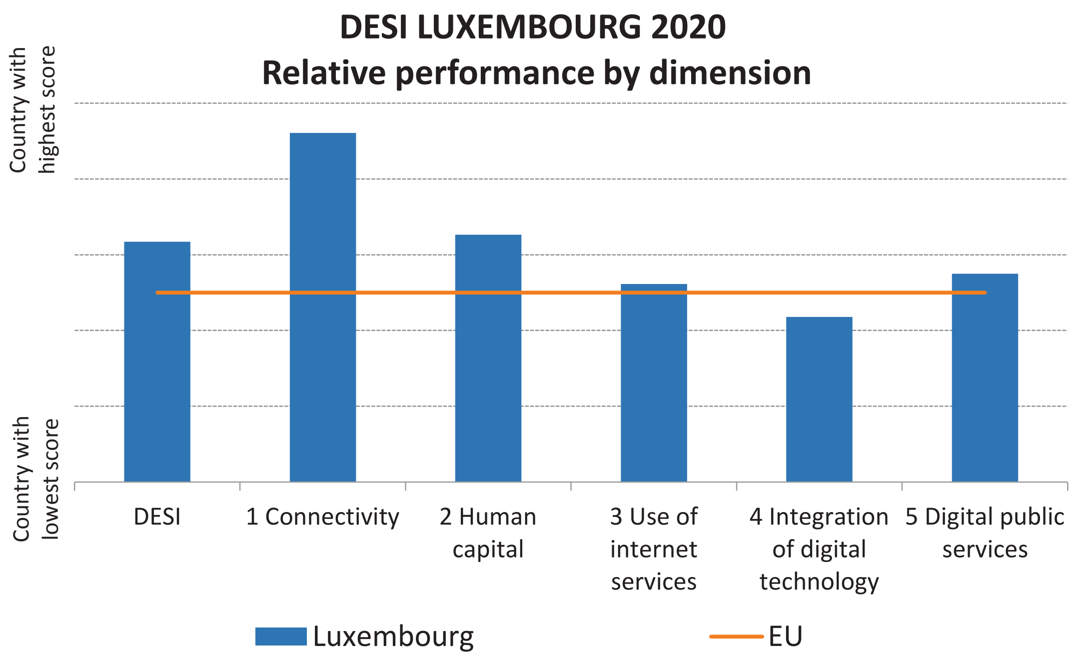
Nevertheless, strict urban planning, and environmental and territorial requirements hinder private investment and prevent progress in creating corridors for connected and automated driving, in logistics, and in smart cities and internet of things.

Luxembourg is an important regional hub for transport paths, with two TEN-T corridors passing by (North Sea-Mediterranean and Rhine-Alpine), several motorways connecting with neighbouring countries (France, Germany and Belgium), and high amounts of traffic - partly due to cross-border workers. The need to deploy 5 G corridors in Luxembourg is therefore high, particularly to ensure business continuity of 5 G connectivity across the borders. The Horizon 2020 5 G cross-border corridor project '5G CROCO' was therefore launched in 2018 to conduct a large-scale trial between Lux-Metz and Saarbrucken. A 5 G cross-border cooperation agreement was also signed between Luxembourg, France and Germany in 2017.

Luxembourg's performance in the digitalisation of businesses and use of internet services is relatively weak. The country needs substantial public and private investment to foster innovation and the digitalisation of businesses. More than a third of businesses do not invest intensively in digital technologies and only 9% of Luxembourg's SMEs sell online in 2020. The share of turnover generated by e-commerce remains among the lowest in the EU (below 3%). Luxembourg has already established useful programmes to support the digitalisation of SMEs, including the popular 'Fit4Digital' programme, and has launched an online retail window for Luxembourg retailers and customers. Building the digital capacities and skills of retailers, in particular SMEs, remains important. The further adoption of enabling technologies to address low productivity growth, including cloud, big data and robotics, remains a challenge and business R&D intensity in the ICT sector remains well below the EU average. The development and broader diffusion of digital solutions will also be a key enabler for the green transition. Digitisation of businesses accelerated, e.g. with an e-commerce platform to allow local traders to sell online.

The public sector is digitally mature and Luxembourg has made major progress on digital public services. Luxembourg supported digital public services by providing pre-filled online forms and using big data. However, despite a significant increase, the use of digital public services is low (58%) compared with the EU average (67%). The e-Administration, with its provision of online public services, has enormous potential. In its new strategy 'Gouvernance électronique 2021-2025', adopted in February 2021, the Luxembourg government commits to providing a digital alternative for all public services. The digitalisation of the justice system is an important target for investment in Luxembourg. Despite progress made with digitalising justice, further efforts are needed in: (i) facilitating the initiation of proceedings online; (ii) access to electronic files of closed or ongoing cases; and (iii) the electronic service of court documents to individuals and businesses[16].

Luxembourg's innovation procurement investments are still significantly below the EU average, in particular for digital solutions. To speed up the digital transformation of the public sector and boost business digital integration, there is a need to further strengthen both R&D procurements and procurements that ensure wide adoption of new ICT technologies. This can be achieved by: (i) creating a national action plan with an ambitious target for innovation procurement; (ii) making innovation procurement a strategic priority in national ICT strategies; (iii) adopting the reform recommended in the new EU action plan on intellectual property rights (IPR) to leave IPR ownership in public procurement with contractors; and (iv) substantially increasing investment in pre-commercial procurement and public procurement of innovative solutions in strategic technologies that are key for economic recovery, such as ICTs.



Note: EU aggregate corresponds to EU28, based on 2020 DESI report.

[16] For more information see the forthcoming 2021 Rule of Law report, Country Chapter on the rule of law situation in Luxembourg. See also Figures 41 to 47 2021 EU Justice Scoreboard.

Box: Progress towards the Sustainable Development Goals

Sustainable Development Goals and the four dimensions underpinning the Annual Sustainable Growth Strategy.

The objectives of the Sustainable Development Goals are integrated in the European Semester since the 2020 cycle. This provides a strong commitment towards sustainability in coordination of economic and employment policies in the EU. In that respect, this section outlines Luxembourg's performance with respect to SDGs with particular relevance for the four dimensions underpinning the 2021 Annual Sustainable Growth Strategy and of relevance to the recovery and resilience plans (green transition, fairness, digital transition and productivity, and macroeconomic stability), indicating possible areas where investments and reforms in line with the objectives of the Facility could further accelerate the progress on the SDGs.

Green Transition

Luxembourg has made progress on the green transition, although starting from a low overall performance level. Per capita GHG emissions exceed the level of other Member States, with 66% of CO_2 emissions coming from road transport (according to STATEC), of which almost half are from the high number of cross-border workers commuting by car (not accounted for in the population count) and international freight traffic. Nevertheless, Luxembourg has recorded a sharp reduction in GHG emissions per capita in recent years. This could partly be linked to more residents opting for public transport, reflecting the extension of the public transport system in Luxembourg City (SDGs 11, 13). The introduction of free public transport in

2020 and the introduction of a carbon tax from 2021 might not be sufficient to achieve the country's environmental commitments in the absence of an efficient alternative to cars for non-resident transportation. To this end, a number of key projects are underway to connect or reinforce the main cross-border commuting axes, based on rail and multimodality. Luxembourg is making progress on water pollution caused by nitrates. However, nitrate concentrations in groundwater and the trophic state of surface water remain problematic. On nature protection, considerable progress has been made in adopting conservation measures and producing management plans for all sites. However, habitat fragmentation and biodiversity loss still require close attention (SDGs 14, 15).

Luxembourg is highly dependent on energy imports. The reduction of GHG emissions intensity of energy consumption has been lower than the EU average, with a small but increasing share of renewable energy (SDG 7). Overall, Luxembourg's citizens are among the less concerned by environmental action in the EU (SDG 12).

Fairness

Luxembourg has traditionally outperformed the EU average in nearly all the indicators related to poverty, inequality and inclusive growth (SDGs 1, 8, 10). However, the trend has been generally worsening in recent years. This is reflected by a number of indicators, such as in-work-at-risk of poverty or income inequality, while substantial public transfers are less effective in reducing market income differentials. House price inflation amplifies inequalities, with the housing burden (mortgage and rental) significantly higher than the EU average for households in the lower income range. Education is among the main factors explaining differences in income. Luxembourg outperforms the EU average on the quality education indicator (SDG 4), although the achievement rate seems to be lower for pupils with foreign backgrounds. Indicators show that gender inequality at work is very low and shrinking, except the occupation of senior management posts (SDG 5). The expected population growth and ageing in the long term might challenge the government's capacity to maintain the high levels of social cohesion, equality and intergenerational fairness.

Digital transition and productivity

Luxembourg has considerable potential for developing new businesses in digital and other high-tech fields, such as the satellite industry. The level of digital infrastructure and the proportion of ICT, science and technology workers in Luxembourg are among the highest in the EU (SDG 9). This is in stark contrast with digital integration in the business sector, which remains below the EU average. Except for a few selected activities, little support is provided by the public sector to invest in research and innovation, including agriculture (SDG 2). The legal framework does not seem to encourage research and innovation or entrepreneurship, as failure is heavily penalised by corporate insolvency regulations. Disconnection between private sector R&D and the public research system is not conducive to knowledge circulation and a prompt transfer of research results into the real economy and may hamper the coordination of public and private research and innovation efforts, in particular in areas supporting the green transition. Luxembourg is among the most productive countries in the EU, even if productivity growth has been lagging lately. However, price competitiveness is being eroded, while the housing and mobility bottlenecks might also lower the country's attractiveness for firms and skilled workers, upon whom the economy highly depends.

Macroeconomic stability

Luxembourg is among the top EU countries on the quality of its institutions, including very high perceived judicial independence[17] and political stability (SDG 16). The government is committed to maintaining low levels of public debt, which provide a highly stable outlook, as assessed by credit rating agencies. The unemployment rate remains relatively low and employment has even increased in 2020, despite the impact of the crisis. Luxembourg has significantly reduced the time taken to transpose EU regulations, although their effective implementation lags slightly behind the EU average and a lack of transparency has been reported in a few areas, mainly related to the increasing financial information requirements introduced since the 2008 financial crisis and recently further reinforced.

3. Objectives, structure and governance of the plan

3.1. Overall strategy of the plan

Luxembourg's recovery and resilience plan complements the national response to the COVID-19 crisis. Measures introduced by Luxembourg in its recovery and resilience plan ("the plan") complement the national economic stimulus package introduced by Luxembourg in 2020 in its Stabilisation, and Neistart Lëtzebuerg programmes in response to the pandemic. Out of the total cost of EUR 183.1 million, RRF non-repayable support is requested to cover EUR 93.4 million (51% of the total costs), while the national budget will fund 46%, and other EU instruments are expected to fund the remaining 3% of the total costs. The plan contributes significantly to the green and digital transition, with respectively 60.9% and 31.6% of the plan's total allocation, exceeding the respective targets laid down in the RRF Regulation. With its skills, health, and housing components, the plan also exhibits a strong social dimension. All but one (Scale-up) of the seven European flagships are supported by the RRF (there are no investments directly related to the 'Renovate' flagship, but building renovation is mentioned in the envisaged reform of the housing sector).

The 20 measures of the plan are structured in 8 components, grouped in three pillars.

Pillar 1: Social cohesion and resilience

[17] Figures 48 and 50, 2021 EU Justice Scoreboard. See also the 2020 Rule of Law Report, p.2 (SWD(2020) 315 final).

Under pillar 1 (Social cohesion and resilience), the component **Skilling, reskilling and upskilling** (1A) aims at promoting, by two dedicated training programmes emphasising digital skills, the skills of job seekers and workers placed on a short-time work scheme. A complementary reform will deliver a training action plan laying down paths for vocational trainings ("Skillsbridges") designed to develop skills identified as the most needed for the future.

The component **Strengthening the resilience of the health system** (1B) aims at delivering, through a consultative reform process ("Gesondheetsdësch"), a work programme aligned with the strategic objectives of a more resilient health sector, and an implementation roadmap. A related reform seeks to address shortages of health professionals by reforming the regulation of medical professions and job profiles in healthcare, and thus opening the sector to additional trained staff. Two investment projects (single digital registry of healthcare professionals, development of telemedicine) seek to accelerate the digitalisation of the sector, thereby increasing its resilience and efficiency.

The component **Increasing the supply of affordable and sustainable public housing** (1C) seeks to respond to the challenge of the sustained, strong rise in housing prices. A recast of the scheme supporting housing policy at municipal level (Housing Pact 2.0) focuses on increasing the supply of affordable, sustainable public housing, streamlining the financial incentives for municipalities to create affordable dwellings by mobilising plots of land for construction and the renovation of the unused building stock. In addition, the 'Neischmelz' investment will fund the renewable energy generation part of a broader housing project developed on a revitalised brownfield site in Dudelange.

Pillar 2: Green transition

Under pillar 2 (Green transition), the component **Decarbonisation of transport** (2A) aims to support a rapid development of electro-mobility through the electrification of the fleet of contracting authorities and public transport, and through an aid scheme in favour of charging infrastructure for electric vehicles installed by businesses.

The component **Environment and biodiversity protection** (2B) includes the establishment of a legislative framework for a financial and advisory support to municipalities in protecting nature and preventing biodiversity loss.

Pillar 3: Digitalisation, Innovation and Governance

Under pillar 3 (Digitalisation, Innovation and Governance), the component **Promoting a data-based economy** (3A) aims at developing ultra-secure, quantum-technology based communication infrastructure (LuxQCI lab) helping public and private sectors enhance the security of communication of sensitive data. The national infrastructure, at the centre of a national quantum-technology ecosystem, will be integrated in the European Quantum Communication Infrastructure project (EuroQCI).

The component **Modernisation of public administration** (3B) includes investments in the digitalisation of public administration services, including online solutions for citizens and businesses to carry out virtual appointments and obtain various permits, as well as an online national platform for conducting public consultations.

The component **Promoting a transparent and fair economy** (3C) includes a legislative measure prohibiting deductions for corporate income tax purposes of interests and royalties paid to related undertakings established in jurisdictions included on the EU list of non-cooperative jurisdictions for tax purposes. The component also includes measures aimed at fighting money laundering and terrorist financing, including measures designed to reinforce and consolidate the provisions applicable to professionals providing services to companies and trusts, and investment services, as well as to better understand the money laundering and terrorist financing risks, including in vulnerable sectors.

Table of components and associated costs.

Component	Total cost (EUR million)	Of which RRF funding (EUR million)
1A: Skilling, reskilling and upskilling	10.4	6.5
1B: Strengthening the resilience of the health system	1.2	1.2
1C: Increasing the supply of affordable and sustainable public housing	51.5	24
2A: Decarbonisation of transport	40	30.5
2B: Protection of environment and biodiversity	13.6	6
3A: Promotion of a data-based economy	30.2	10
3B: Modernisation of public administration	32.7	12.7
3C: Promoting a transparent and fair economy	3.6	2.5
Total	**183.1**	**93.4**

3.2. Implementation aspects of the plan

Consistency with other programmes

Luxembourg presented its recovery and resilience plan in parallel to its National Reform Programme. The plan should therefore be seen as part of a broader implementation of the government's priorities and in line with the National Reform Programme, with a set of investments and reforms that are consistent and complementary (see also section 4.2).

While the partnership agreements and the programmes under the Cohesion Policy are still at the stage of negotiation, most of the plan investments appear complementary with the interventions of the shared management funds planned for 2021-2027. As regards the ERDF and the Just Transition Fund, synergies and complementarities could be potentially expected with investments under the plan for almost all components (1B, 1C, 2A, 2B, 3A, 3B). The investments included in component 1A (Skilling, reskilling and upskilling) of the plan are also fully consistent with the specific objectives of the ESF+ (in particular its objectives (a) 'improving access to employment of all jobseekers' and (g) 'promoting lifelong learning, notably flexible upskilling and reskilling opportunities for all').

Besides, the plan explicitly refers to Luxembourg's integrated National Energy and Climate Plan (NECP), which went beyond the agreed binding target for Luxembourg's GHG emissions reduction under the Effort Sharing Regulation by setting a more ambitious national target of a 55% reduction by 2030 compared to 2005. Actions contained in the plan are expected to contribute to these emissions reduction. The measures in Component 2A on the decarbonisation of transport will help reduce greenhouse gas emissions in that sector, by supporting the development of recharging infrastructure, while promoting the rapid development of electromobility in the various vehicle categories, both private and public. The Housing Pact 2.0 in Component 1C will in part contribute to increasing the energy efficiency of buildings through fostering the renovation of the existing building stock. The 'Neischmelz' project also promotes the generation of renewable energies. These elements will contribute to the objectives set in the NECP.

Consistency with the challenges and priorities identified in the euro area recommendation

The plan, and more broadly the economic and fiscal policies carried out by Luxembourg to support the economy and the recovery are consistent with the challenges and priorities identified in the euro area recommendation[18] for 2021-2022.

The government launched two programs to support the economy in 2020 following the outbreak of the pandemic crisis. The Commissions' draft budgetary plan assessment already concluded that most of its measures have supported economic activity against the background of considerable uncertainty.

In a medium-term perspective, Luxembourg is supporting job transitions, notably towards the green and digital economy with the plan dedicating respectively 60.9% and 31.6% of the plan's total allocation to the green and digital transition. Although not part of the plan, Luxembourg is also making efforts to become a centre for sustainable finance in Europe.

Luxembourg is moving forward in the fight against anti money laundering and terrorist financing by deepening the identification, assessment and understanding of the money laundering and terrorist financing risks to which it is exposed, strengthening the regime applicable to professionals providing services to companies and trusts and investment services and by further developing the Luxembourg Business register.

Besides, the plan includes a number of measures with the aim to strengthen the effectiveness and **digitalisation of public administration**.

[18] Pending final adoption by the Council, after endorsement by the European Council. The text agreed by the Eurogroup on 16 December 2020 is available at: https://data.consilium.europa.eu/doc/document/ST-14356-2020-INIT/en/pdf

However, the plan does not adequately address features of the tax system that facilitate aggressive tax planning, in particular by means of outbound payments.

The administrative organisation of the Member State

The administrative system for the implementation of the plan in Luxembourg is clearly described in Part 3 of the plan. The ministry responsible for the coordination and management of the plan is the Ministry of Finance (Directorate of Economic and Budgetary Affairs). The Ministry of Finance coordinates all ministries and legal bodies responsible for the implementation of the plan. The implementation of measures and the monitoring of milestones and targets are delegated to line ministries responsible for the implementation of the plan, which report to the Ministry of Finance.

Gender equality and equal opportunities for all

While the plan does not contain the requested stand-alone section describing national challenges in the field of equality and explaining how reforms and investments included in the plan will be instrumental to address them, considerations to address certain equality challenges are present in four out of the eight components. Further measures fostering equal opportunities and gender equality (equal access to education and life-long learning, parental leave, targeted support to vulnerable job-seeker groups, promotion of women in politics and businesses) are included in Luxembourg´s National Reform Programme. This needs to be seen in the context of the overall high level of gender equality and social protection coverage in Luxembourg's labour market, with the gender employment gap below the EU average, and the gender pay gap among the lowest in the EU. However, Luxembourg is expected to monitor how the investments of component 1A (Skilling, reskilling and upskilling) contribute to gender equality and equal opportunities.

The consultation process conducted for the preparation of the plan

The Government conducted two rounds of presentations of the plan to, and consultations with, social partners and the Luxembourg Parliament. Specifically, the draft plan has been presented to the parliamentary Finance and Budget Committee, the feedback of which has informed the finalisation of the plan. Following its adoption by the Government, the plan has been presented to the parliamentary committees concerned, as well as to the plenary. Members of the Parliament expressed their views at the subsequent debate ahead of the formal submission. Social partners have been presented the draft plan as part of the annual European Semester process, and shared their views about the priorities to be reflected in the plan. In their opinion, the plan should promote social inclusion, the creation and support of quality jobs, and an acceleration of the twin transition, notably by helping workers having to adapt to the transition. Following the adoption by the Government of the plan, a new presentation to the social partners took place.

Cross-border or multi-country projects

Luxembourg has included in the plan a cross-border and multi-country project. It is presented in component 3: Promoting a data-driven economy, which encompasses a reform and an investment with the objective to develop an ultra-secure communication infrastructure based on quantum technology. The first step of this measure is to implement the necessary infrastructure at a national level. The second step consists in expanding the use of this technology with other countries that have also put in place the necessary infrastructure. The first cross-border pilot project is expected to occur in the first quarter of 2023 and discussions with partnering Member States have already started.

The planned communication strategy

Section 7 in Part III of the plan outlines the communication strategy envisaged to raise awareness of the public on the EU funding channelled via the RRF. Luxembourg published on the website of the Ministry of Finance the draft plan as approved by the Government Council on 10 March 2021 and the full plan submitted to the Commission on 30 April. Luxembourg has also set up a dedicated section on the website of the Ministry of Finance to provide information on the reforms and investments presented in the plan as well as an overview of the projects financed under the Facility.

State aid disclaimer

State aid and competition rules fully apply to the measures funded by the Recovery and Resilience Facility. Union funds channelled through the authorities of Member States, like the RRF funds, become State resources and can constitute State aid if all the other criteria of Article 107(1) TFEU are met. When this is the case and State aid is present, these measures must be notified and approved by the Commission before Member States can grant the aid, unless those measures are covered by an existing aid scheme or comply with the applicable conditions of a block exemption regulation, in particular the General Block Exemption Regulation (GBER) declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 TFEU[19]. When State aid is present and it requires notification, it is the duty of the Member State to notify State aid measures to the Commission before granting them, in compliance with Article 108(3) TFEU. In this respect, the State aid analysis carried out by Luxembourg in the recovery and resilience plan cannot be deemed a State aid notification. In as far as Luxembourg considers that a specific measure contained in the recovery and resilience plan entails de minimis aid or aid exempted from the notification requirement, it is the responsibility of Luxembourg to ensure full compliance with the applicable rules.

[19] Commission Regulation 651/2014, OJ L 187, 26.6.2014, p. 1

4. SUMMARY OF THE ASSESSMENT OF THE PLAN

4.1. Comprehensive and adequately balanced response to the economic and social situation

The plan contains several actions to improve social cohesion, sustain economic growth and progress in the green and digital transition. The small maximum financial contribution does not allow the plan to address all challenges, but the sets of measures presented within each of the eight components of the plan appear broadly coherent. Importantly, the plan is embedded in a more ambitious recovery plan mainly financed by the national budget. Luxembourg submitted its National Reform Programme on 16 April 2021. The information provided in the National Reform Programme is being considered and jointly assessed in this Staff Working Document together with the Recovery and Resilience Plan. The green components are also broadly consistent with the national energy and climate plan (NECP), while some projects proposed in the plan are also part of broader strategies, such as one dedicated to the knowledge-based economy.

Luxembourg has weathered the economic effects of the pandemic relatively well mainly due to the positive contribution from the external sector, the structure of its economy with a large financial sector more resilient in the pandemic, and the unprecedented global policy response. Owing to a persistently prudent fiscal stance, the government has made good use of its relatively wide fiscal space to articulate a decisive policy response, which has been crucial to cushion the impact of the pandemic on the economy (real GDP fell by 1.3% in 2020, compared with 6.1% in the EU as a whole).

Luxembourg's plan covers reasonably the six pillars of the RRF scope in spite of its limited maximum financial contribution. The plan's structure combining RRF funding with national funds allows a wider spread of measures. Luxembourg's selection of measures puts a strong emphasis on the twin transition, with a 60.9% climate contribution and a 31.6% digital contribution, well above the RRF's corresponding objectives of respectively 37% and 20%. The plan also features a relatively strong social dimension (skills and health) and shows a good overall balance between reforms and investments.

Green transition

The significant green dimension of the plan is due to three measures in components 1C, 2A and 2B, which contribute to addressing some important challenges faced by Luxembourg in its green transition; however, the limited maximum financial contribution under the Facility means that the plan had to focus on certain specific issues. The 'Neischmelz' investment (component 1C) will support the deployment of renewable energy generation and distribution on a specific site dedicated to affordable housing, in an innovative way. Alongside its primary objective to increase the supply of affordable housing, the reform of the Housing Pact will also contribute to sustainability through a better energy efficiency of buildings, including through renovation of the existing building stock. By funding the investment in charging points (component 2A), the Facility will contribute to the very ambitious target for electro-mobility of achieving 49% of electric cars in Luxembourg's overall car fleet by 2030. Other challenges, such as investing in public transport infrastructure, are tackled outside the plan. Finally, the ‘Naturpakt’ measure (component 2B) can become an essential element in achieving the national objectives for nature protection and biodiversity conservation, by encouraging local authorities to implement measures chosen from a catalogue of specific policy-related measures.

Digital transformation

Component 3A contains a reform aimed at developing and implementing an ultra-secure communication infrastructure based on quantum technology. This project is in line with the “European Quantum Communication Infrastructure” initiative (also known as EuroQCI) launched by the Commission in 2019, a high-priority project for the Commission and the participating Member States. At a later stage, the project involves a large-scale satellite communication element, based on quantum technology. That technology is still under development and entails a certain level of risk but the project appears to be technically feasible. The reform aimed at developing a quantum technology ecosystem, should ensure that small and medium-sized enterprises and start-ups develop know-how in this sector, which is expected to be a key element of the next stages of the digital transformation. Component 3A also includes an investment consisting in developing and deploying a “national test laboratory”, the “LuxQCI Lab”, aimed at acquiring knowledge and experience and supporting research activities in the field of quantum communication. This initiative is at the heart of the EU-funded OPENQKD (Open Quantum Key Distribution) pilot project aimed at installing quantum communication test infrastructures in several European countries, which will be linked to each other at a later stage. This investment is in line with the digital transformation ambition of the RRF and will equip Luxembourg with tangible and intangible infrastructure in order to be ready to accommodate the sizeable impacts of quantum applications.

Component 3B of the plan gathers a series of measures aimed at the modernisation of the public administration through digitalisation, in the context of the national Electronic Governance Strategy and responding to the “Modernise” European flagship, which seeks to support the digitalisation of public administration and promote “the development of key digital public services”. The component will increase the effectiveness and efficiency of public administrations and will place the user at the centre of the strategy. Among the measures with higher potential is the expansion of services through MyGuichet.lu. The introduction of new online services makes it possible to expand the offer of digital public services for citizens and businesses. This offers administrative simplification both for end-users (citizens and businesses) and for the administration responsible for the procedures. In addition, online approaches save commuting time, which improves productivity and they are available at all times, improving accessibility. Digital public services also tend to enhance transparency through more comprehensive and systematic information provided to users on the stage of progress in the procedure.

Smart, sustainable and inclusive growth

The aim of the eADEM project (Component 3B) is to upgrade ADEM’s IT resources and to develop an application system for centralised management, adapted to the missions of the Luxembourg public employment service, in order to respond to changes in employment and skills expectations. This project is expected to reduce bottlenecks in the agency’s day-to-day running of jobseekers orientation and employers support, and will expand its outreach in implementing active labour market policies, for instance by developing on-line training courses. This development is all the more welcome since the procedures for handling jobseekers registrations in place at the onset of the pandemic, turned out not to be fully suitable for coping with fast-growing number of simultaneous registrations during the crisis. In addition, the National Platform for the Management of Public Inquiries (Component 3B) is a welcome simplification of the administrative procedure for consultation of official notices and files submitted to a public inquiry.

In the context of the plan, Luxembourg proposes some measures intended to reinforce actions against money laundering and terrorist financing (Component 3C).

Social and territorial cohesion

The lack of affordable housing is one of the main sources of inequality of Luxembourg. A high degree of private property concentration and little incentives to release land for development limit the ability of public authorities to tackle the chronic under-supply of housing. This, together with sustained strong demand, continues driving up prices. Against this backdrop, the reform of the Housing Pact (Component 1C) should strengthen the public sector's capacity to increase the stock of public affordable and sustainable housing, especially for rental. The reform of the Housing Pact, which is currently under discussion in Parliament, would offer municipalities the support and incentives to sign legally-binding implementation agreements with the government involving a joint obligation to develop land use plans in coordination with the central government. The reform is expected to increase access to land and housing. It offers the opportunity to curb in a meaningful way the trend of increases in housing prices, one of the main factors driving up household indebtedness. The Neischmelz project also pursues, indirectly, a social objective with more than half of the accommodation planned for affordable renting.

Overall, territorial cohesion is being strengthened with new ways of coordination between both levels of government, such as the agreements under the Housing pact and the Nature Pact included in the plan.

Health, and economic, social and institutional resilience

Available data suggest that Luxembourg's health system is comparatively performant in offering accessible and good quality care. However, issues emerged when neighbouring countries closed their borders at the outbreak of the COVID-19 crisis. This has highlighted the vulnerability of the health system. The plan contains measures expected to address the shortage of health professionals and skills in order to adapt them to needs and to strengthen the resilience and efficiency of the healthcare system, notably through the recasting of competences of defined health professions and the digitalisation of the health sector, including the development of telemedicine solution.

Policies for the next generation

The plan contains several measures intended to foster upskilling and reskilling in Luxembourg. The "FutureSkills" initiative strengthens the partnership between national employment agency (ADEM) and the Chamber of Commerce, which has developed a diversified training offer for jobseekers with the aim of assisting them with their integration or reintegration into the labour market. The Digital skills programme offers two days of training to all employees who benefited from the short-time work scheme between1 January and 31 March 2021.

Table 4.1. Coverage of the six pillars of the Facility by the components of Luxembourg's plan

		Green transition	Digital transition	Smart, sustainable & inclusive growth	Social and territorial cohesion	Health, and economic, social and institutional resilience	Policies for the next generation
1	Skilling, reskilling and Upskilling		●	○	●		●
2	Strengthening the resilience of the health system		●		○	●	
3	Increasing the supply of affordable and sustainable public housing	●			●	○	●
4	Decarbonisation of transport	●		●	○		
5	Protection of environment and biodiversity	●					
6	Promoting a data-driven economy		●	●		●	
7	Modernisation of public administration		●	●	○	●	
8	Promoting a transparent and fair economy					●	

Key: "●" investments and reforms of the component significantly contribute to the pillar; "○" the component partially contributes to the pillar

Conclusion

Taking into consideration all reforms and investments envisaged by Luxembourg, its recovery and resilience plan is expected to represent to a large extent a comprehensive, and **adequately balanced response to the economic and social situation**, thereby contributing appropriately to all six pillars referred to in Article 3 of the RRF Regulation, taking the specific challenges and the financial allocation of Luxembourg into account. This would warrant **a rating of A** under the assessment criterion 2.1 in Annex V to the RRF Regulation.

4.2. Link with country-specific recommendations and the European Semester

Given the small RRF allocation for Luxembourg (0.15% of GDP in 2019), the investments in the plan focus on a selection of measures which contribute to addressing a **significant subset of CSRs** issued to Luxembourg in 2019 and 2020.

Component 1A Skilling, reskilling and upskilling contributes to addressing some of the challenges identified in the CSRs, specifically: to mitigate the employment impact of the crisis, with special consideration for people in a difficult labour market position (CSR 2 of 2020), to increase the employment rate of older workers by enhancing their employment opportunities and employability (CSR 1 of 2019), and to foster investment policy on stimulating skills development (CSR 3 of 2019). The component combines targeted and more general training measures for job seekers and workers on short-time work scheme, i.e. part of the population in a difficult labour market situation. Some of those training measures put emphasis on the sought-after digital skills, thus contributing to the digitalisation and innovation, including in the business sector (CSR 3 of 2020), and to mitigating the skills mismatch on the labour market. A dedicated target for training of job seekers in the age group 45+ contributes to increasing the employability and employment opportunities of older workers (CSR 1 of 2019). The reform designed to strengthen the adult learning system is complementary to those training measures, thus increasing the resilience, employability and mobility of workers in the context of the green and digital transitions. Those short-term, targeted training measures and the development of qualification avenues for the most promising job profiles are likely to progressively stimulate the labour force supply towards sectors where the skills mismatch is greatest. Given the small maximum financial contribution, national funds and ESF+ will also be used as part of a comprehensive response to the above challenges, notably the employment situation of the most vulnerable jobseekers (CSR 2 of 2020).

Component 1B Reinforcement of the resilience of the health system contributes to addressing some of the challenges identified in CSR 1 of 2020, specifically: to help improve the resilience of the health system by ensuring appropriate availability of health workers. The plan also includes reforms to improve the governance and digitalisation of the health system.

Reform 1 reinforces the governance of the health system and outlines the consultation process with stakeholders as well as the working programme method to address six pre-defined thematic challenges: greater complementarity between hospital and non-hospital sectors; more patient-centric services, prevention of shortage of medical and nursing staff; health prevention; recourse to new technologies in health; financing of the health system. The result of this process will also feed into the vision of the future-proof health system in the National Health Plan.

Reform 2, consisting in the legislative recast of the responsibilities of health professionals, contributes to mitigating risks arising from Luxembourg's lack of health workers, and this will be achieved through better forecasting of needs, expansion of regulated professions and increase of domestic training opportunities. The investment in a single digital register of healthcare professionals will help better identify shortages of professionals and skills mismatches, while mobilising workers in case of shocks. It will allow a better management and anticipation of the healthcare coverage and the healthcare professionals needed. The investment in telemedicine will improve the access and efficiency of the health system. The development of telemedicine is also a way to limit the pressure on health professionals. The component is impactful and relevant for the intended objectives to be achieved through specific and well-targeted measures.

Component 1C Increasing the supply of affordable and sustainable housing contributes to addressing some of the challenges identified in the CSRs, namely to 'focus investment on the green (…) transition, in particular on sustainable (…) buildings [and] clean and efficient production and use of energy' (CSR 3 2020), and to 'focus investment policy on increasing housing supply, including by increasing incentives and lifting barriers to build' (CSR 3 2019). One of Luxembourg's greatest challenges is the lack of affordable housing, reflected in the steady increase in housing prices. Against that backdrop, the legislative recast of the Housing Pact aims at better targeting the governmental support to municipalities to create affordable housing, and to better use the existing residential housing and land potentially available for construction. The intention is to mobilise potentially available land and buildings to increase and improve the supply of affordable housing through public financial incentives to municipalities for acquiring plots of land to build as well as unused buildings to renovate. The impact of the yet to be adopted reform can only become visible in the medium term, and will largely depend on the ability of the law to engage in municipalities, together with additional ongoing policy tools to increase the public sector's leverage on the housing market. The overall 'Neischmelz' project contributes to the objective of increasing the supply of affordable and sustainable housing as well as clean and efficient production and use of energy, given that the generation units intended to supply power and heat to the new district, and possibly its neighbourhood, will exclusively rely on renewable energy sources.

Component 2A Decarbonisation of transport contributes to addressing some of the challenges identified in the CSR, namely to 'focus investment on sustainable transport' (CSR 3 2019 and CSR 3 2020) to contribute to the decarbonisation of economy and enhance air quality. By the reform 'Electrification of the fleet of contracting authorities and entities, and public transport', Luxembourg goes beyond the requirements laid down by Directive 2019/1161 on the promotion of clean and energy-efficient road transport vehicles[20] in that Luxembourg imposes the respective minimum procurement targets for the share of clean vehicles at the level of each contracting authority and entity, rather than at the national level. In addition, several contracting authorities and entities have committed to targets going beyond the minimum, thereby contributing to an overall higher level of ambition. Development of electro-mobility is the goal of the other measure of the component, an aid scheme in favour of the rollout of electric charging points which seeks to close the funding gap on a yet to be developed market. Apart from addressing the respective CSRs, both measures contribute to Luxembourg's 2030 GHG emission (-55%), and electro-mobility (49% share) targets, and to the implementation of positive structural changes.

Component 2B Protection of environment and biodiversity contributes to addressing some of the challenges identified in the CSRs, namely to focus investment on the green transition (CSR 3 of 2020). The draft law concerned, 'Naturpakt', encourages municipalities to invest in improving the natural environment and biodiversity status of their urban, open, aquatic, and forest areas. The performance-based certification subsidy rewards the participating municipalities that have achieved a scoring of at least 40% on the basis of actions listed in a dedicated catalogue aimed at, among others, creating, preserving, maintaining or restoring biotopes, habitats and degraded ecosystems.

Component 3A Promotion of data-based economy contributes to addressing some of the challenges identified in the CSRs, namely to foster digitalisation and innovation (CSR 3 of 2019 and 2020). Both measures of the component fall under the European Quantum Communication Infrastructure initiative (EuroQCI). The investment measure consists in developing and deploying an experimental platform intended for use by scientists for research into quantum-

[20] Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles, OJ L 188, 12.7.2019, p. 116-130.

based ultra-secure communications (Luxembourg Quantum Communication Infrastructure Lab, 'LuxQCI Lab'). That research infrastructure will be used to acquire the know-how required to develop and operate a quantum-communication infrastructure, thereby contributing to boosting Luxembourg's research and innovation capabilities in this field. Another deliverable of the investment will be a successful demonstration of a cross-border quantum key distribution system. Related to the investment is the reform measure consisting in supporting a new ecosystem in Luxembourg built on the quantum–based communication infrastructure. Once successfully tested by LuxQCI Lab, the infrastructure is to be used by the public sector and critical services, while its opening to the private sector can be expected after 2026. Deliverables of the reform consist in a successful testing, and the creation of technical conditions (including the integration of the terrestrial and space segments) in view of a broader rollout of the technology. Given that mainly public entities will be involved in the testing phase, and that the infrastructure will be opened to commercial use possibly after 2026, Component 3A is expected to contribute to addressing CSR 3 of 2020, in that it calls for fostering innovation and digitalisation in the business sector, in the medium to long term.

The same digitalisation and innovation challenge reflected in CSR 3 of 2019 is partly addressed by **Component 3B Modernisation of public administration.** The latter also contributes to partly addressing CSR 3 of 2020 that highlights innovation and digitalisation of the business sector. This is achieved by the development of online administrative procedures and services to be used by citizens and businesses, thus reducing the cost of compliance, and increasing the efficiency of interactions with the public administration. The investment in the electronic management of documents and case management, while serving public administration in the first phase, will benefit citizens and businesses after its completion through greater efficiency of document exchanges via public administration platform MyGuichet.

Component 3C Promotion of a transparent and fair economy contributes to addressing some of the challenges identified in the CSRs, specifically to ensure effective supervision and enforcement of the anti-money laundering ("AML") framework as regards professionals providing trust and company services, and investment services (CSR 4 of 2020). Reform 2 comprises relevant, intertwined measures aimed at reinforcing the AML framework and its enforcement, as well as at enhancing the identification of money-laundering ("ML") and terrorist financing ("TF") risks. The reform contributes significantly to enhanced effective supervision of professionals providing trust and company services, and investment services. This is achieved by a combination of targeted, legislative and non-legislative measures including, among others, a better use of data registered on legal persons, greater understanding of risks allowing for targeted mitigation measures, as well as clarification of applicable sanctions. Moreover, the regime applicable to trust and company service providers will be reviewed and reinforced through a modification of the relevant legislation by September 2023.

The plan does not adequately address the CSRs on **addressing features of the tax system that facilitate aggressive tax planning, in particular by means of outbound payments** (CSR 4 of

2019, CSR 4 of 2020). The plan includes, as part of component 3C, a legislative measure prohibiting the deductibility of outbound royalties and interest payments to non-cooperative tax jurisdictions, which entered into force on 1 March 2021. However, this measure corresponds to the implementation of an agreement reached at EU Council level in December 2019, applying to all Member States, irrespective of whether or not they have been given a recommendation to address aggressive tax planning in the context of the European Semester. Moreover, this measure does not appear adequate to address the concern on outbound payments mentioned in the CSRs, as its geographical scope is limited to non-cooperative tax jurisdictions. As such, it does not target those jurisdictions where outbound payments are 'at risk of escaping tax (…) by also not (being) subject to tax in the recipient jurisdiction', i.e. jurisdictions with zero or low corporate income tax. It should be noted that the plan mentions, as a complement to that measure, Luxembourg's intention to carry out an impact assessment of the above-mentioned legislative measure, 'with a view to informing the discussion on an extension of the measure to third jurisdictions other than those included in the EU list on non-cooperative tax jurisdictions'. However, the plan does not contain any commitment to revise the corporate tax legislation based on the findings of that impact assessment. It thus offers no guarantee that Luxembourg will put in place an adequate legislative framework to ensure proper taxation of intra-group outbound payments in the form of royalties and interests, with a broader geographical scope including zero or low corporate tax rate jurisdictions. Finally, the component indicates that Luxembourg will continue to adopt a constructive attitude in ongoing and upcoming discussions on the modernisation of the EU and international fiscal system applicable to companies. It makes specific reference to Luxembourg's active and constructive participation in ongoing negotiations as part of the OECD Inclusive Framework, and indicates that depending on the global agreement found, Luxembourg will implement the new rules to adapt its national fiscal framework; it also indicates that a number of initiatives announced in the recent Commission Communication "Business Taxation for the 21st Century" are likely to help remedy any problems in terms of outgoing dividends, interest and royalties payments, and that Luxembourg will participate constructively in the process of negotiating these initiatives within the Council, taking into account the country-specific recommendation on aggressive tax planning. These indications are welcome, but do not have an immediate effect on addressing the country-specific recommendation.

The plan does not directly address the **long-term sustainability of the pension system** (CSR 1 of 2019) or the negative effects of the early retirement schemes and the financial incentives for early labour-market exit arising from the benefits system which negatively affect the **employment rate of older workers** (CSR 1 of 2019). However, the plan, in its component 1A Skilling, reskilling and upskilling, contains an investment with a target for older job seekers that contributes to increasing the **employability of older workers** (CSR 1 of 2019).

Addressing CSR 3 of 2020, the Luxembourg authorities adopted numerous measures **supporting the liquidity of businesses, notably SMEs**, and the **promotion of private investments** fostering the economic recovery through the successive national stimulus packages, regularly updated and adjusted, as reflected in the Budgetary Plans of 2020 (amended) and 2021.

Lastly, whereas the plan does not contain measures addressing barriers to competition in **regulated professional business services** (a challenge identified in CSR 2 of 2019), two measures related to that topic, including a reform of the right of establishment, are mentioned in the National Reform Programme.

To summarise, the following CSRs issued to Luxembourg in 2019 and 2020 are addressed by the plan to varying degrees:

– CSR 1 of 2019, insofar as the CSR relates to enhancing the employability of older workers;

– CSR 3 of 2019 (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);

– CSR 1 of 2020 (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);

– CSR 2 of 2020 (mitigate the employment impact of the crisis, with special consideration for people in a difficult labour market position);

– part of CSR 3 of 2020 (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, fostering innovation and digitalisation in particular in the business sector);

– part of CSR 4 of 2020 (ensure effective supervision and enforcement of the anti-money laundering framework as regards professionals providing trust and company services, and investment services;

The following CSRs issued to Luxembourg in 2019 and 2020 are not addressed by the plan:

– while the investments in skilling contribute to the employability of older workers (part of CSR 1 of 2019), the plan does not directly address the long-term sustainability of the pension system (part of CSR 1 of 2019), the negative effects of the early retirement schemes and the financial incentives for early labour-market exit arising from the benefits system which negatively affect the employment rate of older workers.

– CSR 2 of 2019 (reduce barriers to competition in regulated professional business services);

– CSR 4 of 2019 and part of CSR 4 on 2020 on addressing features of the tax system that facilitate aggressive tax planning, in particular by means of outbound payments are not adequately addressed;

– part of CSR 3 of 2020 (ensure effective implementation of measures supporting the liquidity of businesses, in particular small and medium-sized enterprises and the self-employed; front-load mature public investment projects and promote private investment to foster the economic recovery), which has been addressed outside the plan.

Conclusion

Taking into consideration the reforms and investments envisaged by Luxembourg, its recovery and resilience plan is expected to contribute to effectively addressing all or a **significant subset of challenges identified in the country-specific recommendations**, or challenges in other relevant documents officially adopted by the Commission under the European Semester, and the recovery and resilience plan represents an adequate response to the economic and social situation of Luxembourg. This would warrant **a rating of A** under the assessment criterion 2.2 in Annex V to the RRF Regulation.

Table 4.2 Mapping of country challenges identified in 2019-20 country-specific recommendations and components of Luxembourg's plan

Country challenges (as identified in Section 2)	Associated CSR (2019-2020) or European Semester recommendations	Component 1A – Skilling, reskilling and upskilling	Component 1B – Strengthening the resilience of the health system	Component 1C – Increasing the supply of affordable and sustainable public housing	Component 2A – Decarbonisation of transport	Component 2B – Protection of environment and biodiversity	Component 3A – Promoting a data-driven economy	Component 3B – Modernisation of public administration	Component 3C – Promoting a transparent and fair economy
Public finances									
Long-term sustainability of public finances, in particular of the pension system	2019.1, 2020.1	○							
Tackle aggressive tax planning	2019.4, 2020.4								
Financial sector/Businesses									
Affordable housing supply / sustainable buildings	2020.3, 2020.3			●					
Anti-money laundering/Counter	2020.4								●

terrorism financing									
Business investment/Productivity growth	2020.3	●		○			○	○	
Reduce barriers to competition	2019.2								
Employment									
Mitigate the employment impact of the crisis	2020.2	●							
Increase the employment rate of older workers (employability)	2019.2.1, 2020.2.3	●							
Skills development	2019.3	●							
Skills shortages	2020.1	○	●						
Health									
Resilience of the healthcare system	2020.1		●						
Green dimension									
Sustainable transport	2019.3, 2020.3				●				
Clean and efficient production and use of energy	2020.3			●					
Progressive decarbonisation of the economy	2020.3			●	●				
Digital dimension									
Foster innovation in the business sector	2019.3, 2020.3	○					●	○	
Foster digitalisation in the business sector	2019.3, 2020.3	●					○	○	

Key: "●" investments and reforms of the component significantly address the challenge; "○" the component partially addresses the challenge

4.3. Growth potential, job creation, economic, institutional and social resilience, European Pillar of Social Rights, mitigating the impact of the crisis, and social territorial cohesion and convergence

Fostering economic growth and jobs

The reforms and investments included in the plan are a subset of the measures proposed by Luxembourg to address the impact of the crisis and promote a recovery consistent with the green and digital transitions. For that reason, particular attention is paid to the effects in the medium and long term of reforms and investments. The crisis has intensified the chronic shortage of skilled labour, a limiting factor for growth and investment, in particular in ICT and health. At the same time, the lack of adequate skills is thought to be a major cause of the difficulties faced among people born outside the EU to find sustainable employment. The skilling component (1A) is expected to provide jobseekers continuous on-line programmes designed to develop digital and other future-oriented skills, developed by the reformed employment agency (ADEM) to increase employment opportunities. This component gathers measures of the broader digital governance strategy, which also aims to foster digital integration in the private sector, notably by placing users experience at the centre.

Investments will also be made to improve the matching efficiency and labour market transitions through vocational training (component 1A). The new trainings in the plan are expected both to increase productivity for people whose skills do not currently match labour market requirements, and to train more people for professions affected by a significant shortage of skilled workforce. In the face of the new challenges related to the green and digital transition, and taking into account the high reliance of the Luxembourg economy on an adequate and skilled labour supply, developing an efficient matching system is particularly welcome to ensure a smooth functioning of the labour market.

Box 1: Stylised NGEU impact simulations with QUEST – LUXEMBOURG

Model simulations conducted by the Commission using the QUEST model show that the economic impact of the NGEU in Luxembourg could lead to an increase of GDP of between 0.5% and 0.8% by 2026[1]. After 20 years, GDP could be 0.1% higher. Spill-overs account for a large part of such impact.

According to these simulations, this would translate into up to 830 additional jobs. Cross border (GDP) spill-overs account for 0.7 pps in 2026, showing the value added of synchronised expenditure across Member States (line 2). Even in a scenario with a lower productivity of NGEU funds, it would still lead to a significant impact (line 3).[2]

Table 1: QUEST simulation results (% deviation of real GDP level from non-NGEU case, linear disbursement assumption over 6 years)

Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2040
Baseline	0.7	0.9	0.9	0.9	0.8	0.8	0.6	0.4	0.2	0.1	0.1
of which spill-overs	0.7	0.8	0.8	0.8	0.8	0.7	0.6	0.3	0.2	0.1	0.0
Low productivity	0.3	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.1	0.1	0.0

This stylised scenario does not include the possible positive impact of structural reforms, which can be substantial. A model-based benchmarking exercise shows that undertaking structural reforms that would result in halving the gap vis-à-vis best performers in terms of indicators of structural reforms could raise Luxembourg GDP by 15% in 20 years' time, more than the 11% found for the EU average[3].

Due to the differences in the assumptions and methodology, **the results of this stylised assessment cannot be directly compared to the numbers reported in chapter 4 of Luxembourg's plan.**

[1] RRF amounts to roughly 90% of NGEU, which also includes ReactEU, Horizon, InvestEU, JTF, Rural Development and RescEU. For Luxembourg the RRF share is lower.
[2] Technically, the low productivity scenario considers a significantly reduced output elasticity of public capital.
[3] Varga, J, in 't Veld J. (2014), "The potential growth impact of structural reforms in the EU: a benchmarking exercise ", European Economy Economic Papers no. 541.

http://ec.europa.eu/economy_finance/publications/economic_paper/2014/pdf/ecp541_en.pdf.

In the medium to long term, the main supporting factors for economic growth included in the plan are the measures contributing to foster labour supply inflows, which might trigger a substantial economic growth momentum: an improved accessibility to housing (Component 1C), cleaner and more efficient transportation systems (with contribution from Component 2A) and improved accessibility and quality of the health system (Component 1B). Reforms and investments proposed in Component 1B also target more cost-effective healthcare delivery and hence contribute to improving the sustainability of public finances in the long run and improve the Health system resilience.

Strengthening social cohesion

The upskilling and reskilling component (1A) in the plan is important for social cohesion, and in particular, one of the investments includes a target for the participation of older workers and is thus also expected to contribute to greater social cohesion by investing in people that might more likely be lacking up-to-date digital skills. As a result, social cohesion is expected to be enhanced. The whole component refers to one of the headline targets of the European Pillar of Social Rights Action Plan for the EU by 2030, namely that at least 60% of all adults should be participating in training every year by 2030. In the same line the strengthening of the health system (Component 1B) is expected to benefit the most vulnerable people. The Component contributes to the implementation of the European Pillar of Social Rights (principle 16 Access to healthcare) and social cohesion through addressing gaps in access to healthcare in underserved areas.

The modernisation of the public administration (3B) initially aims to strengthen institutional resilience by promoting more effective and efficient administrative services. However, with its broader scope to engage the private sector in the digital transition and digital inclusion, it is expected to act as a powerful social cohesion driver.

The reform of the Housing Pact (Component 1C) aims to help increase labour mobility and reduce regional disparities. It is in line with principle 19.a. of the European Pillar of Social Rights which states "Access to social housing or housing assistance of good quality shall be provided for those in need". Although it is difficult to assess ex-ante the effectiveness of the reform in terms of its impact on the actual access to affordable housing, the new Housing Pact 2.0 will focus on increasing the supply of affordable and sustainable housing, and on mobilising existing land and residential potential.

Against the backdrop of Luxembourg's limited challenges in the area of gender equality and equal opportunities, the plan contains a limited number of measures responding to those challenges. The component 3B Modernisation of public administration approaches the development of digital services in line with the principle of equal access, especially for older persons and persons with lower digital skills. The component 1A Skilling, reskilling and upskilling has a strong focus on supporting the participation of older people in the labour market. The components 1B Resilience of the health system and 1A Skilling, reskilling and upskilling are designed to ensure equal access to the services concerned (i.e. e-learning courses as well as telemedicine consultations) thanks to digital inclusion measures which cater for the needs of persons with low digital skills, older persons, or persons without their own IT equipment or smartphone. The component 1C Increasing the supply of affordable and sustainable public housing aims at easing the access to affordable public housing by a targeted reform inciting municipalities to create affordable dwellings, mainly for rental. These measures are specifically targeting the low revenue households, which is expected to reduce socio-economic inequalities. Moreover, the plan announces the finalisation of a comprehensive action plan for digital inclusion still in 2021.

Reducing vulnerability and increasing resilience

Improving institutional coordination and diversifying the economy will be key factors conducive to resilience towards external shocks. These aspects appear to be well covered in the plan. Notably, the Housing Pact (Component 1C), the Nature Pact (Component 2C), together with the instrumental modernisation of the administration (Component 3B) can be regarded as contributing to resilience and reducing vulnerability.

The size of the research project to develop a communication system based on quantum technology (Component 3A) is sufficient to drive Luxembourg into a new area of specialisation to diversify economic structures in coordination with other countries. This measure is therefore expected to increase the cohesion of the economy. Greater economic and social cohesion is, in turn, expected to increase social resilience. In the long term, therefore, the measures also strengthen society's ability to respond to economic and social shocks and structural changes, while implementing structural measures in a fair and inclusive way. The plan also includes measures to increase institutional resilience through reforms aimed at streamlining the framework for combating money laundering and terrorist financing (Component 3C). By fighting against organised crime, it is expected to further contribute to resilience.

Conclusion

Taking into consideration all reforms and investments envisaged by Luxembourg, its recovery and resilience plan is expected to have a high impact on **strengthening the growth potential, job creation, and economic, social and institutional resilience of Luxembourg, on contributing to the implementation of the European Pillar of Social Rights** and the Porto declaration adopted on 7 May 2021, including through the promotion of policies for youth, and on mitigating the economic and social impact of the COVID-19 crisis, thereby enhancing the economic, social and territorial cohesion and convergence within the Union. This would warrant **a rating of A** under the assessment criterion 2.3 of Annex V to the RRF Regulation.

Box: **Employment and social challenges in light of the Social Scoreboard accompanying the European Pillar of Social Rights**

The Social Scoreboard supporting the European Pillar of Social Rights points to some employment and social challenges in Luxembourg. The COVID-19 crisis initially negatively affected the unemployment rate (20-64) which rose to 7.6% in June 2020 but then improved to reach the annual value of 6.8% in 2020. Following the outbreak, Luxembourg took unprecedented measures to protect employment and especially people in a difficult labour market position. The employment rate dropped by 0.7 pps in 2020 (same as the EU average) and stood at 72.1%. National data show that skilled workers with upper secondary or higher education have been more affected in the short term than the low-skilled. Young people under the age of 30 have been disproportionally hit (unemployment rate of 25.7% in Q4 2020 – to be nonetheless read against the small size of this population group). Before the crisis, non-EU born residents were already facing a high unemployment rate (13.1% in 2019), below average incomes and a very high risk of poverty or social exclusion (38% in 2019).

Social Scoreboard for LUXEMBOURG	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24) (2020)
	Youth NEET (% of total population aged 15-24) (2020)
	Gender employment gap (2020)
	Income quintile ratio (S80/S20) (2019)
	At risk of poverty or social exclusion (in %) (2019)
Dynamic labour markets and fair working conditions	Employment rate (% population aged 20-64) (2020)
	Unemployment rate (% population aged 15-74) (2020)
	Long term unemployment (% population aged 15-74) (2020)
	GDHI per capita growth (2019)
	Net earnings of a full-time single worker earning AW (2019)
Social protection and inclusion	Impact of social transfers (other than pensions) on poverty reduction (2019)
	Children aged less than 3 years in formal childcare (2019)
	Self-reported unmet need for medical care (2019)
	Individuals' level of digital skills (2019)

Critical situation	To watch	Weak but improving	Good but to monitor	On average	Better than average	Best performers

Update of 29 April 2021. Members States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories. For methodological details, please consult the Joint Employment Report 2021; NEET: neither in employment nor in education and training; GDHI: gross disposable household income.

The employment rate in 2020 remains below the EU average, particularly for older workers, and possible skills mismatches and labour shortages deserve attention. Low-skilled people have a high inactivity rate, at 36.7%. Also, the low-skilled participate less in learning activities (5.7% against an average of 16.3% in 2020). Overall, 53% of jobseekers have only a lower secondary level of qualification. Upskilling and reskilling of workers and jobseekers are key in this context, against the background of possible skills mismatches.

The impact of students' origin and socioeconomic background on their performance is one of the strongest in the EU. Almost half (47.7%) of pupils in the lowest quarter of the socioeconomic index underachieve in reading, in contrast to just 10.2% of those in the top quarter. Recent measures aim at diversifying the school offer to better reflect the diversity of the school population.

In this context, the recovery and resilience plan of Luxembourg addresses a series of employment challenges relevant for the implementation of the European Pillar of social rights. To enhance labour market access, mitigate the employment impact of the crisis and stimulate skills development, the plan envisages support for re/upskilling measures for workers on short-time work schemes ("Digital Skills" vouchers up to 500€ for online classes in 2021) and for job-seekers. The measures are part of the "FutureSkills" initiative which combines training with practical work experience in the public sector, and studies and surveys to anticipate required skills and training needs. However, this investment does not target low-skilled people. The plan also includes the development of a new skills strategy kick-started by the Skillsdesch initiative, agreed between social partners in July 2020, targetting both workers and job-seekers. Its main objectives are to analyse needs in skills, identify most promising vocational domains and to design and implement an action plan for future trainings (including an OECD skills study). The plan also includes a measure to strengthen the capacity of the Public Employment Service through digitalisation.

With more people likely to fall back on the basic safety nets due to the crisis, reforms on social protection and inclusion can provide much needed support, in synergy with ESF funding. The plan includes a number of social support measures, notably on social and affordable housing, and on the health care sector and workforce. The plan strengthens the system of municipal planning of housing investments (Housing Pact 2.0) and includes an investment to improve access to affordable housing. These measures are expected to help address the soaring prices in the housing sector and contribute to mitigate their impact in terms of inequalities by targeting the low-income households. The plan also includes a review of the system of medical professions, a single digital register of health professions and the strengthening of telemedicine provision.

4.4. The principle of 'do no significant harm'

Luxembourg's recovery and resilience plan includes a systematic assessment of each measure against the principle of 'do no significant harm' (DNSH), for each of the six environmental objectives within the meaning of Article 17 of the Taxonomy Regulation. Luxembourg's assessment is particularly developed for measures that relate to the green transition (components 1C, 2A, 2B), as they are the most likely to have an impact on the six environmental objectives.

The assessment provided allows to assess that all measures will comply with the DNSH principle. For some measures, the justification is based on the fact that the implementation of the existing EU and Luxembourg legislative framework allows to prevent any significant harm. This is the case for instance for the 'Housing Pact 2.0', or for the support scheme for electric vehicles charging stations. Luxembourg has also demonstrated that the measure to ensure that procuring entities buy a minimum share of zero- or low-emissions vehicles is compliant with the DNSH principle, by providing sufficient information on the criteria applicable to purchased vehicles.

For the natural environment and biodiversity support scheme 'Naturpakt', Luxembourg communicated to the Commission a draft of the catalogue of possible biodiversity protection and nature restoration measures, which clearly supports environment protection actions, and does not raise any concerns as regards compliance with the DNSH principle.

Conclusion

Taking into consideration the assessment of all the measures envisaged, no measure for the implementation of reforms and investments projects included in Luxembourg's recovery and resilience plan is expected to do a significant harm to environmental objectives within the meaning of Article 17 of Regulation (EU) No 2020/852 (the principle of 'do no significant harm'). This would warrant **a rating of A** under the assessment criterion 2.4 of Annex V to the RRF Regulation.

4.5. Green transition

Climate target

Overall, the plan is considered to contribute to climate objectives for 60.9% of Luxembourg's amount requested under the RRF of EUR 93.4 million, and as such, the climate target of 37% is met with a very significant margin.

Three measures contribute to the **climate target**:

- The 'Neischmelz' project in component 1C (EUR 24 million) focuses on renewable energy production from solar and geothermal sources, and as such benefits from a 100% climate coefficient under intervention fields 029 (Solar energy) and 032 (Other renewable energy, including geothermal energy).
- The support scheme for electric vehicles charging points in component 2A (EUR 30.5 million) is tracked with a 100% climate contribution under intervention field 077 (Alternative fuels infrastructure).
- The 'Naturpakt' support scheme for natural environment and biodiversity protection in component 2B (total funding request of EUR 6 million) is tracked with a 40% climate contribution under intervention field 050 (Nature and biodiversity protection, natural heritage and resources, green and blue infrastructure).

Table 4.5.1: Components with climate contribution

Component	Contribution to the climate transition (EUR million)	% of total amount requested under the RRF
1C. Increasing the supply of affordable and sustainable public housing	24	25.7%
2A. Decarbonisation of transport	30.5	32.6%
2B. Protection of environment and biodiversity	2.4	2.6%
Total	**56.9**	**60.9%**

The plan applies correctly the methodology for climate tracking mentioned in Annex VI of the Regulation, by identifying intervention fields, and corresponding coefficients for the calculation of support to climate change objectives. It should be noted that the plan does not propose any increased climate coefficients for any measure.

Green transition

Luxembourg's recovery and resilience plan puts a significant focus on the green transition, with one of its three pillars fully dedicated to mobility and biodiversity measures. An additional measure, the 'Neischmelz' renewable energy project (part of the housing component 1C), also contributes to the green transition. The proposed actions are in line with the context of the European Green Deal. In the context of a small maximum financial contribution, the plan manages to address several significant challenges Luxembourg faces as regards the green transition (cf. Section 2.3.1).

Climate and energy

A significant part of the investments put forward in the plan focuses on the climate and energy transition. They aim to contribute to Luxembourg's 2030 targets and to its transition to climate neutrality by 2050. This is welcome as Luxembourg needs additional measures to reach its climate and energy objectives.

Due to the limited maximum financial contribution, proposed measures focus on addressing certain challenges. The proposed measures of the plan follow up and are consistent with the orientations outlined in Luxembourg's National Energy and Climate Plan (NECP), although they focus prominently on certain challenges, in particular on sustainable mobility and renewable energy generation, in line with the 'Recharge and refuel' and 'Power up' flagships.

By contrast, energy renovation of buildings, and the 'Renovate' flagship, do not feature prominently in any investment measure. It is only mentioned, as a secondary objective, in the 'Housing Pact 2.0' reform, which aims to support municipalities' efforts to make more affordable housing available, either by building new housing or renovating the existing building stock. Increasing renovation efforts will remain necessary[21].

The 'Neischmelz' measure (component 1C) aims to support the deployment of renewable energy generation capacity on a specific site, in an innovative way. This is useful as Luxembourg is generally experiencing difficulties to increase renewable energy generation domestically. This measure aims to develop solar and geothermal energy generation as part of the wider 'Neischmelz' project to rehabilitate an old industrial site and develop a new, sustainable urban district. As such, it will focus only on one site, and will not in itself constitute a structural response to the challenges Luxembourg faces on renewable energy or to the achievement of Luxembourg's renewable energy targets. However, this project features an innovative dimension with the expectation to produce heat through a deep geothermal energy power plant, which could be a very valuable precedent for other projects in a continental environment[22].

[21] Zangheri, P., Armani, R., Kakoulaki, G., Bavetta, M., Martirano, G., Pignatelli, F. and Baranzelli, C., Building energy renovation for decarbonisation and Covid-19 recovery, EUR 30433 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-24766-1, doi:10.2760/08629, JRC122143.
[22] For an overview and assessment of sustainable districts in Europe see: Saheb, Y., Shnapp, S. and Paci, D., From nearly-zero energy buildings to net-zero energy districts, EUR 29734 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-02915-1, doi:10.2760/693662, JRC115188; and Shnapp, S., Paci, D. and Bertoldi, P., Enabling Positive Energy Districts across Europe: energy efficiency couples renewable energy,

Sustainable mobility

The support scheme for electric vehicles charging points (component 2A) is expected to make a useful contribution to the shift towards sustainable mobility, by complementing existing schemes and fostering the deployment of a network of charging stations to make electric mobility more attractive for Luxembourg's drivers. This is welcome to support investments in the electrification of transport. Due to the limited maximum financial contribution, this component does not address other challenges such as the development of public transport infrastructure, which is however underway outside of the context of the plan. As transport is Luxembourg's main greenhouse gas emitting sector, efforts in sustainable mobility contribute to Luxembourg's climate goals, particularly under the Effort Sharing Regulation.

Environmental policies, including biodiversity

The plan includes a whole component (component 2B) dedicated to nature and biodiversity protection. This component represents 6.4% of the total allocation under the Facility. It consists in a significant measure comprising elements on reforms and of investments to support natural environment and biodiversity protection and restoration, the 'Naturpakt'. This measure constitutes both a reform to set up a new reference framework for municipalities' actions in favour of natural environment and biodiversity, and an investment to provide financial support to encourage municipalities' efforts. It is based on a comprehensive catalogue of measures across different types of habitats and environmental challenges (e.g. water protection, climate adaptation), and also comprises communication and awareness raising actions. It provides a sound, integrated approach to local action to protect and restore the natural environment and biodiversity, inspired by the 'Climate Pact' recently put in place in Luxembourg. In the context of the limited allocation under the Facility, the plan does not, however, include measures on other environmental issues, such as eco-innovation, circular economy or sustainable finance.

Just transition

While Luxembourg is not facing transition challenges in the same manner as other countries, it should be noted that no specific action is foreseen in the context of a just transition regarding Luxembourg's two main emitters – the cement plant and steel industry in Esch-sur-Alzette. However, as noted above, reforms in adult learning system and training will help employability and mobility of workers in the context of the green and digital transitions.

Lasting impact

Most measures described in the plan are expected to have a lasting impact towards the green transition. The 'Neischmelz' renewable energy measure is part of a wider project to

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EUR 30325 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-21043-6, doi:10.2760/452028, JRC121405.

develop a sustainable district, which will overall result in long-lasting infrastructure development. The support scheme for electric vehicles charging points will also improve Luxembourg's sustainable mobility infrastructure for the coming decades. The reference framework and support scheme for the natural environment and biodiversity 'Naturpakt' will also support municipalities' efforts over the years to engage in nature conservation actions, and support under the Facility will help kick-start the programme. The 'Naturpakt' is scheduled to continue all the way to 2030, and it will contribute to anchoring environment protection and biodiversity conservation in municipalities' practices going forward. The reforms and investments are in line with Luxembourg's National Climate and Energy Plan, particularly regarding its focus on sustainable mobility that is promoted through the Component 2A. More investments will be needed in the area of energy efficiency but the limited allocation under the Facility did not allow for all climate-related challenges to be tackled extensively as part of the plan.

Conclusion

Taking into consideration the assessment of all the measures envisaged, the recovery and resilience plan is expected, to a large extent, to make a significant contribution to the green transition or to address the challenges resulting from it and ensures that at least 37% of its total allocation contribute to the climate target. This would warrant a **rating of A** under the assessment criterion 2.5 in Annex V to the RRF Regulation.

4.6. Digital transition

Overall, the plan is considered to contribute to digital objectives for 31.6% of Luxembourg's amount requested under the RRF of EUR 93.4 million, and as such, the digital target of 20% is met with a significant margin.

Luxembourg's plan correctly follows the methodology for digital tagging set out in Annex VII to the RRF regulation, by identifying intervention fields, and corresponding coefficients for the calculation of support to the digital objectives, for each measure. It should be noted that:

- In the different measures of the components there are often several sub-measures. For such measures, the plan indicates an intervention field for each sub-measure, and the digital tagging is computed at sub-measure level.
- The choice of the intervention fields for the digital transition is overall well justified and it reflects the nature, objective and expected outcome of the investments included in the component.

Overall, the choice of digital intervention fields in Luxembourg's plan is well justified. As seen in Table 4.6.1, four components contribute to the digital transition, and account for 31.6% of the total allocation of the plan. These components are: 1A Skilling, reskilling and upskilling, 1B Strengthening Health System Resilience, 3A Promotion of a data-driven economy, whose budget fully contributes to the digital target, and 3B Modernisation of Public Administration whose budget also fully contributes to the digital transition. The latest two are the main contributors to the digital transition.

Table 4.6.1: Components with digital contribution

Component	Contribution to the digital transition (EUR million)	% of total amount requested under the RRF
1A.Skilling, reskilling and upskilling	5,60	6,0%
1B. Strengthening Health System Resilience	1,17	1,2%
3A. Promotion of a data-driven economy	10,00	10,7%
3B. Modernisation of public administration	12,73	13,6%
Total	**29,50**	**31,6%**

Digital transition

The implementation of the plan is expected to contribute to the digital transformation. The plan contains of a number of measures which contribute to the digital transition notably through the digitalisation of public administration and services and the health system, which aims to improve its effectiveness and efficiency, and the development of basic and advanced digital skills. Those measures will promote digitalisation and innovation and contribute to meeting demand on the labour market demands. These measures are expected to increase the overall use of internet services and hence contribute to the digital transition with a lasting impact. In the context of the limited allocation under the Facility, the plan does not, however, include measures on other digital issues, such as the digitalisation of firms.

The implementation of the measures is expected to contribute to addressing the challenges resulting from the digital transition. In particular, Luxembourg plans to develop an ultra-secure communication infrastructure based on quantum technology to improve the security of communication between different parties. This will contribute to personal data security, a major challenge resulting from the digital transition. Luxembourg will also digitalise the Agency for the Development of Employment (ADEM) to improve the efficiency of the public authorities in ensuring satisfaction of labour market needs. In addition, the measures contribute to improve communication's efficiency between government and businesses and citizens, for instance by increasing the number of administrative procedures that can be followed remotely by private persons and businesses.

The measures presented are also aligned with various European initiatives such as the EU Digital Strategy, the EU Skills Agenda, the European Education Area and the Digital Education Action Plan. The measures in the plan are also aligned with two out of six European flagships included in the Commission's Annual Sustainable Growth Strategy. These are the flagship: *Modernise*, which concerns the digitalisation of the public administration, and *Reskill-upskill*, which focuses on education and training to support digital skills.

Conclusion

Taking into consideration the assessment of all the measures envisaged, the recovery and resilience plan is expected, to a large extent, to make a significant contribution to the digital transition and to address the challenges resulting from it and ensure that a minimum of 20% of its total allocation contribute to support digital objectives. This would warrant a **rating of A** under criterion 2.6 of Annex V to the RRF Regulation.

4.7. Lasting impact of the plan

The impact assessment presented in the plan is of a qualitative nature, as a quantitative impact assessment shows a negligible impact, given the limited size of Luxembourg's total grant allocation. The plan states that the Government's long-term vision does not focus solely on macroeconomic indicators but uses the plan as an additional lever to achieve its long-term objectives. Instead of aiming at a specific level or growth of a macroeconomic variable in the short to medium term, it intends to pave the way for a sustainable, digital and resilient economy through the measures contained in the plan. The measures presented focus on innovative and sustainable economic activities with significant exploitation potential. Through many innovative projects, Luxembourg is diversifying its economic activity, creating new investment opportunities, and embarking on a more resilient growth path. In addition, the plan aims at providing an adequate response to the current health crisis, which is likely to aggravate existing inequalities.

Pillar 3 of the plan 'Digitalisation, Innovation and Governance' aims at strengthening the administration and institutions. The focus is on structural changes to strengthen the exchange of confidential information within the public and private sectors (component 3A) and to have high-quality digital public services (component 3B). For example 3A can help laying groundwork for preventing cyber-attacks, recognised as a threat at European level under the EU Directive on the security of network and information systems. Promoting a transparent and fair economy (Component 3C) aims notably at strengthening the AML and TF risk identification and supervisory framework. Therefore it can be concluded for sub-criteria 7a that these measures have a lasting structural change on the administration and relevant institutions, mainly related to the digital transition.

All three pillars of the plan aim at structural changes in policies. The "FutureSkills" and Digital Skills (component 1A) initiatives aim to strengthen and diversify the professional skills of jobseekers and employees on short-time working schemes due to the COVID-19 crisis, with a particular focus on the development of digital skills. In a longer-term perspective, in Component 1A the "Skillsdësch" reform intends to foster lifelong learning and improve the adequacy of training to the needs of the labour market, which should make the labour market more resilient. The 'Health' component 1B contributes to the improvement of resilience and performance of the health sector. It contains measures expected to address the shortage of health professionals and skills, better governance and digitisation of the health sector (e.g. the development of telemedicine). In Pillar 2, the decarbonisation of transport (2A) and biodiversity (2B) components is expected to contribute positively to the green transition, with a lasting impact. Pillar 3 Promoting a transparent and fair economy (Component 3C) aims at strengthening the AML and TF legal supervisory framework. Therefore, for sub-criteria 7b it can be concluded that the reforms and investments are expected to bring a lasting structural change to relevant policies.

In the long term, the plan's effects would mainly stem from the measures aimed at bolstering the participation and skills of the labour force, the resilience of the health sector, and the green and digital transition. This is expected to have a positive impact on the labour force participation rate, job creation and long-term labour productivity. The investments and reforms are also expected to strengthen the resilience of the healthcare sector, stimulate investments and job creation in green mobility and renewable energy and strengthen the efficiency and digital resilience in public institutions. In the design of the plan, the Government involved the Chamber of Deputies and the civil society via an exchange with the associations representing the social partners. For some measures, the involvement of stakeholders in the implementation is also mentioned. For sub-criteria 7c it can be concluded that the implementation of the envisaged measures is expected to have a lasting impact.

Conclusion

Taking into consideration all reforms and investments envisaged by Luxembourg in its recovery and resilience plan, their implementation is expected, **to a large extent, to bring about a structural change in the administration or in relevant institutions and in relevant policies and to have a lasting impact.** This would warrant **a rating of A** under criterion 2.7 of Annex V to the RRF Regulation.

4.8. Milestones, targets, monitoring and implementation

Adequacy of the structure tasked with the implementation of the plan, monitoring of progress and reporting

The administrative system for the implementation of the plan in Luxembourg is clearly described in Part 3 of the plan. The ministry responsible for the coordination and management of the plan is the Ministry of Finance (Directorate of Economic and Budgetary Affairs). The Ministry of Finance coordinates all ministries and legal bodies responsible for the implementation of the plan[23]. The implementation of measures and the monitoring of milestones

[23] Ministère des Finances, Ministère du Travail, de l'Emploi et de l'Économie sociale et solidaire, Ministère de la Santé, Agence eSanté, Ministère du Logement, Fonds du Logement, Ministère de la Mobilité et des Travaux Publics, Ministère de l'Énergie et

and targets are delegated to line ministries responsible for the implementation of the plan, which report to the Ministry of Finance. The plan includes a description on how Luxembourg plans to ensure that the reforms and investments will be implemented in an effective manner. It clearly identifies the line ministries and legal authorities that are responsible for implementing the measures, monitoring progress and reporting on the fulfilment of milestones and targets. The Directorate of Economic and Budgetary Affairs within the Ministry of Finance is the coordinating authority responsible for overall reporting. The plan includes a description of monitoring arrangements. More specifically, it is explained in the plan how progress towards milestones and targets will be measured. This explanation clarifies which indicators will be used for that purpose. It identifies which authority will be responsible for verifying that the milestones and targets are actually fulfilled. It clarifies how information on progress towards milestones and targets will be gathered at the level of the plan and mentions that an IT system is under development for collecting and storing all relevant data related to the implementation of the recovery and resilience plan - the achievement of milestones and targets, data on final recipients, contractors, subcontractors and beneficial owners.

Milestones, targets and indicators

The overall quality of milestones and targets is deemed satisfactory. The description of milestones and targets in each component of the plan is generally clear and realistic. In particular, the targets and milestones are clear and specific enough to track progress in the implementation of reforms and investments. The metrics used to express the targets are well suited. The milestones are sufficiently precise to measure the actual implementation of the reforms and investments, in particular in that they relate to a large extent to objectively verifiable events which correspond either to the full completion of the investments or reforms, or to key steps towards such full completion. The milestones and targets are based on robust data and verification mechanisms. Overall, milestones and targets proposed in the plan are acceptable and realistic.

Overall organisational arrangements

The Directorate of Economic and Budgetary Affairs within the Ministry of Finance has the overall responsibility for the plan and acts as the single point of contact for the Commission as the "coordinator" and managing department. The coordinator is responsible for the implementation of the plan, as well as for co-ordinating with other relevant authorities in the country, and monitoring progress with the fulfilment of the milestones and targets. As far as the administrative capacity is concerned, the coordinator at the Ministry of Finance provided information on the staff members dedicated to the implementation of the plan and has foreseen the possibility to outsource certain tasks related to the management or control of the Facility to external service providers. Adequate supervision and quality control procedures are also in place

de l'Aménagement du Territoire, Ministère de l'Économie, Ministère de l'Environnement, du Climat et du Développement Durable, Ministère d'État, Ministère de la Digitalisation, Ministère de la Justice.

between the Ministry of Finance and the external service provider. The Ministry of Finance has been given a specific mandate as a management and coordination body for the implementation of the plan by decision of the Government Council on 26/4/2021.

The plan also specifies that agreements are signed between the Ministry of Finance and the final recipients of the grants allocated to implement the measures of the plan. Final recipients will be asked to provide the necessary information on the implementation of the projects and, more specifically, on the indicators defined in the plan to achieve the milestones and targets. Milestones, targets and indicators are included in the agreements between these **final recipients** and the Ministry of Finance. The representatives of the managing department will check the existence and reliability of the information provided during on-site visits. The managing department ensures the quality of the information collection system (consistency and reliability of the data collected, dynamics of information feedback). A new IT system for collecting and storing all relevant data related to the implementation of the recovery and resilience plan - the achievement of milestones and targets, data on final recipients, contractors, subcontractors and beneficial owners – is under development. In accordance with Article 20(5) point (e) of Regulation (EU) 2021/241, Luxembourg should implement this measure in order to comply with Article 22 of that Regulation, by confirming the status of its implementation before the first payment request. A dedicated audit on the system shall be undertaken. The report should analyse any related weaknesses found and corrective actions taken or planned. Accordingly, a milestone has been introduced in order to ensure that the system is implemented before the first payment request is made.

Conclusion

The arrangements proposed by Luxembourg in its recovery and resilience plan are expected to be adequate to **ensure effective monitoring and implementation of the plan**, including the envisaged timetable, milestones and targets, and the related indicators. This would warrant **a rating of A** under the assessment criterion 2.8 of Annex V to the RRF Regulation.

4.9. Costing

Reasonable costs

Luxembourg has provided an explanation and has submitted documentation on the cost estimates submitted for each investment in the plan. The investments can be broken down into three categories according to the magnitude of their costs: three large projects (accounting each for more than EUR 10 million), four medium-sized projects (accounting each for around EUR 5-6 million) and nine smaller investments (accounting each for less than EUR 2 million).

The cost information and evidence received is in general considered to be complete and understandable, however for some measures the evidence is not considered to be sufficient, and the underlying assumptions not fully justified. Luxembourg has provided information allowing to check the eligibility of costs. Information has been provided to assure that the cost fall within the required time frame, VAT is excluded from the cost estimates and no unjustified recurring costs were included. The "Inspection Générale des Finances" (IGF) has verified, based on the explanatory documents provided by the line Ministries, all projects covered in the plan to ensure that the estimated costs are reasonable and plausible. However, no documentary evidence of this verification was submitted.

Plausible costs

Luxembourg has overall provided limited historical and comparative cost information to justify the plausibility of cost estimates. However, as many projects have already started, invoices, tender documents and project plans were submitted as references. For several investments, invoices have been provided to demonstrate the total costs or to justify hourly rates of external consultants. For others project plans, an implemented law and an external study have been submitted. The Facility finances close to half of the total costs of the measures included in the plan, the rest coming mostly from the national budget and to a more limited extent from other EU funding sources.

No double Union financing

Luxembourg has indicated for each investment if it is eligible for EU funding programmes other than the RRF. For instance, under component '3A: Promoting a data-driven economy – Development and employment of testing infrastructure and solutions ultra-secure connectivity' Luxembourg indicated that it could also request funding from 'Digital Europe Programme' and 'Connecting Europe Facility 2'. The audit and control system is designed to prevent double funding. Luxembourg has provided sufficient information and evidence that the amount of the estimated total cost of the plan to be financed under the Facility is not covered by existing or planned Union financing.

There are two investments (3A Development and deployment of testing infrastructure and solutions ultra-secure connectivity and 3B-4 National platform for the management of public surveys) that **contain recurring costs**, however Luxembourg has provided a clear justification that these costs are required for the projects and thus contribute to the long-lasting impacts of those investments. Those limited recurrent costs financed by the plan are expected to have an insignificant budgetary impact once the plan funding ends. Therefore, their funding can be sustainably ensured after the end of the RRF without any sizeable negative impact on Luxembourg's budget. This expenditure can therefore be supported by the RRF.

Commensurate and cost-efficient costs

The size of the investment part of the plan for Luxembourg is too small to have a material quantitative economic impact, however including the reforms in the plan, the social and economic impact on for example the green and digital transition, affordable housing and skill development **can be considered commensurate with the limited total costs**.

Conclusion

The justification provided by Luxembourg on **the amount of the estimated total costs of the recovery and resilience plan is to a medium extent reasonable and plausible, in line with the principle of cost-efficiency and is commensurate** to the expected national economic and social impact. Luxembourg provided sufficient information and evidence that the amount of the estimated cost of the reforms and investments of the recovery and resilience plan to be financed under the Facility will not be covered by existing or planned Union financing. **This would warrant a rating of B under** the assessment criterion 2.9 of Annex V to the RRF Regulation.

4.10. Controls and audit

Robustness of internal control system and distribution of roles and responsibilities

At plan level, the national set-up for RRF control is designed in a very straightforward way. The Directorate for Economic and Budgetary Affairs within the Ministry of Finance has overall responsibility for the plan and acts as a single point of contact for the Commission. This service (managing department) is also responsible for drawing-up of the payment requests and management declarations and it will coordinate, monitor the implementation of the RRF and collect the data on the indicators from the final recipients. The management verifications will be done by the management department. However, the audits will be carried out by the audit authority for the RRF in LU, i.e. "l'Inspection Générale des Finances". IGF is also the audit authority for the European Structural and Investment Funds and it is independent of the service gestionnaire, therefore ensuring segregation of functions.

The audit authority (i.e. IGF) describes in general the audit approach which will be applied to the RRF: annual system audit (with a view to assess the functioning of the management and control systems, including the system in place for the reporting of the milestones and targets and also the internal control system for preventing, detecting and correcting fraud, conflict of interest, corruption and double funding) and annual audits of operations (based on an adequate sample).

Concerning the prevention, detection and correction of serious irregularities, the plan describes the national organizational structure covering the tasks to be performed based on a risk mapping, responsibilities and how they should prevent, detect and correct fraud, corruption and conflicts of interest wherever they occur. The use of the single data-mining and risk scoring tool to be provided by the Commission is also confirmed. The results of the controls will be summarised in a report drawn up during the control of expenditure. However, not all procedures for the protection of the financial interests of the Union described in the plan are already in place (e.g. a procedure for reporting suspected fraud or a criminal offence to the competent authorities is to be developed and others described in Part III, Chapter 4 on Implementation, subchapter x and Chapter 6 on Audit and Controls sub-chapter xi of the Plan). The Luxembourg authorities have committed to develop and complete them by the fourth quarter of 2021. In accordance with Article 20(5) point (e) of Regulation (EU) 2021/241, Luxembourg should implement these procedures in order to comply with Article 22 of that Regulation, by confirming the status of their implementation before the first payment request. Accordingly, a milestone has been introduced in order to provide assurance on the protection of the financial interest of the Union before the first payment request is made.

Adequacy of control systems and other relevant arrangements

The control system put in place seems appropriate. Apart from the follow-up check relating in particular to the milestones and targets set out in the plan and included in an agreement with the final recipient (giving rise to a specific report accompanying the main control report and detailed in the paragraphs on monitoring), the managing department checks the invoice statement obtained with the request for reimbursement and ensures that it is approved and signed by an authorised person of the final recipient. Each project must undergo one or more on-the-spot checks by the managing department. The managing department aims to obtain reasonable assurance as to the legality and regularity of the underlying transactions, taking into account the level of risk it has identified for the type of final recipients and transactions concerned. Therefore, the checks will be performed at all components level.

At plan level, monitoring the implementation of the plan should be achieved through (i) a systematic and continuous process of production and collection of quantitative and qualitative data on the implementation of the plan, and (ii) by analysing the data by the managing department and within the consultation committee as part of a partnership-based approach. On-the-spot checks and visits carried out by the managing department during the management and monitoring of projects shall be subject to the drawing up of a visit report describing the progress of the project. These checks make it possible to verify that the operation is in line with the objectives and strategy set out in the plan.

The managing department is responsible for aggregating all the information relating to the indicators for which it also carries out a consistency check and, more generally, a quality control. The managing department will also be responsible for communicating and making use of these monitoring data, both in the coordination committees and in the annual implementation report. The managing department carries out checks on the administrative, financial, technical and physical aspects of the operations, in all stages of the implementation of a project, namely when the financing sheet is being examined, when projects are managed and monitored, when applying for reimbursement of grants to final recipients, when grants are paid to final recipients. In addition, specific measures are implemented to check compliance with the rules relating to public procurement, to prevent corruption and to protect financial interests.

The data relating to final recipients will be collected as soon as they enter the operation, which is done either by entering data directly by the managing department or by importing data via an import Excel file. The data collected in this way will then have to be entered either directly into the information system or imported via files. Luxembourg has confirmed that it will collect and store data in accordance with the requirements of Article 22(2) point (d) of the Regulation. In addition, it has also confirmed that all information and documents will be kept in accordance with Article 132 of the Financial Regulation.

Any request for payment shall be accompanied by a management declaration certifying that the funds have been used for their intended purpose, that the information provided with the request for payment is complete, accurate and reliable and that the control systems put in place provide the necessary assurance that the funds have been managed in accordance with all applicable rules, in particular the rules aimed at avoiding conflicts of interest and preventing fraud, corruption and double funding under the Facility and other Union programmes, including a summary of audits.

As Luxembourg's authorities will submit one payment claim per year, the audit authority will carry out annual audits of operations and an annual system audit, resulting in an annual audit report detailing the controls carried out and setting out the results of the audits and controls during the reporting period. It will provide an opinion, based on the controls and audits that have been carried out under its responsibility, on whether the management and control system is functioning effectively, so as to provide reasonable assurance that the milestones and targets declared in the payment requests submitted to the Commission are correct and therefore a reasonable assurance that the underlying transactions are legal and regular.

Adequacy of arrangements to avoid double EU funding

Double funding is being tackled from the programing phase of each component. Luxembourg has put in place a robust system to deal with the risk of double-funding. First, at the level of final recipient, who must indicate the sources and amounts of any other funding, outside the Facility support, received or applied for in the same financial year for the same action or for other actions. The same final recipient must also certify, as part of his application for reimbursement, that the absence of such a risk has been verified and documented. The managing department must therefore ensure that the final recipient's accounting and financial information system allows accurate monitoring of the sources of funding and, where appropriate, of each of the programmes in which the final recipient participates. In addition, coordination meetings with the representatives involved in the implementation of shared management funds are also foreseen, sharing information in relation to financing of different projects.

The managing department will also perform documentary checks. The department must therefore ensure that the final recipient's accounting and financial information system allows accurate monitoring of the sources of funding and, where appropriate, of each of the programmes in which the final recipient participates. Additionally, IGF will also perform audits which should ensure that the funds have been managed in accordance with all applicable rules and that systems are able to prevent, detect and correct cases double funding.

Legal empowerment and administrative capacity of control function

Luxembourg indicates that the approval of the plan will constitute the legal mandate for the Ministry of Finance (and therefore for the managing department within the Ministry). With regard to the legal mandate of the audit authority, the plan refers to the law of 10 March 1969 establishing the "Inspection Générale des Finances". As regards the administrative capacity of the managing department, it will consist of 6 staff members, which according to Luxembourg is sufficient to perform the task allocated to it. Luxembourg has also foreseen the possibility to outsource certain tasks related to the management or control of the RRF to external service providers. Adequate supervision and quality control procedures, independence and absence of conflicts of interest are part of the contractual arrangements with the external service providers. The audit authority will outsource all the audit work (both system audits and audits of operations). Adequate provisions, including supervision and quality control procedures, are included in the contract with the external service provider to ensure that the external service provider disposes of adequate administrative capacity to perform the audit work. The technical expertise of existing staff is confirmed.

Conclusion

The arrangements proposed by Luxembourg in the plan to **prevent, detect and correct corruption, fraud and conflicts of interest when using the funds provided under the Facility**, including the arrangements aimed to **avoid double funding** from the Facility and other Union programmes, are assessed to be adequate. This would warrant **a rating of A** under the assessment criterion 2.10 of Annex V to the RRF Regulation.

4.11. Coherence

Considering the size of the RRF allocation, the plan contains an adequate balance between investments and reforms. The eight components contain investments, and six components include accompanying reforms targeting the same objectives. For example, the three measures in component 1 Skilling, reskilling and upskilling are mutually supportive, and the proposed reform should allow for an adaptation, if necessary, of the investments in skills. Another example is in component 1C Increasing the supply of affordable and sustainable public housing, where the investment in the 'Neischmelz' project for the supply of electricity and heat from renewable energy sources to new dwellings in Dudelange are accompanied by a reform to create a concept to support housing policy at municipal level (as part of Housing Pact 2.0). In 2A Decarbonisation of transport the investment for the implementation of a support scheme for electric charging points is combined with a reform defining the minimum percentages of low- and zero-emission vehicles, including electric vehicles, in public procurement. The description of the measures also includes an explanation of their coherence with national and European policies. For sub-criteria 11a the assessment concludes that the plan includes coherence within components with measures that contribute to reinforcing the effects of one another.

All components in the plan are complementary, i.e. they do not have contradictory aims or possible negative effects on one another. There are several components that complement each other. For example, component 1C (Increasing the supply of affordable and sustainable public housing) may also contribute to a reduction in traffic as many cross-border workers experience difficulties in finding affordable housing in Luxembourg. That component's sole investment is geared towards renewable energy to be supplied to sustainable housing in order to support the green transition. Another example is component 1A "FutureSkills" where the social impact also supports the fiscal challenge from the pension system by a measure aiming to increase the participation rate of older workers. The assessment concludes that for sub-criteria 11b the plan is also coherent between components. In order to promote wider coherence across instruments, notably with the European cohesion policy funds, a balanced territorial allocation of resources is encouraged.

Conclusion

Taking into consideration the qualitative assessment of all components of Luxembourg's recovery and resilience plan, their individual weight (importance, relevance, financial allocation) and their interactions, the plan contains measures for the implementation of reforms and public investments which, to a high extent, **represent coherent actions**. This would warrant **a rating of A** under the assessment criterion 2.11 of Annex V to the RRF Regulation.

Annex – Climate and Digital Tagging Table

Int. Field = intervention field
Coeff. = Coefficient for the calculation of support to climate change objectives and to digital transition, on the basis of Annex VI and Annex VII of Regulation (EU) 2021/241

Measure/ Sub-Measure ID	Measure/Sub-Measure Name	Budget (EUR m)	Climate		Digital	
			Int. Field	Coeff. %	Int. Field	Coeff. %
1A.I1	"Futureskills"	1,5			016	40%
1A.I2	Digital Skills	5			108	100%
1B.I1	Single digital register of health professions	0,34			095	100%
1B.I2	Telemedicine solution for remote medical follow-up of patients	0,83			095	100%
1C.I1	'Neischmelz' project in Dudelange	24	032	100%		
2A.I1	Support scheme for charging points	30,5	077	100%		
2B.I1	'Naturpakt'	6	050	40%		
3A.I1	Development and deployment of testing infrastructure and ultra-secure connectivity solutions	10			021	100%
3B.I1	Electronic Document Management and Case Management	5,04			011	100%
3B.I2	Development of MyGuichet — Project 1/3: Virtual appointment	0,17			011	100%
3B.I3	Development of MyGuichet — Project 2/3: Various C2G and B2G approaches	0,36			011	100%
3B.I4	Development of MyGuichet — Project 3/3: APP Mobile MyGuichet.lu	0,33			011	100%
3B.I5	'eADEM'	6,41			011	100%
3B.I6	National platform for the management of public surveys	0,41			011	100%