Evaluation of Luxembourg's COVID-19 Response

LEARNING FROM THE CRISIS TO INCREASE RESILIENCE

OECD

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Preface

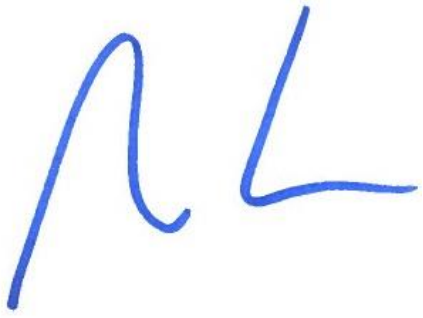
Responding to COVID-19 has presented an unprecedented challenge for Organisation for Economic Co- operation and Development (OECD) member countries, due to both the magnitude of the crisis and the severity of its impact on health, the economy, educational continuity and the well-being of citizens more generally. As we have seen, the crisis has also shone a light on structural and social problems, including the erosion of public trust in government and expert opinion. In response to this situation, OECD member countries have deployed significant human, financial and technical resources in a relatively short period of time to manage and mitigate the consequences of the crisis.

To build resilience to large-scale crises, countries now need to learn from this experience and understand what worked (or did not), for whom and why. To this end, the OECD has developed an analytical framework to assess governments' response to COVID-19, focusing on three components: pandemic preparedness, crisis management, and response and recovery policies. Luxembourg is the first country to invite the OECD to apply this analytical framework and to comprehensively assess its responses to the COVID-19 pandemic.

The response of Luxembourg's public authorities to the crisis, led at the highest level of government, was particularly agile. Whether in the area of public health, educational continuity, the economy or the labour market, this strategic agility enabled Luxembourg to safeguard the life of the nation and minimise the direct impacts of the pandemic. Luxembourg was able to draw on its mature risk management system and benefited from the very active involvement of its parliament.

In a world where major crises are likely to happen more often, maintaining a high level of trust in government action will require civil society to play a greater role in crisis management. Addressing inequalities, whether in education or income, is also a key factor for a sustainable and inclusive recovery. The conclusions and recommendations of this report will guide governments in these efforts.

This report is an important step in building a robust database of policy responses to COVID-19 and will serve as a valuable resource for Luxembourg and its peers.



Mathias Cormann

Secretary-General of the OECD

Foreword

While the Luxembourg government's response to the COVID-19 crisis was particularly agile, maintaining a high level of trust in government, reducing inequality and achieving sustainable and inclusive growth will be critical to the country's future resilience. This report aims to assess Luxembourg's response to COVID- 19 and learn lessons from it based on an analytical framework developed by the OECD, focusing on three main components that correspond to the phases of the risk management cycle.

This evaluation report is the product of close co-operation between the OECD and the High Commission for National Protection under the Ministry of State of Luxembourg. This is the first report of its kind. It was informed by the OECD publication "First lessons from government evaluations of COVID-19 responses", which summarises the key lessons learned from evaluations produced by OECD member country governments. This evaluation of Luxembourg also draws on survey data from the country's ministries, communes, hospitals and schools, as well as a series of interviews with public and private stakeholders.

The evaluation of Luxembourg's COVID-19 response highlights the importance of agile strategic governance in guiding the response to the crisis, based on solid evidence. Whether in the area of public health, educational continuity, the economy or the labour market, this agility enabled Luxembourg to safeguard the life of the nation and minimise the direct impacts of the pandemic. The country was able to draw on its mature risk management system and the very active involvement of its parliament. However, in a world where major crises are likely to happen more often, maintaining a high level of trust in government will require civil society to play a greater role in crisis management. Addressing inequalities, whether in education or income, is also a key factor for ensuring a return to sustainable and inclusive growth. The conclusions and recommendations of this report will guide governments in these efforts.

The report was approved by the Public Governance Committee on 23 September 2022 and prepared for publication by the Secretariat.

Acknowledgements

This review was conducted by the Directorate for Public Governance (GOV) in collaboration with the Economics Department (ECO), the Directorate for Education and Skills (EDU) and the Directorate for Labour, Employment and Social Affairs (ELS). It has benefited from excellent collaboration with the government of Luxembourg.

The review was led and co-ordinated by Claire Salama, a public policy analyst (GOV), and written by a multidisciplinary team at the OECD. Claire Salama wrote Chapter 1 on how to evaluate Luxembourg's response to COVID-19 and Chapter 3 on crisis management. Nestor Alfonzo-Santamaria (GOV) prepared Chapter 2 on emergency anticipation and preparedness policies, with assistance from Adrien Valentin (GOV) and contributions from Jack Radisch (GOV). Caroline Berchet (ELS) wrote Chapter 4 on health system resilience in the face of the pandemic, with contributions from Philip Haywood (ELS). Chapter 5 on education policy during the crisis was written by Diana Toledo Figueroa (EDU), Stéphan Vincent-Lancrin (EDU) and Quentin Vidal (EDU). Filippo Cavassini (ECO), Federica De Pace (ECO), Florian Gache (ECO) and Axel Mathot (GOV) wrote Chapter 6 on economic and fiscal policies to mitigate the impacts of the crisis, with contributions from Sylvie Montout. Chapter 6 also benefited from comments from and discussions with the delegates on the Economic and Development Review Committee (EDRC). Finally, Chapter 7, on social and employment policies in the face of the crisis, was written by Vanda Almeida (ELS) and Emily Farchy (ELS), with contributions from Agnès Puymouyen (ELS) and was supervised by Sebastian Königs (ELS). The report was prepared for publication by Meral Gedik, with administrative support from Lyora Raab and Deborah Merran. Isabelle Delpech provided copy editing.

The review was produced under the guidance of senior staff, including Elsa Pilichowski (Director of GOV), Jon Blondal (Head of the GOV Public Management and Budgeting Division), Gillian Dorner (Senior Advisor to GOV), Alvaro Pereira (Director of ECO), Isabell Koske (Deputy Director of ECO), Stefano Scarpetta (Director of ELS), Mark Pearson (Deputy Director of ELS), Francesca Colombo (Head of the ELS Health Division), Frederico Guanais (Deputy Head of the ELS Health Division), Stephane Carcillo (Head of the ELS Jobs and Income Division), Andreas Schleicher (Director of EDU), Tia Loukkola (Head of the EDU Innovation and Measuring Progress Division) and Paulo Santiago (Head of the EDU Education Policy Advice and Implementation Division). The OECD is also grateful for comments from Stephane Jacobzone, Senior Advisor in GOV.

The OECD Secretariat would like to express its thanks to the Ministry of State and the High Commission for National Protection for their constructive co-operation, which made this review possible. The Secretariat would like to thank in particular Luc Feller, High Commissioner for National Protection, and Myriam Heirendt, international and general affairs researcher, for their support and commitment throughout this project. At the Ministry of State, the report benefited from close collaboration with Jacques Flies, Secretary-General of the Governmental Council, and Jeff Feller, Chief of Staff of the Prime Minister.

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Executive summary

While the COVID-19 pandemic did not affect all countries with the same intensity, the response to the crisis was an unprecedented challenge for most. In this context, Luxembourg deployed significant human, financial and technical resources in a short period of time to manage and mitigate the consequences of the crisis. This report, which is part of the OECD's work to evaluate responses to the COVID-19 crisis, aims to understand which measures worked and which did not, for whom and why, to learn lessons from this experience and in so doing strengthen the country's future resilience.

Factors affecting Luxembourg's response to the COVID-19 pandemic

To assess the measures adopted by Luxembourg, their implementation and results, it is important to understand structural issues in the country that could affect the performance of the policies adopted. With a population of 645 397 over 2 586 km^2, the country's small size was an advantage in the management of this major crisis in that it facilitated the implementation of measures. On the other hand, the high level of openness, cultural heterogeneity and dependence on workers from abroad, corollaries of its size, have posed a significant challenge in terms of educational continuity and keeping key sectors running. The stability of the political system over the past 30 years and the country's highly centralised governance structure have also allowed the government to make decisions quickly. On the economic front, Luxembourg was able to rely on good fiscal space and a highly service-oriented economy to weather the pandemic-induced shock and the new world of remote working imposed by the lockdown.

Emergency anticipation and preparedness in Luxembourg

Even before the COVID-19 crisis, Luxembourg had a mature risk management system. While an influenza pandemic was considered less likely than other critical risks by public authorities, they were able to deploy and adapt the government's influenza pandemic plan very quickly to respond to the emergency. Luxembourg is the only country in the region to have mobilised its crisis unit the day the first case of COVID-19 was detected in the country. Luxembourg was also able to leverage its diplomatic network to repatriate the almost 1 000 Luxembourg residents abroad and avoid travel restrictions being imposed at the borders that would have negatively affected its economy and the functioning of its health system. However, the concept of critical infrastructure used in Luxembourg, which determines which operators must have emergency response plans, should be reviewed in favour of a broader definition – one that covers all essential services.

The management of the COVID-19 crisis

The management of complex modern crises involves multiple stakeholders other than emergency services and therefore requires significant co-ordination and steering by the government. In Luxembourg, the interministerial management of the crisis, led by the highest level of government, was particularly agile.

Similarly, the country's crisis communications, which were issued in the three official languages, benefited from strong leadership and reached a wide audience, despite some challenges around the coherence of the messages expressed. While Luxembourg stands out for the very active involvement of its parliament throughout the crisis, which adopted 30 laws on pandemic control measures, greater participation of civil society in crisis management would be desirable. Luxembourg could strengthen its system for providing scientific advice to the government and more systematically assess the impact of the measures adopted during the crisis to learn the relevant lessons.

The resilience of the health system to COVID-19

While the excess mortality rate in Luxembourg was, at the start of 2022, more than 60% lower than the OECD average, the pandemic disproportionately affected people aged over 80 years and disadvantaged populations. The indirect consequences of the pandemic in Luxembourg are also worrying, in terms of delayed care and the deterioration of mental health. Considering these challenges, the mobilisation of resources and actors was remarkable and enabled new systems to be developed rapidly and health services to expand to absorb the shock of the health crisis. The effectiveness of the vaccination campaign, the mass testing policy and contact tracing efforts is undeniable. However, Luxembourg should strengthen key aspects of its preparedness to ensure its health system is more resilient to future threats. This includes strengthening information systems, improving health worker capacity and setting up a central procurement and logistics unit for essential products. Following the crisis, the health system must also be adapted to address long-term needs and mitigate the indirect effects of the pandemic by paying greater attention to risk prevention, strengthening primary care and continuing to address vaccine hesitancy.

The education system during the pandemic

Luxembourg differs from other OECD member countries in terms of the low number of days that schools were closed: 48 days for primary and 34 days for secondary. On the whole, the education system was able to adapt to the upheavals caused by the crisis, allowing for good educational continuity. However, the priority given to reopening schools did not always respond to the challenges posed by the crisis, particularly in terms of preventing widening inequalities and providing better support for teachers. In this regard, the government must, for example, improve its measures to provide differentiated support to certain categories of students. Despite having a good governance framework, the crisis education policy would have benefited from better consultation with stakeholders on the ground, such as the 170 public primary schools and 41 public secondary schools, to better adapt certain measures to their needs.

Emergency economic and fiscal measures

Luxembourg's relative fiscal effort in favour of households and businesses, amounting to EUR 2.85 billion or 3.9% of GDP in 2021, is in line with that of other similar OECD member countries. This effort helped to safeguard businesses' financial situation and maintain a relatively high level of employment. Support was granted quickly and easily to companies, despite some initial hesitation. This agility allowed them to obtain this assistance quickly to protect their liquidity – a decisive factor in safeguarding their operations. The support package has covered the economic sectors most affected by the crisis and the measures appear to have preserved the financial situation of businesses in the most affected sectors. However, short-time working did not apply to self-employed people, who received a set lump-sum payment later than the others. In future, it will be important to take better account of self-employed people and consider a sliding scale of support to better target interventions. In the short term, it will also be important to monitor the sectors most affected by the crisis to ensure their resilience, including through the use of administrative and corporate balance sheet data. It will also be necessary to continue the process of digitalising administrative

processes, which has proven its worth during the crisis and which can facilitate future interventions to support businesses.

Social and employment policies put to the test by the crisis

Labour market and social policies were relatively well prepared for the COVID-19 pandemic in Luxembourg. Although Luxembourg's unemployment rate rose by 1.8 percentage points in the second quarter of 2020, the impact of the crisis was relatively modest compared with the OECD average. When employees fell ill, reduced their hours or lost their income, paid sick leave, extraordinary family leave, job retention schemes and unemployment benefits were quickly brought into play. Existing schemes were also expanded and strengthened, while new measures were adopted to address emerging needs. A strong recovery allowed the labour market to tighten after the crisis. Many of those hardest hit have since recovered their livelihoods. Nevertheless, it is still possible to refine policies to ensure that, if a similar crisis occurs, assistance reaches those who need it and no one is left behind.

1 Evaluating the response to the COVID-19 crisis in Luxembourg

Public policy evaluations allow lessons to be drawn from the crisis in order to strengthen the future resilience of countries. This chapter presents the analytical and methodological framework for the evaluation that forms the basis of this report. It also presents the structural strengths and weaknesses present in Luxembourg that may have impacted the margin for manoeuvre that the government had when facing the crisis. It ends with a brief overview of the main measures adopted by Luxembourg at the beginning of the crisis.

1.1. Introduction

Responding to the crisis has presented an unprecedented challenge for most Organisation for Economic Co-operation and Development (OECD) member countries, due to both the magnitude of the crisis and the severity of its impact on health, the economy, educational continuity and the well-being of citizens more generally. In response to this situation, OECD member countries have deployed significant human, financial and technical resources in a relatively short period of time to manage and mitigate the consequences of the crisis. Luxembourg is no exception.

Two and a half years into the pandemic, this report aims to draw lessons from this period in order to strengthen the country's future resilience. This evaluation thus aims to provide an understanding of what worked and what did not work, for whom and why in Luxembourg's response to COVID-19. This report builds on the OECD's work on government evaluations of COVID-19 responses, and is based on a mixed method to ensure that its results are robust. The assessment therefore focuses on a set of evaluative criteria in order to provide a comprehensive understanding of the public value chain in responding to the crisis. In order to answer all of these evaluative questions, while taking into account the context in which the Luxembourg government operates, this chapter first provides a methodological framework, before examining the country's structural strengths and presenting an overview of the measures adopted to address the crisis.

1.2. How can the response to the COVID-19 crisis be evaluated?

1.2.1. This report is part of the OECD's work on evaluations of COVID-19 responses

The OECD's work on government evaluations of COVID-19 responses identifies three types of measures that countries should assess to better understand what worked and what did not work in their response to the pandemic (OECD, 2022[1]) (see Figure 1.1):

- **Pandemic preparedness**: measures taken by governments to anticipate a pandemic before it occurs and to prepare for a global health emergency with the necessary knowledge and capacity (OECD, 2015[2]).
- **Crisis management**: policies and actions implemented by the public authorities in response to the pandemic once it has materialised, to co-ordinate government action across government, to communicate with citizens and the public, and to involve the whole-of-society in the response to the crisis (OECD, 2015[2]).
- **Response and recovery**: policies and measures implemented to mitigate the impact of the pandemic and the resulting economic crisis on citizens and businesses, support economic recovery and reduce well-being losses. These measures include lockdowns and other restrictions to contain the spread of the virus, as well as financial support for households, businesses and markets to mitigate the impact of the downturn, health measures to protect and care for the population, and social policies to protect the most vulnerable.

Figure 1.1. Framework for evaluating measures taken in response to COVID-19

Note: These phases are presented as a circle because they are not necessarily chronological.
Source: OECD (2022[1]), "First lessons from government evaluations of COVID-19 responses: A synthesis", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/483507d6-en.

These three types of measures correspond to the main phases of the risk management cycle, as defined in the OECD Recommendation of the Council on the Governance of Critical Risks (OECD, 2014[3]). The empirical relevance of this evaluation framework, presented in Figure 1.1, is also proven by analysis of the first available government evaluations (OECD, 2022[1]) (see Box 1.1 for more information on this study).

Box 1.1. OECD work on government evaluations of COVID-19 responses

The OECD publication "First lessons from government evaluations of COVID-19 responses" summarises the key lessons learned from evaluations produced by OECD member country authorities during the first 15 months of the pandemic response. To this end, 67 evaluations from 18 OECD member countries were analysed.

To identify key lessons from these evaluations, the OECD Secretariat conducted a qualitative and systematic content study, identifying recurring themes through coding and a quantified approach. This analysis shows that the vast majority of evaluations in the sample address one or more of the three major phases of risk management as defined by the OECD Recommendation on the Governance of Critical Risks: pandemic preparedness, crisis management, and response and recovery.

In addition, initial assessments show that many countries have reached similar conclusions, allowing for several important findings that can not only be factored into strategies currently being implemented in the wake of the COVID-19 crisis, but also help to build countries' resilience in the future. In particular, the conclusions that emerge from the evaluations studied are:

- Overall, pandemic preparedness was inadequate, especially considering the enormous human and financial cost of global health crises such as the COVID-19 pandemic.
- Countries acted both quickly and massively to mitigate the economic and financial consequences of the pandemic, but will need to monitor the longer-term fiscal costs of doing so.
- There can be no trust without transparency, which requires regular and targeted crisis communication, but above all the involvement of stakeholders and the public in risk-related decision making.

Source: OECD (2022[1]), "First lessons from government evaluations of COVID-19 responses: A synthesis", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/483507d6-en.

1.2.2. This evaluation is based on robust qualitative and quantitative data

Firstly, this evaluation uses comparative data taken from the OECD's work on government evaluations of COVID-19 responses (OECD, 2022[1]). Indeed, this work provides an overview of what has and has not worked, for whom and why on these three types of measures in 18 OECD member countries.

These comparative data, which provide a general international framework, are complemented by two surveys conducted to collect country-specific evaluation data. The first survey was administered to the authorities of the central government of Luxembourg responsible for implementing the various measures to control the pandemic. A second survey was administered to the local actors who had a key role in the response to the crisis: the 102 municipalities and cities, the 171 primary education institutions and the 4 hospitals. Other OECD multi-country survey data were used where relevant; for example, a survey on health system resilience to COVID-19 was used in Chapter 3 on the resilience of Luxembourg's health sector. Administrative microdata were also used in the analysis of the impacts that the pandemic had on the economy and the labour market in Chapters 6 and 7. An anonymous form containing these microdata was made available to the OECD teams by the National Institute for Statistics and Economic Studies of the Grand Duchy of Luxembourg (STATEC) and the General Inspectorate of Social Security of Luxembourg.

These quantitative data were also cross-referenced with qualitative interviews with key stakeholders in crisis management at the national and local levels. The institutions met by the OECD teams were identified jointly by the OECD and the Ministry of State. The OECD teams were able to meet with a wide range of stakeholders, including ministries, representatives from communes and schools, the health sector (hospitals and medical centres), deputies, representatives of civil society (trade unions, the Red Cross, Caritas, and ASTI, an organisation promoting integration and inclusion in Luxembourg), the Consultative Human Rights Commission, private laboratories, the Patiente Vertriedung patients' association, the *Syndicat des Pharmaciens* or Union of Pharmacists, the *Cercle des Médecins Généralistes* or Society of General Practitioners, the *Association des Médecins et Médecins Dentistes* or Association of Doctors and Dentists, employers' associations (Luxembourg Employers' Association, Luxembourg Confederation of Commerce, Chamber of Skilled Trades and Crafts, Federation of Luxembourgish Industrialists), the *Confédération des Organismes Prestataires d'Aides aux Services* or Confederation of Organisations Providing Assistance to Services], the *Ligue Luxembourgeoise d'Hygiène Mentale* or the Luxembourg Association for Mental Health, and the Economic and Social Council of the Grand Duchy of Luxembourg.

1.2.3. The evaluation analyses the measures adopted by Luxembourg, their implementation processes and the results obtained

In order to understand what was and was not successful in the preparation for and response to the COVID-19 pandemic in Luxembourg, this report aims to assess and draw lessons from the relevance, coherence, effectiveness, efficiency, impact and sustainability of the measures put in place during the three risk management phases (see Box 1.2 for an explanation of these different criteria).

Box 1.2. Evaluation criteria of the Development Assistance Committee

The OECD Development Assistance Committee (DAC) has become the main benchmark body for evaluating projects, programmes and policies in all areas of public action. Each criterion represents a different filter or perspective through which the intervention can be analysed.

Taken collectively, these criteria play a normative role. Together, they describe the characteristics expected of all interventions: that they are appropriate for the context, that they are consistent with other interventions, that they achieve their objectives, that they produce results economically, and that they have lasting benefits.

- **Relevance**: the extent to which the interventions' objectives and design respond to beneficiaries' needs and priorities, align with national, global and partner/institutional policies and priorities, and remain relevant even as the context changes.
- **Coherence**: the extent to which the interventions are consistent with other interventions being carried out within a country, sector or institution.
- **Effectiveness**: the extent to which the interventions achieved, or are expected to achieve, their objectives and their results, including differential results across groups.
- **Efficiency**: the extent to which the interventions deliver, or are likely to deliver, results in an economic and timely way.
- **Impact**: the extent to which the interventions have generated or are expected to generate significant positive or negative, intended or unintended, higher-level effects.
- **Sustainability**: the extent to which the net benefits of the interventions continue or are likely to continue.

Source: OECD (2021[4]), *Applying Evaluation Criteria Thoughtfully*, OECD Publishing, Paris, https://doi.org/10.1787/543e84ed-en.

In particular, Chapter 2 of this report analyses the relevance and effectiveness of the risk anticipation and preparedness measures established in Luxembourg before the crisis. Chapter 3 looks at the relevance, coherence, effectiveness and efficiency of the government crisis management mechanisms. The following chapters assess the effectiveness, efficiency, impact and sustainability of the public health measures (Chapter 4), education measures (Chapter 5), economic and fiscal policies (Chapter 6) and social policies (Chapter 7) adopted by Luxembourg in response to the pandemic crisis. Table 1.1 summarises the various evaluation questions that this report attempts to answer.

Table 1.1. The evaluation questions addressed in this report

Evaluation criterion	Evaluation question	Pandemic preparedness	Crisis management	Response and recovery			
				Public health policy	Education policy	Economic and fiscal policy	Social and labour policy
Relevance	Is the intervention addressing the problem?	x	x				
Coherence	Is the intervention aligned with the other interventions ?		x				
Effectiveness	Is the intervention achieving its objectives?	x	x	x	x	x	x
Efficiency	Are resources being used optimally?		x	x	x	x	x
Impact	What difference is the intervention making?			x	x	x	x
Sustainability	Will the benefits last?			x	x	x	x

Source: Prepared by the author.

To do this, it is important to understand the structural strengths and weaknesses at play in Luxembourg that were likely to affect the government's room for manoeuvre in its response to the crisis and, in particular, the performance of the policies adopted. To this end, this introductory chapter presents the main demographic, geographic, public governance, economic and social issues in Luxembourg that may have affected the government's ability to prepare for, manage and respond to the COVID-19 crisis.

1.3. Understanding the context: What were Luxembourg's strengths and challenges in responding to the crisis?

Several factors can affect a government's ability to deal with a crisis. Firstly, each country has its own particular characteristics, which can pose challenges for policy development and implementation, even in times when democratic life is functioning normally. In the case of a crisis of this magnitude, there are even more of these factors as combating the threats posed by the pandemic required a huge response from the authorities in all areas of public life. As such, to assess a government's response to the crisis, one must first understand the extent to which that government was able to take these factors into account in order to deploy measures appropriate for the national context (these fall under the relevance and coherence criteria).

Moreover, assessing the effectiveness of a given government's response to the crisis requires, among other things, its results to be compared with those of other countries. This comparative analysis cannot be completed without a detailed understanding of the direct and indirect impacts that these political, economic and social factors may have had on measures to mitigate the effects of the pandemic. A small country like Luxembourg, which is very open to the global economy, therefore does not face the same challenges or have the same assets when controlling a pandemic as an island country, for example. In this context, this section presents the particular geographical, demographic, political, economic and social features of Luxembourg that may have represented a challenge or an asset in the face of the crisis.

1.3.1. Luxembourg is a small, multilingual and very open country

Luxembourg is the second smallest country in the European Union (EU) in terms of both surface area (2 586 km^2) and population (645 397 inhabitants as at 1 January 2022), after Malta. With 259.4 inhabitants per km^2 in 2021, it is among the five countries with the highest population density in the EU and in the OECD, where the average is 38.7 inhabitants per km^2 (OECD, forthcoming[5]).

Divided into 12 cantons, the country is composed of two main regions, the more Germanic Oesling in the north, and Guttland bordering France in the south (STATEC, 2021[6]). Although Luxembourgish is the official national language, the country also has French and German as official administrative languages (STATEC, 2017[7]). The country is therefore trilingual and its residents know and use an average of four languages (two-thirds of the working population can speak four or more languages), which is an economic advantage and an integration factor *vis-à-vis* its main economic partners and neighbouring countries (STATEC, 2017[7]).

In addition to its central European location, it is politically and economically well-integrated. The country shares borders with France, Germany and Belgium and actively promotes cross-border co-operation with its neighbours (France Diplomatie, 2022[8]). Luxembourg is a founding member of the EU and the eurozone, the OECD, NATO and the Benelux countries, among others.

Luxembourg also has a high level of immigration from neighbouring countries and other EU member states. While Luxembourg's population increased by 44% between 2001 and 2021, the share of the population with Luxembourgish nationality fell by 10 percentage points, from 63% to 53%, in the same period (University of Luxembourg, 2021[9]). This immigration comes mainly from French-speaking groups and other groups who speak an EU language (notably Portuguese, Belgian and German nationals). While the country's size and population has undeniably been an asset in terms of managing a crisis of this magnitude insofar as it has facilitated decision making and the implementation of measures, this high degree of openness to and dependence on workers from other countries has been a major challenge for Luxembourg. The country depends on these workers both economically (see Chapters 6 and 7) and to keep its health sector functioning (see Chapter 4). Furthermore, Luxembourg is a relatively densely populated country, which may, in the event of a pandemic, call for special provisions in terms of managing the risks of the disease spreading. Chapter 4 of this report provides more details on the measures adopted by Luxembourg to address this issue, in particular with regard to the policy of large-scale testing and vaccination of the population, and assesses their effectiveness in this context.

1.3.2. The population of Luxembourg is growing and remains young overall

The country has experienced dynamic population growth (European Commission, 2020[10]), averaging 2% over the past five years, compared to an average of 0.6% across all OECD member countries (OECD, forthcoming[5]). Between 2007 and 2016, the population grew by 21%, which is well above the EU average of 2.8% for the same period (STATEC, 2017[7]). This strong growth in Luxembourg's population is mainly due to a high immigration rate. In 2019, international migrants represented 47.4% of the country's population, well above the OECD average of 13.2% (OECD, forthcoming[5]).

This influx of cross-border workers and immigrants over the last two decades is also the reason why Luxembourg's population is relatively young (OECD, forthcoming[5]); the country's population is also proportionally younger than the OECD average. Thus, while 15.6% of the population was under 15 years of age in 2021 (compared to 17.8% on average for OECD member countries in 2020), only 14.4% of the population was over 65 (compared to an average of 17.4% for OECD member countries in 2020) (OECD, forthcoming[5]). Having a relatively small proportion of older people in the population may have been an asset to the country in controlling the pandemic, as this group is typically more vulnerable to the effects of the virus. It is in this context in particular that Luxembourg's positive aggregate COVID-19 mortality rate should be understood (see Chapter 4). However, further analysis of the differential impacts of the pandemic shows that the mortality rate among 80-year-olds is significantly higher in Luxembourg than in other OECD member countries (see Figure 4.3 in Chapter 4). Chapter 4 assesses the measures adopted in care homes for older people with respect to these impacts.

1.3.3. Luxembourg's political system is stable and enjoys a high level of public confidence

Luxembourg's political system has been stable for several decades

Luxembourg, whose official name is the Grand Duchy of Luxembourg, is a parliamentary democracy with a constitutional monarchy. The Grand Duke, a hereditary sovereign, is the head of state. Under the 1868 Constitution of Luxembourg (Government of Luxembourg, 1868[11]), he alone exercises the executive power and ensures the execution of laws. In practice, however, executive power is exercised by the government, which is headed by the prime minister. Over the past three decades, Luxembourg's government, which operates on the basis of parliamentary majorities, has largely demonstrated political continuity and stability, although there have been some changes to political leadership and the ruling coalitions (see Table 1.2) (OECD, 2022[12]).

Table 1.2. Governments of Luxembourg between 1992 and 2002

Government	Prime minister	Term start date	Term end date	Parties in the coalition
Santer-Poos II	Jacques Santer	9 December 1992	13 July 1994	CSV, LSAP
Santer-Poos III	Jacques Santer	13 July 1994	26 January 1995	CSV, LSAP
Juncker-Poos	Jean-Claude Juncker	26 January 1995	4 February 1998	CSV, LSAP
Juncker-Poos	Jean-Claude Juncker	4 February 1998	7 August 1999	CSV, LSAP
Juncker-Polfer	Jean-Claude Juncker	7 August 1999	31 July 2004	CSV, DP
Juncker-Asselborn I	Jean-Claude Juncker	31 July 2004	23 July 2009	CSV, LSAP
Juncker-Asselborn II	Jean-Claude Juncker	23 July 2009	4 December 2013	CSV, LSAP
Bettel-Schneider I	Xavier Bettel	4 December 2013	5 December 2018	DP, LSAP, DG
Bettel-Schneider II	Xavier Bettel	5 December 2018	Term ends in 2023	DP, LSAP, DG

Note: CSV is the Christian Social People's Party. LSAP is the Luxembourg Socialist Workers' Party. DP is the Democratic Party. DG is the Green Party.
Source: OECD (2022[12]), *Digital Government Review of Luxembourg: Towards More Digital, Innovative and Inclusive Public Services*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/b623803d-en.

This strong political continuity may have been an asset in a context where all sections of society had to work together in a climate of trust.

Legislative power is concentrated in one parliamentary chamber

The legislative power of Luxembourg is exercised by the Chamber of Deputies, a unicameral parliament composed of 60 members or deputies elected for a five-year term by direct universal suffrage, with proportional representation (STATEC, 2021[6]). The Chamber of Deputies votes on bills proposed by the government, or on bills submitted by private members (Government of Luxembourg, 1868[11]). As explained in Chapter 3, in the context of the COVID-19 pandemic, Luxembourg having a unicameral legislature allowed its parliament to act in an agile way, and enabled the government to pass the laws it needed to manage the crisis remarkably quickly without having to prolong the state of emergency longer than necessary.

Luxembourg citizens have trust in the institutions and public authorities

Trust in and satisfaction with public authorities and public services in Luxembourg is on average higher than in other OECD member countries, and has remained stable over time (OECD, 2019[13]; OECD, 2021[14]). In 2020, the trust that Luxembourgers had in their government was the fourth highest among OECD member countries, with 78% of citizens saying they trusted their government that year, compared to an OECD average of 51% (OECD, 2021[14]). This trust also extends to the education system (77% of Luxembourgers were satisfied with the country's education system in 2019) (OECD, 2019[13]). In 2019, 80% of Luxembourgers were satisfied with their healthcare system, compared to an average of 70% in OECD member countries (OECD, 2019[13]). Citizens also believe that Luxembourg's public authorities have learned from the crisis and will be better prepared for future public health crises (68% of citizens think their government would be prepared for another pandemic), more so than in all other OECD member countries.

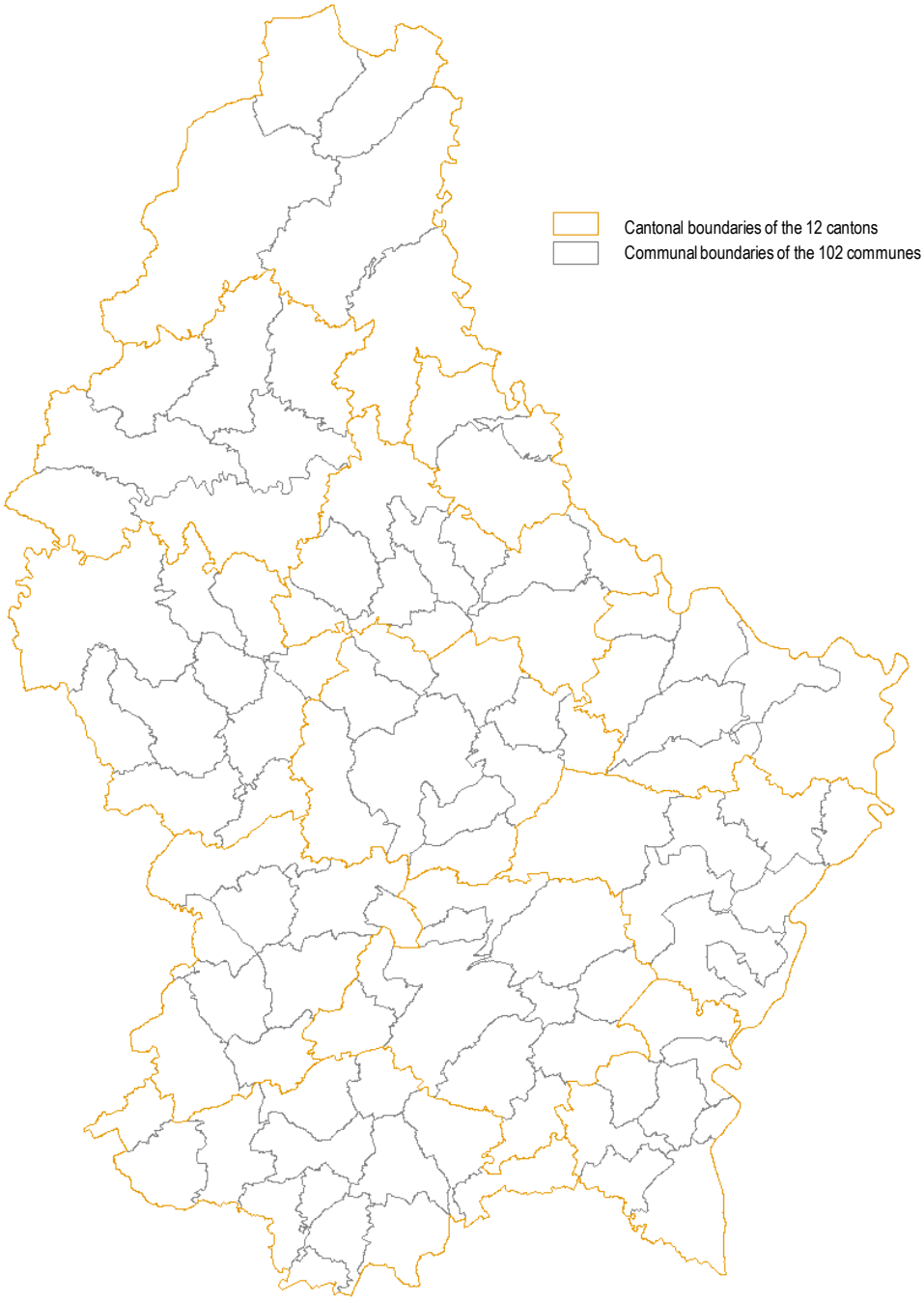
In summary, all the trends show that the public authorities in Luxembourg have largely benefited from the trust of citizens, which is essential for dealing with external shocks the magnitude of the COVID-19 pandemic. This was indeed crucial to ensure the effectiveness of the pandemic containment measures insofar as a lack of trust could have led to citizens not complying with the rules of social distancing and mask-wearing, or not participating in vaccination campaigns. This climate of confidence may also have enabled the government to obtain rapid approval of the measures it proposed from the Chamber of Deputies.

1.3.4. Public governance in Luxembourg is highly centralised

Luxembourg's political and administrative structure is characterised by a high degree of centralisation, although some powers are decentralised to the municipal level. As such, at the local level, Luxembourg's public administration is organised into three districts, 12 cantons and 102 communes, of which 12 have the status of city, with the city of Luxembourg being the largest (Figure 1.2). In reality, however, the 12 cantons have no administrative powers; only the 102 communes have their own powers. Each commune has a deliberative assembly in the form of a communal council, which is elected directly by the inhabitants of the commune in question (Congress of Local and Regional Authorities, 2015[15]). The burgomaster holds the executive power of the commune (Congress of Local and Regional Authorities, 2015[15]).

Figure 1.2. Administrative and territorial organisation of Luxembourg

3 districts, 12 cantons, 102 communes



Source: Luxembourg.

In Luxembourg, municipalities have legal personality, manage their own assets and collect taxes through local representatives, under the control of the central power represented by the Minister for Home Affairs (Information and press services of the Luxembourg government, n.d.[16]). Municipalities autonomously manage municipal interests (records, public services, transportation, health, social welfare, sports, regional economic development and tourism, housing, culture and education), and are consulted by central government on the administration of national policy.

Despite this, power remains highly centralised within central government. This allowed the Luxembourg government to manage the crisis in a generally fast and agile manner (see Chapter 3 for more information on this subject). Municipalities were regularly informed of decisions taken at the national level and served as representatives for the government's actions. However, unlike other OECD member countries where crisis management was shared between the national and local levels, decision making and the implementation of measures has been the exclusive responsibility of central government in Luxembourg. This high degree of centralisation has largely facilitated decision making and the uniform application of measures across the country (see Chapter 3), although countries where responsibility is shared have often also been able to establish unified governance to include both central and local governments (OECD, 2020[17]).

1.3.5. Luxembourg's healthcare system is robust, but faces some structural inequality and risk factors

An effective and efficient health system supported by strong infrastructure

Health outcomes in Luxembourg are generally above the EU average (OECD, forthcoming[5]). In 2015, for example, more than two out of three people believed they were in very good or good health, placing the country among the top 15 European countries in this regard (STATEC, 2017[7]). In addition, while one in three people over the age of 16 reported suffering from a long-term illness or health problem in the 28 EU countries (including the United Kingdom) in 2015, this figure was only 23% in Luxembourg in the same period (STATEC, 2017[7]).This trend has also been reflected during the pandemic: while the prevalence of COVID-19 infections has been high in Luxembourg, the death toll has been much lower than in other OECD member countries. As such, while the prevalence of COVID-19 in Luxembourg is the fourth highest among OECD member countries, this infection rate reflects the country's high capacity to detect COVID-19 infections and the wide variety of testing strategies implemented in the country (see Chapter 4 on health policies during the crisis).

These positive results are set against a background of lower health spending relative to gross domestic product (GDP) than in other OECD member countries. Public and private spending in the Luxembourg health system is lower than in OECD member countries on average and as a percentage of their respective GDPs: in 2019, this spending amounted to 5.4% of Luxembourg's GDP, compared to an average of 8.8% of GDP across all OECD member countries (OECD, forthcoming[5]). This is partly due to the fact that many cross-border workers choose to seek medical care in their own country (OECD, forthcoming[5]). However, the social health insurance system in Luxembourg offers broad access to healthcare (OECD/European Observatory on Health Systems and Policies, 2022[18]).

The health system is well resourced with strong infrastructure and a stable workforce. The number of nurses and nursing assistant practitioners is high and increased between 2010 and 2017 (STATEC, 2021[6]). Luxembourg also has the highest number of long-term care beds in facilities and hospitals per capita among the OECD member countries (81.6 per 1 000 inhabitants, compared to 46.6 for all OECD member countries as a whole) (STATEC, 2021[6]). In addition, while intensive care bed capacity doubled during the first wave of the pandemic, no additional beds had to be mobilised (see Chapter 4 of this report).

However, some structural weaknesses in the health system may have presented challenges in the run-up to the crisis

The Luxembourg health system is structurally dependant on people from other countries in terms of healthcare and medical staff, making it vulnerable to border closures during the first COVID-19 lockdown. The share of doctors living abroad but practising in Luxembourg almost doubled between 2008 and 2017, from 15.6% to 26.4% (IGSS, 2021[19]). In 2019, 62% of healthcare professionals and 49% of doctors practising in Luxembourg were living abroad (Lair-Hillion, 2019[20]). Moreover, despite the presence of

cross-border workers, Luxembourg has very few doctors compared to other OECD member countries. With approximately 3 doctors per 1 000 inhabitants in 2019, Luxembourg is well below the OECD average (3.6 per 1 000 inhabitants), despite an increase of 39% since 2000 (OECD, 2021[21]). During the pandemic, the country avoided a shortage of healthcare staff thanks to a wide range of measures, including a reserve of health workers that allowed more than 700 professionals to be mobilised during the first wave of infections. However, in a crisis where the international mobility of the population was relatively low, the low density of the city care network could have presented a challenge for relieving congestion in hospitals. For this reason, Chapter 4 recommends that Luxembourg become less dependant on health professionals from other countries and invest more in its health workforce to increase its resilience to future crises.

Health inequalities that affect the less affluent and educated

Health is one of the main inequalities in Luxembourg (obesity, depression, smoking and alcohol consumption): the more educated people are, the better paid they are and the more their health risks are reduced (STATEC, 2017[7]). People's perceptions of good health increase with education and income (STATEC, 2017[7]). In Luxembourg, as in other countries, the proportion of people with chronic conditions also decreases as education levels rise (STATEC, 2017[7]). The share of adults with symptoms of depression also decreases with education level; similarly, these symptoms are, on average, less prevalent among the wealthiest members of the population (STATEC, 2017[7]). In this context, the less educated and less affluent may have been more vulnerable to the effects of COVID-19 in terms of physical and mental health. As such, the results explained in Chapter 4 demonstrate that the elderly and vulnerable sections of Luxembourg's population have been disproportionately affected by the pandemic.

1.3.6. Luxembourg has a unique and very autonomous education system

Luxembourg's unique education system has enjoyed high levels of investment but faces challenges when it comes to equity

In Luxembourg, education is provided to a smaller student population than in the vast majority of OECD member countries. As it stands in 2022, Luxembourg has 170 public fundamental institutions (primary schools and nurseries) and 41 public secondary schools. This population is, nevertheless, multilingual and highly multicultural and the country's three official languages all play a role in the education system.[1] Also, given the migratory trends in Luxembourg, the education system (both primary and secondary education) is seeing an increasing number of students whose main language at home is not Luxembourgish.

Annual expenditure per student in schools in Luxembourg is more than twice the OECD average. Despite this high level of spending, Luxembourg performs below the OECD average in all three areas assessed (reading, maths and science) in the Programme for International Student Assessment survey (see Chapter 5 for more information on this subject). Above all, students' socio-economic status is more likely to affect performance in Luxembourg than in most of the OECD member countries, especially in reading (University of Luxembourg, 2021[9]). This context underlines the particular importance for Luxembourg to keep its schools open and to ensure educational continuity in order to prevent these vulnerable populations from dropping out. Chapter 5 of this report highlights the fact that the country stands out for the low number of days that schools were closed, although these efforts did not address all the challenges posed by the crisis.

The education sector has a high degree of autonomy in Luxembourg

The Ministry of Education, Children and Youth has wide-ranging responsibility over the functioning of the Luxembourg education system. It is responsible for early childhood education and care, primary education, secondary education, adult education, and other services related to the care of children in formal education (specialised centres of excellence in educational psychology) and non-formal education formats (crèches and mini-crèches, drop-in centres, school centres, childminders, and youth centres).

The broad responsibilities of the Ministry of Education are conducted with a high degree of autonomy from other government sectors. For example, the Ministry of Education, Children and Youth has its own statistical data collection service. The degree of autonomy enjoyed by the ministry and the breadth of its responsibilities have played a key role during the pandemic, involving significant efforts for co-ordination between central government and the wider education sector (see Chapter 5 for details).

1.3.7. Luxembourg had budgetary room for manoeuvre before the crisis, even if the long-term sustainability of public finances was not certain

Luxembourg's public finances were sound before the crisis

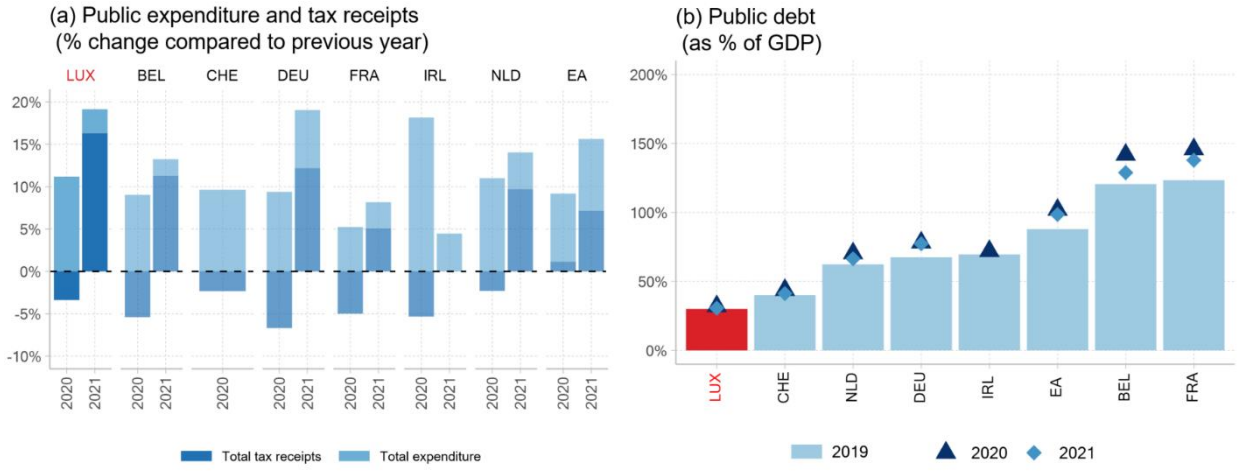
Prior to the crisis, Luxembourg's public finances were relatively healthy, which facilitated the financing of important economic support measures during the pandemic (European Commission, 2019[22]; France Diplomatie, 2022[8]). Luxembourg's public spending amounted to 42.4% of GDP in 2021, compared to 48.5% on average in OECD member countries in 2020 (OECD, forthcoming[5]). The country's public revenues amount to 43.3% of GDP, exceeding the OECD average of 38.1% (OECD, forthcoming[5]). In 2019, the general government balance showed a surplus of about 2.7% of GDP (European Commission, 2020[10]).

In 2020, government debt was low, and it was projected pre-crisis that it would continue to decline throughout the year, from an already low level of about 20% of GDP in 2019 (European Commission, 2020[10]). Luxembourg's gross debt was also among the three lowest in the OECD in 2017, with a gap of almost 80 percentage points from the OECD average (OECD, 2019[13]).

This pre-crisis situation allowed the government to provide huge levels of support to the economy with a limited impact on public balances

The health crisis sharply reduced economic activity levels, forcing all governments of OECD member countries to increase public spending. The challenge was to stabilise and then revive the economy while facing a general decline in tax revenues. In this context, Luxembourg was able to increase its public spending significantly to support the economy (Figure 1.3). The government was also able to take advantage of this room for manoeuvre to make huge investments in health (for example by doubling the number of intensive care beds or creating more advanced 2.0 medical centres) and in education (for example investing in online teaching).

Figure 1.3. Luxembourg's public debt level has remained contained despite a strong political response to the COVID-19 crisis



Source: National accounts, OECD calculations.

StatLink https://stat.link/8lpawb

Even in this context, the increase in government debt and the government deficit was significantly lower than in most other OECD member countries (as a percentage of GDP); in 2020, Luxembourg was in the bottom half of OECD member countries with a deficit balance of -4.1% of GDP. This is mainly due to the resilience of tax revenues and economic growth that the country continued to experience during the COVID-19 pandemic, as well as to exceptionally favourable financing conditions and relatively easy access to capital markets to finance the support measures being implemented (Benmelech and Tzur-Ilan, 2020[23]; Romer, 2021[24]). Chapter 6 of this report provides more information on this topic.

However, the long-term sustainability of public finances in the face of an ageing population remains uncertain

There are, however, some uncertainties about the long-term sustainability of Luxembourg's public finances (European Commission, 2020[10]). Between now and 2070, Luxembourg is expected to face one of the largest increases in age-related spending (pensions, long-term care and healthcare costs) among EU member states (European Commission, 2020[10]). Long-term projections for pensions and long-term care expenditure indicate risks to the sustainability of public finances (European Commission, 2020[10]). OECD projections also indicate that pension and healthcare spending will add significantly to budgetary pressure by 2060 (OECD, forthcoming[5]). The European Commission's projections show a similar trend, with total age-related expenditure expected to rise from 16.9% of GDP in 2019 to 27.3% of GDP in 2070, with most of this increase due to old-age pensions (European Commission, 2021[25]). As will be discussed in Chapter 4, this ageing population and the impact of age-related spending on public finances will undoubtedly be an issue in the future in a country where the long-term care sector is still suffering from some lack of investment. The sustainability of the measures adopted by the Luxembourg government during the crisis must therefore be assessed in the light of these challenges.

1.3.8. Luxembourg's economy is open and highly service-based

Luxembourg's economy is dynamic, open and highly dependent on the service sector

Prior to the pandemic, Luxembourg was experiencing economic growth that was moderate but above the average among EU countries (European Commission, 2020[10]); its annual real GDP growth (adjusted for inflation) averaged 3.2% between 2010 and 2018, compared to an EU average of 1.4%. This dynamism was also reflected in its standard of living, which was higher than the OECD average. On a per-capita basis, Luxembourg's GDP was USD 117 700 PPP in 2021, compared to an OECD average of USD 46 100 PPP per capita in 2020 (OECD, forthcoming[5]).

The structure of Luxembourg's economy has been a strength in the face of the shock caused by the crisis. However, the country has faced some challenges related to the significant slowdown in household consumption and its heavy dependence on foreign trade, which makes a significant contribution to its economic activity. Luxembourg has one of the highest levels of market integration among OECD member countries, with exports and imports more than double GDP (European Commission, 2020[10]).

In addition, the country's economy is mostly composed of services, which represent 87.5% of the economy, compared to 71.1% on average in OECD member countries (OECD, forthcoming[5]). Agriculture, forestry and fishing (0.2% compared to an OECD average of 2.7%), and industry (12.3% compared to an OECD average of 26.2%) account for a much smaller share (OECD, forthcoming[5]). On the other hand, the information and communication technologies services sector is growing faster than the Luxembourg economy as a whole, totalling 24% between 2010 and 2016.

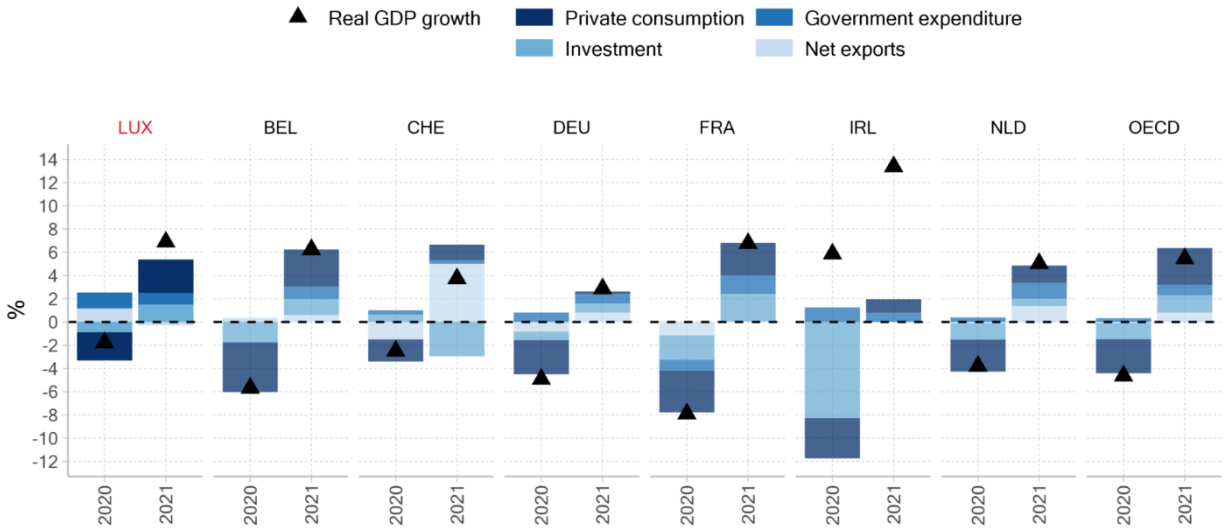
Finally, Luxembourg's economy is distinguished by the role of the financial sector, which represented 25% of GDP and 11% of employment in 2020 (European Commission, 2020[10]), placing Luxembourg in first place in Europe and second place worldwide for the domiciliation of investment funds, for example (France Diplomatie, 2022[8]).

This has been a strength in the face of the shock caused by the pandemic

While high market integration also means greater exposure to external shocks, the Luxembourg economy has proved resilient overall to the COVID-19 pandemic: the downturn in 2020 was relatively mild, and its recovery has been robust, raising growth above pre-pandemic levels. GDP grew by 6.9% in 2021 after contracting by 1.8% in 2020. The slowdown in 2020 was mainly due to a drop in private consumption due to health restrictions, as was the case in all countries (see Figure 1.4). However, this decline was somewhat smaller in Luxembourg. This is due in particular to the decisive action taken by the government at the start of the crisis, with the introduction of COVID support measures equivalent to more than 4.2% of GDP (see also Chapter 6 on this subject).

Figure 1.4. The decline in GDP was mainly due to a fall in private consumption and investment

Change in real GDP by major components (annual percentage growth), 2020-21



Note: The OECD value is the unweighted average of OECD member countries for which data are available.
Source: OECD, quarterly national accounts.

StatLink https://stat.link/6ezpr1

However, Luxembourg's better performance is also the result of the good dynamics of the services sectors, and in particular those related to financial services and information and communication technologies, which have remained relatively unaffected by the pandemic (General Directorate of the Treasury, 2021[26]). This sectoral specialisation has therefore allowed Luxembourg to continue its economic activity despite the health restrictions in place: the services sector, where most jobs can be done remotely, accounted for 55% of GDP in 2020. The acceleration of the digital transition in the services sector (development of working from home and remote services) has been one of the levers of growth in this sector in most European economies. Luxembourg's performance, however, went well beyond this, with activity growing by 11.4% (and value added growing by 0.66%) during the crisis. In the face of the crisis, this weight of the financial sector in Luxembourg's economy has also proved to be an asset, as it has enabled the country to successfully contain the decline in activity (France Diplomatie, 2022[8]). Finally, the information and communication services sector, which accounted for 8.3% of Luxembourg's GDP in 2020, with the notable inclusion of Amazon EU's headquarters, recorded a 17% increase in its value added in 2020, driven in particular by e-commerce.

1.3.9. The Luxembourg labour market is relatively dynamic but highly dependant on cross-border workers

The unemployment rate is low in Luxembourg but hides a contrasting reality

In 2019, before the crisis, Luxembourg had a strong job creation rate, which resulted in low unemployment (European Commission, 2019[22]). In 2020, the unemployment rate was 5.2%, compared to an OECD average of 7.1%. However, this figure hides inequalities in access to employment. The participation rate of those aged over 55 is among the lowest in the OECD (OECD, forthcoming[5]), at 45%. In 2020, the rate of unemployment among young people in Luxembourg increased (to 16.9%), exceeding the average for OECD member countries (12.8%), and many were at risk of being excluded from the labour market (OECD,

forthcoming[5]). In addition, the long-term unemployment rate (one year or more) was 1.7% in Luxembourg in 2020, slightly above the OECD average of 1.3% (OECD, forthcoming[5]).

Heavy reliance on cross-border workers could have been a risk factor

Employment growth has always been supported by high levels of net immigration and cross-border workers, which, together with workers from other countries, make up an increasing share of Luxembourg's workforce (OECD, forthcoming[5]). In Luxembourg, cross-border workers, i.e. people who do not live in Luxembourg but travel there daily to work, represent 41% of salaried employment. Approximately 200 000 cross-border workers, 105 000 of whom reside in France, travel to Luxembourg every day from their country of origin (France Diplomatie, 2022[8]).

While immigration and a high level of cross-border workers are generally a demographic and economic benefit to the country (see previous sections on this topic), the border restrictions and closures that were put in place during the pandemic risked having a significant impact on the workforce and the country's economy. However, the Luxembourg government actively worked to prevent the closure of Luxembourg's borders throughout the pandemic to allow for the passage of cross-border workers (some of whom were considered key workers because they were employed in the health sector). Similarly, some employment support measures were specifically targeted at immigrant workers. Some of the following sections detail the measures taken by the Luxembourg government to keep the borders open and support cross-border work during the crisis.

1.3.10. In Luxembourg, the risk of poverty and social exclusion is relatively low, but growing

Inequality, poverty and social exclusion indicators in Luxembourg are close to or slightly better than the EU average, despite some signs of deterioration (European Commission, 2020[10]). In 2015, it was estimated that economically vulnerable individuals made up 30.8% of the population, compared to an average of 35.7% among OECD member countries (OECD, 2019[13]). Additionally, Luxembourg's relative poverty rate was 10.5% in 2019, compared to an average of 11.7% among OECD member countries in 2018 (OECD, forthcoming[5]). In Luxembourg, social benefits have a significant impact on poverty (European Commission, 2020[10]).

Nevertheless, income inequality has increased in recent years (European Commission, 2020[10]), although it remains below the OECD average: it had a Gini coefficient of 0.305 in 2019, compared to an OECD average of 0.317 (OECD, forthcoming[5]). Rising housing prices also increase the risk of inequality (France Diplomatie, 2022[8]).

Taking this context into account, household income support in Luxembourg has been provided through, among other things, Social Inclusion Income, an activation benefit consisting of an activity allowance, and the Rent Subsidy scheme (see Chapter 7 for more information on this subject).

1.4. How has Luxembourg responded to the crisis?

It is in this geographical, demographic, economic and social context that, since the start of 2020, Luxembourg has put in place policies to prepare for the arrival of the pandemic. At the beginning of January 2020, the government monitored developments in the COVID-19 situation before activating its crisis management mechanism. On 22 January, the High Commission for National Protection conducted an assessment of the situation in the People's Republic of China and the following day, the Luxembourg Ministry of Health issued a press release outlining the measures to be taken if the novel coronavirus was detected in Luxembourg, alongside recommendations for people travelling to China.

In parallel, throughout January and February, the government initiated an interministerial preparedness phase to assess the needs and readiness of the various ministries, critical infrastructure and essential services for the health crisis. On 1 March 2020, when Luxembourg detected the first case of COVID-19 on its territory, the prime minister launched an initial crisis unit. Chapter 2 of this report assesses all of these pre-crisis measures, which were taken to anticipate the pandemic and prepare the country's response to it.

A state of emergency was declared in Luxembourg on 18 March 2020 (Government of Luxembourg, 2020[27]) (called 'state of crisis' in Luxembourg), by which point the government had already adopted, through the decrees of 13 March and 16 March 2020, measures to restrict movement and close down non-essential activities, similar to a "lockdown" (Government of Luxembourg, 2020[28]; Government of Luxembourg, 2020[29]). The main measures adopted in this sense were:

- the closure of all schools and childcare facilities, as well as higher education (University of Luxembourg) and continuing professional development facilities as at 16 March 2020
- the banning of visits to care homes for older people
- a ban on hospital inpatient visits
- the closure of cultural sites normally open to the public
- a ban on travel except for activities considered essential (grocery shopping, commuting, visiting health facilities, etc.)
- the suspension of cultural, social, celebratory, sports and recreational activities
- the closure of hotel restaurants and bars, except for room service
- the suspension of non-emergency activities in hospitals.

Essential activities, such as waste management, administrative services and hospital services, continued as normal. This was the beginning of the first phase of the pandemic. As in many OECD member countries, these travel restrictions and the rules for social distancing and mask-wearing would change over the following two years. Box 1.3 provides a general timeline of the crisis in Luxembourg.

Box 1.3. General timeline of the crisis in Luxembourg

Luxembourg detected the first case of COVID-19 in its territory on 1 March 2020.

First wave of the virus

On **18 March**, Luxembourg declared a state of emergency with the Grand Ducal Regulation of 18 March 2020 introducing a series of measures in the context of combating COVID-19 (Government of Luxembourg, 2020[27]). The state of emergency was extended for a further three months by a law issued on 24 March 2020.

Luxembourg's first lockdown ended at the end of **May 2020**, when the virus transmission rate reached very low levels. Some businesses were allowed to reopen on 20 April, and masks remained mandatory in situations where a distance of 2 metres could not be guaranteed.

On **19 May 2020**, a large-scale voluntary testing scheme was also launched. During the first phase of this large-scale testing scheme, which took place from 27 May to 28 July, up to 17 drive-through and two pedestrian- and bike-access test sites spread throughout Luxembourg could perform up to 20 000 tests per day.

Gradual easing of measures

As the state of emergency ended on **24 June 2020**, measures to combat COVID-19 were then implemented through laws. Two laws of 24 June 2020, one introducing a series of measures concerning individuals within the framework of the COVID-19 pandemic response and the other introducing a series of measures concerning sports activities, cultural activities and establishments open to the public, replaced the grand ducal regulations.

Restrictions on gatherings, the wearing of masks in shops and on public transport, and the quarantine or isolation of people infected with coronavirus were initially extended until the **end of July 2020**.

Second and third wave of the virus

In **October 2020**, the second wave of COVID-19 hit most of Europe, and Luxembourgers experienced a series of new restrictions implemented to contain the virus. All bars, restaurants and cinemas closed on **26 November**, as the country failed to reduce the number of new cases to under 500 per 100 000 people. Households were not allowed to have more than one guest at a time. A curfew imposed in November was extended until **December 2021**.

Luxembourg extended its restrictions until the middle of January 2021, and on 19 February it extended them again until **14 March 2021**. They were then gradually lifted between the end of March and May 2021, once the vaccination campaign had been able to effectively begin protecting the most vulnerable people.

Source: In the text.

Once the state of emergency was adopted, Luxembourg's authorities implemented means to co-ordinate all parts of administration and society in their response to the crisis. To this end, the government changed how the crisis unit was structured and set up scientific and civil society advisory bodies. Frequent communication with the public through all channels (print media, television, radio, social media, etc.) was also conducted. Parliament also adapted its working methods to the crisis in order to reduce the time it took to review legislative texts. With a few changes, these mechanisms have been maintained throughout the crisis in Luxembourg and are still in place at the time of writing in mid-2022.

These co-ordination and communication efforts were also accompanied by important measures to mitigate the impacts of the COVID-19 crisis with regard to:

- public health (e.g. through a proactive contact-tracing campaign, a highly personalised vaccination campaign, the establishment of a health reserve, etc.)
- education (including deploying digital tools and keeping schools open during the second and third waves of the pandemic)
- the economic and budgetary fields (in particular through the deployment of EUR 2.8 billion in financial assistance to businesses over two years)
- the labour market and social policies (e.g. by supporting employment through short-time work or by introducing exceptional family leave).

These policies are discussed in the following chapters of this report.

Key findings of the report and areas of focus for the future

Two and a half years after the onset of the crisis, it is important to draw useful lessons from it in order to strengthen countries' future resilience. In this context, policy evaluations, such as the one conducted in this report, help countries understand what has worked and what has not, for whom and why. They also provide information to citizens and stakeholders on whether public spending achieved its intended objectives and results.

Evaluating governments' response to the pandemic involves looking at the full range of measures adopted in this regard throughout the risk management cycle: in crisis preparedness, in crisis management, and response and recovery policies. Within this framework, this report assesses Luxembourg's pandemic response in each of these phases and draws the following main conclusions:

- Even before the crisis, Luxembourg had a mature risk management system. The country was also able to quickly and effectively co-ordinate the efforts of all those involved in crisis management, both at the local and interministerial levels and internationally – aided by smooth relations between the government and the communes, and agile crisis management governance.
- While Luxembourg stands out for the very active involvement of its parliament throughout the crisis, which helped to ensure the continuity of the nation's democratic life, greater participation of civil society in all aspects of crisis management is desirable.
- The direct health impact appears to have been lower in Luxembourg than the average for other OECD member countries. However, the pandemic has disproportionately affected elderly and disadvantaged populations and the indirect consequences of the pandemic are also of concern.
- The mobilisation of resources and actors around the interministerial crisis unit was remarkable, and enabled new systems to be developed rapidly and health services to expand to absorb the shock of the health crisis. Luxembourg must now continue its efforts in developing new care

delivery models, to put more emphasis on risk prevention and a multidisciplinary approach to care.

- Luxembourg differs from other OECD member countries in terms of the low number of days that schools were closed, allowing for good educational continuity. However, the priority given to reopening schools has not always addressed all the challenges posed by the crisis, particularly in terms of inequality in student outcomes and negative effects on student well-being. The government must strengthen the measures it has in place to provide differentiated support to certain categories of students in order to contain the growth of educational inequalities.
- Luxembourg's fiscal effort is in line with that of other comparable OECD member countries. This has enabled the public authorities to, overall, allocate enough assistance and support to preserve the financial situation of companies and maintain a relatively high level of employment. Despite this, initial direct subsidies given to businesses could have been larger, and support for self-employed workers has been insufficient.
- Support was granted quickly and easily to companies, despite some initial hesitation. This agility allowed them to obtain assistance quickly – a decisive factor in safeguarding their liquidity. In the future, however, sectors particularly affected by the crisis, such as hotels, cafes and restaurants (HORECA), will require increased monitoring.
- The labour market and social policies in Luxembourg were relatively well prepared for the COVID-19 pandemic. Existing mechanisms for job retention and to compensate for loss of income (sick leave, family leave, unemployment benefit, etc.) were extended and strengthened, and new measures have been adopted to meet emerging needs. Nevertheless, there is still room for policies to be refined to ensure that support reaches all those who need it and that no one is left behind should another such crisis occur in the future.
- Finally, Luxembourg must strive to evaluate the impact of the measures adopted during the crisis more systematically in order to draw the relevant lessons.

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Note

[1] In the "traditional" education system, pre-primary education is provided in Luxembourgish, primary education is provided in German (including children's literacy), and most secondary education is in French or German.

2 Emergency anticipation and preparedness in Luxembourg

The COVID-19 pandemic caught many countries off guard, due not only to its magnitude, but also to the rapid spread of the virus and the complex knock-on effects of the measures put in place to limit case numbers. Luxembourg had the advantage of its mature risk management system, its diplomatic network and emergency plans that had been developed for previous epidemics, which allowed it to adapt quickly to the crisis. The country also faced specific challenges in relation to maintaining the continuity of essential services and access to the medical and protective equipment needed for its health workers and other inhabitants. This chapter examines Luxembourg's risk anticipation capacities and the initial emergency procedures implemented to control the COVID-19 pandemic before a state of emergency was declared on 18 March 2020. The chapter also examines the pandemic preparedness of Luxembourg's critical infrastructure operators and essential service providers.

Key findings

- **Luxembourg's national risk assessment had identified the risk of an influenza pandemic before the outbreak of COVID-19** and a government plan had been developed.
- **Luxembourg assessed the risk of an influenza pandemic to be less likely than other risks it faced**, which led to other actions being prioritised over updating the government's influenza pandemic plan.
- **Future crises should be anticipated based on a strengthened risk assessment process and concerted efforts should be made to use its findings to advance preparedness measures.**
- It is important to **ensure that emergency plans reflect current knowledge of potential crises.**
- **Luxembourg's crisis management system had a high level of maturity**, which allowed for **a flexible organisational structure to be put in place in response to the pandemic** and for political authorities and the institutions responsible for crisis management to co-ordinate their efforts.
- **Luxembourg's diplomatic network played an important role throughout the pandemic.**
- **Luxembourg's regular exchanges with the European bodies and neighbouring countries are illustrative of the importance that Luxembourg accorded international co-operation** throughout the pandemic.
- Luxembourg should continue to pursue **international co-operation as part of its crisis response, including in its cross-border dimension, mindful that it will need to work together with its neighbours** to face future crises.
- The Luxembourg Government's influenza pandemic plan was useful in informing the preparations of all critical infrastructure operators and essential service providers ahead of the first case in the country.
- **One pandemic-related challenge faced by all OECD member countries was to ensure the continuity of certain services that are essential to the well-being of the population**, because these "essential" service providers were not recognised as critical infrastructure and were not equipped with crisis response plans to ensure the continuity of their operations. **It is therefore necessary to improve the crisis preparedness of essential services to guarantee the continuity of their operations.**
- Like most OECD member countries, **Luxembourg faced the risk of a severe shortage of personal protective equipment (PPE) early in the pandemic.**
- **Luxembourg also harnessed the logistics and transportation capabilities of the private sector in the country** to establish direct links with production facilities abroad, purchase equipment directly from manufacturers and transport stock to the country.
- Its experience with the pandemic should encourage Luxembourg **to share its lessons and draw on the vast collection of good practices identified during the pandemic.**
- **Anticipation capacities should be based on a comprehensive understanding of the risks** that takes account of interdependence and exchange between countries.

2.1. Introduction

This chapter examines Luxembourg's risk anticipation capacities and the initial emergency procedures implemented at the start of the COVID-19 pandemic. It also examines the pandemic preparedness of Luxembourg's critical infrastructure operators and essential service providers.

In particular, this chapter examines:

- the extent to which risk and crisis assessment and anticipation helped the country prepare for the COVID-19 pandemic
- the overall preparedness of critical infrastructure operators and essential service providers, such as emergency services, including their ability to consistently provide personal protective equipment (PPE) and medical supplies to key sectors and the general population
- emergency procedures and mechanisms, and how far they facilitated effective preparation for the acute phase of the crisis and took account of the cross-border effects of the pandemic.

This chapter focuses on measures taken by Luxembourg before the state of emergency declared on 18 March 2020 (see Table 2.1); Chapter 3 will cover crisis management measures taken from that date onwards.

2.2. The anticipation capacities of the Luxembourg Government before the arrival of the pandemic in Luxembourg

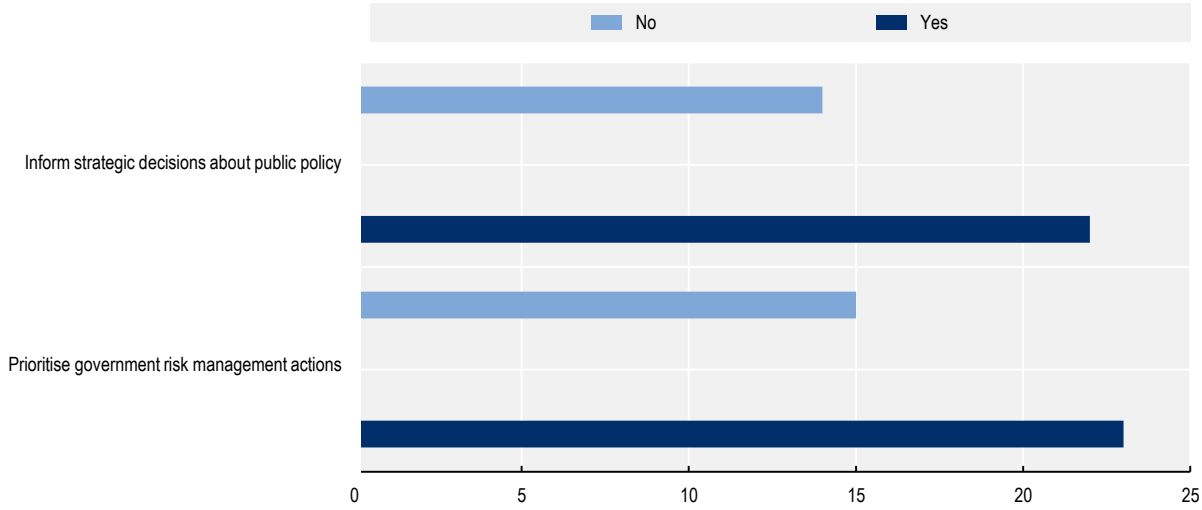
2.2.1. Anticipation capacities depend on a comprehensive understanding of the risks

'Capacity', understood as the ability of communities, organisations or companies to manage their affairs and their own development processes successfully, goes beyond expertise and procedures. "Capacity" also encompasses the incentives and governance practices needed to make the best use of the expertise and procedures available (Swedish Civil Contingencies Agency, 2018[1]).

In this context, anticipation capacities include the measures taken when a disaster is considered imminent, to reduce its impact on lives, livelihoods and systems and services essential to the normal functioning of society (European Commission, 2021[2]). Anticipation capacities make it possible to act either before a crisis hits or at least before substantial impacts are felt. Anticipatory measures are proactive interventions, made when a warning is issued or when a pre-agreed trigger event occurs. Effective anticipatory measures require solid forecasts, triggers and parameters tied to pre-agreed funding, risk monitoring and analysis, and foresight capacities (CERF, 2019[3]). By their nature, these measures must be organised before a disaster strikes to determine the type of capacities needed to respond effectively to the challenges associated with the event.

To identify the anticipatory measures required, governments must begin by building on their understanding of the risk at the root of the disaster and monitor the evolution of the situation to identify possible triggers and incorporate them into emergency plans (European Commission, 2021[2]; OECD, 2014[4]). In 2016, over half of OECD member countries were using their national risk assessments to inform strategic public policy decisions and guide their risk management priorities (see Figure 2.1 below).

Figure 2.1. Use of risk analysis to guide strategic activities



Source: OECD (2017[5]), "OECD Dataset on the Governance of Critical Risks" (database), https://qdd.oecd.org/subject.aspx?Subject=GOV_RISK.

StatLink https://stat.link/hweqc7

The OECD Recommendation of the Council on the Governance of Critical Risks goes beyond encouraging members to link their risk assessment to their strategic decision making (see Box 2.1 below) (OECD, 2014[4]). Members are encouraged to better understand the possible impacts and the likelihood of risks by using the best available evidence, investing in new research and tools, and setting aside the necessary resources.

The Recommendation also encourages members to adopt 360-degree approaches that take account of all risks in national risk assessments to help prioritise disaster risk reduction efforts, emergency management capacities and the design of financial protection strategies.

It also calls on members to periodically review their national risk assessments in light of recent events, changing priorities and new information. This process should include the investigation and assessment of damage and loss resulting from disasters as soon as possible after they occur. The national risk assessment should analyse the factors underlying the exposure and vulnerability of population groups, assets and activities that could give rise to critical risks.

The final element of risk anticipation capacities involves mapping exposed population groups and assets, and infrastructure, to reduce exposure and vulnerability. The assessment process should also identify links between different types of critical risks and the possibility of cascading effects, all of which call for intersectoral and international co-operation.

Box 2.1. Anticipation capacities and the OECD Recommendation of the Council on the Governance of Critical Risks

The OECD Council adopted the Recommendation on the Governance of Critical Risks (hereinafter the "Recommendation") at the Meeting at Ministerial Level held in May 2014. The High Level Risk Forum (HLRF) was instrumental in the development of this Recommendation. Since its adoption, 41 countries have signed up to the Recommendation. The Recommendation proposes that governments:

- identify and assess all risks of national significance and use this analysis to inform decision making on risk management priorities (i)
- put in place governance mechanisms to co-ordinate on risk and manage crises across government (ii)
- ensure transparency around and the communication of information on risks to the public before a risk occurs and during the crisis response (iii)
- work with the private sector and civil society, and across borders through international co-operation, to better assess, mitigate, prepare for, respond to and recover from critical risks (iv).

In particular, with regard to **risk identification and assessment (**i), the Recommendation:

- recognises the role of international co-operation in enhancing anticipation and preparedness capacities
- invites members to expand their anticipation capacities through foresight analysis, risk assessments and financing frameworks
- recommends that members directly link their risk anticipation capacities to timely decision making.

Source: OECD (2014[4]), "Recommendation of the Council on the Governance of Critical Risks", *OECD Legal Instruments,* OECD/LEGAL/0405, OECD Publishing, Paris, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0405.

Anticipation capacities are therefore an integral component of risk governance, because they help identify and respond to needs more effectively, thereby reducing the impact of a hazard or threat on lives and livelihoods.

2.2.2. Luxembourg's national risk assessment had identified the risk of an influenza pandemic before the COVID-19 pandemic

Like most other OECD member countries, Luxembourg considered a human pandemic scenario in its national risk assessment with respect to an influenza pandemic (OECD, 2018[6]; OECD, 2018[7]). Specifically, it considered a scenario in which a new strain of avian influenza was transmitted to the human population.

Although the risk assessment is not a public document in Luxembourg, it was shared with the national government (including among ministers) and public information on the risk of an influenza pandemic was published on the country's emergency website (infocrise.lu) as part of the government's influenza pandemic plan (Government of Luxembourg, 2022[8]).

The scenario chosen was defined by a number of challenges, including the potential for such a virus to cause life-threatening complications. The risk assessment carried out by Luxembourg details the pandemic potential of such a disease, which at epidemic scale was deemed to have the potential to threaten the entire population very quickly (Government of Luxembourg, 2006[9]).

Luxembourg's multidimensional risk analysis included not only direct impacts on the infected population (in terms of morbidity and mortality), but also longer-term negative health effects and impacts on the wider population (including economic impacts, disruptions to essential services and supply chain disruptions).

The human pandemic scenario presented in Luxembourg's national risk assessment predicted that a pandemic could strike in several waves lasting 2-3 months, with an interval of at least several months between two consecutive waves. This scenario predicted that the second wave would be more severe than the first.

The risk assessment estimated that it would take international laboratories at least 3-6 months from the isolation of the new strain to develop a viable vaccine. In the absence of specific vaccines, the risk scenario analysed by Luxembourg also identified that the human population could be very highly vulnerable to a pandemic, notably due to a lack of immunity to a new viral strain. Luxembourg's analysis then concluded that the main direct impacts would likely be felt in the form of high morbidity, mortality and absenteeism, and that if these impacts breached a certain threshold, they would have the potential to cause a serious socio-economic crisis (Government of Luxembourg, 2006[9]). During its development, the government's influenza pandemic plan was based primarily on the Ministry of Health's perception of the risk, on the supposition that the sector under its responsibility would be the most affected. Although the plan focused on responding to the health consequences of an epidemic, it also covered other areas such as continuing essential activities, improving public organisation, drawing up continuity plans for ministries and administrations, and informing the public. However, the plan could have gone further to explore the potential indirect and systemic impacts of a pandemic. Indeed, the OECD Recommendation emphasises the importance of adopting a holistic whole-of-government approach to critical risk governance.

To this end and with a view to building on the lessons learned to date, Luxembourg should encourage all ministries to contribute to and make use of the national risk assessment. At the same time, the country should further build its capacity, including expertise and incentives, across all ministries to enable decision makers to better understand and work with risk and uncertainty.

2.2.3. Luxembourg should keep its risk assessment up to date and ensure that it is used in preparedness and response plans

Luxembourg's major risk assessment (as the national risk assessment is known) identified the risk of a human pandemic as a major risk. This assessment served as the basis for the development of relevant emergency response plans (ERPs), including the government's influenza pandemic plan (Government of Luxembourg, 2022[8]).

Preparedness efforts before 2020 focused on addressing risks considered to be priorities for the country based on the perceived likelihood of them occurring: natural hazards, terrorism, cyber-attacks and disruptions to essential services (Government of Luxembourg, 2022[8]). As a result, the resources available and attention were focused on preparedness activities for priority risks, with crisis management exercises and training targeting risks other than human pandemics.

Luxembourg now has the opportunity to learn lessons from the COVID-19 pandemic about the prioritisation of the risks it faces. When reviewing which risks are prioritised, both their direct and indirect impacts should be considered, such as very high mortality and wider systemic impacts. Risks considered unlikely whose impact would be catastrophic should also be considered, to strengthen preparedness for so-called "black swan" events, of which the COVID-19 pandemic was unfortunately a good example.

2.2.4. The role of the crisis management system and its links with the government's influenza pandemic plan

The concept of "national protection" sits at the heart of Luxembourg's crisis management system. It seeks to:

> *prevent crises, [and] protect the country and the population from the effects of a crisis. In the event of a crisis, it involves the management of measures and activities designed to respond to the crisis and its effects and to facilitate a return to normalcy. (Government of Luxembourg, 2016[10])*

The High Commission for National Protection is responsible for implementing the concept of "national protection". As part of this mission, the High Commission for National Protection is responsible for crisis prevention measures (including the organisation of training courses and exercises), the national crisis management strategy, and the frameworks necessary for crisis prevention and management (see Chapter 3 for a more detailed description of the High Commission's functions and powers) (Government of Luxembourg, 2016[10]).

In collaboration with all relevant stakeholders, the High Commission for National Protection was able to establish a flexible organisational structure for crisis management. Even before the COVID-19 pandemic, Luxembourg's risk management system could be considered mature by OECD and European Commission standards (Tubb, 2020[11]; OECD, 2014[4]). This maturity is reflected in the integration of risk awareness, prevention, preparedness and resilience at all levels of government and among private sector operators. As can be seen in Table 2.1 below, Luxembourg's crisis management system covers almost all the features of a mature system set out in the OECD Recommendation.

Table 2.1. Features of a mature crisis management system

	In the OECD Recommendation	In Luxembourg
Standard operation procedures for crisis management	✓	✓
Organisational structure with defined roles and responsibilities	✓	✓
Emergency response plans for the main types of risk	✓	✓
Process for co-ordination between ministries	✓	✓
Process for international co-operation	✓	✓
Intelligence processing system to inform decision making	✓	✓
Mechanism for liaising with international monitoring and early warning systems	✓	✓
A public information system	✓	✓
The power to demand resources from the private sector in times of crisis	✓	✓
Training of civil servants on the crisis management system	✓	✓
Training of ministers on the crisis management system	✓	×
Mechanism for mobilising multidisciplinary expertise to support crisis management	✓	✓

Note: An expanded programme to train officials across government on the national crisis management system was introduced following the COVID-19 pandemic.
Source: (OECD, 2014[4]; Government of Luxembourg, 2022[8]).

Luxembourg's mature crisis management system required only a few adaptations for its response to COVID-19 (which are detailed in Chapter 3).

The COVID-19 pandemic reaffirmed the importance of coherent efforts between political authorities and the institutions responsible for risk management. Some OECD member countries have set up crisis management training programmes for government officials and decision makers in key sectors. For example, in the United States of America, the Radiological Emergency Preparedness Program co-ordinates national efforts to provide state, local and tribal governments with relevant and practical guidance and policies on planning, training and exercises to ensure they have adequate capacities to prevent incidents involving commercial nuclear power plants, protect against them, mitigate their effects, and

respond to and recover from them (Center for Domestic Preparedness (Federal Emergency Management Agency), n.d.[12]). Another example is the New Zealand National Emergency Management Agency's training programme, which includes multilevel training on crisis and emergency management (National Emergency Management Agency, n.d.[13]). This programme involves response and recovery training for the country's strategic leaders involved in crisis response efforts (Response & Recovery Aotearoa New Zealand (RRANZ), 2019[14]). New Zealand has also developed a tailored online training package for mayors on their role in response and recovery (National Emergency Management Agency, 2017[15]; Center for Domestic Preparedness (Federal Emergency Management Agency), n.d.[12]; National Emergency Management Agency, n.d.[13]; Response & Recovery Aotearoa New Zealand (RRANZ), 2019[14]).

2.2.5. Luxembourg was able to use its national crisis management framework to monitor the evolution of the COVID-19 situation before the government's influenza pandemic plan was triggered

The Luxembourg Government monitored developments in the COVID-19 situation before activating its crisis management mechanism. The following sources were used to monitor the situation:

- direct consultation with neighbouring countries
- information provided by embassies, consulates and permanent missions to international organisations
- exchanges of consular information
- direct discussions with health or crisis management counterparts in other countries
- health surveillance data (epidemiological surveillance: global, European and national from neighbouring countries)
- information provided by the European Commission and the European Centre for Disease Prevention and Control (ECDC)
- information from other international organisations (including the World Health Organization (WHO))
- social media and other media sources (Government of Luxembourg, 2022[8]).

On 22 January 2020, as the situation in China evolved, the WHO Director-General convened a meeting of the International Health Regulations (IHR) Emergency Committee to determine whether the novel coronavirus met the criteria to be considered a public health emergency of international concern (PHEIC). The meeting took place over 2 days (22-23 January) and ended without a recommendation to declare a PHEIC (The Independent Panel of Pandemic Preparedness, 2021[16]).

Meanwhile, on 22 January, the High Commission for National Protection and the Ministry of Health conducted an assessment of the situation in China and, on 23 January, the Luxembourg Ministry of Health issued a press release outlining the measures to be taken if the novel coronavirus was detected in Luxembourg, alongside recommendations for people travelling to China. As soon as the first case was detected in Europe, and more precisely in France (24 January 2020), Luxembourg acknowledged that it was unlikely to be spared by the pandemic (Government of Luxembourg, 2022[8]).

The measures taken by the High Commission for National Protection, the Ministry of Foreign Affairs, and the Ministry of Health, and the acknowledgment following the first case of COVID-19 in Europe, set the scene for the first meeting of the Governmental Council on COVID-19 (or the novel coronavirus as it was initially known) held on 24 January 2020.

This meeting marked the start of the interministerial preparation phase that ran between January and February 2020. As part of this phase, the High Commission for National Protection and the Health Directorate held meetings with the different ministries and administrations to assess their needs and preparedness for the health crisis (see Table 2.1).

From then until the end of February 2020, interministerial meetings were held regularly with the main essential service sectors (see Table 2.2) to analyse the situation, assess their preparedness and prepare the measures set out in the government's influenza pandemic plan (Government of Luxembourg, 2006[9]). Some of these meetings were organised in a “crisis unit” configuration, even though this mechanism had not yet been formally activated.

As soon as the first case of COVID-19 was detected in Luxembourg, the Prime Minister activated the crisis unit as set out in the government’s influenza pandemic plan, with the participation of the Ministry of Health, the Ministry of Home Affairs, the Ministry of Foreign and European Affairs, the Ministry of the Civil Service, the Ministry of Social Security, the Ministry of Mobility and Public Works, the Ministry of National Education, Children and Youth, the Ministry of the Economy, the Ministry of Labour, Employment and the Social and Solidarity Economy, the Ministry of Family Affairs, Integration and the Greater Region, the Health Directorate, the High Commission for National Protection, the Grand Ducal Police, the Grand Ducal Fire and Rescue Corps and the Crisis Communication Service. The activation of the crisis unit marked the first national crisis management mechanism to be activated among European countries (see Table 2.2) and allowed Luxembourg to take measures to pre-empt the spread of the virus in the country at a very early stage compared with its neighbours.

Table 2.2. Activation of national crisis management mechanisms

Country	Date of activation of the national crisis management mechanism	Days after the first case in the country
Austria	27 February 2020	1
Belgium	12 March 2020	39
Germany	27 February 2020	31
Spain	12 March 2020	41
France	29 February 2020	3
Luxembourg	1 March 2020	0
The Netherlands	3 March 2020	4
Portugal	3 March 2020	1

Note: The table includes Luxembourg's neighbouring countries, the Netherlands (due to the BENELUX connection), and Portugal (due to the large population of Portuguese origin living in Luxembourg).
Source: Prepared by the author using public information.

2.2.6. The epidemic management and infection control measures set out in the national Ebola ERP also complemented the government's influenza pandemic plan

As in many OECD member countries, influenza pandemic management plans have evolved in response to the different strains that have emerged since 2005. ERPs were drawn up in response to avian influenza (H5N1) in 2005. The H1N1 pandemic (2009) gave Luxembourg the opportunity to implement part of its influenza pandemic plan. The Ebola ERP was developed in response to the 2014-2015 West African Ebola outbreak (Government of Luxembourg, 2022[8]). Although the Luxembourg health authorities sought to learn from the 2009 H1N1 pandemic and the Middle East respiratory syndrome (MERS), Severe acute respiratory syndrome (SARS) and Ebola epidemics, the lessons learned from these events were not formally incorporated into the influenza pandemic ERP (Government of Luxembourg, 2006[9]). Generally speaking, among OECD member countries, those that were actually exposed to SARS, like Canada, and MERS, like Korea, were better prepared at the beginning of the pandemic. In Luxembourg, the lessons learned from the H1N1 pandemic and the Ebola epidemic were however useful in complementing, as at February 2020, existing scientific knowledge on COVID-19 and the arsenal of measures to combat the virus. Given the uncertainty of the situation and considering that Luxembourg airport could be a potential entry point for a virus circulating in certain parts of the world, it was decided, for example, to implement

control, alert and monitoring measures at the airport and for operators, inspired by the measures put in place at the time of the Ebola epidemic.

It is worth noting that while the MERS coronavirus (MERS-CoV) outbreak in 2012 did not impact Luxembourg, it did encourage other more affected countries, like Korea, to learn important lessons that proved to be very beneficial to their management of the COVID-19 pandemic (see Box 2.2 below).

Box 2.2. Lessons learned from the 2015 Middle East respiratory syndrome outbreak in Korea

In 2015, Korea experienced the largest outbreak of Middle East respiratory syndrome (MERS) outside the Middle East region. In total, Korea recorded 186 laboratory-confirmed cases and 38 deaths, with 16 000 people quarantined by the end of the epidemic.

The magnitude of the impacts of the outbreak prompted Korea to undertake a comprehensive reform of its infectious disease surveillance and management system.

The capacity of the Korea Centers for Disease Control (KCDC) has been strengthened considerably as part of these reforms. In 2018, new services including emergency operations and crisis communication were introduced. At the same time, the KCDC's Epidemic Intelligence Service underwent major expansion (from 34 officers in 2015 to 124 epidemic intelligence service officers in 2018). These reforms also involved the creation of an emergency operations centre that now enables the country to collect and analyse real-time information on infectious diseases at the national and international level.

Korea also implemented an emergency use authorisation protocol in 2017 to approve new diagnostic kits for commercial use.

These reforms and institutional changes proved critical to the effectiveness of Korea's response to the COVID-19 pandemic, allowing the country to achieve better outcomes compared with the country's response to MERS in 2015.

Source: (Asian Development Bank, 2021[17]).

Luxembourg should consider implementing a process to systematically review its emergency preparedness and response plans to ensure that they are kept up to date and that the lessons learned from exercises, national and international crises, and near misses are all incorporated into response plans on an ongoing basis.

To learn the lessons of the COVID-19 crisis, Luxembourg should strive to build on its risk assessment and strategic foresight capacities to identify future risks, going beyond risks similar to COVID-19, to ensure that the lessons learned are applied to the full range of risks facing the country.

2.3. Preparation of essential services and critical infrastructure operators in Luxembourg

2.3.1. The national influenza pandemic response plan provided a good starting point for preparedness discussions with essential services and critical infrastructure operators

The Open-ended Intergovernmental Expert Working Group on Indicators and Terminology relating to Disaster Risk Reduction defines preparedness as follows:

> *The knowledge and capacities developed by governments, response and recovery organisations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters. (United Nations Office for Disaster Risk Reduction, 2016[18])*

Luxembourg's national influenza pandemic plan contained detailed measures for dealing with the medical and non-medical aspects of a pandemic (including crisis decision making, scientific advice, public communication and national stockpiles). These measures served as a starting point for advising all critical infrastructure operators and essential service providers on COVID-19 pandemic preparedness before the first case in the country.

Luxembourg does not specifically identify critical sectors of the economy. The High Commission for National Protection and the ministries responsible for each sector work together to identify operators within each sector that are considered "critical" according to four impact criteria: economic impacts, environmental impacts, impacts on individuals and impacts on wider society. These operators are considered "critical" and have the potential to have the greatest impact if they shut down or are destroyed. Another way to define critical infrastructure operators is to determine whether another critical infrastructure operator is critically dependant on them. As part of its remit in relation to critical national infrastructure resilience, the High Commission for National Protection has set up sectoral working groups with the relevant ministries for the relevant sectors to establish more detailed criteria for identifying critical infrastructure operators within each sector. The Luxembourg legal framework also allows the country to define an entire sector as critical, even if one or more operators do not necessarily meet the criticality criteria, but the operators as a whole could be considered critical. Past sectoral analyses have not led to such a designation for any particular sector (Government of Luxembourg, 2012[19]; Government of Luxembourg, 2018[20]).

The Grand Ducal Regulation of 12 March 2012 implements Directive 2008/114/EC of the Council of the European Union of 8 December 2008 on the identification and designation of European critical infrastructure in the transport and energy sectors (Government of Luxembourg, 2012[19]). The Grand Ducal Regulation of 21 February 2018 considers as critical infrastructure in the energy, information and communication technology, finance, health, food, water, transport, chemical industry and public administration sectors (Government of Luxembourg, 2018[21]).

In all OECD member countries, the pandemic revealed the importance of certain services that had not necessarily been identified as "critical" (OECD, 2022[22]), but that could be considered essential in the context of a specific crisis. In Luxembourg, "essential services" is a new designation introduced as part of the COVID-19 response measures put in place in 2020 (Government of Luxembourg, 2020[23]). This more inclusive designation includes both sectors with critical infrastructure operators as well as other services such as childcare, security, cash transport and cleaning services that are not traditionally considered critical infrastructure (see Table 2.3). The relevant ministries have worked with the High Commission for National Protection to ensure that emergency planning consultation meetings include representatives of key stakeholders in the relevant essential service sectors (Government of Luxembourg, 2022[8]).

Table 2.3. Essential services and critical infrastructure

Essential services - 2020	Critical infrastructure operator sectors - 2018
Public services required for the proper functioning of society	Public administration (services of public authority, such as defence, justice, public order and national security operations and emergency services)
Health and care sector, including hospitals and medical laboratories	Health sector, including hospitals and medical analysis laboratories
Production and distribution of energy and petroleum products	Energy sector, including electricity generation and distribution, gas storage and distribution, and oil storage and trading
Food sector	Food sector, including food supply, food production and food security
Water production and supply Wastewater collection and treatment Waste collection and management	Water sector, including water collection, treatment and supply, wastewater collection and treatment, and waste collection, treatment and disposal
Public transport	Transport sector, including land transport (road and rail), water transport (sea and river), air transport and postal and courier services
Postal and telecommunications services	Information and communication technology sector, including computer programming, management of computer facilities, data processing, hosting services and Internet portals Communication infrastructure, including wired, wireless and satellite telecommunications
Core activities related to the operation of the financial sector and the insurance and reinsurance sector Trading, payment and settlement systems	Financial sector, including central bank activities, as well as infrastructure and systems for the exchange, payment and settlement of financial transactions
Childcare, security, cash transport and cleaning services	*Not mentioned*
Not mentioned	Chemical industry sector, focusing on infrastructure handling hazardous substances

Source: Government of Luxembourg (2020[23]; 2018[20]), Grand Ducal Regulations of 18 March 2020 and 21 February 2018.

2.3.2. Critical infrastructure operators put pandemic response plans in place following the outbreak of COVID-19 and successfully avoided large-scale disruptions

In 2018, a Grand Ducal Regulation established that critical infrastructure operators in Luxembourg must include natural, environmental and health-related risks, including severe weather, floods and pandemics, in their business security and continuity plans (Government of Luxembourg, 2018[20]).

The City of Luxembourg's updated pandemic response plan enabled it to ensure the continuity of essential services with minimal disruption and also served as a model for the pandemic response plans of other municipalities.

As critical infrastructure operators, the emergency services (primarily the Grand Ducal Fire and Rescue Corps) also had emergency plans in place before the outbreak of COVID-19. These plans were supplemented by a COVID-19 emergency plan introduced as part of the national pandemic preparedness campaign between January and March 2020 (Grand-Ducal Fire and Rescue Corps, 2020[24]). This allowed emergency services to set up their own internal crisis management frameworks and implement infection control procedures by early March 2020 to minimise the exposure of their staff and limit disruption. Staff were also given information on respiratory hygiene and handwashing practices. For example, front-line staff shift changes were organised to limit the spread of the virus between teams. These measures allowed the Grand Ducal Fire and Rescue Corps to respond quickly and effectively to the various emergencies the country faced during the pandemic, including one of the largest floods in recent years (see Box 2.3).

Box 2.3. Responding to simultaneous emergencies during COVID-19

Luxembourg's response to the July 2021 floods

July 2021 was marked by record rainfall (over 193 mm above the multi-year average). On 14 and 15 July 2021, severe weather caused flooding on an unprecedented scale, which had a major impact on several areas of Luxembourg. On 14 July, the 32 weather stations recorded between 62.6 mm of rain in Remerschen and a record daily maximum of 105.8 mm in Godbrange.

As a result of these downpours, roads had to be closed across Luxembourg due to damage to the road network, bridges and embankments (including flooding, siltation, landslides, collapsed retaining walls, damaged bridges and fallen trees).

The Grand Ducal Fire and Rescue Corps responded to more than 1 000 calls for help during this extreme event. A crisis unit was activated by the High Commission for National Protection at the request of the Prime Minister and met for the first time on 15 July 2021 at 12:00 a.m. to co-ordinate operations with the various stakeholders set out in the emergency response plan in the event of extreme weather.

Source: (Government of Luxembourg, 2021[25]; Météo Luxembourg, 2021[26]; Government of Luxembourg, 2021[27]), reports of the Government of Luxembourg on the July floods.

The Armed Forces also participated in the COVID-19 response by implementing infection control measures and a remote working system for tasks that could be performed remotely. In this way, the Army was able to ensure the continuity of its own essential operations and support Luxembourg's response to COVID-19. However, managing COVID-19 missions and maintaining day-to-day missions did at times lead to a significant workload for the Army. For example, the distribution of masks occupied up to 200 people per day, around 20% of the Army's total workforce (Luxembourg Army, 2021[28]).

The absence of an emergency plan for some providers posed another challenge. Indeed, most essential service providers were not designated as national critical infrastructure operators and were not therefore required by law to have crisis plans in place to ensure the continuity of their services. The increased relevance of these providers during the pandemic meant they had to develop their emergency plans during the crisis. Although most of these plans were introduced after the outbreak of COVID-19, they were nonetheless effective in limiting disruptions to essential services during the early waves of the pandemic. Luxembourg can learn from this experience to improve how preparedness plans are updated and implemented by critical infrastructure operators and essential service providers. To strengthen these processes, the competent ministries and the High Commission for National Protection could invite the various essential service providers and critical infrastructure operators to share the good practices they identified during the pandemic. These good practices could then be shared across sectors to break down traditional silos and encourage resilience at all levels of society in preparation for the next crisis.

2.3.3. Luxembourg was able to leverage relationships with the private sector to ensure the supply of essential goods

Like most OECD member countries, Luxembourg faced the risk of a severe shortage of PPE early in the pandemic and the national stockpile of PPE was insufficient to ensure the supply of the volume and range of equipment needed to respond to COVID-19. The specific measures set out in the influenza pandemic ERP highlighted the need for stockpiles at the national level, mainly within health facilities and in diplomatic and consular missions (Government of Luxembourg, 2006[9]).

On 15 March 2020, Luxembourg was able to set up a system for analysing and anticipating PPE needs in the health sector via a national logistics unit. This unit, established as a working group of the national crisis

unit, was tasked with assisting health and care system operators to acquire the PPE and essential medicines needed for the care of patients with COVID-19 (Government of Luxembourg, 2022[8]).

Luxembourg also harnessed the logistics and transportation capabilities of the private sector in the country to establish direct links with production facilities abroad, purchase equipment directly from manufacturers and transport stock to the country. Thanks to these efforts, Luxembourg was able to build up an ad hoc national stockpile, specifically for COVID-19, which enabled the country to cover not only the needs of the essential service sectors, including the health sector, but also those of the general public.

Luxembourg could reflect on how to share its experience with all EU countries (in particular with regard to establishing public-private partnerships to support the procurement and transport of equipment).

The country should explore what it can learn from its experience of COVID-19 in terms of what supplies might be needed to respond to future pandemics and other types of risk. For example, Denmark has established the Danish Critical Supply Agency, under the Ministry of Justice, to address challenges affecting global supply chains for PPE and other critical resources (Ministry of Finance, Denmark, 2022[29]). The US government has introduced a bill on the creation of a Supply Chain Resiliency and Crisis Response Office within its Department of Commerce to implement a new critical supply chain resiliency programme (Library of Congress, 2021[30]).

2.4. Managing the cross-border effects of the pandemic in Luxembourg

2.4.1. Luxembourg was able to draw on its extensive experience in international co-operation when responding to the crisis

The active participation of the Ministry of Foreign and European Affairs in the country's crisis management mechanism demonstrates the importance that Luxembourg placed on international co-operation throughout the pandemic.

The Ministry of Foreign and European Affairs provided regular updates to the Governmental Council and the crisis unit on the measures taken by other countries and on these countries' approaches in terms of non-pharmaceutical disease control interventions. The Ministry listed the domestic health measures in force in other European countries, including neighbouring countries, such as mandatory mask wearing, curfews and booster vaccination policies for different age groups. The Ministry also provided information to inform the public about developments in other countries, in particular about decisions that were likely to have an impact on Luxembourg. The Ministry was able to provide factual information on the decisions taken by other countries and on the discussions leading up to them.

At the international level, the Ministry of Foreign and European Affairs sought to ensure that objective criteria taking into account the local context were applied to assess the status of the pandemic in Luxembourg. The Ministry contacted the governments of other countries to prevent Luxembourg from being declared a high-risk zone or subjected to restrictions on freedom of movement. Indeed, there was a risk that Luxembourg would be classified as a restricted zone due to its large-scale national testing policy, which made it appear that there was a disproportionate number of positive cases of COVID-19 or its variants compared with countries that were not testing as much at the beginning of the crisis. Similar efforts were made with the European Commission and the ECDC to ensure that the assessment of the situation in the different countries would be based on multiple objective criteria, taking into account Luxembourg's comprehensive testing strategy.

Italy introduced some border restrictions as early as the end of January, but it was not until early to mid-March that most European countries introduced border restrictions (including, for some, at their borders with other Schengen countries) (Coatleven, Hublet and Rospars, 2020[31]) (see Table 2.4 below). The Ministry of Foreign and European Affairs also made diplomatic efforts with the European Union to maintain

freedom of movement and to ensure that the measures adopted in the Schengen area met the criteria of proportionality and non-discrimination. The Ministry also advocated for the recommendations of the Council of the European Union to take into account the particular needs of "cross-border living areas", to avoid cross-border residents and workers in these areas having to test or quarantine to travel. In this context, efforts were made to raise awareness among neighbouring countries, and all EU countries, of the unique "cross-border" nature of the Luxembourg economy, which accounts for nearly 10% of cross-border workers in the European Union. Particular emphasis was placed on the dependence of the Luxembourg health sector on cross-border workers (60% of staff come from neighbouring countries), who therefore needed to be able to cross borders without obstacles (Coatleven, Hublet and Rospars, 2020[31]).

Table 2.4. Introduction of border restrictions

Country	Date measures introduced
Italy	30 January 2020
Greece	1 March 2020
Hungary	6 March 2020
Austria	10 March 2020
Portugal	11 March 2020
Spain	11 March 2020
The Netherlands	13 March 2020
Cyprus	15 March 2020
Poland	15 March 2020
Czech Republic	16 March 2020
Germany	16 March 2020
Bulgaria	17 March 2020
Estonia	17 March 2020
France	17 March 2020
Belgium	18 March 2020
Luxembourg	18 March 2020
Croatia	19 March 2020
Liechtenstein	19 March 2020
Ireland	20 March 2020
Lithuania	27 March 2020

Note: This table shows the date when border control measures were introduced by national authorities in those EU countries with national curfews in place and indicates the date when restrictions were first introduced, whether full border closure or partial restrictions.
Source: Prepared by the author based on data from (Shiraef et al., 2021[32]), COVID Border Accountability Project.

Luxembourg did not close any of its land border crossings with neighbouring countries, nor did it introduce any controls. Temporary restrictions on third-country nationals were introduced with the declaration of a state of emergency on 18 March 2020, only at Luxembourg airport, which is considered an external border. These restrictions were subsequently extended by the Act of 20 June 2020, on the introduction of certain temporary measures relating to the application of the amended Act of 29 August 2009, on the free movement of persons and immigration (Government of Luxembourg, 2020[33]). A parallel regulation specifying the length of the ban and the scope of permitted exceptions was adopted. This regulation, which was regularly amended and extended during the crisis, allowed in particular for restrictions to be gradually lifted by establishing a list of third countries whose residents and nationals were permitted to enter Luxembourg. Amendments to the restrictions took into account recommendations agreed at the European level to ensure a co-ordinated approach to the phasing out of temporary restrictions on non-essential travel to the European Union.

Moreover, as of January 2021, all travellers arriving in Luxembourg by air have had to comply with health measures. These time-limited measures were extended several times by order of the Health Director.

Other specific temporary health measures were put in place for those entering Luxembourg from certain regions, particularly in response to the emergence of new variants of the virus.

The impacts of these border closures were not anticipated in the measures set out in the government's influenza pandemic plan. To mitigate these impacts, Luxembourg co-operated closely with neighbouring countries at different levels (Prime Minister, Minister of Foreign and European Affairs and the Minister for Family Affairs, Integration and the Greater Region) and advocated its position on free movement within the European Union. To reduce the impact of these closures, Luxembourg also set up housing for cross-border workers in the health and care sector and, at the beginning of the crisis, issued passes to make it easier for workers to get through the border controls introduced by Germany, Belgium and France. The Ministry of Foreign and European Affairs also intervened in relation to other cross-border journeys considered "essential", such as students needing to travel to their universities, people being treated at specialised hospitals in neighbouring countries and journeys due to the shared custody of children following a divorce.

Although these measures and diplomatic efforts were not considered in the government's existing influenza pandemic plan, the consequences of Luxembourg's multidimensional interdependence and interconnection with its neighbours had been identified before the crisis. National consultation mechanisms for tackling issues with a cross-border dimension did already exist and could therefore be mobilised during the pandemic. In particular, the Interministerial Co-ordination Committee for Cross-Border Co-operation (CICT), chaired by the Ministry of Foreign and European Affairs, was operational before the crisis, as set out in the coalition government's programme for 2018-2023. The government therefore had the benefit of a specialised interministerial co-ordination forum to address the various aspects of the need to maintain the cross-border flows on which the country's economy depends, including its more than 200 000 cross-border workers. Luxembourg was able to use its understanding of the situation and these mechanisms to introduce measures before any critical workforce disruptions (Luxembourg Ministry of Foreign and European Affairs, 2021[34]).

Closing borders to non-citizens to contain the spread of the virus not only caused problems for the free movement of people, but also had a negative impact on minorities living in cross-border areas. These closures impacted their ability to maintain essential contacts and carry out their cultural and linguistic activities. The co-operation efforts between the regional associations of South Schleswig and the representatives of the German minority in Denmark offer a positive example of the kind of measures introduced to mitigate these impacts; indeed, they are now working to secure a special arrangement for people living in the border region between Denmark and Germany (Cramer Marsal, Ahlund and Wilson, 2020[35]). The pandemic not only put countries' relationships to the test, but it also offered a number of opportunities for solidarity. In the European context, the European Union Civil Protection Mechanism played a major role in confronting the challenges posed by the COVID-19 pandemic. Since it was first activated, following a request for assistance from France for consular support for EU citizens in Wuhan (China), the mechanism was activated more than 150 times between 2020 and 2021 (European Council, 2022[36]).

Such instances included:

- 127 activations to obtain PPE or medical supplies, diagnostic tests, medical teams, medicines and vaccines.
- 31 activations to repatriate EU citizens stranded abroad.

This represents five times the average number of requests for assistance between 2007 and 2019 (European Council, 2022[36]).

Luxembourg was able to draw on the support of other EU member states to repatriate nearly 1 000 Luxembourg residents over the past 2 years. Luxembourg was also able to liaise with crisis centres in other European countries to arrange for Luxembourg citizens or residents and their families to benefit from repatriation flights organised by other governments. Links with the Belgian, French, Dutch and German Ministries of Foreign Affairs proved to be essential during the pandemic. On two occasions (25 March and 5 May 2020), repatriation flights from Cabo Verde were also organised by Luxembourg under the European Union Civil Protection Mechanism at no cost to the travellers. As part of the repatriation measures, the Ministry of Foreign and European Affairs also organised buses to pick up Luxembourg residents from various European airports and bring them back to Luxembourg. This allowed Luxembourg to transport repatriated people without them having to rely on public transport, at a time when these services were experiencing increasing disruption (Luxembourg Ministry of Foreign and European Affairs, 2021[34]).

In addition to repatriation, Luxembourg was also able to strengthen its capacity to provide consular assistance to offer Luxembourg nationals and residents abroad the support they required (see Box 2.4 below).

Box 2.4. Support for Luxembourg citizens stranded abroad

Luxembourg provided assistance to its citizens in this time of crisis through its network of diplomatic and consular missions. Where Luxembourg did not have diplomatic representation, a bilateral agreement with Belgium and the European Union schemes guaranteed access to assistance for Luxembourg nationals.

At the start of the crisis, the Ministry of Foreign and European Affairs redeployed staff from other departments to respond to the large number of requests for assistance and repatriation (March to June 2020). The consular assistance team within the Ministry grew from 6 to 20 people.

The Ministry also put in place a case management procedure for the consular assistance team in the capital and the diplomatic and consular missions to deal with the considerable influx of assistance requests.

Luxembourg also took advantage of its large networks of Honorary Consuls, and their local knowledge, to respond quickly to the needs of citizens in distress.

Source: Luxembourg Ministry of Foreign and European Affairs (2021[34]), *Note de service : résumé des mesures prises depuis mars 2020*.

It is also worth mentioning Luxembourg's partnerships with international organisations and measures for offering ad hoc assistance to other countries.

For example, as part of multilateral efforts, Luxembourg pledged EUR 69 million under the Team Europe initiative, EUR 4 million in 2021 to support the COVAX Advance Market Commitment (COVAX AMC) and EUR 2 million to the Global Fund to Fight AIDS, Tuberculosis and Malaria COVID-19 Response Mechanism (C19RM). As regards bilateral efforts, Luxembourg's co-operation agency, LuxDev, obtained a EUR 18.5 million mandate to contribute financially to combat the pandemic.

Luxembourg has shared medical equipment through the European Civil Protection Mechanism and vaccines through the COVAX mechanism and the European Civil Protection Mechanism. The Luxembourg Defence Directorate arranged for Lithuania to be delivered 1 200 m^3 of medical equipment from China. The government also organised flights by Cargolux to deliver aid to ten European countries.

As part of the process of updating other national plans, the High Commission for National Protection could work with the competent ministries to ensure that the impacts of major threats to the free flow of goods, services and people are properly addressed in ERPs.

Luxembourg should also take the opportunity to use European and international forums to explore how to prevent further challenges to free movement. It could work to make its partners aware of the potential impacts of border closures on the free movement of goods, services and people, and how to manage them if necessary. Thanks to its experience during the pandemic, Luxembourg will be able to ensure that the peculiarities of cross-border living areas are addressed more systematically in European and national decision-making processes.

The government could also support academic efforts to provide robust data on the effectiveness of border closures for containing or slowing the spread of COVID-19. The government could consider how to fund new research on this topic and how to support efforts to disseminate existing research.

2.5. Summary of recommendations

2.5.1. Strengthen the risk assessment process and use it to increase national resilience.

- Encourage all ministries to contribute to and use the national risk assessment.
- Build capacity, including expertise and incentives, across all ministries to enable decision makers to better understand and work with risk and uncertainty.
- The High Commission for National Protection should keep the risk assessment up to date and ensure that it is used by all.
- The government should make the link between the risk assessment, preparedness efforts and ERPs more explicit.
- The government should ensure that the risk prioritisation criteria take account of both direct and indirect impacts (considering scenarios with high numbers of deaths and wider systemic impacts) and unlikely but potentially catastrophic risks.

2.5.2. Ensure that emergency plans reflect current knowledge of potential crises

- The High Commission for National Protection should consider implementing a response plan review process to ensure that plans are kept up to date and that lessons learned from exercises, crises (national and international) and near misses are all incorporated into response plans on an ongoing basis.
- The government should build on its risk assessment and strategic foresight capabilities to identify future risks beyond those similar to COVID-19.
- As part of the process of updating national plans, the High Commission for National Protection could work with the competent ministries to ensure that the impacts of major threats to the free flow of goods, services and people are properly addressed in ERPs.

2.5.3. Improve the preparedness of essential services

- The government should consider expanding the current definition of critical infrastructure to take better account of essential service providers (such as those identified during the COVID-19 crisis).
- The High Commission for National Protection should ensure that essential infrastructure providers' preparedness plans are updated and implemented.
- The government should facilitate the sharing of lessons learned and best practices among critical infrastructure operators from different sectors and essential service providers.
- The government should disseminate good practices from different sectors to facilitate the sharing of lessons learned.

2.5.4. Share what the country has learned

- The government could reflect on how to share its experience with the rest of the region (in particular with regard to establishing public-private partnerships to support the procurement and transport of equipment).
- The government, along with key partners in the private sector and research community, should explore what can be learned from COVID-19 with regard to securing the supplies that might be needed to respond to future pandemics and different types of risk.

2.5.5. Strengthen international co-operation to respond to future crises

- The government could continue to play an active role in developing the European Union's role as co-ordinator in relation to cross-border flows in the event of crises, in particular by ensuring that the European Union integrates the systematic consideration of the specific needs of communities in cross-border living areas into its decision-making processes.
- The government could also support academic efforts by providing robust data on the effectiveness of border closures for containing or slowing the spread of COVID-19. The government could consider how to fund new research on this topic and support efforts to disseminate existing research.

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Annex 2.A. Timeline of the first months of the COVID-19 pandemic

International	Preparedness and response measures in Luxembourg
4 January 2020 WHO alerts Member States of an outbreak in China through the International Health Regulations (IHR) event reporting system. **9 January 2020** Chinese authorities determine that the outbreak was caused by a novel coronavirus. The ECDC considers the probability of introduction to the European Union to be low. **13 January 2020** WHO publishes the first protocol for an RT-PCR test by a WHO partner laboratory to diagnose the novel coronavirus. **22-23 January 2020** The WHO Director-General convenes an IHR Emergency Committee, but the committee does not recommend classifying the epidemic as a public health emergency of international concern (PHEIC). **24 January 2020** The first three cases of the novel coronavirus in Europe (France) are confirmed. **28 January 2020** The Presidency of the European Council activates the EU Integrated Political Crisis Response (IPCR) mechanism for information exchange and the EU Civil Protection Mechanism is activated following a request for assistance from France to repatriate EU citizens from Wuhan. **30 January 2020** The WHO Director-General declares a public health emergency of international concern (PHEIC). **31 January 2020** EUR 10 million is granted under the EU's research and innovation funding programme, Horizon 2020, to support research into the novel coronavirus disease.	**22 January 2020** Assessment of the situation in China. **23 January 2020** The Ministry of Health issues a press release presenting the measures that will be taken if the novel coronavirus is detected in Luxembourg and recommendations for travellers to China. **24 January - 28 February 2020** **Interministerial preparation phase** At the request of the Prime Minister, the Government Council holds its first debate on the nature of the virus and the country's level of preparedness on 24 January. Between then and the end of February, the main stakeholders meet on several occasions, either in the form of a crisis unit or through interministerial meetings in different configurations, to analyse the readiness of the measures set out in the influenza pandemic and Ebola emergency preparedness and response plans. **29 January 2020 - 25 February 2020** Co-ordination meetings on the situation of Luxembourg citizens abroad and their potential repatriation. **30 January 2020 - 9 March 2020** Preparatory meetings with the main essential service sectors, competent ministries and the High Commission for National Protection.
2 February 2020 The United States implements border controls for non-citizens who were in China in the previous 14 days. **4 February 2020** The WHO Director-General asks the UN Secretary-General to activate the UN crisis management policy. **11 February 2020** WHO announces that the disease caused by the novel coronavirus would be named COVID-19. **21 February 2020** Researchers report the first suspected case of asymptomatic transmission. **23 February 2020** Italian regions introduce the first lockdown/stay-at-home measures in Europe. **27 February 2020** WHO provides guidance to countries on the rational use of PPE. The use of masks or PPE is not recommended for asymptomatic people. **28 February 2020** The European Commission launches pooled procurement of medical	**1 February 2020** The first COVID-19 test is performed in Luxembourg (on a Cargolux pilot who tested negative). **5 February 2020 - 16 March 2020** Meetings held to set up quarantine/treatment facilities and plan other healthcare facilities. **7 February 2020** First PPE order placed. **9 February 2020** In collaboration with the British authorities, Luxembourg organises the repatriation of a Luxembourg citizen from China (arranged under a bilateral agreement). **20-21 February 2020** Two more repatriations are carried out through the European Civil Protection Mechanism activated on 28 January 2020. The first arrives at Charles de Gaulle Airport in Paris on the morning of 21 February 2020. They were transported from Paris to Luxembourg by a Grand Ducal Fire and Rescue Corps (CGDIS) ambulance. The second concerned a tourist couple from Luxembourg, who had stayed in Cambodia, on the cruise ship Westerdam, which had stopped at The Hague.

International	Preparedness and response measures in Luxembourg
equipment with Member States. The first of four pooled procurement contracts for PPE is launched with Member States.	**26 February 2020** An exercise to test the activation of the crisis units is run to test how well the relevant administrations could react and to draw the attention of the relevant actors to the challenges that Luxembourg would face in relation to the management of the COVID-19 crisis. **28 February 2020** Governmental Council - a permanent interdepartmental communication unit is created.
2 March 2020 The Presidency of the European Council steps up the IPCR to full activation mode. **10 March 2020** Italy imposes its first national lockdown. **11 March 2020** The WHO Director-General declares COVID-19 a pandemic. **14 March 2020** Spain declares a state of emergency and announces a two-week lockdown. **15 March 2020** The Commission takes steps to protect the availability of PPE by requiring exports of such equipment outside the European Union to be subject to export authorisation by Member States.	**1 March 2020** First positive case in Luxembourg. **1-15 March 2020** **First meetings of the crisis unit held, as set out in the influenza pandemic plan.** The crisis unit, as set out in the influenza pandemic emergency preparedness and response plan, is activated by the Prime Minister following the detection of the first positive case in Luxembourg on 1 March. **Composition:** A) Ministry of Health; Ministry of Foreign and European Affairs; Ministry of the Civil Service; Ministry of Social Security; Ministry of Mobility and Public Works; Ministry of Education, Children and Youth; Ministry of the Economy; Ministry of Labour, Employment and the Social and Solidarity Economy; B) Ministry of Family Affairs; Health Directorate; High Commission for National Protection; Grand Ducal Police; Grand Ducal Fire and Rescue Corps; Crisis Communication Service The crisis unit would meet again on 11, 12 and 15 March in this configuration. **13 March 2020** Luxembourg adopts the first non-pharmaceutical disease control measures in response to COVID-19 (all schools and childcare facilities must close as of 16 March). **15 March 2020** The extraordinary government meeting urges the people of Luxembourg to "stay at home" as much as possible.

Source: For the international timeline: Authoritative timeline for COVID-19, December 2019-March 2020 (The Independent Panel of Pandemic Preparedness, 2021[16]) and the timeline of EU action (European Commission, 2022[37]). For the Luxembourg timeline: Prepared by the author with input from the Luxembourg Government's internal documents and the information-gathering questionnaire for the Luxembourg Crisis Management Evaluation (Government of Luxembourg, 2022[8]).

3 The management of the COVID-19 crisis in Luxembourg

Managing modern and complex crises, such as the COVID-19 pandemic, requires governments to mobilise a number of actors beyond the traditional emergency services, and to create a climate of trust in public action, which is essential to ensure its effectiveness. This chapter assesses the extent to which the mechanisms put in place in Luxembourg have enabled the government to adopt a co-ordinated and agile approach to responding to the pandemic across its different agencies. It then examines the effectiveness of the government's crisis communications towards citizens, in terms of both the relevance and the coherence of its messaging. Finally, the chapter looks at the measures adopted by the Luxembourg government to deploy a co-ordinated response across society as a whole.

Key findings

Data from the OECD show that managing modern and complex crises, such as the COVID-19 pandemic, should involve a number of actors beyond traditional emergency services. It follows that government co-ordination is essential to steer and manage these different stakeholders. Crisis management also implies communicating with the public and ensuring decisions are transparent, especially since large-scale crises can have a huge impact on the public's trust in the authorities (OECD, 2015[1]; OECD, 2022[2]).

These issues, although heightened during the COVID-19 crisis, are not new. As early as 2014, the OECD Recommendation of the Council on the Governance of Critical Risks (see Box 3.1), adopted in 2014, recognises these challenges and offers recommendations to help governments to overcome them.

In Luxembourg, the **interministerial management of the crisis**, led by the highest level of government, was particularly agile. The national government spoke and responded with a single voice throughout the two-year health crisis. Although no information system existed for this purpose before the crisis, Luxembourg also very quickly put in place a reliable system for real-time monitoring of certain indicators that were key to managing the pandemic. However, the organisation of crisis management and the role of scientific expertise in policy-making must be more transparent in the future. This will require, among other things, the establishment of a permanent cross-disciplinary system of scientific advice, and more active involvement of civil society in crisis management.

Crisis communication has also been very effective overall in Luxembourg. Thanks to the existence of a clear crisis communication strategy prior to the pandemic, the crisis communication services were able to use a large number of channels to reach a wide audience and to be attentive to citizens' expectations. The government has also made significant efforts to make messages available in the country's official languages, as well as in some other languages frequently spoken by cross-border or immigrant communities. However, like many other OECD member countries, Luxembourg has experienced some difficulties in terms of coherence of messages. These difficulties are mainly related to the large number of sectoral and geographical measures adopted during the successive waves of the pandemic. They could be addressed by making a concerted effort to make the scientific reasoning for decisions explicit and by systematically evaluating the impact of communication measures.

Finally, with regard to the **involvement of society as a whole in crisis management**, vertical co-ordination between the national government and the municipalities and cities in Luxembourg worked better than in many other OECD member countries, even if the size of the country and the strong centralisation of its institutional system was a large contributing factor to this. Luxembourg also stands out for the active involvement of its parliament during the crisis, with the exception of a short state of emergency between mid-March and the end of June 2020. This involvement has ensured the continuity of the nation's democratic life. In addition, other forms of citizen consultation can be mobilised to build trust in public authorities in a representative democracy. In any case, Luxembourg should now focus on learning from this pandemic, in particular by investing in its public policy evaluation capabilities, to increase its resilience to future crises.

3.1. Introduction

This chapter focuses on the crisis management phase, which covers the policies and actions implemented by the government in response to the pandemic, i.e. once it had become a reality. “Crisis management” thus refers to the capacity of the government to react appropriately and at the right time, while ensuring co-ordination between all parts of the administration and of society (OECD, 2015[1]).

The management of modern and complex crises, such as the COVID-19 pandemic, should involve a number of actors beyond emergency services. As a result, increased co-ordination of these actors by the government is essential for managing the crisis and its many repercussions throughout society as closely as possible. This type of crisis also requires the government to maintain public trust, both to ensure the effectiveness of the measures adopted to mitigate the effects of the crisis and to maintain room for action in the future. Finally, the impact that large-scale crises can have on the public's trust in government requires that public authorities redouble their efforts to ensure the continuity of democratic life and to demonstrate the integrity, legitimacy and robustness of their decisions (OECD, 2015[1]; OECD, 2022[2]).

These issues, while undeniably heightened during the COVID-19 crisis, are not new. As early as 2014, the OECD Recommendation (see Box 3.1) required governments to make appropriate arrangements to manage risks and crises while maintaining strong interministerial co-ordination, to ensure transparent and meaningful crisis communication, and to enable a society-wide response to hazards and threats.

Box 3.1. The OECD Recommendation on the Governance of Critical Risks

The OECD Council adopted the Recommendation on the Governance of Critical Risks (hereinafter the “Recommendation”) at the Meeting at Ministerial Level held in May 2014. The High Level Risk Forum (HLRF) was instrumental in the development of this Recommendation. Since its adoption, 41 countries have signed up to the Recommendation.

The Recommendation focuses on critical risks, i.e. “threats and hazards that pose the most strategically significant risk, as a result of (i) their probability or likelihood and of (ii) the national significance of their disruptive consequences, including sudden onset events (e.g. earthquakes, industrial accidents or terrorist attacks), gradual onset events (e.g. pandemics) or steady-state risks (those related to illicit trade or organised crime).” The Recommendation is based on the principles of good risk governance that have enabled many member countries to achieve better risk management outcomes.

The Recommendation proposes that governments:

- identify and assess all risks of national significance and use this analysis to inform decision making on risk management priorities (see Chapter 2 of this report)
- put in place governance mechanisms to co-ordinate on risk and manage crises across government
- ensure transparency around and the communication of information on risks to the public before a risk occurs and during the crisis response
- work with the private sector and civil society, and across borders through international co-operation, to better assess, mitigate, prepare for, respond to and recover from critical risks.

Source: OECD (2014[3]), "Recommendation of the Council on the Governance of Critical Risks", *OECD Legal Instruments,* OECD/LEGAL/0405, OECD Publishing, Paris, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0405.

In line with this Recommendation, this chapter examines the extent to which the governance arrangements put in place in Luxembourg to manage the crisis enabled the government to adopt a co-ordinated and agile approach to responding to the pandemic across its different agencies. It also offers a look at the mobilisation and use of scientific expertise for crisis management in Luxembourg, and suggests strengthening the government advisory system for this purpose. The chapter then examines the strategies used by public authorities to issue crisis communications to citizens, in terms of both the relevance and the coherence of the messaging. Finally, the chapter looks at the measures adopted by the government of Luxembourg to deploy a co-ordinated response across society as a whole. The ways in which risks are identified and anticipated in Luxembourg are discussed in Chapter 2 of this report.

3.2. The interministerial management of the COVID-19 crisis in Luxembourg

According to the terminology adopted by the OECD, the crisis phase officially begins when a significant threat is clearly announced and anticipated, or when an undetected event causes a sudden crisis (OECD, 2015[1]). In Luxembourg, a state of emergency (also known as 'state of crisis', as defined in Article 32(4) of the Constitution) was officially declared on 18 March 2020 (see Box 3.2) (Government of Luxembourg, 2020[4]). Preparatory work and discussions, as well as interministerial meetings, partly in the form of a crisis unit, began on 24 January 2020 (see Chapter 2 on this subject).

Box 3.2. General timeline of the crisis in Luxembourg

Luxembourg detected the first case of COVID-19 in its territory on 1 March 2020.

First wave of the virus

The first measures to combat the effects of the pandemic were adopted on **13 March 2020** with the announcement that all schools and childcare facilities would be closed from 16 March.

On **15 March 2020**, a special government meeting called on all residents to stay home as much as possible.

On **18 March**, Luxembourg declared a state of emergency with the Grand Ducal Regulation of 18 March 2020 introducing a series of measures in the context of combating COVID-19 (Government of Luxembourg, 2020[4]). The state of emergency was extended for a further three months by a law issued on 24 March 2020.

Luxembourg's first lockdown ended at the end of **May 2020**, when the virus transmission rate reached very low levels. Some businesses were allowed to reopen on 20 April, and masks remained mandatory in situations where a distance of 2 metres could not be guaranteed.

On **19 May 2020**, a large-scale voluntary testing scheme was also launched. During the first phase of this large-scale testing scheme, which took place from 27 May to 28 July, up to 17 drive-through and two pedestrian- and bike-access test sites spread throughout Luxembourg could perform up to 20 000 tests per day.

Gradual easing of measures

As the state of emergency ended on **24 June 2020**, measures to combat COVID-19 were then implemented through laws. Two laws of 24 June 2020, one introducing a series of measures concerning individuals and the other introducing a series of measures concerning sports activities, cultural activities and establishments open to the public within the framework of the COVID-19 pandemic response, replaced the grand ducal regulations.

Restrictions on gatherings, the wearing of masks in shops and on public transport, and the quarantine or isolation of people infected with coronavirus were initially extended until the **end of July**.

Second and third wave of the virus

In **October 2020**, the second wave of COVID-19 hit most of Europe, and Luxembourgers experienced a series of new restrictions implemented to contain the virus. All bars, restaurants and cinemas closed on **26 November**, as the country failed to reduce the number of new cases to under 500 per 100 000 people. Households were not allowed to have more than one guest at a time. A curfew imposed in November was extended until **December 2020**.

Luxembourg extended its restrictions until the middle of January 2021, and on 19 February it extended them again until **14 March 2021**. The restrictions were then gradually lifted between the end of March and May 2021 with vaccines administered progressively to vulnerable populations.

Source: In the text.

In the face of such a situation, the OECD Recommendation stresses the importance of governance mechanisms and advises that members:

> *"Assign leadership at the national level to drive policy implementation, connect policy agendas and align competing priorities across ministries and between central and local government through the establishment of multidisciplinary, interagency-approaches (e.g. national coordination platforms) that foster the integration of public safety across ministries and levels of government" (OECD, 2018, p. 125[5]).*

As such, the governance mechanisms proposed by the Recommendation take several forms, such as:

- establishing specific structures to ensure interministerial co-operation
- monitoring risk factors and implementing the crisis response
- activating or creating mechanisms to gather expert advice on the pandemic.

This section of the chapter looks at how the government of Luxembourg used these three types of mechanisms and the extent to which they were able to cope with the complex and changing nature of the crisis.

3.2.1. Crisis leadership was provided at the highest level of government

As the OECD Recommendation states, strong leadership at the national level is essential for effective governance of the crisis. Such leadership is essential to facilitate co-operation and decision making across government and with external stakeholders, but it also plays a key role in crisis communication by helping to build trust in those managing the crisis (see the following section on crisis communication).

The Recommendation therefore calls, among other things, for the designation of a national institution to lead critical risk governance with co-ordination and incentive powers for the entire disaster risk management cycle (OECD, 2014[3]). The results of the OECD survey on critical risk governance show that most OECD member countries designate such a lead institution from within their central government, although the roles assigned to them vary considerably from country to country (OECD, 2018[5]).

In Luxembourg, the High Commission for National Protection and the ministry in charge of the primary sector affected by the crisis are responsible for this task. The High Commission for National Protection was created, in its current form, by the law of 23 July 2016 to ensure the management of national crises that require an urgent response and interministerial co-operation (see Box 3.3). In this context, the High Commission for National Protection is responsible for co-ordinating the contributions of ministries, agencies and services to crisis management, and for ensuring that all decisions taken in this regard are implemented and monitored.

Box 3.3. The High Commission for National Protection

The High Commission for National Protection was created, in its current form, by the law of 23 July 2016, based on the observation that the increasing occurrence of complex crises required a comprehensive approach to risk that included all sectors of society. At the national level, the High Commission for National Protection's missions are:

- co-ordinating counter-terrorism measures
- preventing, preparing for and managing crises
- protecting critical infrastructures (see Chapter 2 for more information on the concept of critical infrastructure)
- ensuring the functioning of the Government's Computer Emergency Response Team (GovCERT) and the National Agency for the Security of Information Systems (ANSSI).

In particular, with regard to crisis prevention, preparedness and management, the High Commission for National Protection's mission is to co-ordinate:

- **prevention measures, by**
  - co-ordinating the contributions of ministries, agencies and government services
  - co-ordinating research programmes, policies and projects
  - conducting risk analysis and monitoring
  - co-ordinating the organisation of training courses and exercises.
- **anticipatory measures, by**
  - developing and co-ordinating a national crisis management strategy
  - defining the type, structure, body and format of plans for crisis prevention and management measures and activities, and co-ordinating planning
  - initiating, co-ordinating and ensuring the execution of activities and measures related to the identification, designation and protection of critical infrastructure, whether public or private.
- **crisis management measures, by**
  - initiating, conducting and co-ordinating crisis management tasks
  - ensuring the execution of all decisions taken
  - promoting a return to normality as quickly as possible
  - preparing a joint crisis management budget and ensuring its implementation
  - ensuring the establishment and operation of the National Crisis Centre.

Source: Government of Luxembourg (2016[6]), *Loi du 23 juillet 2016 portant création d'un Haut-Commissariat à la Protection nationale* [Law of 23 July 2016 establishing a High Commission for National Protection], https://legilux.public.lu/eli/etat/leg/loi/2016/07/23/n1/jo (accessed on 14 October 2022).

Within the framework of its responsibilities, the High Commission for National Protection is Luxembourg's point of contact for European and international institutions and organisations, and ensures effective co-operation with these entities. The creation of such an institution is in itself a step forward for risk governance, in that it allows for a comprehensive "all risks, all sectors" approach to crises – an approach that was all the more necessary in the context of the COVID-19 pandemic.

Moreover, the High Commission for National Protection is hierarchically attached to the centre of government (CoG) (the Ministry of State) (see Box 3.4 for more information on the concept of centre of government). This choice, made by only a minority of OECD member countries (13 out of 34 respondents) according to the critical risk governance survey (OECD, 2018[5]), allowed Luxembourg to draw clear lines of responsibility very early on in the management of the crisis. The political leadership of the CoG is essential to maintain citizens' confidence in the government in the context of infringements (albeit temporary and proportionate) on fundamental freedoms for the purpose of limiting the effects of the pandemic.

Box 3.4. The OECD definition of a centre of government

The CoG is "the body or group of bodies that provide direct support and advice to heads of government and the council of ministers, or cabinet" (OECD, 2018[7]). A key institution in the executive branch, its mandate is to ensure that elected officials make decisions informed by evidence and expert analysis, and to facilitate co-ordination between government institutions.

The concept of the CoG does not refer to any specific organisational structure: its composition may vary according to the political system at play or contextual factors. The functional definition of the CoG may include institutions or agencies that perform essential cross-cutting government functions, such as planning, co-ordination, prioritisation and policy development, even though they may not report directly to the head of government. While the role of the CoG is traditionally more procedural (e.g. preparing the Council of Ministers agenda), in OECD member countries, it is generally moving towards strategic leadership and interministerial co-ordination.

Source: OECD (2020[8]), "Building resilience to the Covid-19 pandemic: the role of centres of government", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://dx.doi.org/10.1787/883d2961-en.

As such, where other OECD member countries had to appoint a single co-ordinator or point of contact within the CoG (e.g. Italy, Latvia and New Zealand) to more clearly articulate the national response to COVID-19 (OECD, 2020[8]), Luxembourg could rely on the existing leadership of the High Commission for National Protection. In addition, co-ordinators were appointed within the ministry responsible for the sector mainly affected by the crisis: the Minister for Health and the Health Director. Together, the High Commission for National Protection, the Minister for Health and the Health Director provided leadership in the response to the crisis. This dual approach allowed Luxembourg to benefit from specific health expertise that was particularly necessary for this crisis, and also enabled the CoG to focus on the interministerial dimension of crisis management while maintaining a view to the medium and long term.

3.2.2. The governance of the crisis unit allowed for great agility in the government's response

In addition to clear leadership, crisis management requires appropriate governance arrangements to co-ordinate the response efforts of the various government stakeholders. To this end, the OECD Recommendation on the Governance of Critical Risks calls for the creation of a crisis unit to co-ordinate disaster response efforts (OECD, 2014[3]). Such a crisis unit was also set out in Luxembourg's general risk governance framework. However, like many OECD member countries, Luxembourg had to alter the composition and structure of the crisis unit to respond effectively to the pandemic, which was complex and ever-changing and affected a wide range of areas.

Indeed, very few OECD member countries have experienced a pandemic in recent decades, with the exception of the SARS virus, which affected countries such as Canada, Korea and Singapore. While these countries may have been better prepared for the COVID-19 pandemic, many, like Luxembourg, found that their risk management governance plan was not necessarily suitable for this type of complex crisis (see Chapter 2 for more information on Luxembourg's overall crisis preparedness level). Cross-border and highly complex crises like the COVID-19 pandemic require the active involvement of many public services and bodies at different administrative levels, as well as a high degree of agility in decision making in the face of many "unknowns" (OECD, 2015[1]). To better understand the distinction between complex and traditional crises, and what this means in terms of adapting crisis management, see Table 3.1.

Table 3.1. Managing new and complex crises

Traditional crises	New and complex crises
Centralised monitoring and control system	Crisis identification/monitoring: scientific expertise plays an important role
Standard procedures	Flexible and versatile crisis management teams
Strict lines of responsibility	Leadership with strong capacity for adaptability
Sectoral approaches	International and multisectoral co-operation
Principle of subsidiarity	Management of response networks
Feedback to improve procedures	Ending the crisis and restoring confidence, and conducting evaluations to improve procedures

Source: Prepared by the author based on (OECD, 2015[1]), *The Changing Face of Strategic Crisis Management*, OECD Reviews of Risk Management Policies, OECD Publishing, Paris, https://doi.org/10.1787/9789264249127-en.

In Luxembourg, the limits of the crisis unit – which was intended to serve as a platform for interministerial work within the framework of the influenza pandemic (Government of Luxembourg, 2006[9]) and Ebola (Government of Luxembourg, 2014[10]) ERPs –crisis became apparent very quickly in the face of the COVID-19. As a result, even before a state of emergency was declared in the country on 18 March 2020 (Government of Luxembourg, 2020[4]), Luxembourg had already decided to adapt the structure of the crisis unit. The structure of this crisis unit was reviewed and adapted several times over the following two years, with working groups being added or removed with the different waves of the virus (see Box 3.5 on the general timeline of the pandemic) in order to better reflect the concerns of the public authorities in relation to the health crisis.

Box 3.5. Evolution of the composition of Luxembourg's crisis unit over time

Interministerial preparation phase (24 January 2020 to 28 February 2020)

At the request of the Prime Minister, the High Commission for National Protection and the Ministry of Health submitted a note on the characteristics of the virus and the country's level of preparedness to Luxembourg's Governmental Council for its meeting on 24 January 2020. A number of subsequent interministerial meetings enabled the public authorities to analyse the country's level of preparedness in light of the influenza pandemic and Ebola ERPs, to place the first orders for PPE and to organise the repatriation of Luxembourg citizens.

First meeting of the crisis unit as provided for in the influenza pandemic ERP (1-15 March 2020)

After the first case of COVID-19 on Luxembourg territory was confirmed, the Prime Minister declared that the crisis unit of the influenza pandemic ERP was to be put into action. In addition to the High Commission for National Protection, this crisis unit was composed of representatives from most government ministries, as well as the Grand Ducal Police, the Grand Ducal Fire and Rescue Corps and the Crisis Communication Service.

Changes to the composition of the crisis unit (15 March 2020 to mid-May 2020)

The composition of the crisis unit, as set out in the influenza pandemic ERP, quickly proved to be inadequate given the scale of the pandemic, the large number of sectors it affected and the speed at which it evolved. The Luxembourg government therefore decided to adapt the structure of the crisis unit by expanding its composition to include non-state stakeholders and by forming permanent thematic working groups to deal with more technical issues. During this period, the Governmental Council also met two to three times a week to ensure the co-ordination of work at the ministerial level and to adopt the grand ducal regulations necessary for the crisis unit's decisions to be implemented.

Interministerial working group on the crisis exit strategy (mid-April 2020 to mid-June 2020)

A specific working group was created to make proposals to the government on the different phases of the exit from the crisis (easing of lockdown and accompanying measures, such as sectoral recommendations, distribution of protective equipment, implementation of a large-scale testing strategy, etc.). This working group was composed of representatives from the Ministry of State, the High Commission for National Protection, the Ministry of Health, the Health Directorate, the Ministry of Higher Education and Research, and the COVID-19 Task Force. This group had regular meetings with representatives from government departments to discuss the gradual lifting of the restrictions put in place during the lockdown phase.

Crisis unit version 2 within the Ministry of Health (mid-May to mid-October 2020)

The composition of the crisis unit was adapted to the new calmer epidemiological situation, bringing together fewer actors and focusing more on the services of the Ministry and the Health Directorate.

Crisis unit version 3 (mid-October 2020 to present)[1]

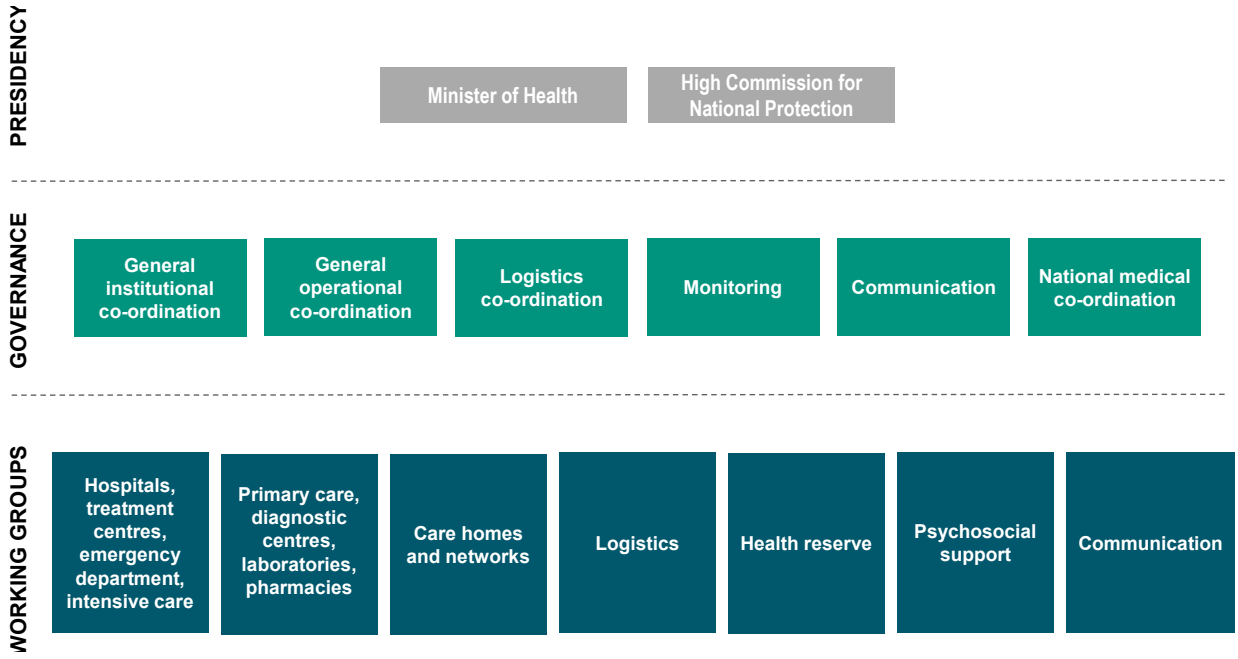
With the resurgence in the number of positive cases, the government decided to revert the structure of the crisis unit to the way it was during the period from 15 March to mid-May, with thematic working groups.

1. Day this report was finalised (summer 2022).
Source: High Commission for National Protection.

The crisis unit, chaired by the High Commission for National Protection and the Ministry of Health, is composed of several working groups, which oversee and work on separate areas, such as hospitals, diagnosis and contact tracing, testing, primary care, care homes and care networks, logistics, the health reserve and communication (see Figure 3.1 for an example of how these working groups are organised).

Figure 3.1. Composition of the crisis unit during the first wave of the pandemic

Organisation of Luxembourg's crisis unit between 15 March 2020 and mid-May 2020



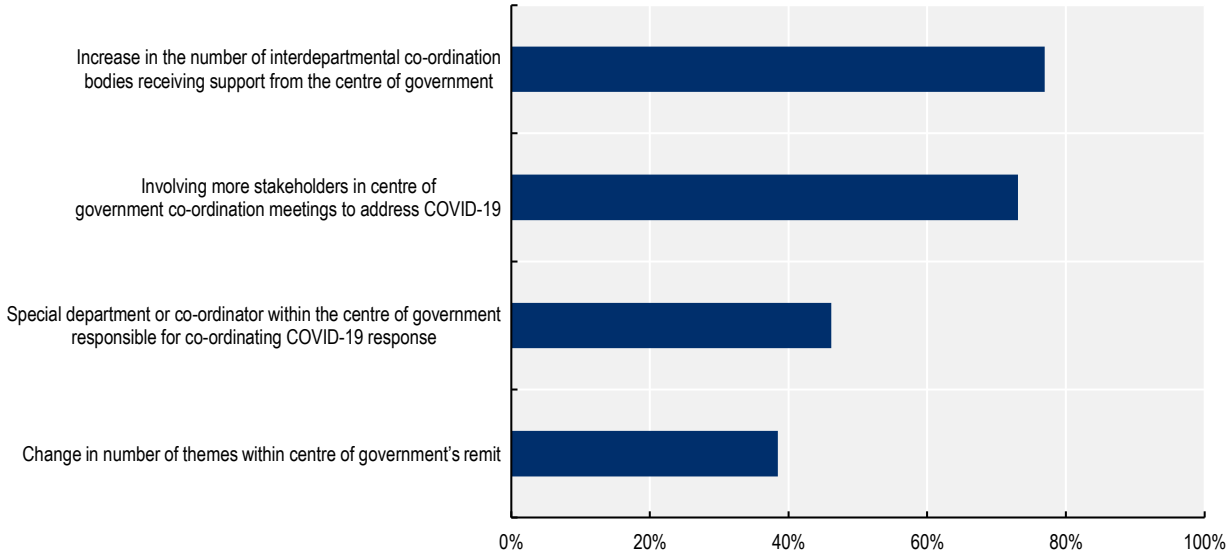
Source: Prepared by the author based on internal documents provided by the High Commission for National Protection.

It co-ordinates all the efforts made by both government stakeholders – in terms of procurement and logistics of medical supplies, and communication and monitoring of the pandemic – and non-governmental actors, such as hospitals, laboratories, primary care providers, pharmacies, etc. As such, these working groups were generally multidisciplinary and included representatives from several ministries and departments, as well as, in the case of some working groups such as the Testing working group, representatives from the private sector.

First of all, the government of Luxembourg showed flexibility and speed in implementing and putting into action these governance mechanisms to facilitate inter-agency co-operation in the management of the crisis. This flexibility and the mobilisation of actors from a wide range of backgrounds was particularly possible because communication between the state and non-governmental stakeholders in the country is fluid.

Moreover, while most OECD member countries also appear to have created ad hoc structures to manage the COVID-19 crisis (almost half of members created new institutional mechanisms to respond to the pandemic (OECD, 2021[11]), see Figure 3.2), Luxembourg stands out for the very high level of representation that its systems provide.

Figure 3.2. Evolution of the functions and structure of the centre of government during the crisis



Note: These data are from 26 OECD member countries: Austria, Belgium, Canada, Chile, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Mexico, Norway, Poland, Portugal, Korea, Sweden and Türkiye.
Source: OECD (2021[11]), *Government at a Glance 2021*, OECD Publishing, Paris, https://doi.org/10.1787/1c258f55-en.

StatLink https://stat.link/0qm5th

In fact, in principle, the various ministerial departments were represented in the working groups by the government's chief advisors. This allowed the decisions made in these working groups to be adopted quickly. However, the OECD's work shows that the presence of high-level figures gives more weight to the debates that take place in the crisis unit, increases accountability and speeds up decision making (OECD, 2022[2]).

In Luxembourg, the presence of the chiefs of staff or general co-ordinators of the various ministerial departments in these working groups made it possible to take decisions very quickly without them having to be systematically validated by a higher authority, and enabled technical subjects to be addressed with the relevant experts.

Luxembourg also significantly increased the frequency of Governmental Council meetings, which made it possible to adopt decisions that could not be made in working groups in this framework (for example, the grand ducal regulations implementing certain measures prepared by the working groups). The flexibility of the crisis unit's structure throughout the different waves of the pandemic, the multidisciplinary composition of the working groups and the high level of representation within them allowed Luxembourg to be reactive and innovative in managing the crisis. The stakeholders met by the OECD Secretariat emphasise the agility in crisis management enabled by these mechanisms.

In addition to the national mechanisms discussed in detail in this chapter, there was also a highly developed cross-border and European dimension to crisis management, based in particular on specific collaboration structures with neighbouring countries. The successful functioning of these mechanisms has been of particular importance for Luxembourg, which is one of the European countries most directly interconnected and interdependent with its neighbouring regions within a shared cross-border living area. Chapter 2 of this report addresses this dimension.

3.2.3. This structure may have reduced the clarity and transparency of decision making

The structure of the crisis unit in Luxembourg undeniably reflects the complexity of the shock caused by the pandemic. However, the creation of bodies to co-ordinate the government's response to the crisis, while useful for political decision making, risked producing challenges related to internal co-ordination between them, particularly with respect to gaps and overlaps in the respective responsibilities of the working groups. Coherence in policy making and the uniform application of these decisions is crucial to ensure the effectiveness of crisis management measures (OECD, 2020[8]). While this does not ultimately seem to have been a problem in Luxembourg, where exchanges between senior administration officials are usually fluid, it might be useful in the future to clarify the responsibilities and missions of each crisis management body in the form of terms of reference. Such terms of reference would avoid any doubt about the scope of competence of each of these bodies and, most importantly, clarify who has final responsibility over a decision. Furthermore, these terms of reference would ensure greater transparency in crisis management decision-making processes and are therefore an important instrument for accountability to citizens (OECD, 2022[2]).

Above all, it would have been desirable to include civil society more from the outset in the various working groups of the crisis unit during the COVID-19 pandemic. With a few exceptions (e.g. the participation of ASTI and Caritas in the social working group), no civil society stakeholders participated in the working groups. Even when this participation did occur (on an informal and ad hoc basis), there was a definite lack of formality in the consultation of civil society in these working groups. The role of civil society is increasing in the new crisis management environment. In the face of complex crises where there are many unknowns and which affect all sectors of society, citizens, voluntary organisations and national and international non-governmental organisations should be included in all response systems (OECD, 2015[1]). Greater involvement of civil society, or stakeholders from non-traditional sources of expertise, should be considered more seriously in the future in Luxembourg (see next section on the role of scientific expertise in the crisis).

Finally, the OECD Recommendation on the Governance of Critical Risks emphasises the importance of making information and the actions taken by risk management bodies to ensure the integrity of their decision-making processes available and accessible to the public. In times of crisis, while exceptional circumstances may require restricting access to sensitive or classified information, critical risk management decision-making procedures still benefit from being shared. Luxembourg has made this information widely available to the public. However, although the organisational chart of the crisis unit, the ad hoc working group and the interministerial group on the crisis exit strategy, as well as the associated list of experts, have been published on the government website, Luxembourg could consider further clarifying the lines of responsibility of the crisis unit vis-à-vis external stakeholders.

3.2.4. Although no information system existed for this purpose before the crisis, Luxembourg very quickly put in place a reliable system for real-time monitoring

In times of crisis, it is essential for governments to have access to real-time data to monitor risk factor developments and support hazard management decision making (OECD, 2022[12]). The COVID-19 crisis in particular has shown how evidence and information are crucial inputs for effective public action. However, collecting this data can be difficult for some countries as it requires the right digital tools and reporting procedures to enable analysis, decision making and implementation of those decisions (OECD, 2021[11]). Although Luxembourg did not have an adequate pandemic risk monitoring system in place prior to the crisis, it was able to remedy this situation quickly by developing new monitoring tools and protocols. This effort should be extended to other risks and key sectors to ensure robust risk monitoring.

Before the pandemic, Luxembourg had an imperfect information system capable of monitoring the evolution of infectious diseases. Although Luxembourg's public health protection law of 1 August 2018 (Official Journal of the Grand Duchy of Luxembourg, 2018[13]) obligated it to declare cases of around 70

communicable diseases, doctors had to report this information either in writing or by fax and, since 1 January 2019, by filling in an online form available at https://guichet.lu. Making declarations in this way did not allow for the analysis of fast-changing data. Medical testing laboratories had been issuing results electronically since 1 January 2019, but the system was not equipped to handle the high number of declarations produced in the pandemic. Moreover, this reporting obligation was limited to positive results for the majority of diseases. It was therefore not easy for the government to monitor the population's COVID-19 positivity rate and to obtain a complete, real-time overview of epidemiological developments in the country (Ministry of Health, 2021[14]).

In addition, the hospitalisation data available in information systems that existed before March 2020 were not sufficient to track the day-to-day evolution of the pandemic. For example, there was no health monitoring system in place for COVID-19 hospital admissions, intensive care bed occupancy rates, or COVID-19 and non-COVID-19 occupancy rates on regular wards, and the activity indicators for hospital emergency departments, provided for in the Grand Ducal Regulation of 25 January 2019, were not systematically collected (see Chapter 4 on public health policies in Luxembourg for more information on these systems). Another major challenge faced by the public authorities was the fact that the indicators collected in hospitals were not harmonised, making it impossible to compare them across different facilities. The government was also not aware of stock levels of PPE in non-hospital healthcare facilities. With regard to the long-term care sector, there were no harmonised indicators, either quantitative or qualitative, to document the activities and resources of the various facilities.

Based on this observation, very quickly after the first case of COVID-19 was detected in the country, the crisis unit's monitoring working group undertook a major effort to set up a system for daily and reliable monitoring of the spread of the virus, the pressure put on hospitals and other healthcare facilities by the virus, and other information essential for managing the crisis, such as stocks of PPE and the pandemic situation in neighbouring countries. To this end, the monitoring working group, in conjunction with the other crisis unit working groups (e.g. the hospital working group and the contact-tracing group) and healthcare system stakeholders:

- Established **data-sharing routines**, including defining joint indicators to harmonise monitoring between the different actors and establishing a data quality control system.
- **Automated**, as of 17 March 2020, **data transfers** from hospitals and testing laboratories **using the new Qlik information system** (see Box 3.6 for more information on this tool), and rapidly expanded data transfers from other sources (long-term care facilities, advanced care centres, etc.). The Qlik database also made it possible to visualise data in the form of tables and maps to help the crisis unit and the government make quick decisions.
- Produced **daily and weekly reports** for the crisis unit and the Ministry of Health with updates on the epidemiological surveillance of COVID-19, COVID-related hospitalisations, the status of stocks of PPE and other materials needed to treat COVID cases, deaths due to COVID, and vaccines administered in Luxembourg.

Box 3.6. The Qlik database

The Qlik application brings together COVID-19 data from various actors (such as laboratories, hospitals, care homes, the General Inspectorate of Social Security, and advanced care centres) in thematic dashboards that allow users to follow the evolution of the pandemic and conduct relevant analyses.

It has been progressively improved by integrating other data (such as those from the mass screening programme and contact tracing, those relating to vaccination administration and coverage, those concerning advanced care centre activity, those concerning the status of wastewater, and individual data from the General Inspectorate of Social Security) to perform sectoral analyses and identify possible sources of outbreaks.

Automated daily reports were developed for several bodies (such as the Ministry of Education, the Ministry of Family Affairs and the Fédération des Hôpitaux Luxembourgeois [Luxembourg Hospitals Federation]). Aggregate data are also publicly available.

Source: OECD (2022[15]), information-gathering questionnaire for the Luxembourg Crisis Management Evaluation (see also Chapter 4 of this report).

The implementation of this monitoring system has served as a real aid to decision making for the crisis unit, and Luxembourg stands out for the speed with which it was able to set up these processes and this platform. This speed is partly due to the fact that the number of health actors involved in the response to the pandemic in Luxembourg is relatively small. As a result, the country was able to quickly establish rules for collecting indicators such as bed availability and PPE stocks with the hospital sector, because it only has four hospitals and a small number of specialist facilities. Other risks and hazards may, however, involve a larger number of actors. To increase the country's resilience to future crises, the High Commission for National Protection should strengthen its critical risk monitoring system and establish sustainable and standardised processes for collecting data from critical infrastructure and services.

Luxembourg should therefore consider increasing its monitoring of key intelligence indicators related to the main risks identified in Luxembourg, in concert with not only the infrastructure already identified as critical but also the country's essential services. Indeed, as discussed in Chapter 2, while critical infrastructure requires more advanced monitoring and preparation, other essential services cannot remain a blind spot in risk monitoring. For example, establishing clear and lasting rules and processes with actors from the long-term care system, adapted to the realities on the ground and allowing for monitoring of certain key data (PPE stocks, vacancies for essential qualified staff, the quantity and age of ventilators, and energy stocks in case of shortages, etc.), could prove an important tool to help manage other crises. In this context, Luxembourg could draw inspiration from the United Kingdom's National Situation Centre, which was created in September 2021 to monitor risks and model their effects as closely as possible to the CoG (see Box 3.7 for more information on this body).

Box 3.7. The United Kingdom's National Situation Centre

The United Kingdom's National Situation Centre, known as SitCen, is located in the Cabinet Office Civil Contingencies Secretariat at the centre of government. The COVID-19 crisis highlighted the importance of high-quality data in making better decisions. As a result, SitCen was created during the COVID-19 pandemic in September 2021 to collect and collate timely and reliable data on all aspects of risk and crisis management.

SitCen has three roles:

- to provide public decision makers with an overview of public institutions and critical sectors using dashboards
- to model past data to generate projections related to the materialisation of certain risks
- to brief senior officials and ministers on the basis of these data.

The SitCen team works primarily on the set of risks identified in the national risk assessment, with the aim of preparing for the future and determining what policies to adopt in the event that one of these risks materialises.

Source: Prepared by the author.

Luxembourg could also consider revising its definition of critical infrastructure to include other essential stakeholders and services. This was done in Scotland, where social services are now considered essential services alongside the National Health Service (NHS).

With regard to pandemic preparedness specifically, establishing coherent data flows and corresponding databases that integrate all the relevant data collected by the different stakeholders (hospitals, contact-tracing systems, the Ministry of Health, etc.) is essential to enable quick and high-quality analysis for future pandemics (see Chapter 4 for more information on this topic). Furthermore, while the implementation of the Qlik information system has been critical to Luxembourg's response, the country must continue its efforts to develop a single information system, where databases are interoperable, with a unique identifier for patients and where health services are automatically integrated. Despite improvements linked to the pandemic and to the implementation of shared medical records, Luxembourg's information systems are still incompatible. As some OECD member countries have shown, an integrated health information system allows for better management of health crises. Canada, Denmark, Estonia, Finland, Korea, Latvia, the Netherlands and Sweden all stand out for their integrated information systems that linked data from multiple health sectors and provided real-time data from the onset of the pandemic crisis (Oderkirk, 2021[16]) (see also Chapter 4). The challenge is to design systems that can be used not only to transmit information, but also for internal management purposes (this is particularly important given the time constraints typical of crisis periods) (OECD, 2022[2]).

3.2.5. The role of scientific expertise in public decision making should be strengthened more generally outside of crisis periods to increase its legitimacy

The last important aspect related to crisis management governance concerns the advisory role that experts and scientific bodies played in Luxembourg to help the public authorities make decisions. This role is also known in risk management as "sense-making".

As discussed in the previous section, the COVID-19 crisis required governments to make clear and legitimate decisions based on reliable data in a context where there were many unknowns and very little time for dialogue and information gathering (OECD, 2020[8]). Governments were also faced with the need

to synthesise information from multiple sources and stakeholders and use it to inform plans and responses to the COVID-19 crisis (OECD, 2020[8]). To address this, the vast majority of OECD member countries called on scientific expertise to inform public decision making. While necessary in the face of so many unknowns, this risked threatening the public's trust in government and in expert advice, and calling into question the boundary between expertise and political decision making.

In Luxembourg, trust in government is stronger than average in OECD member countries (OECD, 2022[17]), but maintaining a high level of trust in the event of repeated crises and ensuring that the best expertise is available quickly may require setting up a permanent scientific advisory system with transparent governance to ensure that decisions are made with the best possible basis.

The creation of the COVID-19 Task Force gave Luxembourg a unified voice with specialist expertise

Many OECD member countries, such as Belgium, Colombia, Spain and Switzerland, created an ad hoc scientific committee in March 2020 to advise the government. In Luxembourg, this committee was named the COVID-19 Task Force. The Task Force was formed to provide the health system with the combined expertise available in Luxembourg's public research sector, under the co-ordination of the Ministry of Higher Education and Research. The missions of this Task Force were:

- To co-ordinate scientific expertise from public research (Luxembourg Institute of Health, Luxembourg Institute of Socio-Economic Research, Luxembourg Institute of Science and Technology, National Health Laboratory, Luxinnovation, University of Luxembourg, and the Luxembourg National Research Fund) to support decision making by healthcare providers and the government.
- To help identify and centralise a variety of priority activities, drawing on intersectoral expertise in biology, medicine, mathematics, informatics, epidemiology, economics, and social sciences.
- To be the point of contact between the national research ecosystem, the clinical community and the authorities in order to promote joint projects (OECD, 2022[15]).

The creation of this Task Force in Luxembourg allowed for scientific advice to be centralised in the face of such uncertainty and rapidly evolving evidence.[1] In France, however, the mission to control the quality of the management of the health crisis found that the dispersion of scientific expertise among several public health authorities may have made it difficult to pool knowledge and competences (Report of the Mission on quality control of the management of the health crisis, 2020[18]). In general, OECD data suggest that the creation of a new scientific advisory body improved government decision making on complex issues related to COVID-19 (OECD, 2022[2]).

However, even the most respected researchers and scientists, with their expertise, cannot ensure that the best evidence-based policies are adopted and implemented without the support of an effective national scientific advisory system. In Luxembourg, two scientific committees with competence in health matters existed prior to the pandemic: the Conseil Scientifique du Domaine de la Santé [Scientific Health Board], whose mission is to issue recommendations on medical and care best practices, and the Superior Council of Infectious Diseases, whose mission is to issue recommendations on infection prevention and control. The Superior Council of Infectious Diseases has been particularly active in developing the vaccine strategy and vaccine recommendations. However, there was no formalised system for gathering cross-sectoral scientific expertise (the Ministry of Higher Education and Research is normally responsible for co-ordinating scientific advice).

Trust in expert advice must be built over time. In addition, OECD data show that the new scientific bodies created to meet the needs of the crisis may have had difficulty accessing the data and information necessary for their analysis (OECD, 2022[2]). While this was not the case in Luxembourg, the government

could consider establishing a permanent institutional structure to collect scientific advice at the highest level of government, along the lines of what has been done in the United Kingdom (see Box 3.8).

Box 3.8. The United Kingdom's Scientific Advisory Group for Emergencies

The United Kingdom created the Scientific Advisory Group for Emergencies (SAGE), which advises the Cabinet when a crisis requires expert guidance. SAGE meets in situations that require intergovernmental co-ordination, including when the Cabinet, in consultation with the Prime Minister, decides to put the Cabinet Office Briefing Rooms (COBR) into action. In this context, SAGE meets to provide scientific and technical advice on how a risk might develop and on potential scenarios and their impacts. The advisory group is both flexible and scalable in that its tasks are adapted to the nature of the risk and evolve as the crisis progresses.

Under the authority of the government's Chief Scientific Adviser, SAGE brings together experts from all sectors and disciplines to analyse data, evaluate existing research and commission new research. It may create subgroups or liaise with decentralised institutions or scientific groups, and it is empowered to access intelligence information.

To inform the government, SAGE presents strategic options documents that describe scientific and technical solutions and their advantages and disadvantages in relation to different response scenarios. At all stages, SAGE representatives attend COBR to explain scientific issues.

Source: OECD (2015[1]), *The Changing Face of Strategic Crisis Management*, OECD Reviews of Risk Management Policies, OECD Publishing, Paris, https://doi.org/10.1787/9789264249127-en.

To this end, Luxembourg would benefit from following the principles of a robust and credible scientific advisory system established by the OECD (see Box 3.9).

Box 3.9. General principles for a robust and credible system to provide science advice to the government

To ensure the availability of credible expertise, governments should create scientific advisory systems that:

1. Have a clear mandate, with defined roles and responsibilities for its various actors. This includes:
   - clear definition and demarcation of advisory and decision-making roles and functions
   - definition of the roles and responsibilities of each actor in the system
   - *ex ante* definition of the legal role and potential liability of all persons and institutions involved
   - availability of the institutional, logistics and personnel support necessary to accomplish the advisory mission.
2. Involve relevant stakeholders, including scientists and policy makers, as appropriate. This involves:
   - using a transparent participation process and following strict procedures for declaring, verifying and dealing with conflicts of interest
   - drawing on the scientific expertise needed in all disciplines to address the issue at hand

- explicitly considering whether and how to engage non-scientific experts and civil society stakeholders in advice development
- implementing effective procedures for timely information exchange and co-ordination with various national and international counterparts.

3. Produce sound, unbiased and legitimate advice. This advice should:
   - be based on the best scientific data available
   - explicitly assess and communicate scientific uncertainties
   - be free from political interference (and other special interest groups)
   - be generated and used in a transparent and responsible manner.

Source: OECD (2022[12]), *Scientific advice in crisis: Lessons learned from COVID-19*; OECD (2015[1]), *The Changing Face of Strategic Crisis Management*, OECD Reviews of Risk Management Policies, OECD Publishing, Paris, https://doi.org/10.1787/9789264249127-en.

Some challenges may have arisen in relation to governance of this scientific expertise

The OECD has identified several principles for establishing an effective national science advisory system (OECD, 2015[1]). These principles underline the importance of the governance of scientific expertise for ensuring the relevance and credibility of the resulting advice. Indeed, maintaining trust between decision makers and scientific evidence providers is essential for effective decision making when there is great uncertainty.

Firstly, including expertise from a variety of backgrounds ensures that decisions are informed by credible and neutral advice. In Luxembourg, the COVID-19 Task Force brought together multidisciplinary expertise in public health, economics, innovation, public-private partnerships and logistics. In contrast, many OECD member countries' scientific advisory committees are composed solely of epidemiologists, virologists, public health experts and medical experts (OECD, 2020[8]). Nevertheless, Luxembourg could extend the multidisciplinary dimension of its Task Force even further by including experts in ethics and rights in particular. This is what the Swiss government has done, for example, by creating the National COVID-19 Science Task Force (Swiss Federal Chancellery, 2020[19]).

There is also a role for civil society and practitioners in managing the link with scientific expertise. Civil society organisations could have been consulted in the process of developing scientific advice in Luxembourg. OECD data show that few countries have involved stakeholders on the ground and civil society organisations in their scientific advisory committees (OECD, 2022[2]). However, consultation with them, the private sector, citizens and international organisations can enhance the quality of the advice and strengthen the credibility and inclusiveness of the council. To include this dimension, Luxembourg could draw inspiration from the way Australia's National COVID-19 Coordination Commission operated during the crisis, with support from a board composed of representatives from all sectors, including non-profit organisations.

Secondly, transparency about the choices made in the composition of scientific advisory bodies, members' declarations of private interest, and the bodies' decision-making processes is crucial when authorities are confronted with health risks characterised by a high degree of uncertainty. This requires formal processes for consulting scientific committees and making decisions, and for such bodies to be transparent and have integrity (OECD, 2022[2]). In Luxembourg, the COVID-19 Task Force was mobilised informally based on an initiative from the research sector, so there was no transparency in the choices made regarding the composition of this body. Furthermore, decision-making processes were not subject to a clear *ex ante* process (who provides advice? Who makes decisions? Is the decision made by consensus, by majority, etc.?). This transparency and the establishment of explicit processes are all the more important to clarify the role of the scientific council with regard to political decision making, and to deal with cases of divergent

opinions within the scientific community. In the future, Luxembourg could consider more clearly defining the mandate of the COVID-19 Task Force or any scientific advisory body by establishing a mandate or mission statement, as well as clearly defining the decision-making processes.

The transparency of scientific expertise could be increased

The scientific evidence that informs the policy response to COVID-19 is inherently incomplete and conditional. In such a dynamic situation, when policy makers and the public want assurance and certainty, the scientific community faces a real challenge. On the one hand, it may be difficult to reach a consensus. On the other hand, communicating uncertainties and alternative viewpoints to citizens may affect public trust in scientists and politicians.

In this context, many countries have controlled the nature and volume of the information made public. As a result, the publication of scientific advice is rarely systematic and often remains at the discretion of the government in OECD member countries. This was the case in Luxembourg, where most, but not all, of the Task Force's opinions were published online at www.researchluxembourg.org/en/covid-19-task-force/. Moreover, the Task Force chose not to publish dissenting opinions in order to ensure that the scientific advice given to the government was coherent.

Publishing dissenting opinions and systematically publishing opinions to the government strengthens the legitimacy and credibility of the scientific advice among the public. Maintaining transparency about the data behind scientific advice and which scientific advice is followed by governments promotes citizen confidence. To this end, the OECD Recommendation advises that governments ensure transparency with respect to the information used in decision making to promote stakeholder acceptance of the risk management decisions taken (OECD, 2021[11]). In particular, this requires governments to ensure transparency with regard to the assumptions that underlie analyses of scientific advice, as well as the uncertainties associated with them.

Luxembourg could follow the example of some other countries and publish the minutes of COVID-19 Task Force meetings and the opinions expressed. In Ireland, for example, the National Public Health Emergency Team is the official mechanism for co-ordinating the response of the health sector. It aims to facilitate the flow of information between the Department of Health and its agencies and provides a forum for coming to a consensus on strategic approaches to the crisis. Its meeting agendas are routinely posted on the Department of Health website, alongside meeting minutes, which include dissenting opinions and the actions and policies discussed (OECD, 2020[8]). This best practice could serve as inspiration for the COVID-19 Task Force in Luxembourg.

3.3. External crisis communication in Luxembourg

The OECD Recommendation of the Council on the Governance of Critical Risks advises governments to communicate risks to the public using targeted messaging, and methods tailored to different audiences, while ensuring that the information provided is accurate and reliable (OECD, 2014[3]). In this sense, the Recommendation stresses the importance of crisis communication, understood as communication from the government to the public and stakeholders on the evolution of the crisis and the actions to be taken in response to a risk that has materialised. Such communication should be targeted, adapted, accessible, precise and coherent (OECD, 2016[20]). In Luxembourg, as in many other OECD member countries, it has sometimes been difficult to strike this balance, given the fast-changing nature of the health measures to be communicated.

3.3.1. Luxembourg used a wide variety of channels, which allowed it to reach a large audience and to be attentive to citizens' expectations

During the coronavirus crisis, OECD member countries generally understood the importance of clear and coherent communication in responding to the crisis. In the face of a pandemic, whether or not the public accept the decisions taken has direct consequences on whether the mitigation measures imposed are followed and whether the fight against the effects of the virus is effective. As a result, governments greatly increased the frequency of their external communications to the public, using a variety of channels, ranging from press conferences and social media to online databases (OECD, 2020[8]).

In Luxembourg, the government made great efforts to communicate quickly and extensively on various channels to ensure its crisis communications reached as many people as possible. This initiative was consistent with the crisis communication strategy set out by the government in advance of the 2020 pandemic (Government of Luxembourg, Ministry of State, 2016[21]). Initially, the government used traditional crisis communication channels, such as the media, radio and television. As soon as the first cases were detected, press releases detailing the situation and its evolution were relayed to the print media. As the virus progressed, communication also accelerated both through press conferences streamed live to the public and via other media (print, radio, etc.). To encourage people to follow the public health rules in place, the government also put up posters in public places and throughout Luxembourg, for example in bus shelters.

The most important messages were also relayed on the social media pages of ministries and political figures, at www.covid19.lu and on the Telegram account of the Health Directorate, which was used to issue urgent communications to health professionals. Using social media is particularly important in a world where false information is widely shared by a large number of sources (OECD, 2015[1]); social networks have a key role to play in combating misinformation that threatens compliance with the emergency measures adopted (OECD, 2020[22]). However, traditional modes of communication cannot be ignored, as some population groups do not use social media. The combined use of social networks and traditional media, as was the case in Luxembourg, is best practice for public communication in times of crisis (OECD, 2020[22]; OECD, 2020[8]). To summarise, mass communication through a wide variety of channels enabled Luxembourg to relay public health instructions to as many people as possible.

In addition to this top-down communication from the government to the population and stakeholders, Luxembourg also made use of some two-way communication. A hotline was set up at the beginning of March 2020 to answer questions from citizens and, later, from companies on how to deal with the virus. This hotline allowed the government to not only answer citizens' questions, but also to develop a deeper understanding of the population's concerns. While crisis communication has traditionally favoured a top-down approach, with messages sent from the executive branch to citizens, this type of two-way communication can promote dialogue and help the authorities understand the questions and concerns of the population. The Luxembourg government also used other two-way communication tools such as Facebook Live and an email helpdesk, which were able to serve as an indicator of how communications were being received by the population and if there was a need for any additional information. Using this information, communication could be continuously adapted and improved.

It is imperative that Luxembourg pursues this approach when communicating other crises in the future, and it should also consider extending it to other channels. Some OECD member countries, such as France, for example, have set up WhatsApp accounts to both communicate key information to the population and to listen to their concerns and reactions to public health instructions (OECD, 2020[22]).

3.3.2. Luxembourg's crisis communication benefited from messaging adapted to different audiences but may have suffered from a lack of coherence

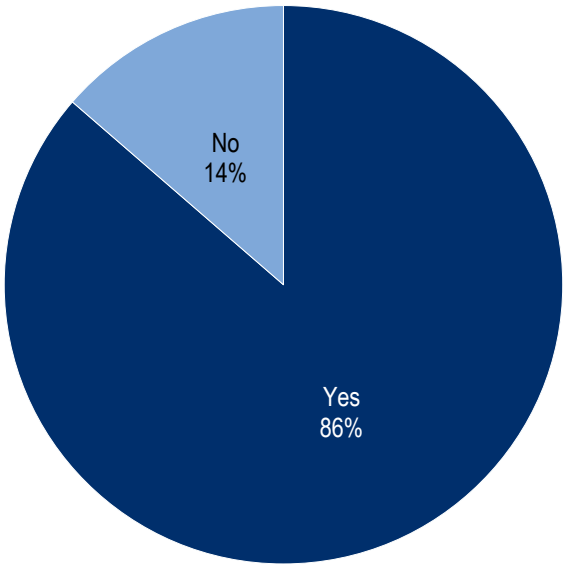
When citizens' expectations are at their highest, public communication must find the right words to give meaning to events (OECD, 2021[11]). This mission of meaning also refers to the capacity of the public authorities to address different populations by adapting messages to their different expectations, and to demonstrate the scientific rationale behind the emergency decisions taken. In Luxembourg, crisis communication was largely adapted to different audiences, supported by clear leadership and developed with the help of the scientific community, but may have suffered from a lack of coherence at times.

The first factor in creating meaning is clear messaging, supported by strong leadership, throughout the crisis. Leadership plays a major role in crisis communication, in that public authorities must convey messages that meet the public's legitimate need to know what is happening and what to do, while taking care not to create expectations that cannot be met (OECD, 2020[8]). In Luxembourg, crisis communication was managed in close consultation between the Ministry of State, the Ministry of Health and the Health Directorate during the first phase. The government spokesperson was endorsed directly by the Prime Minister and the Minister for Health during press conferences. While the Ministry of Health and the Health Directorate gradually took over the co-ordination of communication from summer 2020 onwards, the Ministry of State remained the main player in acute phases, such as during the second wave of the pandemic in autumn 2020.

The use of clear language and personalised communication materials are also essential to create meaning and share complex information with different segments of the population. Like other OECD member countries such as Sweden, Belgium and the United States, Luxembourg therefore chose to produce communication materials in several languages – in the country's three official languages and in certain other languages frequently used by cross-border communities. This proactive strategy allowed the messages to reach as many people as possible in their native language. OECD data shows that tailoring communication materials is one of the most effective ways to share complex information with different segments of the population (OECD, 2022[2]).

Despite this leadership and the high degree of personalisation of messages in Luxembourg, crisis communication sometimes lacked coherence. This challenge was not specific to Luxembourg, as OECD data shows that 12 out of 26 (46%) CoGs faced difficulties ensuring public communications were coherent during the COVID-19 crisis (OECD, 2021[11]). Aware of this challenge, the government of Luxembourg sought to equip municipalities with tools that would allow them to relay the main messages as closely as possible to the local population while maintaining coherence across regions. This government support was received very positively by the municipalities, 86% of which felt that it was sufficient to help them communicate with the general public (OECD, 2020[22]).

Figure 3.3. The tools made available to the municipality by the government to relay crisis communication messages were effective



Note: n = 44 out of the 102 municipalities that were sent the survey.
Source: OECD (2022[23]), OECD survey of municipalities on COVID-19 management.

StatLink https://stat.link/4moacg

Despite these tools and the existence of an explicit communication strategy, the Luxembourg government encountered difficulties with the coherence and clarity of messages about measures to contain the spread of the virus. As has been the case in other OECD member countries, the increased frequency of communication and quick changes in public policy have sometimes resulted in confusing messages that may have hindered the creation of meaning, and thus prevented mitigation and recovery measures from being effective. This was partly due to the rapidly changing state of scientific knowledge, as well as the huge number of different rules in place in the lockdown-easing phases and during the successive waves of the virus. Yet, OECD data show that clear and coherent communication is essential during emergencies to gain public trust and ensure people comply with the rules in place (OECD, 2022[2]).

To reduce confusion and build trust in government measures, it is important to state the scientific and technical arguments behind the health advice issued. In addition, the OECD Principles of Good Practice for Public Communication Responses to Mis- and Disinformation emphasise the importance of transparency and honesty in communication (OECD, 2022[2]; OECD, forthcoming[24]). Luxembourg has made efforts towards this by involving health professionals (doctors, virologists, scientists, etc.) in its communication campaigns, particularly with regard to vaccination. However, some communications related to the easing of lockdown and mask-wearing rules could have been accompanied by more scientific and technical explanations. In order to ensure that its messages were well received by the public, Luxembourg could have more systematically tested the effectiveness of its communication measures.

3.4. The involvement of society as a whole in crisis management in Luxembourg

OECD data show that in the event of a new and complex crisis, government crisis management must be complemented by agile partnerships with a broad network of stakeholders (OECD, 2018[5]). The OECD Recommendation of the Council on the Governance of Critical Risks, for example, advises countries to

> *"Engage all government actors at [the relevant] national and sub-national levels, to coordinate a range of stakeholders in inclusive [crisis management] policy making processes."*

This is all the more true as the public authorities currently co-exist with an increasingly large network of actors and are facing increased pressure from society and the media. As a result, traditional approaches to crisis management based on command and control procedures are no longer sufficient. New and complementary approaches are needed to deal with the unexpected and respond to unprecedented shocks. This means that governments must conduct networked, society-wide crisis management, which involves working with subnational public entities and stakeholders from the private sector, the research community and civil society, as well as implementing policies to ensure the continuity of the nation's democratic life.

In Luxembourg, the government has become very aware of this need and has made significant efforts to mobilise a very wide range of stakeholders in its management of the crisis, including the private sector, the municipalities and even certain civil society organisations. However, more active consultation with civil society organisations is desirable to enable them to play a real role in decision making. The same applies to citizens who were not involved in crisis management at all.

3.4.1. Central government co-ordination with local stakeholders was generally effective, although sometimes late

OECD data suggest that subnational authorities were often at the forefront of the COVID-19 crisis insofar as they are often responsible for health, social welfare and transportation services. Co-operation between central and local governments was therefore both essential and complex in many member countries, since local situations differ from one subnational authority to another (OECD, 2020[25]).

In Luxembourg, however, local authorities have played a much smaller role in crisis management than in some other countries due to its geographical size and the fact that these local authorities (the 102 municipalities) have limited powers. Since the law of 27 March 2018 on the organisation of civil security and the creation of the Grand Ducal Fire and Rescue Corps, all national rescue services actors have been brought together as part of a national public establishment and the municipalities are no longer responsible for this matter. As a result, it was not necessary to involve the municipalities in the national crisis unit, as was the case in other OECD member countries. In Austria, for example, the National Crisis and Disaster Management committee co-ordinated the response between federal ministries, provinces, aid agencies and the media (OECD, 2020[8]).

Despite Luxembourg's high level of centralisation, however, the municipalities had to be mobilised for crisis management, both because of some of their own responsibilities (management of public records, some parts of social assistance, disposal of contaminated waste from hospitals, etc.), and to enable them to relay the actions of the national government (see Box 3.10 for more information on the role of municipalities and cities in crisis management in Luxembourg).

Box 3.10. The role of Luxembourg's municipalities and cities in crisis management

Compared to other OECD member countries, subnational authorities played a relatively limited role in managing the COVID-19 crisis in Luxembourg, focusing mainly on maintaining essential communal services, such as drinking water distribution, household waste, public records, urban planning, etc.

However, the 102 municipalities and cities in the country were able to play an important role in relaying the actions of the national government, by:

- sharing prevention messages related to crisis management (preventive measures to be followed, areas where masks should be worn, etc.).
- helping to distribute masks
- establishing certified antigen test centres
- helping to set up vaccination centres, in particular by:
  - providing administrative staff
  - providing reception facilities
  - providing logistics and IT support.

Source: Authors based on (OECD, 2022[15]), OECD information-gathering questionnaire for the Luxembourg Crisis Management Evaluation.

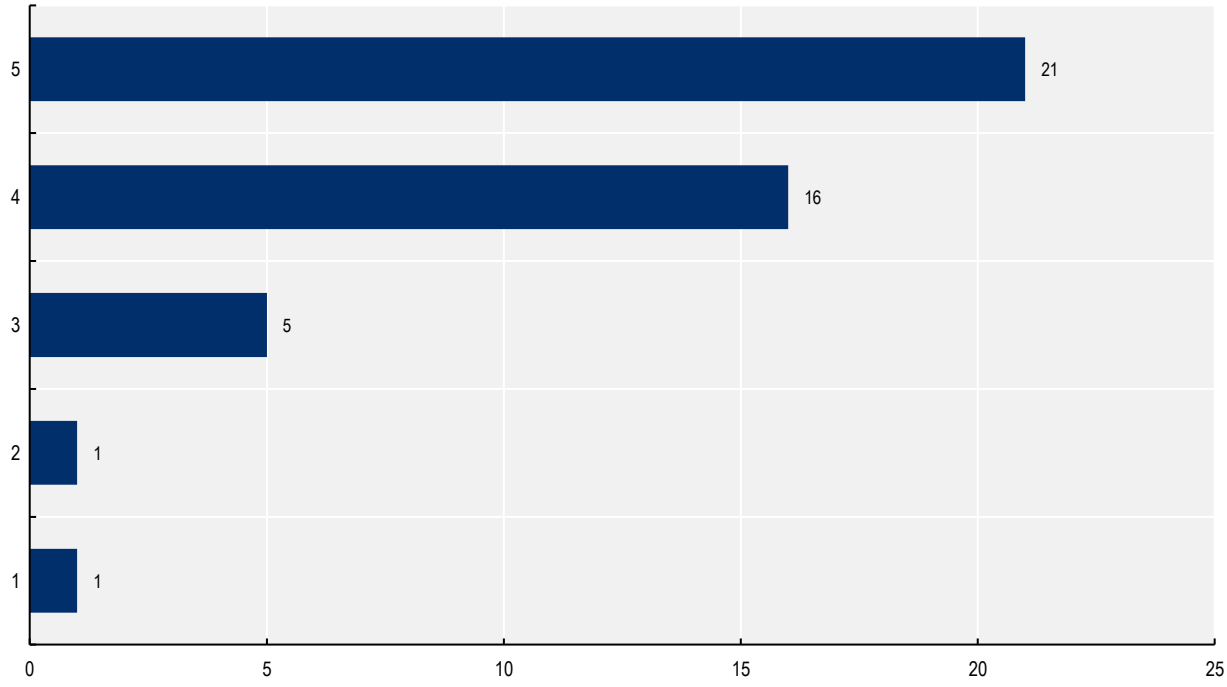
This crucial role was understood very early on by the Luxembourg government, which actively communicated with the municipalities and, more particularly, with the Association of Luxembourg Cities and Municipalities (SYVICOL) to relay the information needed for crisis management. As such, the Ministry of Home Affairs systematically relayed and explained national decisions through circulars sent to the municipalities, SYVICOL and communal public facilities. These circulars were also the subject of regular meetings between SYVICOL and the Ministry of Home Affairs to answer questions from burgomasters (municipality leaders) on the application of the national rules.

Forms of two-way vertical co-ordination were also put in place to allow the municipalities to ask questions about the application of country-wide measures. For example, the Ministry of Home Affairs and the Ministry of Health set up a 24/7 point of contact for burgomasters at the Health Inspectorate to improve communication between the national authorities responsible for public health and the municipalities. This contact was accessible by phone and by email.

Finally, in order to amplify the effects of crisis communication for citizens, the Ministry of Home Affairs created a toolbox, available online, made up of communication tools (leaflets, icons, videos, etc.) to help municipalities relay the government's prevention messages. All of these measures were highly appreciated by the municipalities, the vast majority of which felt that they were effective in helping them fulfil their role as relays in crisis management (see Figure 3.4).

Figure 3.4. Effectiveness of the measures made available to municipalities by central government to support local crisis management

5 = very effective; 1 = not at all effective



Note: n = 44 out of the 102 municipalities that were sent the survey.
Source: OECD (2022[23]), OECD survey of municipalities on COVID-19 management.

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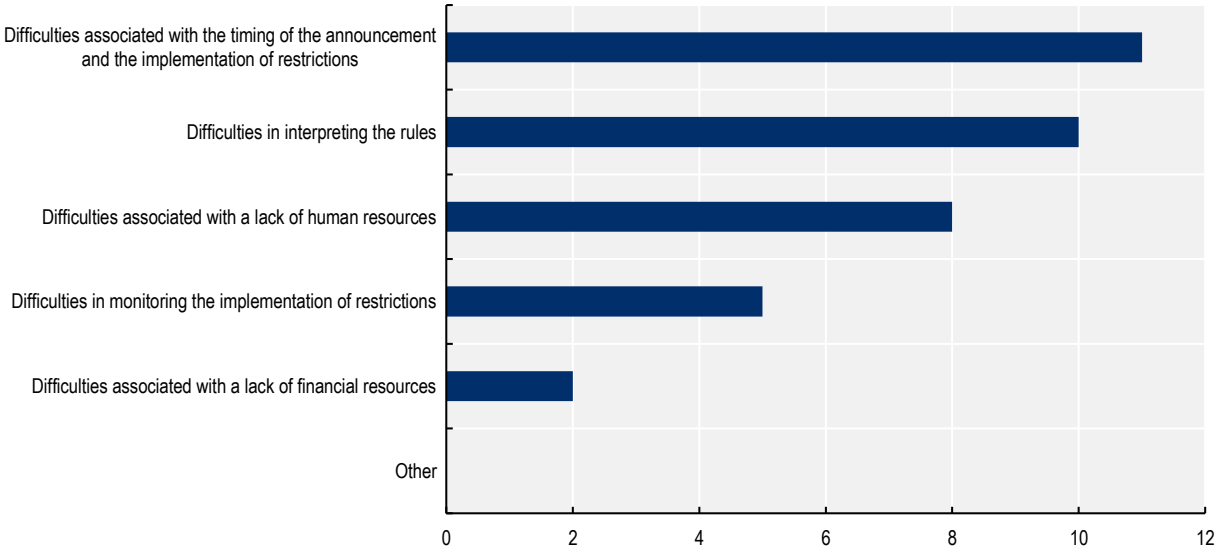
However, as in other OECD member countries, getting the right information to the local level or to front-line staff (such as police forces) in a timely manner may have been a challenge for the Luxembourg government in its response to the crisis (OECD, 2022[2]; OECD, 2022[15]). The same applies to the application of sometimes complex and evolving national rules, as discussed in section 3.3 of this chapter on crisis communication. These contextual factors, linked to the rapid evolution of the epidemiological situation and to rule changes, are however not specific to Luxembourg, and the very frequent communication between the Ministry of Home Affairs and the municipalities was able to somewhat limit the negative effects. Chapter 5 of this report provides more information on vertical communication between the national government and the education sector as a whole.

Figure 3.5. Key challenges in implementing and adapting national restrictions related to COVID-19



Note: n = 36 out of the 102 municipalities that were sent the survey.
Source: OECD (2022[23]), OECD survey of municipalities on COVID-19 management.

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3.4.2. The active involvement of parliament ensured the continuity of democratic life, but other forms of citizen participation could have been used better

Civil society now has higher expectations during a crisis, including wanting to play a greater role in the national response. Thus, while responsibility for managing a crisis ultimately lies with the government, the involvement of civil society and the private sector is an indispensable factor for its success. The data suggest that, in general, the governments of OECD member countries need to do more to involve stakeholders and citizens in crisis management decision making, especially since democratic accountability mechanisms may not have functioned normally in most countries during the acute phase of the pandemic (OECD, 2022[2]). At the beginning of the pandemic, for example, 20 out of 38 OECD member countries declared a state of emergency to give the executive branch special powers to prevent the spread of COVID-19 and mitigate its consequences for society (OECD, 2021[11]).

Luxembourg declared a state of emergency, which gives exceptional powers to the executive branch, on 18 March 2020 (Government of Luxembourg, 2020[4]). This state of emergency lasted until midnight on 24 June 2020, but was not declared again during subsequent waves of the pandemic. The period when parliament's powers were limited (during a state of emergency, grand ducal regulations can replace laws, see Box 3.11 on this subject) was thus relatively limited in Luxembourg compared to some of its European neighbours. For example, in France, the state of health emergency, first introduced for two months by the law of 23 March 2020, was extended until 10 July 2020 inclusive, and then reinstated from 17 October 2020 to 1 June 2021.

Box 3.11. The state of emergency within the meaning of Article 32.4 of the Constitution of Luxembourg

The state of emergency is an exceptional situation in which the executive branch has exceptional powers. In Luxembourg, states of emergency have been governed by Article 32.4 of the 1868 Constitution since it was amended on 13 October 2017.

Under this article, a state of emergency may be declared in the following cases:

- an international crisis
- real threats to the vital interests of some or all of the population
- imminent danger resulting from serious attacks on public safety.

Once declared, and given the urgency resulting from the Chamber of Deputies' inability to make laws within the appropriate time limits, the Grand Duke may take the necessary regulatory measures in all matters. These measures may go against existing laws and limit the fundamental rights and freedoms of citizens, but they must be necessary, adequate and proportionate to the aim pursued and comply with the Constitution and international treaties.

Source: Luxembourg (1868[26]), Constitution of Luxembourg.

Luxembourg therefore made the explicit choice to involve parliament (known in Luxembourg as the Chamber of Deputies) very actively in the response to the crisis. As a result, the Chamber of Deputies passed a total of 30 laws relating to measures to combat the pandemic. This decision allowed for strong continuity of democratic life in the country, as all these laws were subject to normal examination and voting procedures. The Chamber of Deputies adapted to allow for more agile operation given the large number of laws that had to be passed. It created a new decision-making body, bringing together the Bureau and the Conférence des Présidents, or Conference of Presidents, the purpose of which was to temporarily adapt the internal rules of parliament to enable deputies to take decisions more quickly. In this respect, the involvement and adaptation of the Luxembourg parliament in the management of the crisis is a good practice in terms of continuity of democratic life. While this high degree of parliamentary involvement may have had some effects on management flexibility (see Chapter 5 on the topic), these were relatively limited given the high degree to which the Chamber of Deputies' operating methods were adapted.

Outside of this formal framework of representative democracy, the explicit involvement of civil society in crisis-related decision making was very limited in Luxembourg, despite the creation of a specific body for this purpose: the ad hoc group. This group was composed of various civil society representatives, including the Chamber of Employees, the Fédération des Artisans, or Federation of Craftspeople, the Chamber of Commerce, an ethics expert, the Ombudsman, the Human Rights Consultative Commission, the Ombuds Committee for the Rights of the Child and a health psychologist from the University of Luxembourg. Its planned aim was to involve these civil society representatives in the decision-making process, but it met very few times (four times, two of which were convened by the government). The members of the ad hoc group agree that this forum for exchange served more as a place to listen than as a true link in the decision-making process, insofar as the vast majority of decisions had already been made when it met.

To give substance to this idea of consultation with civil stakeholders, Luxembourg should consider involving civil society representatives earlier in the process for making crisis management decisions. This can be done, for example, by involving civil society organisations more systematically in the crisis unit's working groups. This is particularly important in the case of, for example, public service user associations or representatives of certain vulnerable sectors of society (homeless people, migrant workers, etc.) (see also Chapter 4 on this topic).

It is easy in a small country like Luxembourg to think that informally consulting the main stakeholders in the crisis is enough. But it is also important to involve citizens directly in government decisions to ensure the quality of public action and to maintain the population's trust (OECD, 2021[11]; OECD, 2022[17]). The OECD has found considerable evidence of the value and effectiveness of public consultations for obtaining expert advice and devising solutions quickly, even in crisis situations (OECD, 2020[27]). Some countries have been able to adopt innovative forms of these consultations, for example via digital technology. In Estonia, citizen consultations contributed to the implementation of a digital solution for tracking inventory and demand for PPE. Luxembourg should consider involving citizens more actively in its crisis management, and more generally, in its risk management.

3.4.3. Luxembourg must strive to evaluate the measures adopted during the crisis more systematically in order to draw lessons for the future

In the wake of the crisis, it is important to conduct in-depth analysis of what happened and to look at the relevance, coherence, efficiency, effectiveness and sustainability of the measures taken. It is important to carry out this process for each individual measure and each institution, but also to take an overall look at the response to the crisis (OECD, 2015[1]). For this reason, the OECD Recommendation of the Council on the Governance of Critical Risks (OECD, 2014[3]) calls on countries to develop the institutional capacity required to learn from past crises.

Luxembourg has not yet undertaken this effort to learn lessons for the future. While this report is a first step in this direction, Luxembourg's public institutions must work to systematically evaluate the measures adopted during the crisis. This is particularly complex in a context where one crisis follows on from another, but it is important in order to avoid repeating the same mistakes and to ensure, in a context where some decisions were taken very quickly, that public funds were well used. Therefore, to better prepare for these exercises in the future, the government of Luxembourg should consider setting up a system of public policy evaluation across the entire administration to equip ministries with the capacity to understand what policies have worked, to what extent, why and for whom.

3.5. Summary of recommendations

3.5.1. Strengthen transparency in crisis management

- **Involve civil society** and user representatives more in the management of the crisis, particularly in the various working groups of the interministerial crisis unit.
- **Set up direct consultation forums for citizens** in times of crisis to listen to their opinions on crisis management.
- **Clarify the responsibilities and missions of each of the crisis management bodies** in the form of terms of reference or a mandate statement for the working groups of the crisis unit and the Task Force.
- **Make information** on the main measures adopted by the crisis unit **available and accessible to the public**.
- **Make all Task Force advice public**, and consider publishing dissenting expert opinions where applicable.
- **Extend two-way crisis communication** with citizens to more channels.

3.5.2. Clarify and strengthen the role of scientific expertise and evidence in public decision making

- **Establish a permanent system of providing scientific advice** to the government, using a wide range of expertise, including non-traditional expertise (e.g. practitioners, civil society organisations, etc.).
- **Draw up a list of national experts** from different disciplines and organisations so that their expertise can be used quickly and effectively to inform those managing the crisis on a wide range of topics.
- Continue to **make explicit the scientific rationale** behind government decisions on crisis management.

3.5.3. Prepare for future crises

- **Strengthen the critical risk monitoring system** led by the High Commission for National Protection.
- **Develop protocols and processes for collecting data** from critical infrastructure and essential services to be better prepared in the event of a future crisis.
- **Develop a single health information system**, where databases are interoperable, with a unique identifier for patients and where health services are automatically linked.
- **Learn lessons from this crisis and prepare for future ones** by evaluating the public policies adopted since March 2020 and building ministerial capacity to do so in the future.
- **Consider revising the scope of critical infrastructure** to include other essential actors or services, such as social services.

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Note

[1] The recommendations working group set up as part of the crisis unit in July 2020 was also mandated to ensure scientific monitoring of public health interventions in other European Union countries. This working group issued a weekly report that was communicated and commented on within the crisis unit.

4 The resilience of the Luxembourg health system to COVID-19

The COVID-19 pandemic has had a major impact on the health of Luxembourg's population. The mobilisation of resources and actors around the interministerial crisis unit was remarkable, and enabled new systems to be developed rapidly and health services to expand to absorb the shock of the health crisis. However, the pandemic also revealed structural weaknesses in the healthcare system, suggesting a lack of preparedness. This chapter assesses the resilience of Luxembourg's health system, taking into consideration the direct and indirect effects of the health crisis. The strengths and weaknesses of the crisis management in Luxembourg are also analysed in terms of the level of pandemic preparedness, the mechanisms implemented to absorb the shock and contain the pandemic, and the policies put in place to help certain health system functions recover.

Key findings

The Luxembourg health system responded and adapted remarkably well to the COVID-19 pandemic, as shown by numerous measures such as intensive testing for cases, contact tracing, the increase in hospital capacity, and the health reserve. However, Luxembourg needs to strengthen key aspects of preparedness to ensure that its health system is more resilient to future threats (for example, by strengthening information systems, increasing health personnel and setting up a central purchasing and logistics unit for critical products). Following the crisis, the health system must also be adapted to address long-term needs and mitigate the indirect effects of the pandemic (by strengthening primary care and continuing to address vaccine hesitancy, for example).

The direct health impact, measured in terms of excess mortality, has been lower in Luxembourg than the average for other OECD member countries. Up to and including the first half of 2022, the excess mortality rate was 1 226 per million population in Luxembourg, more than 60% lower than the OECD average. However, **the pandemic has disproportionately affected older and disadvantaged populations.** The mortality rate among the population aged 80 and over residing in long-term care facilities (a population that is on average more vulnerable than in other OECD member countries) is almost double the OECD average.

The effectiveness of Luxembourg's vaccination campaign in reducing hospitalisations and deaths is undeniable. The campaign was carried out successfully thanks to the efforts made upstream by thematic groups starting in March 2020, allowing work to be done on key issues such as the storage and delivery process, and the development of information systems. Although the vaccination campaign was highly personalised (with invitations sent out and personal accompaniment to appointments), **vaccine hesitancy still appears to be relatively high.** Despite overestimation biases, in May 2022 almost 30% of people residing in Luxembourg were still not fully vaccinated. It would have been beneficial to deploy vaccination in doctors' surgeries and retail pharmacies earlier in Luxembourg. Targeted awareness-raising based on community approaches should be strengthened.

The indirect consequences of the pandemic in Luxembourg are worrying, both in terms of delays in diagnoses and routine care, and in terms of deteriorating mental health (mainly among young people and people in employment).

Luxembourg has suffered from several shortcomings in terms of pandemic preparedness. Outside of the critical infrastructure sector, Luxembourg was not aware of the status of stocks of PPE at the beginning of the pandemic, and there was no information system in place to manage the crisis. The country's reliance on cross-border health workers also made the health system extremely vulnerable to border closures during the first lockdown to contain the spread of the disease. Finally, the lack of infection prevention and control expertise and medical support in long-term care facilities limited their ability to respond quickly to the health crisis. The interministerial crisis unit put in place innovative measures to compensate for the lack of preparedness, such as the development of the Qlik information system, the provision of temporary accommodation for cross-border health workers and the implementation of training in long-term care facilities.

The responsiveness of the interministerial crisis unit and the mobilisation of stakeholders was remarkable, putting in place several pragmatic solutions from mid-March 2020 onwards to absorb the shock and contain the pandemic:

- **Intensive testing of cases** was implemented at the start of the pandemic through a range of actions such as mass screening and the formation of mobile teams. This large-scale screening

strategy is among the best practices established by OECD member countries to reduce virus transmission and detect clusters in specific areas early.

- The **contact-tracing system** proved to be effective and thorough in identifying contact cases thanks to three key factors: strengthening of the teams, specific support for certain categories of vulnerable populations following retrospective surveys, and the development of the Care+ application.
- The sharp **increase in hospital capacity** enabled the number of intensive care beds to double during the first wave of the epidemic, allowing the health system to withstand the large influx of patients from Luxembourg itself and from neighbouring countries. This increase was made possible by cancelling non-urgent and non-essential surgical and medical activities during this first wave.
- **Health workers were mobilised** during the first two waves of the pandemic by means of the **health reserve and redeploying staff to areas of critical activity**, thereby preventing any shortages of health personnel for COVID-19 care.

New care-delivery models were able to redress some of the weaknesses in Luxembourg's healthcare system. The goal is to sustain these efforts and evaluate practices to improve health system resilience:

- Luxembourg restructured **primary care** to respond more efficiently to all of the population's needs during the first waves of the pandemic. The implementation of advanced care centres and COVID-19 consultation centres in the primary care sector in Luxembourg is among the best practices of OECD member countries. Luxembourg must continue to strengthen primary care based on multidisciplinary teams that put greater emphasis on health risk prevention and co-ordinated care.
- **Remote consultations, remote monitoring of COVID-19 patients and electronic prescription services** were rapidly deployed to maintain access to care in Luxembourg. However, remote consultations accounted for just 9% of all medical consultations in Luxembourg in 2020, compared to an average of 21% in all OECD member countries. Luxembourg should implement indicators to assess the quality of telemedicine services, including factors such as safety, care outcomes and user satisfaction (as ten other OECD member countries have already done).
- New **mental health support** mechanisms were created for the public and healthcare workers, but multisectoral approaches that link mental health to education, youth and employment policies are lacking, so the needs of at-risk populations are not being met. The policies implemented in Australia, Canada and France are good examples of this being done.

4.1. Introduction

According to the OECD's "New approaches to economic challenges" analysis framework, the evaluation of health systems resilience is based on a cycle composed of four phases: 1. Anticipate; 2. Absorb; 3. Recover; and 4. Adapt. These four phases are essential to reduce the scale and severity of crises, and to minimise the direct and indirect consequences they have on health. This chapter assesses the resilience of Luxembourg's health system, taking into consideration the direct and indirect effects of the health crisis. The strengths and weaknesses of the management of the crisis in Luxembourg are also analysed in terms of the level of pandemic preparedness, the mechanisms implemented to absorb the shock and contain the pandemic, and the policies put in place to help certain health system functions recover.

The COVID-19 pandemic reached Luxembourg on 1 March 2020. The country mobilised significant financial resources during the first two years of the pandemic to respond to the health crisis. In 2020 and 2021, the Health Directorate spent more than EUR 166 million to address the needs of the crisis specifically. Additional financial resources and the remarkable mobilisation of stakeholders around the interministerial crisis unit enabled innovative measures to be developed rapidly and health services to expand. However, the pandemic also revealed structural weaknesses in the healthcare system suggesting a lack of pandemic preparedness. Like other OECD member countries, Luxembourg must now adapt by drawing lessons from the pandemic to improve the performance of the health system and its resilience to potential future pandemics.

4.2. The direct health impact of COVID-19 in Luxembourg

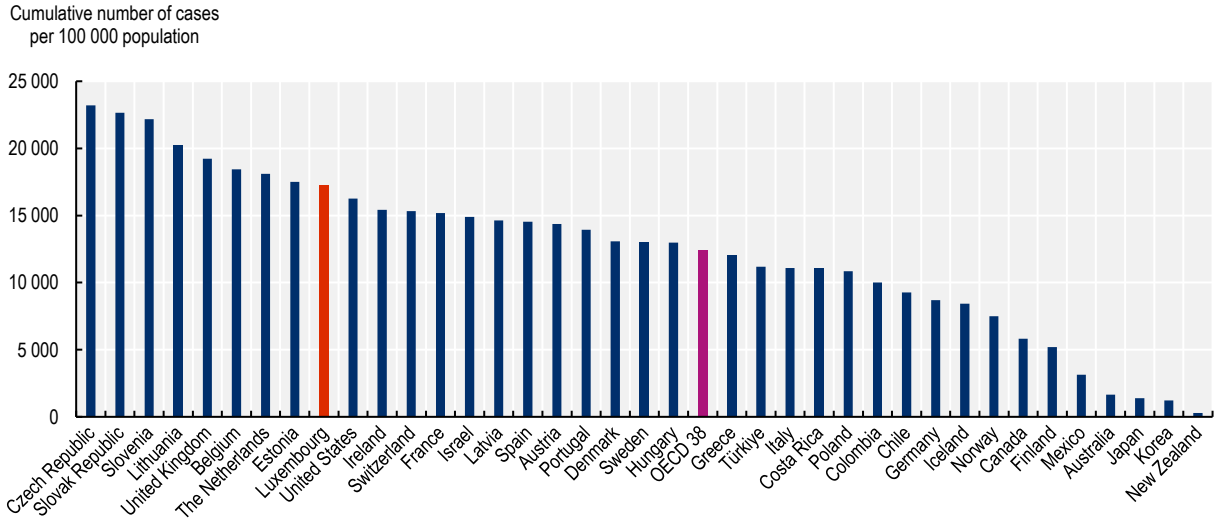
4.2.1. Although the prevalence of COVID-19 infections has been high in Luxembourg, the death toll has been much lower than in other OECD member countries

The COVID-19 pandemic has had a major impact on the health of Luxembourg's population. From January 2020 to December 2021, Luxembourg had one of the highest infection rates among OECD member countries. Despite lower rates of COVID-19-related deaths than in all other OECD member countries, life expectancy fell in Luxembourg in 2020, as was the case for most of these countries.

At the end of December 2021, the cumulative number of reported cases of COVID-19 in Luxembourg was 17 213 per 100 000 inhabitants, well above the OECD average of 12 401 per 100 000 inhabitants. Luxembourg had the ninth-highest prevalence of COVID-19 among OECD member countries (Figure 4.1). This elevated infection rate reflects the country's high capacity to detect infections and the wide variety of testing strategies implemented in the country (see section on Luxembourg's mass testing policy has proven to be effective in curbing the spread of the virus).

Figure 4.1. The prevalence of COVID-19 in the population of Luxembourg was among the highest in OECD member countries

January 2020 to December 2021



Note: The data depend on the ability of countries to detect COVID-19 infections – which was particularly limited in many countries at the beginning of the crisis – and the testing strategies they have implemented. Data are considered up to and including week 52 of the 2021 calendar year.

Source: European Centre for Disease Prevention and Control (2021[1]), "COVID-19 datasets", *European Centre for Disease Prevention and Control* (database), https://opendata.ecdc.europa.eu/covid19/nationalcasedeath/; and *Our World in Data* (database) for non-European countries.

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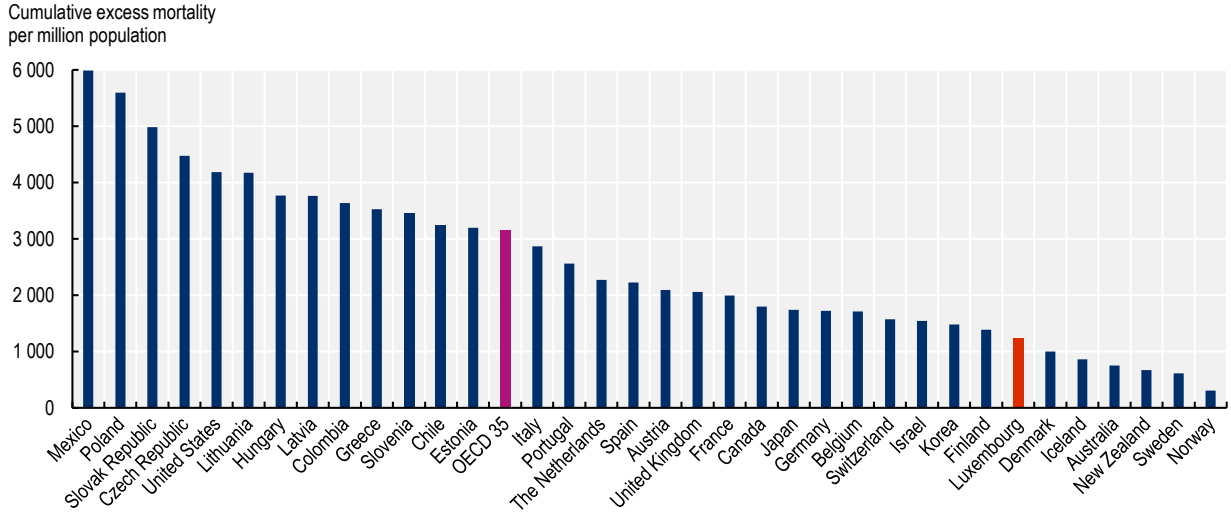
From January 2020 to the first half of 2022, COVID-19 caused 1 306 deaths per million population in Luxembourg, slightly below the OECD member country average of 1 462 deaths per million population. Up to and including the first half of 2022, the excess mortality rate[1] was 1 226 per million population in Luxembourg, more than 60% lower than the OECD average (3 156 per million population). The number of excess deaths per million population in Luxembourg is also much lower than those recorded in certain neighbouring countries, such as France (1 996 additional deaths per million population), Germany (1 724 additional deaths per million population) and Belgium (1 709 additional deaths per million population) (Figure 4.2).

As in other OECD member countries, the high number of deaths in 2020 had an impact on life expectancy. Life expectancy in Luxembourg fell by 11 months in 2020, compared to an average decrease of 8.5 months across the European Union (EU) (OECD/European Observatory on Health Systems and Policies, 2022[2]). According to provisional Eurostat estimates, in 2021 life expectancy increased by seven months to 82.8 years (close to its 2019 pre-pandemic level) (Eurostat, 2021[3]).

Figure 4.2. The cumulative excess mortality rate per million population is well below the OECD average

January 2020 to the first half of 2022



Note: Excess mortality data are not available for Costa Rica, Ireland and Türkiye. The OECD average is a weighted average. Excess mortality is calculated by comparing figures with those from 2015 to 2019. Data are considered up to and including week 13 of the 2022 calendar year. Data are limited for Colombia (up to and including week 35 of 2021), Mexico (all 52 weeks of 2021), Canada (up to and including week 6 of 2022) and Australia (up to and including week 12 of 2022).
Source: OECD (2022) based on Eurostat and national data.

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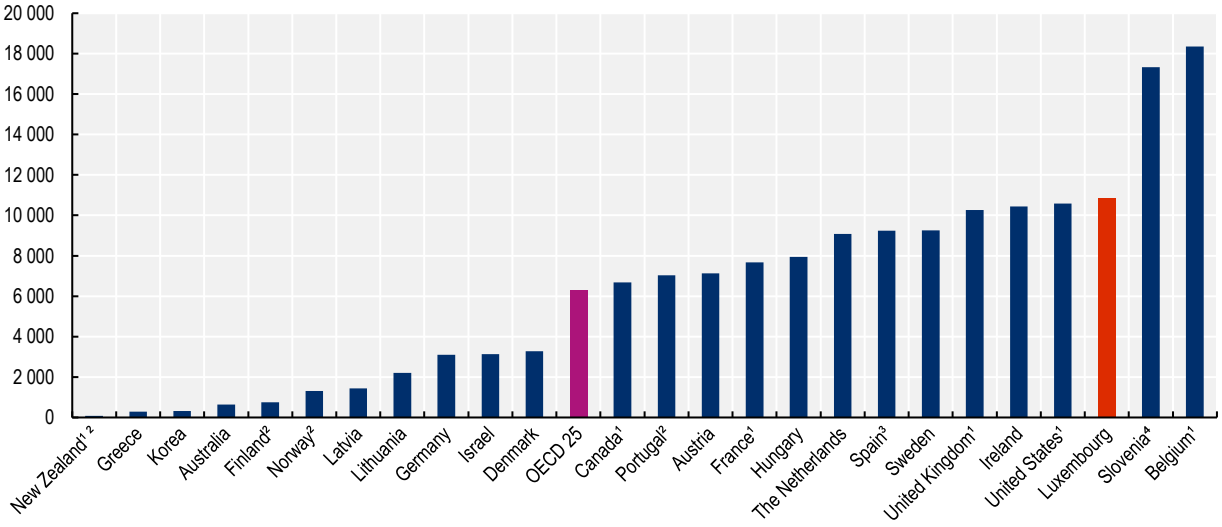
4.2.2. The pandemic disproportionately affected older and vulnerable populations

As in all OECD member countries, the vast majority of deaths attributable to COVID-19 occurred in older people living in residential facilities. Between March and the end of May 2020, almost half (46%) of the deaths attributed to COVID-19 in Luxembourg were among residents of long-term care facilities (Rocard, Sillitti and Llena-Nozal, 2021[4]). If we look at the same indicator among those aged 80 or above, Luxembourg comes third, with only Slovenia and Belgium faring worse. The mortality rate among the population aged over 80 years residing in residential facilities in Luxembourg is almost double the average for OECD member countries (Figure 4.3). However, it should be emphasised that the organisation of the long-term care system in Luxembourg favours home care, so only older and highly dependant people with multiple comorbidities live in institutions. Thus, those living in long-term care facilities in Luxembourg are on average more vulnerable than in other OECD member countries.

Moreover, at the beginning of the pandemic, Luxembourg decided to ensure that older people residing in residential facilities could remain there throughout their illness and that, unless required for medical reasons or desired by the resident or their family, they would not be hospitalised. As such, all residential facilities were provided with COVID kits supplied by the Ministry of Health's pharmacy service and containing the medication needed for end-of-life care and to provide palliative care at the person's bedside (see Section 3). This measure, taken in order to prevent older people in the terminal stage of their illness being taken out of their usual environment, has resulted in a high mortality rate in these residential facilities.

Figure 4.3. Mortality rates in Luxembourg's residential facilities are among the highest in all OECD member countries

Deaths attributed to COVID-19 in residential facilities for older people (80+ years)



Note: Cumulative death data up to and including early February 2021.
1. Includes confirmed and suspected deaths.
2. Includes only deaths that occurred in long-term care facilities.
3. The data come from regional governments using different methodologies, some including suspected deaths.
4. Slovenia includes deaths that occurred in retirement homes and long-term social care facilities.
Source: Rocard, E., P. Sillitti and A. Llena-Nozal (2021[4]), "COVID-19 in long-term care: Impact, policy responses and challenges", *OECD Health Working Papers*, No. 131, OECD Publishing, Paris, https://doi.org/10.1787/b966f837-en.

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The pandemic has also disproportionately affected disadvantaged members of the population and people born in another country. Hospitalisation and death rates differ significantly depending on income level (Van Kerm, Salagean and Amétépé, 2022[5]). Between 1 March 2020 and 27 October 2021, the risk of being hospitalised in intensive care for COVID-19 and the death rate were 1.6 times and 1.4 times greater, respectively, among people with a low standard of living than those with the highest standard of living. Some individuals born in another country were also more heavily affected by the pandemic in terms of rates of infection, hospitalisation and death (Van Kerm, Salagean and Amétépé, 2022[5]). The risk of developing severe forms of COVID-19 was, for example, two and three times higher for residents born in Italy and in any former Yugoslav country, respectively, than for people born in Luxembourg.

The unequal social distribution of COVID-19 morbidity and mortality (whereby rates are higher among the most disadvantaged populations) in Luxembourg is a reality that must be taken into account when developing health policies in the country. The aim is to strengthen the supply of health services to people who are less likely to receive care in the health system and to implement appropriate information and awareness-raising strategies.

4.2.3. While the effectiveness of the vaccination campaign in Luxembourg is undeniable, vaccination coverage is slightly lower than the average in OECD member countries

Several empirical studies have confirmed the effectiveness of the vaccination campaign in reducing hospitalisations and deaths in Luxembourg, especially among people over 70 years of age and those living in residential facilities (Alkerwi et al., 2021[6]; Government of Luxembourg, 2021[7]). As of

16 November 2021, vaccination was over 90% effective in protecting against hospitalisation and death for three age groups considered (70+, 50–69, and 25–49 years) (Government of Luxembourg, 2021[7]).

The vaccination campaign conducted by the interministerial crisis unit was a success for several reasons. Firstly, high priority was given to organising the vaccine campaign from March 2020 onwards, with the establishment of five thematic groups[2] that began work very early on key topics such as defining prioritisation criteria, communication, vaccine supply and developing information systems. Thanks to the work carried out upstream by the thematic groups, Luxembourg was able to meet pharmaceutical requirements, with the High Commission for National Protection entering into contracts with Comptoir Pharmaceutique Luxembourgeois (a private wholesaler-distributor). This public-private partnership ensured that storage, set-up and delivery all ran smoothly, and that agent training could be organised. The work carried out upstream by the thematic groups also made it possible to develop information systems for sending vaccination invitations, making appointments online and recording information about those vaccinated. As an example, the Ministry of Health sent vaccination invitations to every person defined as a priority in the vaccination schedule, giving them the option of using the online vaccination application (Box 4.1). Luxembourg's vaccination campaign was therefore highly personalised, which was not the case in other OECD member countries.

Box 4.1. Luxembourg's vaccination campaign was more personalised than in some other OECD member countries

In Luxembourg, the Ministry of Health invited every person defined as a priority in the vaccination schedule to receive their vaccine. Each invitation included a personal access code that allowed the recipient to log into the vaccination application launched by the Government IT Centre. People could also use a hotline operated by the Health Directorate to receive help with making an appointment.

Other OECD member countries also used online appointment booking platforms to facilitate the implementation of the vaccination campaign, but users did not have personalised support mechanisms like those in place in Luxembourg. In France, for example, the Ministry for Solidarity and Health entrusted online management of vaccination appointments to various service providers, including the companies Doctolib, KelDoc and meSoigner. While these platforms made it easy to find an appointment, people in France did not receive letters or access codes, which can slow down the speed of a vaccination campaign, especially in the event of changes in the vaccination schedule.

Source: OECD (2022), Information-gathering questionnaire for the Luxembourg Crisis Management Evaluation.

In Luxembourg, the vaccination campaign started at the end of December 2020, almost a month earlier than in some neighbouring countries (such as France) in four vaccination centres. The country started to vaccinate health professionals, those working at health facilities (including residential facilities for older people) and residents of these facilities on 28 December 2020. The country's vaccination strategy had six phases based on individuals' risk of exposure, with the degree of vulnerability varying by age and health status (Government of Luxembourg, 2021[8]).

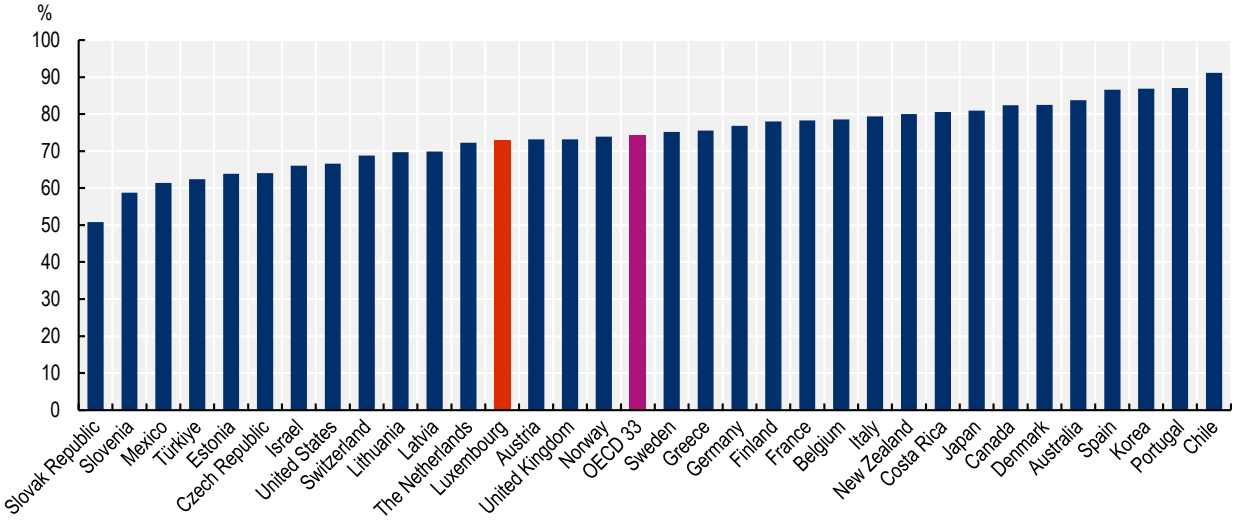
Between 28 December 2020 and 15 June 2021, the vaccination invitation response rate was 73%, demonstrating strong adherence to the vaccination campaign among the public (Government of Luxembourg, 2021[9]; Alkerwi et al., 2021[6]). In contrast, in May and June 2021, 12.7% of the population was still not ready to be vaccinated against COVID-19 (STATEC, 2021[10]), and at the end of May 2022, 73% of people living in Luxembourg had completed the full vaccination schedule (Figure 4.4), lower than the average in other European countries. It should be noted that about 5% of the resident population were probably vaccinated abroad and thus not identified by Luxembourg's system (which may mean that the official figures are an underestimate) (Bertemes and Hentschel, 2021[11]).

According to the Luxembourg Institute of Socio-Economic Research, vaccination rates are positively correlated with standard of living, and vary significantly by country of birth. For example, high-income populations are almost 80% more likely to be vaccinated, compared to only 58% among low-income populations, with these differences remain after adjusting for other socio-demographic characteristics (Van Kerm, Salagean and Amétépé, 2022[5]).

In order to improve vaccination coverage, the government of Luxembourg has proposed various actions to reach people with lower vaccination rates, such as young people aged 20 to 35, secondary school students and isolated or vulnerable populations. These initiatives, which are all equally important, include setting up lists where people can opt in to be vaccinated and using mobile teams to vaccinate older people in their homes, residents in care homes, students in secondary schools and people in certain communes. These efforts are remarkable and were also implemented in the majority of OECD member countries: by 2022, at least 18 other countries had implemented home-based vaccination with the use of mobile teams (OECD, forthcoming[12]).

Figure 4.4. The proportion of the population who completed the vaccination schedule is lower in Luxembourg than the OECD average

Percentage of the population who had received all doses prescribed by the initial vaccination protocol as at the end of May 2022



Note: The percentage represents the total number of people who received all doses prescribed by the initial vaccination protocol, divided by the total population of the country.
Source: *Our World in Data* (accessed 1 June 2022).

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The government of Luxembourg conducted several communication campaigns in response to vaccine hesitancy, including the *Ech si geimpft, an Du ?* [I am vaccinated, are you?] campaign, which encouraged people to discuss COVID-19 vaccination with their general practitioner (GP) to allay any fears or concerns they may have had. A telephone line was set up to allow vaccine-hesitant people to discuss their fears and concerns with doctors from the Centre Hospitalier de Luxembourg (CHL). In order to educate the country's health professionals and best prepare them to answer patients' questions, the Health Directorate held "Lunch Talks", during which experts shared information about COVID-19 vaccines with them and answered their questions. "Expert Videos" were also created, in which experts from Luxembourg's scientific

community (mainly professors from the University of Luxembourg and the Luxembourg Institute of Health) explained the vaccines to the general public.

The vast majority of the government's communication campaigns on the subject were written in the country's five main languages: Luxembourgish, French, German, English and Portuguese, and many were also translated into Tigrinya, Spanish, Russian, Albanian, Serbian and Turkish.

With its *Loss dech impfen! Och an denger Gemeng* [Get vaccinated! Even in your commune] initiative, the government made vaccination even more accessible to citizens. This was accompanied by leaflets sent out in advance to all households in each commune. This targeted communication campaign also identified the sociocultural profile of the communes. Based on this profile, the leaflets were translated into further languages to include those particularly present in these communities. In addition, as part of the vaccination communication efforts, the government reached out to the country's religious communities and provided them with information. In collaboration with the Catholic community, a video address was recorded with a religious representative to respond to the community's hesitations.

Finally, the *Impfbotschafter* (vaccination ambassador) and *Froen un d'Santé* (Facebook Live health Q&A) formats were also used to counter vaccine hesitancy. Vaccination ambassadors are representatives of the healthcare roles who volunteer to raise awareness in their personal and professional environments. Thanks to regular training sessions organised by the Health Directorate, they were prepared for their mission, received support in their activity and were able to answer citizens' questions through direct personal contact. The *Froen un d'Santé* format was an event that took place on social media almost weekly in which experts answered questions from the public live. The format won the Patient Experience Award at the Luxembourg Healthcare Gala in July 2022.

These awareness-raising activities, which are targeted at the populations least likely to be vaccinated and are based on multisectoral partnerships, must be strengthened in order to further increase vaccination coverage in Luxembourg, particularly among disadvantaged populations and those born in another country. It should also be noted that although many GPs participated in the vaccination campaign in vaccination centres, private practices were only involved in the vaccination campaign in Luxembourg later on. However, private GPs promote vaccination, especially with their patients. It is difficult to determine whether earlier deployment of COVID-19 vaccination in private practices would have been a key factor in reducing vaccine hesitancy or reluctance among patients, but national surveys conducted in the United States have revealed that the majority of disadvantaged people prefer to be vaccinated in their doctor's office rather than elsewhere (The Commonwealth Fund, 2021[13]; Frost, 2021[14]). Retail pharmacies were only authorised to administer vaccines against COVID-19 late in the process: starting from March 2022 in Luxembourg, compared with March 2021 in England, France and Switzerland and June 2021 in Italy.

4.2.4. Approximately 60% of patients with COVID-19 report at least one symptom more than one year after the acute phase of infection

In Luxembourg, a significant proportion of patients with COVID-19 continue to feel the effects of the disease several months later. According to estimates by the Luxembourg Institute of Health (Luxembourg Institute of Health, 2022[15]), one in six COVID-19 patients report at least one symptom one year after the acute phase of infection, with fatigue, shortness of breath, and irritability the most common ones. One-third of COVID-19 patients continued to experience fatigue one year later, 13% reported that respiratory symptoms were affecting their quality of life, and more than half (54%) had ongoing sleep problems.

The Luxembourg Ministry of Health has prioritised multidisciplinary care for long COVID, in partnership with CHL, GPs and certain rehabilitation facilities, in order to develop a person-centred care network (Government of Luxembourg, 2021[16]). A pilot project began on 1 August 2021, with a budget of EUR 1.01 million (Centre Hospitalier du Luxembourg, 2021[17]). The implementation in Luxembourg of multidisciplinary management of patients with long COVID, co-ordinated between GPs, specialists and

hospitals, is one of the best practices in OECD member countries to respond effectively to this new public health challenge (OECD, forthcoming[18]).

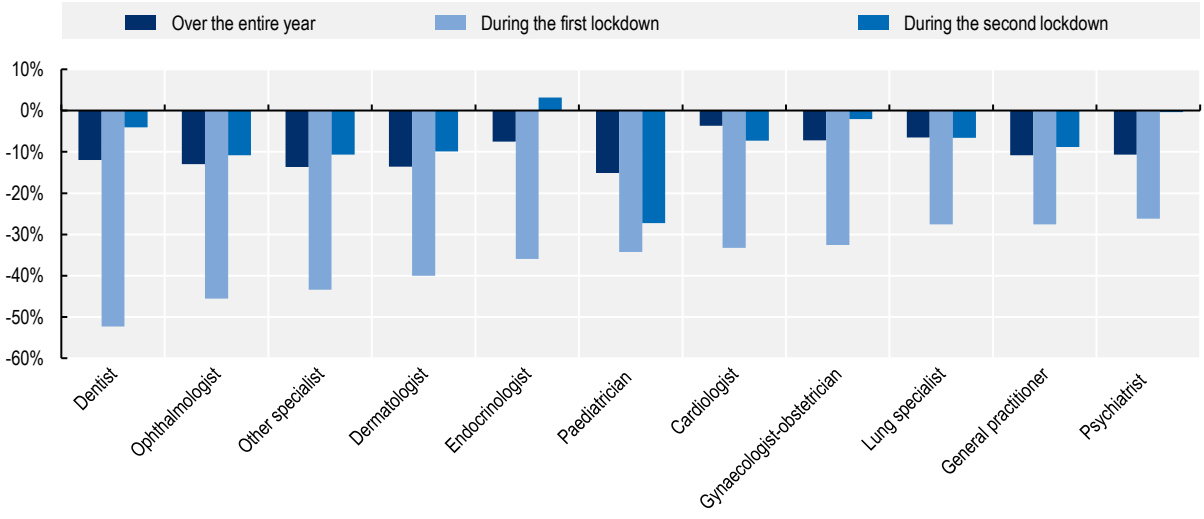
4.3. The indirect consequences of the pandemic in Luxembourg

The indirect consequences of the pandemic in Luxembourg are worrying, both in terms of healthcare utilisation, and in terms of deteriorating mental health (mainly among young people and people in employment).

4.3.1. Luxembourg recorded a decline in consultations with health professionals

Data on the number of consultations with different health professionals, and analysis of how this has changed over time, show that the number of consultations fell in 2020 compared with 2019. GPs, dentists, dermatologists, ophthalmologists, paediatricians and psychiatrists saw their consultations decrease by more than 10% throughout the year (Figure 4.5). Similar findings were also observed in other OECD member countries, such as Australia, Austria, Belgium, France, Norway and Portugal (OECD, 2021[19]).

Figure 4.5. Changes in the number of consultations with selected health professionals in cities, 2019 compared with 2020



Note: The data include outpatient visits and remote consultations. The data compare the number of consultations in 2020 with 2019 (over the entire year), then March through May 2020 (the first lockdown) is compared with the same period in 2019, and November and December 2020 (the second lockdown) are compared with the same period in 2019.
Source: General Inspectorate of Social Security of Luxembourg (2022).

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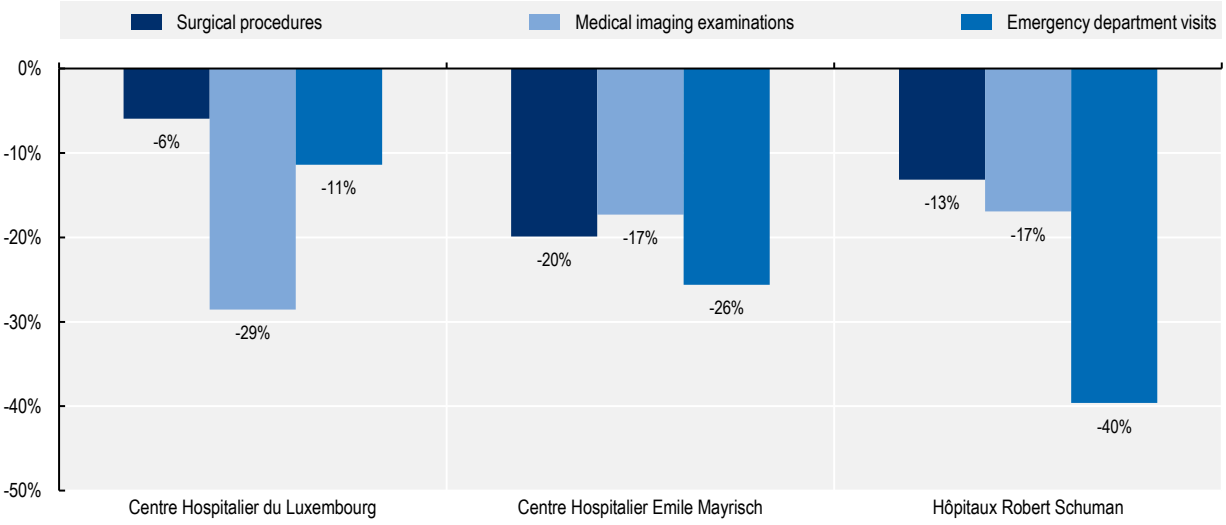
For all health professionals, the drop-in activity was particularly sharp during the first lockdown. The number of consultations with health professionals fell by more than 26% in the March to May 2020 period compared with the same period in 2019 (Figure 4.5). Dentists, ophthalmologists and endocrinologists saw their activity drop significantly, with a reduction of over 40% in the number of consultations. The decrease in the number of consultations during the second lockdown was much less pronounced, with the exception of paediatricians, who saw their activity fall by 27%. However, it is still difficult to assess the consequences of the decline in consultations on the health of the population in Luxembourg.

4.3.2. Hospital activity decreased and the number of non-urgent operations reduced in most hospitals

To increase the capacity of the health system and to respond to the outbreak of COVID-19 cases, Luxembourg quickly cancelled certain hospital treatments. Non-urgent and non-essential operations were postponed in Luxembourg's hospitals, which may have led to increased waiting times for certain types of surgery. The hospitals for which data are available (CHL, Centre Hospitalier Emile Mayrisch and Hôpitaux Robert Schuman) show a clear decrease in operations over the whole year of 2020 compared with 2019, ranging from -6% at CHL to -20% at Centre Hospitalier Emile Mayrisch (Figure 4.6). Similarly, the number of visits to the emergency department decreased by between 11% and 40% in 2020 compared with 2019, and the number of medical imaging exams also decreased by between 17% and 29% in 2020 compared with 2019. The reduction in hospital activity was particularly significant during the first lockdown. At CHL, for example, March to June 2020 saw a sharp decline in activity compared to 2019, with a drop of almost 30% in operations and the number of visits to the emergency department (Antares Consulting, 2020[20]). The impact of this decrease in activity on the health of the population and the possible resulting loss of opportunity cannot yet be assessed.

Figure 4.6. Hospital activity fell in 2020 compared with 2019



Note: At CHL, the decrease in medical imaging examinations corresponds only to radiology procedures.
Source: 2020 annual reports of the three hospitals available online: CHL, Centre Hospitalier Emile Mayrisch and Hôpitaux Robert Schuman.

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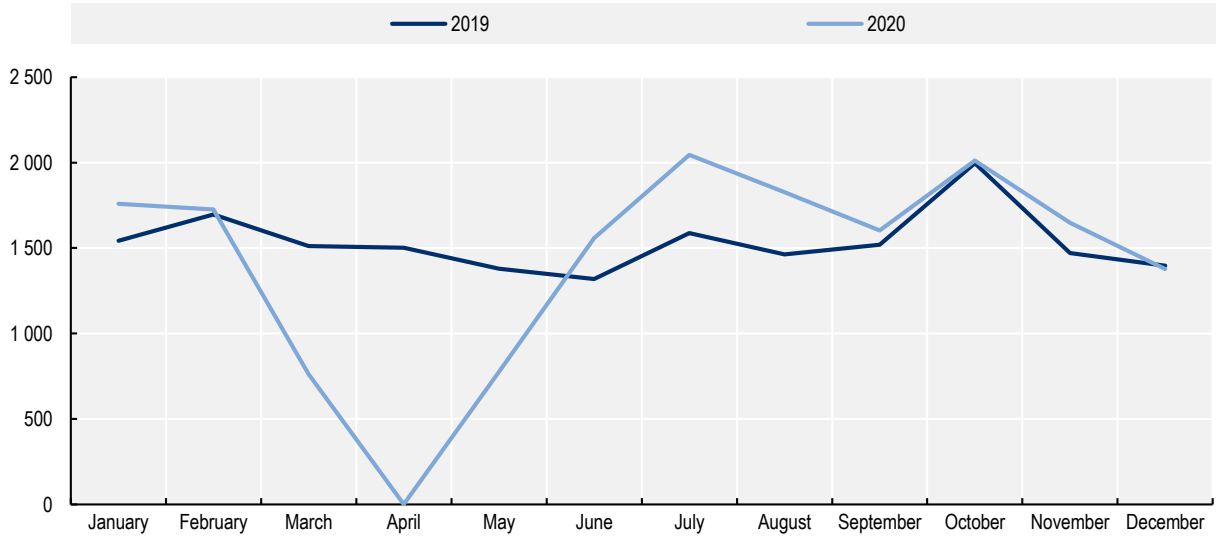
4.3.3. Cancer screening and treatment were delayed in 2020

Organised screenings for certain cancers were disrupted by the lockdown in Luxembourg. For the year as a whole, the number of breast cancer screenings fell by 7% in 2020 compared to 2019. The drop in the number of screenings was greatest during the first lockdown (Figure 4.7). As the first lockdown came to an end, activity returned with an increase in the number of breast cancer screenings in June 2020. Similarly, the number of cervical cancer screenings carried out decreased by 6% in 2020 compared with 2019.

In total, and based on data from the National Health Laboratory, regarding the number of pathological diagnoses of malignant tumours each month in 2019 and 2020, Fondation Cancer estimates that approximately 10% of expected cases of cancer were not detected and surgeries were not performed in 2020 (Mittelbrownn, 2021[21]).

Figure 4.7. Breast cancer screening dropped significantly in 2020 compared with 2019

Number of women aged 50 to 70 who participated in the mammography programme in Luxembourg



Source: General Inspectorate of Social Security of Luxembourg (2022).

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Cancer treatment has also suffered from delays, with a sharp decline in the number of oncology procedures. The number of hysterectomy operations, for example, dropped by 27% in 2020 compared with 2019. Similarly, the number of mastectomies fell sharply during the first lockdown, then gradually returned to levels close to those seen in 2019. From September 2020, the level of activity exceeded that recorded over the same period in 2019 (Figure 4.8).

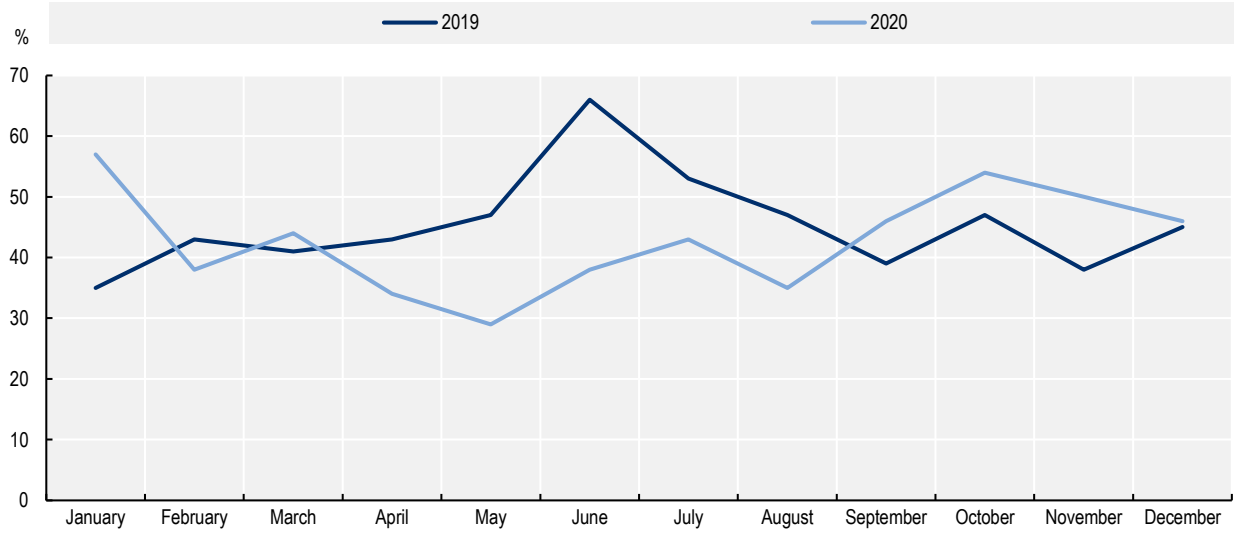
A survey of a panel of oncologists shows that lockdown reduced the total number of radiotherapy sessions by almost a quarter in May 2020 compared with the same period in 2017 and 2019 (Backes et al., 2020[22]). Even after lockdown, the number of radiotherapy sessions remained lower between July and October 2020 than during the same period in 2017 and 2019. Data provided by the Centre National de Radiothérapie du Luxembourg, or National Centre for Radiotherapy in Luxembourg, show that over the whole year of 2020, the total number of radiotherapy sessions decreased by 5.3% compared to the previous year (i.e. 1 390 fewer sessions).

Delays in the diagnosis and treatment of cancer are likely to have a serious impact on the patient's prognosis. Available estimates show that a four-week delay in surgical treatment for cancer increases the risk of death by about 7%, while four-week delays in non-surgical treatment may increase the risk of death by 13% (Hanna et al., 2020[23]).

Activity data for 2021, supplemented by data from Luxembourg's National Cancer Registry, will make it possible to conduct a more precise assessment of the indirect consequences of the pandemic on the diagnosis and treatment of cancers in the country.

Figure 4.8. Cancer surgery activity decreased during the first lockdown

Number of mastectomies carried out to treat cancer in 2019 and 2020



Source: General Inspectorate of Social Security of Luxembourg (2022).

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4.3.4. The health crisis has had a significant impact on the mental health of the population, particularly among younger people and those in employment

In Luxembourg, as in many OECD member countries, the pandemic and the measures implemented to curb the spread of the disease during the first two waves have had significant negative consequences on people's mental health.

A survey conducted by the National Institute for Statistics and Economic Studies in collaboration with ILRES shows signs of a clear deterioration in the mental health of Luxembourgers. One in three residents say their mental health deteriorated during the COVID-19 pandemic, a proportion that reduces with age (STATEC, 2020[24]). Around 37% of 18–44-year-olds reported that their mental health had deteriorated, compared to 22% of those aged 65 and older. The main factors associated with the deterioration of mental health were a decline in physical health, a loss of job security, increasing expenses (STATEC, 2020[24]) and a deterioration in social relationships during periods of lockdown (STATEC, 2020[25]).

The results of the COVID-KIDS study also show a deterioration in satisfaction among children. One-third of children aged 6 to 11 and 43% of children aged 12 to 16 reported that their satisfaction with life had decreased. Children also reported experiencing negative emotions and worries frequently or very frequently during the pandemic. One in six of younger children (6–11 years) and one-third of older children (12–16 years) reported experiencing negative emotions (Kirsch et al., 2022[26]).

In addition, the eighth Quality of Work Index survey conducted in 2020 showed that risk of falling into depression had increased as a result of the COVID-19 pandemic (CSL, 2021[27]). The share of survey participants at high risk of depression had increased from 8% in 2019 to 11% in 2020. Today, one in three workers are at risk of depression as a result of the pandemic, and more than one in ten show very strong signs of depression.

4.4. How resilient was pandemic management in Luxembourg?

4.4.1. Luxembourg anticipated the pandemic risk very early on

Luxembourg has an influenza pandemic ERP that has only partially met the needs of managing the crisis

In the context of the adoption of the International Health Regulations, Luxembourg has had an influenza pandemic ERP since 2006, following the spread of avian influenza in 2004 and the H1N1 pandemic in 2009. The influenza pandemic ERP defines the planning and preparedness, surveillance, prevention and consequence management to address the risk of an influenza pandemic (Government of Luxembourg, 2021[28]).

While the 2009 H1N1 pandemic required that the influenza pandemic ERP be put into action, it must be noted that it has not been updated since 2006. Nevertheless, the lessons learned from that pandemic and the Ebola epidemic contributed useful additions to the range of measures used to tackle this pandemic. It should also be noted that no pandemic preparedness exercises were actually conducted prior to the first case of COVID-19, indicating the low operationality of the influenza pandemic ERP (see Chapter 2). Similarly, some practical aspects have been neglected in the influenza pandemic ERP, such as the plan for continuity of medical care for conditions other than the pandemic disease; training and education on infection prevention and control measures for health professionals; logistics and research and development of vaccines and other drugs; psychological support for the public; and civil society participation. All of these components are essential for assessing needs and managing a pandemic crisis well (see Chapter 2).

Interministerial meetings were held at the end of January 2020, with the crisis unit set to work on 1 March 2020

Since the end of January – and at the request of the Prime Minister – the Governmental Council, the High Commission for National Protection and the various stakeholders met on numerous occasions (until 28 February), in the form of either a crisis unit or interministerial meetings to analyse the level of preparedness of the measures included in the influenza pandemic and Ebola ERPs and to assess crisis management needs.

On 1 March 2020 (the date the first positive case was detected in the country), the crisis unit was set to work. Its membership was modified regularly from 15 March 2020 onwards to better reflect concerns relating to the health crisis. The crisis unit, chaired by the High Commission for National Protection and the Ministry of Health, is composed of several working groups, which oversee and work on separate areas, such as hospitals, diagnosis and contact tracing, testing, primary care, care homes and care networks, logistics, the health reserve and communication (see Chapter 3). The unit co-ordinates all the work carried out by hospitals, laboratories, primary care providers, pharmacies, nursing homes and care networks, while managing logistics, medical supplies, health staffing, communication and psychosocial support around the crisis.

The flexibility of the crisis unit and the multidisciplinary composition of the working groups allowed Luxembourg to be reactive and innovative in managing the crisis. Many public actors at all levels of governance (including communes and fire departments) quickly joined the national effort to tackle the crisis. However, it is regrettable that civil society and user representatives were not more involved in the various crisis unit working groups during the pandemic (see Chapter 3).

4.4.2. Structural difficulties weakened the level of operational preparedness for the pandemic

National stocks of PPE were initially insufficient, but the logistics unit quickly placed several orders

The lack of knowledge about the good status of PPE stocks in health and care institutions reflects a lack of preparedness to face such a large pandemic in Luxembourg. The logistics unit,[3] as the sole government buyer, manager and distributor of PPE and medical devices, quickly overcame this lack of preparedness.

The High Commission for National Protection acquired 200 000 FFP2 masks in 2017 as part of the influenza pandemic ERP, and national stocks of PPE totalled 1 048 000 units of surgical masks, 235 135 units of FFP2 masks, 20 340 units of Tyvek gowns, and 780 100 units of gloves prior to the declaration of a state of emergency. In accordance with crisis plans, these national stocks were used primarily to cover the needs of critical infrastructure and were not designed to ensure the wide distribution of masks and other equipment to the general population or to businesses in general.

Health and care facilities were not required to monitor their stocks, so when the state of emergency was declared, the government was not aware of the amount they held of these supplies. For this reason, the logistics unit conducted a national PPE census on 19 March. Estimates based on daily consumption over the previous seven days as at 19 March indicated that there were not enough surgical masks in stock to cover the needs of healthcare workers in the event of an outbreak.

Daily stock management monitoring was set up to provide daily updates on the delivery and use of equipment for all hospitals and care facilities. This monitoring has been essential for assessing needs in real time and preventing equipment shortages. Alongside this, supply networks were expanded, enabling essential PPE and medicines to be acquired from different suppliers (based in Asia in particular) and using all mechanisms, including the European Union. This equipment included masks, gloves, disinfectants and protective clothing, as well as the respirators and medication needed to treat COVID-19 patients. According to High Commission for National Protection figures, more than 84 million units of surgical masks and 3.3 million units of FFP2 masks were ordered directly from China in March 2020. These orders were placed before the European and global PPE market was saturated. The logistics unit also purchased four scanners that were made available to the four hospitals.

PPE and medical devices purchased by the logistics unit quickly made up for Luxembourg's shortcomings in terms of preparedness. To strengthen the level of preparedness for similar crises in the future, the government of Luxembourg is planning to set up a central purchasing unit for critical products that will manage procurement, logistics and storage at the national level, demonstrating Luxembourg's ability to adapt.

No information system existed at the beginning of the pandemic to manage the crisis

At the beginning of the crisis, Luxembourg did not have an information system in place capable of monitoring the evolution of the pandemic, in terms of either epidemiological surveillance or the use of health resources, particularly for the hospital system. Nevertheless, the implementation of the Qlik information system on 17 March 2020 enabled the spread of the virus to be monitored and pressure on hospitals to be assessed.

While reporting of certain communicable diseases has been mandatory in Luxembourg since the law of 1 August 2018 was implemented as part of public health protection (Official Journal of the Grand Duchy of Luxembourg, 2018[29]), the computer application used to manage and monitor infectious diseases was not designed to perform ad hoc data analysis and did not allow for the collection of negative polymerase chain reaction (PCR) test results under mandatory reporting. It was therefore not possible to monitor the positivity rate and to obtain a complete overview of epidemiological developments in the country (Government of

Luxembourg, 2021[30]). The other information systems used also proved inadequate to meet the information and indicator requirements for managing the crisis. In March 2020, there were not enough data available on hospitalisations to conduct daily surveillance and analyse the impact of the pandemic on hospital operations. There was, for example, no monitoring of intensive care beds, COVID-19 and non-COVID-19 occupancy rates, emergency services' activity levels, and COVID-19 hospital admissions. For the long-term care sector, there were no harmonised indicators, either quantitative or qualitative, to document the activities and resources of the various facilities (see Chapter 3).

The crisis unit's monitoring working group has made major efforts to develop new information systems to monitor the spread of the virus and assess pressure on hospitals. A collection and compilation system and an automatic analysis and reporting system were progressively set up in collaboration with the various crisis unit working groups, health system actors and policy makers. Since 17 March 2020, the new centralised Qlik information system has enabled the number of COVID-19 cases and deaths in hospitals to be recorded and hospital capacity to be identified in real time. For long-term care facilities, this measure arrived later; it was not until April 2020 that the Qlik information system was used to identify cases in such facilities. Over the months, the integration of the various data sources into the new information system (Box 4.2) enabled numerous statistics and dashboards to be introduced that were used on a daily basis to help manage the crisis.

While the implementation of the Qlik information system has been critical to Luxembourg's response, the government must continue its efforts to develop a single information system, where databases are interoperable, with a unique identifier for patients and where health services are automatically linked. Despite improvements linked to the pandemic and to the implementation of shared medical records, Luxembourg's information systems are still incompatible. As some OECD member countries have shown, an integrated health information system allows for better management of health crises. Canada, Denmark, Estonia, Finland, South Korea, Latvia, the Netherlands and Sweden all stand out for their integrated information systems that linked data from multiple health sectors and provided real-time data from the onset of the pandemic crisis (Oderkirk, 2021[31]).

Box 4.2. The Qlik database

The Qlik application brings together COVID-19 data from various actors (such as laboratories, hospitals, care homes, the General Inspectorate of Social Security, and advanced care centres) in different thematic dashboards that allow users to follow the evolution of the pandemic and conduct relevant analyses.

It has been progressively improved by integrating other data (such as those from the mass screening programme and contact tracing, those relating to vaccination administration and coverage, those concerning the status of wastewater, and individual data from the General Inspectorate of Social Security) to perform sectoral analyses and identify possible sources of outbreaks. Automated daily reports were developed for several bodies (such as the Ministry of Education, the Ministry of Family Affairs and the Fédération des Hôpitaux Luxembourgeois, or Luxembourg Hospitals Federation). Aggregate data are also publicly available.

Source: OECD (2022), Information-gathering questionnaire for the Luxembourg Crisis Management Evaluation.

Luxembourg is highly dependent on cross-border healthcare workers

The Luxembourg health system is critically dependant on people from other countries in terms of healthcare and medical staff, making it extremely vulnerable to border closures during initial efforts to contain the COVID-19- pandemic.

Luxembourg's government has been concerned about the shortage of health professionals for several years. The number of new graduates each year does not make up for natural retirements in some disciplines. As a result, the percentage of doctors from other countries continues to increase every year. The share of doctors living abroad but practising in Luxembourg almost doubled between 2008 and 2017, from 15.6% to 26.4% (IGSS Luxembourg, 2021[32]). In 2019, 62% of healthcare professionals, 21% of GPs and 34% of specialist doctors practising in Luxembourg were living abroad (Lair-Hillion, 2019[33]). Moreover, despite the presence of cross-border workers, Luxembourg has very few doctors compared to other OECD member countries. With approximately 3 doctors per 1 000 inhabitants in 2019, Luxembourg is well below the OECD average (3.6 per 1 000 inhabitants), despite an increase of 39% since 2000 (OECD, 2021[19]). This low density of doctors was, until now, mainly due to the lack of medical training available in the country, which created a dependence on doctors trained elsewhere. Luxembourg's first Bachelor of Medicine degree was created in 2021.

On the other hand, Luxembourg has one of the highest densities of nurses in the OECD (11.7 nurses per 1 000 inhabitants compared with the OECD average of 8.8 per 1 000 inhabitants). However, more than two-thirds of practising nurses live in neighbouring countries (29% in France, 24% in Germany and 12% in Belgium) but are attracted by the better salaries and good working conditions on offer in Luxembourg (OECD/European Observatory on Health Systems and Policies, 2022[2]).

As border closures were not one of the measures included in the influenza pandemic ERP, Luxembourg had to react quickly and work in close co-operation with Germany, Belgium and France. Passes were distributed to healthcare professionals to facilitate border crossings, and the government of Luxembourg offered free temporary accommodation to cross-border employees of the healthcare and long-term care sector starting in April 2020. These measures demonstrate a commitment to solidarity and co-operation between countries that should be commended.

In order to meet the needs of its population and to be less dependent on workers from other countries during future health crises, Luxembourg must invest more in its healthcare workforce. Increasing medical staff, introducing multidisciplinary approaches and adapting the training and role of healthcare professionals are all extremely relevant policies given Luxembourg's situation (Box 4.3).

Box 4.3. Overview of policies for investing in the health workforce in selected OECD member countries

Increasing medical staff

In **France**, the *Contrat d'aide à l'installation des médecins* is a one-off grant paid to doctors in two instalments. Its objective is to help doctors meet the investment costs associated with starting work, such as premises, equipment and other miscellaneous expenses. There are also *contrats d'engagement de service public*, whereby medical students and interns are given a monthly allowance. In return, the students undertake to practise in an area determined by the regional health agencies after completing their training for a period equal to that during which they received the allowance.

Adapting the responsibilities of health professionals

In Australia, Canada, Estonia, France, Ireland, Latvia, Sweden and the United Kingdom, nurses' skills grew through the development of their initial and continuing training. In these countries, the tasks

of advanced practice nurses tend to include prevention and screening. Retail pharmacists also play a greater role in health promotion and prevention in **Belgium, England, Finland, France, Italy and Switzerland**. During the COVID-19 pandemic, pharmacists saw their responsibilities expanded to include maintaining essential therapeutic monitoring and protecting the most vulnerable from exposure to the virus. In addition, the expansion of pharmacists' competencies allowed them to exceptionally renew expired prescriptions for patients with chronic conditions (France), administer COVID-19 vaccines (in France, the United Kingdom and Italy) and perform diagnostic tests (the United States, Australia and England).

Pursuing multidisciplinary approaches

In **Canada, the United Kingdom, France, Australia and the United States**, multi-professional health centres (as opposed to isolated practices) offer co-ordinated care, with greater emphasis on health promotion, prevention, therapeutic education and social support. Multidisciplinary approaches are not only essential for managing chronic conditions but also help to better monitor and reduce lifestyle-related risk factors, especially among the most disadvantaged. The use of multi-professional health centres also aims to ensure an adequate supply of care in areas with low medical density and to address financial concerns about access to care for disadvantaged populations.

Source: OECD (2020[34]), *Realising the Potential of Primary Health Care*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/a92adee4-en; OECD (forthcoming[35]), *Improving the Resilience of Health System*.

Care homes and networks suffered from a lack of infection prevention and control knowledge and medical support at the beginning of the health crisis

As demonstrated in Section 2 of this chapter, the health situation in long-term care facilities was severe in Luxembourg. This was due to two structural factors: a lack of expertise in infection prevention and control, and a lack of medical support in long-term care facilities. While long-term care facility managers received numerous memos from the Health Directorate, the Ministry of Health and the Ministry of Family Affairs at the start of March 2020, it was not until the end of March that orders and recommendations on infection prevention were issued. As a result, the long-term care sector began responding too late.

The Health Directorate did not issue an order for the care of vulnerable people until 30 March 2020 (Government of Luxembourg, 2021[36]), followed by recommendations on the strategy for using PPE on 6 April 2020 (Abdelrahman et al., 2021[37]) and on preventing infection in long-term care facilities on 23 April 2020 (Government of Luxembourg, 2020[38]). Training in good hygiene practices and infection prevention for long-term care facilities was implemented from 28 March onwards,[4] alongside the use of medical support devices from early April:

- the provision of COVID kits (kits supplied by the Health Directorate containing the medication needed for the regular or on-call doctor to provide end-of-life care or palliative care at the person's bedside)
- the establishment of a dedicated on-call line of GPs for residential facilities for older people
- the hospitalisation of anyone with COVID-19 on the advice of the doctor for the person's well-being
- the implementation of hygiene training for healthcare workers, accompanied by site visits from the Health Directorate and the Ministry of Family Affairs to assess whether the training meets the needs of the field
- the establishment of a hygiene officer and a hygienist within the Confederation of Care and Assistance Providers.

While these measures are essential to provide medical support to long-term care facilities, improve care co-ordination and increase capacity for hygiene and infection control, they would have benefited from being implemented earlier given the severity of the disease for older people. This would have reduced the excess mortality rate of these residential facilities, which was 60% in April 2020 (Abdelrahman et al., 2021[37]). These measures should be made permanent to help alleviate the structural difficulties faced by long-term care facilities[5] and enable a faster response to future health emergencies.

Moreover, according to the various stakeholders interviewed during the information-gathering mission, the response was often different between the health sector and the long term-care sector. Luxembourg, for example, chose not to prioritise vaccination for people in contact with residents of long-term care facilities, who are the most vulnerable to severe forms of the disease. As such, external service providers working in long-term care facilities (e.g. cleaners and catering staff) were not defined as a priority population when the vaccination campaign was launched on 28 December 2020, whereas this was the case in the hospital sector.

In this regard, it is important to remember that it is the Ministry of Family Affairs – not the Ministry of Health – that is responsible for overseeing long-term care facilities. As discussed in the Waringo evaluation report (Abdelrahman et al., 2021[37]), long-term care facilities received recommendations from both ministries, which meant that messages were less clear and hindered the day-to-day management of the pandemic in these facilities. Luxembourg should therefore give careful consideration to the issue of supervision of long-term care facilities, including integrated centres for older people and care homes, which provide other services in addition to accommodation. In France, supervision of long-term care facilities falls under the responsibility of the Ministry for Solidarity and Health, while in Belgium it is the responsibility of the federal public service Santé Publique or Public Health (formerly the Ministry of Social Affairs and Public Health).

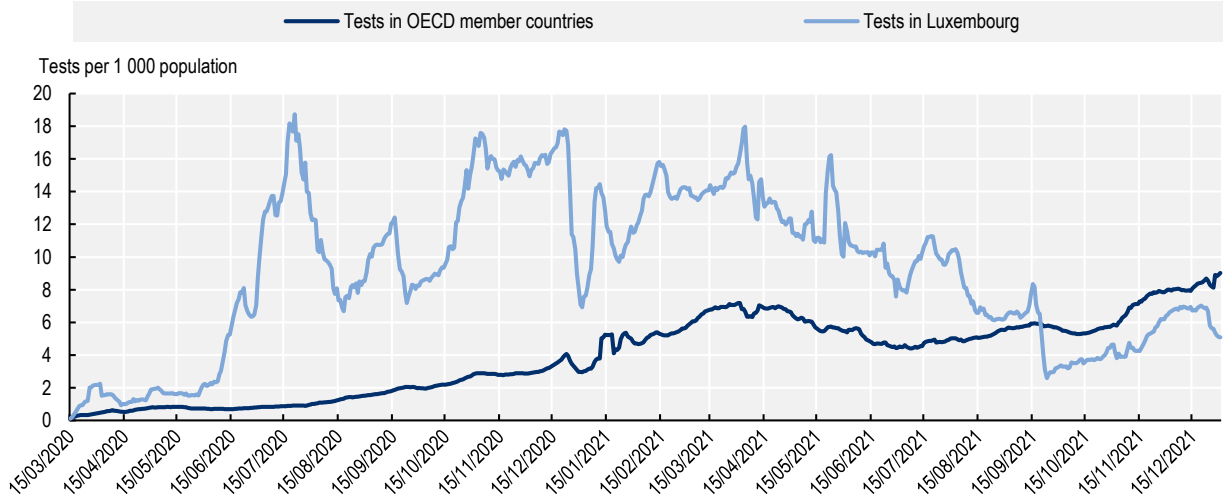
4.4.3. The responsiveness of the Luxembourg health system allowed it to absorb the shock

Luxembourg's mass testing policy has proven to be effective in curbing the spread of the virus

Intensive case testing was implemented at the start of the pandemic, beginning on 25 February 2020. Initially, people with symptoms of COVID-19 returning from areas defined as at risk for SARS-CoV-2 by the European Centre for Disease Prevention and Control were tested at home by health inspectors. The first tests were all performed by the National Health Laboratory, before testing capabilities were developed in private medical testing laboratories (Laboratoires Réunis, Ketterthill laboratories and BioneXt laboratories). Available data show that Luxembourg is among the countries with the highest testing capacity in the OECD, reaching up to 18 tests per week per 1 000 inhabitants in July 2020 (much higher than the average in other OECD member countries) (Figure 4.9).

Figure 4.9. Luxembourg has conducted far more tests than the average in other OECD member countries

Number of weekly tests (spread over seven days)



Note: The OECD average is calculated based on 37 countries.
Source: *Our World in Data.*

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The crisis unit's testing working group carried out a wide range of actions in the field of testing (Government of Luxembourg, 2021[39]), demonstrating the government of Luxembourg's commitment to containing the COVID-19 pandemic:

- Numerous test sites were opened, such as advanced care centres, COVID-19 consultation centres and drive-through COVID-19 test centres.
- Systematic screening of certain sectors of activity (such as construction, commerce, care and hospitality) was implemented in order to minimise the risk of infection at the end of lockdown.
- Large-scale testing was implemented from 18 May to 15 September 2020 under the responsibility of the Luxembourg Institute of Health. Participation in this testing programme was voluntary and by personal invitation only. The first phase of large-scale testing guided the lifting of lockdown by identifying asymptomatic individuals in order to intervene early in virus transmission chains (Box 4.4).
- At Luxembourg Airport, all passengers were able to get a free test upon entering the country from the end of May 2020.
- Mobile teams were deployed, initially as part of large-scale, targeted testing, but also to respond to clusters of infections, for example, in schools, businesses and long-term care facilities.
- Exceptional actions were carried out to encourage citizens to get tested by distributing free rapid antigen tests to businesses or directly to households.
- School-based testing was also conducted by National Health Laboratory from November 2020 to July 2021 (over 32 800 tests conducted) and from September 2021 to December 2021 (over 9 600 tests conducted) (see Chapter 5).

The early and rapid detection of cases has been essential to limit and stop the spread of COVID-19 in Luxembourg. The results of the evaluation of the first and second phases of large-scale testing demonstrate the effectiveness of the system in controlling transmission of the virus (Wilmes et al., 2021[40]). Based on modelling, the total number of possible cases would have been 42.9% higher without the large-scale testing programme.

Although Luxembourg's testing policy stands out from other OECD member countries in terms of both its scope and the wide range of strategies it employed, it should be noted that this system was introduced much later in long-term care facilities. According to the Waringo report, PCR testing of all residents and staff in the facilities was not performed by the National Health Laboratory mobile teams until 21 April, more than one and a half months after the first positive case was detected in Luxembourg (Abdelrahman et al., 2021[37]). As part of the second phase of large-scale testing, mobile teams were deployed to all long-term care facilities on a planned and repeated basis, as well as whenever an outbreak of infection was detected (starting on 16 September 2020).[6]

Box 4.4. Large-scale testing is among the best practices of OECD member countries

Beginning on 18 May 2020 and continuing through 15 September 2020, the first phase of the large- scale testing programme was implemented. The population was divided into three categories based on their risk of exposure to the virus, with each category being invited at different intervals. With a theoretical maximum capacity of 20 000 tests per day, 1 520 445 invitations for reverse transcription PCR testing were sent out during the first phase of the programme and 560 082 tests were performed. Under the second and third phases of the programme (beginning on 16 September 2020 and 15 September 2021, respectively), a PCR testing capacity of 53 000 tests per week was implemented across eight drive-through sites, one airport site, five mobile teams for certain facilities, and the option to get tested before or upon return from a trip abroad.

The large-scale testing strategy is among the best practices established by OECD member countries to reduce virus transmission, assess transmission dynamics and detect clusters in specific areas early. Among OECD member countries, only Korea, Australia and Latvia implemented large-scale testing policies (OECD, forthcoming[12]).

Source: OECD, based on documents sent by the High Commission for National Protection and the Health Directorate, and the information-gathering mission.

The contact-tracing system was effective and allowed for personalised support

The large-scale testing programme was accompanied by a contact-tracing system that allowed for early detection of cases and outbreaks. This strategy, which aims to break chains of transmission, was implemented as early as March 2020 by the Health Directorate's central contact-tracing unit. This system proved to be effective in identifying contact cases in an exhaustive manner and providing responses and support specifically for vulnerable population.

According to data from the contact-tracing unit, the system was effective in comprehensively identifying contact cases. In 2021, the average number of contacts per case in Luxembourg was 5.2. In total, as at 24 March 2022, 266 862 positive case investigations had been completed and 812 644 contacts had been processed. In addition, in periods of moderately high incidence, 90% of cases were called within 24 hours of receiving a positive result. Delays were nevertheless noted during the second wave of the pandemic (in October and November 2020) when it took 3.3 and 6.9 days for cases to receive a call from the contact-tracing unit, respectively (Government of Luxembourg, 2021[41]).

The success of the contact-tracing system in Luxembourg can be explained by three factors: i) major strengthening of the contact-tracing unit's teams; ii) a support system for vulnerable populations; and iii) the implementation of the remote Care+ service, allowing case investigations to be conducted and online services to be provided to those testing positive:

- The contact-tracing service employed health professionals from the Health Directorate and then recruited – through the health reserve mechanism – volunteers, staff from other agencies and staff who had been redeployed or made redundant due to the pandemic. According to data from the Ministry of Health, up to 400 people (300 full-time equivalents) were working on Luxembourg's contact-tracing system at the same time. A training programme was developed for all new employees assigned to contact tracing.
- It should also be noted that the contact-tracing system sought to investigate the origin of infection in some contact cases, as was also done in some other OECD member countries (such as Korea). This retrospective follow-up was implemented in some hospitals, residential and healthcare facilities, companies, schools and disadvantaged populations to document the circumstances and causes of infections. Advice and specific support were also offered to implement pandemic prevention and control measures. This support system was essential for providing responses to vulnerable populations, enabling better adherence to isolation measures and hygiene protocols.
- Finally, the development of the Care+ service allowed all positive cases to be identified and investigated, clusters to be recorded, sources of infection to be determined, and quarantine and testing orders to be issued. By enabling the epidemiological analysis of transmission chains, this tool promoted the co-ordination of the different contact-tracing sectors of activity and allowed calls and complex investigations to be prioritised.

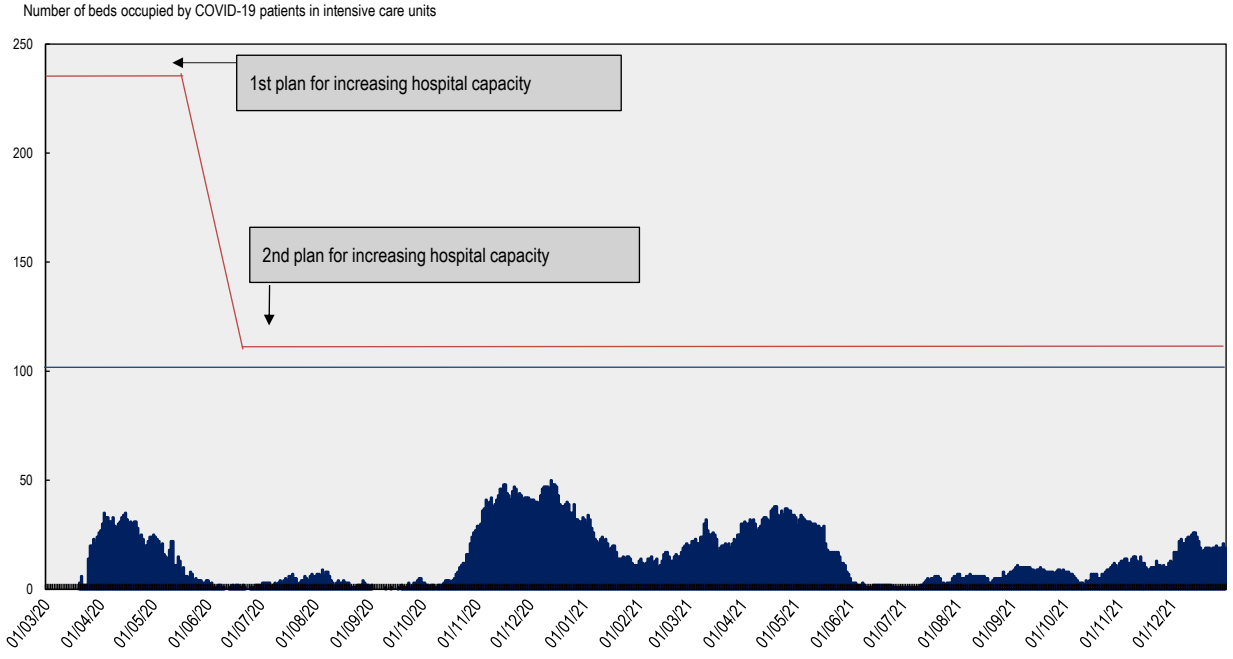
Intensive care bed capacity doubled during the first wave of the pandemic, but no additional beds had to be mobilised

Luxembourg provided sufficient hospital care during the COVID-19 pandemic thanks to a large plan which increased hospital capacity. While the measures put in place largely met the needs of the huge influx of COVID-19 patients, they resulted in the excessive suspension of operations and other non-emergency procedures, with potential losses of opportunity for patients.

The interministerial crisis unit's hospital working group, in charge of co-ordinating hospital services, conducted an inventory of hospital capacity and intensive care beds on 16 and 17 March 2020 so that this capacity could be redeployed to treat COVID-19 patients. Four phases of operation were set out in the national COVID-19 surge capacity plan, with the objective of spreading patients across different hospitals and co-ordinating efforts according to the magnitude of the pandemic. The reorganisation of hospital services also resulted in temporary facilities being set up for the admission and treatment of patients requiring hospitalisation, with, for example, a field hospital being opened in the CHL car park, additional intensive care beds being installed, and recovery rooms being redeployed to intensive care units. In addition, in hospital emergency departments, the development of patient triage protocols led to the implementation of specific pathways for COVID and non-COVID patients.

As a result of these different measures (and based on the modelling performed by the COVID-19 Task Force (see Chapter 3), the number of level 3 intensive care beds (resuscitation beds) more than doubled during the first wave of the pandemic, from 102 before the pandemic to 244 on 19 March 2020 (Figure 4.10). The reorganisation of hospital services therefore helped Luxembourg to respond to the large influx of patients both from Luxembourg itself and from neighbouring countries (notably France, Belgium and Germany).

Figure 4.10. Intensive care bed capacity more than doubled during the first wave of the pandemic



Note: The blue area represents the daily number of COVID-19 patients in level 3 intensive care. The blue line represents initial hospital capacity in level 3 intensive care beds before the pandemic. The red line represents the additional hospital capacity mobilised during the pandemic.
Source: OECD (2022), mission to gather information from the Ministry of Health.

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A list of non-COVID hospital procedures to be suspended was defined in parallel with the plan to increase hospital capacity. According to the Ministry of Health, the phasing out of hospital activity during the first phase of the pandemic was inadequate and resulted in an excessive reduction in surgical and other non-emergency procedures (as reported in Section 2 of this chapter). The government of Luxembourg drew lessons from the first wave when defining a second plan to increase hospital capacity in July 2020 onwards. This more detailed plan made it possible to better pace the response and maintain as much non-COVID hospital activity as possible after July 2020.

A wide range of policies helped to prevent a shortage of healthcare workers for COVID-19 care

In response to the increased demand for healthcare during the COVID-19 pandemic, the government of Luxembourg implemented a wide range of policies to mobilise additional staff members and prevent a shortage of healthcare workers for COVID-19 care. However, this mobilisation for COVID-19 care came at the expense of other areas of care, such as outpatient and non-emergency hospital treatment.

The government launched a mandatory census of all regulated health professionals, including medical interns, students, retirees and staff on unpaid leave in March 2020. A platform for the registration of medical and non-medical volunteers was also set up, allowing a health reserve[7] to be established in Luxembourg in March 2020. Enrolment in the health reserve was open to all practitioners (including those working in private practices) and the contracts included an attractive hourly remuneration – a key factor in the success of the scheme. According to data provided by the Ministry of Health, 2 378 doctors, 6 120 other healthcare workers and 3 635 other volunteers had registered for the health reserve by 23 March 2020. During the first wave of the pandemic in 2020, 716 workers were deployed to different entities in the health system by the health reserve (Table 4.1). During the second wave, which started in November 2020, the number of care workers assigned to COVID pathways in hospitals almost doubled thanks to the health reserve. Between December 2020 and February 2022, 925 healthcare workers (nurses, doctors, physiotherapists

and pharmacists) were mobilised by the health reserve for the COVID-19 vaccination campaign. These data attest to the usefulness of the health reserve in Luxembourg for the rapid mobilisation of workers in various fields of expertise. Among OECD member countries, only 13 other countries used a health reserve during the COVID-19 pandemic (Canada, Costa Rica, Finland, France, Greece, Israel, Italy, Latvia, Lithuania, Slovenia, Spain, the United Kingdom and the United States). In the short and medium term, the health reserve should be maintained, with volunteers receiving continuous and adapted training so they can be mobilised quickly during future pandemics.

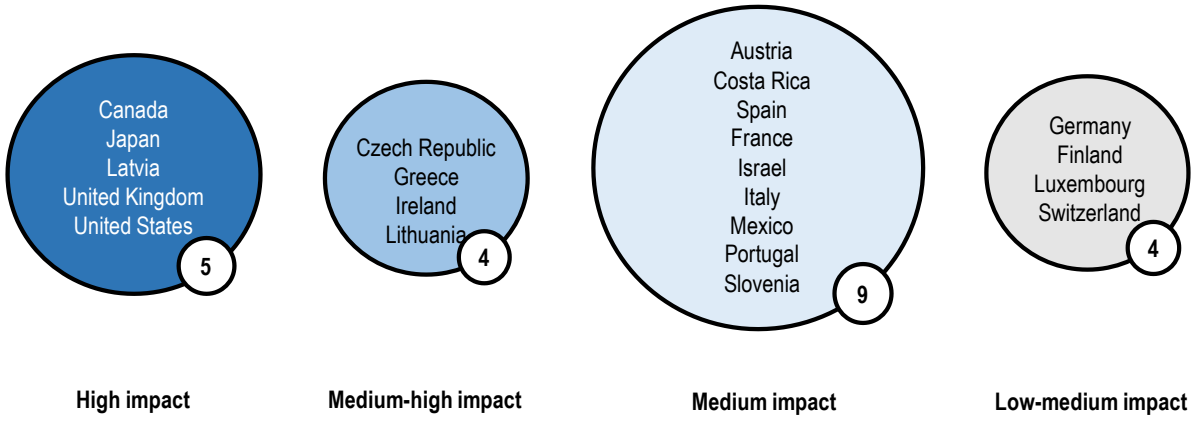
Table 4.1. The health reserve mobilised more than 700 workers during the first wave of the pandemic

	Number of professionals mobilised, by service
Administration	22
Telephone helplines	29
Test centres	30
Advanced care centres	240
Hospitals	163
Supported housing	5
Care homes	188
Home care services	35
Care and socio-pedagogical support services	4
Total	**716**

Source: OECD (2022), Information-gathering questionnaire sent to the Ministry of Health.

In addition, with regard to hospitals and residential facilities for older people, a number of other policies were implemented during the different waves of the pandemic (such as adjusting legal working hours (Official Journal of the Grand Duchy of Luxembourg, 2020[42]), reorganising clinical teams, providing training for students and healthcare workers, and not closing borders to allow the movement of cross-border health workers). All of these measures made it possible to avoid a shortage of health workers to respond to the COVID--19 pandemic in Luxembourg, as well as Germany, Finland and Switzerland (Figure 4.11).

Figure 4.11. Unlike the majority of OECD member countries, Luxembourg did not suffer from a shortage of health workers to respond to the COVID-19 pandemic



Note: This Figure shows countries' responses to the question: "On a scale of 1 to 5, please indicate the impact of the lack of healthcare workers to respond to the COVID-19 pandemic: 1 (low), 2 (low-medium), 3 (medium), 4 (medium-high) and 5 (high)."
Source: OECD health systems resilience questionnaire.

4.4.4. New ways of organising the healthcare system allowed some of its functions to recover

Advanced care centres, composed of multi-professional teams, strengthened primary care in Luxembourg

At the start of the COVID-19 pandemic (23 March 2020), the government and health professional organisations set up four advanced care centres in the primary care sector. The objective of these centres, which are composed of multidisciplinary care teams, was to provide care specific to COVID-19 patients to relieve hospitals (COVID pathway), but also to ensure the continuity of primary care for other patients (non-COVID pathway) (Government of Luxembourg, 2020[43]). Drive-through testing was also set up outside these centres. Advanced care centres saw a peak in visits the week of 30 March 2020 and recorded a total of 21 313 visits from March through May 2020. Following the resumption of activity in private practices, these centres were gradually closed. COVID-19 consultation centres were reopened in autumn 2020 and during the first half of 2021.

The establishment of advanced care centres and COVID-19 consultation centres as primary care facilities that support the delivery of community medicine services and help relieve the hospital system during pandemics is among the best practices of OECD member countries. Not only do advanced care centres reduce the risk of infection between COVID and non-COVID patients, but they also harness the potential of primary care to meet the full spectrum of health care needs. Among OECD member countries, Austria, Slovenia, Australia and the United Kingdom are among those that have reorganised primary care to respond more efficiently to the needs of the population as a whole (OECD, 2021[44]).

Reorganising and strengthening primary care with multidisciplinary teams is essential for health systems to function properly, both to increase resilience to future pandemics and to meet the changing needs of the population (OECD, 2021[44]). Luxembourg must therefore continue to strengthen primary care in order to improve quality and efficiency by promoting the creation of multi-professional medical practices. The creation of more advanced medical centres is a first step in strengthening primary care, but they should be geared more towards a multidisciplinary and co-ordinated practice that promotes better risk prevention. At least 18 OECD member countries have developed multidisciplinary primary care facilities (OECD, 2020[34]).

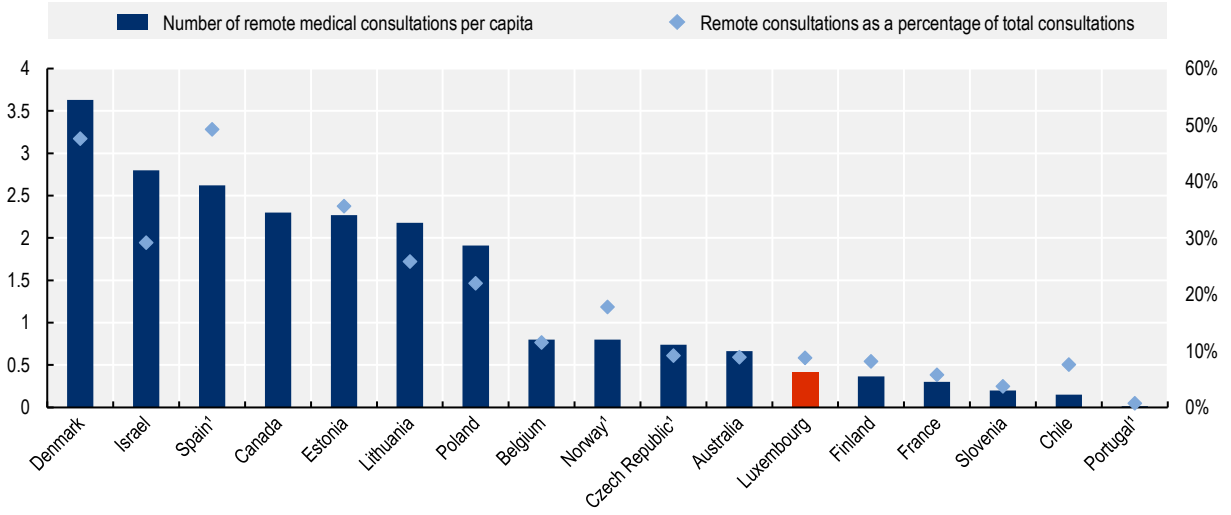
The development of telehealth in Luxembourg has improved but the benefits of the new services need to be evaluated

As in other OECD member countries, remote consultations, remote monitoring of COVID-19 patients and online prescription services were rapidly deployed in Luxembourg to maintain access to care for populations while limiting transmission of the virus (OECD, 2021[19]).

The remote consultation system, with electronic transmission of documents, was made available to the entire population in March 2020. In compliance with security and data protection requirements, this new service also offers functionalities that allow the digitalisation of the general patient journey, such as booking appointments, issuing prescriptions and sending medical data to other facilities (eHealth Agency, 2021[45]). Both the public and healthcare professionals in Luxembourg showed strong resilience during the pandemic by embracing these new technologies: the number of remote consultations peaked at almost 18 000 during the week of 23-29 March 2020. The public authorities also encouraged the use of telemedicine by introducing a new act into the nomenclature of the National Health Fund (CNS, Luxembourg, 2021[46]). However, remote consultations accounted for just 9% of all medical consultations in Luxembourg in 2020, compared with an average of 21% in all OECD member countries (Figure 4.12).

Figure 4.12. The use of remote consultations in Luxembourg is lower than in other OECD member countries

Number of remote medical consultations per capita and remote medical consultations as a proportion of all consultations in 2020



1. The Figure for Norway excludes remote specialist consultations, the Figure for Spain includes GP and paediatrician consultations at primary care centres in the national health system, and the Figure for Portugal includes only remote medical consultations with hospitals. Figures for the Czech Republic are estimates.
Source: OECD health statistics; OECD one-time collection of data on remote consultations (2022).

StatLink https://stat.link/z7tswh

International studies demonstrate the benefit of remote care services in improving access to care in the general population, but concerns remain about access to these services for disadvantaged populations and those in rural areas (OECD, forthcoming[47]). Similarly, the satisfaction of users and healthcare professionals varies considerably from one country to another. Luxembourg has so far not evaluated the benefits and risks of deploying remote care services. In this respect, Luxembourg should implement indicators to assess the quality of telemedicine services, including factors such as safety, care outcomes and user satisfaction, as ten other OECD member countries have already done (Belgium, Canada, England, Estonia, France, Israel, Mexico, the Netherlands, Norway and the United States) (OECD, forthcoming[47]). These assessments will allow for analysis of the practices and the reasons for the reduced use of remote consultations compared with other OECD member countries.

New counselling services were developed during the pandemic but multisectoral approaches are lacking

As reported in Section 2, the mental health of the population deteriorated significantly during the pandemic, particularly among young people and employed people. New mental health support mechanisms were created for the public and healthcare workers, but multisectoral approaches that link mental health to education, youth and employment policies are needed to meet the needs of the most at-risk populations.

To support the mental health of care workers and the general population, Luxembourg implemented new forms of support, including online information documents, new mental health helplines and increased access to mental health services (such as psychotherapy). This new online information includes tips on how to maintain good mental health during the pandemic and how to self-manage anxiety, depression and substance use.

These new measures, while necessary for the general population and for health workers, should be accompanied by multisectoral approaches, given the disruption that the pandemic has caused in terms of work organisation and in schools (see Chapter 5). Multisectoral mental health policies for young people and those in employment would allow to pay more attention to the mental health of these groups. In this respect, Luxembourg could take inspiration from the approaches developed in certain OECD member countries, such as Australia, Canada and France (Box 4.5).

It should be noted, however, that the Plan de Relance Sport (or Sport Recovery Plan) drawn up by the Ministry of Sport has indirectly supported mental health in Luxembourg in the context of the pandemic, in particular among young people. Numerous grants and subsidies have been allocated to various sports clubs and to families (Government of Luxembourg, 2021[48]). To encourage families to enrol their children in a sports club, the Ministry of Sport has, for example, contributed to the enrolment fee by paying EUR 50 for each new membership. Scientific research has shown that these targeted investments in sport are beneficial to the mental health of the population and promote social cohesion (Guthold et al., 2019[49]; OECD, 2021[19]).

Box 4.5. Multisectoral approaches to supporting the mental health of young people and employed people in selected OECD member countries

In **Australia**, Headspace centres provide comprehensive support to 100 000 people aged 12 to 25 each year, with a focus on mental health interventions. Headspace centres also collaborate with schools to offer specific support to students.

In **Canada**, the Mental Health Commission has a set of guidelines to help companies create work environments that support employees' mental health. One of the key components of promoting mental health in the workplace is training for managers and supervisors.

In **France**, to address concerns about the mental health of students during the COVID-19 crisis and university closures, the Chèque Psy Étudiant scheme, which was launched in February 2021, allows students to have three appointments with a psychologist or psychiatrist free of charge. This was expanded in April 2021 with the introduction of a programme offering up to ten free sessions with a mental health specialist for children aged 3 to 17 years.

Source: OECD (2021[50]), "Tackling the mental health impact of the COVID-19 crisis: An integrated, whole-of-society response", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/0ccafa0b-en.

4.5. Summary of recommendations

4.5.1. Prepare for future crises

- **Develop a single information system**, where databases are interoperable, with a unique identifier for patients and where health services are automatically linked (as in Canada, Denmark and Korea).
- **Invest more in the health workforce** by increasing medical staff (as in France with support for GPs when they set up practice), introducing multidisciplinary approaches (as in Australia, Austria, Slovenia and the United States), and adapting the training and responsibilities of healthcare professionals (as in Canada, France and Latvia with the development of advanced practice nurses).
- **Strengthen hygiene skills and the medicalisation of long-term care facilities**, and improve quality governance. Luxembourg could also give further consideration to the supervision of longterm care facilities.
- **Invest in multi-professional teams for primary care** that promotes better access to risk prevention and meets all care needs in health crises (as has been done in 18 other OECD member countries).
- Set up a **central procurement and logistics unit** for all health institutions for critical products, drugs and medical devices, in order to organise the national supply, logistics and storage of these products.
- **Maintain the health reserve**, providing required training in key public health areas, such as epidemiological surveillance and contact tracing.

4.5.2. Absorb the shock and help health system functions to recover

- **Involve civil society** and user representatives more in the management of the crisis, particularly in the various working groups of the interministerial crisis unit and the COVID-19 Task Force.
- **Involve the primary care sector** to meet all the public's needs, in particular primary care doctors' office and retail pharmacies to accelerate vaccination coverage.
- **Strengthen the provision of health services to disadvantaged populations**, who are at higher risk of developing severe forms of the disease, through activities aimed at preventing risk factors, and by continuing to develop community-based actions to reduce vaccine hesitancy.
- **Strengthen screening and monitoring of depressive disorders, and develop multisectoral mental health policies** for young people and those in employment (as in Australia, Canada and France).
- **Evaluate the benefits and risks of deploying remote care services**, particularly with regard to access, care quality, patient safety and user experience (as in Belgium, England and the United States).
- **Reconsider the increase in hospital capacity more closely** to ensure the continuity of non- emergency procedures. Establish co-operation between hospitals both to organise the pandemic care pathway and to ensure that non-emergency hospital procedures continue to run.

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Notes

[1] The analysis of excess mortality data, corresponding to deaths recorded in excess of the number that would normally have been expected at a given time of the year, makes it possible to avoid, in part, problems with data comparability due to differences in national practices of accounting for, recording and codifying these deaths.

[2] In charge respectively of: i) the vaccination strategy (target populations to be vaccinated, prioritisation of groups); ii) communication and organising a hotline; iii) the supply of vaccines (negotiations with the European Commission, arrangements for delivery of vaccines to Luxembourg, training of vaccinators according to the manufacturers' instructions); iv) developing information systems (sending out invitations, making appointments, recording information on those vaccinated, providing computer equipment); v) and logistics and vaccination centres (identifying vaccination sites, transporting and storing vaccines within the country, designing and operating vaccination centres and mobile vaccination teams).

[3] The logistics unit was set up under the responsibility of the Ministry of Defence within the crisis unit of the Ministry of Health and the High Commission for National Protection on 17 March 2020. The logistics unit was initially composed of representatives from the Health Directorate, the Army, the High Commission for National Protection, and the Grand Ducal Fire and Rescue Corps.

[4] A total of nine training sessions were organised between 28 March and 6 April 2020 with 189 participants representing integrated centres for older people, care homes, home care networks and private practice nurses. According to data provided by the High Commission for National Protection, training on good hygiene practices saw an attendance rate of 94%, indicating that the programme was a success.

[5] Some of these measures have already been made permanent through amendments to Bill No. 7524 on the quality of services for older people made by the government on 29 September 2021 (CSL, 2021[51]). These amendments provide for the introduction of a reference person for infection prevention and control and compliance with hygiene and sanitary regulations, the obligation to include in the facility's general regulations the hygiene and sanitary rules to be respected and a system for infection prevention and control, and the introduction of governance for quality management.

[6] A total of 109 facilities benefited from these testing operations, following 186 interventions during which 16 501 tests were performed and 628 positive cases were detected.

[7] The Act of 17 July 2020 introducing a series of measures to combat the COVID-19 pandemic made it possible for the Ministry of Health to hire health professionals or doctors about to receive their licence to practice.

5 The Luxembourgish education system during the pandemic

This chapter examines how the government of Luxembourg handled the COVID-19 crisis in education, with a particular focus on formal (general) education. The study is structured around three areas of analysis: educational continuity during the various stages of the health crisis; the impact of the crisis on educational outcomes and stakeholder well-being; and the processes of engaging, co-ordinating and communicating with stakeholders. The analysis shows that, on the whole, Luxembourg managed the crisis successfully in the education sector: schools mostly remained open, educational continuity was ensured when they were closed, and educational outcomes remained relatively stable. The OECD proposes recommendations to support actions taken by Luxembourg in future, both in the context of the pandemic and for other similar crises, taking into account the broader needs of the country's education system.

Key findings

Compared to other education systems in the OECD, the education system in Luxembourg is characterised by: i) a high degree of linguistic diversity and multilingual ambition; ii) high levels of investment in education; and iii) equity and quality challenges in student performance. These are all important contextual elements for understanding the decisions made by the country's government starting in February 2020.

To ensure educational continuity, Luxembourg stood out in its desire to **reduce the number of days on which schools were closed to a minimum.** In total, school closures in 2020 and 2021 amounted to 48 days of teaching in primary education and 34 in secondary education (fewer for final-year students). Solutions to ensure educational continuity were put in place during this time. One of the successes of the government's management of the crisis was its ability to build a consensus regarding the overall strategy that underpinned all of its actions.

As in many other OECD member countries, educational continuity has meant that **school monitoring in Luxembourg has not detected any systematic negative impact on students' educational outcomes.** Overall, the system has withstood the upheaval caused by the crisis, teaching has continued and learning has ensued. The slight decline in German language comprehension performance, first in oral work in 2020 and then in written work in 2021, could have been anticipated, as could the impact on the workload faced by students, teachers and parents, who have had to deal with exceptional circumstances for a long time.

For Luxembourg, the following are areas that could be improved as the crisis continues (and in the event of other, similar crises):

- **Make preparations for educational continuity** in the event that schools have to close again. This goal requires building teachers' capacity to incorporate digital technology and skills into an expanded educational toolkit.
- **Put in place tailored support to curb the growth of educational inequalities** during times of crisis. In the short term, the ministry must improve its proactive support measures, providing differentiated support if resources are limited, to benefit the most vulnerable students first. In the medium to long term, more extensive transformation of the education system will be needed, for example on the model of the European Schools.
- **Reconsider the division of responsibility for managing and equipping schools with digital infrastructure between central government**, which supplies secondary schools directly, **and communes**, which equip primary schools through (weighted) public funding. In essence, centralising the supply of digital equipment could take some pressure off the communes – especially in times of crisis – and harmonise the quality of digital infrastructure, between the schools themselves and between primary schools and secondary schools.
- Conduct statistical studies on the effects of the crisis on the lives and experiences of children and families in Luxembourg, and on different population groups, to better inform public policy.
- Tailor health and pedagogical measures to ensure that they are proportionate to the emergency context, while continuing to be science-based, and that they seek a return to normality, or a degree of predictability, as far and as safely as possible.

From the earliest days of the COVID-19 crisis, **the Ministry of Education, Children and Youth was able to rely on the autonomy, resilience and co-ordination of its staff and their resources**. The COVID-19 and education governance framework, from which the joint Ministry of Education and Ministry

of Health co-ordination unit emerged, enabled the government to put in place the necessary health measures to stop the spread of the virus as soon as schools reopened.

For future crisis co-ordination, the following should be considered:

- In times of crisis, i**nclude the education sector in the** government of Luxembourg's **interministerial crisis unit.**
- **Ensure that the crisis governance framework, including the steering committee, remains as stable as possible**. The membership, remit and resources of the committee should now be established in advance and transparently, to ensure that it is able to function properly. The Ministry of Education, Children and Youth's decision to maintain its co-ordination unit in a "dormant" form is particularly relevant.
- **Strengthen the coverage, integration and interoperability of databases from different sectors** to facilitate the mobilisation of reliable and complete information, which is particularly vital in times of crisis.
- Depending on the urgency, strike a balance between the consultation time dedicated to developing the policy response and to communicating the decisions made. Upstream, better stakeholder consultation makes it easier to communicate and implement measures. Direct communication has its place in times of crisis but communicating decisions through the regular hierarchy must prevail in situations where there is less urgency.

5.1. Introduction

This chapter analyses the government of Luxembourg's COVID-19 response in the field of education, particularly general formal education. The analysis is based on national and international data, as well as on three surveys of key actors in the Luxembourg education system: a first addressed to the Ministry of Education, Children and Youth; a second to the Ministry of Higher Education and Research; and finally a third addressed to school leaders (or school principals). Of the approximately 200 state-run and private schools in Luxembourg, 141 principals responded to this survey by the OECD. In addition, interviews carried out with numerous stakeholders in the Luxembourg education system during two working visits to Luxembourg are an important source for the analysis and recommendations.

This chapter begins by setting the context for education in Luxembourg and outlining the key elements of the government's response to the health crisis in the education sector. It then examines the main successes and areas for improvement in the government's response. The study is structured around the following lines of analysis: educational continuity during the various stages of a health emergency; the impact of the crisis on educational outcomes and stakeholder well-being; and the processes of engaging, co-ordinating and communicating with stakeholders. The chapter then summarises some proposed recommendations for the government of Luxembourg, to support its future actions in the context of the pandemic or other crises, taking into account the broader needs of the education system.

5.2. Understanding the Luxembourg education system

Luxembourg's education system is one of the smallest among the OECD member countries (less than 100 000 students across all levels). It has three features: i) a goal of multilingualism and a high degree of linguistic diversity among learners compared to other OECD education systems; ii) high levels of investment in education; and iii) equity and quality challenges in student performance. This section discusses the broad outlines of these three features to better understand the constraints and opportunities faced by the Ministry of Education, Children and Youth during the pandemic, and as backdrop for the OECD's recommendations.

5.2.1. Luxembourg has a unique education system focused on multilingualism

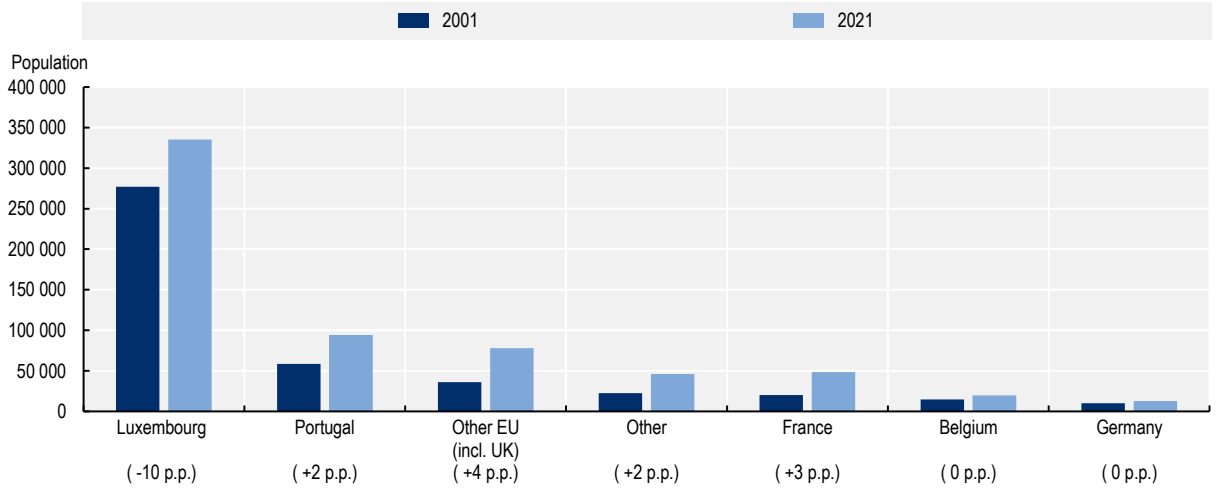
In 2022, Luxembourg had 170 state-run primary schools (equivalent to pre-primary and primary education according to the International Standard Classification of Education [ISCED]) and 41 state-run secondary schools (divided into three years of lower secondary education and three or four years of upper secondary education according to ISCED). In addition, there are 14 private primary schools and 12 private secondary schools in the country; these institutions receive state subsidies and follow the state curriculum to varying degrees (MENEJ, 2022[1]; MENEJ, 2022[2]). In 2019-20, 93% of students were enrolled in state-run education in Luxembourg (LUCET et SCRIPT, 2021[3]).

The uniqueness of Luxembourg's education system compared with other OECD member countries lies largely in its multilingual approach to teaching and learning, and in its highly international population. The country has three official languages (Luxembourgish, German and French), each of which takes alternates as the language of instruction in the education system. Children aged 1-4 can benefit from the multilingual education programme provided by early years education and childcare services through the childcare voucher system. This programme gives them early and daily contact with French and Luxembourgish, while taking into account that they may speak other languages (MENEJ, 2022[4]). The language of instruction then evolves as students progress through their school careers. In the "traditional" education system, pre-primary education is provided in Luxembourgish, primary education is provided in German (including children's literacy), and most secondary education is in French or German. Higher education is provided in German, English and French (OECD, 2016[5]). Some state-run or private schools offer an

international education programme, in line with the country's multilingual ambition, but allowing for literacy and schooling in a child's native language (or languages other than German). In 2022, 16 state-run and private primary schools and 13 secondary schools were offering international education (MENEJ, 2022[6]).

Between 2001 and 2021, the population of Luxembourg increased by 44%, with a large rise resulting from the migration of groups speaking a European Union language (particularly French and Portuguese, see Figure 5.1). Over the same period, the share of the population with Luxembourgish nationality fell by 10 percentage points, from 63% to 53% (LUCET et SCRIPT, 2021[3]). Cross-border activity is also fairly active (see Chapter 1). In 2022 therefore, the education system (both primary and secondary education) is seeing an increasing number of students whose main language at home is not Luxembourgish (65.7%) (LUCET et SCRIPT, 2021[3]).

Figure 5.1. Population of Luxembourg by country of origin



Note: p.p. = percentage point change compared with other population groups between 2001 and 2021. Population growth of a group in absolute variation does not always equate to relative variation growth in the population.
Source: LUCET and SCRIPT (2021[3]), *Rapport national sur l'éducation au Luxembourg 2021* [National Report on Education in Luxembourg 2021], https://bildungsbericht.lu/wp-content/uploads/2022/05/Rapport-national-sur-l-education-Luxembourg-2021.pdf.

StatLink https://stat.link/vz9db2

The multilingual structure of the traditional education system is a growing challenge for an increasingly diverse student population. From the age of 12 years, students are directed to different educational tracks, essentially "classical" and "general" education. Classical education is more selective and *de facto* considered to be more prestigious than general education. However, there are now variations on this model, such as international education. As demographics have changed, the supply of and demand for international education has grown in recent years. In 2019-20, for the first time, more than 10% of secondary school students, primarily following the classical curriculum, completed their studies through an international education programme, either in the state-run or private sector (LUCET et SCRIPT, 2021[3]).

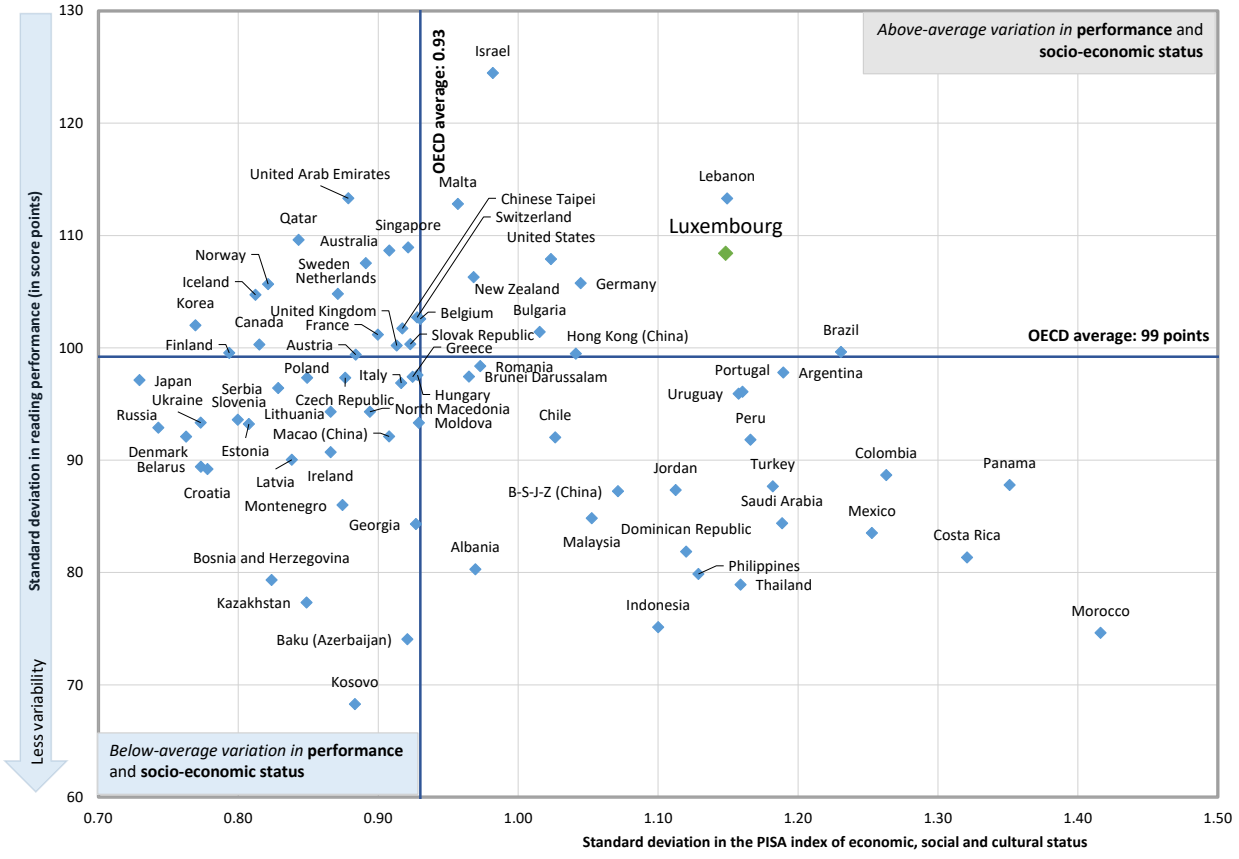
5.2.2. High levels of education spending, modest learning outcomes

In Luxembourg, the annual per student cost is more than twice the OECD average. After taking into account public-private transfers, public spending on educational institutions, from primary to tertiary level, per full-time student in Luxembourg was USD 23 457 in 2018 (in USD purchasing power parity), compared with an average of USD 10 000 for OECD member countries.

However, despite this high level of investment, Luxembourg performed below the OECD average in all three areas assessed (reading, mathematics and science) by the Programme for International Student Assessment (PISA) 2018 (OECD, 2019[7]). Luxembourg's performance has changed very little across PISA cycles since 2000.

In Luxembourg, students' socio-economic status had one of the largest impacts on reading performance in PISA 2018 than anywhere in the OECD, with this factor explaining 17.8% of the variance in performance (compared with an OECD average of 12%). More advantaged students in Luxembourg have a reading score 122 points higher than disadvantaged students. This is the biggest difference observed between these two groups in any country or economy participating in PISA. The average difference in the OECD is 89 points. At the same time, the differences in performance between immigrant and non-immigrant students are lower than the OECD average, although 55% of Luxembourg's 15-year-old students come from an immigrant background, according to the PISA survey. Given the same socio-economic background, these students scored an average of 17 points lower in reading than non-immigrants, compared with an OECD average of 24 points. However, Luxembourg is one of the countries participating in PISA 2018 where there is a high degree of socio-economic diversity among students, and where students' educational outcomes vary more than in countries with similar overall performance or level of economic development (OECD, 2019[7]) (see Figure 5.2).

Figure 5.2. Variation in students' reading performance by socio-economic status, PISA 2018



Source: OECD (2019[7]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/5f07c754-en.

StatLink https://stat.link/01nygz

National assessments in Luxembourg corroborate these findings: students from socio-economically disadvantaged homes, who do not speak any of the languages of instruction at home, or who attend one of the two general secondary education tracks, have lower academic performance than their peers (LUCET et SCRIPT, 2021[3]).

5.2.3. The Ministry of Education, Children and Youth has a broad remit, while allowing schools and teachers pedagogical autonomy

The Ministry of Education, Children and Youth is responsible for early childhood education and care, primary education, secondary education, adult education, and other services related to the inclusion of students with special needs in formal education (through specialised centres of excellence in educational psychology) and non-formal education (crèches and mini-crèches, drop-in centres, school centres, childminders, and youth centres). The Ministry of Education, Children and Youth is also responsible for child and youth welfare and working with young people. The education sector employs the largest number of public workers (44.8% of the 31 049 civil service employees as of 31 December 2020, including teachers) (Government of Luxembourg, 2021[8]). The ministry's responsibilities are similar to those of many education ministries in OECD member countries. Although they are separate organisations, the Ministry of Higher Education and Research and the Ministry of Education, Children and Youth have been both led by the same minister since 2013 (Government of Luxembourg, 2022[9]).

Like many other OECD member countries, Luxembourg grants a broad pedagogical autonomy to teachers and schools. For example, in 2017, two-thirds of decisions relating to the organisation of secondary education were taken by Luxembourg's secondary schools. Only one-third were taken at the central level. In contrast, all decisions regarding staff management, planning and structures, and resource management were made centrally (OECD, 2018[10]). These areas of responsibility are delegated to the communes for primary education.

While the curriculum is centralised, teachers have pedagogical autonomy in implementing it. This autonomy extends to the choice of teaching materials as well as their choice of professional training. The government develops and provides free educational materials (such as textbooks), and teachers can choose to use them or not.

These contextual elements (multicultural system, challenges around equity and quality, pedagogical autonomy for teachers and schools) are essential to understanding and putting into perspective the decisions taken by the government of Luxembourg during the pandemic.

5.3. Educational continuity during the health crisis in Luxembourg

5.3.1. Schools remained mostly open during the COVID-19 pandemic

The Ministry of Education, Children and Youth made opening schools a priority throughout the pandemic. This was its main strategy to ensure educational continuity and the well-being of young people in Luxembourg.

A decision to close the country's schools was taken during the week of 9 March 2020. In a context of uncertainty and drawing on the strategies adopted by the countries of the Greater Region of SaarLorLux, on Friday 13 March, the government of Luxembourg announced that schools and educational activities would be suspended from Monday 16 March to prevent or slow the spread of the COVID-19 virus in the population so as to best protect those who were most vulnerable (see Annex table 5.A.1). Some 150 000 children, young people and adult learners, and 20 000 education professionals were asked to stay at home for an initial two weeks. As the health situation deteriorated, the return to school was gradually postponed, first until the Easter

holiday (4-19 April), and then until 4 May 2020, bringing the total duration (excluding holidays) of the first full closure period for secondary schools to five weeks, and for primary schools to eight weeks.[1]

Final-year students in secondary education began returning to school on 4 May 2020, followed a week later by the rest of the secondary school population, initially on an alternating basis so as to reduce the number of students on site by half. All students then returned to class gradually as the health situation evolved. Annex table 5.A.1 summarises the different protocols in 2019-20, 2020-21 and 2020-22. Because of their flexibility and effectiveness (see Box 5.1 on protocols and infections in schools), these health protocols helped to keep schools open or partially open as long as possible in 2020. It was not until the end of the 2020-21 Christmas break, in January 2021, that the decision was again made to completely close schools at all levels for one week. This decision was repeated one last time in February 2021 but affected primary schools only.

In total, school closures in 2020 and 2021 amounted to 48 days of teaching in primary education and 34 in secondary education (fewer for some classes) in 2020 and 2021. These figures place Luxembourg among the OECD member countries that closed their schools the least, alongside (depending on the level of education) Iceland, Japan, Norway and Sweden. The OECD average for school closures is about 81 days in primary schools and 94 days in secondary schools (OECD, 2021[11]).

The University of Luxembourg followed a similar trend, with the Ministry of Higher Education and Research preferring to limit periods of complete closure. Although the university has access to high-quality digital infrastructure, which enabled a relatively easy transition to remote learning, it reopened its doors in September 2020 (in contrast, many OECD member countries delayed the start of the academic year for higher education students), offering hybrid learning or alternating attendance patterns. The university also made much less use of remote learning than most universities in OECD member countries. Each course enjoyed broad autonomy to make its own arrangements, with some holding end-of-semester examinations in person as early as May 2020.

Box 5.1. Health protocols to tackle the spread of the COVID-19 virus in schools in Luxembourg

The return to class of some students starting on 4 May 2020 was made possible thanks to strong health protocols, combining social distancing (enabled by the use of alternating attendance), the distribution of personal protective equipment (masks, hand sanitiser and so on), the communication of precautionary measures, and inviting everyone in schools to take part in the country's large-scale testing strategy. This approach, supported by ongoing collaboration between the Ministry of Education and schools, and facilitated by the rapid development of digital tools such as the EduTesting application and the self-declaration and tracing portal for infections,[2] enabled early detection of infections leading to numerous but localised isolations, and helped the system to respond more quickly to outbreaks. A health plan featuring four scenarios (MENEJ, 2022[12]) to enable the system to be adapted to changes in the circulation of the virus and virus variants made a significant contribution to limiting the spread of the pandemic in schools, reassuring school staff, students and parents. Although the government never mandated self-testing for students and teachers, nearly 90% participated.

Successive analysis reports show that schools were not a key location for virus transmission (MENEJ et al., 2020[13]; MENEJ, 2020[14]; MENEJ, 2021[15]). On the contrary, the data on infections collected by the General Inspectorate of Social Security and the Health Directorate, coupled with the Ministry of Education, Children and Youth's school databases and analysed by a multidisciplinary team, suggest that schools were less affected by the coronavirus than other sectors of society. This is partly because they are structured spaces where activities are organised in accordance with rules and clearly established health protocols, and partly because the school population has been very regularly tested (and then isolated if necessary).

These findings, gradually supported by medical advances showing that the virus was less dangerous (and, at least initially, less contagious) in young people, confirmed the government's strategy of keeping schools open as much as possible.

Education stakeholders, from school principals and teachers to parents and unions, approve – in retrospect at least – of the government's decision to make opening schools its top priority. One of the successes of the government's management of the crisis was its ability to build a consensus regarding the overall strategy that underpinned all of its actions. Faced with the fears expressed by some people regarding the return of children (and teachers) to school, particularly at the beginning of the pandemic, the government was able to defend the key role of schools in enabling learning, ensuring the mental, social and emotional well-being of students and their parents, and maintaining access to the labour market. The Ministry of Education, Children and Youth's strategy is consistent in this respect with the first of the OECD's ten principles for effective and equitable educational recovery from COVID: keep schools open as much and as safely as possible (OECD/EI, 2021[16]).

The ministry faced several challenges in delivering educational continuity: ensuring the continuity of teaching remotely while schools were closed and social distancing was the norm; defining and implementing health protocols for opening schools; ensuring the quality of education under altered conditions; and enabling students to graduate during the pandemic. These challenges are discussed in the following subsections.

The first school closure was mitigated by remote learning

After closing the country's schools in March 2020, the government was keen to guarantee every student's right to education by helping schools to provide remote learning. To support this unprecedented effort, teams from the ministry, including the Department for the Co-ordination of Educational and Technological Research and Innovation (SCRIPT), the national youth service, the educational technology centre, and the national education training institute IFEN, assisted school staff by developing and/or very quickly making available a range of educational resources for remote teaching or learning to teachers, parents and students.

First, SCRIPT created the Schouldoheem[3] platform, offering a diversified catalogue of digital resources available in five languages to meet the specific needs of the Luxembourg system. The platform was consulted more than one million times during the first period of school closures (to give some perspective to this figure, the country has 90 000 students and a population of 632 000). Approximately 68% of the visits were made within the first two weeks, and 84% were made directly from the website URL (i.e. without going through a search engine), clearly demonstrating that the platform's launch was successfully communicated. SCRIPT also offered 32 "challenges" in which more than 3 000 students participated, 14 livestreams that attracted 35 000 views in a few days, dance workshops in which nearly 9 000 children took part (SCRIPT, 2020[17]), and hard-copy learning materials made available to students by teachers. This resource development effort was the result of multisectoral collaboration involving SCRIPT, the Museum of Natural History, the national youth service and educational science students at the University of Luxembourg (e.g. for a directory of open educational resources (Université du Luxembourg, 2022[18])). The deployment of these new tools and the transition to remote learning were accompanied by the establishment of a direct telephone helpline to provide educational and psychosocial support. This was staffed jointly by SCRIPT and the Psychosocial and Scholastic Assistance Centre (CePAS). This helpline for students, parents and education professionals offered educational support and answers to questions about remote teaching and learning.

Educational continuity has benefited from the excellent overall state of Luxembourg's pre-crisis digital infrastructure. In 2017, the country was ranked ninth in the world on the information and communication technology (ICT) Development Index, a measure that takes into account access (first place), usage (eighth

place) and the digital skills of its population (seventy-fourth place) (ITU, 2017[19]). Almost all of the country is covered by high-speed Internet and schools (as well as most homes) have adequate computer equipment. In primary education, each of the 15 regions has a teacher who specialises in digital skills and is responsible for helping their colleagues master digital tools and for leading public procurement. The role that these teachers played with teaching teams was particularly appreciated during the crisis. In addition, at the secondary level many students (sometimes entire secondary schools) benefit from the one2one programme, which provides all students in a class with personal tablets using an annual rental model.[4] During the previous legislative period, the Ministry of Education, Children and Youth had also renegotiated its contracts with Microsoft, guaranteeing all students and school staff free, unlimited access to Office 365 products. As a result, within the first few days of school closures, the majority of students were able to connect with their teachers using the Microsoft Teams collaboration platform and take part in remote learning. One of the first tasks schools often faced was the need to remind people how to use these tools, sometimes still not widely used.

Additional digital equipment was loaned to students from disadvantaged backgrounds on a case-by-case basis, at the initiative of schools, the educational technology centre or communes. Solutions were generally found quickly for students who did not have equipment at home.

Students with specific needs also benefited from special support measures provided by socio-educational staff at specialised centres. These ranged from a dedicated telephone helpline to individual coaching. Outpatient child and family services and ad hoc care for special needs students resumed before schools reopened in cases where such services or care were vital to continuity of treatment or to diagnosis.

Especially during the first closure, educational continuity through remote learning mobilised school principals, school committees and teachers, galvanised by the unprecedented circumstances. Some teachers distributed hard-copy educational materials through the letterboxes of the children in their classes, others organised a secure homework collection. Teachers helped to identify and increase monitoring of students most at risk of disconnecting and dropping out. The vast majority quickly adapted to the use of digital tools that had previously been largely underutilised or not employed at all (in particular the Teams platform). During the first wave of the pandemic, and despite a general feeling of unpreparedness, the teachers interviewed by the OECD and their representatives expressed a certain sense of pride. Faced with the state of emergency, they managed to ensure some educational continuity remotely, even though it was not perfect. In retrospect, they express satisfaction at having succeeded in mastering digital tools that had not previously been widely used.

These different forms of support are similar to those put in place in other countries and economies during the pandemic. Many countries made digital resources available to students and/or teachers and asked teachers to provide remote learning (or at least stay in touch) with students (Vincent-Lancrin, 2022[20]). In France, the government opened up or expanded access to educational resource platforms that existed before the crisis, set up a virtual classroom platform and offered teachers educational support in how to use them (Thillay, Jean and Vidal, 2022[21]; Vincent-Lancrin, 2022[22]). In Belgium (Flemish Community), the KlasCement teacher resource platform was enriched with resources for remote learning and peer-to-peer discussion (Minea-Pic, 2022[23]). In Luxembourg, although SCRIPT was able to build on pre-existing educational resources, it had to create a new platform in five languages with limited human resources, given the size of the country. In the few countries that have conducted such studies, including France, Germany and the United States, teachers, on average, scaled back their goals and focused primarily on giving out homework and lessons rather than on remote learning (Thorn and Vincent-Lancrin, 2021[24]). Discussions with teachers and teachers' unions suggest that teachers in Luxembourg also used a mix of homework to be completed by students independently (paper or digital format), online classes and individual monitoring. For teachers with access to the virtual classroom system (Teams), the lack of a statistical study on this issue means that there is no information about the balance they struck between different educational practices, nor the intensity of the contact they had with their students (and students' families) during this first closure.

Experience gained during the first year made it easier to respond to subsequent closures

Luxembourg closed its schools twice more after they first reopened in May 2020. At the end of the Christmas holidays in 2021, the government once again decided to close all schools completely for one week. With the experience gained in 2020, the technical progress made by its staff on mass testing, the availability of mechanisms for tracing infections and the gradual vaccination of the population, the ministry was able to reopen primary and secondary schools after just one week of closure in January 2021. In secondary schools, alternating attendance then face-to-face teaching continued until the end of the school year. In the primary sector, schools closed for a third and final time in February 2021.

According to the stakeholders consulted, the later closures did not pose the same challenges as the first one, since teachers already had some initial experience, the platforms and helplines were still in place and, more generally, the protocols used while schools were open retained some elements of remote teaching and learning. How they were managed is not known due to a lack of data, but it is likely that more emphasis was placed on remote learning through virtual classrooms, as was the case in Germany (Thorn and Vincent-Lancrin, 2021[24]).

Educational continuity was maintained through the health protocols

When schools reopened after the first closure, the government's efforts focused primarily on the health aspect of the crisis to keep schools open as much as possible. Additional educational resources remained available on the digital platforms, as did other support services introduced during the period of closure. The health protocols nonetheless required staff and learners to adapt to ensure high-quality education in new and changing conditions.

From the first time schools reopened, the health priority was mainly reflected through: i) the provision of health guidelines and materials to schools; ii) the implementation of health protocols at multiple levels; and iii) the design of on-site spaces and schedules.

In May 2020, the return to face-to-face teaching was gradual, using an alternating attendance pattern. To reduce the number of students present on site by half, the government requested that classes (or half-groups) used alternating attendance patterns based on a weekly system: half of the students attended classes in person, while the other half attended classes remotely or did work at home or, if possible, in school, in spaces provided by the communes or in drop-in centres, where staff supervised the half-groups. This general framework was adapted to suit local circumstances, thanks to the autonomy given to schools. It was also staggered differently for different classes: final-year classes in the classical and general secondary education tracks, as well as those in vocational education, were able to return to site before other classes so that they could prepare for their final exams (see section below). The final-year classes were followed by the other secondary and vocational education classes, as well individual music classes. Then it was the turn of primary classes, as well as childcare facilities such as crèches and drop-in centres (MENEJ, 2020[25]). Subsequently, when the health situation allowed it, alternating attendance was abandoned in favour of a return to full-time, face-to-face teaching for all, with the aim always being to avoid completely closing schools.

During these periods of full or partial school opening, the Ministry of Education, Children and Youth and government institutions focused their efforts on developing and implementing various health protocols, as well as providing protective equipment and testing materials, making the strategic choice to try and keep schools open rather than preparing for an eventual forced return to remote learning. The 141 school chairs and school principals (primary and secondary) who responded to the OECD questionnaire were generally satisfied, too: 79% rated the government's logistical support as satisfactory or very satisfactory during periods when schools were fully open and 73% during periods when they were partially open. Furthermore, 90% were satisfied or very satisfied with the provision of protective equipment (tests, masks, hand sanitiser, etc.). This feeling seemed widely shared by the teachers' representatives, parents and students

we met, all of whom praised the efforts that made it possible to reopen the schools, and then to keep them at least partially open.

Higher education shifted to remote and then hybrid format

In higher education, the Ministry of Higher Education and Research granted broad autonomy to the University of Luxembourg, enabling it to respond flexibly to the challenges posed by the crisis, despite challenges of its own, such as managing international students and handling the occupation of student housing during the period of closure.

At the beginning of the crisis, the university gave itself three weeks longer to prepare than the primary and secondary education sectors. The effort was led by a task force responsible for observing how the pandemic developed in neighbouring countries. Before the first government shutdown of the university was announced on Friday 13 March 2020 (along with the rest of the country's schools), an ambassador trained the teaching staff in the use of videoconferencing solutions. For its part, the IT team developed two platforms (TeachRemotely.lu and WorkRemotely.lu) and equipped some 15 classes with remote learning tools. With modernised classrooms and an additional investment of EUR 1 million, the university was able to implement a hybrid teaching model by the start of the 2020-21 academic year, less than six months after it was first closed. Although there were variations across different courses, classes were typically divided into three rotating groups: one on site and two working remotely. The university did not close again after the summer of 2020. As the virus evolved, educational continuity was ensured by hybrid teaching throughout the 2020-21 academic year, and then by a return to face-to-face teaching from November 2021.

Nevertheless, the Ministry of Higher Education and Research faced a double challenge typical for higher education: managing international students coming to study in Luxembourg and managing Luxembourg students going to study abroad (traditionally a large number).

The closure of the borders of neighbouring countries made it difficult for international students to return to their families when the university closed. Those who had to stay behind received support from the university's inclusion and well-being unit, as did Luxembourg students whose only option was to remain in their university accommodation. This support was psychological (establishment of a hardship fund), material (provision of digital equipment), social (quizzes, weekly evenings to help students avoid feeling isolated), financial (fundraising and help from the ministry to provide equipment and food, for example) and academic (personalised support sessions).

The university's management team, teachers and students thus seem to have received the appropriate autonomy, flexibility and support to handle the crisis from the Ministry of Higher Education and Research. Hybrid teaching was well accepted, although discussions with stakeholders show that the positive educational innovations it generated have tended to evaporate over time and that it was not equally popular with different student populations.

In the case of Luxembourg students abroad, the Ministry of Higher Education and Research co-ordinated with the Association of Luxembourg Student Unions (ACEL) to contact, support and possibly repatriate them. The ministry added the option of a semester of fees for Luxembourg students with scholarships to study abroad.

Educational continuity has also been achieved by maintaining examinations

The last significant element of educational continuity was the maintenance of end-of-course examinations under near pre-pandemic conditions. This decision was both required and made possible by Luxembourg's general strategy of keeping schools and universities open as much as possible. This goal was achieved through different means depending on the type of education.

At the primary level, the government originally wanted to postpone the traditional common tests. However, it was forced to cancel them due to the extended lockdown. Since these results were not available, the procedure used to determine students' pathway at the end of primary education was changed: decisions on which secondary education track they would follow were based on students' work in different areas, formative evaluation and, potentially, information provided by psychologists. The numbers of students being guided towards the various different types of education remained stable, although there was a slight decrease in the number being guided towards the classical secondary education track compared with 2019 (MENEJ, 2020[26]).

In secondary schools, priority was given to maintaining the national school-leaving examination, the procedures for which were changed as little as possible. It is for that reason that students in their final year of secondary or vocational education returned to class first (from 4 May 2020). The baccalaureate normally consists of six written tests and two oral tests, which make up two-thirds of each student's final grade, with the remaining third evaluated by continuous assessment. In 2020 however, the government decided to restrict the examination programme to what had been covered in class before lessons were suspended (on 16 March). The number of in-class assignments for core subjects was reduced, and in their special subjects, students were given the opportunity to complete a personal project rather than take a written test. At the end of the summer session, which went ahead according to the original schedule with the same criteria for passing and failing, 83% of candidates obtained their qualification, a stable figure which is in line with trends in recent years (MENEJ, 2021[27]).

In vocational education, the government made changes to the procedures for holding and assessing the work experience modules, granting exemptions for certain modules in accordance with well-defined conditions. Final-year students were granted a waiver for all work experience modules that could not be assessed. For all other classes, students were granted a waiver for all work experience modules that should have been completed between 16 March 2020 and the end of the school year; the deadline for signing new apprenticeship contracts was also extended.

Finally, in higher education, the Ministry of Higher Education and Research and the University of Luxembourg wanted students to take their examinations, so that they could continue to progress in their studies with the guarantee of recognised examinations. For some courses (medicine, for example), examinations were conducted in person; for others, they were conducted remotely. At first, online proctoring techniques were considered, but they were quickly discarded when they proved unpopular with students and the wider public. The authorities preferred to assess students using homework assignments, recorded oral exams and more flexible proctoring methods. In addition, recognising that study conditions were not optimal, the authorities allowed students an additional semester to repeat courses, coupled with a similar extension of the number of semesters for which students would be covered by financial aid. This situation seems to have had no impact on the number of credits validated, the number of degrees obtained or the number of registrations. Very few changes were made to application and selection procedures, which are specific to each course.

Based on the successful experiences of the previous year, the government introduced similar measures during the resurgence of the epidemic in 2021. In both primary and secondary education, the examination curricula for some subjects were reduced to so-called "essential" content to ensure that students were able to progress. To guarantee the smooth running of final examinations, five types of health precautions were put in place based on the experience accumulated in 2020 (MENEJ, 2021[28]): i) mass distribution of tests to enable preventive testing of all final-year students (on an optional basis); ii) the set-up of examination rooms and mask mandates; iii) extended time for resits offered to students with COVID-19 at the time of the examinations; iv) lifting of quarantine (under strict protocols and in a separate room) for infected students who requested it; and v) preventive remote learning for everyone for the last three days of classes. The pass rate for the various final secondary school examinations declined from 83% in 2020 to 76% 2021; however, this is within the range of fluctuations seen in recent years (MENEJ, 2021[27]).

In 2020 and 2021, the Ministry of Education, Children and Youth also divided the school year into semesters rather than terms to reduce the number of assessments, which were difficult to organise due to remote learning and alternate attendance. The ministry proposed making this permanent at the secondary level, but not everyone was happy with the reduction in the number of assessments, in part because this raises the stakes of these assessments for students. The increase in the volume of subjects to be revised and the examination periods to be organised after the Christmas holidays were, for example, aspects on which a consensus was not reached. It was finally decided that, within the framework of educational autonomy, schools could maintain the use of semesters if they so wished.

Thus, throughout the crisis, the government has tried to reconcile protecting the health of school populations with maintaining continuity of education and examinations. In this spirit, the ministry's action around examinations has met two distinct requirements. On the one hand, it had to adapt the examination procedures sufficiently to ensure that they could go ahead under the best possible conditions. On the other hand, it was careful not to change their content too much so that they would retain their value relative to other cohorts, even if they had to take into account the uncertainty surrounding the equality of learning conditions during the pandemic. Other countries (such as France and England) decided not to hold written tests for their final examinations in 2020, and it is unlikely that the student cohorts in these countries will be penalised in their future studies or in the employment market as a result. The maintenance of written tests in Luxembourg gave students and teachers a strong signal that education was continuing as normally as possible, and that they should keep putting in the same effort. Fair examinations required roughly equivalent effort and coverage of the curriculum for all final-year students, perhaps giving a similar impetus to the rest of the system.

To summarise, the government kept schools open as much as possible as the main way of ensuring educational continuity, supporting those in schools by providing educational resources and supplying more staff to enable alternate attendance. The strategy advocated by the ministry was generally successful: the country closed schools only briefly, stakeholders appreciated the logistical support provided by the government to implement health protocols, and the public approved of these decisions, at least in retrospect. However, this continuity also came at the cost of increased effort and investment by school staff, students and parents.

5.4. The impact of the COVID-19 crisis and government responses on student achievement and well-being in Luxembourg

5.4.1. School monitoring shows no systematic deterioration in student skills following the COVID-19 crisis

The Luxembourg school monitoring system

Before presenting these results, it is necessary to offer an overview of the school monitoring system in Luxembourg. In the 2000s, the OECD's PISA studies led Luxembourg to rethink its school system and to embark on an effort to improve quality assurance. National education standards were defined and, after being enshrined in law in 2009, laid the groundwork for performance-based management of the school system.

At the heart of this approach, Luxembourg created the national standardised testing programme (ÉpStan). This school monitoring system assesses students' language and mathematics skills, as well as their motivation to learn and their attitude towards school, at the beginning of each school learning cycle (i.e. at the beginning of classes 2.1, 3.1, 4.1, 7e and 5e, equivalent to levels 1, 3, 5, 7 and 9 in the international system, or CP, CE2, CM2, 5e and 3e in France). Each year, the assessment is carried out across all students in these classes, i.e. about 28 000 students (rather than on representative samples as is done in

some countries). Standardised testing (the ÉpStan) consists of tests and questionnaires (some of which have been digitalised and are administered through the dedicated Oasys platform[5]), making it possible to analyse the link between students' socio-economic and sociocultural backgrounds and their academic performance. Using this model, the Luxembourg Centre for Educational Testing (LUCET) provides relevant information to national education stakeholders and decision makers in Luxembourg, and establishes a longitudinal database comprising entire cohorts, making it possible to track changes in students' competency profiles, as well as their school biographies.

Despite the health crisis and the constraints it placed on the Luxembourg education system, LUCET administered the ÉpStan in autumn 2020 and again in autumn 2021. This is one of the successes of the government's response: these assessments mean that it has been possible to reliably measure the impact of the health crisis on students' learning and on a range of additional dimensions, such as motivation, parental support, or, on an ad hoc basis, their attitudes towards remote learning.

Additional studies and surveys (newly carried out or which existed before the crisis) are being used in addition to the ÉpStan and national examination results to help measure the impact of the pandemic on the well-being and health of the school population, and to guide the Ministry of Education, Children and Youth's crisis management policy. Most of these other studies, however, provide insights that should be interpreted with caution as they are not based on representative samples.

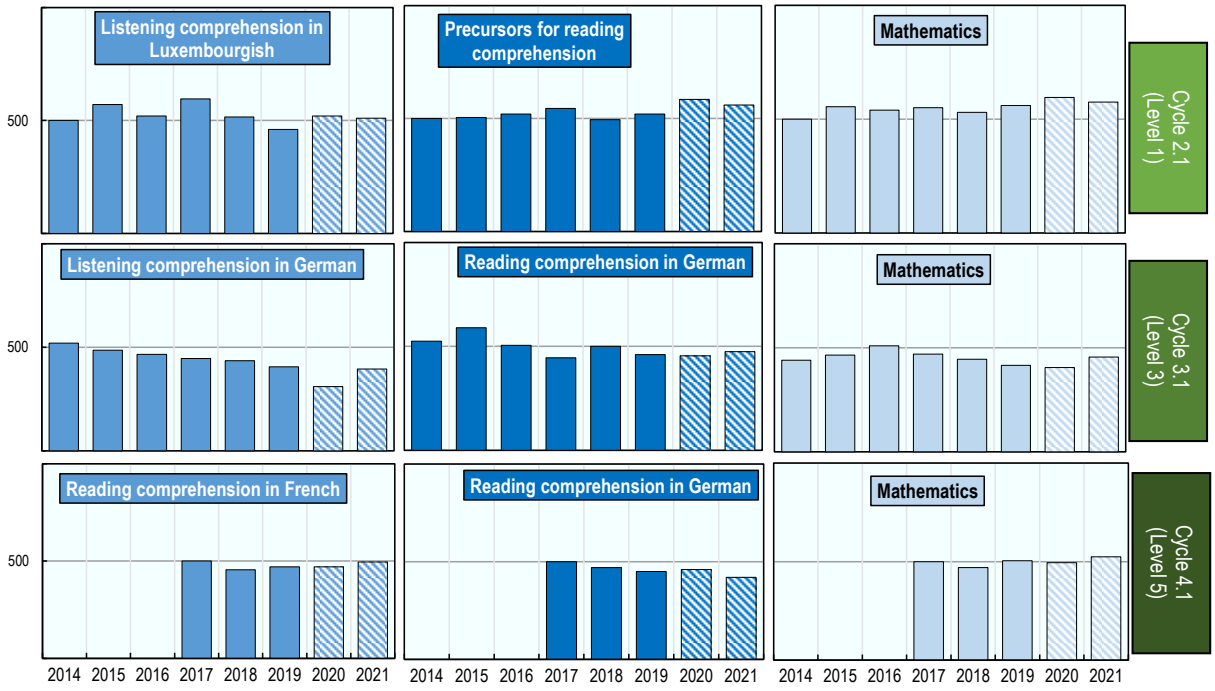
The relevant results are described in the two subsections below.

Student learning outcomes were minimally affected by the COVID-19 pandemic

The ÉpStan results for the two crisis years, announced in April 2021 and April 2022, remained broadly stable. Test scores in both languages and mathematics did not experience a downward trend, despite the challenges of remote learning and alternate attendance.

In 2020, the only significant decline was in the German listening comprehension of students in cycle 3.1 of their primary education (Figure 5.3). Regardless of socio-economic status and the languages spoken at home, student performance deteriorated following the first school closures and the subsequent alternating attendance system. Students and parents reported that they generally adapted well to homeschooling but did not enjoy it. The motivation or academic performance of students statistically more at risk of lower achievement (as a result of being from a disadvantaged socio-economic background, not speaking any of the languages of instruction at home, or being enrolled in the general and vocational secondary education tracks) may have been slightly more affected by the crisis (LUCET, 2021[29]), but the impact was not significant or systematic.

Figure 5.3. Results of standardised tests (ÉpStan) in primary education



Note: Cycles 2.1, 3.1 and 4.1 correspond to levels 1, 3 and 5, i.e. CP, CE2 and CM2 in France.
Source: Results of standardised tests (ÉpStan) administered by LUCET.

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In 2021, primary school students' scores stabilised. The decline in German listening comprehension observed in 2020 seems to have halted, especially for students who speak German or Luxembourgish at home. Scores in German reading comprehension did decline, however. At the primary level, there was a slight decline in performance by students in cycle 4.1, while at the secondary level, a clear deterioration was observed among students in the general and vocational secondary education tracks, regardless of their language context (Figure 5.4).

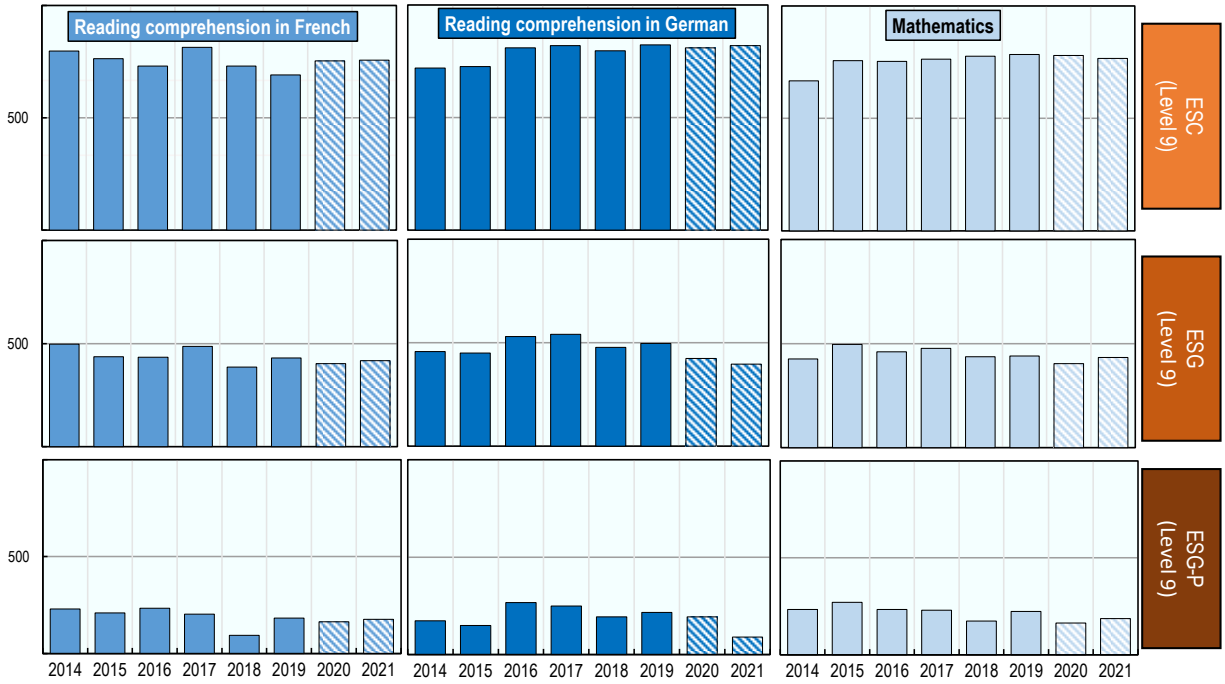
From these two waves of results, two conclusions can be drawn. Firstly, given that there is no systematic negative trend in the competency scores of primary and secondary school students, it appears that the system has proved resilient, and that educational continuity has enabled learning to go on. Secondly, it should nonetheless be noted that there was a slight decline in scores for German comprehension, affecting listening in 2020 and reading 2021. This decline, which is concentrated in students in one cycle, would be of relative importance if not for the fact that proficiency in the German language has a significant impact on academic choices and success in Luxembourg (see the first section of this chapter). In light of these results, LUCET's recommendations to promote German comprehension in a more differentiated way in oral than in written language, and to give special attention to students who are less likely to succeed, seem very relevant.

The performance gap between students from different socio-economic, language or migrant backgrounds does not appear to have widened significantly or systematically. At the primary level (cycle 4.1), the gap in German between students from disadvantaged and advantaged socio-economic backgrounds remained the same in 2017 and in 2021 (20 points, although there was a slight increase between 2019 and 2020, while remaining within the fluctuations seen in results of pre-crisis cohorts). At the secondary level (5e), inequalities increased between 2019 and 2020, but this was remedied in 2021. However, put into perspective, the only significant widening was seen in written German, where the gaps between students from more and less advantaged social backgrounds increased from an average of 86 points between 2015

and 2019 to 105 and 107 points in 2020 and 2021, the largest gaps seen since the assessments began in 2010, and slightly higher than the 98-point gap in 2018. The assessments carried out for students in 7e do not include enough observations to draw any conclusions. As in France, perhaps the prior academic level best explains the impact of the crisis: at the secondary level, performance by students following the classical track remained stable in mathematics, hovering very slightly around 580 points from 2015 to 2021, while the performance of those following the general and vocational tracks fell between 2019 and 2020, from 482 to 471 points for general students, and from 417 to 399 points for vocational students. However, a similar decline, limited to students following the general and vocational tracks, occurred between 2017 and 2018, before performance subsequently recovered. The trends are the same when analysing French or German comprehension among students in 5e between 2017 and 2018, and again between 2019 and 2020. The main point to be drawn from these figures is that there are large differences in academic achievement between the different types of education (with the classical education track typically recruiting students who are more successful in school than the general or vocational tracks), and that the performance of the highest-achieving students appears to be less subject to the one-off variations observed from year to year, including those caused by the health crisis in 2020.

These results should be seen in the context of the results recorded in other countries that have collected quality data. There are few instances where standardised national assessments (such as the ÉpStan) have detected a significant decline in students' academic proficiency after short school closures; nor do widening gaps between groups of students from different socio-economic backgrounds appear to be systematic (Thorn and Vincent-Lancrin, 2021[24]). In the case of Luxembourg, the decline in students' level of German remains notable, however, because it is part of a pre-existing trend and is correlated with a widening of the gaps between students from different socio-economic backgrounds, but above all because it could, therefore, be anticipated. Conversely, the fact that its impact on standardised test results is so limited could not have been anticipated, either in Luxembourg or in some high-income OECD member countries.

Figure 5.4. Results of standardised tests (ÉpStan) in secondary education



Note: In this figure, the data are taken from students in 7e in Luxembourg. This is equivalent to level 7, or 5e in France. ESC = classical secondary education; ESG = general secondary education; ESG-P = vocational education.
Source: Results of standardised tests (ÉpStan) administered by LUCET.

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The COVID-19 crisis affected the well-being of students, families and teachers differently

Luxembourg has conducted several studies to assess the impact of the pandemic on the well-being of education stakeholders.

The 2022 National Report on the State of Luxembourg's Children offers the most reliable comparison of the well-being levels of 8-year-olds, 10-year-olds and 12-year-olds between 2019 and 2021, with *ex-post* weighting making the study relatively representative (MENEJ, 2022[30]). Overall, the report shows that the well-being level of 10-year-olds and 12-year-olds did not change significantly between 2019 and 2021 and remains at high levels despite the pandemic. Overall subjective well-being remained stable for 10-year-olds (declining from 89 to 88 out of 100 between 2019 and 2021) and decreased slightly, while remaining very high, for 12-year-olds (dropping from 87 to 82 between 2019 and 2021). Changes in overall multidimensional subjective well-being follow the same pattern, with insignificant changes and high levels (an increase from 85 to 88 for 10-year-olds and a decrease from 85 to 83 for 12-year-olds). Interestingly, as has been found in other studies, 75% of 10-year-olds and 90% of 12-year-olds considered their families to be more cohesive after the pandemic than before, although they sometimes also reported that their parents were more tense or preoccupied than before the crisis. Overall, in 2021, 10-year-olds reported having suffered more from the pandemic than 12-year-olds, but both groups placed the following concerns at the top of their lists: missing their extended family, missing their friends (and activities for 10-year-olds), and being worried about the health of family members. However, these data cannot be compared with data prior to the health crisis. As in other studies, parents have a more positive view of their children's experience than their children do (Thorn and Vincent-Lancrin, 2021[24]).

The other studies also use non-probability samples, but their small number of observations and methodology make them non-representative, although anecdotally interesting. In a survey of the well-being of state-run primary students (170 observations) and private secondary school students (332 observations), 31% of responding children aged 6-11 years and 43% of 12-16 year-olds reported that their life satisfaction had decreased compared with before the pandemic (University of Luxembourg, 2022[31]). Despite the decline, even in this group, which is again not representative of Luxembourgish students, a majority of children self-assessed their well-being levels as stable or higher than before the pandemic. The children and adolescents consulted felt constrained by the social distancing measures and experienced negative emotions or worries about the disease. These concerns were particularly notable among older children and girls. The majority of the youngest respondents (55%) and almost all of the oldest (96%) said that they learned more effectively at school than at home, a perception shared by the students that the OECD teams met during their visits.

To measure the well-being of students' parents during the crisis, the Ministry of Education, Children and Youth ran several non-representative surveys. The first, run less than two weeks after schools were closed for the first time, revealed a sense among parents that they were managing the challenge presented by the new education context relatively well (MENEJ, 2020[32]). Of the 13% of respondents who reported difficulties, one-half cited a lack of time, one-third a lack of knowledge, 9% a lack of computer equipment and 8% a lack of information. On average, parents reported spending 2.5 hours per day helping their child(ren) with schoolwork; this is more than in other countries that conducted representative studies during the first wave (Thorn and Vincent-Lancrin, 2021[24]). Another non-representative survey conducted in January 2021 paints a similar picture for the 4 200 parents who responded (at a later stage of the crisis). Seventy-nine percent of them had felt especially stressed since the crisis began and 69% were concerned about their children's progress at school and their learning (more so for parents of children with special needs attending specialised centres) (MENEJ, 2021[33]). Parents were likely to become fatigued as the crisis wore on, even once schools reopened. Nevertheless, 70% of respondents felt that their child had adapted quickly to the new educational context.

The Ministry of Education, Children and Youth also measured teacher well-being. In a non-representative survey run at the end of March 2020, 90% of respondents felt they were managing the challenge of remote education well (MENEJ, 2020[32]). More than half reported that they talked to other teachers to share their experiences and improve how they organised their work – a positive development that also emerged from our questionnaires. Like for parents, a second survey, ran in January 2021 among 1 350 teachers at the primary and secondary levels, and in specialised centres, suggests that teachers were becoming fatigued as the crisis wore on (MENEJ, 2021[34]). At that time, 91% of teachers reported feeling stress related to the health crisis. The need to communicate with parents, students and management, prepare distance learning courses and carry out administrative tasks increased the workload of most teachers. They appeared concerned about students' learning (82%), their personal situation (81%) and their physical and mental well-being (83%). In contrast, 65% felt well or sufficiently informed and 86% felt they were able to support their students during this time.

Despite their methodological limitations, these different surveys paint a nuanced picture of the mental health of students, parents and teachers during the crisis. As is the case for the statistical surveys conducted in other OECD member countries (Thorn and Vincent-Lancrin, 2021[24]), it appears that the well-being of students, teachers and parents was affected by the crisis, increasingly so the longer it lasted. This is despite both teachers and parents feeling that they were overall able to cope with remote learning and the constraints imposed by the health situation. Like in other countries, both teachers and parents were concerned about delays in students' learning, though according to standardised testing (ÉpStan) this fear did not ultimately materialise in worse educational outcomes compared with previous years. Despite the pandemic-related difficulties and anxiety, the majority of educators feel that they did their best, that they rose to the challenges they faced and that they became more adaptable and competent at using digital tools. No notable drop in students' level of well-being was observed, though the pandemic was certainly not pleasant for them. Rather, it was teachers' well-being that seems to have declined as the crisis wore on.

The absence of statistical studies on the effects of the crisis on the lives and experiences of children and families in Luxembourg, and the impossibility of observing its effects on different population groups, is regrettable. In several countries, the disparate effects of the crisis on different social groups seems to have materialised in how the crisis was experienced at home, more so than in standardised tests. Here again, one might think that reopening schools would lead to sufficiently equal access to education being restored. However, the aforementioned studies and the interviews conducted during the visits by OECD teams paint a picture of an experience of the pandemic that is probably quite similar to that documented elsewhere. While it may have had negative effects, some significant, on a minority of students or families, a large majority of the population was able to adapt and cope resiliently.

5.5. Avenues for reflection on arrangements for educational continuity in times of crisis in Luxembourg

The two preceding sections show that, on the one hand, the government of Luxembourg was able to quickly propose solutions to ensure educational continuity for students, in particular by keeping schools open as much as possible. On the other hand, they show that the effects of the crisis on academic performance – which remained stable – were limited, as, most likely, were its effects on the well-being of students and their families. This is despite feelings of fatigue among stakeholders during the crisis. Drawing on pre-pandemic trends, questionnaires answered by school principals, interviews during site visits and comparisons, this section offers critical avenues for reflection on arrangements for educational continuity in times of crisis.

During the first school closure, the ministry and its agencies made unprecedented efforts to guide and support educators and ensure educational continuity through remote teaching. The momentum and the attention afforded to education did, however, wane as the crisis wore on. Moving from educational and psychosocial support to mainly logistical and health-related support, the ministry focused its energy on issues around screening and contact tracing, perhaps believing that opening schools – even if only partially or with tailored arrangements – was the best option for educational continuity, especially since teachers and families could still use the resources developed during the periods when schools were closed. With teachers and students testing out new educational arrangements, alternating between classes with their teachers and working at home with varying degrees of autonomy depending on the week, three possibilities could have been developed, or could be developed in response to a new crisis.

5.5.1. Stronger tutoring or remedial teaching measures could have been put in place for students during the COVID-19 pandemic

Generally speaking, the government's educational continuity strategy has paid off. By keeping schools open as far as possible and by providing support and tools to staff – admittedly more logistical than educational – the ministry succeeded in partially mitigating the disruption caused by the health crisis. On average, academic performance remained stable and the impacts on the well-being of education stakeholders were limited overall.

These results were not a foregone conclusion. The crisis could have exacerbated inequalities in the Luxembourg education system that had been identified for decades and could have affected students and families in different ways. In Luxembourg, socio-economic background, language background and type of education correlate with student attainment, as evidenced by standardised testing (ÉpStan) since 2011. Many stakeholders, including school principals and teachers, expected to see a decline in proficiency in the languages of instruction (especially German) among students with different language backgrounds when schools first closed.

This expectation did partially materialise. Students from disadvantaged backgrounds, those who speak neither German nor Luxembourgish at home and students in the general secondary education preparatory stream (ESG-P) (and to a lesser extent general secondary education (ESG)) were indeed more negatively affected by school closures (LUCET et SCRIPT, 2021[3]). They found it more difficult to get back to the competency levels expected of them. Indeed, in 2021, only students in Grade 3.1 who speak Luxembourgish or German at home reached the oral German level of the pre-2020 cohorts. Widening inequalities between students from different social backgrounds has also been observed in (written) German. Given that proficiency in the German language is critical in the Luxembourg system, proactive measures could have been put in place to support the affected students.

Admittedly, during the first months of the crisis, the Ministry of Education, Children and Youth dedicated most of its resources to remote learning, reopening schools and developing the health protocols on which they depended. However, an ambitious programme of differentiated (pre-emptive) or remedial (after the fact) support for those students most likely to be affected by the crisis could have been implemented during the two years of the pandemic to counter the potential increase in inequities.

The Ministry of Education, Children and Youth did run summer schools at the end of the 2020 summer break (and again in 2021 and 2022). These summer schools offered a two-week remedial education package for students whose parents requested it – not necessarily the students who needed it most. More than 30 people working with the Department for the Co-ordination of Educational and Technological Research and Innovation (SCRIPT) developed 48 thematic files in less than a month to provide all students with free learning materials, complete with answer keys. According to the interviews conducted by the OECD teams, stakeholders regarded these files positively. Published on the *Schouldoheem* platform, they have been visited by 50 000 people and downloaded 47 000 times (MENEJ, 2020[35]). During this two-week summer school, contact time with teachers was limited to a few hours per student. At the primary

level, 80 teachers, 165 temporary substitute teachers and 99 members of the "supervised studies pool" provided remedial classes to the 4 830 students enrolled. At the secondary level, there were 18 teachers and 69 student teachers for the 519 students enrolled. The Directorate for the Inclusion of Children also provided additional support to children with special educational needs enrolled in specialised centres. In recognition of the vulnerabilities of some students, the Ministry of Education, Children and Youth was responsive and flexible in deploying a range of measures to identify, guide, support and supervise individuals, bolstered by a parallel schedule of centre reopenings (sometimes ad hoc) and the resumption of mobile educational support services.

This may not have gone far enough, particularly at the primary education level. This support was not considered satisfactory by the majority of school chairs who responded to the OECD questionnaire, whether for students from single-parent families (37% satisfied at primary level compared with 68% at secondary school level), from different language backgrounds (31% compared with 52%), with a foreign background (32% compared with 58%), from less privileged backgrounds (24% compared with 73%) or with special educational needs (22% compared with 62%). This wide gap between primary schools and secondary schools is partly explained by the structural organisation of the Luxembourg education system. While secondary education is under the direct supervision of the central administration, through secondary school principals, primary education is decentralised into 15 regional directorates (headed by a ministry official) and primary schools depend on the communes for the infrastructure and equipment they need, and in part for school development plans.[6] The Ministry of Education, Children and Youth (and the support it provides to educators) could therefore seem structurally further removed from primary schools than from secondary schools.

While some countries offered limited student support, especially when their schools remained open for a long time (France, for example), others implemented ambitious tutoring programmes targeting students identified by their schools or teachers as experiencing difficulty. This was the case, for example, in England with its National Tutoring Programme, in Japan where additional counsellors and social workers were assigned to schools, and in the Czech Republic and Wales (OECD, 2020[36]; OECD, 2021[37]). Once the first round of closures had ended, some of the resources allocated in Luxembourg to support teachers during the reopening under the health protocol could have been directed towards tutoring in German for targeted populations, at a minimum, and even towards tutoring in other disciplines depending on the student.

The OECD recommends that the Ministry of Education, Children and Youth put in place tailored support, particularly in times of crisis, to curb the growth of educational inequalities. While the impact appears to have been small, the observed decline in oral German in 2020 and of written German in 2021 following remote learning could have been anticipated, given that fewer and fewer students in Luxembourg speak German at home. In the medium term, ongoing efforts to explore the effectiveness of dual language education (i.e. in German and French) or of mirroring the international state school model (which offers German, French, Portuguese and English sections from primary to secondary school) seem promising in terms of reducing social determinism based on the effect of the language spoken at home on academic achievement. Enacting this type of reform would not negate the need to offer differentiated support in a crisis, but that support might instead have to take a different form and be less German-centric. The new homework support scheme that will be implemented in September 2022 is a first step in this direction.

5.5.2. More direct educational support could have been provided to teachers during the COVID-19 pandemic, especially in primary education

After demonstrating remarkable momentum at the beginning of the crisis – at first driven by the ministry and then quickly self-sustained by the desire of, and need, for educational teams to stand together to face new challenges – teachers later showed some fatigue regarding the situation. The unprecedented circumstances imposed by the pandemic meant that the Ministry of Education, Children and Youth had to

provide additional support to its educational staff, despite its tradition of educational autonomy. This educational support may not however have been enough.

The OECD survey shows that the government's educational support was not deemed satisfactory at either the primary or secondary school level. However we look at it, the responses from primary school chairs and secondary school principals paint two different pictures. The remarkable differences in satisfaction between primary and secondary schools may in part reflect how the system is governed: the responses would likely have been different if the respondents to the primary school questionnaires had been from the regional directorates (intermediaries between the schools in each region and the ministry) rather than school presidents, who are structurally more distant from the ministry. The division of public responsibility differs between primary education, whose management and equipment are partially decentralised to the communes, and secondary education, which is entirely centralised. This makes it harder to interpret certain questions on the activities of the ministry and other government actors because supervision concerns several actors (ministry, including the General Directorate, communes and other public bodies). Collaboration with the ministry is considered relatively less satisfactory than collaboration with other actors. From this perspective, the relative satisfaction levels for these two levels of education (with respect to their direct hierarchy) also provide a complementary indicator to their absolute satisfaction levels.

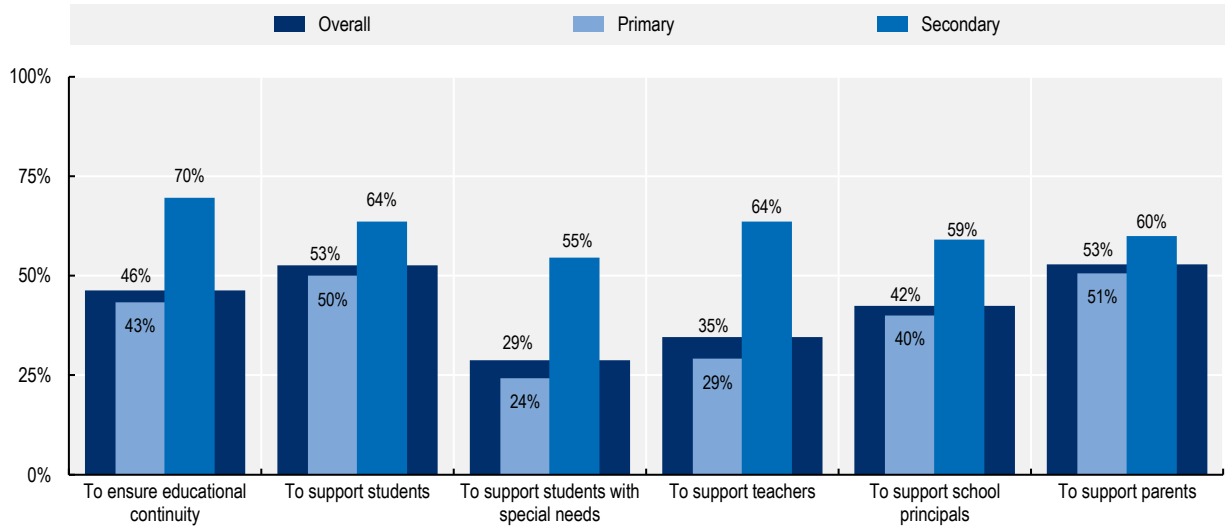
At the primary level, throughout the whole crisis, school chairs (or more broadly school management) were moderately satisfied with the government's general guidance on educational continuity (56%) and on the provision of non-educational resources (48%). However, they were satisfied with the digital educational resources made available (71%).

At the secondary level, secondary school principals were largely satisfied with the ministry's and the government's general instructions on educational continuity (83%) and with the educational resources provided for distance learning, whether digital (83%) or not (73%).

During the closures, only 29% of school chairs felt that their teachers received satisfactory support from the government, compared with 64% of secondary school principals (Figure 5.5). In both primary and secondary schools, all things considered, satisfaction with support for teachers (and school chairs/principals) was relatively low compared with satisfaction on the other issues covered by the questionnaire.

On average, the two periods of full school closure were less well received by school staff. From the psychological support that the ministry offered to teachers (materials, resources, services, etc.) to the specific efforts made for students with special educational needs, from single-parent families or from disadvantaged backgrounds, the responses from primary schools were more critical across the board than those from secondary schools. In the case of primary education, satisfaction with support for teachers was particularly low, much more so than among other groups (except for students with special educational needs).

Figure 5.5. Quality of support received by schools during closures



Note: N = 141. Percentage of schools that rated the support they received from the government as satisfactory or highly satisfactory.
Source: OECD secondary questionnaire delivered by the Ministry of Education, Children and Youth.

StatLink https://stat.link/9y8qfm

The views gathered through the questionnaire from primary school chairs and secondary school principals were supported by interviews with educators at each level and from each type of educational institution. These meetings confirmed the different perceptions between primary and secondary education on certain points.

Whether or not they considered the ministry's provision of educational resources satisfactory, many of the teachers interviewed reported that they had not used them or had used them only to a limited extent, either because they considered them unsuitable for their needs or because they received them too late, after they had made other arrangements with their colleagues. Many teachers saw them as more suitable for families, as additional resources to those they themselves offered. However, this emergency collaboration between educators, which initially took place at the institutional or professional network level, emerged as a positive aspect they looked back on from the crisis. This strengthened the mutual support and feelings of cohesion in the school teams. Paradoxically, perhaps this intense peer-to-peer collaboration contributed to the sense that there was a lack of government support for teachers. Recourse to peer learning and strengthened professional communities seem to have been one of the positive aspects of the crisis.

Could the ministry have done more to support teachers in their role as educators, at least at the primary level? Since teachers hold educational autonomy dear, they might have found government support intrusive, so the government's reluctance to intervene is understandable. However, as was the case for students, the continuation of the crisis could have been used as an opportunity to explore ways of offering support tailored to the Luxembourg context. While it is difficult to imagine what more the government could have done during the first school closure, more attention could have been paid to teacher support once schools had reopened under the health protocol, which created an unprecedented teaching environment.

The government invested heavily in human resources to keep schools open, especially when schools were alternating between in-person lessons and home-learning, during which many additional staff were hired (e.g. in 2020, 600 permanent substitutes were assigned to the regional directorates, followed by 499 staff who were authorised to act as temporary replacements).

Other forms of support would perhaps have been possible. The special circumstances brought about by the health and social crisis could have justified opening up more professional positions. The government could, for example, have strengthened the already active professional communities of educators around a governmental platform, as was done in Belgium (Flanders) (Minea-Pic, 2022[23]). It could have encouraged the organisation of virtual *edcamps*, like in Ukraine or the United States (Modica, 2022[38]). It could also have promoted the value of digital education through participation in professional communities, beyond the training offered by the national education training institute IFEN. The aforementioned suggestions on tutoring or other forms of support for struggling (or potentially struggling) students would also have indirectly facilitated teachers' work.

In short, the educational autonomy that teachers normally enjoy revealed its limits as the crisis set in, judging by teachers' feelings around their well-being and their views on government support. While at the start of the crisis this autonomy supported stronger team cohesion and peer learning within schools, as time wore on it also symbolised educators' feelings of isolation. During the first period of closure, the ministry deployed a range of digital resources to enable school chairs and principals, teachers, students and parents to take part in remote learning. This transition, which was generally successful in view of the urgency of the situation and the response in other countries (Vincent-Lancrin, Cobo Romaní and Reimers, 2022[39]; OECD, 2021[37]; OECD, 2021[11]), left mixed impressions among actors on the ground: those working in secondary education felt well supported by the government and well equipped, while those working in primary education found they were not equally equipped, were supported by the regional directorates, but lacked educational support from the government. The experience of the second period of closures, almost a year later, was not much different – although everyone felt better prepared. Paradoxically, educational autonomy, which teachers usually appreciate, may have been perceived as "abandonment" in a time of crisis – perhaps all the more so because measures implemented by the Ministry of Education seemed entirely focused on health-related issues. To avoid this feeling of neglect and to support teachers in times of crisis, the government could work with them to identify appropriate support measures for different teaching protocols, facilitate and recognise peer learning (when it is proven and documented), or target its support towards teachers of students who are struggling. More broadly, it should continue to build teachers' capacity to incorporate digital technology and skills into an expanded educational toolkit (OECD, 2021[37]; OECD, 2021[40]).

5.5.3. The division of responsibility for the provision of digital infrastructure could be redefined

Despite the quality of the ICT infrastructure in Luxembourg, many stakeholders complained of problems with digital equipment and connections, which further hindered educational continuity. The crisis exposed differences between families and led to questions about the division of responsibilities between central government and the communes in relation to digital infrastructure, with the former providing digital infrastructure to secondary schools and the latter to primary schools.

Primary schools seem to have suffered more from shortages of digital equipment for themselves or their students than secondary schools. A minority of schools rated the provision of digital equipment for remote learning (37%) and teaching (40%) satisfactory during the crisis, compared with 70% and 73% for secondary schools. The wording of the question in the survey does not make it possible to establish whether this is a structural effect (central government helped primary schools less because they are not its responsibility, which was perceived as such) or a situational effect (central government could and should have helped primary schools more, even if they were not its main responsibility).

In essence, perhaps the decentralised organisational model showed its limitations during the health crisis, at least as regards infrastructure for digital learning. For example, the shift to remote learning necessitated the provision of additional computer equipment to teachers and students, especially the most disadvantaged, which the communes were not always able to do. In a country the size of Luxembourg,

more centralised management of the physical and digital infrastructure of schools would have made it possible to reach more students at risk of disengagement and properly equip them. This would have allowed schools and educational teams to focus on teaching and educational continuity for their students, and therefore to provide more personalised support to those students who needed it. This was done to a certain extent at the start of the crisis when the ministry, through the educational technology centre, reviewed the ability of schools to stay in touch with their students in order to reconnect with those who were withdrawing from education and, if necessary, to replace paper materials with digital communication tools.

Discussions with stakeholders suggest that central government may be better positioned to provide hard digital infrastructure to all institutions, including primary schools, as it already provides a lot of the soft digital infrastructure used (resources, software, etc.). This would allow for greater harmonisation and equity between students and families living in different communes around the country – and perhaps lessen the perception that primary schools are less well equipped than secondary schools when it comes to digital tools.

The OECD therefore recommends that the government of Luxembourg reconsider the division of responsibility for managing and equipping schools with digital infrastructure between central government, which supplies secondary schools directly, and communes, which are responsible for equipping primary schools through (weighted) public funding. In essence, centralising the supply of digital equipment could take some pressure off the communes – especially in times of crisis – and harmonise the quality of digital infrastructure, between the schools themselves and between primary schools and secondary schools.

5.5.4. The short-term management of the health crisis in the education sector could have been reimagined as the crisis wore on

As the health crisis wore on, the Ministry of Education, Children and Youth dedicated an increasing share of its resources to working with the Ministry of Health to co-ordinate large-scale testing, contact tracing and isolation (and then vaccination) of school populations at a pace dictated by the pandemic. This approach to educational continuity based on keeping schools open demanded significant resources from the ministry, impeding the government's ability to refocus on strategic long-term educational planning. This is probably one of the reasons why the Ministry of Education, Children and Youth did not put in place more proactive educational support for students or teachers as the crisis wore on and schools reopened but were not operating as normal.

Everywhere, health protocols had to be adapted to the immediate health needs resulting from unpredictable fluctuations in the course of the pandemic – something that Luxembourg did very well. But this emergency policy endured, obscuring medium-term educational issues. For the Ministry of Education, planning for educational continuity became a health issue. This approach showed its limitations in the second year of the pandemic, when the virus' rapidly changing infectiousness required the government's constant attention and school staff had to adapt almost instantaneously to new health protocols. As the pandemic wore on and the protocols multiplied, stakeholders on the ground sometimes complained that the ministry's crisis management neglected the growing need for educational support and predictable responses over time. The ministry, preoccupied with testing for COVID-19 and contact tracing, at times seemed to fail to see that educational continuity also required greater effort on the part of educators. As late as 2022, school principals and teachers felt that they had still not been allowed to step down from their "battle stations" and they continued to work under poorer conditions, especially as regards stress, burnout and fatigue. Some of the practices adopted at the start of the crisis persist and the constant use of digital tools has blurred the lines between school and home, a fact that both teachers and students lament.

Finally, according to several of the stakeholders contacted, the health crisis delayed other reforms initiated by the Ministry of Education, Children and Youth before March 2020, as well as many development projects planned by primary schools and secondary schools. To return to the normal way of managing things (which

does not necessarily mean returning to pre-crisis practices), it will be necessary to revive these reforms and programmes, especially since some past reforms played a positive role during the crisis (such as the creation of the regional education directorates, the one2one programme, the contract with Microsoft Office 365 and the establishment of educational leaderships). When asked in July 2022, the Ministry of Education, Children and Youth estimated that the reforms planned for the current legislative programme would all be completed before the next election period. Given the experience gained over the last two years and national education stakeholders' extensive use of new technologies, the ministry should also take advantage of the opportunity offered by the health crisis to judiciously integrate digital technology into education.

5.6. Engagement, co-ordination and communication with educational system stakeholders in Luxembourg during the COVID-19 pandemic

The previous sections focused on the content of the government of Luxembourg's response. The next step is to examine the process behind the government's response, including how it engaged and communicated with the various stakeholders involved in education during the crisis.

5.6.1. Education's place in the horizontal governance of the crisis

As in other education systems, a shared sense of urgency among stakeholders in the Luxembourg education system fostered rapid response and a sense of solidarity during the crisis. This facilitated the implementation of the important measures described in the following sections, such as closing schools, partially and then fully reopening them, or implementing health protocols and large-scale COVID-19 testing within schools.

Perhaps because of how it operates and its longstanding relative autonomy, the Ministry of Education, Children and Youth only participated in the government's interdisciplinary crisis unit on an ad hoc basis. The Minister for Education participated in some meetings, in the capacity of the Minister for Higher Education and Research, whose ministry was represented in the crisis unit given the importance of research during the pandemic. Bilateral meetings were also held with the Minister for Health. However, the ongoing participation of the Ministry of Education, Children and Youth in the discussions of this governmental crisis unit would have been preferable: it would have made it possible to reduce the contradictions and discrepancies observed between the health measures imposed in the different sectors (for example, masks were no longer compulsory in restaurants and bars, but they were still compulsory in schools).

A state of emergency was declared on 18 March 2020 in Luxembourg and then extended within ten days by the parliament with a two-thirds majority. On Saturday, 21 March, the parliament unanimously voted to extend it for a maximum of three months, in accordance with the Constitution (Official Journal of the Grand Duchy of Luxembourg, 2020[41]). The government was therefore able to govern, until June 2020, via grand ducal orders. Unlike ordinary laws, these do not require a vote in parliament. This allowed the government to respond quickly to the risks posed by the outbreak and to take a series of drastic measures, such as the lockdown and school closures. Once the state of emergency ended, the parliament resumed its role. Major efforts were made to legislate as quickly as possible to meet the changing demands of the pandemic in terms of health measures, with legislative processes averaging three to four days from the preparation and submission of the bill.

For three months, governing via grand ducal order facilitated the drafting and application of health protocols that allowed schools to be closed and then reopened, and the levels of protection, contact tracing and isolation to be amended based on how the virus was circulating in the country. After the lull in the

summer of 2020, any changes to disease control measures (such as the requirement to wear a mask) once again had to be presented to parliament and voted into law.

The involvement of the parliament, which differentiates Luxembourg from other OECD member countries (see also Chapter 3 on this subject), may have slightly delayed implementation. This time could have been used, for example, to improve communication on changes to the health protocol or its application in schools. The government's communication strategy consisted of informing stakeholders in the education system about changes to health measures through the press, before they were officially announced, which may have caused problems for education stakeholders. The legislation could have been made more flexible, even via a short legislative process, to allow the Ministry of Education, Children and Youth to take decisions on small changes without reinstating the state of emergency.

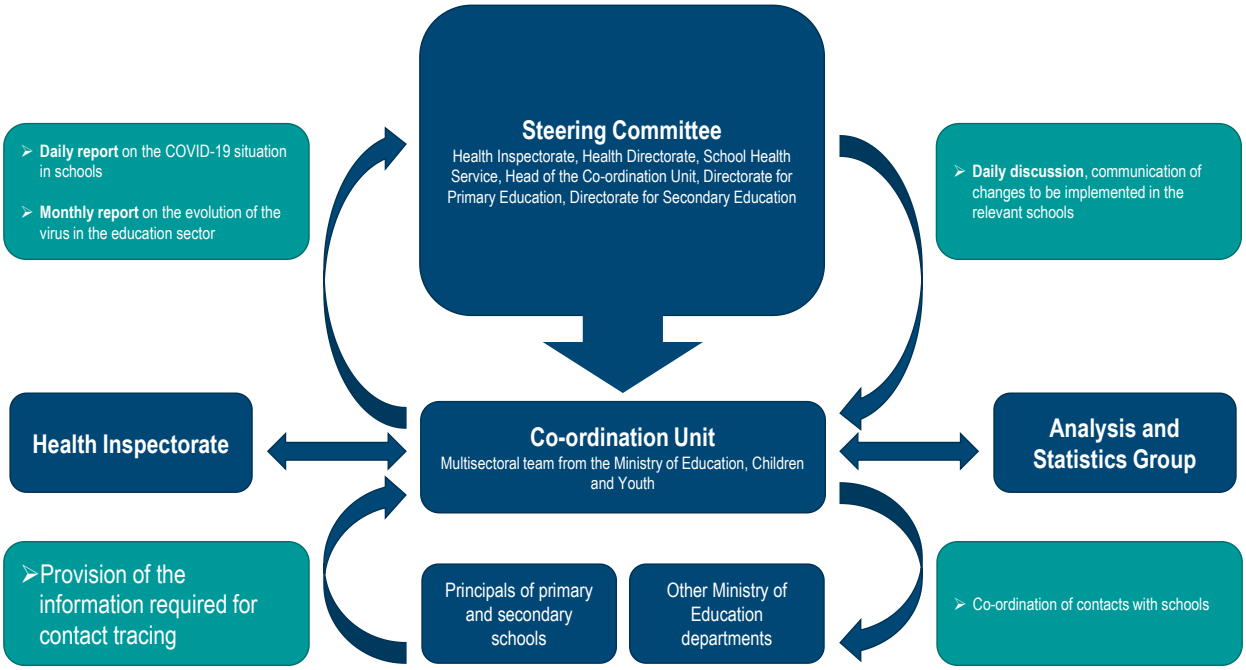
Moving forward, it would be advisable to explore the possibility of giving the Ministry of Education, Children and Youth greater autonomy, perhaps by agreeing broad principles regarding what would be considered acceptable amendments to procedures. This would allow the parliament to legislate more selectively and the Ministry of Education, Children and Youth to avoid delays and free up resources to prepare for implementing new measures.

5.6.2. A crisis governance framework for the education sector

The Ministry of Education, Children and Youth created a governance framework for education, titled “COVID-19 and education” (Figure 5.6) to respond to the evolving crisis in the second half of 2020 (Phase 5 of Annex table 5.A.1). This framework brought together stakeholders from the education and health sectors.

Meetings of the COVID-19 and Education Steering Committee were held virtually twice a week (or as often as needed depending on the stage of the pandemic). The aims of this committee were to oversee policy responses in the context of the pandemic, to monitor the evolution of the virus in the education sector and to adapt the health arrangements for education accordingly. Within this governance framework, the co-ordination unit focused on handling information and implementing the agreed measures. The main co-ordination tasks between this unit and the Health Inspectorate were reporting information from the field to the steering committee, identifying high-risk contacts, co-ordinating arrangements within schools and early years education and care services, collecting and cross-referencing data, and monitoring infections in schools.

Figure 5.6. The Ministry of Education, Children and Youth's COVID-19 and education governance framework



Source: OECD, information-gathering questionnaire for the Luxembourg Crisis Management Evaluation (OECD, 2022[42])

More generally, the COVID-19 and education framework was responsible for steering and monitoring the measures adopted during the pandemic, developing a transparent strategy for responding to the health crisis, providing clear guidance to stakeholders in the education system and implementing an enhanced testing strategy (starting in April 2021). For example, as part of these efforts, the Ministry of Education, Children and Youth published a quarterly report on the evolution of the pandemic in schools, as well as weekly analyses (MENEJ, 2021[15]).

Through this governance framework, and through the co-ordination unit in particular, the Ministry of Education, Children and Youth and the health sector were able to establish consultation processes to decide how teaching in schools should change depending on the stage of the pandemic. Throughout these interactions, protecting the health of the population guided the actions and efforts of both parties. The specific expertise of these two actors, i.e. concerning how educational institutions operate and epidemiological knowledge, helped them co-ordinate and manage the pandemic in the education sector.

The collaboration between the Ministry of Education, Children and Youth and the health sector focused on defining protocols based on an analysis of the health situation, their continuous adaptation to the evolution of the pandemic (including by developing multi-level isolation and classroom closure scenarios, and defining a return to in-person teaching), and case tracking processes and arrangements. Collaborations have also been established on the logistics of implementing the large-scale testing of primary and secondary school students and teachers, and professionals from other areas of education. The government made significant investments to provide the necessary resources (medical and protective equipment, vehicles) and capacity for the analysis, validation and transmission of results. Collaboration was also required for tracking high-risk individuals on a daily basis.

In its early days, the co-ordination unit was hindered by repeated changes to the "education" team. The rapid evolution of the pandemic and the constant need to train newcomers was detrimental to the effectiveness of the framework. The establishment of a stable team as soon as possible improved its performance.

The same lesson could have been learned for the steering committee, whose membership changed depending on the priorities of the moment. Despite the similarities in the country's actors' social missions, this lack of clarity sometimes made it difficult to consult the committee members. Indeed, several stakeholders noted that they did not always know who to contact about the problems they faced. A more stable committee, with defined (albeit possibly dormant) areas of responsibility, should have been established and communicated to other stakeholders. This stability would have allowed for a variety of perspectives to be kept on ministerial discussions, even when they became less critical to the implementation of education policy during the crisis.

From this perspective, the ministry's decision to keep the co-ordination unit dormant, rather than closing it, is to be welcomed. This will allow for better responsiveness in the event of a crisis. Generally speaking, responsibility for areas of crisis governance should remain as stable and transparent as possible. This would not only enable the unit's members to build expertise, but the other stakeholders in the system would always know who to contact.

5.6.3. Strengthening the infrastructure and interoperability of information systems is a priority to decompartmentalise data and facilitate research

In times of crisis more than ever, the quality of a government's response depends on its access to reliable, relevant and timely information. The management of the crisis and the government's ability to implement health protocols was largely built on Luxembourg's prior investment in longitudinal information systems. Collaboration within the co-ordination unit relied on these systems, both for tracing the virus and for producing scientific research on the school sector. It was in part the Ministry of Education, Children and Youth's restricted access to its information systems (governed by the personal data protection act) that made its participation in the "health" work and collaboration with the health sector essential.

In the education system, the Ministry of Education, Children and Youth has two separate information systems: one for primary education (Scolaria) and another for secondary education (Fichier élèves 2, or FE²). These two applications, which are accessible via the national education portal, [7] are part of an ecosystem of digital tools with various functions. These tools enabled the government to respond quickly. For example, in the first weeks of the pandemic, the ministry's educational technology centre used Scolaria to contact primary students, their parents and school staff individually by email. Thanks to Scolaria, the most important news bulletins were read by more than 70% of parents and the government was able to identify the lack of digital equipment in some homes, largely thanks to feedback from teachers.

Better integration or interoperability of some of these systems would have simplified government action and should be implemented to improve and simplify its digital ecosystem. The compartmentalisation of databases posed some problems on occasion (see also Chapters 3 and 4, which discuss similar challenges in the area of health). Because the specialised centres did not have their own information system, students with special educational needs who were not enrolled in a regular school were at risk of being overlooked during the initial delivery of remote learning materials. Later in the management of the crisis, the co-ordination unit set up between the Ministry of Education and the Ministry of Health faced similar obstacles when trying to organise contact tracing between primary schools, secondary schools and other facilities (childcare, day-care, etc.), particularly for siblings. While the linkage of data from these different sources was initially done using spreadsheets, the two ministries then developed new digital solutions that facilitated the tracing and isolation of infected individuals. The stakeholders contacted welcomed these developments. Work to develop technical solutions to enable interoperability (or easy data matching) between the databases should therefore continue.

During the pandemic, when urgent action was required, the government was therefore fairly successful in collecting, cross-referencing and sharing data, allowing for effective tracing and targeted isolation, which were prerequisites for the reopening of schools. The Ministry of Education, Children and Youth has good information systems and functional applications that facilitated the work of its teams and their collaboration

with the Ministry of Health teams. However, this co-ordination work has highlighted the efforts that need to be made to strengthen the coverage and synergy of the various information systems used by the ministry and the government as a whole.

In this context, the OECD recommends continuing to strengthen the interoperability of the ministry's information systems. The health emergency has highlighted certain gaps, suggesting that efforts should be made to integrate and link databases from different sectors to facilitate the rapid mobilisation of reliable and complete information, which is all the more necessary in times of crisis.

5.6.4. The Ministry of Education, Children and Youth sought to inform its staff and the public as the pandemic evolved

Beyond a governance and co-ordination framework, the Ministry of Education, Children and Youth's response required new communication channels to be put in place, both internally and for the general public, to inform everyone about the policies the government was implementing, to publicise the resources the government was offering and to be transparent about the evolution of the pandemic in the school sector. The Ministry of Education, Children and Youth developed new tools for direct communication with the public and its staff.

First, meetings were held between the Ministry of Education, its general directorates of primary and secondary education, the trade unions, the taskforce for the non-formal education sector, principals' professional bodies (primary and secondary education), and representatives of parents and students. The purpose of these meetings was to inform all stakeholders about how the health situation was evolving and to consult on the next steps (e.g. reopening schools).

Second, the Ministry of Education, Children and Youth sought to communicate with the general public. By communicating directly, the ministry mobilised new resources and expertise and produced numerous communication and meeting materials to disseminate its information, both to educators and other stakeholders. In addition to numerous leaflets and frequently asked questions on the ministry's website, beginning in April 2020 a system of parent newsletters was implemented, with 34 issues in 2020, 22 in 2021 and 6 in 2022. Other communication events were also held, including press conferences and video conferences with the Minister of Education. Many of these documents were prepared in different languages, which required a significant additional effort by the government (MENEJ, 2020[43]). Helplines were also set up to support families and teachers to access and use the educational resources, or for general information.

5.6.5. The government should have consulted more with stakeholders on the ground and favoured communication through the regular hierarchy once the critical states of emergency were over

The Ministry of Education, Children and Youth's communication efforts in the context of the pandemic were necessary and should be commended. However, overall, the stakeholders interviewed noted that the ministry's communications were often top-down only. The government communicated decisions after they were made, rather than engaging in upstream consultation with stakeholders in the education system to inform decision making. Stakeholders in other sectors made the same observation.

This strategy, appropriate for the urgency of the first period of closure and the start of the crisis, became less understandable as the crisis wore on and amendments to protocols were marginal. In the future, it will be important for the government of Luxembourg to establish mechanisms for rapid consultation with those stakeholders with the greatest responsibility for policy implementation on the ground before taking decisions. The government dedicated time to listening to stakeholders, but in the future and as far as possible, briefly discussing the decisions taken before they are formalised could strengthen the sense among stakeholders that there has been real dialogue. For example, better consultation with primary

school chairs on health protocols could have made it possible to take better account of the range of realities on the ground or to allow for more autonomy in implementing certain aspects of the measures.

Similarly, while direct communication with the general public was appropriate at the start of the crisis (and beyond on some points), government decisions were sometimes communicated directly to parents, with little or no advance warning to schools, or with too little lead time or flexibility. This made it difficult for the leadership team in schools and even teachers to communicate and implement instructions. As the crisis continued, direct communication from the minister and the ministry could have focused more on explaining the measures and their objectives than on announcing them. A quicker return to communication through the regular hierarchy would have reactivated the various administrative levels in their roles, making the sources of information clearer, while giving them more time to prepare their communications to students, parents and other stakeholders.

The OECD therefore recommends that the government work to strike a balance in times of crisis between truly multi-directional consultation time with stakeholders when making decisions and communicating the decisions taken, and between direct communication and communication through the regular hierarchy depending on the urgency of the situation.

5.7. Summary of recommendations

In Luxembourg, the education sector showed responsiveness and adaptability in the context of the COVID-19 pandemic, establishing two major priorities: the safety of stakeholders and educational continuity. This resulted in a sustained effort by all those involved in education to be flexible in adapting to the changes imposed on teaching and learning. Overall, Luxembourg managed the crisis successfully in the education sector: schools remained open for the most part, educational continuity was ensured when they were closed, and academic performance remained stable. However, the government could have given greater priority to the purely educational (or pedagogical) aspect of the crisis and taken better account of the impacts of the length of the crisis on those affected in some of its decisions.

5.7.1. Ensure educational continuity in times of crisis

- **Keep schools open as much as possible as the main way to ensure educational continuity, without neglecting educational support for stakeholders on the ground over time.** The strategy advocated by the ministry was generally successful: the country closed schools only briefly; educational continuity was maintained during the closures through remote learning and the provision of digital resources; stakeholders appreciated the logistical support provided by the government to implement health protocols; and the public approved of these decisions, at least in retrospect. However, in an ongoing crisis, educational continuity also comes at the cost of increased effort and investment by school staff and families, considering that even when schools did reopen under health protocols, things did not go back to normal in terms of learning and teaching. This is true despite the opening of schools and educational continuity and should be borne in mind.
- **Implement differentiated forms of support, particularly in times of crisis, to curb the widening of educational inequalities** that can be anticipated in the short term, and whose already high levels before the crisis **call for more in-depth reflection in the long term** in any case. While the impact appears to have been small, the observed decline in oral German in 2020 and of written German in 2021 following remote learning could have been anticipated, given that fewer and fewer students in Luxembourg speak German at home (33% in 2022). In the short term, the ministry should improve its proactive support measures, providing differentiated support if resources are limited, for students identified as experiencing or potentially experiencing difficulties. For example, a German tutoring system could have been

explored starting in the 2020/21 academic year to complement the summer schools. In the medium to long term, the Luxembourg education system must continue to evolve, for example by enacting reforms that follow the model of European programmes or international schools, which can reduce some of the performance gaps between students due to their language background.

- **Support teachers consistently in their role as educators as they continue to work in unusual teaching environments, including by integrating digital technologies and skills into their professional development.** Starting in the first period of closure, the ministry deployed a range of digital resources to enable school principals, teachers, students and parents to take part in remote learning. During the periods of face-to-face teaching under the health protocol (alternating teaching), the reopening of schools could have given the impression of a return to normal teaching conditions. While teachers showed initiative and the crisis strengthened professional learning communities, it also led to stress and a sense of fatigue or abandonment. This could perhaps have been reduced by offering specific support to teachers who wanted it or by facilitating their peer learning.
- **Reconsider the division of responsibility for managing and equipping schools with digital infrastructure between central government**, which supplies secondary schools directly, **and communes**, which are responsible for equipping schools through (weighted) public funding. In essence, centralising the supply of digital equipment could take some pressure off of the communes – especially in times of crisis – and standardise the quality of digital infrastructure, between the schools themselves and between primary schools and secondary schools .

5.7.2. Strengthen stakeholder engagement mechanisms

- **Include the education sector in the government of Luxembourg's interministerial crisis unit.** The education sector's participation will make public policies between the different sectors more consistent and will provide the ministry with better information to enable it to implement changes in the education sector.
- **Establish a stable governance framework as soon as possible.** The Ministry of Education put in place a crisis governance system that allowed for effective co-ordination between actors, particularly between the health and education sectors. However, one of the lessons learned from the crisis is the importance of keeping crisis units as stable as possible over time to ensure that the units acquire expertise quickly and that external stakeholders can communicate easily with their members. Such stability would have been beneficial to the crisis steering committee.
- **Strive to find a balance in times of crisis between the time afforded to consulting with stakeholders on decisions and communicating these decisions.** Better upstream consultation could at times have improved the quality of the decisions taken once the critical states of emergency had passed. Direct communication with the public has its place during a crisis, but a return to communicating decisions through the regular hierarchy should be encouraged in situations where there is less urgency.
- **Continue to strengthen the ministry's information infrastructure.** Contact tracing systems and the production of scientific research were based on robust information systems, but the health emergency highlighted the importance of continuing efforts to integrate or link/make interoperable databases from the various formal and non-formal education sectors to facilitate the mobilisation of reliable and complete information in times of crisis. While standardised testing can be commended for providing quality school monitoring data during the crisis, it would also have been worthwhile to conduct quality statistical studies on the experience and well-being of teachers, parents and students during the various phases of the crisis.

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Annex 5.A. Timeline of crisis management in the education sector

Annex table 5.A.1. Key stages of the pandemic and changes to educational provision (2020-21)

Period	General health context	School opening (general trends)
Phase 1 16 March – 3 May 2020	Start of the pandemic Increasing spread High infection rate First wave of infections	**Lockdown and suspension of classes and activities** **Remote teaching and learning** **Resumption of support and assistance activities** from 20 April 2020
Phase 2 4 May – 28 June 2020	End of the first wave of infections Decreasing spread Lower infection rate until mid-June	**Lifting of lockdown and gradual resumption of classes and activities** **Reopening of playgrounds** from 13/14 June 2020 **Educational day trips and field trips allowed** from 22 June 2020
Phase 3 29 June – 15 July 2020	Increasing spread Medium infection rate Start of a new wave of infections in July 2020	**Return to permanent face-to-face teaching** **Resumption of school trips** **Remote learning** for vulnerable, isolating or quarantined students
Phase 4 16 July – 14 September 2021	Medium infection rate	**Resumption of activities during school holidays** delivered by the National Youth Service **Care of children by early years education and childcare services** **Summer school**
Phase 5 2020/21 academic year 15 September – 8 November 2020	Medium infection rate at the start of the academic year Increasing spread from October 2020	**Normal in-person classroom format without division into subgroups** **Remote learning for vulnerable, isolating or quarantined students**
Phase 6 9 November – 25 December 2020	Medium infection rate Increasing spread (mid-October 2020) New wave of infections	**Partially alternating teaching** (from early November 2020) **Higher education: alternating daily or weekly teaching** for children in higher education except those in final year (from 30 November 2020) **Remote learning** for vulnerable, isolating or quarantined students
Phase 7 26 December 2020 – 7 February 2021	Slowing infection rate at the end of 2021 Increasing from January (mid-January) High infection rate	**Suspension of face-to-face classes and activities** in schools, specialised centres and all other institutions under the responsibility of the ministry (4-8 January 2021) **Remote learning** **Resumption of classes and activities** from 11 January 2021 **Remote learning** for vulnerable, isolating or quarantined students **Closure of early years education and childcare services** except for hospital crèches (28 December 2020 – 10 January 2021) **Establishment of emergency early years education and childcare services** for children of health and care workers
Phase 8 8 February – 18 April 2021 (end of Easter holidays)	High infection rate Delta variant	**Suspension of face-to-face classes and activities** in schools, specialised centres, early years education and childcare services and other institutions under the responsibility of the ministry (8–21 February 2021). **Remote learning** except for final-year students (8–21 February 2021) **Introduction of therapeutic provision** at specialised centres (8–21 February 2021) **Reopening of schools and early years education and childcare services** (from 22 February 2021) **Remote learning** for vulnerable, isolating or quarantined students **Additional ad hoc measures to be implemented in the event of an increase in infections at a school** **Additional ad hoc measures to be implemented in the event of an increase in infections nationally**
Phase 9 19 April – 15 July 2021	Decreasing spread until June 2021 Increasing from 21 June	**Alternating teaching** **Remote learning** for vulnerable, isolating or quarantined students **Final-year exams held in person** (from 17 May 2021)

	High infection rate Decreasing spread from July (mid-July)	**Resits** for students who tested positive during the exam period (3–16 June 2021) **General resumption of in-person teaching** for higher education students (from 31 May 2021)
Phase 10 16 July – 14 September 2021	Low to medium spread	**Activities during school holidays** delivered by the National Youth Service **Care of children by early years education and childcare services** **Summer school:** remedial and refresher courses
Phase 11 15 September – 28 November 2021	Medium infection rate Increasing infections from November 2021	**In-person teaching** **Normal operation** of early years education and childcare services
Phase 12 29 November 2021 – 10 March 2022	High infection rate New wave from November 2021 Omicron variant from December 2021 Decrease in infections from mid-February	**In-person teaching**
Phase 13 11 March – 18 April 2021	Decreasing spread	**In-person teaching**

Source: OECD (2022[42]), information-gathering questionnaire for the Luxembourg Crisis Management Evaluation.

Notes

[1] Schools were first reopened on 4 May 2020 for final-year students in secondary and vocational education, then on 11 May 2020 for other students in secondary education, and on 25 May 2020 for primary and pre-primary educational establishments (MENEJ, 2020[25]).

[2] The COVID tracing application (https://covidtracing.public.lu/home) and the EduTesting portal (https://portal.education.lu/edutesting).

[3] The Schouldoheem platform: https://schouldoheem.lu/fr.

[4] The classes covered by the one2one programme are called “iPad classes”: https://portal.education.lu/cgie/INNOVATION/ONE2ONE.

[5] Oasys, the online assessment system developed by LUCET: https://wwwfr.uni.lu/recherche/fhse/lucet/expertise/oasys.

[6] The government allocates each commune the resources it needs in the form of “contact time”, weighted to correct socio-economic inequalities in the communes (a disadvantaged commune will receive a proportionally higher share of lessons, i.e. of paid contact hours, than a better-off commune) https://men.public.lu/dam-assets/fr/fondamental/offre-scolaire-organisation/pdf-ef-en-details.pdf.

[7] National education portal: https://portal.education.lu/Application

6 Emergency economic and fiscal measures in Luxembourg

This chapter describes the economic and fiscal policies adopted during the crisis, particularly those aimed at supporting business. It compares the measures adopted in Luxembourg with those of other OECD Member countries. The chapter offers a detailed analysis of the use of the various measures by the size, sector and pre-crisis financial health of the beneficiary companies. It also includes the results of an impact assessment analysing how the support received by businesses affected their performance. Finally, this chapter makes recommendations for improving the targeting, implementation and impact of emergency economic and fiscal policies.

Key findings

Fiscal measures were in line with those adopted by comparable OECD member countries

Of the EUR 3.57 billion that Luxembourg allocated to deal with the COVID-19 crisis over two years, EUR 2.85 billion went to companies and households (including EUR 200 million in the form of State- guaranteed loans). This amounts to 3.8% of the country's GDP (2021) and is similar to spending levels in other European countries. Notably, Luxembourg opted to prioritise employment support measures, and this enabled it to maintain a relatively high level of employment, especially in the early stages of the crisis.

Economic policies met the needs of most economic sectors

Business support measures include a variety of programmes. In Luxembourg, these measures have been able to meet the needs of most economic sectors. The most popular measures with companies are short-time work, repayable advances, support for uncovered fixed costs, recovery support and State-guaranteed loans. However, short-time work did not apply to the self-employed, who received a dedicated support measure in the form of a lump-sum two weeks after the first lump-sum support for companies.

Support for business was granted quickly and easily, despite some initial hesitation

The first measures were put in place during the early weeks of the crisis, after the State of Emergency Act was passed on 24 March 2020. Relatively flexible fiscal procedures, together with regular reporting of fiscal information to parliament, allowed the government to commit and disburse the necessary funds quickly.

The public authorities in Luxembourg have been responsive and have been able to cope with a large influx of requests for support from companies, working with employers' associations and making effective use of IT tools. This agility allowed companies to obtain assistance quickly – a decisive factor in safeguarding their liquidity.

The support measures covered the economic sectors hardest hit by the crisis

Subsidies primarily targeted those companies that were hardest hit by the crisis. The top four deciles of hardest-hit companies in terms of reduced turnover in 2020 have received 57% of the total amount of subsidies, which is in line with the objective of supporting those sectors most exposed to the crisis.

The measures have largely focused on companies that were previously in good health and suffered during the crisis

Overall, the support measures have benefitted to a greater extent those companies whose financial health was neither very good nor very bad. In contrast, smaller total amounts have benefitted those companies in poor or excellent financial health. This finding is consistent across all of the support measures analysed and regardless of the financial health indicator employed. The finding suggests that the support has primarily helped companies that were doing relatively well before the crisis but needed assistance to survive the crisis.

The support measures seem to have protected the financial position of companies in the sectors hardest hit by the crisis

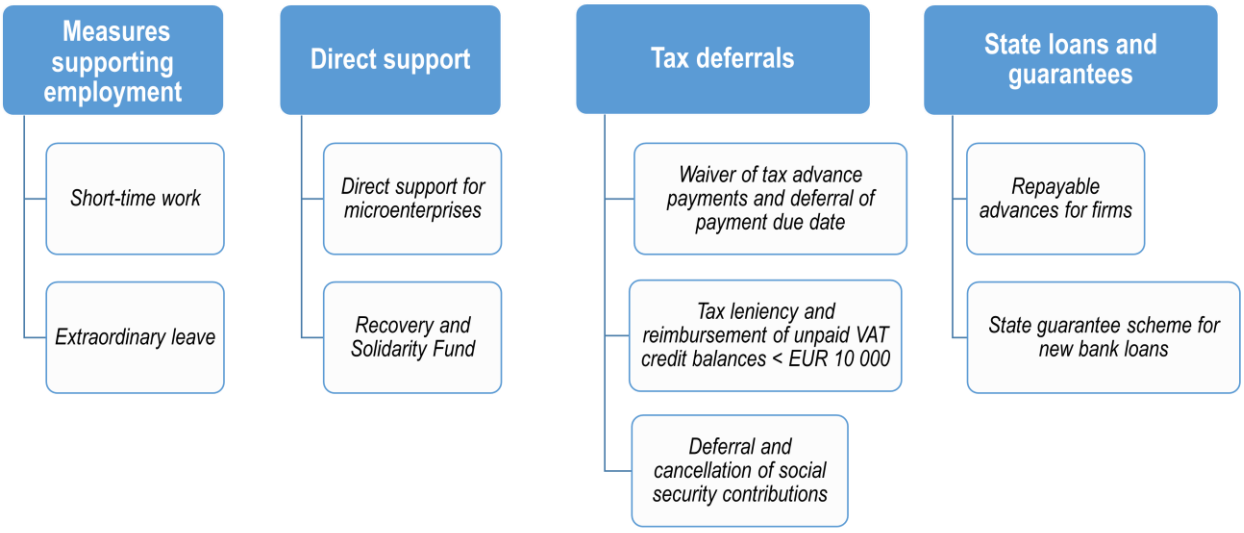
The amounts of assistance and employment support have been broadly sufficient to protect the financial position of most companies, as measured by profits, liquidity and solvency. Bankruptcy rates in the hotel, restaurant and café sector (HORECA), one of the hardest hit by the crisis, are decreasing, which confirms that the support put in place for this sector has been somewhat effective. The sectors hardest hit by the crisis will, however, require increased monitoring as some, such as HORECA, are facing structural changes due to the development of remote working and videoconferencing.

6.1. Introduction

Faced with the health crisis, the fiscal response of OECD Member countries was swift, massive and multifaceted. In Luxembourg, the comprehensive business support package was similar to those deployed by many OECD Member countries. It included a variety of measures aimed at providing a response tailored to each company's situation. These measures can be grouped into four main categories: i) tax deferrals; ii) measures to maintain employment; iii) direct support; and iv) State loans and guarantees. For each of these four categories, Figure 6.1 sets out the measures covered in this chapter. The measures analysed were selected based on their relative share of disbursements within Luxembourg's emergency plan.

To address the economic impact of the health crisis, stabilisation and recovery plans have been put in place to support and accelerate the ongoing recovery and future growth. The recovery package will not be considered in detail in this chapter because it would be premature to conduct an impact assessment on a set of measures that are still being implemented.

Figure 6.1. Luxembourg's measures to support businesses during the COVID-19 crisis



Source: Prepared by the authors.

An analysis of discretionary measures to tackle COVID-19 shows that the support policies adopted in Luxembourg have been commensurate with the needs of most economic sectors. The self-employed received less support at the start of the crisis; however, specific support measures were put in place during the crisis. Assistance was granted swiftly, a critical success factor in supporting companies that may run out of cash very quickly. Given the scale and speed of the intervention, the potential risk was of a windfall effect enabling companies to receive support when they did not need it. The OECD's analysis suggests that this has not been the case: the companies hardest hit by the crisis are those that have received the most support. The analysis demonstrates that it is important to continue to monitor the financial health of businesses to ensure that future interventions can be appropriately targeted. It also seems necessary to continue to digitalise administrative procedures. The digitalisation effort has proved its value during the crisis and can help create a resilient business climate.

The rest of the chapter is structured as follows: it first assesses the overall package implemented by Luxembourg by comparing it with those adopted in other OECD member countries. It then looks at the implementation of the support measures, analysing the procedures for applying for and granting assistance, as well as the budgetary procedures used to disburse the necessary funds. The chapter then

goes on to address the issue of targeting by analysing the use of support measures. It also presents the results of a microsimulation that offers some elements that will help evaluate the impact of the measures on business performance.

6.2. The features of the business support measures in Luxembourg and the main expenditure items

In Luxembourg, the first business support measures were put in place very quickly to accompany the strict lockdown implemented on 18 March 2020. Most of the measures followed the Communication from the European Commission on 19 March 2020 introducing changes to the State aid regulations (see Box 6.1). The objective of Luxembourg and most of the countries in the region was to protect domestic industry for a future recovery and to limit the social impact of the business shock. In Luxembourg, short-time work was the key measure in terms of the amount of total expenditure. In this respect, the choices made by Luxembourg are in line with those made by other open economies such as Ireland and Belgium. Liquidity measures, such as State loans and guarantees, have been less important in Luxembourg, limiting the risk of long-term corporate debt as the crisis ends.

Box 6.1. The European Union's Temporary Framework

Faced with the exceptional circumstances caused by the pandemic, the European Union issued a communication on 19 March 2020 introducing a temporary change to the rules on business support.

Article 107 of the Treaty on the Functioning of the European Union regulates the granting of aid to protect competition within the single market. Paragraph 2 of Article 107 already allowed Member States to introduce a generalised short-time work programme, to suspend taxes paid by businesses and to subsidise businesses directly affected by the pandemic (for example in the aviation, tourism or trade sectors) under the provision on aid to make good the damage caused by natural disasters or exceptional circumstances. Paragraph 3 allows for economic support to be expanded in the event of a "serious disturbance in the economy of a Member State."

The nature and scale of the COVID-19 pandemic enabled Member States to activate paragraph 3 of Article 107. However, given the magnitude of the situation, the Commission prepared a special legal basis for all Member States. This Temporary Framework made it possible to supplement and regulate the opportunities available while taking into account common competition issues. It authorised the introduction of State-guaranteed loans and public loans at favourable interest rates, which were to be capped at EUR 800 000 per company. Recipient companies had to be experiencing difficulties due to the pandemic.

Implementation of these measures by the Member States was, however, subject to prior approval by the European Commission, which was granted swiftly. The Commission approved the introduction of a repayable advance programme in Luxembourg on 24 March.

This regulation, which was amended six times, remained in force until 30 June 2022. The 27 Member States introduced a total of around EUR 3 200 billion in support within this framework.

Source: Communication from the European Commission: Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak (2020/C 91 I/01), https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:52020XC0320(03)&from=EN; the State Aid Temporary Framework, https://competition-policy.ec.europa.eu/state-aid/coronavirus/temporary-framework_en.

6.2.1. Business support measures were put in place at the beginning of the pandemic

As in many other European countries, the adjustment in the labour market in Luxembourg took the form of a reduction in the average working time per employee. The aim was to limit the rise in unemployment by reducing working hours through short-time work. This involved a large-scale programme in which public funding has played the most significant role in supporting businesses. In addition to the "*force majeure*/COVID-19" short-time work programme, which was implemented in March 2020, the employment measures included COVID-19-related family leave. This enabled employees and the self-employed to care for their loved ones following the closure of schools, childcare facilities and care homes for people with disabilities and the elderly.

At the same time, from late March 2020, the Government implemented several waves of direct, non-repayable support. This was initially aimed at businesses with fewer than ten employees (microenterprises). Self-employed people, who were also eligible for this assistance, were specifically targeted from April 2020 onwards. Companies with fewer than 20 employees received a second lump-sum payment in April 2020, and self-employed people in May 2020. From June 2020, recovery support provided all small businesses in the tourism, events, HORECA, culture and entertainment sectors, as well as the self-employed, with a monthly grant of EUR 1 250 per employee in work and EUR 250 per employee on furlough. Businesses were eligible if they experienced a reduction in turnover of more than 25% compared to the same month in 2019.[1] The recovery support measures were adjusted after March 2022 as part of a gradual reduction, and came to an end in June 2022. In November 2020, the government also introduced support for "uncovered fixed costs". This direct, monthly, non-repayable support targeted the sectors hardest hit by the COVID-19 crisis: tourism, events, HORECA, culture and entertainment. It was intended to cover a portion of the monthly expenditure not covered by businesses' revenues. Businesses were eligible if they had experienced a reduction in turnover of at least 40% compared to the same month in 2019. Recovery support and support for uncovered fixed costs were extended until June 2022. Other specific forms of financial support for the tourism (including vouchers for overnight stays), physical retail, culture, sport and agriculture sectors were introduced in the same period.

Companies experiencing liquidity issues resulting from the pandemic were also able to request the waiver of advance payments for direct taxes (corporate income tax and municipal business tax) for the first two quarters of 2020. For businesses operating in the HORECA sector, this option was extended to the third and fourth quarters of 2020. The government also helped companies affected by the COVID-19 crisis by accelerating the reimbursement of some tax claims (indirect taxes), in particular VAT credit balances of less than EUR 10 000. Unpaid VAT credit balances of less than EUR 10 000 were automatically refunded during the week of 16 March 2020. Penalties for late submission of VAT and other returns were waived.

In addition to non-repayable assistance, the Government also awarded capital grants to businesses, in the form of repayable advances, and guarantees to facilitate access to bank financing (Box 6.2).

Box 6.2. The main support measures taken by Luxembourg in response to the crisis

i) Tax and social security contributions waivers and deferrals

- *Waiver of tax advance payments and deferral of payment due date (18 March 2020)*: waiver of quarterly advance payments of community income tax and municipal business tax for the first two quarters of 2020 (until the second quarter of 2021 for the HORECA sector). The measure also allowed for payments of these two taxes and the wealth tax to be deferred for four months. Businesses and self-employed people who were struggling due to the pandemic were eligible.
- *Tax leniency (18 March 2020)*: reimbursement of unpaid VAT credit balances below EUR 10 000; abolition of penalties for late VAT and subscription tax reporting for companies experiencing difficulties due to the pandemic.
- *Other measures (1 April 2020)*: suspension of the calculation of interest on arrears for late payment of social security contributions; tax deduction for landlords who waived part of the rent owed by tenants during 2020 to encourage rent reductions (capped at EUR 15 000). Businesses and self-employed people who were struggling due to the pandemic were eligible.

ii) Employment support

- *Short-time work for "force majeure/COVID-19" (18 March to 24 June 2020)*: reinforcement and simplification of the pre-existing short-time work scheme allowing the payment of an advance to businesses who applied for it; beneficiaries committed not to laying off employees and had to be directly or indirectly affected by the health measures. The advance covered 80% of the wages paid to employees and apprentices, as well as workers on fixed-term contracts and temporary workers (27 March). This was increased to 100% for employees paid at the social minimum wage.
- *Structural short-time work scheme during the economic recovery period (1 July 2020 to 30 June 2022)*: a new simplified scheme for businesses affected by the health crisis. Conditions for receipt of support were more favourable to the HORECA, tourism and events sectors, which were deemed vulnerable (no limit on the number of eligible employees and ability to lay off employees). The conditions became progressively stricter. The scheme was suspended in July 2021 before being reactivated for vulnerable sectors in February 2022 until the end of June. Businesses that were required to close were covered by a temporary scheme which placed no limits on the number of eligible employees.

iii) Direct support

- *Lump-sum payments to microenterprises and small businesses (25 March to 24 June 2020)*: one-off payment for microenterprises (fewer than ten employees) and small businesses (fewer than 20 employees). The 25 March grant was EUR 5 000, and was paid to microenterprises and the self-employed who had to close their businesses due to the sanitary restrictions. On 24 April, the government introduced further payments of EUR 5 000 for microenterprises and EUR 12 500 for small businesses that had either closed or lost at least 50% of their turnover.
- *Lump-sum payments for the self-employed (8 April 2020 to 24 June 2020/29 January 2021 to 15 May 2021)*: scheme renewed three times. The first payment was EUR 2 500 and could not be combined with the 25 March 2020 payment. The second payment (6 May 2020) was EUR 3 000, EUR 3 500 or EUR 4 000 depending on revenues. Both payments were available until 24 June 2020 to the self-employed experiencing temporary financial hardship due to the pandemic. The third payment, in January 2021, was identical to the second one.

- *Recovery and Solidarity Fund/Recovery support (24 July 2020 to 30 June 2022)*: direct, monthly, non-repayable assistance for businesses in vulnerable sectors (tourism, events, HORECA, culture and entertainment) that experienced a reduction in turnover of at least 25% and did not lay off more than 25% of their employees. The amount of support granted was calculated by multiplying the number of employees and self-employed people working for the business by EUR 1 250 (EUR 250 for employees on short-time work). Businesses were eligible for support for the month of June 2020. The amount of support then gradually decreased. This support could not be combined with support for uncovered fixed costs, but it could be claimed alongside repayable advances and State guarantees.
- *Support for uncovered fixed costs (21 December 2020 to 30 June 2022)*: direct, monthly, non- repayable assistance for businesses in vulnerable sectors (tourism, events, HORECA, culture and entertainment) that experienced a reduction in turnover of at least 40%. The support covered a portion of the monthly expenses not covered by business revenue. The eligible amount was calculated as the difference between 75% of expenditure and 100% of revenue. The State covered 70% of this amount (or as much as 90% for companies with fewer than 50 employees). Businesses were eligible for support for the month of November 2020.

iv) State loans and guarantees

- *Repayable advances (3 April 2020 to 31 December 2021)*: a State loan scheme for businesses and the self-employed experiencing difficulties due to the pandemic. The amount covered 50% of costs, including staff costs (capped at EUR 5 355) and rent (capped at EUR 10 000 per month per group). The interest rate was 0.5%. Repayment was to begin 12 months after the first advance payment. This support could be combined with the short-time work scheme and other support granted by the Ministry of Economy.
- *State guarantee scheme (21 April 2020 to 30 December 2021)*: a State guarantee scheme facilitating bank lending to businesses and self-employed people experiencing difficulties due to the pandemic. The State guaranteed 85% of the nominal amount of bank loans. The loan amount could cover up to 25% of a business's turnover in 2019. Interest rates varied from 0.25% to 2% depending on the size of the business and the maturity of the loan. Businesses were obliged to first make use of other financing tools (*Société Nationale de Crédit et d'Investissement* (SNCI), a public-law banking institution in Luxembourg; the European Investment Bank (EIB); *Office du Ducroire*, Luxembourg's export credit agency).
- *Special Anti-Crisis Financing (26 March 2020 to 31 December 2021)*: co-financing scheme operated by SNCI (60%) and banks (40%) for businesses experiencing difficulties due to the pandemic. The amount of financing ranged from EUR 12 500 to EUR 10 million. The maximum duration of the Special Anti-Crisis Financing was five years and repayments were to begin no later than two years after the funds were released.

Note: the names of the schemes are accompanied by their start and end dates.
Source: Government of the Grand Duchy of Luxembourg; prepared by the authors.

Analysis of the emergency measures implemented in Luxembourg and in six OECD Member countries (Belgium, France, Germany, Ireland, the Netherlands and Switzerland) confirms that the country took action as quickly as its neighbours (see Table 6.1). Other countries introduced or adapted pre-existing regular income replacement schemes for self-employed people. Luxembourg opted instead to adapt the legal framework for short-time work (which did not previously cover compensation for the self-employed). In addition to repayable advances, the government introduced a non-repayable lump-sum payment of EUR 2 500 for the self-employed on 8 April to partially offset the effects of the crisis. This payment came in addition to a first lump-sum payment granted to microenterprises, which benefitted also some self-employed people.

Table 6.1. Like its neighbours, Luxembourg was quick to support domestic businesses

List of schemes implemented in Luxembourg and in six OECD member countries in March and April 2020 (excluding tax waivers and deferrals)

Country (date of lockdown)	Short-time work	Income replacement for the self-employed	COVID-19 parental leave	State-guaranteed loan	Loan	Lump-sum payment for businesses	Lump-sum payment for the self-employed
Luxembourg (16 March 2020)							
Name	*Chômage partiel (Short-time work)*	*N/A*	*Congé (Leave)*	*Garantie étatique (State guarantee)*	*Avances rembour. (Repayable advances)*	*Aide micro. (Microenterprise support)*	*Aide indép. (Self-employed support)*
Date	18 March	*N/A*	14 March	21 April	3 April	25 March	8 April
Eligible	Businesses	*N/A*	Businesses + self-employed	Businesses + self-employed	Businesses + self-employed	Businesses + self-employed	Self-employed
Switzerland (16 March 2020)							
Name	*Réduction horaire de travail (RHT – Reduced working hours)*		*Allocations pour pertes de gains (APG – Loss of earnings allowances)*	*Cautionnements solidaires COVID (COVID guarantees)*	*N/A*	*N/A*	*N/A*
Date	20 March		20 March	25 March	*N/A*	*N/A*	*N/A*
Eligible	Businesses + self-employed		Businesses + self-employed	Businesses + self-employed	*N/A*	*N/A*	*N/A*
Netherlands (15 March 2020)							
Name	*Noodmaatregel Overbrugging Werkgelegenheid (NOW) (Temporary emergency measure for employment)*	*Tijdelijke Overbruggingsregeling Zelfstandige Ondernemers (TOZO) (Temporary support measure for the self-employed)*	*N/A*	*Garantie Ondernemingsfinanciering Corona (GO-C) & Borgstelling MKB Kredieten (BMKB) (COVID corporate financing guarantee & SME loans guarantee)*	*N/A*	*Tegemoetkoming Ondernemers Getroffen Sectoren COVID-19 (TOGS) (Support for business in COVID-affected sectors)*	
Date	6 April	22 April	*N/A*	17 March	*N/A*	31 March	
Eligible	Businesses	Self-employed	*N/A*	Businesses + self-employed	*N/A*	Businesses + self-employed	
Germany (16 March 2020)							
Name	*Kurzarbeitergeld (Short-time work)*	*Grundsicherung für Solo-Selbstständige (Dedicated support for the Self-Employed)*	*N/A*	*Wirtschaftsstabilisierungsfond & KfW loans (Fund for Economic Stabilisation & KfW loans)*	*N/A*	*Soforthilfen (emergency support)*	
Date	14 March	28 March	*N/A*	23 March	*N/A*	30 March	
Eligible	Businesses	Self-employed	*N/A*	Businesses + self-employed	*N/A*	Businesses + self-employed	
Ireland (15 March 2020)							
Name	*Temporary Wage Subsidy Scheme (TWSS)*	*Pandemic Unemployment Payment (PUP)*	*Illness Benefit COVID-19*	*COVID Credit Guarantee Scheme (CCGS)*	*MFI business loan/Working capital loan*	*N/A*	*N/A*
Date	26 March	13 March	4 April	1 April	13 March/1 April	*N/A*	*N/A*
Eligible	Businesses	Businesses + self-employed	Businesses + self-employed	Businesses	Businesses + self-employed	*N/A*	*N/A*
Belgium (14 March 2020)							
Name	*Chômage temporaire (Temporary layoff)*	*Droit passerelle indépendants (Transitional benefit for self-employed people)*	*N/A*	*Régime de garantie fédérale (Federal guarantee scheme)*	*N/A*	*Primes régionales (Regional allowances)*	

Date	13 March	24 March	*N/A*	1 April	*N/A*	15 and 27 March (Flanders and Wallonia)	
Eligible	Businesses	Businesses + self-employed	*N/A*	Businesses + self-employed	*N/A*	Businesses + self-employed	
France (17 March 2020)							
Name	*Activité partielle (AP – Short-time working)*		*Congés pour garde d'enfant (Childcare leave)*	*Prêt Garanti par l'État (PGE – State-guaranteed loan)*	*Prêts bonifiés et Avances rembour. (Subsidised loans and repayable advances)*	*Fonds de solidarité (Solidarity Fund)*	*Aide du CPSTI aux indép. (Social protection for self-employed people)*
Date	23 March		16 March	25 March	26 April	1 April	10 April
Eligible	Businesses + self-employed		Businesses + self-employed	Businesses + self-employed	Businesses	Businesses + self-employed	Self-employed

Note: Cells marked N/A denote that a similar scheme of the same scale was not identified in the country concerned before 1 May 2020. In the vast majority of cases, the date corresponds to the date on which the scheme took effect or the date of publication of the legislation. Where these dates are not available, the date given is the most likely date based on government communications and available information on the subject. Where "businesses" and/or "self-employed" are marked as eligible, this does not mean that all businesses and/or all self-employed people were eligible for the scheme in question. Date of lockdown = date on which the HORECA sector was closed.
Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional governments of Belgium; EU PolicyWatch (Eurofound); prepared by the authors.

6.2.2. Fiscal measures focused on supporting employment

The measures adopted in Luxembourg with the largest budgetary impact were:

- short-time work, with a total of EUR 1 208 million granted;
- family leave, amounting to EUR 288 million in 2020 and 2021;
- the Recovery and Solidarity Fund, with a total of EUR 271 million granted (EUR 110 million for recovery support and EUR 161 million for support for uncovered fixed costs);
- the State guarantee scheme, with a total of EUR 194 million guaranteed for loans taken out in 2020 and 2021;
- repayable advances granted to businesses amounting to a total of EUR 180 million.

To better assess the relative importance of the measures implemented in Luxembourg, the budgetary effort has been compared with the efforts of other OECD Member countries (Belgium, France, Germany, Ireland, the Netherlands and Switzerland) along the four main types of business support measures: i) tax and social security contribution waivers and deferrals; ii) short-time work and leave; iii) direct support; and iv) State loans and guarantees.

Business support measures

Estimating the total value of emergency schemes in OECD Member countries, as well as the breakdown of expenditure across different areas, is a difficult task. Measures are not categorised the same way in different countries. The availability and frequency of data updates also varies. Nevertheless, this exercise is useful because it enables a better assessment of the choices made in a given country compared with the efforts of other OECD Member countries.

Overall, a degree of heterogeneity can be seen in the relative scale of national schemes.[1] In 2020-21, of the EUR 3 570 billion allocated to tackle the COVID-19 crisis, Luxembourg allocated EUR 2 850 billion in support to businesses and households. This represents 3.9% of its annual GDP in 2021. It is an effort comparable to that of Belgium, which devoted 4.7% of GDP, and Ireland, which devoted 3.3% of GDP. These economies were relatively less affected by the crisis and were therefore able to bounce back more

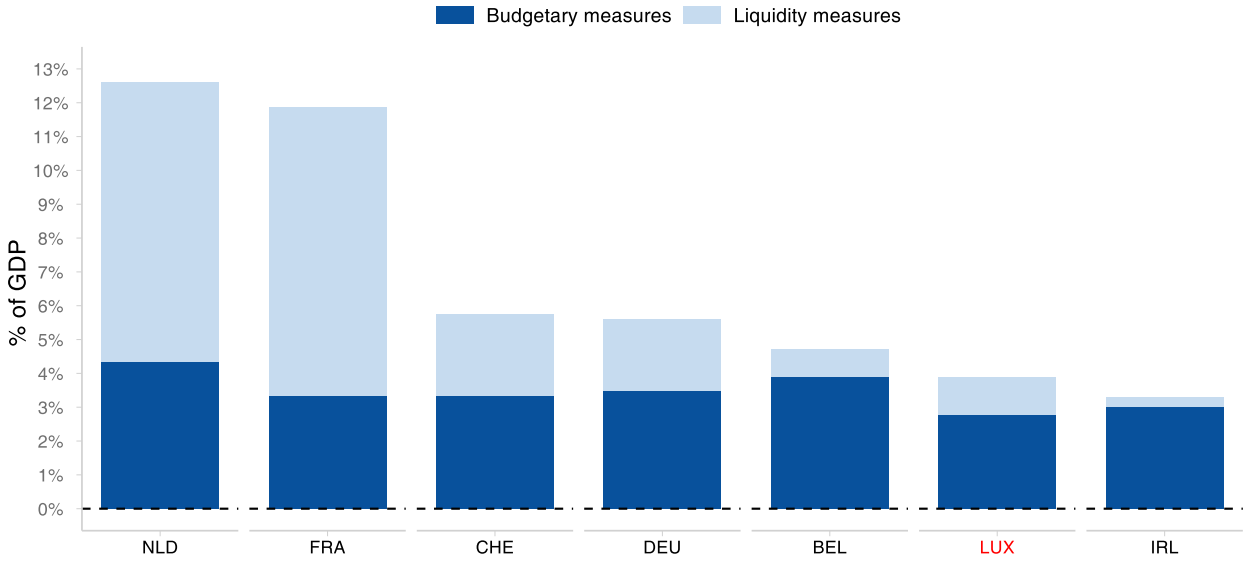
quickly. In other countries, the effort was greater: it amounted to 12.6% of GDP in the Netherlands, 11.9% in France and 5.6% in Germany.

Support measures have been divided into two categories: i) fiscal measures (short-time work and leave, direct support and tax and social security contribution waivers); and ii) liquidity and guarantee measures (State guarantees, tax and social security deferrals and State loans). This categorisation enables a distinction to be made between expenditure with an immediate and definitive effect on public finances, and temporary disbursements and guarantees that are expected to have only a limited impact on public finances in future years. In general, all of the countries considered in the analysis relied mainly on immediate fiscal measures, with the exception of the Netherlands and France, which favoured liquidity and guarantee measures within their overall packages.

Across the board, the main fiscal measures are comparable, ranging from 3.0% (Ireland) to 4.3% (Netherlands) of GDP. In terms of liquidity and guarantee measures, France, with measures worth around 8.6% of GDP, and the Netherlands, with measures worth 8.3% of GDP, stand out, followed by Switzerland (2.3%), Germany (2.1%), Luxembourg (1.1%), Belgium (0.8%) and Ireland (0.3%) (see Figure 6.2).

Figure 6.2. Luxembourg's budgetary effort is in line with that of other OECD member countries

Share of funds disbursed or granted in 2020-21 by type of measure as % of GDP in 2021



Note: The amounts indicated are not exhaustive. They correspond to the main measures that the OECD has identified from public information and from the survey of the countries selected for this chapter. The amounts given for direct support, short-time working and leave have been disbursed. The amounts given for tax and social security contribution deferrals and State loans have been temporarily disbursed and the State guarantee measures have been allocated as guarantees.
Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional governments of Belgium; EU PolicyWatch (Eurofound); Eurostat; prepared by the authors.

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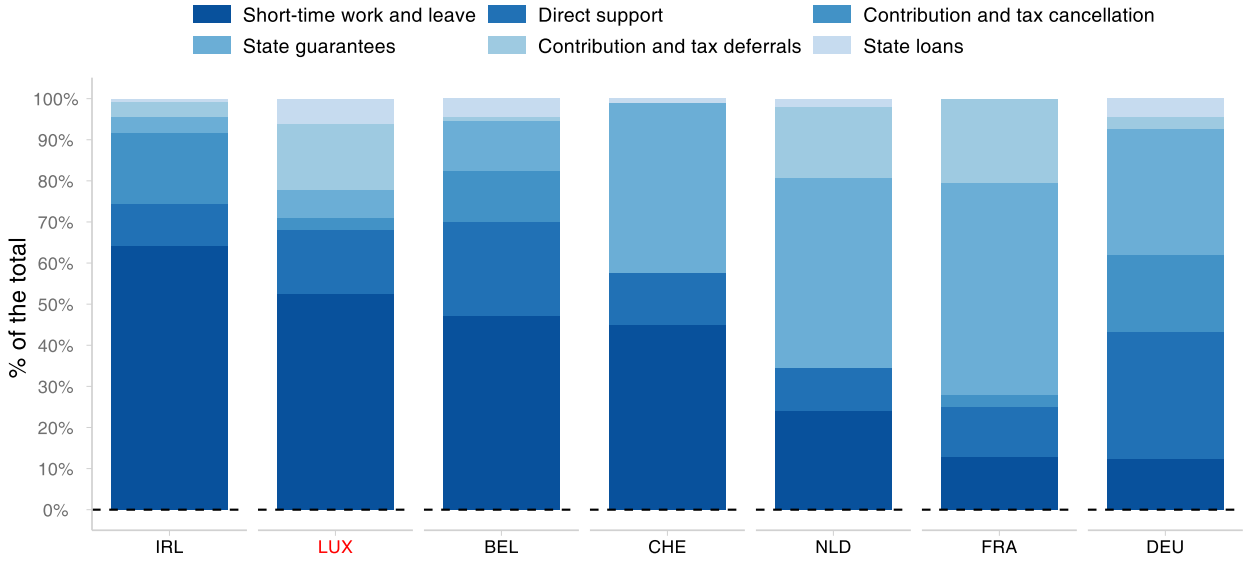
A comparative analysis of emergency measures shows that Luxembourg (along with Ireland, Belgium and Switzerland) stands out for the predominant focus on employment support measures, mainly in the form of short-time work (see Figure 6.3). Luxembourg's decision to focus on maintaining employment from the early phases of the crisis seems appropriate given the country's heavy reliance on cross-border workers

and its need to retain as much of this workforce as possible. This decision may also have facilitated the economic recovery following the rebound in demand in the second half of 2020 (OECD, 2021[1]; IMF, 2021[2]).

Figure 6.3. In Luxembourg, measures focused primarily on supporting employment

Share of total disbursed (or granted) funds by measure during 2020-21



Note: The amounts indicated are not exhaustive. They correspond to the main measures that the OECD has identified from public information and from the survey of the countries selected for this chapter. The amounts given for direct support, short-time working and leave have been disbursed. The amounts given for tax and social security contribution deferrals and State loans have been temporarily disbursed and the State guarantee measures have been allocated as guarantees.
Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional governments of Belgium; EU PolicyWatch (Eurofound); Eurostat; prepared by the authors.

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Budgetary disbursements

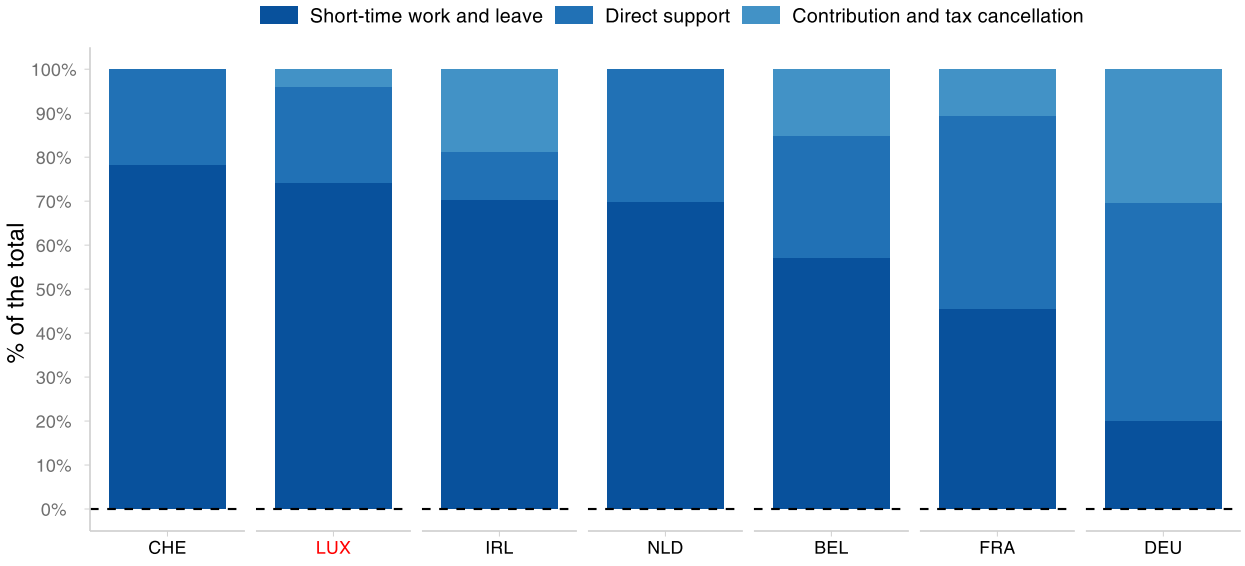
In all the countries considered in this comparative analysis, public financing of short-time work has played a significant role in the schemes supporting businesses. In Luxembourg, short-time work accounted for 60% of the funds spent to support businesses, or 1.6% of GDP. The coverage rate of this scheme is among the highest, at 80% of gross wages, rising to 100% for wages at the level of the Social Minimum Wage. In Ireland, short-time work accounted for 70% of spending to support businesses, or 2.1% of GDP. In contrast, in Germany, which has one of the lowest replacement rates (60% of the benchmark net hourly wage), short-time work accounted for only 20% of spending to support businesses, or 0.7% of GDP (see Figure 6.4 and Figure 6.5).

Direct support includes subsidies or similar granted to companies and self-employed people. These measures represent recurring and important budgetary support mechanisms for businesses. They made up the largest share of support in Germany and France, accounting for 50% of spending allocated to help businesses in Germany (1.7% of GDP) and 44% in France (1.4% of GDP). In Luxembourg, this kind of support accounted for a smaller share of spending (16%, or 0.6% of GDP), as the employment component covered the initial shock of the crisis. However, as the second part of this chapter will show, more direct support was used in 2021 (see Figure 6.5).

In Luxembourg, tax deferrals accounted for approximately the same amount of spending as direct support (with the difference that deferrals represent temporary expenditure for the State). These measures include the waiver of quarterly tax advances, the deferral of tax due dates, the deferral of social security contributions and the refund of VAT credit balances.

Figure 6.4. Public financing of short-time work played a significant role within the budgetary measures

Share of total disbursed funds by each budgetary measure during 2020-21



Note: The amounts indicated are not exhaustive. They correspond to the main measures that the OECD has identified from public information and from the survey of the countries selected for this chapter. The amounts given for direct support, short-time work and leave refer to actual disbursements.

Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional Governments of Belgium; EU PolicyWatch (Eurofound); Eurostat; prepared by the authors.

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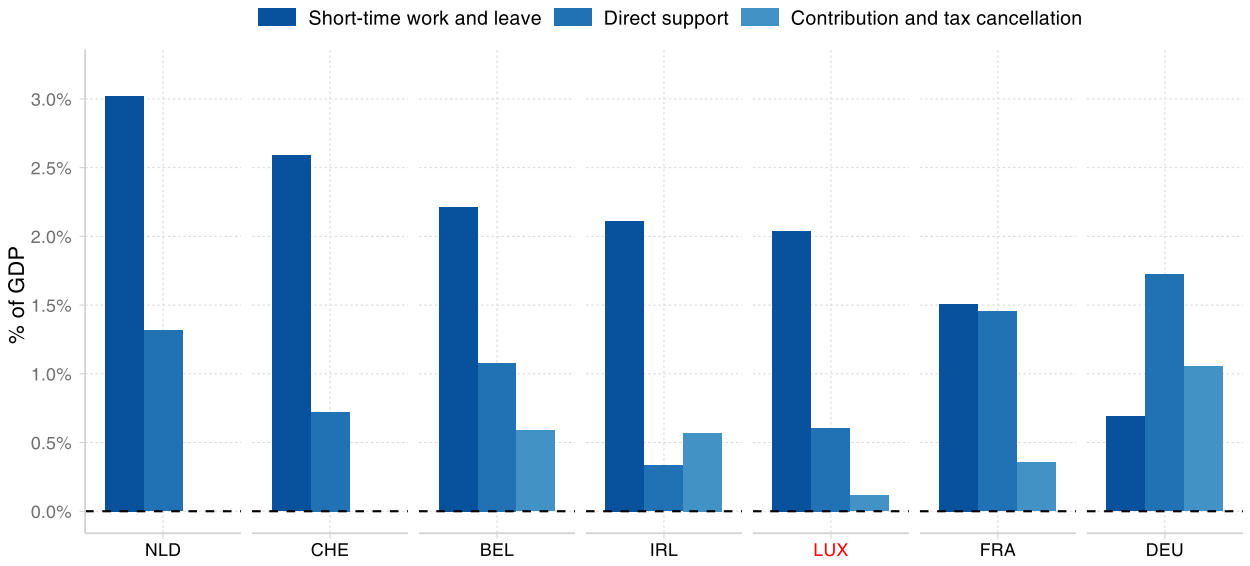
Figure 6.5. The extent of budgetary spending is similar to that in the countries studied

Funds disbursed for each budget measure in 2020-21 as % of GDP in 2021



Note: The amounts indicated are not exhaustive. They correspond to the main measures that the OECD has identified from public information and from the survey of the countries selected for this chapter. The amounts given for direct support, short-time working and leave have been disbursed.

Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional Governments of Belgium; EU PolicyWatch (Eurofound); Eurostat; prepared by the authors.

StatLink https://stat.link/pnt4ew

Provision of liquidity and guarantees

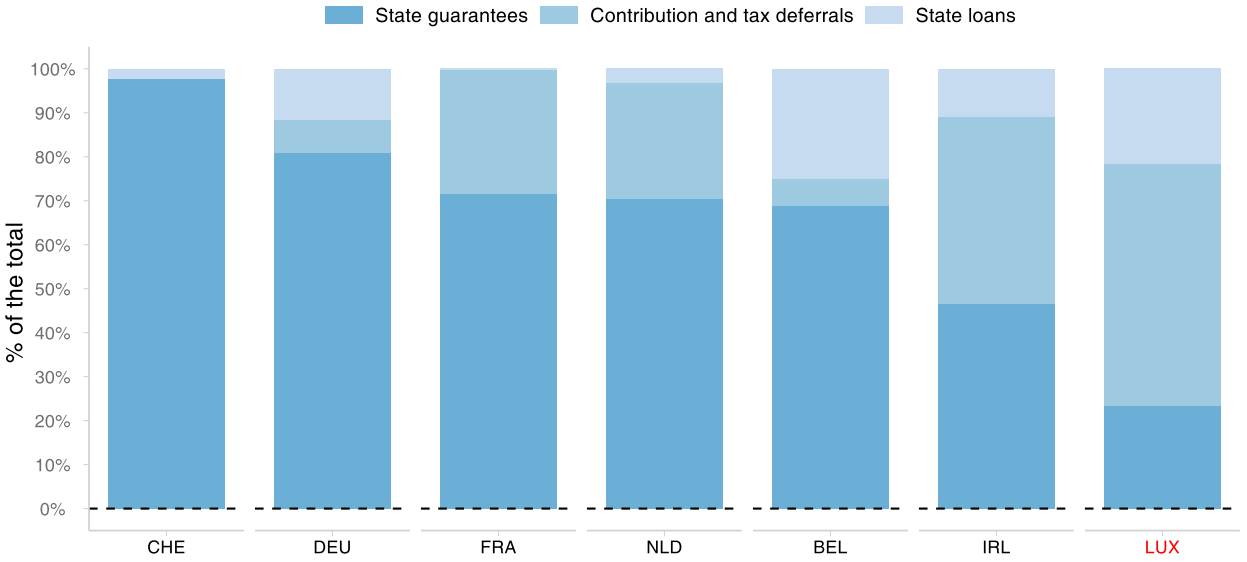
With respect to liquidity and guarantee measures, State-guaranteed loans were the most widely used measure in most of the countries surveyed. In Luxembourg, however, such loans accounted for just 23% of total liquidity spending, or 0.3% of GDP. This type of measure accounted for almost all of the liquidity and guarantee provision in Switzerland, representing 2.3% of GDP. It accounted for more than 60% of spending in all countries surveyed, except for Luxembourg and Ireland (see Figure 6.6 and Figure 6.7).

While these measures have been widely used in all of the countries studied, the implementation mechanisms differed. Most countries, like Luxembourg, have guaranteed loans for a maximum of six years. Some countries have allowed a ten-year period in special circumstances (for example, small businesses experiencing serious cash flow problems in France). The interest rate varies according to the duration of the loan. In Luxembourg, it is 0.25% for a one-year maturity, 0.5% for three years and 1% for six years (see Figure 6.6).

Finally, most countries have put in place tax deferrals for businesses. This type of measure accounts for 60% of the liquidity and guarantee provision in Luxembourg, compared with 42% in Ireland. Deferrals can take the form of deferring direct tax payments (as in the Netherlands, Germany and Ireland), deferring social security contributions for businesses and self-employed people, or deferring VAT payments (as in Belgium) (see Figure 6.6).

Figure 6.6. State-guaranteed loans were the most widely used liquidity measure in most of the countries surveyed

Share of total funds allocated to each liquidity measure in 2020-2021



Note: The amounts indicated are not exhaustive. They correspond to the main measures that the OECD has identified from public information and from the survey of the countries selected for this chapter. The amounts given for tax deferrals and State loans have been temporarily disbursed and the State guarantee measures have been allocated as guarantees.
Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional Governments of Belgium; EU PolicyWatch (Eurofound); Eurostat; prepared by the authors.

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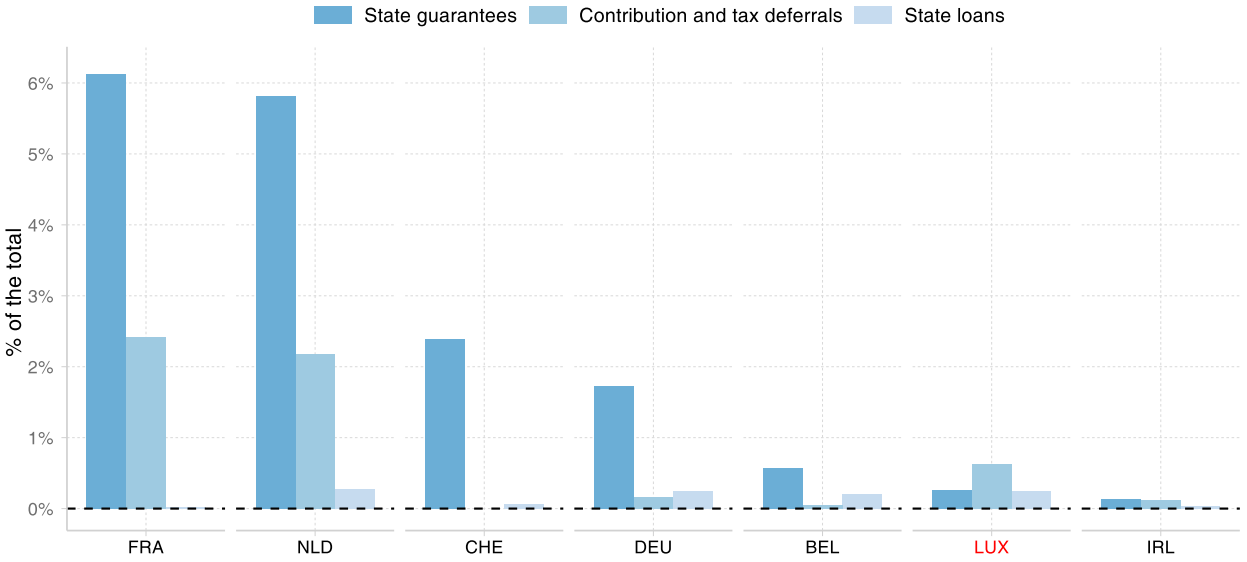
Figure 6.7. Luxembourg was among the countries that spent the least on liquidity measures in GDP terms

Share of spending on each liquidity measure in 2020-21 as % of GDP in 2021



Note: The amounts indicated are not exhaustive. They correspond to the main measures that the OECD has identified from public information and from the survey of the countries selected for this chapter. The amounts given for tax deferrals and State loans have been temporarily disbursed and the State guarantee measures have been allocated as guarantees.
Source: Government of the Grand Duchy of Luxembourg, State Accounts of the Swiss Confederation; Ministry of Finance of the Netherlands; Federal Government of Germany; Government of Ireland; Federal and Regional Governments of Belgium; EU PolicyWatch (Eurofound); Eurostat; prepared by the authors.

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6.3. Implementation of the business support measures in Luxembourg

In Luxembourg, support through advances for short-time work and *ex-post* controls helped provide a rapid response to businesses' demand and needs, maintain people in employment, while limiting public expenditure. The digital tool used to process direct support for businesses also made it possible to respond quickly to applications and to grant assistance within a relatively short time. Speed of delivery has been recognised as a key factor in protecting the liquidity of businesses (Schivardi, 2020[3]). The fiscal procedures were flexible enough to allocate the necessary funds quickly, while keeping parliament informed.

6.3.1. Luxembourg deployed its short-time work programme quickly, relying on an established consultation framework

In consultation with social partners, the Government introduced the "*force majeure*/COVID-19" short-time work programme on 18 March 2020. Unlike the system already in place, this special programme was based on advances paid to businesses in order to support them quickly. The existence of the Economic Committee (*Comité de conjoncture*) and its consultative framework for approving short-time work measures (see Box 6.3) facilitated consultation with social partners and a rapid response to applications from businesses.

Box 6.3. Luxembourg's Economic Committee

The Economic Committee (*Comité de conjoncture*) is a government advisory body, whose main task is to maintain employment by taking measures to prevent layoffs resulting from cyclical causes. Part of the committee's remit involves issuing opinions on the various types of applications for short-time work arrangements and on requests for early retirement to support restructuring.

The members of the Economic Committee represent employee and employer organisations, as well as various ministries and government agencies. The Minister of Economy convenes the Economic Committee, which may be chaired by the Minister of Economy, the Minister of Labour and Employment, or the Minister of Finance, individually or jointly. The committee comprises representatives from the following institutions and organisations:

- National Institute for Statistics and Economic Studies (STATEC)
- Ministry of Economy
- Ministry of Labour, Employment and the Social and Solidarity Economy
- Inspectorate of Finance
- National Employment Agency (ADEM)
- Inspectorate of Labour and Mines
- Federation of Luxembourg Industrialists and Entrepreneurs (FEDIL)
- Federation of Craftspeople (*Fédération des artisans*)
- Independent Trade Union Confederation of Luxembourg (OGB-L)
- Luxembourg Confederation of Christian Trade Unions (LCGB)
- Luxembourg Confederation of Commerce (CLC)
- Luxembourg Central Bank (BCL).

Source: Government of Luxembourg, Economic Committee, https://cdc.gouvernement.lu/fr.html (accessed 15 June 2022).

Once a business's application was accepted by the Economic Committee, the National Employment Agency (ADEM)[2] paid the special advance. This meant that businesses were able to make use of this advance within ten days of the ADEM receiving their application. An *ex-post* accounting process made it possible to verify that the advances paid matched the actual short-time hours declared via the businesses' accounts. A total of 20 000 applications were audited. The differences between the amounts actually owed to businesses and the advances received by them have been accounted for in benefit payments for subsequent financial years.

The use of this advance payment system with *ex-post* verification seems to have been particularly effective in responding very quickly to business needs while reducing the risk of wasteful use of resources. Similar systems were also implemented in other OECD member countries (OECD, 2022[4]). In Luxembourg, the risk of fraud seems to have been relatively contained: in 2021, the Ministry of Labour reported just six cases of fraud, either because the beneficiary business had gone bankrupt or because the beneficiary business received the advances while keeping the employees at work (Chamber of Deputies, 2021[5]; Jacquemot, 2021[6]).

6.3.2. Implementation of direct support took longer, requiring the establishment of a legal framework and specific processing methods

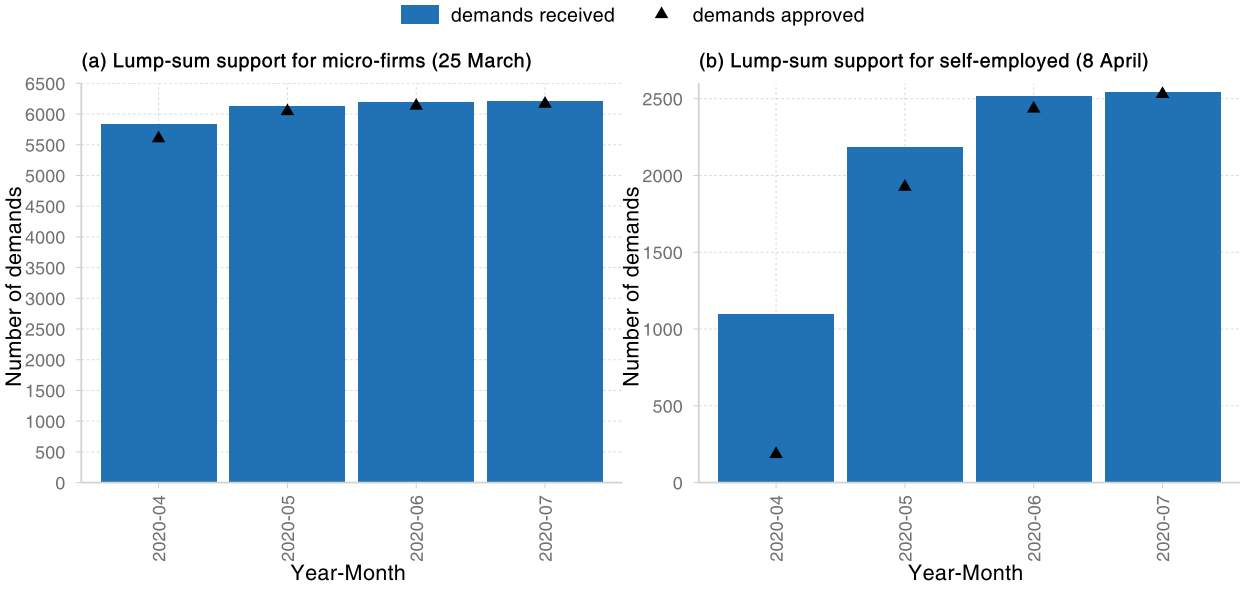
Direct support took longer to be implemented than short-time work due to the lack of a pre-existing legal framework. The first lump-sum payment of EUR 5 000 to microenterprises on 25 March 2020 benefited only those businesses closed due to government decisions. This excluded about 6 000 businesses. Some of these businesses were not considered to be microenterprises as they fell below the qualifying thresholds. Others were affected by the sanitary restrictions, but they were not obliged to close. The Ministry of Economy's Directorate for Small and Medium-Sized Enterprises (DGCM) decided to open up the subsequent programmes also to these companies.

At the beginning of the crisis, business support was not always appropriately targeted. Repayable advances and short-time work targeted sectors defined by the Statistical Classification of Economic Activities in the European Community (NACE), which is an economic activity classification system based on the business's principal activity code (APE code). However, this classification appeared to be unsuitable for allocating support. By using this classification to determine which businesses should receive support, the public authorities excluded businesses that were highly dependant on a NACE sector directly affected by the crisis, even though they did not belong to it. This was particularly the case for business working on the organisation of events (sound engineers, communication managers, online corporate event organisers, and so on), which are not classified as belonging to the events sector and did not therefore receive any support. Yet the decline in activity in the sector probably had a similar impact on them. There was also the risk of excluding businesses whose APE code had not been updated but had in fact an activity affected by the crisis. The DGCM subsequently sought to avoid these pitfalls by asking businesses to describe the main activity in their applications for support. This approach helped improving targeting. The ministry's teams then had to analyse these activity descriptions on a case-by-case basis.

Some self-employed people (around one in six) benefited from the first lump-sum payment of EUR 5 000 and were eligible for the repayable advances introduced on 3 April 2020. The second support package introduced by the DGCM on 8 April specifically targeted the self-employed, whether or not they had been required by the authorities to cease their activity. This allowed some self-employed people to receive EUR 2 500 directly into their bank accounts, which to some extent mitigated their ineligibility for short-time work. However, most self-employed people did not receive this support until May or even June 2020 (Figure 6.8). For the first time, all applications for this support to the self-employed were submitted entirely in digital format, thus requiring some time for the ministry's teams to adapt to the digital tool. As a result, the DGCM was only able to start processing applications from 16 April. It is also possible that some eligible self-employed people were not immediately aware of this support. The fact that the number of applications was higher for the second and third lump-sum payments for the self-employed is consistent with this possibility. Some self-employed people may also have thought that they were ineligible for the first payment of EUR 5 000 (because they were not required by the authorities to cease their activity).

Figure 6.8. Implementation of the first lump-sum payment for the self-employed took longer

Cumulative monthly total number of applications for and receipts of the first two lump-sum payments



Note: Only those applications for support which went on to be approved are shown. Detailed information on rejected applications is not available for these programmes. The rejection rate reported by the DGCM for the first lump-sum payment targeting microenterprises is 56%.
Source: DGCM, Ministry of Economy.

StatLink https://stat.link/2veqic

The analysis shows that providing support to the self-employed proved more difficult. This seems to be partly due to their special status, which excluded them from short-time work. In addition, short-time work benefited from an existing consultative framework with social partners, namely the Economic Committee. This was not the case for the implementation of direct support, including for the self-employed, for which consultation and dialogue took place in a more informal way. To remedy this situation, Luxembourg should, in the future, assess the needs of the self-employed, take their specific needs into account and consider strengthening recurrent support that is provided in the early stages of a crisis. It would also be important to establish a more formal framework for dialogue, including with representatives of the self-employed, when putting in place measures aimed at supporting business, in order to better target direct assistance and monitor the implementation of the measures.

6.3.3. Luxembourg adapted the support measures and how they were allocated as the pandemic evolved

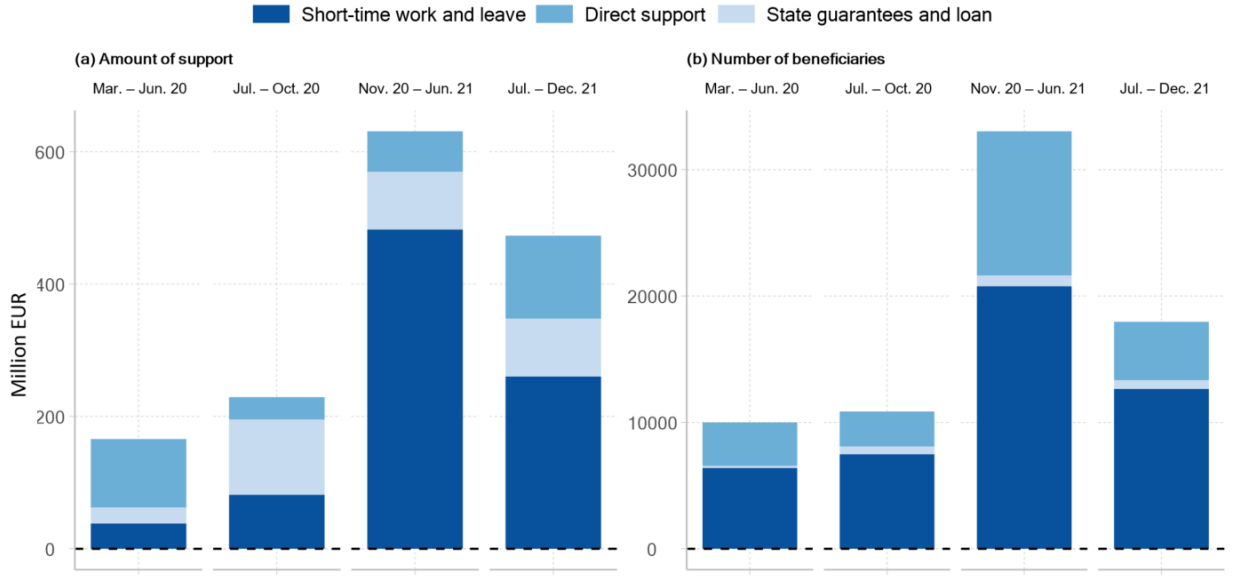
The change in the number of businesses accessing support reflects the different waves of infection and the associated sanitary restrictions. The first wave corresponded to a very high use of support measures for a three-month period, followed by a lower level of use from July to October 2020 and then a slight upward trend from November 2020 to June 2021 (see Figure 6.9, Panel b). There were significant differences in the amounts spent during the first and second waves. These differences can be explained both by the changing number of beneficiary businesses and by the redefinition of some measures, in particular the Recovery and Solidarity Fund, which was stepped up in the second phase of the pandemic, responding to the need to revive the economy as the crisis was ending. The Recovery and Solidarity Fund also focused on those businesses that were hardest hit by the COVID-19 pandemic.

For short-time work, the funds paid out amounted to EUR 482 million for the first wave, and just EUR 81.5 million in the subsequent wave, before rising again in the third wave to EUR 280 million (see Figure 6.9, Panel a). A total of 33 032 businesses received these funds in the first wave, and 10 868 in the second wave. This decrease was primarily due to the difference in the intensity of the shock experienced by business during the first and second lockdown waves (see Figure 6.9, Panel b). According to STATEC data, following a 7.3% decline in activity in the second quarter of 2020, at the height of the crisis, Luxembourg was able to return to pre-crisis activity levels in the third quarter of 2020.

Conversely, the funds allocated to direct support almost doubled between the first and third periods, rising from EUR 60.9 million to EUR 125 million. This increase was not due to more beneficiary businesses (the number actually fell), but to a greater diversity of direct business support and an increased concentration of support for the hardest-hit sectors.

Figure 6.9. Support evolved in line with the evolution of the pandemic

Change in funds disbursed and businesses receiving support during the COVID-19 crisis



Note: The first period covers the state of emergency in Luxembourg. The second period corresponds to an intermediate period during which the epidemic slowed. Starting in November 2020, the country faced a series of waves until June 2021. The fourth period corresponds to the end of 2021.
Source: STATEC – Central Balance Sheet Office, and the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/859uie

6.3.4. Digitalisation improved the management of demands for support

Digitalisation played a very important role in implementing direct support to business. The DGCM provided back-office management for processing applications using a software package known as MMAET. This software was operational less than a week after the first support measure was launched (25 March 2020) and its development was accelerated during the crisis.

The DGCM quickly went "all digital" for processing support applications. From the launch of the lump-sum payment for the self-employed (8 April 2020), applicants were required to use the professional area on the MyGuichet.lu website.[3] This caused an initial delay in implementation, as applications could not be processed before 16 April. However, this approach delivered significant time savings for businesses and gains in effectiveness for the government.

In parallel, the MMAET software has been continuously improved since the beginning of the crisis, providing information about the number of applications submitted and the status of applications (in process, in payment, rejected, etc.). These figures are available in real time.

To respond to the many requests for information, a hotline and a dedicated e-mail address were set up. The DGCM updated a frequently asked questions (FAQ) document listing eligible and ineligible types of activity. This FAQ was updated and sent to employers' associations daily. An e-mail address dedicated to the support for uncovered fixed costs and recovery support programmes was created. A hotline was provided by staff at the House of Entrepreneurship, a dedicated point of contact for entrepreneurship launched in 2016 by the Chamber of Commerce and the Ministry of Economy (House of Entrepreneurship, n.d.[7]). Getting the House of Entrepreneurship involved in responding to questions and providing more information about support measures not only offered answers which better met the needs of entrepreneurs but also allowed the DGCM to focus on processing applications.

Finally, the DGCM put in place a verification process to check the information supplied by businesses and avoid the risk of fraud. An internal audit was also carried out using sample checks.

Analysis of indicators relating to the applications received highlights the positive impact of these initiatives on application processing. For the initial EUR 5 000 support payment for microenterprises, of 14 145 applications, only 6 220 enterprises were approved (see Table 6.2). This large discrepancy is due to non-compliance with the eligibility criteria, mainly because of a misunderstanding of the criteria relating to the size of the business. The number of full-time equivalent employees used to determine eligibility was that of the group and not of the individual organisation or business. The rejection rate improved significantly following the second support payment of EUR 12 500, with 8 022 of 8 944 applications being accepted. In total, business support payments amounted to about EUR 76 million.

Table 6.2. Lump-sum payments targeting the most vulnerable companies

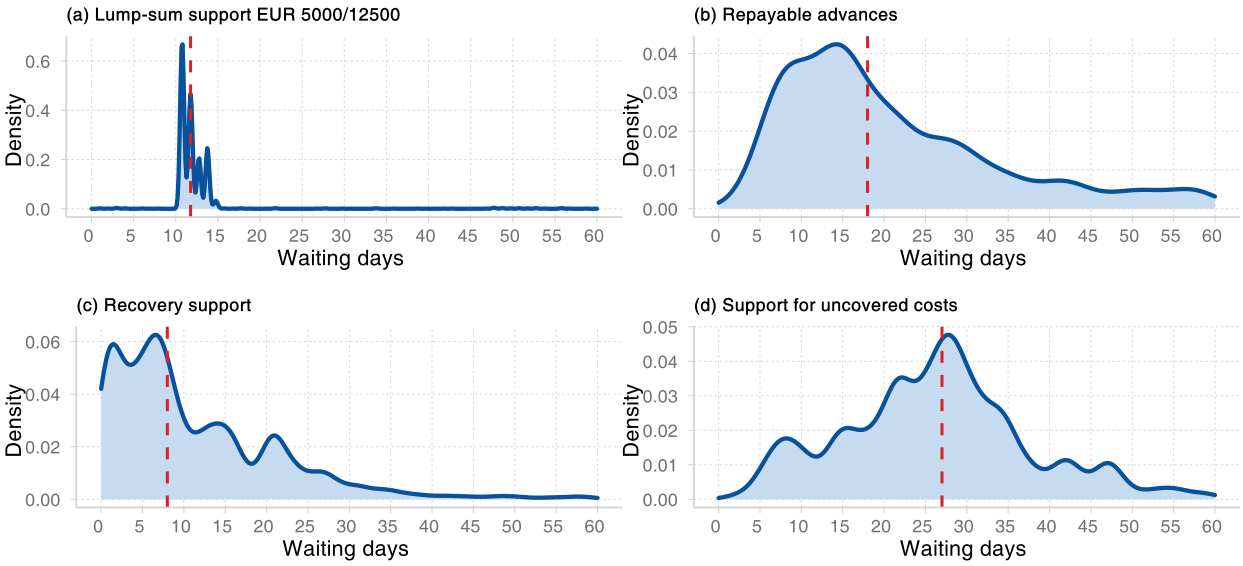
	Initial support payment of EUR 5 000 for microenterprises	Additional payment of EUR 5 000 for microenterprises	Payment of EUR 12 500 for small businesses	Total (in EUR million)
Period covered	25 March to 25 June 2020	28 April to 25 June 2020		
Number of beneficiaries	6 220	7 329	693	14 242
Amounts disbursed	31 517 500	36 547 500	8 415 000	76.5
Rejection rate	56%	10%		38%

Note: Businesses were able to apply just once for each support payment. A business could therefore receive the initial payment of EUR 5 000 when it was introduced, and the additional EUR 5 000 one month later. This explains why there were not 14 242 different businesses that received the support payments. The figures for the amounts disbursed provided by the Ministry of Economy differ slightly from the amounts obtained by multiplying the number of beneficiaries by the amount of support.
Source: DGCM, Ministry of Economy (Luxembourg) on 27 January 2022.

On average, companies waited 15 days to receive the second lump-sum payment of EUR 5 000 and EUR 12 500. To receive the amount requested, businesses had to wait an average of 15 days for recovery support and 30 days for support for uncovered fixed costs. Under the repayable advance programme, the average time taken to receive the support was 29 days (see Figure 6.10).

Figure 6.10. Businesses waited an average of between 15 and 30 days to receive direct support

Density function for days elapsed between application and receipt of the lump-sum payment



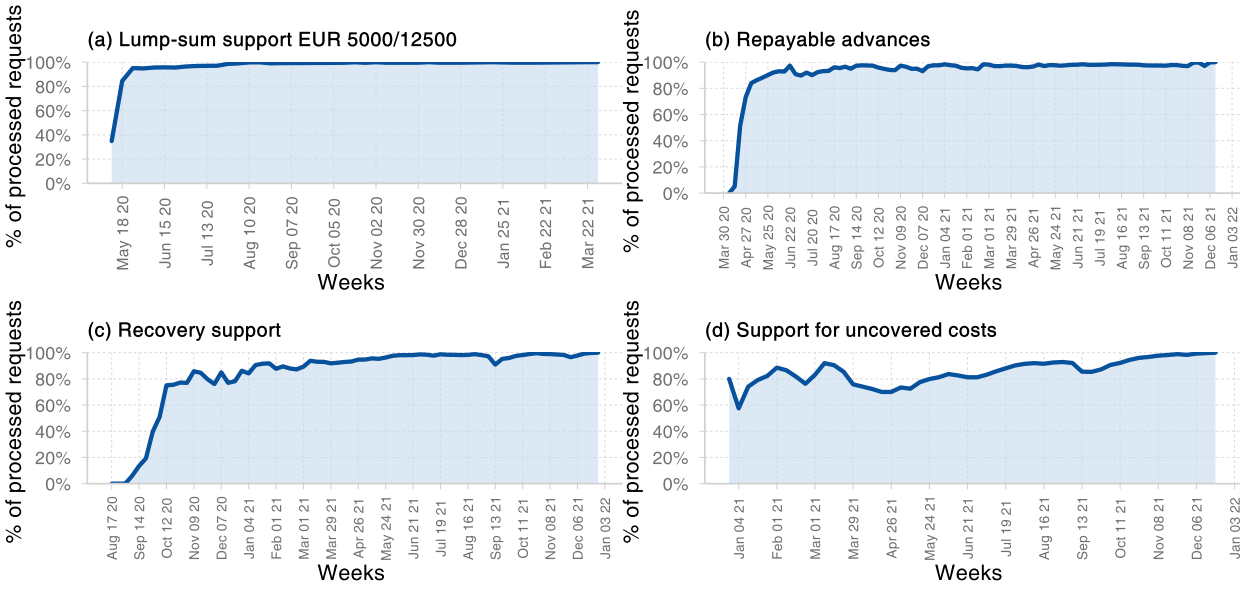
Note: The date on which payments were received has been estimated from the date on which the Ministry of Economy decided to award the payment and start the payment procedure, and from the last date on which the status of the application was changed. For the lump-sum payments of EUR 5 000 to EUR 12 500, the mean time was 15 days and the median time was 12 days (the first quartile – 11 days and the third quartile – 13 days). For recovery support, the mean time was 15 days and the median time was 8 days (the first quartile – 4 days and the third quartile – 19 days). For support for uncovered fixed costs, the mean time was 30 days and the median time was 27 days (the first quartile – 20 days and the third quartile – 34 days). For repayable advances, the mean time was 29 days and the median time was 18 days (the first quartile – 12 days and the third quartile – 32 days).
Source: DGCM, Ministry of Economy.

StatLink https://stat.link/vtuxa1

Over time, an increasing proportion of the applications received were approved. As regards lump-sum payments and repayable advances, two weeks after their introduction, almost all applications were being processed within seven days (see Figure 6.11). Support for uncovered fixed costs had the largest mean (and median) delay between application and receipt of payment. It is also the programme for which the DGCM took the longest time to deal with all applications. This is partly due to the number of steps required to validate an application and grant such a large amount of support (support under this measure was capped at EUR 300 000). In addition, businesses were required to send a number of documents and other items to receive the support. This resulted in a significant number of incomplete applications.

Figure 6.11. There were continuous improvements in application processing times

Weekly change in proportion (%) of approved applications



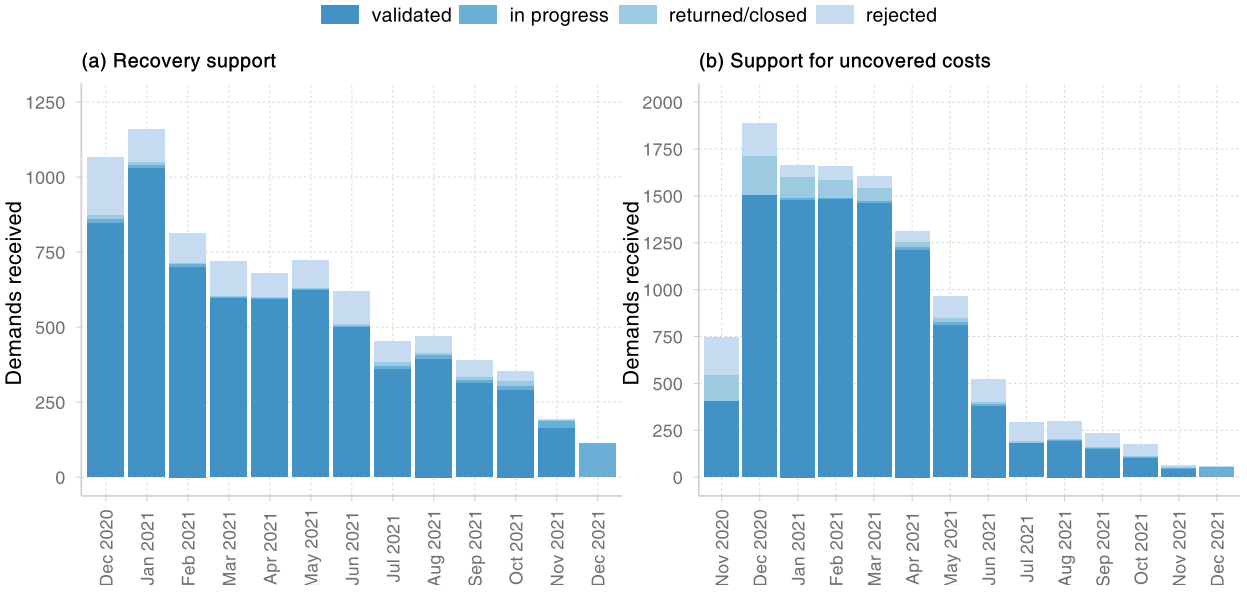
Note: The proportion of approved applications = applications received since the support measure was introduced that have received a favourable decision divided by applications received since the support measure was introduced. The figures only cover approved applications since data on rejected applications are not available. An increase in the Figure means that the administration is processing enough applications in one week to be able to deal with applications not processed in previous weeks.
Interpretation: At the end of the week of 12 October 2020, fewer than 80% of applications for recovery support received since this measure was introduced had been processed by the administration. The remaining applications were not processed at that time.
Source: DGCM, Ministry of Economy.

StatLink https://stat.link/rfs7la

The improvement in processing times is also the result of the decrease in the number of applications received as the crisis eased (see Figure 6.12).

Figure 6.12. Applications for support gradually fell between December 2020 and December 2021

Processing of applications for recovery support and support for uncovered fixed costs



Note: Status as of 25 January 2022.
Source: DGCM, Ministry of Economy.

StatLink https://stat.link/imq1x8

Crisis management has demonstrated the advantages of simplifying and digitalising administrative procedures so that support can be awarded quickly, protecting business liquidity and jobs. This process should continue.

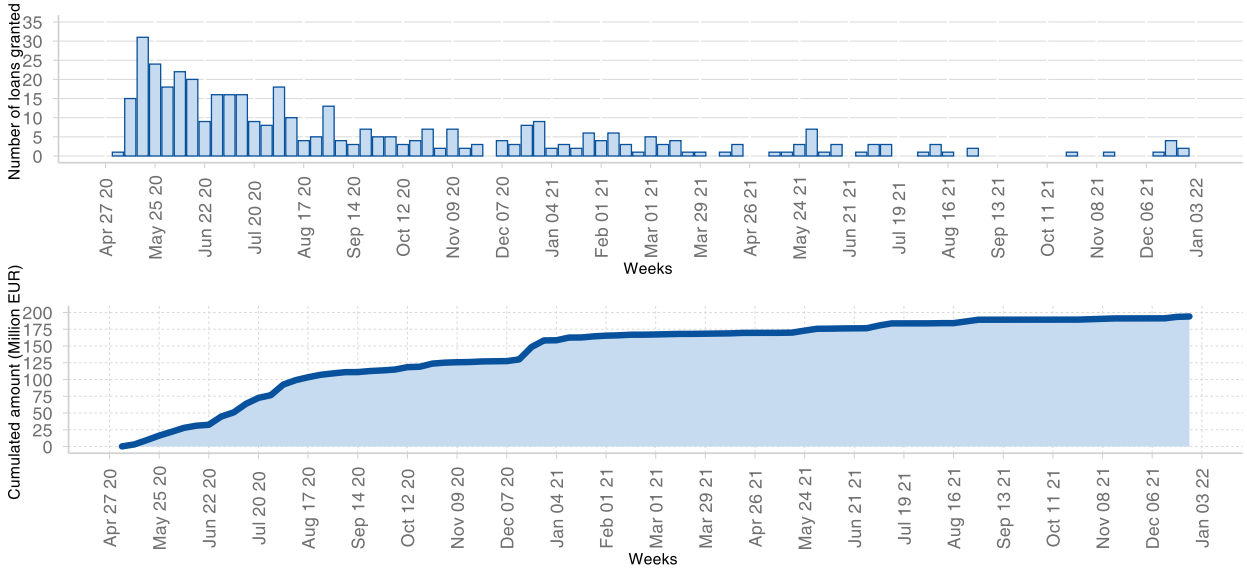
- **Recommendation**: the Ministry of Economy and the DGCM should conduct an in-depth analysis of the administrative procedures for businesses, especially small and medium-sized businesses, and seek to simplify and digitalise them. This process can build on the tools put in place during the crisis.

6.3.5. Guaranteed loans have been widely used by businesses

Luxembourgish businesses affected by the pandemic took advantage of the guaranteed loan programme, as soon as it was implemented. In the first three months of the programme's implementation, 222 loans were granted, totalling EUR 95.6 million. As of 31 December 2021, the State Treasury had identified a total of 415 loans granted, totalling EUR 194 million. The amount guaranteed by the State is equivalent to some EUR 164.9 million (85% of the nominal amount of the loans). As the recovery progressed, the number of applications gradually declined, holding steady at relatively low levels during the first three quarters of 2021, underlining the resilience of Luxembourg's economy to the pandemic (see Figure 6.13).

Figure 6.13. Applications for State guarantees declined as the economy recovered

Weekly trends in new State-guaranteed loans and total cumulative amount



Source: Ministry of Finance.

StatLink https://stat.link/f17nck

The State Treasury manages the day-to-day registry of guaranteed loans, including the approval and rejection of applications submitted by banks. The arrangements and practical implementation are formalised in an agreement signed between the State and the banks participating in the guaranteed loan programme (BCEE, BIL, Banque de Luxembourg, Banque Raiffeisen, BGL BNP Paribas, ING, Bank of China, Banque BCP).

In Luxembourg, beneficiary businesses have six years to repay the loans, as is the case in most countries (Anderson J., 2020[8]). As of 30 June 2022, less than 7% of loans were in default. Of these, only 28 loans were classified as "in default" for a total amount of EUR 12 781 800. It should be noted that “a loan in default" does not necessarily mean that bankruptcy proceedings have been initiated and that the State may have to cover all or part of funds loaned. So far, no State guarantee has been activated (Government of Luxembourg, 2022[9]).

6.3.6. Flexible fiscal procedures enabled a quick and appropriate response

Given the scale of the economic measures implemented in Luxembourg, the Government had to ensure that there was sufficient liquidity to disburse the funds quickly, and that it also had the authority to do so. A mechanism for proper monitoring of the commitment and disbursement of funds was also required.

The State Treasury

To this end, from the beginning of the health crisis, Luxembourg ensured that it had sufficient liquidity to be able to disburse the sums linked to the exceptional measures adopted, and to absorb the drop in revenue associated with the crisis (for example, income tax and VAT revenue fell).

During the first two months of the crisis, Luxembourg was able to benefit from surplus liquidity thanks to a EUR 1.7 billion loan taken out in November 2019 to repay a loan maturing in May 2020. This situation gave

the State Treasury valuable time amid great uncertainty and increased volatility on the markets due to the rise in international financing rates. This period of uncertainty did not last long in Europe, thanks to the intervention of the European Central Bank (ECB), which introduced the pandemic emergency purchase programme on 18 March 2020. The act passed on 18 April 2020 also allowed the Government to borrow an additional EUR 2.5 billion on 28 April 2020. All these circumstances meant that Luxembourg did not experience any liquidity problems.

In addition to having the money available to fund the measures, the Government also needed the authority to commit and disburse the funds. In principle, the funds that a Government can use are limited to the amount specified in the budget passed by Parliament. Any increase in these funds therefore requires Parliament to make changes to the budget. There is, however, one important exception to this rule in Luxembourg: items may be given an "open-ended" limit in exceptional cases. For these funds, the Minister of the Budget may grant an overrun at the request of the authorising minister. Each year, the budget contains several items that have open-ended limits for each ministry, with the aim of adding some flexibility to the annual budget in case of *force majeure* or an unforeseen economic downturn. In the case of the COVID-19 crisis, this exception allowed the Government of Luxembourg to commit and disburse the majority of the necessary funds in this flexible way, without having to go through Parliament. More than 80% of the additional COVID-related spending in 2020 was related to items with open-ended limits that were already included in the original 2020 budget (that Parliament passed in late 2019).

Nevertheless, new budget items still had to be adopted for some measures. An act on 24 July 2020 thus created a Recovery and Solidarity Fund for businesses, and another on 15 December 2020 established a legal basis for introducing a new open-ended item to fund COVID-19-associated health insurance expenditure. Most of the crisis-related expenditure already had a legal basis in the initial budget, however, and this facilitated a quick Government response. Unlike France or Germany, for example, Luxembourg did not have to introduce an amended budget act in Parliament.

The role of Parliament

This flexibility was accompanied by frequent communication between the Minister of Finance and Parliament. The Minister of Finance provided regular updates on changes in the State's financial position at joint meetings of the Chamber of Deputies Finance and Budget Committee and Budget Oversight Committee. At these meetings, the Minister reported on the amounts disbursed in response to the COVID-19 pandemic. However, the information was limited to amounts. No details were provided on how the funds were allocated by measure or by type of beneficiary. For 2022, on the other hand, the Ministry of Finance took note of the recommendation issued by the Court of Auditors and produced a document featuring detailed information for each measure introduced in 2020. This document is currently in the process of being published. This process of discussion and providing information should continue. In the future, the Government of Luxembourg should continue such regular exchanges with the Chamber of Deputies on the beneficiaries, targeting and impact of the measures put in place, even in crisis situations.

Monitoring of spending

Monitoring by the Ministry of Finance and the Inspectorate of Finance focused on the fiscal and financial aspects to ensure continuity of the fiscal system and sufficient liquidity. Since Luxembourg has not (yet) introduced performance budgeting, the fiscal authorities were not able to monitor the efficiency or effectiveness of the measures adopted. While such an analysis was not necessarily a priority in the acute phase of the crisis, a budgetary perspective that included performance data would have been useful in the context of a long crisis to determine whether certain measures should have been extended or better targeted. A performance-based approach could also have provided additional information to Parliament, thereby enhancing transparency. In general, performance budgeting would help improve the budget

process in Luxembourg. The approach used by France can serve as an example in this area: annual performance reports attached to the 2020 budget accounts with objectives and performance indicators.

6.4. Targeting and impact of support measures in Luxembourg

Cross-analysis of data on the financial position of businesses in Luxembourg and data on support to business demonstrates that the support measures in Luxembourg met the needs of most businesses (see Box 6.4). The businesses hit hardest by the crisis received the most support. Conversely, measures addressed to all businesses might have benefited businesses that could have weathered the crisis without the need for support, creating a windfall effect. A broad support package would have also heightened the risk of protecting businesses that would have gone bankrupt without the crisis. The available data suggest that this did not happen in Luxembourg. Public support benefited businesses that were in good shape in 2019 and were particularly hard hit by the crisis. The analysis of the impact of the support on businesses' performance also shows that the financial position of most businesses has been protected.

Box 6.4. Description of the data used in this study

The analysis of support's take-up and impact on business performance is based on a database that includes the following data:

STATEC – Central Balance Sheet Office (*Centrale des Bilans*)

The Central Balance Sheet Office holds information on the annual accounts of businesses in Luxembourg (commercial companies, sole traders with an annual turnover of more than EUR 100 000, Luxembourg branches of foreign companies and economic interest groups). The Central Balance Sheet Office covers 66% of the 37 000 businesses in the country (2016), as some businesses are not legally required to file their annual accounts (financial companies, public institutions, self-employed professionals and non-profit associations). Most of the businesses included in the dataset are small businesses (98%).

Microdata on government support (Ministry of Economy, DGCM, Ministry of Finance, General Inspectorate of Social Security)

The DGCM supplied data on the beneficiaries of the main COVID-19 support measures for which it was responsible (lump-sum payments for businesses and self-employed people, repayable advances, recovery support, support for uncovered fixed costs, support for retail businesses and social minimum wage support). Beneficiary businesses are accounted for every time that they received support under the same programme.

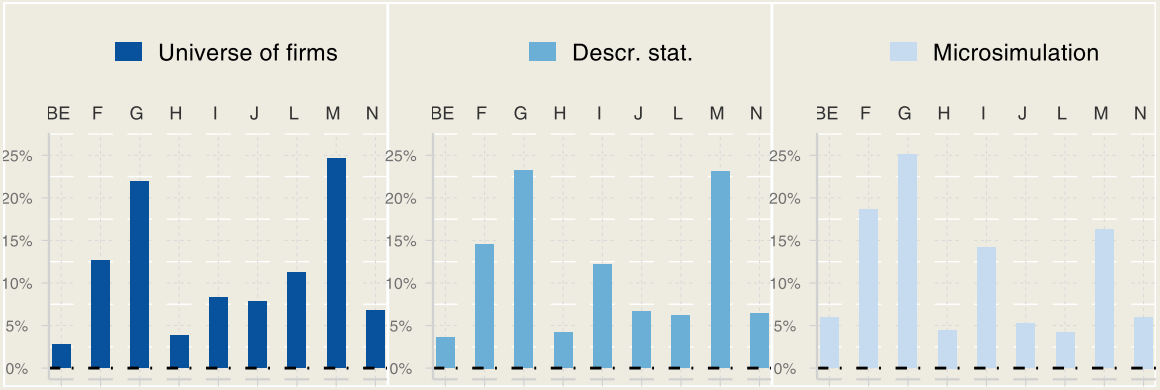
The Ministry of Finance has made available data relating to the beneficiaries of the State guarantee programme. The General Inspectorate of Social Security shared data on beneficiaries of the short-time work scheme and extraordinary family leave for COVID-19 via STATEC.

Consolidated database

The consolidated database built by combining the data listed above excludes financial activities (NACE section K), public administration, education, human health and social work (sections O, P and Q), as well as the activities of households as employers and extra-territorial activities (sections T and U). The data were linked using the business registration number and reference year. The data track businesses from 2016 to 2021, although not all data are available every year. After cleaning, the consolidated database covered 21 247 businesses in 2020, representing 63% of businesses in Luxembourg operating in the sectors of interest (excluding arts and entertainment and excluding other services due

to the lack of public data). The data used for the microsimulation covered only 12%. Nevertheless, the samples are relatively representative at the sectoral level (see Figure 6.14). In addition, businesses with fewer than 50 employees accounted for 97% of the consolidated database (in 2020).

Figure 6.14. Distribution of sectors in the samples studied compared to the distribution of all businesses in Luxembourg



Note: BE=Industry, F=Construction, G=Trade, H=Transportation and warehousing, I=HORECA, J=Information and communication, L=Real estate, M=Specialised, scientific and technical activities, N=administrative and support service activities. Sections R (arts and entertainment) and S (other services) have been excluded here due to a lack of information but are included in the consolidated database. To compare the samples (descriptive statistics and microsimulation) with the universe of firms, the distribution of economic sectors in Luxembourg has been recalculated based only on these sectors (such that the sum of these shares is equal to 100%). The distribution of sectors in Luxembourg is based on 2019 data, which are the most recent available data. The distribution of sectors in our samples corresponds to the year 2020.
Source: STATEC – LuStat and Central Balance Sheet Office, prepared by the authors.

StatLink https://stat.link/ztvnjw

6.4.1. State support targeted the hardest hit sectors and businesses

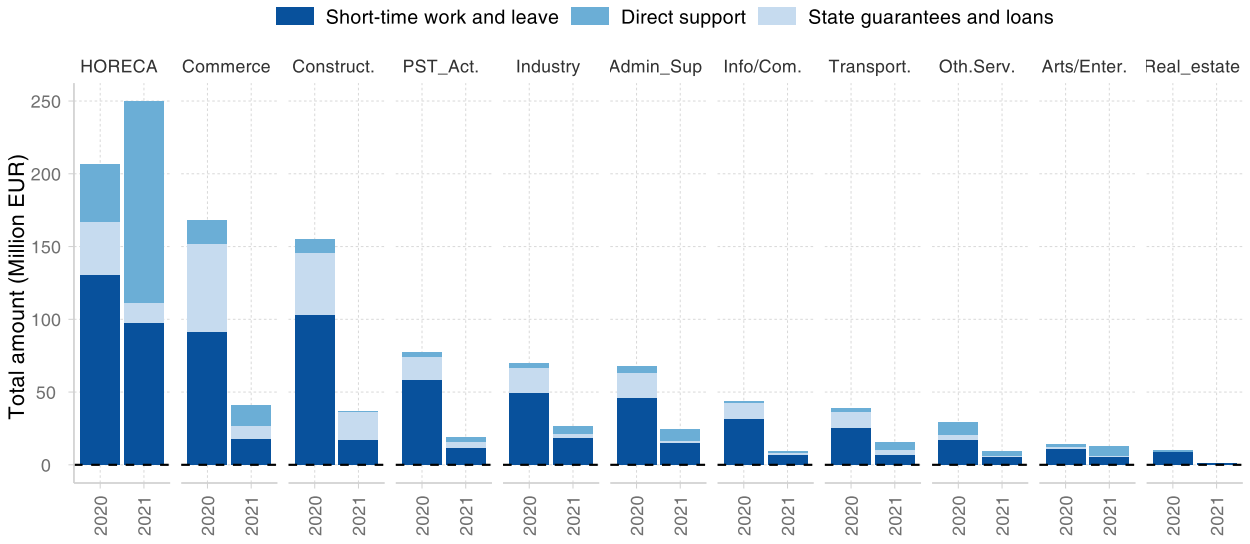
The crisis affected almost all sectors of the economy (excluding the financial sector) and the sample data used in this study confirm that they all received support in 2020, i.e. at the peak of the crisis (see Figure 6.15 and Figure 6.16). The variation in the amounts disbursed in 2021 by sector reflects the evolution of the crisis. Aggregate amounts increased in 2021 for the HORECA sector and remained virtually stable for arts and entertainment (see Figure 6.15). This is due to the sectoral conditions for granting short-time work and the main direct support measures in 2021, as these sectors were considered the "vulnerable" sectors. While the amounts allocated to these two sectors did not decrease in 2021, the number of beneficiary businesses did (see Figure 6.16). The measures thus increasingly targeted vulnerable sectors on the one hand, and the hardest hit businesses within these sectors on the other.

In 2020, employment support measures, direct support and loans mainly benefited three service sectors, which together accounted for 57% of employment support, 70% of direct support and 64% of total loans: accommodation and food services (EUR 130 million in short-time work and leave, EUR 39 million in direct support and EUR 37 million in loans), construction (EUR 102 million, EUR 42 million and EUR 10 million), and trade (EUR 91 million, EUR 61 million and EUR 17 million).

After the sanitary restrictions were relaxed in 2021, the use of these measures became more targeted; the accommodation and food services sector accounted for 48% of short-time work and leave payments and 75% of direct support payments. The trade, construction, and HORECA sectors accounted for 64% of newly allocated State-guaranteed loan funds in 2020, rising to 73% in 2021 (see Figure 6.15 and Figure 6.16).

Figure 6.15. Support targeted the hardest hit sectors

Support disbursed by sector of activity in 2020 and 2021 (in EUR million)

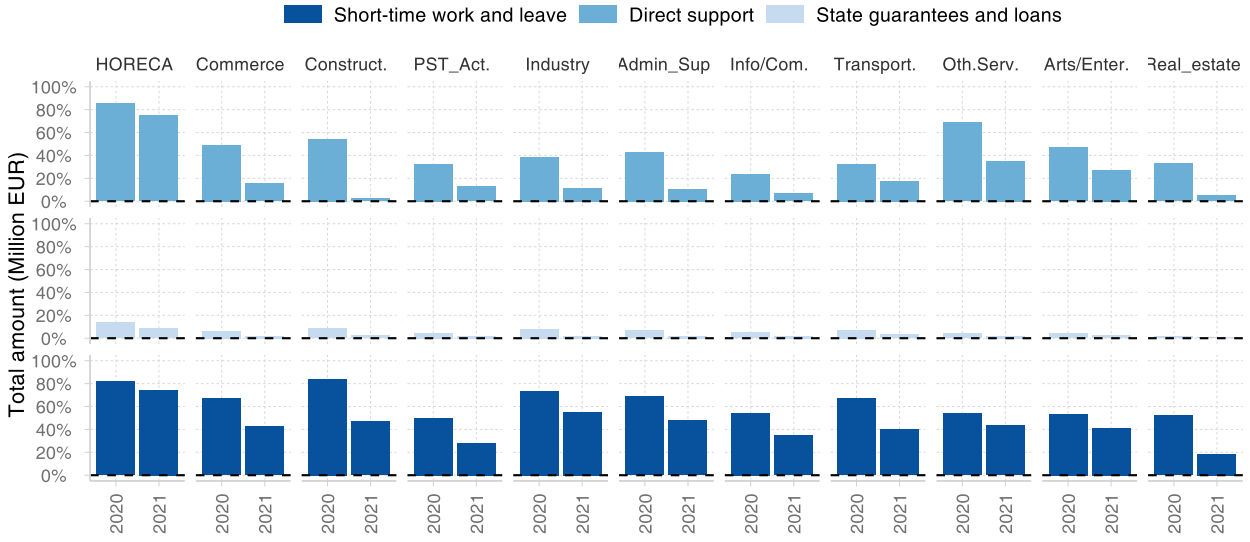


Source: STATEC – Central Balance Sheet Office and DGCM, Ministry of Economy; prepared by the authors.

StatLink https://stat.link/no10r2

Figure 6.16. In 2021, direct support favoured businesses in the HORECA, other services and arts and entertainment sectors

Proportion of businesses receiving support by sector and type of support in 2020 and 2021



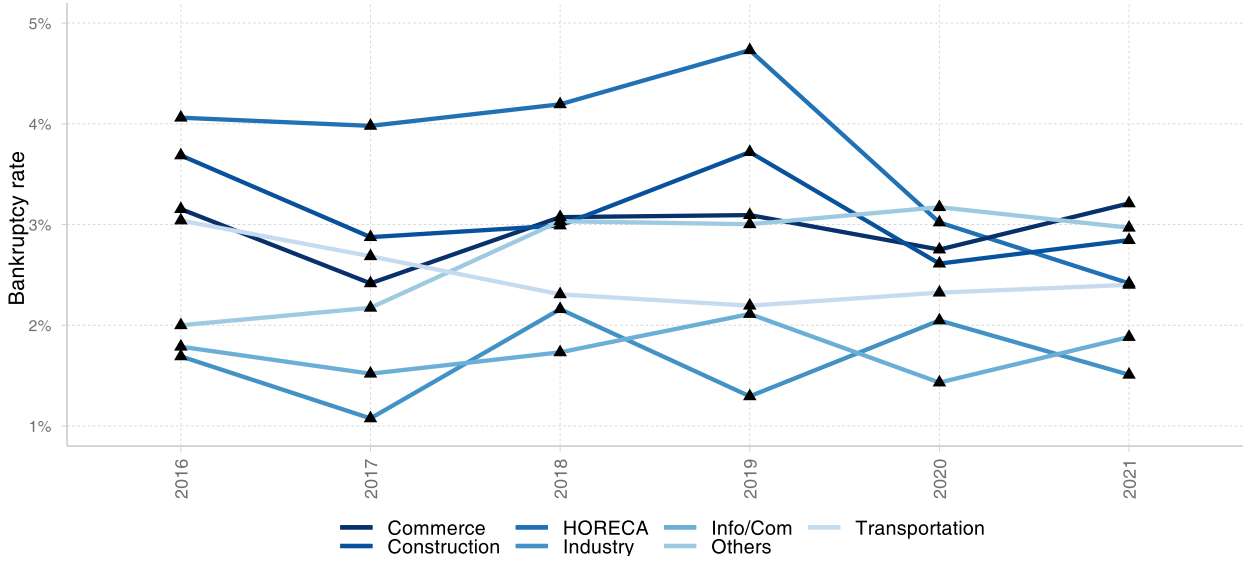
Note: For each type of support, the Figure shows the proportion of all businesses in the sector that benefited from at least one form of support on at least one occasion. A single company may be included in all three categories at the same time.
Source: STATEC – Central Balance Sheet Office and DGCM, Ministry of Economy; prepared by the authors.

StatLink https://stat.link/arh2ks

The impact of the pandemic and the support measures is reflected in the bankruptcy rate for each sector. Figure 6.17 shows the trend in bankruptcies since 2016, based on aggregated public data from STATEC. In 2020, the bankruptcy rate decreased in three sectors (out of seven available). However, HORECA is the only sector in which the bankruptcy rate fell for two consecutive years. This seems to confirm that this sector, which was particularly affected by the pandemic, was particularly targeted by the support measures.

Figure 6.17. In Luxembourg, bankruptcy rates are in line with historical figures, except in the HORECA sector

Bankruptcy rates by sector (%)



Note: Bankruptcy rate = number of bankruptcies divided by the number of businesses in the previous year. Bankruptcy is a state in which a legal entity has ceased payments and can no longer obtain credit from banks, suppliers or creditors. The entity may continue to exist following the conclusion of bankruptcy proceedings, but ceases to exist permanently in the event of dissolution or liquidation. Other = Financial and insurance activities + Real estate activities + Specialised, scientific and technical activities + Administrative and support service activities.
Source: STATEC; prepared by the authors.

StatLink https://stat.link/atpw08

The aim of the measures, as regulated by the European Union, was to target businesses that were healthy before the crisis but suffered a sharp decline in activity in 2020. According to the data collected, the businesses hardest hit by the COVID-19 crisis benefited more from the support measures. This suggests that the support was relatively well targeted. Regardless of the measure concerned, the rate of use increased with the scale of impact on the activity. This relationship becomes even clearer in 2021 (see Figure 6.18).

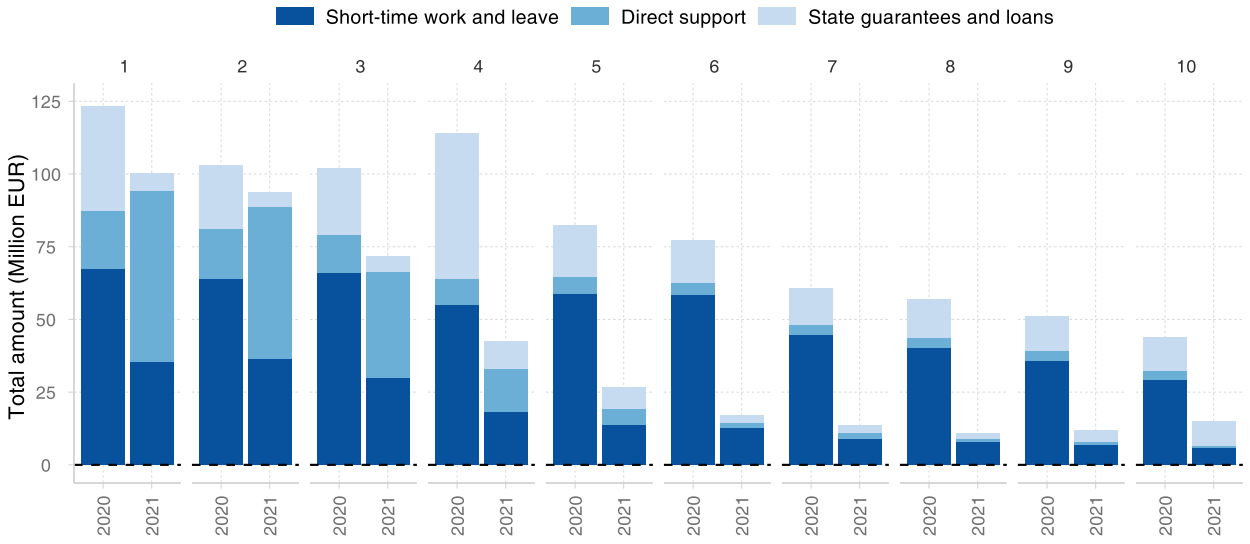
The first four deciles of hardest-hit businesses in terms of reduced turnover in 2020 received 54% of the total support paid out over the period considered. This is in line with the objective of supporting the sectors most exposed to the crisis, and was reinforced in 2021, when the top two deciles received 48% of the total funds allocated (see Figure 6.18).

The data indicates a threshold effect for direct support, some of which was awarded on condition of a reduction in turnover of at least 25% compared to the same month of the previous year.[4] Between the third and fourth decile, the total amount of direct support disbursed decreases more than the reduction in turnover. Adjustments to support measures on the basis of a progressive reduction in turnover could have

avoided this effect. This approach would have helped businesses that were less affected because they adapted better than others. To remedy this situation, all new direct support measures could include a subsidy proportionate to the reduction in turnover to help target businesses more precisely.

Figure 6.18. Support measures targeted the hardest-hit businesses

Support disbursed by decile of turnover growth between 2020 and 2021 (in EUR million)



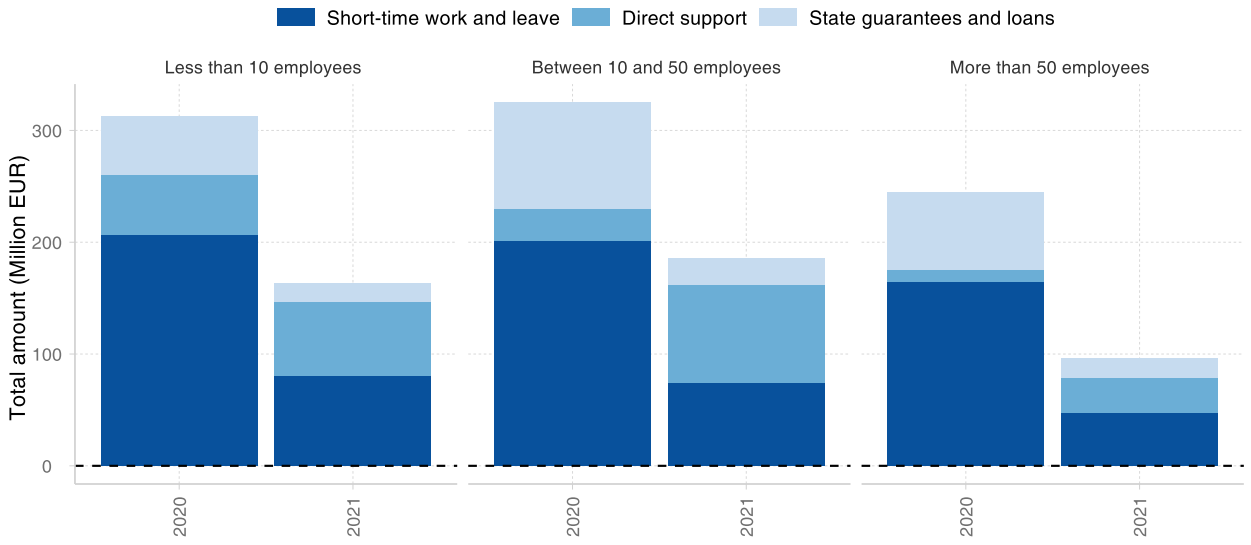
Note: Businesses have been split into ten equally sized categories based on their rate of growth in turnover between 2019 and 2020. The deciles that separate businesses into these ten categories are: -48%, -31%, -22%, -14%, -7%, -1%, 6%, 15% and 37%.
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/fkem1d

In two years, businesses with fewer than 50 employees received 74% of the total amount granted under all support measures (see Figure 6.19). Nevertheless, different beneficiary profiles can be distinguished according to the measures examined. With respect to employment support, the amount of support was divided equally across businesses. Conversely, more than half of direct support went to microenterprises (fewer than ten employees) in 2020. These smaller firms were generally harder hit during the crisis in OECD Member countries (OECD, 2020[10]). The Government of Luxembourg introduced several lump-sum payments specifically for very small businesses, which explains this concentration in 2020. In contrast, direct support was no longer so focused on microenterprises the following year (36%). In 2021, recovery support and support for uncovered fixed costs, which were not conditional on business size, accounted for most of the direct support.

Figure 6.19. Businesses with fewer than 50 employees received more support

Support disbursed by business size in 2020 and 2021 (in EUR million)



Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/fwepor

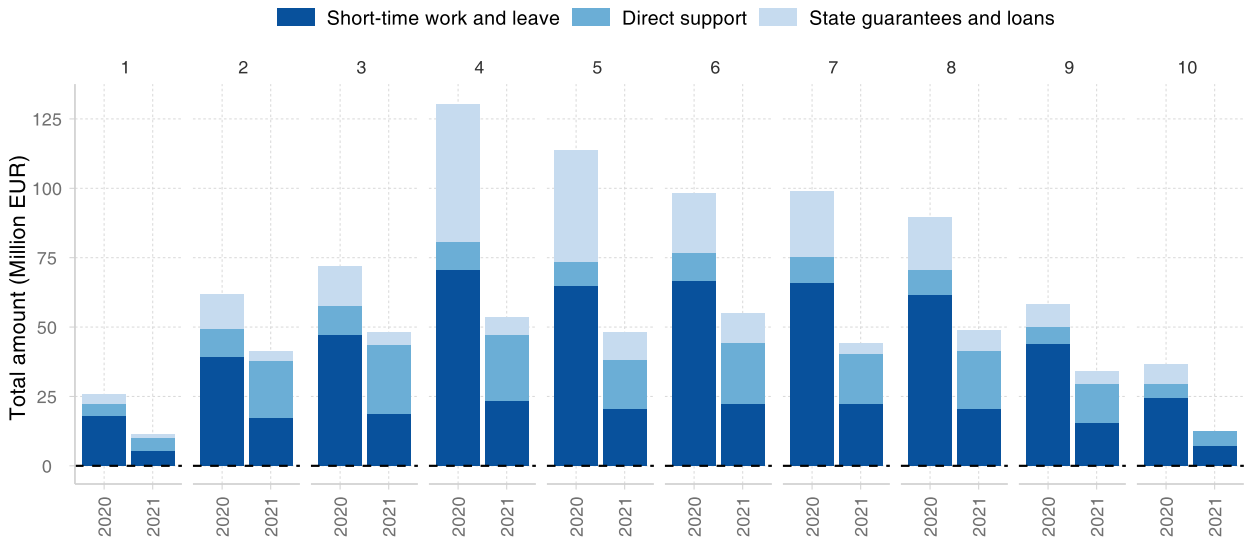
6.4.2. State support targeted healthy companies that needed support during the crisis

Linking data from the Central Balance Sheet Office with administrative data on support measures provides information on the pre-crisis financial position of beneficiary businesses. This information is important in determining whether support measures helped businesses that were already failing before the crisis. The amount of support received by companies in 2020 and 2021 can be broken down by decile of profitability and corporate debt. The upper deciles of the profitability indicators reflect a better financial position, while the upper deciles of the debt indicator include businesses with high financial costs.

In 2020, the rate of use of loans, direct support and employment support by the least profitable firms (first decile of the profitability indicator) and the most profitable firms (last decile of the profitability indicator) was below 7%. Businesses in the fourth decile received 23% of repayable advances and State-guaranteed loans, while those in the fifth decile received 18%. By 2021, the distribution of recipients was more even, although the deciles at either extreme continued to receive less support. Nevertheless, the use of loans shifted in favour of businesses in the sixth decile, which received 20% of loans compared with 11% in 2020 (see Figure 6.20).

Figure 6.20. Businesses with very high or very low profitability received less support

Support received by profitability decile measured in 2019 (in EUR million)



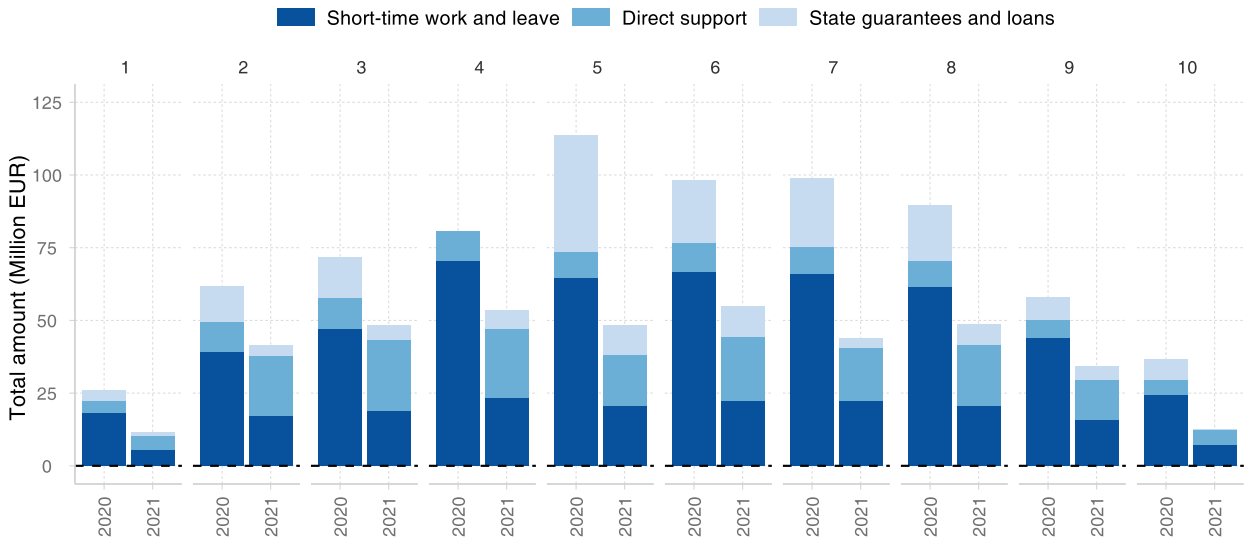
Note: Businesses have been split into ten equally sized categories based on their level of profitability between 2019 and 2020. Profitability = profit for the financial year divided by turnover. The nine deciles that separate businesses into ten categories are: -19%, -5%, 0%, 1%, 2%, 4%, 6%, 10% and 18%.
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/8w6hu3

In terms of the debt indicator, businesses in the sixth and seventh deciles made the most use of loans. The use of the different support measures according to debt level once again reveals a bell curve, with businesses in very good or poor financial health making less use of support measures (see Figure 6.21).

Figure 6.21. Businesses with very high or low debt levels received less support

Support received by decile of debt measured in 2019 (in EUR million)



Note: Businesses have been split into ten equally sized categories based on their level of debt between 2019 and 2020. Debt level = total debts divided by assets. The nine deciles that separate businesses into ten categories are as follows: 15%, 28%, 39%, 52%, 64%, 75%, 89%, 110% and 189%.
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/hu07b9

Overall, disbursements were concentrated among businesses whose financial health before the crisis was average. Businesses in poor or excellent health received less support overall. This remains true to varying degrees regardless of the type of support analysed and regardless of the financial health indicator used, suggesting that firms with very high or very low debt levels received less support overall, and that the support measures therefore largely protected healthy businesses that needed assistance to survive the COVID-19 crisis.

6.4.3. Support measures largely protected the profits, liquidity and solvency of businesses

The health restrictions put in place in Luxembourg from March 2020 to curb the rise in COVID-19 infections hit businesses hard. In some sectors, businesses were forced to deal with a sharp decline in their activity. Some businesses had to reduce their costs and increase their debt levels to meet their payments. This had a significant impact on their financial position. One measure of the impact of the support masures is therefore to estimate the extent to which the support received by businesses actually protected their financial position.

This exercise presents many difficulties. First, data on the financial position of businesses combine the impact of the crisis and the impact of the support received by companies. Furthermore, it is not possible to estimate the impact of the measures by comparing over time (before and after the COVID--19 crisis) the financial position of businesses that received support with similar businesses that did not receive support (for example by using a difference-in-difference estimation), since most businesses in each sector (excluding the financial sector) benefited from support, as shown above (see Figure 6.15).

To overcome this problem, a model has been used to simulate the income statement and balance sheet of companies under three scenarios: 1) no health crisis; 2) a health crisis without financial support from the government; and 3) a health crisis with financial support from the government (see Box 6.5).

The use of this analytical tool makes it possible to draw some conclusions about the impact of support measures. In general, they have helped most beneficiary businesses to reduce their losses and diminish the risk of bankruptcy. In some sectors, such as HORECA, the microsimulation seems to indicate a particularly significant impact, confirming that this sector has benefited from substantial support.

It is important to keep in mind, however, that this is a simplified accounting framework, which does not take into account the interactions between businesses; inter-firm credit, for example, may have been significantly affected when activity declined (Hadjibeyli, Roulleau and Bauer, 2021[11]). The results are based on assumptions about the businesses' cost structures and how these changed during the crisis, as described in Box 6.5. In addition, further assumptions have been made due to the lack of a clear definition of how businesses may have accounted for support in their balance sheets during the COVID-19 crisis, and these assumptions may affect the results (see Box 6.5).

Box 6.5. A simplified accounting framework to estimate the impact of business support measures during the COVID-19 crisis

The microsimulation model is a simple tool which helps assessing and quantifying the impact of the COVID-19 crisis and government intervention on firm level outcomes (profitability, insolvency and liquidity), by allowing the construction of different unobserved counterfactual scenarios. This microsimulation model was developed on the basis of previous work by STATEC (2021[12]), Hadjibeyli et al. (2021[11]), OECD (2021[13]), Gourinchas et al. (2020[14]), Guerini et al. (2020[15]).

The model is built under three different scenarios. In scenario 1, *no COVID-19 crisis*, businesses are in the same financial situation as in 2019, in scenario 2 the COVID-19 crisis takes place, but the government does not intervene, and in scenario 3, the crisis takes place, and the government intervenes supporting firms with liquidity and budgetary measures. In practise, in scenario 2 the COVID-19 crisis affects firms' balance sheets by reducing their profits, eroding their assets and cash flows and by increasing their debt ratio. This increases the probability of the firm becoming illiquid and insolvent. In scenario 3, the COVID-19 shock still takes place but the risks of the firms becoming illiquid and insolvent are counteracted by government intervention, which alleviate labour costs and profits losses. The impact of government intervention on firms profits, liquidity and insolvency is then quantified by comparing these main outcome variables in scenarios 3 and 2 to those in scenario 1.

In practice, the 7 following equations simulate the financial situation of firm *i*, belonging to sector *k*, in scenario *j*=(2,3):

$$(1) Profits^{j}{}_{i,k,2020} = (1+s_k) * Revenues_{i,k,2019} + \left(1+p^{j}{}_{k}\right) Labour\ costs_{i,k,2019} + (1+c_k * s_k) Operating\ costs_{i,k,2019} + (1+s_k) Taxes_{i,k,2019} + Support^{j}{}_{i,k,2020}$$

$$(2)\ Capital^{j}{}_{\mathrm{i,k,2020}} = Capital_{\mathrm{i,k,2019}} + (Profits^{j}{}_{\mathrm{i,k,2020}} - Profits_{\mathrm{i,k,2019}})$$

$$(3)\ Assets^{j}{}_{i,\mathrm{k,2020}} = Assets_{\mathrm{i,k,2019}} + (Capital^{j}{}_{\mathrm{i,k,2020}} - Capital_{\mathrm{i.k,2019}})$$

$$(4)\ \left(\frac{Debt}{Assets}\right)^{j}_{\mathrm{i,k,2020}} = \frac{(debt_{\mathrm{i,k,2019}} + repayable\ advances\&state\ guaranteed\ loans_{\mathrm{i,k,2020}})}{Assets_{\mathrm{i,k,2020}}}$$

$$(5)\ Cash\ flow^{j}{}_{\mathrm{i,k,2020}} = Cash\ flow_{\mathrm{i,k,2019}} + (Profits^{j}{}_{\mathrm{i,k,2020}} - Profits_{\mathrm{i,k,2019}})$$

$$(6)\ Illiquidity^{j}{}_{\mathrm{i,k,2020}} = 1(Cash\ flow^{j}{}_{\mathrm{i,k,2020}} \leq 0)$$

$$(7)\ Insolvency_{\mathrm{i,k,2020}} = 1\left(\left(\frac{Debt}{Assets}\right)^{j}_{\mathrm{i,k,2020}} > 1\right)$$

Equation (1) simulates the profits of firm *i* belonging to sector *k* in 2020, in scenario *j=(2,3)*. In detail. profits in 2020 are a function of firms revenues, labour and operating costs, taxes and government support. The impact of the crisis on firms' revenues in 2020 is captured by the coefficient s_k. This represents the COVID-19 shock in sector *k* and is approximated by the median sectoral growth rate of firms turnover between 2020 and 2019 (computed using monthly data for the March-December period). The parameter p^j_k represents the payroll shock for sector *k* in scenario *j*=(2,3). The payroll shock is calibrated differently in scenario 2 and 3, following Hadjibeyli, Roulleau and Bauer (2021[11]). In scenario 2, p^2_k, is calibrated using the growth rate of firms' total payroll costs between the period March-December 2020 and 2019, under the assumption that all labour costs in 2020, including short time work and workers benefits, are borne by the firm. In scenario 3, p^3_k is computed under the assumption that costs related to short-time work and workers benefits are born by the government. The coefficient c_k represents the adjustment factor of operating costs for sector *k*. It is calculated as the median by sector of the firm level elasticity of operating costs to revenues in the 2017-2019 period. The variable *Support* represents the total support received by each firm. It is equal to 0 in scenario 2. For scenario 3, it is directly measured using firm level data provided from Ministry of Economy and the Ministry of Finance.[1]

The variable *firms' profits* is crucial for quantifying the impact of the crisis on firms' financial vulnerability, which is measured by the concept of *liquidity* and *insolvency*. Liquidity is proxied by the firms' cash flow, defined as the business's ability to cover its operating costs, including taxes and interest payments on its debts, and insolvency indicates the situation in which debt exceeds the assets. Liquidity and insolvency are simulated by assuming that the shock on profits directly impacts firms' capital (equation 2) and leads to an adjustment of assets (equation 3), which in turn impacts the debt ratio (equation 4). The estimated variation in profits also directly affects firms' cash flow (equation 5). When the cash flow is exhausted, the firm is considered illiquid (equation 6) and when debt exceeds the value of assets, the firm is considered insolvent (equation 7).

Factors influencing the vulnerability of businesses due to the crisis

The simulated model is also used to identify the main pre-crisis factors of vulnerability of a firm. This is done by estimating the following regression model based on Hadjibeyli et al. (2021[11]):

$$\Pr(nv_i = 1) = aX_i + \varepsilon_i$$

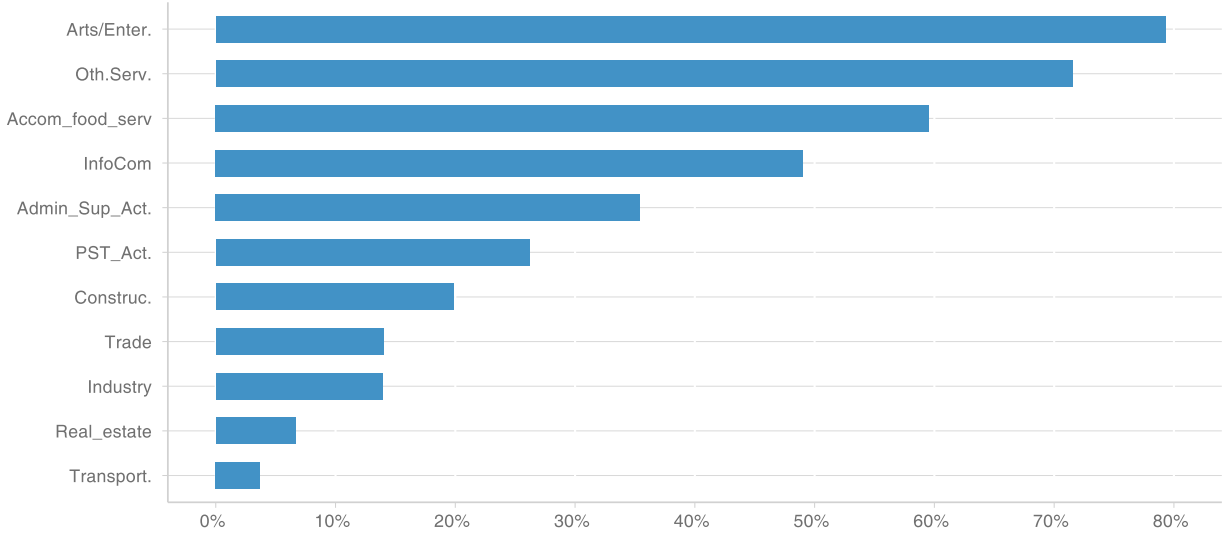
in which the binary variable nvi, which results from the model estimation and takes value 1 if business *i* becomes illiquid or insolvent in 2020 but would have not in the absence of the crisis, is regressed on a vector of explanatory pre-crisis variables (referring to 2019), Xi, that include non-financial characteristics (industry, firm size, age and location) and financial characteristics (assets, debt, cash flow, productivity and employment).

1. Because of lack of accurate information about how each firm records support measures in their balance sheets, it has been assumed that short-time work and family leave are included in the total monthly payroll observed in the data. It has also been assumed that direct support (grants) are excluded from the total revenues declared and observed in the Central Balance Sheet Office.

The contribution of employment support programmes, business subsidies and State-guaranteed loans to earnings before interest, taxes, depreciation and amortisation (EBITDA) varies by sector. The support measures have helped to mitigate the decline in EBITDA. With the support measures, the arts and entertainment, other services, and accommodation and food services sectors benefited from an increase in EBITDA of more than 60% compared to a scenario without any support (see Figure 6.22). This suggests that these sectors would have experienced the most significant decline in EBITDA without support.

Figure 6.22. The impact of support on business profits varies by sector

Median impact of support on businesses' operating income



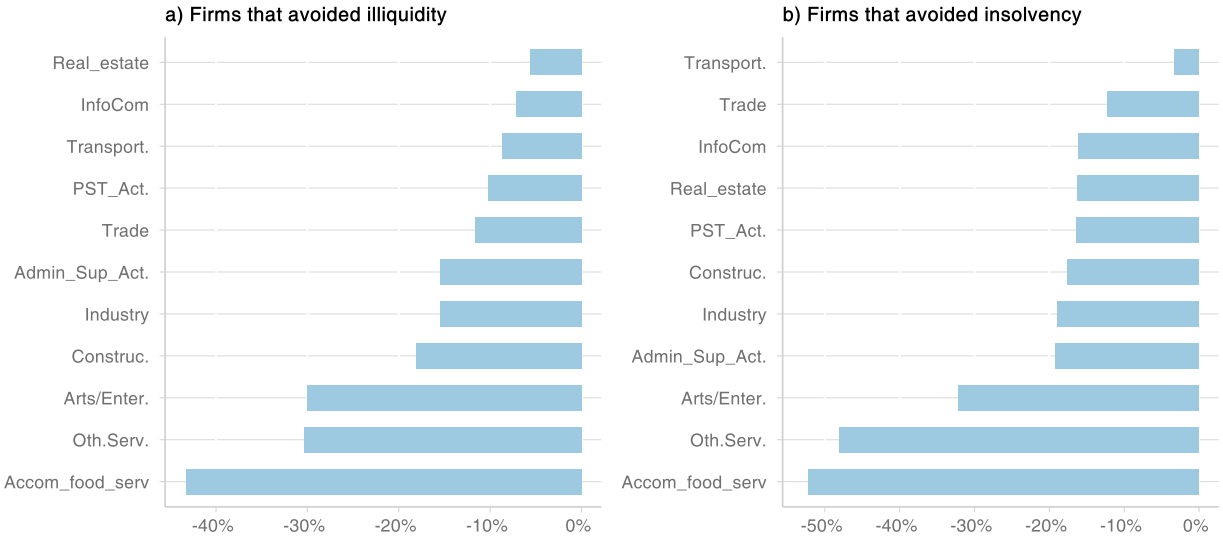
Note: Estimated growth rate of median income in sector between scenario S3 (COVID-19 with government intervention) and scenario S2 (COVID-19 without government intervention).
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/u3v5rl

The microsimulation suggests that the crisis and the support measures had a particularly strong impact on sectors affected by the health restrictions, such as the HORECA or events sectors. Businesses directly impacted by the health crisis benefited from unprecedented public support, which made it possible to sustain their activity by improving their liquidity and solvency. The Government's financial support measures therefore limited cash flow losses and the accumulation of debt by businesses (see Figure 6.23).

Figure 6.23. Impact of support measures on business liquidity and solvency varies by sector

Variation in the number of businesses in financial difficulty compared to the scenario with no support



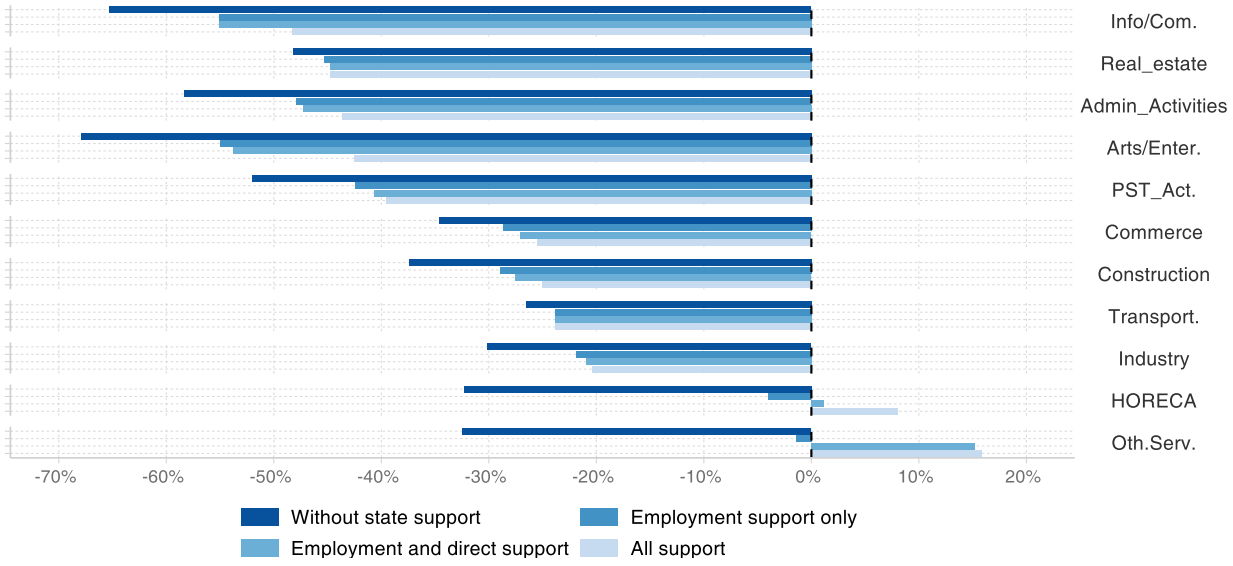
Note: Growth rate of the proportion of illiquid (or insolvent) businesses between scenario S3 (COVID-19 with government intervention) and scenario S2 (COVID-19 without government intervention).
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/0pa2rh

Comparing the growth rates of median income by sector in the different COVID-19 scenarios with the “no COVID” scenario also confirms the effectiveness of the support for all beneficiary sectors. In line with the previous results, the HORECA and other services sectors (associations, personal services, repair of computers and personal and household goods) benefited the most from the Government's intervention, with support measures having a positive effect on income compared with a scenario in which there was no crisis or intervention.

Figure 6.24. Measures helped absorb the impact

Median impact on businesses' operating income: scenarios with COVID-19 compared to a situation with no COVID-19



Note: Growth rate of the median income by sector for four COVID-19 scenarios compared to scenario 1 (no COVID-19 epidemic).
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy (Luxembourg); prepared by the authors.

StatLink https://stat.link/ywl8eb

6.4.4. Some businesses are more likely to become vulnerable due to the crisis

Without drawing any causal conclusion, the results produced by the linear probability model show that some businesses, classified according to pre-crisis variables, are more likely to become vulnerable due to the crisis. These businesses include those in the trade, HORECA and administrative and support service activities sectors, as well as medium and small businesses, which are at greater risk of illiquidity or insolvency compared to large firms (Table 6.3, model 1).

As expected, businesses with more assets or liquidity, or lower pre-crisis debt levels, are less likely to experience difficulties during the crisis. However, businesses with higher productivity are more affected by the crisis. This finding is consistent with the results of a study of the impact of guaranteed loan programmes on business productivity in 14 OECD Member countries (Demmou et al., 2021[13]).

These results are confirmed when a COVID-19 shock is added to the model as a control variable (Table 6.3, model 1), with the exception of the coefficient for the HORECA and administrative and support service activities sectors, which becomes statistically non-significant. This suggests that these sectors were the hardest hit by the crisis, experiencing a sharp decline in turnover and therefore seems to confirm the priority given to these sectors and firms' sizes in the support measures.

When the same model is estimated using data recorded for the pre-crisis period (2017-2018-2019), the results are similar. However, it is interesting to note that in this case, unlike the results estimated by models 1 and 2, more productive firms have a lower probability of becoming insolvent or illiquid. This finding suggests that during the COVID-19 crisis, healthier companies also faced the risk of becoming insolvent or illiquid.

Table 6.3. Factors influencing the vulnerability of businesses to the crisis

Dependant variable: being illiquid or insolvent	**Model (1)** During the crisis	**Model (2)** During the crisis	**Model (3)** Before the crisis
Age $_{t-1}$	-0.002***	-0.0016*	0.0003
	(0.00)	(0.00)	(0.0002)
Sector (compared with PST activities)			
Administrative and support activities	0.065*	0.04	0.039***
	(0.03)	(0.03)	(0.0085)
Real estate activities	0.05	0.02	0.076***
	(0.03)	(0.03)	(0.0095)
Arts, entertainment	0.117*	0.05	0.10***
	(0.06)	(0.06)	(0.0199)
Other services	0.03	0.03	0.097***
	(0.03)	(0.03)	(0.0113)
Trade	0.074***	0.08***	0.062***
	(0.02)	(0.02)	(0.0056)
Construction	0.04	0.04*	0.0069
	(0.02)	(0.02)	(0.0060)
HORECA	0.142***	0.07	0.105***
	(0.02)	(0.04)	(0.0076)
Industry	0.02	0.02	0.0514***
	(0.03)	(0.03)	(0.0092)
Information and communication	0.04	0.04	0.0465***
	(0.03)	(0.03)	(0.0082)
Transportation and warehousing	0.01	0.02	0.057***
	(0.03)	(0.03)	(0.0093)
Size (t-1) (in comparison with large)			
medium	0.074*	0.14*	-0.078***
	(0.03)	(0.06)	(0.0093)
small	0.03	0.08*	-0.0611***
	(0.02)	(0.04)	(0.0052)
Other features			
zombie $_{t-1}$	0.125*	0.03	0.060*
	(0.05)	(0.05)	(0.0232)
ln(asset)$_{t-1}$	-0.311***	-0.33***	-0.224***
	(0.01)	(0.01)	(0.0034)
ln(debt level) $_{t-1}$	0.264***	0.27***	0.2081***
	(0.01)	(0.01)	(0.0028)
ln(productivity) $_{t-1}$	0.046***	0.05*	-0.0291***
	(0.01)	(0.01)	(0.0022)
ln(cash flow) $_{t-1}$	-0.012*	-0.012*	-0.0128***
	(0.00)	(0.00)	(0.0012)
COVID-19 impact		-0.42*	
		(0.21)	
Fixed effects of the year	No	No	Yes
Const.	0.76***	0.77***	1.00***
	(0.09)	(0.10)	(0.0248)

Dependant variable: being illiquid or insolvent	**Model (1)** During the crisis	**Model (2)** During the crisis	**Model (3)** Before the crisis
Year	2019-2020	2019-2020	2017-2018-2019
N obs	5 075	4 456	34 419
R2	0.4	0.4	0.4

Note: * indicates a 10% significance level, ** indicates a 5% significance level and *** indicates a 1% significance level. Illiquidity = 1 if the business has negative capital, otherwise = 0. Insolvency = 1 if the business's total debts exceed its assets. "Large" businesses have more than 50 employees, "medium" businesses have between 10 and 49 employees, and "small" businesses have fewer than 10 employees. Zombie = 1 if the business's EBITDA is less than its interest payments for at least two consecutive years and if the business is at least ten years old. Assets = total assets. Debt level = total debts divided by assets. Total debts = bank debts + tax debts + other debts. Productivity = gross value added divided by number of employees. Gross value added = turnover + other income - operating expenses. Cash flow = cash in banks, balance in postal checking accounts, cheques and cash on hand. COVID-19 impact = annual growth rate of turnover between 2019 and 2020. PST = Professional, Scientific and Technical services.
Source: STATEC – Central Balance Sheet Office, and data from the DGCM, Ministry of Economy, Luxembourg; compiled by the authors.

It will be necessary to continue to monitor certain sectors, such as HORECA, and the small businesses that were hardest hit during the COVID crisis, as new crises are emerging, and some sectors will be affected by structural changes due to the spread of remote working and videoconferencing. The risks of illiquidity and insolvency remain, and so targeted support measures will be required. In the future, Luxembourg should set up a monitoring unit at the DGCM to track the financial position of businesses and put in place targeted support in consultation with social partners. The unit should also monitor the impact of the crisis on the self-employed.

Existing databases will also need to be better integrated and their use facilitated to support monitoring of sectors experiencing economic difficulties. While ensuring that data remains confidential, the economic ministries should be given the ability to access business performance data, allowing them to target support measures if necessary. It would therefore be appropriate to involve STATEC in establishing the DGCM monitoring unit and facilitate the use of business data to target support measures.

6.5. Summary of recommendations

6.5.1. Improve the targeting of support measures

- **Take better account of the self-employed**: it will be important to assess the needs of the self-employed and take their needs into account, including by creating a recurrent support measure at the very onset of a crisis, or by including the self-employed under the short-time work scheme.
- **Monitor the hardest-hit sectors in the short term to ensure their resilience to crises**: this could be done by establishing a monitoring unit at the DGCM to track businesses' financial position and put in place targeted support measures in consultation with social partners. The unit should also monitor the impact of the crisis on the self-employed.
- **Better integrate and facilitate access to businesses' administrative and balance sheet data**: to support monitoring of sectors experiencing difficulties, existing databases will need to be better integrated and their use facilitated. Involving STATEC in establishing the DGCM monitoring unit will be important to facilitate the use of business data to target measures.
- **Consider some degree of progressivity for access support to better target any future intervention**: eligibility criteria for direct support created a threshold effect. Adding some degree of progressivity would have helped to improve targeting. If necessary, all new direct support measures could include support proportionate to the reduction in turnover to help target businesses more precisely.

6.5.2. Strengthen the implementation of business support measures

- **Consider setting up a consultation structure with social partners for all future interventions**: it will be important to set up a more formal framework facilitating dialogue with social partners for the implementation of support measures. This framework could help improve the targeting of direct support and monitor its implementation. Such a framework could build on the monitoring unit recommended above and also include representatives of the self-employed.
- **Continue to simplify and digitalise administrative procedures**: the process of digitalising administrative practices proved valuable during the crisis and should continue. The Ministry of Economy and the DGCM could conduct an in-depth analysis of the administrative procedures concerning businesses, especially small and medium-sized businesses, to simplify and digitalise them. This effort could build on the tools put in place during the crisis.
- **Continue to support Parliament's information-sharing and control role:** this will require informing the Chamber of Deputies about the beneficiaries, targeting and impact of the measures implemented, even in crisis situations, and planning to provide this type of information for all future interventions.

6.5.3. Improve the information provided to Parliament

- **Continue a regular exchange with the Chamber of Deputies** on the beneficiaries, targeting and impact of the measures implemented, even in crisis situations, and plan to provide this type of information for any future interventions.

6.5.4. Evaluate the impact of support over the long term

- **Continue monitoring and evaluating business support measures:** more evaluations of the impact of the support measures, including on business performance, could be conducted. For this purpose, it will be important to involve all public authorities to evaluate the relevance of each of the measures for investment, the sustainability of businesses and job creation, considering all support measures put in place.

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Notes

[1] An exception to this rule was made during the period of sanitary restrictions in December 2021 and January 2022, when shops and personal care businesses received the support automatically.

[2] The ADEM operates under the supervision of the Ministry of Labour, Employment and the Social and Solidarity Economy. Its remit includes registering unemployed people as jobseekers, determining their rights to benefit payments, paying their benefits and helping them access the measures it puts in place to support their return to the labour market.

[3] The online form available on the website was developed by the Ministry of Economy with support from the Government IT Centre.

[4] To receive support from the Recovery Fund, businesses had to register a reduction of at least 25% in turnover compared to the previous year. For support for uncovered fixed costs, turnover generally had to have fallen by at least 40% compared to the previous year.

7 Luxembourg's labour market and social policy response to the COVID-19 crisis

Labour market and social policies in Luxembourg were relatively well prepared going into the COVID-19 pandemic. As employees fell ill, reduced their working hours or lost their earnings, paid sick-leave, family leave, job retention schemes and unemployment benefits kicked-in. Existing schemes were extended and reinforced, while new measures were adopted to respond to emergent needs. The tight labour market coming out of the crisis has aided a strong recovery, and many of those deeply affected have since recovered their livelihoods. Nevertheless, there remains scope for fine-tuning policies to ensure, if such a crisis happens again, support reaches everyone who needs it, and no one is left to fall through the cracks. This chapter examines the main labour market and social impacts of the COVID-19 crisis in Luxembourg, and presents a first review of the measures taken by Luxembourg authorities to support the jobs and livelihoods of those affected.

Key findings

Luxembourg's labour market was heavily affected by the crisis. Unemployment rates rose by 1.8 percentage points while the number of hours worked fell 10 percent on the previous year. Yet the recovery has been swift and strong. Employment rates now exceed their pre-crisis levels and inactivity rates have fallen to levels not seen since prior to the financial crisis. The concentrated sectoral nature of the crisis, however, left some groups acutely exposed.

Containing the COVID-19 pandemic called for unprecedented restrictions on social and economic activity. While necessary, these restrictions caused widespread disruption to people's lives, jobs, and incomes. Luxembourg was, in many ways, well prepared for the shock, with jobs shielded by existing paid sick leave and job retention schemes, an exceptional family leave, and generous unemployment insurance and social assistance systems in place to protect livelihoods. These measures, rapidly extended to adapt to the demands of the crisis, have helped to minimise job losses and sustain the incomes of many.

Notwithstanding this, they did not reach all those whose livelihoods were affected. Accelerated access to job retention support dampened the impact of the labour market shock, and at the peak of the crisis close to 2 in 5 of all dependent employees were supported by the scheme. Yet self-employed workers were not covered by the scheme, and many are likely to have faced financial distress. Other workers – such as young people, and those on temporary contracts – while in principle protected by the scheme appear, de facto, to have had more difficulty in accessing support. This is because channelling support through employers, renders targeting dependent on employer incentives. These incentives are shaped by hiring and firing costs which are themselves are dependent on tenure, and contract type. Those with short work histories and precarious contracts may, therefore, struggle to access support. Alongside this, young workers and those on temporary contracts, with their shorter or patchier employment histories, will also have been less likely to meet the minimum employment criteria to qualify for unemployment benefits, and below-25 year-olds do not have direct access to Luxembourg's main social assistance benefit.

Luxembourg introduced new and generous measures to support parents and caregivers who were no longer able to rely on the school and care facilities that enabled them to go to work. This family leave was an essential, and innovative, element of Luxembourg's emergency response to the crisis. The policy enabled parents to retain jobs and income while ensuring their children were taken care of. During the confinement in spring 2020, close to 40% of eligible parents benefited from this policy, and it is likely to have played an important role in avoiding the swell in the gender gap in employment rates seen in a number of OECD countries. However, the gender imbalance in the take-up of such policies may have pernicious long-run consequences if women suffer from extended absences from the labour market. Paid sick leave, which replaced 100% of earnings, was key to protecting workers and ensuring those who were sick with COVID-19 stayed isolated. However, in a similar crisis it would be important to ensure *all* workers had access to paid sick leave.

With its comprehensive and generous systems for the protection of employment and livelihoods, Luxembourg was well placed to support its population through the COVID-19 pandemic. The policies introduced, and the extensions agreed, were timely and responsive to the needs emerging from the pandemic. However, this support was not available and accessible to all workers – the young, those with interrupted employment histories and the self-employed were among the most vulnerable. These workers, concentrated in the most heavily impacted sectors, were often less able to access the support provided by *chômage partiel*, income support and even sick leave. These gaps in Luxembourg's comprehensive safety net should be addressed in a future pandemic.

7.1. Introduction

In the early months of 2020, the outbreak of COVID-19 caused a profound disruption, both to lives and to livelihoods across the OECD. Indeed, containing the COVID-19 pandemic called for unprecedented restrictions on social and economic activity. In Luxembourg, the Grand Duc declared a state of crisis on 18 March 2020 and endorsed a full lockdown, requiring the closure of all non-essential shops and schools, and imposing severe restrictions on mobility.[1] As employees fell ill, reduced their working hours or lost their earnings, paid sick-leave, family leave, job retention schemes and unemployment benefits kicked in to protect their jobs and incomes. Existing schemes were extended and reinforced, and new measures were adopted to bridge the gaps. This chapter examines the main labour market and social impacts of the COVID-19 crisis in Luxembourg, and presents a first review of the measures taken by Luxembourg authorities to support the jobs and livelihoods of those affected by the COVID-19 pandemic.

The policies introduced in Luxembourg in response to the pandemic were timely and largely responsive to emergent needs. The tight labour market coming out of the crisis has aided a strong recovery, and many of those deeply affected have since been pulled back to work. Nevertheless, there remains some scope for fine tuning to ensure that, if such a crisis happens again, support reaches everyone who needs it, and no one is left to fall through the cracks.

This chapter begins with an analysis of the impact of the pandemic on Luxembourg's labour market and social outcomes. It examines the impact of the crisis on job loss and hours worked and analyses how the impact fell with particular force upon certain groups of Luxembourg's workers and their families. The analysis draws primarily on two data sources: for cross-country analysis the chapter makes use of the European Labour Force Survey (EU-LFS) which is highly standardised across countries but comes with certain drawbacks. Notably, the EU-LFS has a limited sample size and no coverage of cross-border workers. For more detailed analysis of labour market patterns of more specific groups, and for evidence on take-up and coverage of support policies, this chapter therefore uses more detailed microdata provided by the *Inspection Générale de la Sécurité Sociale* (IGSS), which capture the entire population and include cross-border workers.

Following the analysis of labour market trends, the chapter then turns to the primary policies adopted to cushion this impact; protecting jobs through Job Retention Schemes (JRS), exceptional family leave, and paid sick leave, and protecting income through unemployment benefits, social assistance, and targeted support to vulnerable groups.

7.2. The impact of the COVID-19 crisis on labour market and social outcomes in Luxembourg

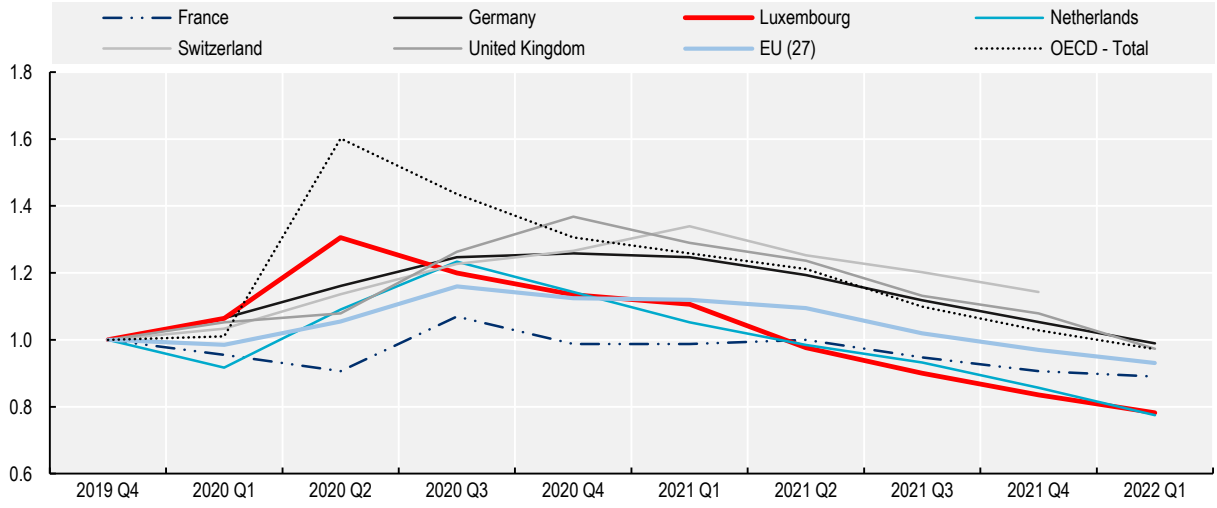
7.2.1. Luxembourg's labour market was heavily affected by the crisis, but has made a strong recovery since

The COVID-19 pandemic had a profound impact on labour markets across the OECD and, by the second quarter of 2020, unemployment rates hit levels nearly 3.5 percentage points above those seen prior to the pandemic (see (OECD, 2020[1]) and (OECD, 2021[2])). While Luxembourg was no exception to this trend and saw unemployment rates rise by 1.8 percentage points in the space of just three months, the impact was relatively modest compared to the OECD average. The muted impact in Luxembourg – and in many other European countries employing such schemes – was, to a large extent, due to the heavy use of Job Retention Schemes (JRS) – in Luxembourg, *chômage partiel.* Such job retention programmes seek to minimise job losses, and enable a quick resumption of economic activity, by funding a significant share of lost wages for employees who work reduced hours – or not all – on a temporary basis.[2]

Two years into the pandemic economic activity has made a strong recovery and unemployment rates in many OECD countries are close to – or even below – their pre-crisis levels (Figure 7.1). In Luxembourg, where unemployment was a little higher than in some peer countries before the crisis[3], the unemployment rate has continued to fall since May 2020 and is now substantially (1.2pp) below its pre-crisis level. These levels have not been seen since prior to the global financial crisis.

Figure 7.1. The unemployment rate in Luxembourg has come down to below its pre-crisis level

Seasonally adjusted unemployment rates indexed to pre-pandemic levels (Q4 2019 = 100), 15-64



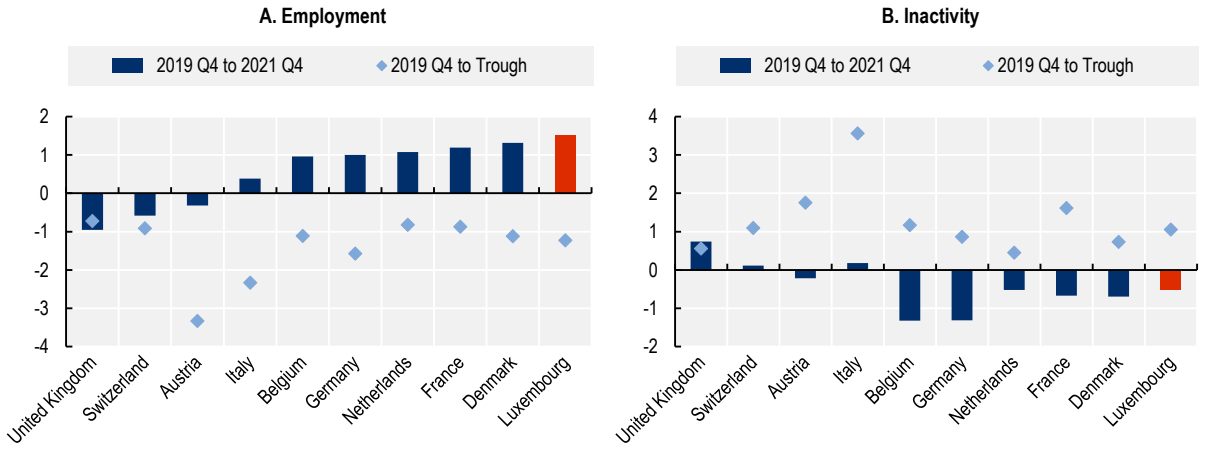
Source: OECD Short-term Labour Market Statistics (2022) https://stats.oecd.org/.

StatLink https://stat.link/ry7u6d

However, unemployment rates do not paint a complete picture of the labour market impact of the crisis. Alongside the unemployed, many people – both inside and outside the labour force – would have liked to work more. During the COVID-19 lockdowns, many of those who lost their jobs were unable to search for work because their sector was effectively closed for business. Furthermore, the widespread school and care facility closures brought unforeseen care duties for many workers – often mothers – making paid work difficult. Though they left employment, these workers were not formally counted as unemployed. Instead, they were included in the inactive population because they were neither available nor actively searching for work. Indeed, at the peak of the first wave in Luxembourg, during the first quarter of 2020, employment rates fell to under 67%, 1.23 percentage points short of their pre-pandemic levels, while inactivity rates peaked at 29% – 1.1 percentage points above its pre-crisis level (Figure 7.2). This increase in inactivity, was substantial compared to other OECD countries. For example, Germany saw an increase of just 0.9 pp and the Netherlands just 0.5pp. Nevertheless, it was less pronounced than in a number of neighbouring countries such as France (1.6pp), or elsewhere such as Austria (1.8pp) and Italy (3.6pp). Furthermore, employment, and to a lesser extent inactivity, have since made a strong recovery.

Figure 7.2. The employment rate is higher, and inactivity lower, than they were before the crisis

Percentage-point changes, Q4 2019 to Q4 2021 and Q4 2019 to trough/peak, seasonally adjusted



Note: Countries are sorted by the change in employment rates since before the crisis in ascending order.
Source: OECD Short-term Labour Market Statistics (2022) https://stats.oecd.org/.

StatLink https://stat.link/jaug5l

7.2.2. Many workers in Luxembourg started teleworking during the crisis

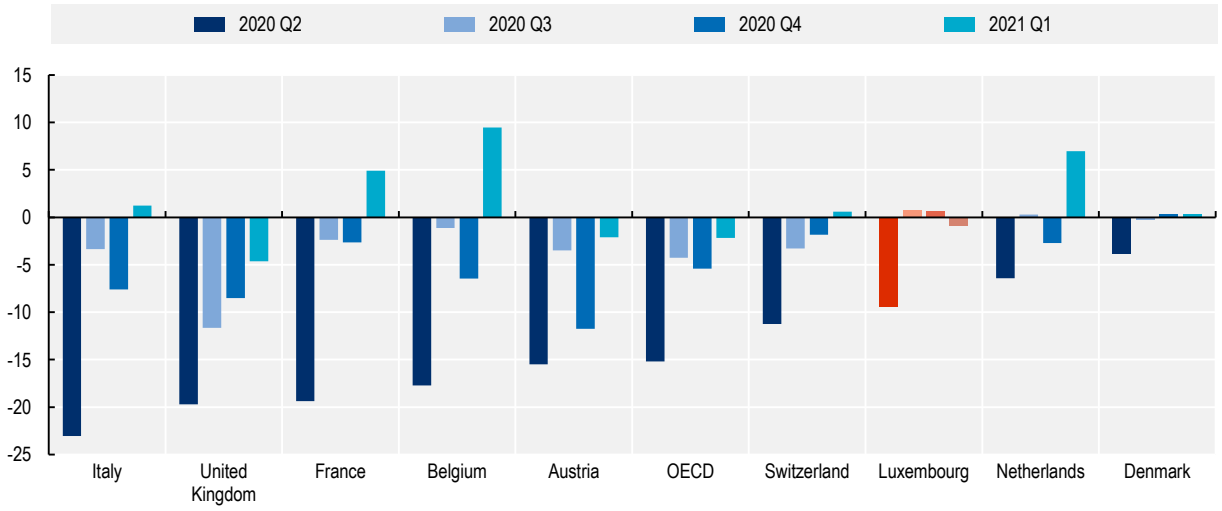
Increasing unemployment and inactivity during the early months of the pandemic were largely driven by job loss among those workers requiring physical proximity to undertake their work. In Luxembourg, however, the dominance of high-skilled services that do not require such physical proximity meant that many workers were able to transition to telework. This sectoral concentration, no doubt, played an important role in dampening the extent of job loss in Luxembourg. Close to three in every four jobs in Luxembourg can be done remotely (OECD, 2021[2]).

Among all OECD countries, Luxembourg has by far the lowest share of workers working in occupations put at risk by mandated closures (Basso et al., 2020[3]).[4] Indeed, the proportion of employees working remotely saw an unprecedented leap following the outbreak of the crisis, reaching an historic peak of 52% in the second quarter of 2020. This was more than double the pre-crises figure (STATEC, 2022[4])[5] and significantly higher than the 39% average across the OECD (OECD, 2020[1]). The rise in telework was particularly pronounced in the financial and insurance sector and in extraterritorial organisations (i.e. international organisations and diplomatic services), and concentrated among qualified white-collar workers (STATEC, 2021[5]). Those who could not telework had to reduce their working hours, yet the shock was short-lived in Luxembourg

Many of those who were unable to work from home had to reduce their working hours, due to the widespread recourse of employers to the *chômage partiel* scheme. In just one month, the number of employees receiving support under *chômage partiel* increased from just 820 in February 2020 to 103 438 in March 2020. The construction sector accounted for the largest share, at over 31% in March 2020. As a result, changing hours worked gives a more complete picture of the labour market impact of the crisis, capturing not only unemployment and wider joblessness but also the impact on people working less than they normally would. Hours worked in Luxembourg fell by 10% during the first quarter of the crisis, relative to the previous year, a much more muted impact compared to countries such as Italy (-23%), the United Kingdom (-20%), France (-19.4%) as well as the OECD average (-15%). Furthermore, the loss in hours worked was quick to recover, with hours exceeding pre-crisis levels already in the third quarter of 2020 (Figure 7.3).

Figure 7.3. Total hours worked in Luxembourg declined by less and recovered more quickly than in many peer OECD countries

Percentage change, year on year



Notes: EULFS hours data not available for Germany during this period.
Source: OECD calculations based on the European Labour Force Survey.

StatLink https://stat.link/jhn94g

Unlike in most other OECD countries, the aggregate fall in hours worked in Luxembourg was largely accounted for by workers who remained in their jobs, working reduced or even zero hours. This can be seen by breaking down the source of the reduction in aggregate hours as resulting from job losses (i.e. the *extensive* margin) or reduced working hours among workers who remain employed (i.e. the *intensive* margin). In fact, net joblessness in Luxembourg – net of population change – appears to have *declined* incrementally during this period. These results stand in stark contrast to those in the majority of OECD countries – even those who, like Luxembourg, relied heavily on JRS. The heavy reliance on job retention support is likely to have supported the rapid recovery in hours worked seen in quarters 3 and 4 of 2020 as the health crisis dissipated and workers were able to return to their jobs.

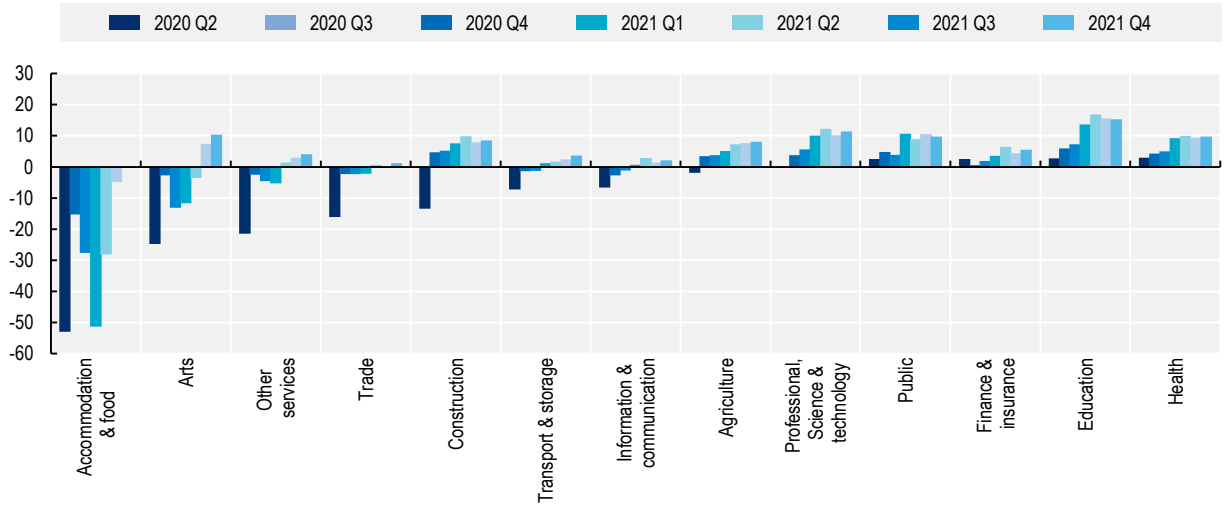
As unemployment rates have declined, a growing share of those who remain unemployed are now the long-term unemployed. In March 2022, those out of work for 12 months or more accounted for 48.7% of all jobseekers, compared to 43.1% in February 2020, though the number of long-term unemployed people has been declining since the beginning of 2021 in absolute terms. The long-term unemployed require particular attention and support, and, in the context of a tight labour market and an ageing population, they should be considered as a resource on the Luxembourg labour market.

While the initial shock of the COVID-19 crisis was felt across large swathes of the Luxembourg economy, some sectors were particularly hard hit, and have been slow to recover. Accommodation and food services, as well as the arts sector, were initially most severely impacted, with the number of hours worked plummeting in the second quarter of 2020 by 53% and 25%, respectively (Figure 7.4). Wholesale and retail trade, as well as construction, also experienced large declines in total hours worked, at -16% and -14%, respectively. At that time, expectations that closures would be short-lived prompted widespread use of Luxembourg's *chômage partiel*. The result was a strong rebound in most sectors in the third quarter of 2020 as theatres and cinemas reopened, trade recommenced, and many of those on *chômage partiel* indeed returned to work. However, some of these sectors, such as hospitality and the arts, took a second hit during the second wave of the pandemic in the third quarter of 2020 as a result of new, more targeted,

limitations on work, culture and social interactions. Meanwhile, other sectors saw hours worked rise to levels even *higher* than those seen prior to the crisis.

Figure 7.4. The impact on hours worked in the arts and hospitality was profound and sustained

Hours worked in Luxembourg, percentage change, year on year



Note: Hours are not defined for the self-employed.
Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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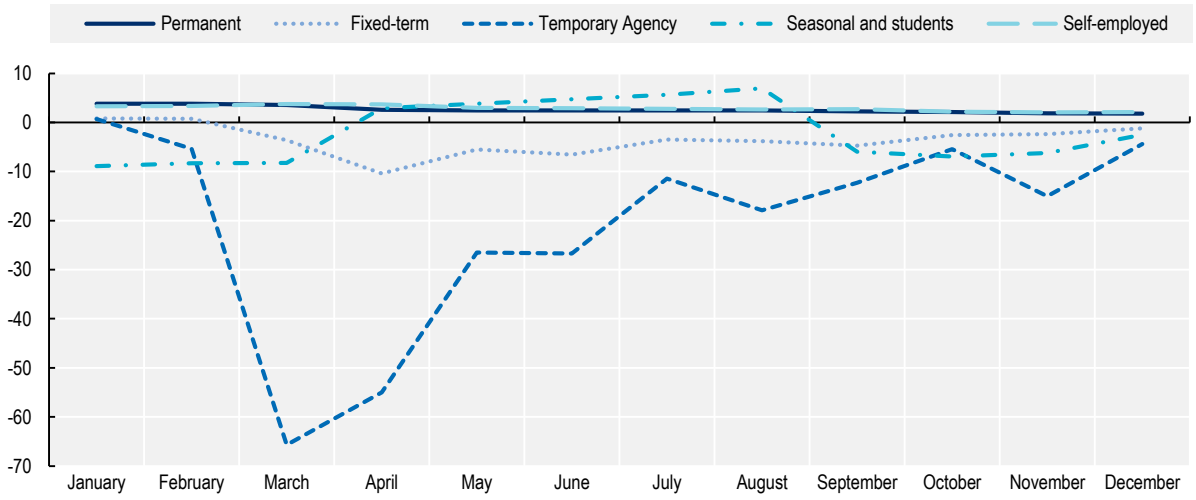
7.2.3. The concentrated sectoral impact of the crisis in Luxembourg, and nature of support, left some groups acutely exposed

The impact of the crisis differed substantially across groups of workers depending, to a large degree, on their sector of employment and the types of jobs they held. Workers in heavily impacted sectors and in jobs deemed "non-essential" that required physical proximity and therefore could not be carried out from home saw their work disappear, while those in precarious work and on unstable contracts found themselves to be less protected by the deep employment support that was provided by *chômage partiel* (Figure 7.5). The pandemic exacerbated labour market inequalities to the extent that more disadvantaged socio-economic groups – the low paid, those with a low education, and young people – are over-represented in these sectors and jobs (Figure 7.6).[6]

Figure 7.5. Temporary workers saw a big drop in employment

Percentage change year on year in employment 2019-20



Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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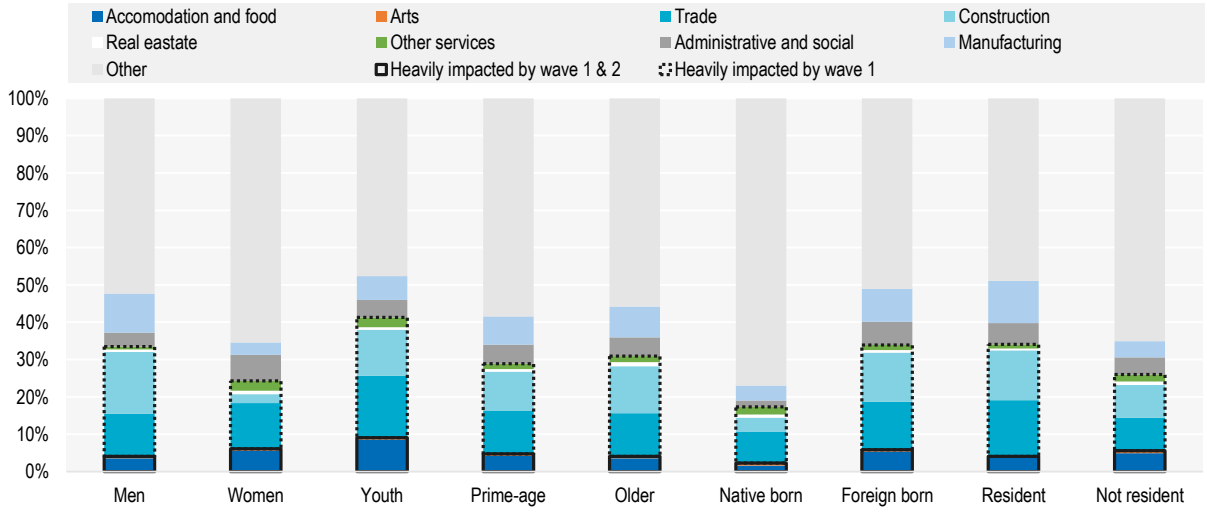
Figure 7.6. Sectoral concentration of socio-demographic groups in Luxembourg prior to the crisis

Percentage of workers in different sectors by socio-demographic group in Luxembourg, 2019



Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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7.2.4. Women experienced compounding burdens from the crisis, but in Luxembourg employment rates have more than recovered and have improved relative to men's

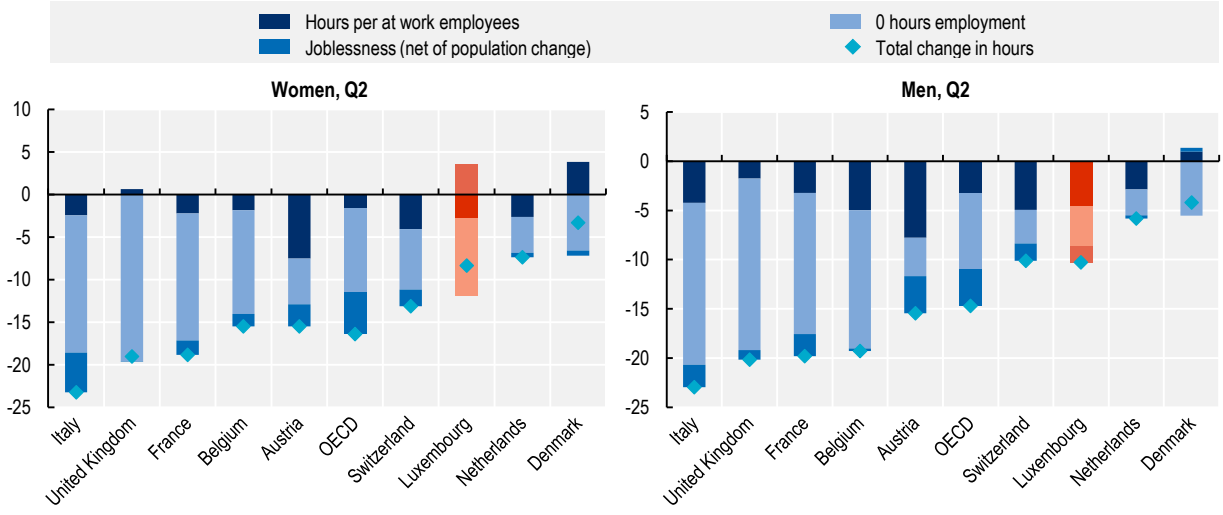
The COVID-19 crisis, through its peculiar nature as a public-health crisis, has had a gendered impact on labour market and social outcomes, and brought specific challenges for women (OECD, forthcoming[6]). Women were at the forefront of the fight against the COVID-19 virus being over-represented in many health and long-term care professions. At home, women often faced increased care burdens for children and elderly or frail relatives when formal care services were closed or disrupted, which compounded with the often much greater share of unpaid work they were doing already. Indeed, in a survey carried out during the first pandemic wave (LISER, 2021[7]), the self-reported hours spent on childcare were 60% higher for mothers than for fathers before the lockdown (32 vs. 20 hours per week), and also a slightly larger share of the additional care burden during the lockdown fell on mothers (7 vs 6 hours per week). In the same survey, women were also slightly more likely to report worse-than-usual psychological well-being. And victims of domestic violence – in most cases women – were more exposed to their abusers during lockdowns and faced increased risks of violence (see below for measures put in place to address this).

By contrast, women's employment outcomes developed relatively positively over the crisis, and particularly so in Luxembourg (OECD, 2021[2]). By the fourth quarter of 2021, female employment rates in Luxembourg were 2.5 percentage points higher than they had been before the crisis, in the fourth quarter for 2019. The gender gap in employment rates had narrowed by 2 percentage points. This reflects employment growth among women notably in the health and education sector as well as in high-paid services, and it puts Luxembourg among the OECD countries with the most positive employment trends for women since the start of the crisis. While women in Luxembourg also experienced a lesser decline in unemployment rates over the crisis than men (-0.6% vs. -1.2% between Q4 2019 and Q4 2021), this is a consequence of a growing share of women entering the labour force, with some of them initially being unemployed before finding a job.

One possible reason may be Luxembourg's generous exceptional family leave, which enabled people caring for small children or frail adults to temporarily take time away from the labour market while care facilities were closed. This meant that, while elevated calls to provide care at home led many women, and particularly mothers, to stop working or reduce their working hours, in Luxembourg these additional calls did not require them to leave the labour market entirely. Indeed, a decomposition of hours lost during the first year of the crisis illustrates that, women were able to keep a foothold in the labour market (Figure 7.7), and thus to increase their hours rapidly as schools reopened and economic activity renewed.

Figure 7.7. Women were able to keep a foot in the labour market and did not experience largescale job loss

Percentage change in hours worked by employment status of worker, year on year, 2019-20



Note: Cross-border workers are not captured in the EULFS data.
Source: OECD calculations based on the European Labour Force Survey.

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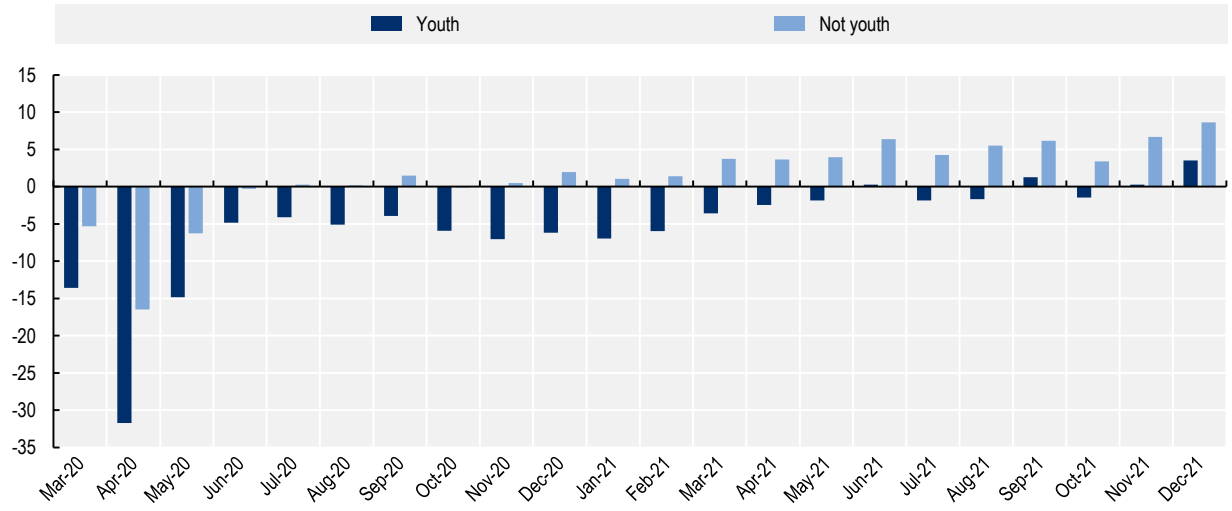
7.2.5. Youth employment remains subdued, and inactivity has risen in Luxembourg

In Luxembourg, as elsewhere in the OECD, younger workers were more concentrated in sectors heavily impacted by the crisis. Over 40% of young workers were employed in sectors that suffered a heavy loss in hours during the early months of the pandemic – in accommodation and food services, in arts, in transport and storage, in agriculture, construction and trade (Figure 7.6). This is ten percentage points higher than among prime-aged and older workers. The evolution of hours worked throughout the pandemic waves shows the relevance of sectoral concentration. During the first wave, in early 2020, hours worked by young workers fell more sharply than those of older workers. During the second wave, young people – who were more likely to work in accommodation and food services – again saw their hours tumble (Figure 7.8).

Figure 7.8. Young workers bore the brunt of the impact of the crisis

Hours worked by age (15-24), as % of total hours in the same month in 2019



Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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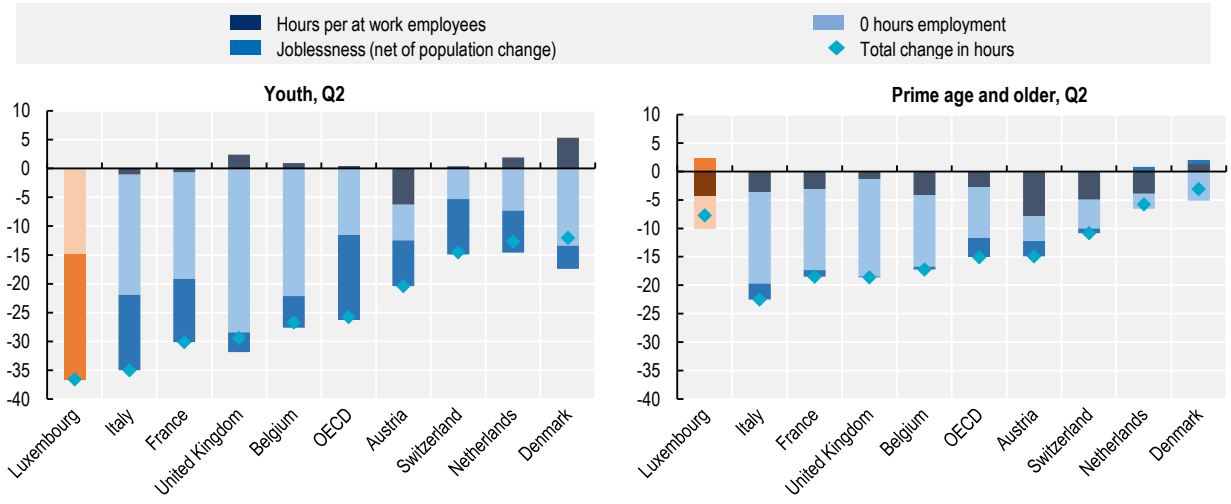
More broadly, beyond the sectoral nature of the COVID-19 crisis, it is well-established that youth labour market outcomes tend to be more sensitive to economic cycles. Youth tend to be more concentrated on temporary contracts (in Luxembourg 22% of young workers aged 15-24 are on temporary, fixed-term, contracts compared to just 2% of those between 25 and 54). Furthermore, having typically been hired more recently, young people tend to have fewer firm-specific skills and less experience, such that firing and re-hiring costs are more limited. As the last in, they are often the first out. This also implies that firms' incentives to maintain employment contracts with the support of *chômage partiel* are more limited for young workers than for those with a longer tenure. This is shown by the trend in hours worked: during the second quarter of 2020 the hours worked by younger workers not only fell faster, by close to 37% year on year, as compared to just over 7% among prime-aged workers. This drop was also driven largely by moves into joblessness as opposed to reduced hours in employment (Figure 7.9).

Figure 7.9. Losses in aggregate hours were much higher for young workers, and they reflect to a much greater share employment losses

Percentage change in hours worked by employment status of worker, year on year, 2019-20



Note: Cross-border workers (*frontaliers*) are not captured in the European Labour Force Survey data.
Source: OECD calculations based on the European Labour Force Survey.

StatLink https://stat.link/64ruv7

These trends have increased an – already large – gap in employment rates between young and prime-aged workers in Luxembourg, by 1.4 and 4 percentage points during both the first and second waves of the COVID-19 pandemic (*not shown*).

7.2.6. Foreign born workers felt a deep impact of the pandemic in Luxembourg but a strong recovery has been driven by increasing employment in high-skilled services, health and construction

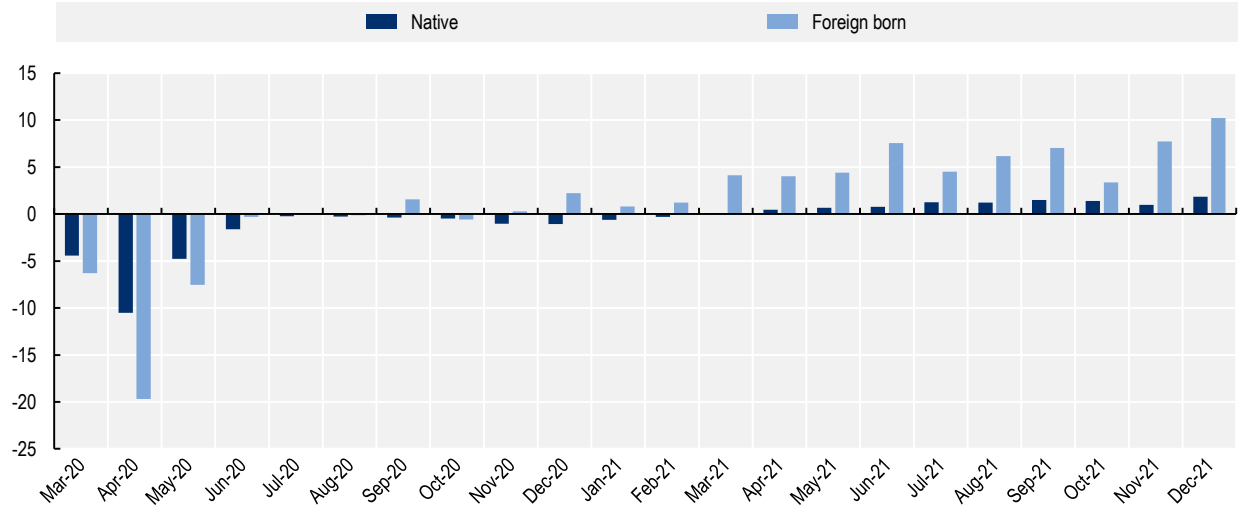
Luxembourg has the highest share of migrants in the population of all OECD countries.[7] Over 40% of Luxembourg's population were born abroad and these foreign-born individuals are highly educated, with over half holding a tertiary degree. In addition to this large resident foreign-born population, Luxembourg also hosts a large number of cross-border workers. Indeed, according to the IGSS, close to 200 000 cross border workers came to work in Luxembourg from another country (with 50% originating in France). As a result, the Luxembourg labour market is heavily dependent on its foreign-born population, with only 27% of the jobs occupied by the native born. This dependence is particularly marked in certain sectors such as health – with 1 in 10 cross-border workers employed in health and social work activities.

While the hours worked by cross-border workers has followed a similar pattern to that of the resident population of Luxembourg, the initial impact of COVID-19 on the working hours of foreign-born workers was profound. Hours worked by foreign-born workers fell by nearly double that of the native-born population, which reflects partly that many native-born workers are employed in the public sector. Yet the recovery was fast for Luxembourg's foreign born and by June 2020 hours worked had recovered their pre-pandemic levels (Figure 7.10). This recovery was likely driven by strong growth in the number of foreign-born working in professional, scientific and technical activities, as well as health and construction. These sectors account for the largest share of foreign-born workers, 12.3%, 8.3%, and 13.1%, respectively. Employment of the foreign-born in trade, which also accounts for a large share of Luxembourg's foreign-

born workers, 12.7%, however, has remained subdued. Indeed, the selective departure of those foreign-born workers who lost their job has also, no doubt, contributed to the strong recovery.

Figure 7.10. The foreign-born saw a deeper initial impact but have made a strong recovery

Hours worked by migration status, as % of total hours in the same month in 2019



Note: Note: hours are not defined for self-employed. Hours are corrected for calendar effects.
Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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7.2.7. Household incomes have been relatively protected from the crisis in Luxembourg

While the labour market impact of the crisis could be measured in a timely manner, through monthly labour force surveys, much less is known still about how the crisis has affected household incomes. In most OECD countries, data on the level and distribution of household incomes are collected through household surveys – in Luxembourg this is through the European Union Statistics on Incomes and Living Conditions (EU-SILC) – which are typically published with a delay of about two years. For this reason, survey-based data on trends in disposable household incomes in Luxembourg were not yet available at the time of writing. However, the Luxembourg national statistical office (STATEC) and the IGSS, have jointly simulated income data for the year 2020. These data allow for a first tentative assessment of the income trends in Luxembourg during the initial crisis year.[8]

These simulated data suggest that the COVID-19 crisis has not had a major impact on the level and distribution of disposable household incomes in Luxembourg in 2020 (STATEC, 2021[5]). According to these simulations, the median disposable household income in Luxembourg, i.e. the income after taxes and social transfers of the household that is exactly in the middle of the income distribution, rose slightly in nominal terms between 2019 and 2020, by about 2.6%. Income inequality, as captured through different inequality measures, including the Gini Index, stayed constant or slightly declined. Also, the poverty rate remained nearly unchanged, at 17.2% (17.4% in 2019).[9] These trends are in line with a survey carried out by the Luxembourg Institute of Socio-Economic Research (LISER) towards the end of the first pandemic wave, in late May to early July 2020, which had only few respondents reporting acute financial difficulties: 9% indicated finding it very or quite difficult to manage financially, 11% to have had difficulties paying bills and 7% to have had difficulties paying rent or mortgage (LISER, 2021[7]). The Eurofound's *Living, Working*

and COVID-19 survey found that the share of people reporting having difficulties making ends meet in Luxembourg was the second lowest across all 27 EU countries (Ahrendt et al., 2021[8]).

The stability in household incomes, inequality and poverty is notable given the depth of the economic crisis and can be considered testament of the success of Luxembourg's policy response to the crisis. In particular, it certainly reflects the effectiveness of the *chômage partiel,* the exceptional family leave, and, to a lesser degree, unemployment benefits in protecting the incomes of workers who were forced to reduce their hours worked or were affected by job loss. Meanwhile, the incomes of many other population groups, such as workers who continued working in their workplace and those who teleworked, pensioners or the unemployed, were not directly affected by the crisis. The finding of stable household incomes and constant or declining inequality in Luxembourg is consistent with findings for other EU countries with available data, such as France, Germany, Italy and Spain (Clark, D'Ambrosio and Lepinteur, 2021[9]; Braband et al., 2022[10]). It is, however, much too early for an assessment of how household incomes may have developed after 2020 when many of the crisis emergency measures had been rolled back.

7.3. Policies to protect jobs and incomes in Luxembourg during the COVID-19 crisis

Luxembourg authorities responded to the COVID-19 crisis with timely and wide-ranging measures to preserve people's jobs, incomes and livelihoods. This included extensions of existing schemes, in particular in the areas of job retention support, paid sick leave, unemployment benefits, and minimum-income benefits, as well as the introduction of new measures, notably exceptional family leave and targeted support for certain vulnerable groups. These policies appear, overall, to have been highly effective at securing employment and cushioning income losses. However, there remains scope for some learning and fine tuning to ensure that, if such a crisis happens again, support is provided in an even more targeted way and reaches everyone one in need.

7.3.1. Luxembourg extended its existing job retention scheme and provided accelerated access

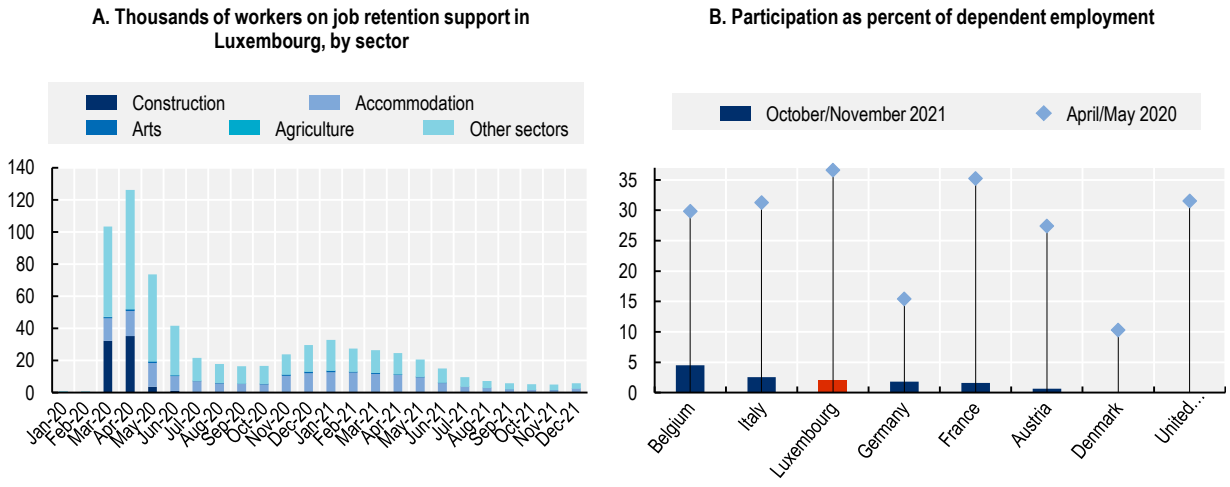
Across the OECD, the restrictions imposed by COVID-19 containment measures were accompanied by support to help businesses retain their workforce. In particular, the sharp decline in activity led nearly all OECD countries to introduce, or expand on existing, Job Retention Schemes (JRS). In mid-March 2020, Luxembourg supplemented its existing JRS scheme with a newly adopted crisis scheme: *Mesures pour le chômage partiel pendant la période de relance économique.* The crisis scheme provided accelerated access to support and, alongside workers on permanent contracts, widened access to include temporary workers and those working for temporary work agencies. Self-employed workers, however, remained, *de facto,* excluded from JRS support. These measures remained in place for vulnerable sectors until 30 June 2022. However, between July 2020 and January 2021, access to the accelerated support was restricted to companies in the tourism and events sector and from January 2021 to March 2021, layoff rules tightened for companies outside vulnerable sectors (defined as those with mandated closures).

The support extended under *chômage partiel* provides workers with a subsidy to cover 80% of their wages for these lost hours. Workers at the minimum wage receive 100% of their salaries while the subsidy is capped at 2.5 times the minimum wage. The proportion of wages covered by the scheme is increased from 80% to 90% for workers undertaking training while on JRS. However, households receiving support under *chômage partiel* were ineligible to apply for the more generous support offered under the exceptional family leave in the event of school closures.

By supporting firms in retaining their employees, Luxembourg's *chômage partiel*, went a long way towards smoothing the impact of the pandemic on jobs. In just one month, the number of workers receiving support

under the *chômage partiel* scheme increased from just 820 in February to over 100 000 in March 2020, spiking at over 120 000 in April. At the peak of the pandemic, close to 2 in 5 of all dependent employees accessed support under the scheme, putting it among the most far-reaching JRS in the OECD. In these early months of the pandemic workers in the construction sector received the lion's share of support (Figure 7.11). The numbers fell rapidly thereafter, as economic activity picked up and workers in many sectors returned to work, but they remained relatively high in the accommodation and food services, until support was formally restricted to these sectors in July 2020.

Figure 7.11. At the peak of the crisis many workers were supported by *chômage partiel*



Source: ADEM (Panel A); OECD (2021[2]), *OECD Employment Outlook 2021* (Panel B).

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Widespread use of JRS, across the OECD, has largely shifted the burden of the cost of hours not worked from employers and employees to governments. In Luxembourg, workers at the average wage who are asked to work reduced hours recoup approximately 80% of their gross wage. This is comparable to what Luxembourg's generous unemployment insurance system pays during the initial months of an unemployment spell. Elsewhere in Europe, support provided for those on JRS often exceeds unemployment support by a substantial degree (e.g. Switzerland (10pp), France (13pp), Norway (21pp) and Austria (25pp)), but unemployment benefit support is also less generous.

Workers earning the minimum wage receive the entirety of their salary when on *chômage partiel*, while the subsidy is capped at 250% of minimum wage. In Luxembourg the government bears just over 70% of wage costs, marginally higher than the average government contribution across OECD countries utilising similar schemes of 68% of the labour costs for low-wage workers and 61% at the average wage (OECD, 2021[2]).

7.3.2. In Luxembourg, financial incentives to encourage training while on chômage partiel had limited impact

Job retention schemes are primarily designed to offer stability – both to the workers and to the economy and labour market more widely – by smoothing the impact of ephemeral disruptions. The risk of such programmes, however, is that they can delay necessary restructuring, maintaining workers in jobs that are no longer economically viable. To ensure that workers are prepared for the eventuality that their job, and their skills, are no longer demanded in a post-crisis labour market, some OECD countries encouraged training of JRS participants by offering financial incentives (OECD, 2021[2]).

In Luxembourg, workers who undertook training while on *chômage partiel* saw their wage subsidy increased from 80% to 90% of wages.[10] However, workers on the minimum wage already received 100% of their salary and thus faced no incentive to train. In addition, others saw their incentives limited if the cap on the subsidy (at 250% of the minimum wage), was binding. For these workers the payment could not rise further and the incentive for training had little impact. Indeed, in 2020 only 537 workers accessed the 90% wage subsidy, and in 2021 this figure dropped to just 29.

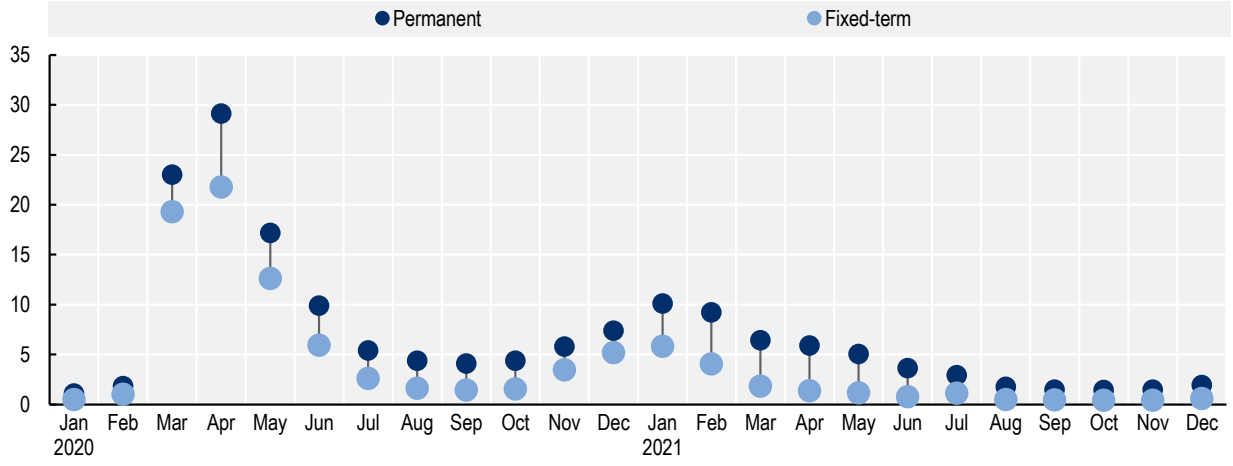
The lack of incentives for training among those for whom the subsidy cap was binding, *de facto* had the effect of targeting training towards those with lower wages; this can be an effective strategy if lower wage workers are likely to be those who may struggle the most in moving to a different job if their employer does not resume operations. However, the lack of incentives facing those at the minimum wage, could be problematic. These are the workers who would most benefit from training and upskilling. Luxembourg should consider increasing the subsidy for those workers at the minimum wage, even if this takes the subsidy beyond 100%. Alongside this, given that those on JRS support for extended periods are those most likely to become unemployed at the end of the support, an alternative targeting mechanism would be to incentivise training only for those who have claimed JRS for an extended period. Luxembourg could consider an additional training incentive for those who have been on JRS for an extended period.

7.3.3. Temporary workers and the self-employed were under-protected

Despite the large number of beneficiaries, Luxembourg's *chômage partiel* scheme left some coverage gaps. Despite formal eligibility, fewer temporary, fixed-term contract workers accessed job retention support (Figure 7.12). In principle, widening access to include temporary workers, as Luxembourg did, should reduce the risk that JRS reinforce labour market duality. However, in practice, employers have weak incentives to bear the costs of using job retention support for temporary workers, and even less to renew their contracts. Indeed, throughout the COVID-19 crisis, workers on a permanent contract were more likely than those on a temporary contract to receive support through *chômage partiel*. Furthermore, the disparity in access expanded during the latter half of both the first and second waves, suggesting that, indeed, the contracts of those on JRS were not renewed when they expired.

Figure 7.12. Permanent workers were more able to access *chômage partiel* than those on a fixed-term contract

Percentage of workers benefiting from *chômage partiel*, relative to total employment, by contract type



Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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Self-employed workers were excluded from the Luxembourg JRS, and many self-employed workers will therefore have struggled to cover recurring expenses such as housing costs, which are difficult to bring down in the short term – particularly during lockdown (OECD, 2020[11]). While some self-employed may have been able to cushion a drop in income by eating into their savings, requiring the self-employed to run down their savings is problematic when business closures are part of a government-mandated health measure. It can also be inefficient if it requires self-employed workers to sell their productive assets. From mid-April 2020 the Ministry of the Economy introduced a number of ad hoc measures to support self-employed workers. However, this support came late and eligibility was, initially, limited to those with income below 2.5 times the minimum wage and employing fewer than ten employees. Until May 2020, when further support was introduced, no support was provided for those self-employed with moderate earnings, whose primary income source nevertheless, fell suddenly away, and who were unable to meet ongoing expenses.

Perhaps most importantly, the ad hoc nature of support provided little predictability for the self-employed to enable them to plan their finances through the turbulent COVID-19 pandemic. Alongside the economic consequences of this insecurity, the lack of ongoing and predictable support is likely to have had toll on the mental health of those unsure of the level of protection they would receive. In response the needs of the self-employed that were revealed during the pandemic a number of OECD countries introduced temporary, but recurrent, measures to support their incomes (Box 7.1).

Box 7.1. Support for self-employed workers in OECD countries

Across the OECD, even in countries with well-developed social protection systems, many self-employed workers who suddenly lost their income struggled to make ends meet.

Several countries introduced recurrent cash transfers for self-employed workers in the early phase of the crisis. Often, these transfers were dependent either on previous earnings, or on losses due to the crisis:

- In the **United Kingdom**, for example, the self-employed received a taxable grant of up to 80% of their previous earnings over the previous three years. The support, capped at GBP 2 500 a month, was available for self-employed with average annual profits of less than GBP 50 000.
- In **Austria**, self-employed workers received a benefit replacing 80% of their net income loss, up to a limit of EUR 2 000 a month. Newly self-employed workers who only started their business in 2020 and therefore could not prove their income with a tax declaration received a flat rate payment of EUR 500 per month.
- In the **United States**, where the Department of Labor estimates that the self-employed account for 16 million workers, with an additional 1.5 million gig workers, the Federal Government's relief package extended the coverage of unemployment support to cover these workers.
- In **Ireland**, self-employed workers who lost all of their income received the COVID-19 Pandemic Unemployment Payment, a flat-rate payment of EUR 350 a week paid for the duration of the crisis. Those with only partial losses did not receive income support, however.
- **Germany** rolled out a federal "Corona Supplement" for self-employed workers with up to ten employees, providing lump-sum cash support of up to EUR 15 000 depending on the number of employees and costs that the self-employed / small firms were unable to cover because of the COVID-19 crisis. This support covered only operating costs of the business such as rent, wages of employees not covered by short-time work schemes; for their own living costs, self-employed workers had to rely on the means-tested minimum-income benefit (Unemployment Benefit II), eligibility to which was temporarily relaxed – see (OECD, 2020[11]). The city of Berlin provided an additional top-up of EUR 5 000 Euros for small firms; however,

this programme had to be suspended within days as earmarked funds (EUR 1.3 billion) were depleted following a large number of claims.

Most of these earnings-replacement programmes were designed to deliver support quickly. But determining previous earnings is complex without a structure in place to do so –especially for the self-employed, whose earnings fluctuate. Therefore, some workers may still have fallen through the cracks, particularly those with short work histories and those who have taken career breaks for parental leave. A "pay now, assess later" approach to payments – see (OECD, 2020[11]) – ensures that those in need receive payments quickly, while the exact policy design is ironed out at a later date. Requiring self-certification of current need, as in the German "Corona Supplement" scheme can also speed up payments. In Austria, the first "immediate hardship fund" for self-employed workers required claimants to self-certify their need for assistance and preserve documentation, with random checks to be carried out at a later date.

Source: OECD (2020[11]), "Supporting livelihoods during the COVID-19 crisis: Closing the gaps in safety nets", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/17cbb92d-en

7.3.4. A tight labour market and restrictions on JRS have led to a sharp decline in the take-up of support in Luxembourg

To ensure that support offered under JRS did not become an obstacle to the recovery, by locking workers in unviable jobs, from July 2020 accelerated access to *chômage partiel* has been restricted to so-called vulnerable sectors and those limiting layoffs. These restrictions were further tightened in January 2021. Alongside the strong labour market recovery, this has no doubt played a role in the sharp decline in take-up of support which fell to just over 2% by October 2021.

As the pandemic progressed, countries across the OECD increased the targeting of JRS. Some, like Luxembourg, targeted support to those activities or areas that remained subject to restrictions while others linked restrictions to the decline in business activity of firms (OECD, 2022[12]). While the former approach was relatively straightforward during mandatory closures, defining 'vulnerable sectors' became less clear cut as restrictions eased. In Luxembourg, the sectors defined as vulnerable were designated in consultation with social partners. However, this sectoral approach may have proven somewhat blunt, as businesses operating outside vulnerable sectors but potentially directly dependent on them (such as restaurant cleaners) were no longer eligible for accelerated access to support. A number of OECD countries have increased co-financing obligations, requiring firms to cover a larger part of the costs of hours not worked. This can be an alternative – or complementary – approach to increasing the targeting of support.

By alleviating labour costs for firms, Luxembourg's *chômage partiel*, significantly reduced the number of jobs at risk of termination and, no doubt, went an important distance towards cushioning the employment impact of the pandemic and mandatory business closures. Going forward, it would be important for the Luxembourg government to ensure that no workers – irrespective of employment history and contract type – are left to fall through the cracks. This also includes ensuring that firms' incentives, including the avoidance of hiring and firing costs, and the effects these incentives have on the de facto targeting of support, are anticipated and assuaged.

7.3.5. Luxembourg provided generous extraordinary family leave benefits to workers with unforeseen care duties

As in the majority of OECD countries, Luxembourg authorities mandated the closure of schools, childcare facilities and care support structures, to contain the spread of COVID-19, following the outbreak of the

pandemic in March 2020. All elementary schools and childcare facilities were fully closed between 16 March and 24 May 2020, and then progressively opened with restrictions between 25 May and 15 July 2020. The closure of formal care facilities brought a significant increase in households' care burdens across the OECD, with much of this increased unpaid work falling on women.[11]

Luxembourg responded rapidly to the unanticipated increase in home care needs following the outbreak of the pandemic by introducing two types of exceptional family:

- a special leave for family reasons (*congé pour raisons familiales extraordinaire*), aimed at helping parents of young children to cope with (i) emergency school and childcare facility closures, and (ii) isolation or quarantine of children with COVID-19;
- and a leave for family support (*congé pour soutien familial*), aimed at helping workers to look after a disabled adult or an elderly person who could not attend their usual support structures.

Both employees and the self-employed were eligible for the scheme, but those with a household member in *chômage partiel* were ineligible. For the self-employed, coverage of the period up to the end of the month of the first 77 days of leave was subject to a voluntary affiliation to the *Mutualité des employeurs*. Together with the *chômage partiel*, the *congé pour raisons familiales extraordinaire* was an essential element Luxembourg's emergency response to the crisis, allowing parents to keep their jobs and income while ensuring that their children were taken care of. During the confinement in spring 2020 close to 40% of eligible parents benefited from this policy (Zhelyazkova, Berger and Valentova, 2020[13]). Meanwhile, the take-up of the *congé pour soutien familial* was low – only 60 people accessed this support over the entire period during which it was available. This may reflect lower demand for this type of support, with possibly only a small number of workers hosting an elderly or disabled person in their own home after the closure of a care facility. At the peak of the crisis, between March and May 2020, when schools and childcare facilities were fully closed, 7% of Luxembourg workers benefited from either of the two types of exceptional family leave, on average (Figure 7.13). Take-up remained relatively high in June and July 2020 when schools were open with restrictions (close to 3%), and rose again in January and February 2021 when schools were again only partially open (3%).

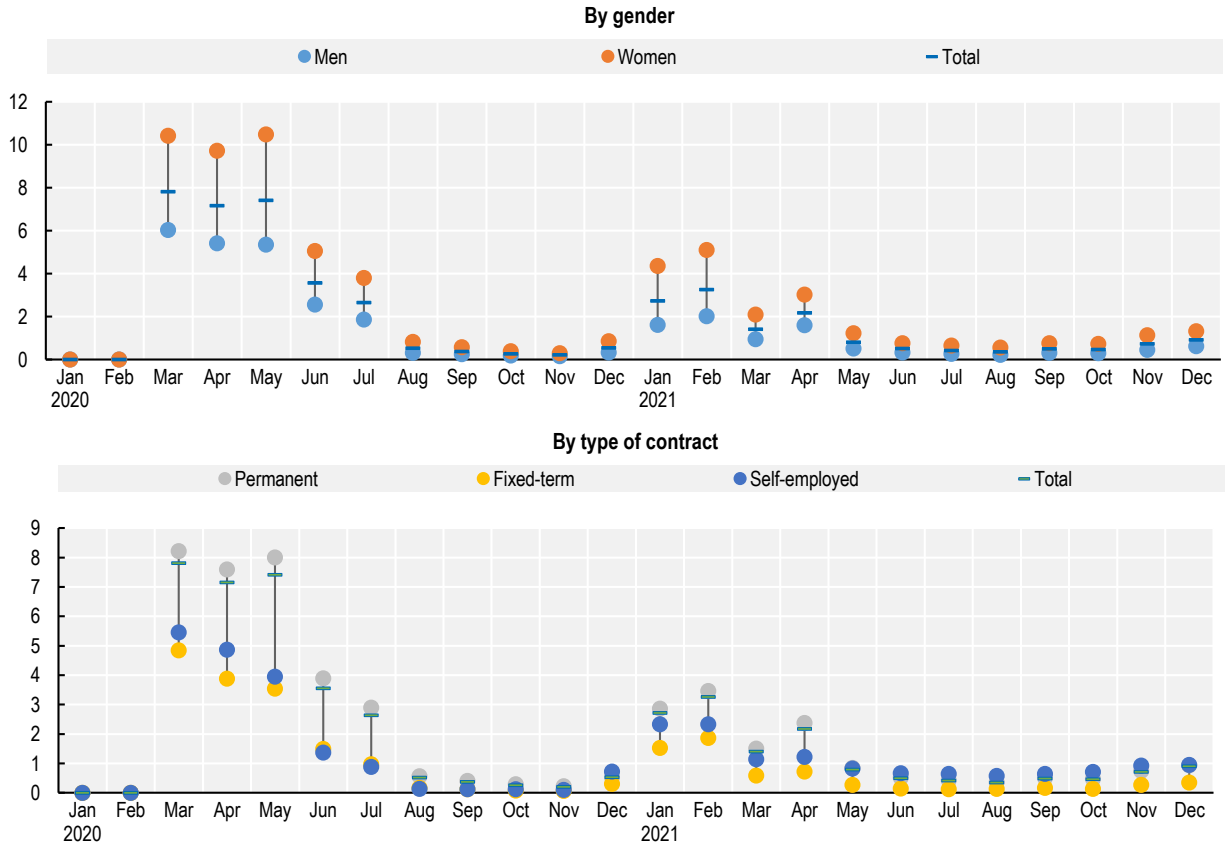
7.3.6. The generous family leave likely contributed to a quick recovery of female employment

More working women than working men took up exceptional family leave during the COVID-19 crisis (Figure 7.13). At the peak of the crisis, when schools and childcare facilities were fully closed, close to 10% of working women took up this leave, compared to an average of only 5% of working men. This reflects that a larger share of the increased domestic and care work brought by the crisis fell on women.

The implications of a higher incidence of exceptional family leave among women for gender equality are *ex ante* ambiguous. On the one hand, the paid leave formally recognised the value of what is typically unpaid work, allowing parents – and in many cases women – to do this work at full earnings without having to resign from their jobs. This likely contributed to the faster recovery of female relative to male labour force participation and employment after the crisis in Luxembourg, helping women to bounce back more quickly than if they had exited the labour market to take care of their children. On the other hand, it possibly accentuated the traditional pattern of women being more involved than men in domestic and childcare, hence potentially undermining gender equality by supporting their absence from the workplace (physical or virtual), with possible longer-term negative consequences for career progression. Indeed, there may be costs associated with this absence in terms of loss of visibility, human capital accumulation, and project assignment, which, if born disproportionately by women, may accentuate existing gender related inequities.

Figure 7.13. Take-up of exceptional family leave was higher among working women and for workers on permanent contracts

Percentage of beneficiaries of exceptional family leave relative to total employment by gender and type of contract



Note: Employment figures include people on short-time work.
Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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7.3.7. Take-up of exceptional family leave was lower for workers in non-standard employment in Luxembourg

A higher share of workers with standard, permanent, contracts took up exceptional family leave compared to workers with fixed-term contracts and the self-employed (Figure 7.13). For the self-employed, the lower take-up reflects that coverage of the first 77 days of family leave is dependent on a voluntary affiliation to the *Mutualité des employeurs*, which only 40% of the self-employed have. This lower coverage was identified by the Luxembourg authorities as a potential challenge during the crisis, and there have been reflections among the Luxembourg authorities on whether to extend mandatory affiliation to the *Mutualité des employeurs* for the self-employed. Recently the government conducted awareness campaigns to inform the self-employed about the risks of non-affiliation and motivate them to affiliate. Irrespective of this, in the context of a global pandemic, there may have been a rationale of covering self-employed workers irrespective of their affiliation. After all, the need for exceptional leave largely resulted from government-mandated closures of schools and childcare facilities.

For fixed-term workers, the lower coverage likely reflects the fact that some of these workers considered it necessary to continue working in order to increase the likelihood of having their contract renewed.

7.3.8. Some workers in Luxembourg faced a trade-off between special leave for family reasons and JRS

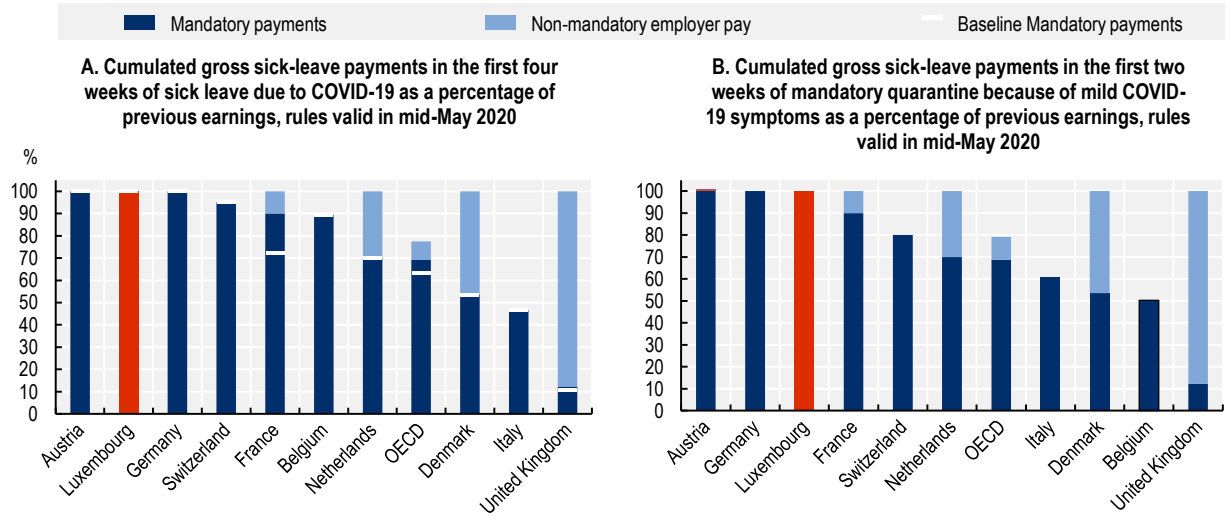
The interaction between family leave and JRS may in some cases have led to inequities. Family leave was more generous than JRS, with a replacement rate of 100% instead of 80%. This made it more beneficial for parents with children younger than 13 years old to request family leave. However, the timing of the support meant that such a choice was not always possible. Where registration for JRS preceded a need for family leave the parent received support under JRS and could not apply for family leave. As a consequence, some workers who were already on JRS may not have been able to access the more generous family leave, even if their personal circumstances would justify it. This may have created discrepancies between the use of family leave by workers on JRS support and other workers, who could access the leave without restrictions. Although both JRS and family leave allowed workers to stay at home without working to take care of their children and older relatives in need, the difference in replacement rates was not negligible, implying an advantage for those who could request family leave. To minimise the probability of these unbalances occurring in future crises, Luxembourg authorities could consider the possibility of switching between JRS and family leave, allowing workers to retract from JRS temporarily to benefit from family leave. Alternatively, a top-up of 20% could be given to workers on JRS support who would need to benefit from family leave, to compensate from the difference in the replacement rates of the two schemes.

7.3.9. Paid sick leave was key to protecting quarantined and sick workers in Luxembourg

As in most OECD countries, paid sick leave played a crucial role in protecting Luxembourg workers' health, jobs and incomes during the COVID-19 crisis. First, it helped contain the spread of the virus, by allowing workers infected with COVID-19 or in quarantine to stay home rather than continue going to work. Second, it helped to preserve the jobs of workers who were sick or in quarantine, by keeping employment relationships intact, reducing pressure on the unemployment benefits and JRS. Third, it supported workers' income by ensuring an uninterrupted continuation in income for those either affected by the virus or asked to self-isolate.

Luxembourg took special measures to prolong entitlement periods, excluding days of sick leave taken between 16 March and 24 June from the calculation of the duration limit. It also supported employers with the costs of paid sick leave associated to COVID-19, covering the costs from the first day between 1 April and 30 June 2020, and increasing the reimbursement rate from 80% to 100% for cases of COVID-19 isolation and quarantine from 1 July onwards. These measures ensured an adequate coverage and generosity of sickness benefits. Indeed, Luxembourg was one of the few OECD countries with a replacement rate of 100% during the first four weeks of paid leave for people who fell sick with COVID-19 and during the first two weeks of mandatory quarantine because of mild COVID-19 symptoms (Figure 7.14).

Figure 7.14. Paid sick leave replaced 100% of earnings for workers who were sick with COVID-19 or in quarantine



Note: The results refer to an eligible full-time private-sector employee who is married with no kids, age 40, earning an average wage and working with the same employer for one year who cannot work from home. "Mandatory paid sick leave" refers to mandatory payments paid to individuals by employers (sick pay) and mandatory payments by the government, either directly paid to individuals or indirectly by subsidising employers (sickness benefits). "Non-mandatory employer sick pay" includes employer sick pay commonly agreed via collective agreements or other arrangements; these payments are included for those countries where the majority of employees would receive such payments. Countries emphasised with a dashed fill are those where employees are entitled to a benefit other than a dedicated sickness benefit.
Source: (OECD, 2020[14])"Paid sick leave to protect income, health and jobs through the COVID-19 crisis".

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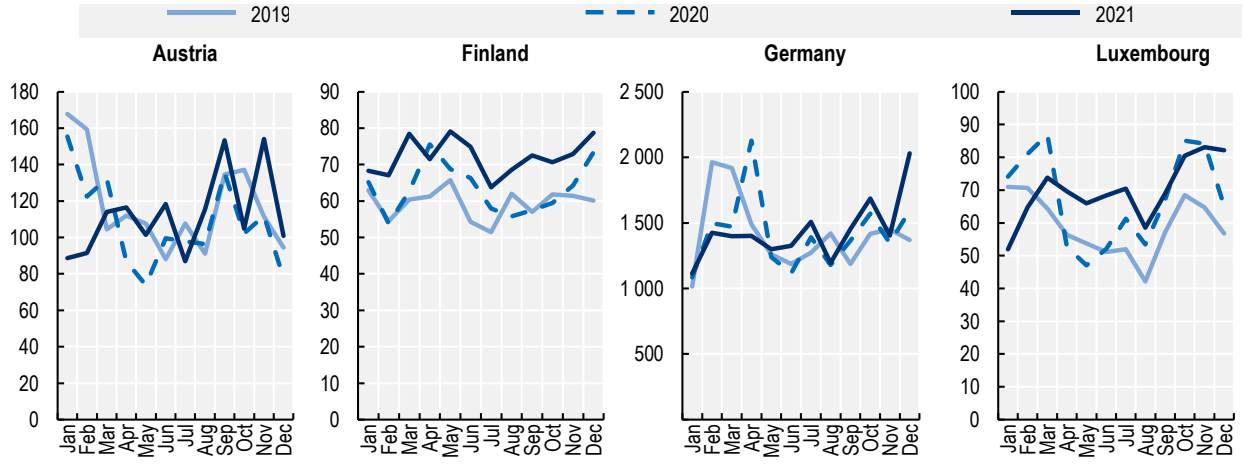
Take-up of paid sick leave in Luxembourg varied over the course of the pandemic, reflecting the evolution of the spread of COVID-19, the intensity of restrictions to mobility and economic activity, and the interaction with other policy interventions (Figure 7.15). It increased at the onset of the pandemic, in March 2020, when the number of COVID-19 cases surged, and then went down between April and June 2020 (below the comparable pre-crisis levels), following the rapid shift to teleworking in many occupations and the extensive use of JRS. Workers became less exposed to the virus, and if they were, may have continued teleworking or remained under JRS support rather than taking paid sick leave. Take-up continued to exhibit variations until the end of 2021, although to a minor extent. This is in line with trends observed in other OECD countries, such as Austria, Finland and Germany. Notwithstanding the variation during the COVID-19 crisis, take-up rates did not significantly increase relative to the pre-crisis status quo, which reflected the massive utilisation of JRS and the high share of workers who teleworked. More generally, the evolution of take-up reflects two opposing trends: a rise due to contagion from COVID-19 and a decrease because of a lesser prevalence of non-COVID-19-related sicknesses as a result of the containment measures. Therefore, the increase in take-up strictly due to the COVID-19 pandemic may have been more substantial than what is possible to observe in the data, which does not include disaggregation by sickness type.

Figure 7.15. Take-up of paid sick leave varied over the course of the pandemic

Monthly recipients (in thousands) of paid sick leave in selected OECD countries over the course of the pandemic



Note: Monthly averages for Finland and Luxembourg, numbers at the beginning of the month for Germany and at the end of the month for Austria. The data for Finland exclude recipients of employer-provided sick pay, i.e. the first nine respectively ten days of sick leave.
Source: OECD (2022) Employment Outlook 2022 based on national administrative data for Austria, Finland and Germany, and administrative data provided by the Inspection Générale de la Sécurité Sociale (IGSS) for Luxembourg.

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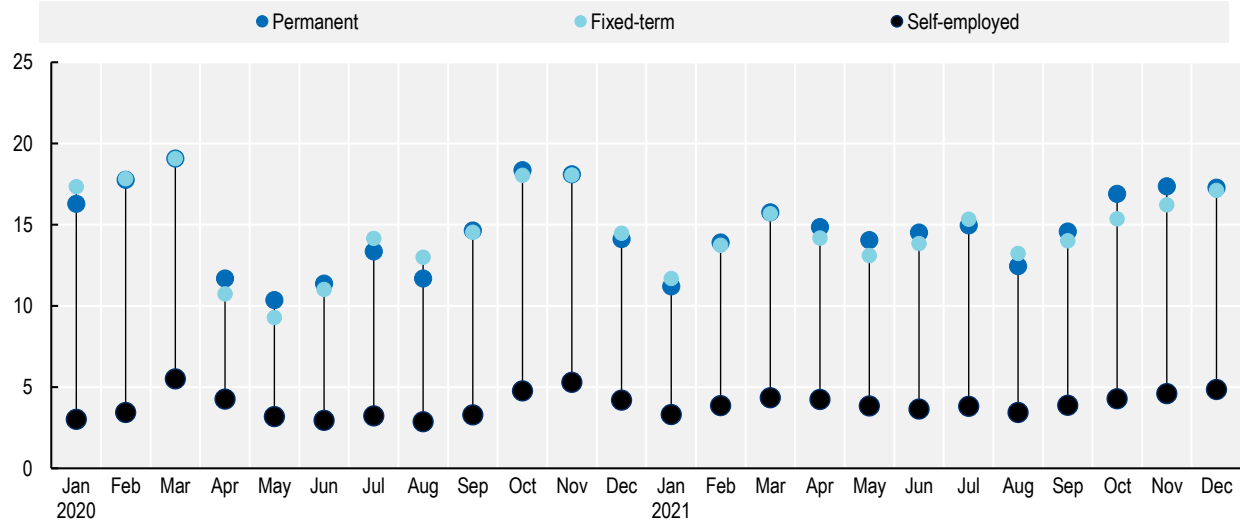
7.3.10. But, in Luxembourg as in other OECD countries, the self-employed were less well covered by paid sick leave than dependent employees

Despite high overall take-up of paid sick leave, there was a significant gap between the self-employed and workers in dependent employment (Figure 7.16). Across the whole crisis period, the take-up of paid sick leave was systematically lower for the self-employed, with an average difference of ten percentage points relative to dependent employees. As for family leave, this reflects that for the self-employed coverage depends on a voluntary affiliation to the *Mutualité des employeurs*. While some self-employed have private insurance cover, a pandemic may – as for the extraordinary family leave – be considered extraordinary enough to justify a temporary extension of insurance to non-affiliated workers. Given the importance of containing the spread of the virus, providing access to paid sick leave to non-covered self-employed workers would also have provided additional incentives to stay home if sick or in quarantine.

Figure 7.16. Take-up of paid sick leave was much lower for the self-employed

Percentage of beneficiaries of paid sick leave relative to total employment by type of contract



Note: Employment figures include people on short-time work.
Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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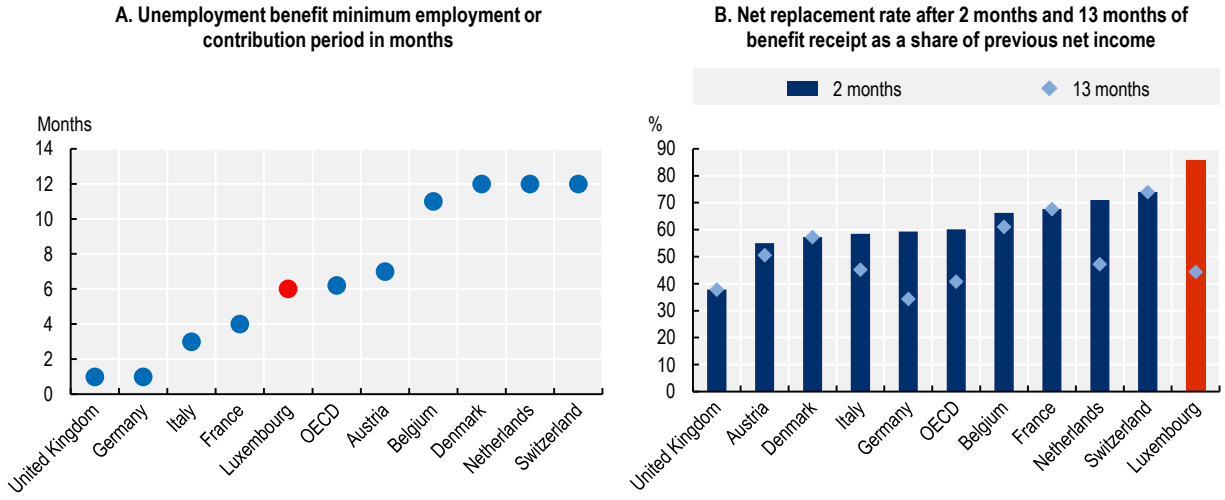
7.3.11. In Luxembourg, unemployment benefits were easily accessible and comparatively generous pre-crisis and provided important income support

Income support for workers affected by job and earnings losses was another important pillar of governments' efforts to cushion the effects of the crisis on workers and households. Despite the rapid expansion of the JRS, the unemployment rate in Luxembourg rose by 1.8 percentage points from the first to the second quarter of 2020. Finding new employment was difficult during the lockdown and the period of uncertainty that followed, including for jobseekers that had already been without work prior to the pandemic. Unemployment benefits (UB) and other out-of-work income support therefore played a vital role in protecting workers and families' livelihoods during these periods.

Workers affected by job and earnings loss had relatively good access to UB during the crisis, and benefits were comparatively generous at least in the early phase of an unemployment spell. To be entitled to UB, jobseekers in Luxembourg generally needed to have been employed for at least six out of the 12 months preceding unemployment (Figure 7.17, left panel). This corresponds to the average required contribution or employment period across OECD countries in 2021.[12] Meanwhile, in Germany and the United Kingdom, non-contributory unemployment assistance programmes (the *Arbeitslosengeld II* and Universal Credit) provide support to jobseekers from the first month of unemployment. Self-employed workers in Luxembourg in principle have the same rights to UB as dependent workers under the condition that they previously declared their taxable income and that they give up their business license. This is rather an exception: in most OECD countries, self-employed workers have only partial access to UB (e.g. in Belgium and France), unemployment insurance is voluntary (e.g. in Austria and Germany) or they have no access at all (e.g. in the Netherlands and Italy) (OECD, forthcoming[6]). Young people who are looking for work after having completed training can also be eligible to UB in Luxembourg under certain conditions.

Figure 7.17. Unemployment benefits are relatively accessible and replace a large share of earnings in the initial months of the benefit spell in Luxembourg



Note: Both panels include unemployment insurance and assistance benefits. Panel B: net replacement rates are for a jobseeker with previous earnings at 100% of the national average wage assuming a 36-month contribution record. They include receipt of social assistance and housing benefits. OECD gives the average over 34 countries (Panel A) and 29 countries (Panel B). Both panels represent the situation on 1 January.
Source: OECD TaxBEN Model (version 2.4.0) http://oe.cd/TaxBEN.

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UB payments are comparatively high in Luxembourg, at least in the beginning of the unemployment spell. For a jobseeker with the required six-month employment record and previous earnings at 100% of the national average wage, unemployment benefits in the second month of unemployment replace about 86% of previous net earnings (the so-called net replacement rate, NRR; Figure 7.17, right panel). This compares to an NRR of 60% across OECD countries on average. However, the benefit amount rapidly declines for many jobseekers after the third month of unemployment, and most jobseekers exhaust their entitlements within a year. In the 13th month of unemployment, a jobseeker with the same employment and earnings history only touches social assistance and housing benefits in Luxembourg, which account to 44% of previous net earnings. This is still a little above the OECD average (NRR of 41%), but much less than in Switzerland (74%), France (68%) and Belgium (61%).

7.3.12. Luxembourg extended the duration of unemployment benefits in the initial crisis phase

Most OECD countries extended unemployment benefit entitlements in the initial phase of the COVID-19 crisis, extending benefit entitlements along one or several of three dimensions (OECD, forthcoming[6]): half of all countries improved access by reducing or waiving minimum contribution periods, covering groups of workers who had previously not been entitled, or even introducing new unemployment assistance benefits; more than one in three countries extended benefit durations by lengthening durations outright or automatically extending entitlements that expired during the peak of the crisis; a dozen countries raised benefit amounts by introducing temporary lump-sum top-ups, raising replacement rates, lifting benefit floors or ceilings, or suspending progressive reductions in benefit amounts for recipients with longer unemployment spells. These measures aimed at covering groups of workers who had previously not been entitled and accounted for the fact that jobseekers had only poor chances of finding new work at a time when large parts of the economy were effectively at a stand-still.

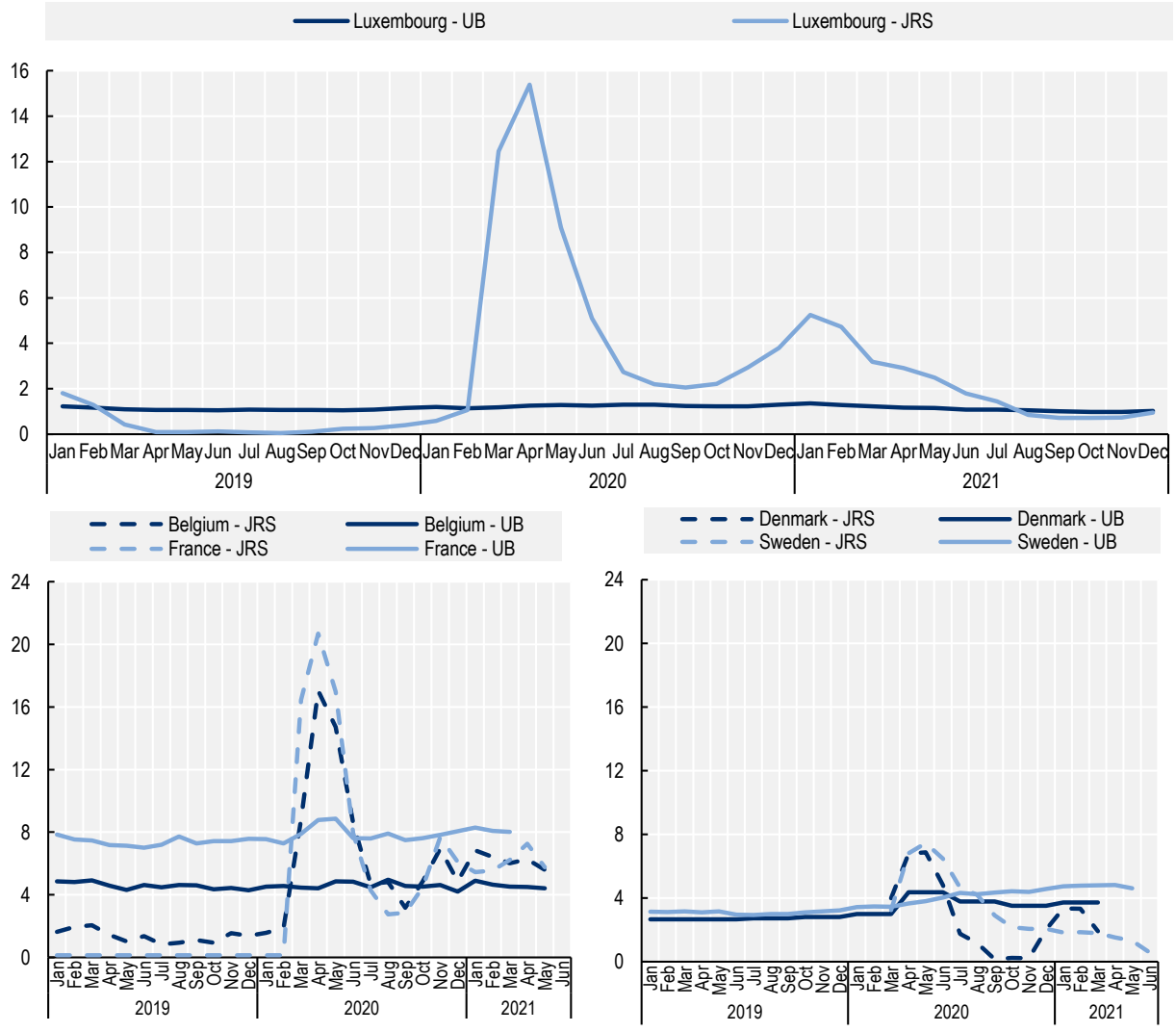
Also Luxembourg extended the maximum UB duration for the duration of the state of crisis, by three months in spring 2020. This particularly benefited workers who were already unemployed at the onset of the crisis and whose entitlements would otherwise have expired during the state of crisis or shortly after. It also made sure that workers with rather short work histories who lost their jobs during the crisis would keep their entitlements until the end of 2020. Luxembourg did not again extend UB durations in the later phases of the pandemic, which reflects the generally favourable labour market developments in the second half of 2020 and through 2021 (see Figure 7.1).

7.3.13. Unemployment benefit receipt rates remained low, as the chômage partiel absorbed most of the labour market shock

Despite the massive repercussions of the COVID-19 pandemic on the Luxembourg economy and labour market, rates of UB receipt remained low as the *chômage partiel* secured workers' jobs and so took pressure off the UB system. While Luxembourg experienced a 20% rise in the absolute number of monthly UB recipients relative to the pre-crisis year 2019, benefit receipt as a share of the working-age population remained at a little above 1% throughout the crisis (Figure 7.18). At the peak of the crisis, in April 2020, 1.3% of the Luxembourg working-age population received UB, a number dwarfed by the 15.4% of people on *chômage partiel*. This is in line with trends observed in some other countries where comprehensive JRS absorbed most of the labour market shock, such as Belgium, Denmark, France and Sweden.

Figure 7.18. The share of unemployment benefits recipients remained low during the crisis

Percentage of unemployment benefits recipients and workers on JRS relative to the working-age population (15-64)



Note: For Denmark, JRS numbers refer to two schemes, the pre-existing sharing scheme and the wage compensation introduced in March 2020; complete JRS figures are missing before March 2020; monthly figures for both UB and JRS were interpolated from quarterly time series.
Source: Top panel: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS). Bottom panels: OECD *Employment Outlook 2022* based on the OECD Social Benefit Recipients – High Frequency database (SOCR-HF), https://www.oecd.org/fr/social/soc/recipients-socr-hf.htm

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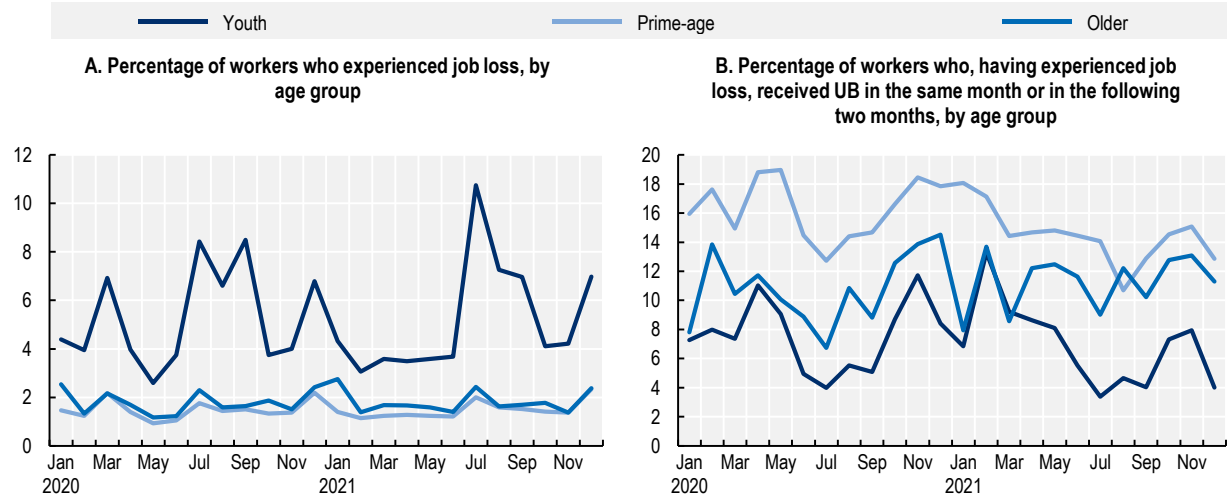
7.3.14. Workers with patchy employment records, in particular the young, may have faced gaps in unemployment benefit coverage

While JRS and UB, in combination with the exceptional family leave, provided strong income protection for most workers who were forced to suspend their work or cut hours during the pandemic, certain groups may have gone uncovered. This may be part of the reason for why UB receipt rates remained largely flat even when unemployment rates increased in March 2020.

In particular, workers with short or patchy employment records were less well covered against the risk of income losses during the crisis. This typically concerns young people, who often have shorter and less stable employment careers, as well as workers on temporary contracts. Both groups were also particularly affected by the reduction in hours and employment losses in the initial phase of the crisis (see Figure 7.5 and Figure 7.8), and a greater share of them likely did not meet the six-month minimum employment requirement to qualify for UB. Indeed, young people were both the age group most affected by job loss and the group least likely to receive UB in case of job loss (Figure 7.19). In a few countries, including Germany and the United Kingdom, UB are available from the first month of unemployment, which improves access for jobseekers with short or patchy work histories. A number of other OECD countries took measures to improve access to UB for those workers during the crisis, by reducing or entirely waiving minimum-contribution requirements (e.g. Finland, Israel, Norway, Spain and Sweden), extending the qualification period for the employment requirement (France, Switzerland) or even introducing new unemployment assistance schemes (Canada, Lithuania, Korea) (OECD, 2020[1]; forthcoming[6]).

Figure 7.19. Young workers were disproportionately affected by job loss and less often covered by unemployment benefits



Note: Youth corresponds to 15-24 year-olds, prime-age to 25-54, and older to 55-64.
Source: OECD calculations based on microdata provided by the Inspection Générale de la Sécurité Sociale (IGSS).

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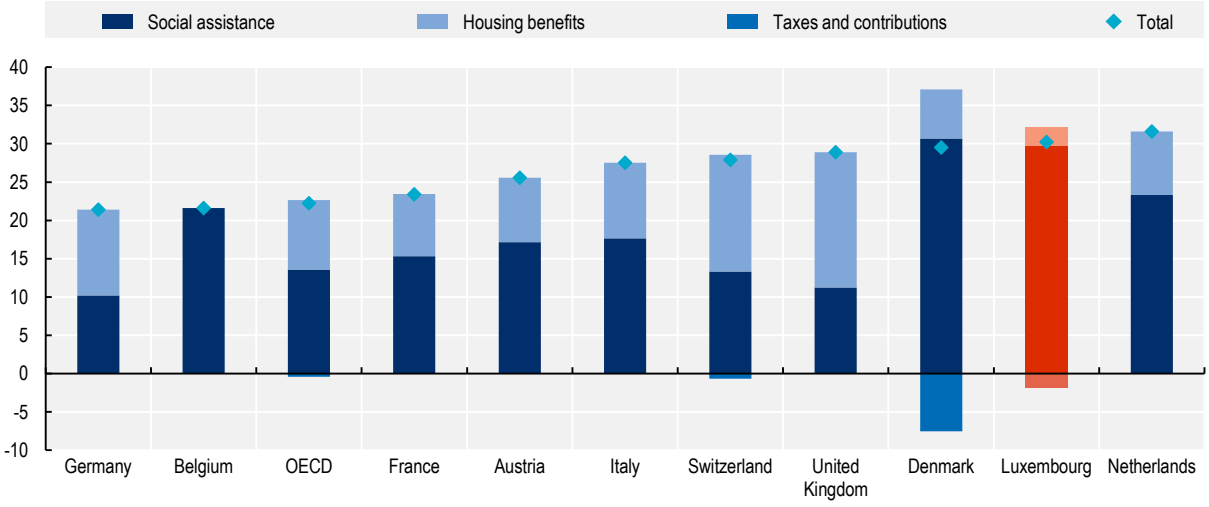
Some groups of self-employed workers may also have faced greater difficulties in accessing income support. Self-employed workers with shorter work history do not qualify. Furthermore, they were not eligible for JRS and, while in principle, they had equal access to UB, self-employed workers needed to have declared their incomes for a minimum of two years prior to suspending operations to qualify. In return, they were entitled to at least one year of benefit receipt.[13] Some Nordic countries waived the requirement for self-employed workers to renounce their business licence to receive income support during the crisis. This could have been considered by the Luxembourg authorities, given the exceptional nature of the crisis. Luxembourg provided targeted ad-hoc support to self-employed workers at different points during the crisis, but such ad-hoc payments are less predictable, and usually less generous, than the support provided through standard social protection systems.

7.3.15. Luxembourg also strengthened income assistance to low-income households

Income assistance played an important role across OECD countries in supporting the livelihoods of low-income household affected by the crisis, particularly those that did not have access to earnings-related support through JRS or UB. Luxembourg provides such income assistance through two social assistance (SA) benefits, the social inclusion income (*REVenu d'Inclusion Sociale*, REVIS) and the cost-of-living allowance (*allocation de vie chère*), as well as a housing benefit (*subvention de loyer*). For a 40-year-old single person with no other sources of income, the net payments from REVIS and the housing benefit accounted for about 30% of the national average wage in 2021, somewhat more than in many European countries (22% across the OECD on average; Figure 7.20). The REVIS accounts for the bulk of these payments.

Figure 7.20. Income assistance benefits are somewhat higher in Luxembourg than in peer countries

Social assistance and housing benefits as a percentage of the average wage, 40-year-old single person, 2021



Note: OECD gives the average over 29 countries. Social assistance only includes REVIS, as the cost-of-living allowance is not simulated.
Source: OECD TaxBEN Model (version 2.4.0) http://oe.cd/TaxBEN.

StatLink https://stat.link/ghm9ak

Luxembourg strengthened income support to low-income households during the crisis by expanding its housing benefits (*subvention de loyer*) and doubling the payment of the annual cost-of-living benefit (*allocation de vie chère*). While no adjustments were made to the REVIS these measures were an effective way of quickly channelling additional support to a large number of financially vulnerable households without requiring them to apply for new benefits and go through lengthy bureaucratic procedures. Indeed, the majority of recipients of SA benefits in Luxembourg receive the cost-of-living allowance, with a small share only receiving the REVIS (an average of 4.2% of households receives some form of SA, with 0.3% receiving only the REVIS, 2.7% receiving only the cost-of-living allowance and 1.2% receiving both). However, since the cost-of-living allowance is paid annually, and the time lag between the application and the receipt of the benefit is variable, it will not necessarily have reached households at the time of greatest need.

7.3.16. Benefit receipt rose little, and some vulnerable groups may have been left behind

Meanwhile, receipt rates of SA increased only little. The share of people in households that received either the REVIS or the cost-of-living allowance rose on average from 4.2% per month in 2019 to 4.5% in 2020 and declined again to 4.2% in 2021. All of this (small) increase reflects the growing number of recipients of the cost-of-living allowance. While SA plays a vital role in supporting the living standards of the most vulnerable households, these numbers suggest that it was of lesser importance in supporting the incomes of workers and households affected by the crisis more broadly. Again, this is consistent with patterns observed in a number of other European countries, where rates of SA receipt have remained relatively flat over the crisis. This certainly reflects the effectiveness of earnings-related benefits, such as the JRS and UB, in protecting workers' incomes. It also explains what appear to have been stable poverty rates in Luxembourg in 2020.

However, the lack of reactiveness of SA receipt rates to the crisis may to some extent also indicate that some vulnerable groups did not have access. This certainly applies to young people between 18 and 25 years, who generally do not qualify for REVIS. Young workers with patchy employment histories may therefore have been left without support, as they could access neither UB nor SA. As shown previously, young workers experienced high job separation rates during the crisis. Relaxing the age condition to access REVIS, at least temporarily, could have been a way to account for this rise in joblessness among the young. Alternatively, Luxembourg authorities could have considered providing an exceptional, temporary, targeted support for these workers. University students who relied on a part-time job to fund their studies may also have required additional attention as they were not eligible to the cost-of-living allowance and therefore did not benefit from the increase in support. These students are entitled to grants to partly cover their cost of living and education fees, whose duration was extended during the crisis. Nevertheless, additional income support would have seemed appropriate. France, for example, provided a one-off emergency aid worth up to EUR 500 for students in sudden financial difficulty due to the crisis (OECD, 2021[15]). The gaps in income support for students revealed by the crisis sparked discussions on how to improve income protection – the New Zealand government already acted by increased social benefits for young people.

7.3.17. Luxembourg introduced targeted support to non-standard workers, in particular the self-employed and workers in the arts, entertainment and recreation sector

In addition to the expansions of JRS, UB and SA programmes, Luxembourg implemented targeted support measures for non-standard workers, who were not well covered by standard job and income protection mechanisms. These included self-employed workers, and in particular those in the arts, entertainment and recreation sector.[14]

For the self-employed, Luxembourg introduced in April 2020 three types of lump-sum emergency allowances to support workers who experienced financial difficulties directly linked to the COVID-19 crisis. These one-off allowances provided rapid relief, but only for a short time, and some professions, including in health and financial and insurance activities, were excluded. A more targeted way of providing such support could have been to make it conditional on proof that workers' activity had been severely impacted by the crisis. A number of countries also introduced recurrent emergency support payments for self-employed workers during the crisis (see Box 7.1).

Luxembourg also carried out a wide range of measures targeted specifically at workers in arts, entertainment and recreation, a sector heavily affected by the crisis (see Figure 7.4) in which many people work on non-standard contracts. These measures supported three main groups of workers: First, artists who before the crisis were able to live out of their projects, without relying on the *statut d'intermittent*.[15] The impact of the crisis for these artists was substantial, as they were left without any source of revenues. The authorities provided several exceptional support measures, though a challenge has reportedly been

that some of these workers were hesitant to take-up such type of support. Second, artists who prior to the crisis had the status of *statut d'intermittent*. For these workers, the authorities reduced the number of working hours necessary to access the scheme and to increase the amounts. Third, teachers in private dance schools, music schools, yoga studios, and other art-related establishments, and technical workers. Many of these workers had troubles accessing *chômage partiel* because they did not have an employee status even when they mostly worked for a single employer and with little flexibility in hours. They also did not qualify for the exceptional lump-sum allowances provided to the self-employed. The Ministry also introduced support measures for this group of workers, to ensure that they were not left unprotected.

7.3.18. In Luxembourg, support was rolled-out to minimise the increase in domestic violence

In many OECD countries, the onset of the COVID-19 crisis brought an increase in officially reported incidents of domestic violence, of calls to helplines, and of visits to websites offering support and assistance (OECD, 2021[16]). The confinement measures imposed by the majority of OECD governments obliged families to live in close contact for several months. This increased the risk of conflict and violent behaviour, and concomitantly, the need to protect victims of domestic violence.

To prevent a potential increase in the incidence of domestic violence, Luxembourg implemented a crisis management system in March 2020, immediately after the outbreak of the pandemic. This included measures to ensure that institutions aimed at fighting domestic violence remained open, and that services were continued, in particular telephone and video consultations with both victims and perpetrators of domestic violence. It also involved the creation of a group to monitor the numbers of domestic violence incidents on a weekly basis. The group collected data to evaluate the risk of an increase in conflicts, violent behaviours and domestic violent actions connected to the crisis, and adjust policies where necessary. Luxembourg authorities also created a new helpline to provide support and orientation to victims of domestic violence during the crisis and updated the website "violence.lu" to facilitate access to information for domestic violence victims. Sheltering facilities were reinforced – including through the use of empty hotels – to avoid saturation of existing shelters.

These measures provided timely support and reduced the risk of a surge in domestic violence during the crisis. Indeed, despite some increase relative to previous years, the number of domestic violence acts remained comparatively low: between 2019 and 2020, the number of police interventions increased by 11% (from 849 to 943), while the number of evictions of perpetrators increased by 5% (from 265 to 278), and both numbers were lower again in 2021 (Government of Luxembourg, 2022[17]).

7.4. Summary of main recommendations

Luxembourg's labour market and social protection system was, in many ways, well prepared for the COVID-19 crisis, and further adjustments and extensions made in the initial crisis months helped to minimise job losses and protect household incomes. The recovery has been strong, and many of those affected by the crisis have since returned to work. Nevertheless, there remains some scope for fine tuning Luxembourg's labour market and social policies, should a similar crisis once more occur.

7.4.1. Consider revising chômage partiel

- **Assess the option of requiring stronger employer contributions to unworked hours as support is rolled back**. In the event of a longer crisis with a softer recovery, it may discourage companies from relying on job retention support to delay restructuring.
- **Strengthen incentives to train while on JRS – particularly for those who are likely to struggle to find a new job should their previous positions become inviable**. This may involve enabling the subsidy for those on the minimum wage to rise beyond 100%.
- **Examine avenues for offering recurrent support, comparable to c*hômage partiel*, to the self-employed.**
- **Consider ways of ensuring that support for short-time work also reaches workers with weaker labour market attachment who are easier for employers to lay off.** A first step would be to monitor access to support among workers on temporary contracts and with short employment histories, including many young people and women.

7.4.2. Adapt the exceptional family leave

- **Enable those eligible for exceptional family leave but receiving support under *chômage partiel* to receive a top up to bring them to a comparable level of support.** Such a top up would reflect the fact that those on family leave are working – though it is unpaid care work in the home rather than paid employment in the workplace.
- **Monitor the gender balance of workers taking exceptional family leave**. Consider providing incentives for households to share the leave in order to minimise the potential pernicious long-term implications for the careers of women who spend extended periods outside the workplace.
- **Examine ways to extend support to the self-employed who must look after their family due to school closures or illness/quarantine.**

7.4.3. Extend access to paid sick leave

- **Ensure that, in a pandemic, access to paid sick leave is available for all self-employed workers** to strengthen their incentives to stay home if sick or in quarantine.

7.4.4. Consider widening access to unemployment benefits

- **Consider, in a similar crisis, reducing or waiving minimum-contribution requirements to improve access for young workers and those with patchy employment histories.**

7.4.5. Ensure social assistance is available to all who need it

- **Strengthen support for the livelihoods of young workers,** acknowledging that not all will have access to family support. This could be done by relaxing the age condition to access REVIS, at least temporarily, or by providing an exceptional, temporary, targeted support.

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Notes

[1] This first pandemic wave was followed by a second wave starting in the early summer of 2020, which led the government to declare new restrictions on gatherings, including restaurants, bars, and hotels, on 17 July. In October 2020 there was a new surge in the number of cases, which led to additional containment measures, including curfews, closing of restaurants and leisure facilities in November and closure of non-essential shops in December. Most of these restrictive measures were gradually lifted between January and May 2021, with the reopening of restaurants and cafés occurring only on 16 May 2021.

[2] The leap in the average OECD unemployment rate is largely due to the inclusion of countries such as the United States, and Canada, where large numbers of temporary layoffs inflated unemployment figures.

[3] The unemployment rate among 15-64 year-olds in Luxembourg was 5.6% in 2019, much below the rate in France (8.5%), but higher than the rates in Belgium (5.4%), Austria (4.6%), Switzerland (4.5%), the Netherlands (3.4%) and Germany (3.2%) (OECD, 2022[18]).

[4] At-risk occupations include jobs that were typically not done remotely before the pandemic and involved a considerable level of physical proximity to other people. See Basso et al. (2020[3]) for more details.

[5] Calculated based on the labour force survey, these figures do not include cross-border workers domiciled abroad.

[6] Data on education level is unavailable in the data provided by IGSS and is thus, unfortunately, not analysed in this chapter.

[7] Alongside cross-border workers and labour migrants, Luxembourg also has a large number of asylum seekers and refugees. In 2019, with over 3 500 asylum seekers per million people, the number of individuals seeking asylum in Luxembourg was amongst the highest, per capita, in the OECD – only Greece saw a larger number. Partially reflecting these disparate groups, employment rates among migrants in Luxembourg differ widely according to country of birth with those were born within the European Union seeing an employment rate of over 70% - substantially higher than among the native-born population – while employment rates among those born outside the European Union hover 10 percentage points below.

[8] These data were obtained by extracting, from administrative data, the income trends between 2019 and 2020 for households across the deciles of the income distribution, and by then using those numbers to predict 2020 income data in the EU-SILC.

[9] Here, the poverty rate is defined using Eurostat poverty threshold at 60% of the median equivalised disposable household income. The OECD typically uses a poverty threshold of 50% of the median equivalised disposable household income, which gives lower poverty rates.

[10] Luxembourg also provided a EUR 500 training voucher for digital skills to workers on JRS in the first quarter of 2021.

[11] According to the 2020 OECD *Risks that Matter* Survey, mothers with young children were nearly three times as likely as fathers (62% versus 22%) to report having taken on most or all of the additional unpaid care work related to school or childcare facility closures (OECD, 2021[20]; OECD, 2021[19]).

[12] At the onset of the crisis in 2020, the average required minimum contribution period across OECD countries was slightly higher than that, because six OECD countries lowered minimum contribution periods between January 2020 and 2021 (OECD, forthcoming[6]).

[13] Analysis of income support for workers on non-standard contracts in European countries for 2014-15 did not find any gap in the probability of benefit receipt for out-of-work people with a history of standard and non-standard work in Luxembourg (OECD, 2020[1]).

[14] See Chapter 4 on health policy for further information on measures to encourage and support physical activity during the crisis.

[15] The *"statut d'intermittent"* is a status that applies to the so-called *"intermittents du spectacle",* who are artists or technicians that work in a temporary manner on individual projects with limited duration, alternating periods of activity with periods of inactivity. Conditional on meeting certain eligibility criteria, these workers are entitled to receive a replacement income during their periods of inactivity, which is a function of their income during periods of activity. For more details see https://guichet.public.lu/fr/citoyens/loisirs-benevolat/culture-tourisme/statut-artiste/intermittent-spectacle.html.

Evaluation of Luxembourg's COVID-19 Response

LEARNING FROM THE CRISIS TO INCREASE RESILIENCE

As countries seek to learn from the COVID-19 crisis and increase their resilience for the future, evaluations are important tools to understand what worked or not, why and for whom. This report is the first of its kind. It evaluates Luxembourg's responses to the COVID-19 crisis in terms of risk preparedness, crisis management, as well as public health, education, economic and fiscal, and social and labour market policies. While Luxembourg's response to the pandemic has been particularly agile, preserving the country's resilience will require maintaining high levels of trust in government, reducing inequalities, and laying the foundations for inclusive growth. The findings and recommendations of this report will provide guidance to public authorities in these efforts.

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