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2023 Country Report – Lithuania

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Recommendation for a COUNCIL RECOMMENDATION

on the 2023 National Reform Programme of Lithuania and delivering a Council opinion on the 2023 Stability Programme of Lithuania

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European Commission

Lithuania

2023 Country Report

ECONOMIC AND EMPLOYMENT SNAPSHOT

Recovery hit by the economic fallout from Russia's invasion of Ukraine

In 2022, economic growth in Lithuania was impeded by surging inflation, which reached 18.9% and was among the highest in the EU. Russia's unjustified invasion of Ukraine in February 2022 created a surge in energy prices, which translated into broader inflation over the course of 2022. Inflation reached a peak in September 2022, at 22.5%, and eased slightly at the end of the year, and decreased to 15.2% in March 2023 (18.5% in January 2023) ([1]). Economic growth in 2022 was 1.9%, with a contraction in the final quarter, driven by a fall in households' real disposable incomes ([2]), a concomitant decline in real consumption and weakened international demand.

High inflation, combined with rising interest rates and lacklustre domestic and international demand, are set to shape economic growth going forward, which is expected to remain weak in 2023. Inflation is expected to remain elevated in 2023, although significantly lower than in 2022, and decelerate by 2024. Investment is expected to contribute positively to growth in the coming years. This is thanks to support from the Recovery and Resilience Facility (see Section 2) and a significant volume of cohesion policy funds in 2021-2027 (EUR 7.8 billion). However, projections for growth and inflation remain surrounded by significant risks arising from geopolitical tensions and exposure to global energy developments. Other risks that warrant monitoring are the formation of a potential wage-price spiral, increased fragmentation of supply chains, and an increase in corporate bankruptcies.

The labour market continued to recover in 2022 and is expected to withstand the economic downturn. The activity rate rebounded in 2021 to pre-pandemic levels and has been increasing since then, partially due to the high employability of people fleeing the Russian aggression in Ukraine. This represents a record high of 79.0% in 2022, well above the EU average (74.6%) (see Annex 14). However, total employment is projected to decrease slightly in 2023, after peaking at 79.8% of the working-age population in Q3 2022 ([3]), due to the impact of the energy crisis on the economy. Similarly, the unemployment rate (15-74 years) fell to 5.5% in Q2 2022 ([4]), before rising slightly in the next quarter and into 2023. The unemployment rate remains higher in towns and rural areas than in larger cities, and higher among low-skilled people.

Skills mismatches ([5]) remain an obstacle to employability, competitiveness and potential growth. Addressing them are essential for Lithuania's digital and green transition. The labour supply continues to fall short of the growing demand. The rate of job vacancies stood at 1.9% in Q3 2022, almost on par with the record level of 2% recorded in Q3 2008, thus putting upward pressure on wages and posing a risk to productivity in labour-intensive sectors (see Annex 12). Tightness in the labour market in 2022, measured as the ratio of job vacancies to the number of unemployed people, was at its highest in 15 years. This points to skills

([1]) Source: Eurostat in April 2023.

([2]) A real value is one which has been adjusted for inflation, enabling comparison of quantities as if the prices of goods had not changed on average.

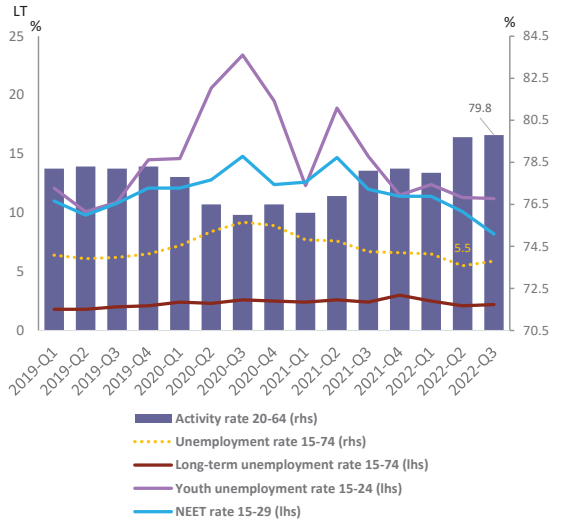
([3]) Source: Eurostat in May 2023.

([4]) Source: Eurostat in May 2023.

([5]) Skills mismatch is a discrepancy between the skills that are sought by employers and the skills that are possessed by individuals.

mismatches and skills shortages, which are of great concern to Lithuanian firms (76% of those polled in the 2022 EIB investment survey), especially in the construction sector (ECFIN business and consumer survey). Nevertheless, the data from Q4 2022 show that the tension in the labour market has decreased.

Graph 1.1: **Selected labour market indicators**



Source: Eurostat

Lithuania's GDP per capita is below the EU average but is converging with it relatively well. However, inflation is putting pressure on real wages. In 2021, Lithuania's GDP per capita was 89% of the EU average, which equalled Estonia's and was 17 percentage points higher than Latvia's. During the last decade, Lithuania's real compensation per employee has outperformed productivity growth, despite both being consistently above the EU average. Nominal wages grew by 11.9% in 2021 and 11% in 2022. However, real wages started to fall in 2022 amid high inflation, after increasing in both 2020 and 2021 by more than 5%. A strong increase in nominal minimum wages (13.7%) ([6]) and increased non-taxable amount applicable for personal income tax purposes helped offset the impact of inflation for people earning the minimum wage, which represents a smaller decline in real terms compared to the EU average.

([6]) This represents the second largest increase in the EU.

Lithuania has successfully overcome its dependency on Russian energy but remains heavily reliant on energy imports. Following Russia's invasion of Ukraine, Lithuania has successively abandoned imports of gas, oil, electricity and coal from Russia by redirecting energy imports through the LNG terminal in Klaipėda, the oil terminal in Būtingė, the new gas interconnection with Poland, the enhanced interconnection with Latvia, and the existing electricity interconnections with Poland, Latvia and Sweden. However, Lithuania still imports around two thirds of its electricity, due to insufficient (albeit increasing) domestic electricity generation. This exposure to imports has contributed to record energy prices (a 190% increase in wholesale prices) and a corresponding surge in inflation (18.9% in 2022). To mitigate this, Lithuania has set an ambition to increase the generation of electricity from renewable sources to 70% of total domestic electricity consumption by 2030 and 100% by 2045, and is currently planning to advance the targets even further. At the same time, Lithuania, with Estonia and Latvia, is still part of the BRELL electricity network controlled by Moscow. This poses a geopolitical risk that could be tackled most effectively by joining the EU electricity grid. Lithuania is preparing to join the network by 2025.

Lithuania's economy is susceptible to energy shocks because it relies on the energy-intensive production of low and medium value-added goods and services. Low prices for energy and other resources, and (to a certain extent) low labour costs, play a key role in keeping Lithuania's economy competitive. However, the recent sharp increase in energy prices and the continued convergence of wages with the EU average puts the sustainability of this growth model into question. Lithuania's export industry is energy-intensive (the biggest export sectors are mineral products and transport services) and, therefore, more vulnerable to energy price shocks.

As assessed in the in-depth review of Lithuania, vulnerabilities relating to price competitiveness, external balances and

house price developments are increasing but seem to be contained. ([7]) Increasing energy and food prices, along with increases in unit labour costs, have helped to push up all measures of inflation in 2022 ([8]), with a divergence between Lithuania and other euro area countries in core inflation that may be difficult to eliminate. As wages have been growing faster than productivity over the last decade, this led to a gradual increase in unit labour costs and an appreciation of real effective exchange rates. Even though Lithuania's current account has remained broadly in balance since the financial crisis of 2008, the increasing prices of energy imports translated into a current account deficit in 2022. In addition, over the last decade, house prices have doubled in nominal terms, with 50% of this increase occurring over the last 3 years ([9]). Despite this, according to the Commission's valuation methodology, house prices do not appear to be overvalued on average. Furthermore, in the face of falling energy prices and the tightening of financial conditions, the inflation is expected to moderate and the current account deficit to improve. However, the fundamental drivers of wage divergence from productivity are expected to persist (see Annex 22).

Increased spending during the consecutive crises continues to weigh on public finances

The energy price shock hit public finances at a time when they had not fully recovered from the COVID-19 pandemic. Even though the pandemic triggered a considerable increase in government spending to support businesses and households, the general government debt and deficit was beginning to improve in 2021 and 2022. However, due to increases in national defence expenditure following the Russian invasion of Ukraine, adoption of measures to protect households' disposable incomes, and increases in general government intermediate consumption and investments, the government deficit is projected to increase to 1.7% of GDP in 2023 (1.1 p.p. higher than in 2022). The deficit is projected to decline to 1.4% of GDP in 2024 as measures to mitigate the impact of high energy prices are phased out. Due to denominator effects, public debt is forecast to decrease by 1.3 p.p. and reach 37.1% of GDP in 2023, and 36.6% in 2024. The budget deficit and debt estimates for 2024 is under high uncertainty and will be dependent on developments in energy prices.

To mitigate the economic and social impact of high energy prices, Lithuania adopted a package of costly and mostly untargeted temporary support measures. These measures are projected to amount to around 1.3% of GDP in 2022 and 0.7% of GDP in 2023. Almost all of the measures were untargeted and did not include incentives to reduce energy demand and increase energy efficiency. The Lithuanian government introduced temporary universal electricity price caps for businesses to preserve the international competitiveness of its energy intensive industries. Reimbursement of VAT on district heating and electricity price caps on household energy consumption were brought in to alleviate the negative social impact of high energy prices.

Some crisis-related increases in current government spending are of a lasting nature, for which corresponding revenue sources are needed. In 2022-2023, Lithuania adopted a package of permanent expenditure measures aiming to protect households' disposable incomes in the situation of high inflation (increases in pensions, other social benefits, and public sector wages), which are not offset by corresponding revenue measures. Without additional revenue measures, these government spending commitments may pose

([7]) European Commission (2023), In-Depth Review for Lithuania, Commission staff working document (COM(2023) 637 final),

([8]) European Commission (2023), Inflation Differentials in Europe and Implications for Competitiveness: Thematic Note to Support In-Depth Reviews, COM (2023) Institutional Paper 198.

([9]) European Commission (2023), Housing Market Developments: Thematic Note to Support In-Depth Reviews, COM (2023) Institutional Paper 197.

a risk to Lithuania's fiscal sustainability in the long-term.

Addressing the remaining socio-economic challenges as a basis for sustainable growth

Even though at-risk-of-poverty rate has been slightly decreasing, it remains one of the highest in the EU. Income inequality in Lithuania remains at critically high levels as reflected in the Social Scoreboard with income of the richest 20% of the Lithuanian population over six times higher than that of the poorest 20% in 2021. Lithuania's tax revenue as a share of GDP is one of the lowest in the EU, even though it has been increasing steadily in 2017-2022. Correspondingly, public spending on social protection has been also increasing, but it is still significantly lower than the EU average. Social transfers in Lithuania are less effective at reducing poverty and inequality than in other EU countries ([10]), even though its effectiveness has been increasing in the previous years. The tax system became slightly more effective in reducing income inequality in the period of 2015-2019 (the latest available data), however, its impact remains relatively small in comparison to other EU countries ([11]). Public services in the areas of health care and general public services are hindered by a structural under-funding, hampering its quality and accessibility.

There are significant regional disparities in productivity, connectivity and social indicators. GDP per capita in the capital region well exceeds the EU average, while some other counties have not yet reached half of the EU average. Since 2011, Lithuania has experienced one of the highest levels of depopulation in the EU, mainly as a result of natural change and also due to people moving. However, population changes are not equally distributed across the country, with the population increasing in the capital region and falling rapidly in more remote regions.

Providing adequate services is particularly challenging in the areas that are far from the regional centres. Due to the lack of a skilled workforce and depopulation in most counties, it is becoming increasingly difficult to provide quality healthcare, education, social and other administrative services in an efficient manner, and to speed up economic development. The situation calls for further consolidation and concentration of resources, and better cooperation between municipalities, combined with more efforts to ensure better public transport. So far, there has been a lack of effective territorial development strategies and coordination at regional level. Local authorities are currently preparing integrated territorial development strategies to be supported by the 2021-2027 EU cohesion policy funds. These strategies would include initiatives agreed by groups of municipalities and could lead to better public services across the whole territory covered by the strategies.

Lithuania is improving on several Sustainable Development Goal (SDG) indicators, and is approaching the EU averages for them. Progress has been made on energy productivity, but it is still lower than the EU average. Lithuania is also improving on SDG indicators on fairness. Lithuania has reduced the risk of poverty or social exclusion, though the risk is still higher than the EU average. The country underperforms on almost all indicators for good health and well-being, though some progress has been made in standardised avoidable mortality (see Annex 16). Lithuania performs well or is improving on SDG indicators on productivity. However, the performance of the health system is likely to have a negative effect on productivity because of its impact on the health of people of working age. Lithuania is making progress on education, though further efforts are needed

([10]) In 2021, social transfers (pensions included) reduced Gini coefficient by 15.8 p.p. in Lithuania, and by 22.1 p.p. in the EU on average; At-risk-of poverty rate (AROPE) – by 22.5 p.p. in Lithuania, and by 28.5 p.p. in the EU on average.

([11]) European Commission's calculations based on the OECD income distribution database data, https://stats.oecd.org/Index.aspx?DataSetCode=IDD.

Box 1:

Energy policy response in Lithuania

Lithuania adopted several support measures to cushion the impact of energy price inflation on households and businesses. The Commission's 2023 spring forecast has projected that their costs in 2023 will amount to 0.7% of GDP. Most of the measures do not preserve the price signal to increase energy efficiency or reduce energy consumption and are not targeted on the most vulnerable people and businesses. Temporary support measures for households will be applied until the end of 2023 (with the exception of the VAT compensation for district heating which is set to last until the end of the first heating season in 2024), while businesses will benefit from the electricity price caps until March 2023.

The measures include electricity and gas price caps for households and an electricity price cap for businesses. From 1 July 2022 to 31 December 2023, households receive 100% reimbursement of the costs of electricity and gas above certain price thresholds per KWh (the price cap thresholds for electricity are being gradually increased from 24 cents per KWh in the second half of 2022 to 33 cents in the second half of 2023). All households benefit from this compensation irrespective of their income levels. Similarly, 50% of the electricity price above a certain threshold is reimbursed to businesses (the same thresholds are applied as for households, but without VAT or excises included in the price). These compensation measures applied from 1 October 2022 to 31 March 2023. However, the market price of electricity fell below the threshold (28 cents per KWh) in the first months of 2023, negating the need to compensate businesses.

Lithuania applies the EU solidarity contribution under Council Regulation (EU) 2022/1854 in the fiscal year starting in 2023. The contribution at a rate of 33% applies to an amount exceeding 120% of the average taxable profits in 2018-2021 in the crude oil, natural gas, coal, and oil refining sectors; as well as at a rate of 90% to the revenue of electricity producers that exceeds prescribed market rate caps which are set by the State Energy Regulatory Council. As Lithuania imports most of its electricity from other EU countries (mostly from Sweden), according to the law, the Energy Ministry, the National Energy Regulatory Council and Litgrid, the power transmission system operator, will be obliged to reach a revenue-sharing agreement with exporting countries.

Following its decision to cease fossil fuels imports from Russia, Lithuania has successfully mobilised its infrastructure and has redirected its energy imports. The Klaipeda LNG terminal has ensured Lithuania's gas independence from Russia and has helped the other Baltic countries to do the same. In 2022, Lithuania also completed works on two gas interconnectors with neighboring Member States: the Poland–Lithuania Gas Interconnection, which became operational in May 2022, and the strengthening of the Lithuania-Latvia Interconnection, which was completed in December 2022. On synchronisation with the EU electricity grid, the project is ongoing and is expected to be completed by the end of 2025, in cooperation with Poland, Latvia and Estonia.

to reach the EU average for participation in early childhood education and adult learning (see Annex 14 and 15) ([12]). The proportion of households with high-speed internet connections is significantly above the EU average. Lithuania's gross domestic expenditure on R&D is low but slowly improving. Lithuania is also improving on SDG indicators on macroeconomic stability. In recent years, the country has increased the amount of investment as a percentage of GDP, and improved the quality of its institutions and people's trust in them (see Annex 1).

([12]) The indicator on participation in adult learning during the previous four weeks is used in the country report, rather than the indicator on learning over the previous 12 months. This is because adult education survey (AES) data for the 12-month indicator are currently only available for 2016 , while the new labour force survey (LFS) indicator, agreed for use in the social scoreboard and as the 2030 headline target on skills, will only be available in 2023.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Lithuania's recovery and resilience plan (RRP) aims to address the key challenges related to the green and digital transition, general and vocational education, innovation and science, healthcare services, tax compliance, social protection and employment. It consists of 27 reforms and 3 investments that are supported by EUR 2.2 billion in grants, representing 4% of Lithuania's GDP in 2021 (see Annex 3 for more details).

The implementation of Lithuania's recovery and resilience plan is well underway. The Commission disbursed EUR 289 million to Lithuania in August 2021 as pre-financing under the Recovery and Resilience Facility (RRF). In addition, on 30 November 2022, Lithuania submitted a request for the disbursement of EUR 649.5 million, concerning the first instalment of non-repayable support. The Commission has adopted a positive preliminary assessment for 31 out of 33 milestones covering six of the plan's seven components, while two milestones related to tax reforms have been assessed to be not satisfactorily fulfilled. The Commission acknowledges the first steps already taken by Lithuania to fulfil these outstanding milestones, though significant work remains to be done. The Commission has therefore activated the 'payment suspension' procedure that gives Lithuania additional time to fulfil these milestones, while receiving a partial payment of EUR 542.3 million (net of prefinancing) linked to the milestones that have been satisfactorily fulfilled.

The 31 milestones that have been satisfactorily fulfilled demonstrate significant progress in the implementation of Lithuania's recovery and resilience plan. This progress includes the launch of key reforms in the areas of education, green and digital transition, social protection and employment support, science and innovation, as well as the public sector and tax compliance. Due to its cross-cutting relevance, the satisfactory fulfilment of the milestone on the RRP repository system provides for further successful implementation of the plan.

Work on the milestones and targets for the forthcoming payment requests is well underway. These include adoption of an action plan for the transition to a circular economy, and key legislation on emergency medical services, the secondary use of health data, adult education and limiting cash payments. Progress is also expected on the installation of new electricity storage facilities and the launch of building renovations.

However, due to high inflation and disruptions in supply chains caused by the Russian war of aggression against Ukraine, a few investments may be delayed or discontinued and could potentially affect the submission of the subsequent payment requests. On this basis, Lithuania intends to submit modifications to the plan. The amended RRP, including the REPowerEU chapter, are expected to address the challenges related to energy supply and security, energy efficiency as well as to accelerate the decarbonisation of the economy and reduce dependence on fossil fuels. Also, Lithuania aims at requesting additional loans, to contribute to the REPowerEU chapter and to promote investments in green technologies and high value-added industries in the private sector.

The following, more detailed review of measures being implemented under the RRP in no way implies formal Commission approval or rejection of any payment requests.

Supporting the green and digital transition

On the green transition, Lithuania has completed several measures including new frameworks for the sale of electricity and a procedure to determine the energy efficiency and environmental requirements of road transport vehicles. Lithuania has adopted a new legislative framework to improve institutional and legal mechanisms to promote the generation, transmission and consumption of electricity from renewable sources. This measure will improve the Lithuanian energy market by establishing a new framework for the sale of electricity and setting long-term renewable energy targets for all sectors. This will contribute to the development of renewable energy sources in Lithuania. As regards transport, Lithuania has adopted a new legislative framework establishing a procedure for determining energy efficiency and environmental protection requirements for the purchase of road transport vehicles, which would progressively contribute to decarbonisation of road transport. Furthermore, the establishment and operationalisation of the Sustainable Mobility Fund, alongside the adoption of an action plan for a better network of electric vehicle recharging points and an IT system to record the quantities of renewable fuels in the transport sector, will help to make greener the transport sector in Lithuania.

Reforms and investments that support the digital transition include several measures to achieve greater digitalisation of the public administration and businesses, develop basic and advanced digital skills, and improve broadband infrastructure. Therefore, to increase the level of digitalisation of the public sector, Lithuania has set up a competence centre for open data and digital transformation, with the aim to avoid duplication of existing solutions. Each new proposed solution will also be assessed to ensure it is compatible with the overall architecture of the information systems and data. Furthermore, Lithuania is making progress in improving digital connectivity in international land transport corridors (Via Baltica and Rail Baltica) and other trunk roads and railway lines of national significance, airports and seaports. This entails assigning the radio frequencies for the deployment of 5G networks and the adoption of laws enabling faster installation of the electronic communications infrastructure. Finally, additional measures have been introduced to promote the development of digital skills at all levels of society, including pupils, employees, jobseekers, vulnerable groups, and older people.

Fostering science and innovation

Measures in the field of science and innovation aim to support innovative activities, concentrate resources in areas of high growth potential, and promote active participation in research and innovation (R&I). Lithuania has established a single Innovation Agency, which will provide a one-stop shop for businesses seeking advice and support on their innovative activities. Revised legal acts will make the innovation support framework more coherent and reduce gaps and overlaps in existing support measures. A new smart specialisation strategy will enable Lithuania to concentrate resources in the areas of highest growth potential. Finally, an agency to implement science policy has been established to promote more active participation of Lithuanian applicants in international R&I programmes.

Quality and accessible education over a lifetime

Lithuania has adopted several measures to improve the quality and efficiency of general and vocational education. The new legislation on the Millennium School Progress Programme sets the framework for future investments to create a high-quality education system across different municipalities and to fill the gaps in pupils'

learning. The new framework to develop a network of schools that implement education programmes will improve the quality of education and help address inequalities. It will do this by reducing the number of small schools, consolidating the school network, and providing all students and teachers with a better learning environment. The new legislative frameworks on career guidance, which includes provisions on career specialists who have started working in schools and in regional career centers, and the support scheme for apprenticeships will help address skills shortages and mismatches. The implementation of the vocational education and training strengthening program will contribute to consolidating resources, avoiding duplication of programs and ensure the involvement of key stakeholders in the development of these programs.

Improving social protection and employment support

Lithuania already completed two sub-measures in the areas of social protection. Lithuania has set-up an accreditation scheme for the provision of social care to increase the quality of social care services. Furthermore, an additional benefit for disabled and elderly single persons has been introduced to tackle poverty in these vulnerable groups. Significant legislative steps have been completed on optimising and improving operational processes in the Employment Service, and to launch training and employment support schemes. Two pilot schemes have been set up: a pilot scheme dedicated to entrepreneurship to support job creation in the areas of the twin transition and circular economy, and a pilot scheme to help people to get qualifications and/or acquire skills for high value-added jobs (including digital skills).

Increasing the effectiveness of the public sector and tax compliance

The RRP sets out measures to create a fairer and more growth-friendly tax system, aiming at reducing poverty and income inequality, as well as improving its tax administration and low levels of tax compliance. To this end, a study assessing the effectiveness of personal income taxation and social insurance contributions in reducing poverty and income inequality has been delivered. In addition, the RRP is expected to contribute when creating a sustainable revenue base and increase the redistributive capacity of the tax and benefit system, by re-orienting the system towards more growth-friendly and green taxation, and by abolishing inefficient tax exemptions. The pending reform, while slightly delayed, should address the highly differentiated tax treatment of different income sources, reduce incentives for tax arbitrage and make the system simpler, more transparent, and fairer. In addition, the RRP includes measures to strengthen the tax administration by improving data analytics, developing IT tools, developing employees' skills, and limiting cash transactions to shrink the shadow economy. Lithuania recently prohibited cash payments of over EUR 5 000, and has also reformed its tax administration, including through digitalisation projects.

To increase the long-term sustainability of the state and municipal budgets, Lithuania adopted rules on the preparation and implementation of public-private partnerships. The rules allow municipal investment projects to be grouped together and enable municipalities to participate in public-private partnership programmes organised by the state, reducing the administrative cost of public agreements with private partners.

Box 1:

KEY DELIVERABLES EXPECTED UNDER THE RECOVERY AND RESILIENCE PLAN IN 2023-2024:

- Entry into force of legislation on improving the working conditions and professional qualifications of health professionals
- Entry into force of a basic model for the delivery of public health services, of legislation on the establishment and regulation of a network of personal health care institutions and legislation governing the implementation of the long-term care model
- Establishment of a Health Professionals Competence Platform
- Modernisation of health care facilities in hospitals' emergency, resuscitation and intensive care units
- An action plan for the transition to the circular economy
- Award of contracts for the digitisation of cultural resources
- A one-stop shop information system for lifelong learning
- IT qualifications for teachers
- Reforming the system for funding and enrolment in higher education
- Reforming the methodology to determine municipal budget revenue
- Implementation of tax reforms, including reviewing personal income taxation and social insurance contributions, abolishing inefficient tax exemptions, and re-orienting the system towards more growth-friendly and green taxation
- A framework for the development of strategic skills in the public sector and delivery of the related training modules
- Entry into operation of digital tools to allow real-time registration of working time in the construction sector
- Increasing the coverage of the unemployment insurance system
- Reforming minimum income protection
- Entry into operation of a new multifunctional IT tool (employment platform) interoperable with a life-long learning system, a career guidance system and other national information systems.

FURTHER PRIORITIES AHEAD

Beyond those tackled in the RRP, Lithuania faces additional challenges. These include: (i) improving the quality of public finances and public services; (ii) decarbonising industrial production and energy generation as well as the transport sector; (iii) addressing social inclusion and protection issues; (iv) strengthening primary and preventive care; and (v) closing skill gaps. Addressing these challenges will also help Lithuania to make further progress in achieving the SDGs where it currently shows room for improvement, namely Good health and well-being (SDG3), Affordable and clean energy (SDG 7) and Quality education (SDG 4) (see Annex 1).

Improving the adequacy and composition of government revenue

Even though Lithuania's revenues from taxes and social security contributions steadily increased in 2017-2022, they remain among the lowest in the EU. In 2021, revenue from tax and social security contributions amounted to 32.3% of GDP, well below the EU average of 41.2%. The VAT gap (the difference between expected VAT revenue and the amount actually collected) is one of the highest in the EU, even though preliminary estimates show that it might have decreased significantly in 2021. In 2021, revenues from property taxes, which are among the taxes least detrimental to growth, amounted to only 0.3% of GDP, around seven times lower than the EU average (see Annex 19). Lithuania collected half the EU average from corporate income taxes (as a share of GDP), had some of the lowest transport taxes in the EU and is one of the few Member States without an annual car tax (see Annex 19).

Low budget revenues limit the funding available for public services and social transfers, hampering timely and equal access to healthcare, social protection and general public services. The public services which receive the lowest level of public funding in comparison to other Member States are healthcare and general public services (such as public administration, legislative or diplomatic services, among others). Inadequate financial resources for healthcare result in long waiting times for care and high levels of unmet needs for medical care, high out-of-pocket costs for households, and the inability to offer competitive salaries to healthcare professionals. General public services are also structurally underfunded in Lithuania, receiving almost half the funding (as a percentage of GDP) than the EU average. In this context, the government is struggling to attract talents to work for the civil service. Public spending on social protection increased in 2015-2021, but it is still significantly below the EU average. This translates into relatively low levels and coverage of social benefits, with old-age pensions among the lowest in the EU relative to employment incomes (see Annex 14). As a result, social transfers in Lithuania are less effective at reducing poverty and inequality than in other EU countries ([13]).

Increases in general government expenditure, which are not matched by corresponding financing measures, might put pressure on fiscal sustainability in the longer term. In its national progress plan for 2021-2030 Lithuania has committed to reach a national consensus between social partners, civil society and political parties on the scope of services that the general government must provide, and on the level of

([13]) In 2021, social transfers (pensions included) reduced Gini coefficient by 15.8 p.p. in Lithuania, and by 22.1 p.p. in the EU on average; AROP – by 22.5 p.p. in Lithuania, and by 28.5 p.p. in the EU on average.

adequate financial resources needed to provide these services. According to the national progress plan, the government would set a target for the level of revenues from taxes and social security contributions to be achieved by 2030, based on this agreement. No progress has yet been made in this respect, even though the government has introduced several major permanent expenditure measures in 2021-2023 (such as increases in public sector wages, pensions and other social benefits), which are not offset by corresponding revenue measures ([14]). Lithuania faces a challenge to satisfy the increasing demand for quality public services and to offer competitive salaries to attract talent into the public sector. Matching permanent expenditure by financing measures would help achieve this in a sustainable manner.

The country still faces some challenges related to the public procurement market and its lack of competition. The percentage of single bids has increased significantly in the past two years (Annex 12). Although some changes have been implemented, further improving the system could help reduce costs and increase the quality of the services provided.

Tackling energy and environmental challenges

Although Lithuania is increasing domestic energy generation, it still imports around two-thirds of its electricity needs from abroad. Following Russia's unjustified invasion of Ukraine, Lithuania has successfully abandoned imports of gas, oil, electricity and coal from Russia. It has also reduced its gas consumption by 47.9% (between August 2022 and January 2023), which is the second biggest reduction in the EU ([15]). However, Lithuania remains highly dependent on imported fossil fuels, with gas still representing a quarter of its electricity generation. While energy prices have decreased, uncertainty remains regarding next winter, which requires continued efforts to structurally reduce gas demand. Reducing further the reliance on fossil fuels is an essential part of ensuring security of supply. Nevertheless, Lithuania has taken steps to streamline permitting procedures and promote electricity generation from renewable energy sources. There has been a big increase in solar (by 55%) and wind (by 24%) production capacity in 2001-2021 (see Annex 7). In the long term, the increase in generation capacity from renewable sources will have to be met with enough grid capacity to anticipate market saturations and market access guarantees for those who both produce and consume energy and renewable energy communities ([16]).

Lithuania's electricity grid is still synchronised with the BRELL electricity network. As the BRELL grid is controlled by Russia, Lithuania's electricity grid remains exposed to the risk of being suddenly disconnected. The regional synchronisation of the electricity grid with the rest of the European Union is making progress but remains to be completed. The region's energy security can also be improved by ensuring that energy interconnections have enough capacity. To that end, cooperation with Latvia and Estonia is necessary.

The transport sector remains the largest emitter of greenhouse gas emissions in Lithuania (see Annex 6). The share of public transport as a percentage of overall passenger travel is the lowest in the EU (5.9% in 2020 and 9.4% in 2019), while the percentage of zero emission vehicles is less than half the EU average (4.9% vs 10.7% in 2022). The public transport system in Lithuania is hindered by fragmented local, intercity and rail systems, which lack coordination at central level. Additionally, 32% of Lithuania's population live in regions exposed to critical levels of air pollution, leading to significant health issues.

([14]) European Commission opinion on the 2023 Draft Budgetary Plan of Lithuania, 22 November 2022.

([15]) The significant fall in gas demand was driven by the reduction in gas consumption by Lithuania's largest gas consumer, Achema, a fertiliser producer.

([16]) Energy communities organise collective and citizen-driven energy actions that help pave the way for a clean energy transition, while moving citizens to the fore.

Lithuania has significant scope to increase the green transition of its transport sector with a strong emphasis on the use of rail transport, of which only 8% is electrified (vs 56.6% in the EU27). It also needs a well-integrated multimodal public transport system, which is a factor in the urban-rural divide due to less available transport outside urban areas (see Annex 8). The incentives to choose less-polluting vehicles could be strengthened with an annual car tax, priced according to the car's emissions. Currently, Lithuania is one of the few EU countries without such a tax (see the Section on public finances). Reforms to create low emission zones in cities have stalled due to municipalities' lack of preparation and the absence of coordination at a central level.

Lithuania is among the worst performers in the EU on energy poverty, with a large untapped potential for building renovation. With 22.5% of the population unable to keep their homes warm enough in 2021 (vs 31.1% in 2015), Lithuania's rate is considerably higher than the EU average (from 9.6% in 2015 to 6.9% in 2021), and these data do not yet show the effects of the energy price surge of 2022 (see Annex 8). Lithuania can further reduce energy consumption by speeding up the renovation of buildings, but a credible strategy to reach the goal of 1000 renovated buildings per year is missing. The current renovation scheme entails lengthy and complex procedures. In addition, building managers do not have incentives to renovate and the current voting scheme encourages homeowners not to renovate ([17]). Additionally, in 2021, 57% of all households (44% by area) in Lithuania were using district heating systems to heat their homes. Increased building renovations, together with further modernisation of the district heating systems, will play a major role in reducing energy poverty in Lithuania.

Lithuania's industrial sector and workforce are more resource- and energy-intensive than the EU average. The economy, particularly industry, is considerably less efficient at using materials to produce wealth than the EU average, with resource productivity almost half of the EU average. The intensity of the Lithuanian workforce's greenhouse gas emissions is above the EU average (see Annexes 8 and 9). Additionally, a large share of the industrial sector is dependent on natural gas for non-energy uses. Fossil fuel dependency could be reduced by shifting to biogases.

In the context of the green transition, labour shortages in key sectors in Lithuania have increased in recent years, which is linked to a lack of relevant skills and creating bottlenecks in the transition to a net-zero economy. In 2022, labour shortages were reported in 28 occupations in Lithuania that require specific skills or knowledge for the green transition. The occupations include insulation workers, plumbers and pipe fitters, and construction and other types of electricians ([18]). The job vacancy rate increased in most key sectors, such as construction (from 0.8% in 2015 to 1.5% in 2021) and manufacturing (from 1.4% in 2015 to 1.8% in 2021), with both sectors below the EU average of 3.6% and 1.9%, respectively, in 2021 ([19]). In 2022, labour shortages were reported as a factor constraining production in industry (for 25.8% of firms) and construction (for 31.4% of firms) ([20]). Upskilling and reskilling for the green transition, including for the people most affected, and promoting inclusive labour markets, are essential policies to accelerate the transition to net-zero and ensure its fairness (see Annex 8).

([17]) In the current setting, passive homeowners are by default counted as voting against the renovation.

([18]) Data on shortages is based on European Labour Authority (2023), *EURES Report on labour shortages and surpluses 2022*. National authorities report through a questionnaire, based on administrative data and other sources as submitted by the EURES National Coordination Offices (definitions of shortages differ, thus data is not comparable across countries and covers a wide variety of sectors). Skills and knowledge requirements are based on the ESCO (European Skills Competences and Occupations) taxonomy on skills for the green transition (for occupations at ISCO 4-digit level of which there are 436 in total). Examples are identified based on their ESCO "greenness" score and relevant sectors.

([19]) Eurostat (JVS_A_RATE_R2)

([20]) European Business and Consumer Survey

Accelerating the industrial transition towards investment in manufacturing for clean technology is crucial to improve industrial competitiveness and security. Lithuania has the potential to transform its manufacturing sector and to contribute to the clean technology supply chain. According to OECD figures, in 2021 about 4% of Lithuanian start-ups are in the 'green' sector (the OECD average in 2021 was 3%). Total venture capital investment amounted to 0.73% of GDP, of which 5.3% was directed to climate tech start-ups. This mainly supports investments in the energy sector (energy generation and grid technologies), as well as in transport.

Two-thirds of the EU-protected habitats in Lithuania are classified as being in an unfavourable condition, while progress towards a circular economy is insufficient. The yearly environmental investment gap ([21]), which excludes investment to achieve carbon neutrality, is estimated to have reached EUR 0.9 billion (see Annex 6) over 2014-2020. Most of those investment needs are in biodiversity and ecosystems (EUR 651 million per year), which are under pressure from forestry, agriculture and invasive species. At the same time, while still above the 2030 target, net carbon removals by land use, land use change and forestry (LULUCF) have fallen significantly since 2013, due to pressure from forestry and more intensive land use. The agricultural sector remains the second largest emitter of greenhouse gases in Lithuania, with emissions on a generally upward trend since the turn of the century. This calls for a more action by stakeholders to help achieve the national and EU climate targets. Similarly, Lithuania's use of circular materials has fallen since 2016 to almost a third of the EU average in 2021 (4% vs. 11.7% in the EU-27) (see Annex 9), emphasising the need for more investment in a circular model. Lithuania also missed the 2020 EU target for municipal waste recycling of 50%, with 44.2% in 2021, and there is a risk of it not meeting the EU target for 2025.

([21]) the difference between current environment and climate expenditure and the expenditure required to reach various environmental and climate objectives.

Social inclusion and protection

While social indicators in Lithuania have improved somewhat, the energy crisis and soaring inflation may reverse the positive trend. The overall share of people at risk of poverty or social exclusion fell slightly between 2020 and 2021. However, compared to the overall rate of 23.5% (in 2021) significantly higher rates have been observed for people over 65 (38.7%) and for persons with disabilities (38.9%). The rate of older women (65+) at risk of poverty or social exclusion was almost twice as high as for older men. In addition, compared to 2019-2020 the situation has deteriorated for single parents with dependent children. Furthermore, 22.5% of the population were unable to heat their homes adequately in 2021. This was three times higher than the EU average. This figure rises to 30.9% for those already at risk of poverty. These statistics are expected to be further negatively impacted by the high energy prices and inflationary pressures observed since 2022. Positive developments have been observed in youth unemployment and long-term unemployment, which both recorded significant falls in 2022, compared to the 2020-2021 levels.

Despite the strong rebound in the employment rates, there are still some structural problems in the labour market. Investment in policies to help people find work (active labour market policies) is relatively low in Lithuania with some recent pilot measures expanding the provision of vocational training and training improving qualifications. Lithuania depends strongly on EU Structural Funds to finance these measures, while the integration of social assistance and vocational training into active labour market policies, especially for unemployed people, is still ineffective. Collective bargaining coverage and the number of people in trade unions in Lithuania remain very low, making it difficult for the social partners to engage in constructive social dialogue.

The inadequacy of the social safety net remains a problem, as reflected by the indicators under the European Pillar of Social Rights. The level of the minimum income was only 50% of the amount used to define poverty and 33% of the income of a low-wage earner in 2021 ([22]). Just 9.6% of people below the threshold that defines them at risk of poverty received social assistance benefits in 2020. To address this, Lithuania introduced a reform to pro-actively identify vulnerable people in need of social assistance (see also Annex 14). While this is expected to improve the situation somewhat, further efforts are needed to address inefficiencies and fragmentation in the planning, organisation and delivery of social services. In particular, municipalities do not sufficiently involve non-governmental organisations in the annual planning of social services. Lithuania launched a pilot project in certain municipalities that aimed to improve the provision of integrated services for the unemployed. It has proved to be successful in addressing some of the related challenges. Therefore, as of 2023, all municipalities in the country are recommended to apply the methodology of these projects in their programmes to promote employment.

Lithuania has made some reforms in social housing. In particular, changes to legislation, applicable since 2022, introduced the right to prioritise single parent families, increased the income and assets limits taken into account in assessing eligibility for social housing and created special provisions in case of a national emergency or quarantine. Nevertheless, access to social housing remains limited. At the end of 2022, there were around 9 700 families (almost 19 000 people) waiting for social housing, with an average waiting time of 5.85 years. While investments are planned under the 2021-2027 EU cohesion policy funds, in particular to develop the social housing stock for disabled persons and large families, these would not be enough to address all needs. In this context, it remains crucial to develop an overall strategy on how to tackle chronic shortages and increase the quality of social housing.

([22]) Vs: 59% and 47%, respectively in the EU.

Strengthening primary and preventive care

Lithuania faces several challenges related to its health system, in particular primary care and disease prevention. Compared with other Member States, Lithuania has a high number of avoidable hospital admissions and one of the highest measures of treatable and preventable mortality. Life expectancy remains among the lowest in the EU, having dropped further between 2020 and 2021. Lithuania has the highest rate of mortality from suicide in the EU. The share of out-of-pocket spending on healthcare is almost double the EU average. Most challenges in Lithuania's health system are linked to structural underfunding of the health sector (health expenditure is among the lowest in the EU) and insufficient resources at primary care level and in public health offices.

The challenges are exacerbated by shortages and an uneven distribution of health professionals, which limit access to primary healthcare. Shortages of nurses remain a particularly persistent issue. While the number of doctors continues to grow, the number of nurses has not kept pace and remains below the EU average. The geographical spread of doctors presents a challenge, as the highest concentration of doctors is in the two biggest cities, accounting for more than twice the ratio in the rest of Lithuania. Persistent Shortages and skills mismatches across all health professions hampers the provision of healthcare.

Lithuania is making efforts to transform its hospital network, moving away from hospital care to a model based on stronger primary care. The high reliance on inpatient care, with very high levels of avoidable hospital admissions and varying quality of care, hints at the underdeveloped role of primary care. While results remain to be confirmed, these efforts have the potential to increase the efficiency and resilience of the health system. At the same time, disease prevention remains a challenge in Lithuania. COVID-19 caused major disruptions to disease

prevention programmes, in particular those tackling cardiovascular diseases and treatable cancers. There is scope for improvement in cancer care, both in better screening coverage and higher survival rates for many treatable cancers (cancer mortality is above the EU average). The highest rate of mortality from suicide in the EU also suggests the potential for preventive measures to foster better mental wellbeing.

Boosting productivity through education and innovation

Steps are being taken to improve the quality of education, but teacher shortages and disparities in pupils' achievements on the basis of their background remain a challenge. While Lithuania has recently taken some steps to address teacher shortages, including to improve the competences of pedagogical staff via the national qualification improvement programs, teaching is not a very attractive profession, and lacks career development opportunities for teachers. At the same time, student performance is closely related to socio-economic background, where the school system cannot compensate for the socio-economic disparities between schools and between municipalities). Furthermore, 21.4% of children aged under 3 in formal childcare is well below the 2021 EU average of 36.2%, with potential negative impact on the educational and labour market outcomes in the longer term. In order to increase the participation, all children from 2 years of age will have to attend pre-primary education institutions as from 2025.

Attainment in tertiary education is very high, but the labour market relevance of higher education remains low. While stricter student admission criteria will enter into force in 2024, a number of higher education institutions still rely heavily on low-achieving students who pay for their studies. Low research productivity and a lack of scientific excellence prevent higher education institutions from providing students with state-of-the-art knowledge. The number of doctorate graduates and the share of foreign doctorate students is low. The availability of information and communication technology specialists, while improving, remains a challenge for Lithuania's the digital transition.

Lithuania has not fully realised the potential of investing in research, development and innovation. Lithuania is a moderate innovator, but it is closing the gap with the rest of the EU, according to the 2022 edition of the European Innovation Scoreboard. This is thanks to increases in venture capital and non-R&D innovation expenditure. Lithuania's private investment in R&D is just over a third of the EU average, which slows down its transition to a higher value-added economy (see also Annex 12). Most of the expenditure in R&D comes from public funding, however, R&D intensity remains well below the government target of 1.5% of GDP for 2024. Lithuania currently does not have a credible plan for ensuring the sustainability of more investment in research and innovation beyond the RRP. Human resources are still lacking.

Other challenges concern the weak links between science and business and the small number of patents, even if Lithuania introduced measures to strengthen public-private links. This is demonstrated by the limited productivity increases gained by applying innovative solutions. At the same time, the start-up ecosystem is quite advanced.

KEY FINDINGS

Lithuania's recovery and resilience plan includes measures to address a series of structural challenges through:

- improving institutional and legal mechanisms to promote the generation of electricity from renewable sources; the establishment and operationalisation of the Sustainable Mobility Fund, and adoption of an action plan for a network of electric vehicle recharging points;

- establishing a competence centre for open data and digital transformation; supporting the development of basic and advanced digital skills, improving broadband infrastructure, including digital connectivity in international land transport corridors;

- establishing a single Innovation Agency, a one-stop shop for businesses seeking advice and support for their innovative activities, adoption of a new smart specialisation strategy;

- rolling out the Millennium School Progress Programme to create a high-quality education system across municipalities and to bridge the gaps in pupils' achievement;

- Setting up an accreditation scheme for the provision of social care, reviewing the benefits system for single persons with a disability and older single persons, launching training and employment support schemes;

- Reviewing inefficient tax exemptions and special tax regimes, and further broadening of the tax base to sources that do not hamper economic growth.

Lithuania should continue the steady implementation of its recovery and resilience plan and swiftly finalise the REPowerEU chapter with a view to rapidly starting its implementation.

Beyond the reforms and investments in the RRP, Lithuania would benefit from:

- providing adequate financing for healthcare, social protection and general public services;

- strengthening primary care and expanding preventive care, including to making the healthcare system more resilient;

- improving the planning and delivery of social services, and improving access to and the quality of social housing;

- improving the coordination of public transport at central level and increasing incentives to choose less-polluting means of transport; stepping up energy efficiency measures, particularly in the industrial sector, and residential buildings;

- ensuring adequate grid capacity and access to the grid for electricity generation from renewable sources; ensuring timely synchronisation with the EU electricity grid;

- stronger protection for biodiversity and progress towards a circular economy, particularly in industry;

- tackling teacher shortages, increasing the number of children in early childhood education and care; increasing the relevance of higher education to the needs of employers, and promoting the skills needed for the green transition;

- providing sustainable sources of public R&D funding and consolidating research resources, promoting private R&D investment and improving national policies to attract and retain talent.

ANNEXES

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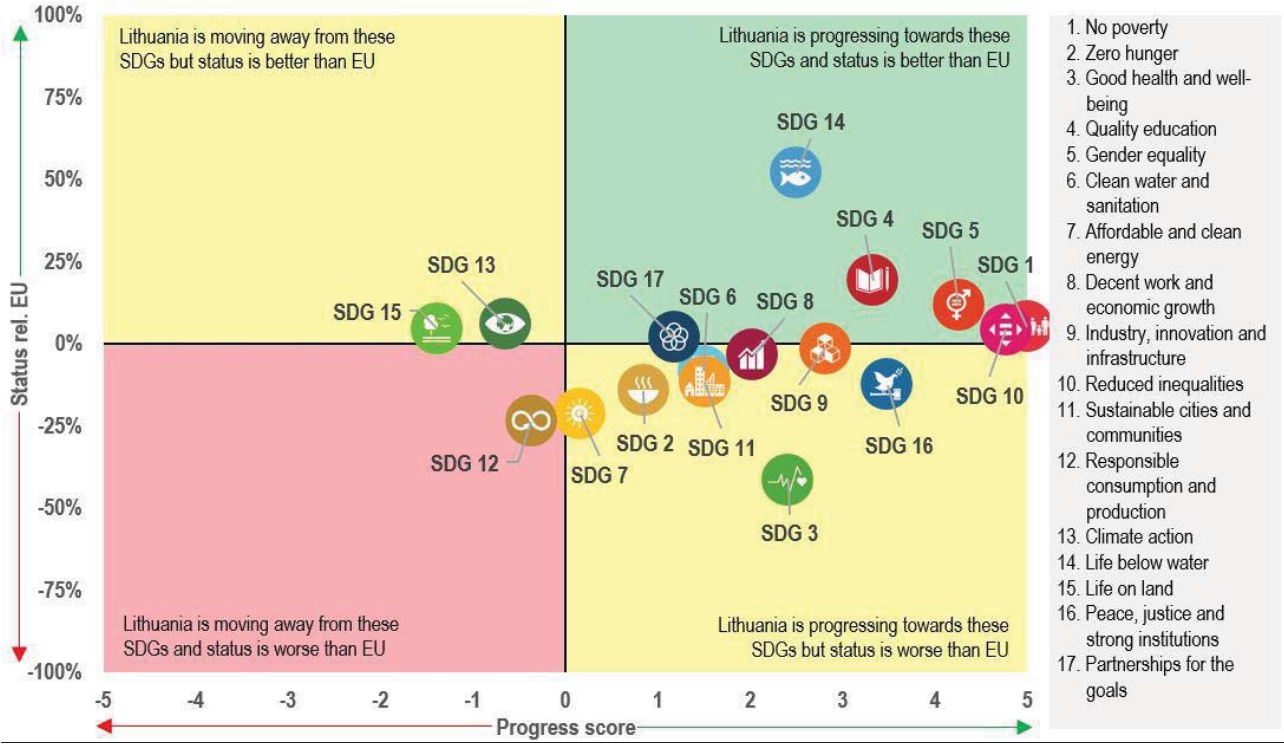
ANNEX 1: SUSTAINABLE DEVELOPMENT GOALS

This Annex assesses Lithuania's progress on the Sustainable Development Goals (SDGs) along the four dimensions of competitive sustainability. The 17 SDGs and their related indicators provide a policy framework under the UN's 2030 Agenda for Sustainable Development. The aim is to end all forms of poverty, fight inequalities and tackle climate change and the environmental crisis, while ensuring that no one is left behind. The EU and its Member States are committed to this historic global framework agreement and to playing an active role in maximising progress on the SDGs. The graph below is based on the EU SDG indicator set developed to monitor progress on the SDGs in an EU context.

While Lithuania performs well on several of the SDG indicators related to *environmental sustainability* (SDGs 13, 14, 15), it needs to catch up with the EU average on others (SDGs 2, 6, 7, 11). On SDG 7 (Affordable and clean energy), Lithuania has achieved significant progress in its share of renewable energy in total energy consumption, which increased from 25.6% in 2016 to 28.2% in 2021 and is well above the EU average (21.8% in 2021). Similarly, progress has been made on other energy indicators, including energy productivity (from 4.6% in 2016 to 5.1% in 2021), which was still significantly below the EU average (8.5%) in 2021. Measures to increase Lithuania's performance are included in Component 2 (Green transformation of Lithuania) of the recovery and resilience plan (RRP). The plan focuses on investments in mobility infrastructure and public transport for sustainable mobility, together with investment in additional solar and wind energy capacity to provide additional security of supply and flexibility to accommodate renewable energy sources in the grid. However, Lithuania is underperforming compared to the EU average on SDG 6 (Clean water and sanitation) and SDG 11 (Sustainable cities and communities), while it is moving away from the goals on SDG 13

Graph A1.1: **Progress towards the SDGs in Lithuania in the last 5 years**



Note: For detailed datasets on the various SDGs, see the annual Eurostat report 'Sustainable development in the European Union'; for details on extensive country-specific data on the short-term progress of Member States: Key findings – Sustainable development indicators – Eurostat (europa.eu). The status of each SDG in a country is the aggregation of all indicators for the specific goal compared to the EU average. A high status does not mean that a country is close to reaching a specific SDG, but signals that it is doing better than the EU on average. The progress score is an absolute measure based on the indicator trends over the past 5 years. The calculation does not take into account any target values as most EU policy targets are only valid for the aggregate EU level. Depending on data availability for each goal, not all 17 SDGs are shown for each country.
Source: Eurostat, latest update of early April 2023, except for the EU Labour Force Survey (LFS) indicators released on 27 April 2023. Data mainly refer to 2016-2021 or 2017-2022.

(Climate action) and SGD 15 (Life on land).

Lithuania is performing well on four SDG indicators related to *fairness* (SDGs 1, 4, 5, 10), but still needs to catch up on several others (SDGs 3, 7, 8). It reduced the risk of poverty or social exclusion (SDG 1) from 30% in 2016 to 23.5% in 2021, although it remains above the EU average of 21.7%. While regional disparities also remain an important issue, Lithuania has achieved significant progress on SDG 10 (Reduced inequalities). While the urban-rural gap for the risk of poverty or social exclusion narrowed from 18.6% in 2016 to 9.8% in 2021, it is still considerably above the EU average of 0.6%. On SDG 3 (Good health and well-being), Lithuania is still underperforming on all these indicators and challenges compared to the EU average. This concerns in particular healthy life years at birth – 56.8 years in 2020 compared to the EU average of 64.0 years. At the same time, while progress has been made in all causes of death indicators, especially in road traffic deaths, where the indicator fell from 6.6% in 2016 to 5.3% in 2021, Lithuania lagged behind the EU average of 4.5% in 2021. RRP Component 7 (More opportunities for everyone to actively build national well-being) includes measures aimed at reforming the minimum income scheme and improving the social safety net in Lithuania. Measures included in Component 1 (A resilient and future-proof health system) are expected to improve the resilience, accessibility and quality of health services as well as increase the quality, affordability and efficiency of the healthcare system.

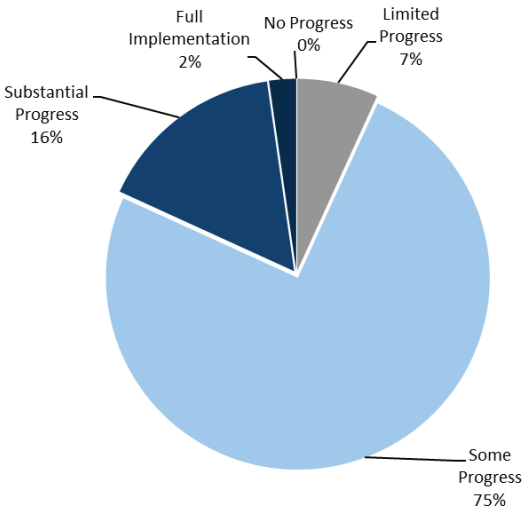
Lithuania performs well or is improving on SDG indicators related to *productivity* (SDGs 4, 8, 9). Its performance on SDG 4 (Quality education) is improving, but further efforts are needed to reach the EU average on participation in early childhood education, which increased from 87.3% in 2015 to 90.9% in 2020 (EU: 93% in 2020), and on adult learning, up from 5.9% in 2017 to 8.5% in 2021 (EU: 11.9% in 2022). In Lithuania, the share of households with a high-speed internet connection in 2021 (SDG 9; 78.2%) was significantly above the EU average (70.2%). Lithuania has slowly improved gross domestic expenditure on R&D, which rose from 0.84% of GDP in 2016 to 1.11% of GDP in 2021 (EU average 2.26%). Furthermore, the country is still lagging some way behind in patent applications to the European Patent Office, with 28 applications per million inhabitants in 2022 against the EU average of 151. Several reforms and investments in Component 3 (Digital transformation for growth) of the RRP focus on further developing digital infrastructure and equipment and improving the quality of education and digital skills at all levels.

Lithuania is improving on SDG indicators related to *macroeconomic stability* (SDGs 8, 16, 17), but still needs to catch up compared to the EU. It continues to perform below the EU average on the investment share of GDP (SDG 8) but increased it from 19.9% in 2016 to 21.4% in 2021 (EU: 23.2% in 2022). The employment rate and long-term unemployment rate are improving and performing better than the EU average (79% compared to EU 74.6% and 2.3% compared to EU 2.4% respectively in 2022). On the negative side, the indicator on young people not in education, employment or training has deteriorated (from 10.2% in 2017 to 10.7% in 2022). Lithuania needs to catch up with the EU average on SDG 16 (Peace, justice and strong institutions), where the Corruption Perceptions Index improved from 59% in 2017 to 62% in 2022, and the general government total expenditure on law courts per capita increased from 36.9 EUR in 2016 to 46.6 EUR, however, still far from the EU average 107 in 2021.

As the SDGs form an overarching framework, any links to relevant SDGs are either explained or depicted with icons in the other Annexes.

The Commission has assessed the 2019-2022 country-specific recommendations (CSRs) ([47]) addressed to Lithuania as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 14 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by Lithuania to date ([48]) and the commitments in its recovery and resilience plan (RRP) ([49]). At this stage of RRP implementation, % of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 5% recorded 'limited progress' (see Graph A2.1). As the RRP is implemented further, considerable progress in addressing structural CSRs is expected in the years to come.

Graph A2.1: **Lithuania's progress on the 2019-2022 CSRs (2023 European Semester)**



Source: European Commission.

([47]) 2022 CSRs: EUR-Lex - 32022H0901(15) - EN - EUR-Lex (europa.eu)

2021 CSRs: EUR-Lex - 32021H0729(15) - EN - EUR-Lex (europa.eu)
2020 CSRs: EUR-Lex - 32020H0826(15) - EN - EUR-Lex (europa.eu)
2019 CSRs: EUR-Lex - 32019H0905(15) - EN - EUR-Lex (europa.eu)

([48]) Including policy action reported in the national reform programme and in Recovery and Resilience Facility (RRF) reporting (twice a year reporting on progress in implementing milestones and targets and resulting from the payment requests assessment).

([49]) Member States were asked to effectively address all or a significant subset of the relevant country-specific recommendations issued by the Council in 2019 and 2020 in their RRPs. The CSR assessment presented here considers the degree of implementation of the measures included in the RRP and of those carried out outside of the RRP at the time of assessment. Measures laid down in the Annex of the adopted Council Implementing Decision on approving the assessment of the RRP, which are not yet adopted or implemented but considered credibly announced, in line with the CSR assessment methodology, warrant 'limited progress'. Once implemented, these measures can lead to 'some/substantial progress or full implementation', depending on their relevance.

Table A2.1: **Summary Table on 2019-2022 CSRs**

Lithuania	Assessment in May 2023	RRP coverage of CSRs until 2026	Relevant SDGs
2019 CSR 1	**Some progress**		
Improve tax compliance and	Some progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and 2024	SDG 8, 16
broaden the tax base to sources less detrimental to growth.	Some progress	Relevant RRP measures being implemented as of 2022	SDG 8, 10, 12
Address income inequality, poverty and social exclusion, including by improving the design of the tax and benefit system.	Some progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and 2024	SDG 1, 2, 8, 10, 12
2019 CSR 2	**Some progress**		
Improve quality and efficiency at all education and training levels, including adult learning.	Some progress	Relevant RRP measures being implemented as of 2021 and 2022	SDG 4
Increase the quality,	Some progress	Relevant RRP measures being planned as of 2022	SDG 3
affordability and	Some progress	Relevant RRP measures being planned as of 2022	SDG 3
efficiency of the healthcare system.	Some progress	Relevant RRP measures being planned as of 2022	SDG 3
2019 CSR 3	**Some progress**		
Focus investment-related economic policy on innovation,	Some progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and 2026	SDG 9, 10, 11
energy and	Some progress	Relevant RRP measures being implemented as of 2021	SDG 7, 9, 10, 11, 13
resource efficiency,	Some progress	Relevant RRP measures being planned as of 2022 and 2023	SDG 6, 10, 11, 12, 15
sustainable transport and	Some progress	Relevant RRP measures being implemented as of 2021	SDG 10, 11
energy interconnections, taking into account regional disparities.	Substantial progress	Relevant RRP measures being implemented as of 2021	SDG 7, 9, 10, 11, 13
Stimulate productivity growth by improving the efficiency of public investment.	Some progress	Relevant RRP measures being implemented as of 2022	SDG 8, 16
Develop a coherent policy framework to support science-business cooperation and	Some progress	Relevant RRP measures being implemented as of 2021	SDG 9
consolidate research and innovation implementing agencies.	Full implementation	Relevant RRP measures being implemented as of 2021	SDG 9
2020 CSR 1	**Some progress**		
In line with the general escape clause, take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.	Not relevant anymore	Not applicable	SDG 8, 16
Strengthen the resilience of the health system, including by mobilising adequate funding and addressing shortages in the health workforce and of critical medical products.	Some progress	Relevant RRP measures being planned as of 2022, 2023 and 2024	SDG 3
Improve the accessibility and quality of health services.	Some progress	Relevant RRP measures being planned as of 2022, 2023 and 2024	SDG 3
2020 CSR 2	**Some progress**		
Mitigate the impact of the crisis on employment.	Substantial progress	Relevant RRP measures being implemented as of 2022	SDG 8
Increase the funding and coverage of active labour market policy measures	Some progress	Relevant RRP measures being implemented as of 2022	SDG 8
and promote skills.	Some progress	Relevant RRP measures being implemented as of 2021, 2022 and 2024	SDG 4
Ensure the coverage and adequacy of the social safety net and improve the effectiveness of the tax and benefit system to protect against poverty.	Some progress	Relevant RRP measures being implemented as of 2021 and 2022	SDG 1, 2, 8, 10, 12
2020 CSR 3	**Some progress**		
Support liquidity for businesses, especially for small- and medium-sized enterprises and export-oriented sectors	Some progress		SDG 8, 9
Front-load mature public investment projects	Some progress	Relevant RRP measures being implemented as of 2021, 2022, 2024, 2025 and 2026	SDG 8, 16
and promote private investment to foster the economic recovery.	Some progress	Relevant RRP measures being implemented as of 2021, 2022 and 2025	SDG 8, 9
Focus investment on the green and digital transition, in particular on the coverage and take-up of very high-capacity broadband,	Some progress	Relevant RRP measures being implemented as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 9
on clean and efficient production and use of energy,	Some progress	Relevant RRP measures being implemented as of 2022	SDG 7, 9, 13
and sustainable transport.	Some progress	Relevant RRP measures being implemented as of 2021	SDG 11
Promote technological innovation in small and medium-sized enterprises.	Some progress	Relevant RRP measures being implemented as of 2021	SDG 8, 9

(Continued on the next page)

Table (continued)

2021 CSR 1	**Some progress**		
In 2022, maintain a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment. Keep the growth of nationally financed current expenditure under control.	Some progress	Not applicable	SDG 8, 16
When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.	Substantial progress	Not applicable	SDG 8, 16
At the same time, enhance investment to boost growth potential. Pay particular attention to the composition of public finances, on both the revenue and expenditure sides of the budget, and to the quality of budgetary measures in order to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, in particular investment supporting the green and digital transition.	Substantial progress	Not applicable	SDG 8, 16
Give priority to fiscal structural reforms that will help provide financing for public policy priorities and contribute to the long-term sustainability of public finances, including, where relevant, by strengthening the coverage, adequacy and sustainability of health and social protection systems for all.	Some progress	Not applicable	SDG 8, 16
2022 CSR 1	**Some progress**		
In 2023, ensure that the growth of nationally financed primary current expenditure is in line with an overall neutral policy stance, taking into account continued temporary and targeted support to households and firms most vulnerable to energy price hikes and to people fleeing Ukraine. Stand ready to adjust current spending to the evolving situation	Limited progress	Not applicable	SDG 8, 16
Expand public investment for the green and digital transitions, and for energy security taking into account the REPowerEU initiative, including by making use of the Recovery and Resilience Facility and other Union funds	Substantial progress	Not applicable	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	Substantial progress	Not applicable	SDG 8, 16
Foster cooperative public procurement at central government and municipality levels.	Some progress		SDG 9
2022 CSR 2			
Proceed with the implementation of its recovery and resilience plan, in line with the milestones and targets included in the Council Implementing Decision of 20 July 2021.	RRP implementation is monitored by assessing RRP payment requests and analysing reports published twice a year on the achievement of the milestones and targets. These are to be reflected in the country reports.		
Swiftly finalise the negotiations with the Commission of the 2021-2027 cohesion policy programming documents with a view to starting their implementation	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	**Some progress**		
Strengthen primary and preventive care.	Some Progress	Relevant RRP measures being planned as of 2023, 2024, 2025 and 2026	SDG 3
Reduce fragmentation in the planning and delivery of social services and improve their personalisation and integration with other services.	Some Progress	Relevant RRP measures being implemented as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 1, 2, 10
Improve access to and quality of social housing.	Limited Progress		SDG 1, 2, 10
2022 CSR 4	**Some progress**		
Reduce overall reliance on fossil fuels	Some Progress	Relevant RRP measures being implemented as of 2022, 2024, 2025 and 2026	SDG 7, 9, 13
by accelerating the deployment of renewables	Some Progress	Relevant RRP measures being implemented as of 2022, 2023 and 2026	SDG 7, 9, 13
and increasing energy efficiency and decarbonisation of industry, [transport] and buildings,	Limited Progress	Relevant RRP measures being planned as of 2024, 2025 and 2026	SDG 7
and [increasing energy efficiency and decarbonisation] of transport	Some Progress	Relevant RRP measures being planned as of 2026	SDG 11
and ensure sufficient capacity of energy interconnections.	Substantial Progress	Relevant RRP measures being implemented as of 2022, 2023 and 2026	SDG 7, 9, 13

Note:

* See footnote ([48]).

** RRP measures included in this table contribute to the implementation of CSRs. Nevertheless, additional measures outside the RRP are necessary to fully implement CSRs and address their underlying challenges. Measures indicated as 'being implemented' are only those included in the RRF payment requests submitted and positively assessed by the European Commission.

Source: European Commission

The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to help it recover from the COVID-19 pandemic, speed up the twin transition and strengthen resilience against future shocks. The RRF also contributes to implementation of the SDGs and helps to address the Country Specific Recommendations (see Annex 2). Lithuania submitted its current recovery and resilience plan (RRP) on 14 May 2021. The Commission's positive assessment on 2 July 2021 and Council's approval on 20 July 2021 paved the way for disbursing EUR 2.2 billion in grants under the RRF over the 2021-2026 period.

Table A3.1:**Key elements of Lithuania's RRP**

	Current RRP
Scope	Initial plan
CID adoption date	20 July 2021
Total allocation	EUR 2,2 billion in grants (4.0% of 2021 GDP) and EUR 0 billion in loans
Investments and reforms	3 investments and 27 reforms
Total number of milestones and targets	191

Source: RRF Scoreboard

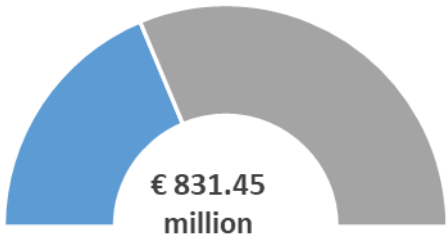
Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contribution for Lithuania was moreover updated on 30 June 2022 to an amount of EUR 2.1 billion in grants. No revision was submitted at the time of publication of this country report.

Lithuania's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ([26]). The Scoreboard also gives an overview of the progress made in implementing the RRF as a whole, in a transparent manner. The graphs in this Annex show the current state of play of the milestones and targets to be reached by Lithuania and subsequently assessed as satisfactorily fulfilled by the Commission.

EUR 831.45 million has so far been disbursed to Lithuania under the RRF. The Commission disbursed EUR 289.15 million to Lithuania in pre-financing on 17 August 2021, equivalent to 13% of the initial financial allocation.

Lithuania's first payment request was positively assessed for 31 out of 33 associated milestones by the Commission, taking into account the opinion of the Economic and Financial Committee, leading to EUR 542.3 million being disbursed in financial support (net of pre-financing) on 10 May 2023. The related 31 milestones cover reforms and investments in the areas of education, green and digital transition, social protection and employment support, science and innovation, as well as the public sector and tax compliance.

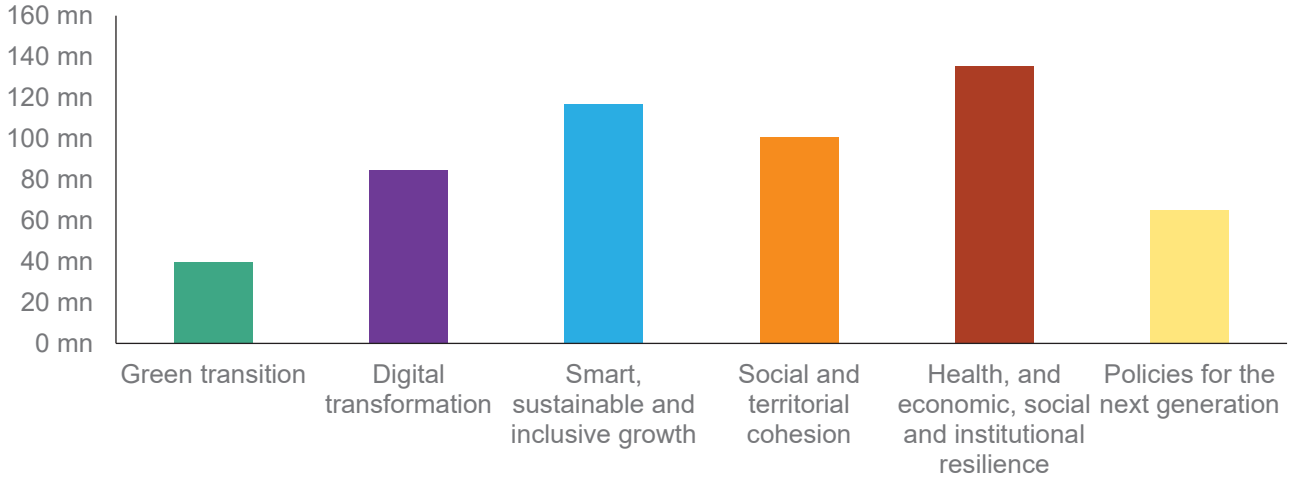
Graph A3.1: **Total grants disbursed under the RRF**



Note: This graph displays the amount of grants disbursed so far under the RRF. Grants are non-repayable financial contributions. The total amount of grants given to each Member State is determined by an allocation key and the total estimated cost of the respective RRP.
Source: RRF Scoreboard

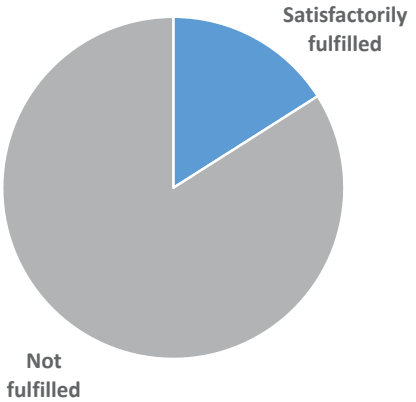
([26]) https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

Graph A3.1: **Disbursements per pillar**



Note: Each disbursement reflects progress in the implementation of the RRF, across the six policy pillars. This graph displays how disbursements under the RRF (excluding pre-financing) relate to the pillars. The amounts were calculated by linking the milestones and targets covered by a given disbursement to the pillar tagging (primary and secondary) of their respective measures.
Source: RRF Scoreboard

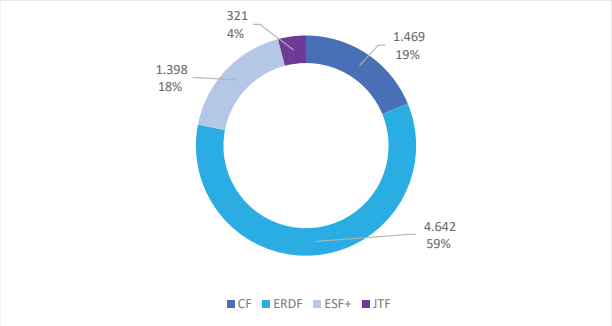
Graph A3.2: **Fulfilment status of milestones and targets**



Note: This graph displays the share of satisfactorily fulfilled milestones and targets. A milestone or target is satisfactorily fulfilled once a Member State has provided evidence to the Commission that it has reached the milestone or target and the Commission has assessed it positively in an implementing decision.
Source: RRF Scoreboard

The EU budget of over EUR 1.2 trillion for 2021-2027 is geared towards implementing the EU's main priorities. Cohesion policy investment amounts to EUR 392 billion across the EU and represents almost a third of the overall EU budget, including around EUR 48 billion invested in line with REPowerEU objectives.

Graph A4.1: **Cohesion policy funds 2021-2027 in Lithuania: budget by fund**

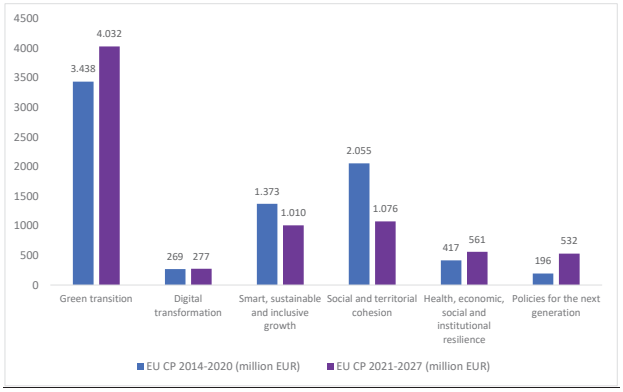


(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)
Source: European Commission, Cohesion Open Data

In 2021-2027, in Lithuania, cohesion policy funds ([27]) **will invest EUR 4 billion in the green transition and EUR 284 million in the digital transformation as part of the country's total allocation of EUR 7.8 billion.** In particular, the European Regional Development Fund (ERDF) will boost R&D, innovation and digitalisation by supporting almost 6 400 companies. Investment in energy efficiency and the renovation of buildings will save energy and reduce heating costs for over 100 000 households and over 200 public buildings. Lithuania will purchase 500 zero-emission public transport vehicles and install 3 000 recharging stations for electric vehicles. Particular attention will be paid to monitoring progress in lowering energy consumption and greenhouse gas (GHG) emissions, which are priorities in 2021-2027. The Just Transition Fund (JTF) will enable further decarbonisation and economic diversification, and help create jobs by attracting investment and supporting the up- and reskilling of workers in the counties of Kaunas, Šiauliai and Telšiai. This will help Lithuania reduce emissions from GHG-intensive industries and address the related negative social and economic effects. Under the European Social Fund Plus (ESF+), Lithuania allocates over EUR 441 million to social inclusion. In addition, about EUR 80 million is dedicated to food and meeting the basic material needs of society's most deprived people.

Of the investments mentioned above, EUR 1.2 billion will be invested in line with REPowerEU objectives. This is on top of the EUR 974 million dedicated to REPowerEU under the 2014-2020 budget**.** EUR 709 million (2021-2027) and EUR 519 million (2014-2020) is for improving energy efficiency; EUR 349 million (2021-2027) and EUR 455 million (2014-2020) is for renewable energy and low-carbon R&I; and EUR 97 million (2021-2027) is for smart energy systems.

Graph A4.2: **Synergy between Cohesion policy funds and RRF pillars in Lithuania**



(1) million EUR in current prices (total amount, including EU and national co-financing)
Source: European Commission

In 2014-2020, cohesion policy funds made EUR 7 billion available ([28]), with an absorption of 89% ([29]). Including national financing, the total investment amounts to EUR 8.2 billion - around 2.7% of GDP for 2014-2020.

Lithuania continues to benefit from cohesion policy flexibility to support economic recovery, step up convergence and provide vital support to regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument

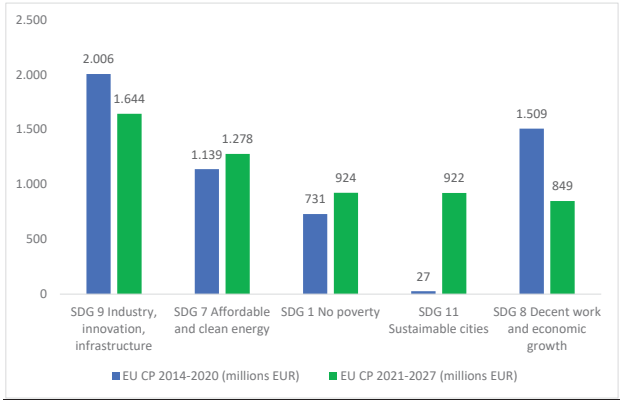
([27]) European Regional Development Fund (ERDF), Cohesion Fund (CF), European Social Fund+ (ESF+), Just Transition Fund (JTF), excluding Interreg programmes. The total amount includes national and EU contributions. Data source: Cohesion Open Data.

([28]) Cohesion policy funds include the ERDF, CF, ESF and the Youth Employment Initiative (YEI). ETC programmes are excluded here. According to the 'N+3 rule', the funds committed for 2014-2020 must be spent by 2023. REACT-EU is included in all figures. Total amount including EU and national co-financing. Data source: Cohesion Open Data.

([29]) 2014-2020 Cohesion policy EU payments by MS is updated daily on Cohesion Open Data.

(REACT-EU) ([30]) under NextGenerationEU provides EUR 324 million on top of the 2014-2020 cohesion policy allocation for Lithuania. REACT-EU provided support supported 150 firms to expand their e-business models and supported R&D on new anti-COVID-19 products and technologies. Funding was also provided for active labour market measures for almost 800 unemployed people. In addition, Cohesion's Action for Refugees in Europe (CARE) supports Lithuania and its regions in providing emergency assistance to people fleeing from Russia's invasion of Ukraine. With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by Lithuania to support vulnerable households, jobs and companies particularly affected by high energy prices.

Graph A4.3: **Cohesion policy funds contribution to the SDGs in 2014-2020 and 2021-2027 in Lithuania**



(1) 5 largest contributions to SDGs in million (EUR) current prices
Source: European Commission

In both 2014-2020 and 2021-2027, cohesion policy funds have contributed substantially to the Sustainable Development Goals (SDGs). These funds support 11 of the 17 SDGs, notably SDG 9 'Industry, innovation, infrastructure' and SDG 7 'Affordable and clean energy' ([31]).

Other EU funds make significant resources available for Lithuania. The common agricultural policy (CAP) made EUR 6.1 billion available in 2014-2022 and will continue to support Lithuania with EUR 4.0 billion in 2023-2027. The two CAP Funds (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development), contribute to the European Green Deal while ensuring long-term food security. They promote social, environmental and economic sustainability and innovation in agriculture and rural areas, in coordination with other EU funds. The European Maritime and Fisheries Fund made EUR 63 million available to Lithuania in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund allocates EUR 61 million in 2021-2027.

Lithuania also benefits from other EU programmes, notably the Connecting Europe Facility, which under CEF 2 (2021-2027) has so far allocated EU funding of EUR 170.1 million to three specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated more than EUR 32.5 million to Lithuanian R&I on top of the EUR 95 million earmarked under the previous programme (Horizon 2020). The Public Sector Loan Facility set up under the Just Transition Mechanism makes EUR 21 million of grant support from the Commission available for projects located in Lithuania for 2021-2027, which will be combined with loans from the EIB to support investments by public sector entities in just transition regions.

Lithuania received support under the European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) to finance short-time work schemes and similar measures to mitigate the impact of COVID-19. The Council granted financial assistance to Lithuania of EUR 1.1 billion in loans, which supported around 21% of workers and 27% of firms in 2020, and around 19% of workers and 27% of firms in 2021.

The Technical Support Instrument (TSI) supports Lithuania in designing and implementing growth-enhancing reforms, including those set out in its recovery and resilience plan (RRP). Lithuania has received significant support since 2017. Examples ([32]) include support to develop a strategic roadmap for the digitisation of industry, to strengthen the pension system and to map the regulatory framework for sustainable financing and to

([30]) REACT-EU allocation on Cohesion Open Data.

([31]) Other EU funds contribute to the implementation of the SDGs, in 2014-2022 this includes both the European Agricultural Fund for Rural Development (EARDF) and the European Maritime and Fisheries Fund (EMFF).

([32]) Country factsheets on reform support are available here.

identify barriers to the growth of green finance products.

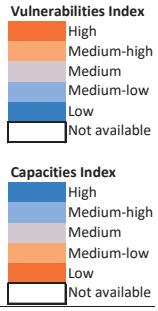
This Annex illustrates Lithuania's relative resilience capacities and vulnerabilities using the Commission's resilience dashboards (RDB) ([33]). Comprising a set of 124 quantitative indicators, the RDB provide broad indications of Member States' ability to make progress across four interrelated dimensions: social and economic, green, digital, and geopolitical. The indicators show vulnerabilities ([34]) and capacities ([35]) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. To this end, the RDB help to identify areas that need further efforts to build stronger and more resilient economies and societies. They are summarised in Table A5.1 as synthetic resilience indices, which illustrate the overall relative situation for each of the four dimensions and their underlying areas for Lithuania and the EU-27 ([36]).

According to the set of resilience indicators under the RDB, Lithuania generally displays a similar level of vulnerabilities compared to the EU average. Lithuania shows medium vulnerabilities in the digital and geopolitical dimensions of the RDB and medium-low vulnerabilities in the social and economic and green dimensions. It has higher vulnerabilities than the EU average in the areas 'digitalisation of the personal space' and 'raw material and energy supply'. Lithuania has relatively low vulnerabilities in relation to 'inequalities and the social impact of the transitions', 'climate change mitigation and adaptation', 'digital for industry', and 'cybersecurity', among others.

Compared to the EU average, Lithuania shows an overall lower level of capacities across all RDB indicators. It has medium resilience capacities in the social and economic, the green and the digital dimensions, and medium-high capacities in the geopolitical dimension. Lithuania shows stronger capacities than the EU average in the areas of 'cybersecurity', 'digitalisation of the public space', 'value chains and trade' and 'raw material and energy supply'. There is ample room for improving capacities compared to the EU in the areas 'health, education and work', 'financial globalisation', 'ecosystems, biodiversity and sustainable agriculture' and 'climate change mitigation and adaptation'.

Table A5.1: **Resilience indices summarising the situation across RDB dimensions and areas**

Dimension/Area	Vulnerabilities		Capacities	
	LT	EU-27	LT	EU-27
Social and economic	Low	Medium	Medium	Low
Inequalities and social impact of the transitions	Low	Medium	Medium	Low
Health, education and work	Low	Medium	Medium-high	Low
Economic & financial stability and sustainability	Medium	Medium-high	Medium	Low
Green	Low	Medium	Medium	Low
Climate change mitigation & adaptation	Low	Medium	Medium-high	Low
Sustainable use of resources	Low	Medium	Medium	Low
Ecosystems, biodiversity, sustainable agriculture	Medium	Medium	Medium-high	Medium
Digital	Medium	Medium	Medium	Low
Digital for personal space	Medium-high	Medium	Medium	Low
Digital for industry	Low	Medium	Medium	Low
Digital for public space	Medium	Medium	Low	Medium
Cybersecurity	Low	Medium	High	Low
Geopolitical	Medium	Medium	Low	Medium
Raw material and energy supply	Medium-high	Medium	Low	Medium
Value chains and trade	Medium-high	Not available	Low	Medium-high
Financial globalisation	Low	Low	Medium-high	Low
Security and demography	Medium	Medium	Low	Low



Note: Data are for 2021, and EU-27 refers to the value for the EU as a whole. Data underlying EU-27 vulnerabilities in the area 'value chains and trade' are not available as they comprise partner concentration measures that are not comparable with Member States' level values.
Source: JRC Resilience Dashboards - European Commission

([33]) For details see https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en; see also 2020 Strategic Foresight Report (COM(2020) 493).

([34]) Vulnerabilities describe features that can exacerbate the negative impact of crises and transitions, or obstacles that may hinder the achievement of long-term strategic goals.

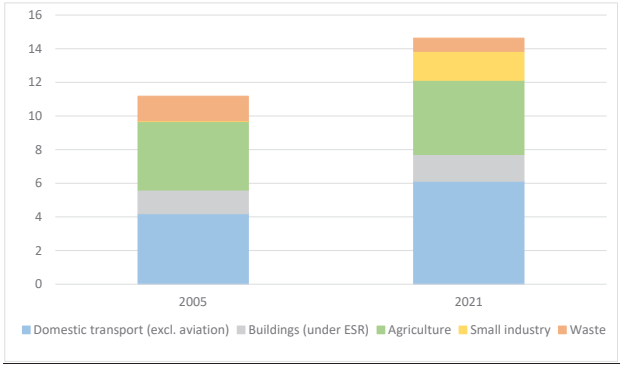
([35]) Capacities refer to enablers or abilities to cope with crises and structural changes and to manage the transitions.

([36]) This Annex is linked to Annex 1 on SDGs, Annex 6 on the green deal, Annex 8 on the fair transition to climate neutrality, Annex 9 on resource productivity, efficiency and circularity, Annex 10 on the digital transition and Annex 14 on the European pillar of social rights.

Lithuania's green transition requires continued action on several aspects including promoting energy efficiency, sustainable transport and protecting biodiversity. Implementation of the European Green Deal is underway in Lithuania; this Annex provides a snapshot of the aspects involved ([37]).

Lithuania is projected to reach its new 2030 climate policy target for the effort sharing sectors, if it implements additional measures tabled ([38]). Data for 2021 on Lithuania's greenhouse gas emissions in these sectors are expected to show the country generated less than its annual emission allocations ([39]). Current policies in Lithuania are projected to reduce these emissions by 11% relative to 2005 levels in 2030, more than sufficient to reach the effort sharing target set before it was raised in line with the EU's 55% emission reduction objective. The additional measures tabled would bring the emission reductions to 23%, exceeding the new target to reduce by 21% ([40]). In its recovery and resilience plan, Lithuania has allocated 37.8 % of its Recovery and Resilience Facility grants to key reforms and investments to support the climate objectives ([41]).

Graph A6.1: **Thematic – greenhouse gas emissions from the effort sharing ESR sectors in Mt CO2eq, 2005-2021**



Source: European Environmental Agency.

In the past decade, Lithuania's land use sector net carbon removals has been static. To boost the capacity of its land use sector to act as a carbon sink, Lithuania's recovery and resilience plan has measures on restoring degraded peatlands. For 2030, Lithuania's target for the land use, land use change and forestry (LULUCF) sector implies removals of 4 633 kt CO_2eq (see Table A6.1) ([42]).

In 2021, the renewable share of Lithuania's energy mix is increasing but natural gas still represent a high share of the country's gross inland consumption. With a share of 28% of gross inland consumption generated by renewables in 2021, Lithuania increases the decarbonisation of its energy mix, with an increase of 4pp since 2019. Oil still accounts for the larger share of the Lithuanian energy mix, with 43% of the gross inland consumption in 2021, a decrease of 4pp since 2019. The share of natural gas in the energy mix keeps its negative trend. Solid fossil fuels complete the mix, at 3%.

([37]) The overview in this Annex is complemented by the information provided in Annex 7 on energy security and affordability, Annex 8 on the fair transition to climate neutrality and environmental sustainability, Annex 9 on resource productivity, efficiency and circularity, Annex 11 on innovation, and Annex 19 on taxation.

([38]) Member States' greenhouse gas emission targets for 2030 ('effort sharing targets') were increased by Regulation (EU) 2023/857 (the Effort Sharing Regulation) amending Regulation (EU) 2018/842, aligning the action in the concerned sectors with the objective to reach EU-level, economy-wide greenhouse gas emission reductions of at least 55% relative to 1990 levels. The Regulation sets national targets for sectors outside the current EU Emissions Trading System, notably: buildings (heating and cooling), road transport, agriculture, waste, and small industry. Emissions covered by the EU ETS and the Effort Sharing Regulation are complemented by net removals in the land use sector, regulated by Regulation (EU) 2018/841 (the Land Use, Land Use Change and Forestry (LULUCF) Regulation) amended by Regulation (EU) 2023/839.

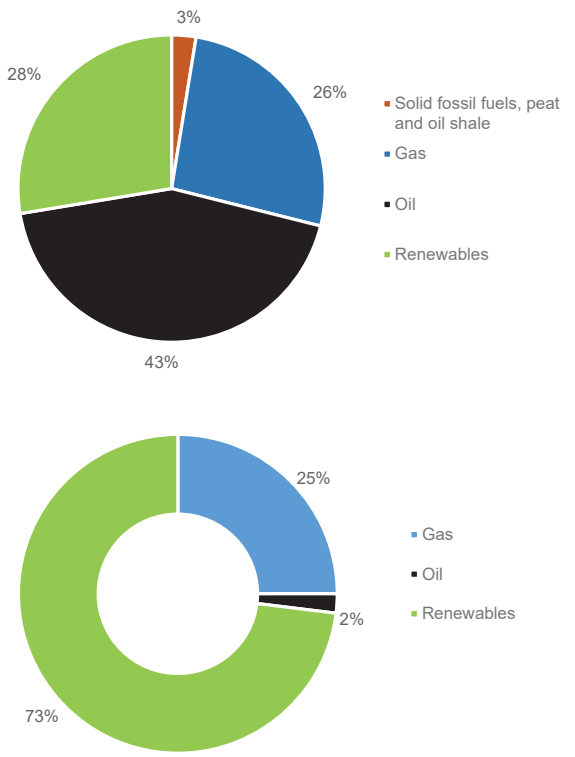
([39]) Lithuania's annual emission allocations for 2021 were some 16.0 Mt CO_2eq, and its approximated 2021 emissions were 14.6 Mt (see European Commission, *Accelerating the transition to climate neutrality for Europe's security and prosperity: EU Climate Action Progress Report 2022*, SWD(2022)343).

([40]) See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as of 15 March 2021.

([41]) For example, measures that aim to increase the generation and storage of renewable energy, sustainable mobility, building renovation, restoring degraded peatlands, and the circular economy.

([42]) This value is indicative and will be updated in 2025 (as mandated by Regulation (EU) 2023/839).

Graph A6.2: **Thematic - Energy mix (top) and electricity mix (bottom), 2021**



Note: The energy mix is based on gross inland consumption, and excludes heat and electricity. The share of renewables includes biofuels and non-renewable waste.
Source: Eurostat.

Renewable energy represents an increasing share of Lithuania's energy and electricity gross final consumption. Between 2020 and 2021, the share of Lithuania's gross final consumption of energy from renewable sources rose from 27% to 28%. In gross electricity consumption, renewables accounted for a 21.3% share in 2021 (+1.1 percentage point). Lithuania's target of 45% share of energy from renewable sources in gross final energy consumption by 2030 included in the NECP was considered sufficiently ambitious. Lithuania will need to increase its renewable energy target in the updated NECP to reflect the more ambitious EU climate and energy targets in the Fit for 55 Package and in the REPowerEU Plan. Such a strengthening of the Lithuanian NECP could reflect the recently adopted ambitious national objective to reach a share of renewably produced electricity in the gross final consumption to 38% by 2025, and 50% by 2030. Under its recovery and resilience plan, Lithuania is rolling out crucial reforms and investments to further decarbonise its economy.

Lithuania is to accelerate the energy renovation of its building stock and increase its energy efficiency by tapping more of the potential in its industrial sector to reach its current NECP objectives. Lithuania NECP targets for primary and final energy consumption (PEC and FEC) were both considered of modest ambition in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, Lithuania is not expected to be on track to meet its 2030 target for both primary and final energy consumption, as these were notified in its NECP ([43]). To promote energy efficiency, its recovery and resilience plan allocates support to expedite the renovation of buildings in line with up-to-date building renovation standards. It supports its building industry by promoting the supply of construction products and services needed to speed up the renovation of buildings. Lithuania has untapped potential to increase its energy efficiency, particularly in the industrial sector, which is noticeably more energy-intensive and natural gas-reliant than the EU average, and in its stock of existing buildings. With 75% of its building stock surface built before 1992, under less stringent building code requirements, it is a priority to target those buildings in implementation programmes and in the earmarked budget to ensure the fully decarbonisation of the building stock by 2050.

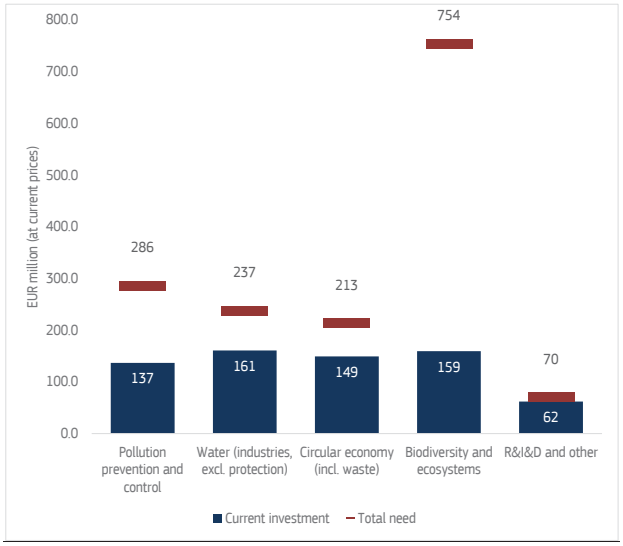
Lithuania's share of zero-emission passenger cars in new car registrations is below the EU average. The use of public transport is decreasing, accounting for only 5.9% of passenger travel in 2020 (9.4% in 2019), which is the lowest share in the EU (EU average in 2020: 13.8%) ([44]). The transport sector generates the highest share of greenhouse gas emissions in Lithuania, while only 8% of the railroad network is electrified. Lithuania's recovery and resilience plan aims to improve the sustainability of its transport sector by building infrastructure to produce alternative fuels and charging/filling infrastructure for all types of clean vehicles with alternative fuels. However, Lithuania still has significant scope to

([43]) After the conclusion of the negotiations for a recast EED, the ambition of both the EU and national targets as well as of the national measures for energy efficiency to meet these targets is expected to increase.

([44]) Source: EU Transport in Figures. Statistical Pocketbook 2022.

increase the green transition of its transport sector by putting a stronger emphasis on rail transport and well-integrated multimodal public transport. Individual transport exacerbates seasonal problems with air pollution and causes significant health issues and economic costs, particularly in the capital, Vilnius.

Graph A6.3: **Thematic – environmental investment needs and current investment, p.a. 2014-2020**



Source: European Commission.

Lithuania would benefit from investing more in environmental protection and in measures protecting biodiversity and addressing pollution ([45]). Between 2014 and 2020, the environmental investment needs were estimated to be at least EUR 1.6 billion while investment was at about EUR 0.7 billion, leaving a gap of at least EUR 0.9 billion per year (see Graph A6.3) ([46]). Lithuania's terrestrial Natura 2000 network covers 12.6% of its land ([47]). Two thirds of the habitats protected under EU legislation are in an unfavourable conservation status, under pressure from forestry, agriculture, and invasive species. Lithuania has yet to complete its Natura 2000 designations and put in place clear site-specific conservation objectives and measures for all sites. Ammonia emissions from agriculture are hampering efforts to reduce air pollution, and the downward trend in air pollution emissions is not strong enough for Lithuania to meet its emission reduction commitments. Despite considerable progress, challenges remain in water management. Only half of all surface water bodies achieve good ecological status. Infrastructure investment is needed to reduce leaks and improve nature-based flood prevention and river restoration (see also Annex 9). Lithuania also has the potential to rely more on environmental taxes to further internalise the costs of air pollution ([48]) (see Annex 19).

Climate change is affecting several sectors and ecosystems in Lithuania, with adaptation challenges particularly in the coastal region ([49])**.** Between 1980 and 2020, total economic losses from weather- and climate-related events in Lithuania amounted to almost EUR 1.5 billion ([50]). The highest climate-related risks relate to (coastal) flooding and windstorms in the western part of the country ([51]). The most climate-sensitive sectors are agriculture, public health, energy, industry, transport, and communication infrastructure. Lithuania's revised national energy and climate action plan addresses these risks with policy measures such as promoting adaptation research and climate proofing infrastructure ([52]). The rising number of heatwaves is projected to affect heat-related mortality, morbidity, and the transport system, especially in urban areas like Vilnius ([53]).

Lithuania provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring

([45]) Environmental objectives include pollution prevention and control, water management and industries, circular economy and waste, biodiversity and ecosystems (European Commission, 2022, Environmental Implementation Review, country report Lithuania).

([46]) When also accounting for needs estimated at EU level only (e.g., water protection, higher circularity, biodiversity strategy).

([47]) In 2021, Lithuania had 17% with nationally designated areas, against the EU average of 18.6% of territory covered by Natura 2000 and 26.4% average for the network of designated areas (European Environment Agency, 2023, Natura 2000 Barometer).

([48]) European Commission, 2021, Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay, Ensuring that polluters pay (europa.eu).

([49]) European Environmental Agency, *Advancing towards climate resilience in Europe*, forthcoming.

([50]) European Environmental Agency, Economic losses from climate-related extremes in Europe, published on 03/02/2022.

([51]) Lithuanian Hydrometeorological Service, Climate Change.

([52]) National Energy and Climate Action Plan of the Republic of Lithuania for 2021-2030.

([53]) Lithuanian Hydrometeorological Service, Climate Change in Vilnius.

food and energy security and mitigating social effects. In 2021, fossil fuel subsidies amounted to EUR 198 million, putting low carbon alternatives to a disadvantage. Examples of such subsidies include the energy tax relief for companies in agriculture and forestry for gas oil, the excise tax exemption and tax relief for natural gas for industrial consumers or the reduced CO2 tax rate on diesel used in agriculture. Lithuania plans to abolish all tax relief schemes for fossil fuels by 2024 and has submitted draft amendments to the Law on Excise Duties to Parliament. The amendments include abolishing excise duties reductions on fossil fuels and including the carbon dioxide component in the excise duties on energy products. The positive fiscal impact of the excise tax revision is estimated at EUR 79 million in 2025 while CO2 component would lead to doubling of that amount.

Table A6.1: **Indicators tracking progress on the European Green Deal from a macroeconomic perspective**

									'Fit for 55' 2030 target/value	Distance WEM	Distance WAM
			2005	2017	2018	2019	2020	2021			
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO2eq; %; pp	13.3	7%	8%	8%	6%	-	-21%	-10	-6
	Net carbon removals from LULUCF [2]	kt CO2eq	-4,153	-6,552	-5,583	-5,883	-6,636	-6,091	-4633	n/a	n/a
			2005	2017	2018	2019	2020	2021	National contribution to 2030 EU target		
	Share of energy from renewable sources in gross final consumption of energy [3]	%	17%	26%	25%	25%	27%	28%	45%		
	Energy efficiency: primary energy consumption [3]	Mtoe	8.1	6.2	6.4	6.3	6.2	6.6	5.5		
	Energy efficiency: final energy consumption [3]	Mtoe	4.7	5.3	5.6	5.6	5.3	5.7	4.5		
			Lithuania						EU		
			2016	2017	2018	2019	2020	2021	2019	2020	2021
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	1.9	1.9	2.0	1.9	1.9	1.9	2.4	2.2	2.2
	Environmental taxes (% of total taxation) [4]	% of taxation	6.5	6.5	6.6	6.2	6.2	5.8	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	1.6	1.5	1.4	1.5	1.3	1.4	1.7	1.6	1.6
	Investment in environmental protection [5]	% of GDP	0.4	0.2	0.3	0.4	-	-	0.4	0.4	0.4
	Fossil fuel subsidies [6]	EUR2021bn	0.3	0.3	0.2	0.2	0.2	0.2	53.0	50.0	-
	Climate protection gap [7]	score 1-4					1.3	1.2			1.5
Climate	Net greenhouse gas emissions	1990 = 100	42.0	43.0	43.0	43.0	42.0	43.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR'10	0.67	0.67	0.67	0.65	0.64	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR'10	0.20	0.20	0.20	0.19	0.19	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	104.1	108.2	114.3	114.3	108.2	116.3	102.9	94.6	-
	FEC in residential building sector	2015=100	105.5	107.1	111.2	106.5	105.5	119.9	101.3	101.3	106.8
	FEC in services building sector	2015=100	104.8	110.3	113.3	109.0	100.2	112.5	100.1	94.4	100.7
Pollution	Smog-precursor emission intensity (to GDP) [8]	tonne/EUR'10	3.1	3.0	3.1	3.1	3.3	-	0.9	0.9	-
	Years of life lost due to air pollution by PM2.5	per 100.000 inh.	817.9	576.6	840.2	777.5	570.8	-	581.6	544.5	-
	Years of life lost due to air pollution by NO_2	per 100.000 inh.	91.9	66.7	100.2	72.0	53.6	-	309.6	218.8	-
	Nitrates in ground water	mg NO3/litre	-	-	-	-	-	-	21.0	20.8	-
Biodiversity	Land protected areas	% of total	16.6	17.0	-	17.0	17.0	17.1	26.2	26.4	26.4
	Marine protected areas	% of total	24.1	-	-	24.1	-	22.8	10.7	-	12.1
	Organic farming	% of total utilised agricultural area	7.5	8.0	8.1	8.1	8.0	8.9	8.5	9.1	-
			2017	2018	2019	2020	2021	2022	2020	2021	2022
Mobility	Share of zero-emission vehicles [9]	% in new registrations	0.2	0.4	0.4	1.1	3.6	4.9	5.4	8.9	10.7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	173	360	648	188626	330028	432518
	Share of electrified railways	%	8.0	8.0	8.0	-	8.0	8.0	56.6	n/a	56.6
	Hours of congestion per commuting driver per year		21.0	20.9	22.0	22.0	n/a	n/a	28.7	n/a	n/a

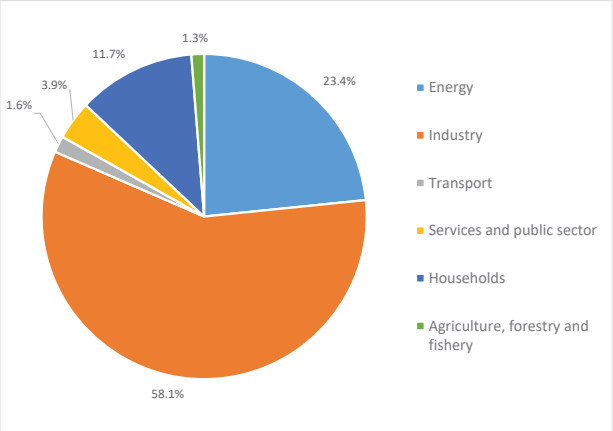
Source: (1) Historical and projected emissions, as well as Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Decision (for 2020) are measured in global warming potential (GWP) values from the 4th Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Regulation (for 2030) are in GWP values from the 5th Assessment Report (AR5). The table above shows the base year emissions 2005 under the Effort Sharing Decision, using AR4 GWP values. Emissions for 2017-2021 are expressed in percentage change from 2005 base year emissions, with AR4 GWP values. 2021 data are preliminary. The table shows the 2030 target under Regulation (EU) 2023/857 that aligns it with the EU's 55% objective, in percentage change from 2005 base year emissions (AR5 GWP). Distance to target is the gap between Member States' 2030 target (with AR5 GWP values) and projected emissions with existing measures (WEM) and with additional measures (WAM) (with AR4 GWP values), in percentage change from the 2005 base year emissions. Due to the difference in global warming potential values, the distance to target is only illustrative. The measures included reflect the state of play as of 15 March 2021.
(2) Net removals are expressed in negative figures, net emissions in positive figures. Reported data are from the 2023 greenhouse gas inventory submission. 2030 value of net greenhouse gas removals as in Regulation (EU) 2023/839 amending Regulation (EU) 2018/841 (LULUCF Regulation) – Annex IIa, kilotons of CO2 equivalent, based on 2020 submissions.
(3) Renewable energy and energy efficiency targets and national contributions are in line with the methodology established under Regulation (EU) 2018/1999 (Governance Regulation).
(4) Percentage of total revenue from taxes and social contributions (excluding imputed social contributions). Revenue from the EU Emissions Trading System is included in environmental tax revenue.
(5) Expenditure on gross fixed capital formation for the production of environmental protection services (abatement and prevention of pollution) covering government, industry, and specialised providers.
(6) European Commission, Study on energy subsidies and other government interventions in the European Union, 2022 edition.
(7) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters. This indicator is based on modelling of the current risk from floods, wildfires and windstorms as well as earthquakes, and an estimation of the current insurance penetration rate. The indicator does not provide information on the split between the private/public costs of climate-related disasters. A score of 0 means no protection gap, while a score of 4 corresponds to a very high gap (EIOPA, 2022).
(8) Sulphur oxides (SO2 equivalent), ammonia, particulates < 10 µm, nitrogen oxides in total economy (divided by GDP).
(9) Battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV).

Before Russia's invasion of Ukraine, Lithuania was heavily reliant on Russian gas and oil. However, the Klaipeda liquefied natural gas (LNG) terminal allowed Lithuania to already diversify its natural gas imports, while the country stopped all Russian natural gas imports in April 2022, as well as commercial electricity trades with Russia and Belarus. Nevertheless, Lithuania is highly dependent on imported fossil fuels in general, as well as on electricity imports. This Annex ([54]) sets out actions carried out by Lithuania to achieve the REPowerEU objectives, including through the implementation of its recovery and resilience plan, in order to improve energy security and affordability while accelerating the clean energy transition, and contributing to enhancing the EU's competitiveness in the clean energy sector ([55]).

Lithuania has achieved a resilient level of gas supply security in the face of challenging circumstances. Its natural gas infrastructure contributes to regional gas security of supply. Lithuania stopped importing natural gas from Russia in April 2022 and has since diversified its supply thanks to the Klaipeda LNG terminal, the only LNG terminal in the Baltic States. It has a capacity of 4 billion cubic metres (bcm)/year. Lithuania does not benefit from a domestic underground gas storage facility, but cooperates with Latvia and stores gas volumes in the Inčukalns facility.

The security of supply of the gas system and electricity system are interlinked. Gas accounted for 25% of gross electricity production in 2021 (see Annex 6), a share that has been fluctuating but decreasing since 2015, when it amounted to 40%. Lithuania is also heavily reliant on electricity imports from European countries, importing 61% of its electricity consumption in 2021. Nevertheless, the electricity grid is still dependent on Russia and Belarus until the synchronisation project is completed by the end of 2025. Should the Baltic states be desynchronised earlier by Russia, Lithuanian the gas demand is likely to increase significantly since more power plants will need to be activated to ensure system adequacy.

Graph A7.1: **Share of gas consumption per sector, 2021**



Source: Eurostat

Lithuania has adopted a comprehensive plan with demand response measures to address security of supply and affordability concerns. Lithuania imports a large share of its electricity, which makes electricity affordability a bigger concern than security of supply. The country introduced additional energy saving measures in 2022 to increase its security of supply. It also introduced an energy saving plan to reduce energy consumption by 20% in 2 years. This is equivalent to saving EUR 800 million otherwise spent on energy imports. The target is mandatory for the public sector and recommended for businesses and individuals. The plan encourages behavioural measures aimed at reducing energy consumption by 20% over 2 years in the public sector, complemented by quick payback measures (energy audits, installation of automatic doors, window replacements, lighting upgrades) as well as long-term measures (e.g. building renovation projects). Similar recommendations were directed at municipalities. Specific measures and a business support package of EUR 2.5 billion have been put in place to support business and industry. Combined heat and power (CHP) is the second hardest-hit sector, representing 17% of gas consumption. Lithuania estimates that habit-changing measures can reduce costs per resident by 10-20%. In households, long-term measures can reduce costs per resident by 30-50%. Over the period August 2022 – March 2023, 41% of gas

([54]) It is complemented by Annex 6 as the European Green Deal focuses on the clean energy transition, by Annex 8 on the actions taken to mitigate energy poverty and protect the most vulnerable ones, by Annex 9 as the transition to a circular economy will unlock significant energy and resource savings, further strengthening energy security and affordability, and by Annex 12 on industry and single market complementing ongoing efforts under the European Green Deal and REPowerEU.

([55]) In line with the Green Deal Industrial Plan COM(2023) 62 final, and the proposed Net-Zero Industry Act COM(2023) 161 final

consumption has been saved in Lithuania compared to the previous 5-years average.

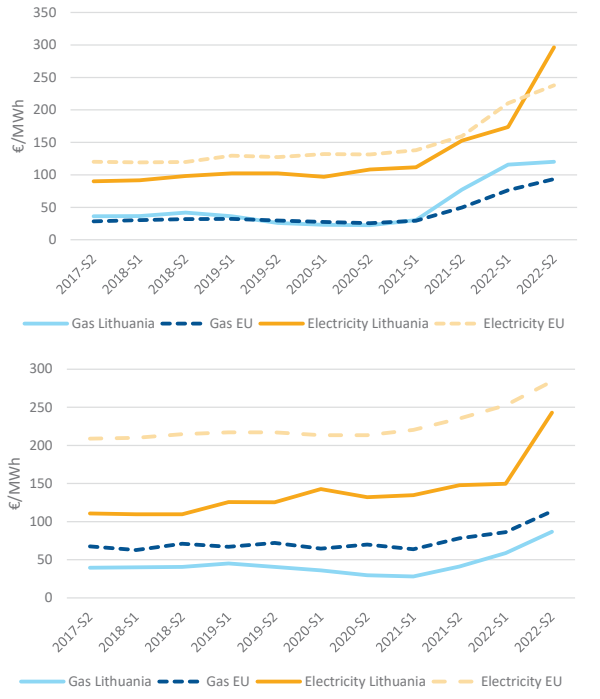
Lithuania is further upgrading its electricity grid infrastructure as part of the synchronisation project. Most projects are expected to be completed by the end of 2025 despite the current context. However, the planned second interconnector with Poland, the submarine HVDC Harmony Link, necessary for the completion of the synchronisation project, is facing significant delays. It is now expected to be completed only in 2028, with significant cost increases due to the current supply chain issues. Lithuania completed work on two gas interconnectors with neighbouring countries in 2022: the Gas Interconnection Poland–Lithuania (GIPL), which became operational in May 2022, and the enhancement of the Lithuania-Latvia Interconnection, which was completed in December 2022. Both projects were Projects of Common Interest (PCIs) either on the 5th Union list or on previous Union lists. Lithuania currently no longer has pending gas PCIs. The lease contract for the floating storage regasification unit in the Klaipeda LNG terminal will expire in 2024, with Lithuania purchasing it before the end of this 2024. In terms of electricity PCIs, Lithuania is focused on the synchronisation projects and the necessary investments.

Lithuania has taken important measures to protect households, small and medium-sized enterprises and industries from rising energy prices. In May 2022, it introduced an energy bills support scheme for households, which has been extended into the first half of 2023. The government has earmarked EUR 530 million of support until June 2023. To protect the smallest energy consumers, which are often energy poor and vulnerable households, the government has postponed the third stage of electricity market liberalisation until 2026.

Households remain shielded from steep energy prices. Measures adopted by the government to combat rising energy prices protect households. The support scheme limits wholesale gas prices to prevent a sharp rise in retail prices, while the retail gas price at the end of 2022 was 65% higher than December 2021. Almost 30% of household consumers in Lithuania (with annual consumption below 1 000 kWh) enjoy regulated electricity tariffs. These measures address the effects of high prices. However, without mechanisms to limit the amount of energy consumed, they may distort incentives to reduce energy demand and impact heavily on public finance. Furthermore, the government extended the list of people eligible for heating support: more than 110 000 households are expected to benefit from this measure in the ongoing heating season (see Annex 8)

Despite the mechanisms introduced by Lithuania to mitigate soaring energy prices, industries are being impacted. The surge in energy prices has had a considerable impact on Lithuanian industry, as industry represented 58% of total gas consumption in 2021, with 48% of national consumption used by the chemical and petrochemical industry. Sectors such as fertilisers are badly affected by the rise in gas prices, leading to severe demand reduction.

Graph A7.2: **Lithuania's retail energy prices for industry (top) and households (bottom)**



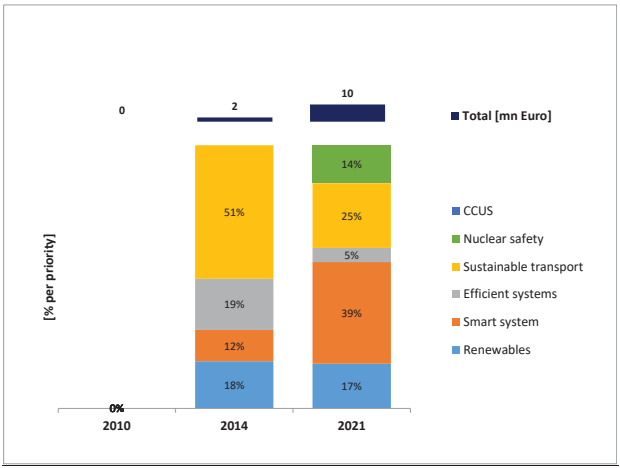
(1) On electricity, the band consumption is DC for households and ID for industry
(2) On gas, the band consumption is D2 for households and I4 for industry
Source: Eurostat

Lithuania has high ambitions to transform its energy system and strengthen its renewable capacity. Further policy support could harness its potential to make the economy net zero. Lithuania's deployment of renewable energy reached a total of 1.8 GW in 2021, up 13% compared to 2020. Most of this growth was down

to solar energy deployment, with a 55% increase in production capacity between 2020 and 2021, accompanied by a 24% increase in wind capacity during the same period (see Annex 6). Lithuania has also taken measures on permitting procedures for renewable energy sources by shortening the consultation periods and creating accelerated procedures for well-defined cases. There is still potential to further explore key sectors to meet the country´s renewables penetration and decarbonisation targets.

Lithuania's strategic goal is to further integrate its national industries into European strategic value chains, so as to become an energy technology exporter by 2030. Accordingly, Lithuania's research and innovation (R&I) public spending in Energy Union priorities ([56]) rose significantly from 0,006% of the GDP in 2014 to 0,021% in 2020, reaching EUR 1 billion. However, exploiting the full potential of increased R&I funding would require the consolidation of the country's fragmented research institutions. Venture Capital (VC) investment in the country's climate tech start-ups and scale-ups has significantly increased in 2021 (from EUR 1,5 EUR million in 2020 to EUR 21,2 million in 2021). Within this, the "energy – generation and grids tech" sector accounted for 92.9% in 2021. However, overall innovation performance has remained weak, which may be due to weak science-business linkages (as evidenced by the low share of public-private co-publications). The Recovery and Resilience Plan will introduce measures to address some of these weaknesses. Declared priority areas for clean energy investment include biofuels, hydrogen, batteries, and offshore wind ([57])as well as batteries, low carbon industry and hydrogen technologies ([58]). Regarding market surveillance activities, based on information provided through the relevant reporting mechanisms, Lithuania is carrying out a low number of checks on products covered by eco-design and energy labelling. This raises concerns with respect to the enforcement of market surveillance obligations and the compliance levels of the concerned products, level playing field among economic operators, missed energy and CO2 savings and consumer trust

Graph A7.3: **Public R&I investment in Energy Union R&I priorities**



Source: JRC SETIS (2022)

([56]) Renewables, smart system, efficient systems, sustainable transport, CCUS and nuclear safety, COM(2015) 80 final ('Energy Union Package').

([57]) Lithuania in-depth report, 2021, IEA.

([58]) Lithuania National Energy and Climate Plan.

Table A7.1:**Key energy indicators**

		LITHUANIA				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	**Import Dependency [%]**	74%	75%	75%	73%	58%	61%	57%	56%
	of Solid fossil fuels	99%	108%	88%	92%	44%	44%	36%	37%
	of Oil and petroleum products	98%	101%	103%	102%	95%	97%	97%	92%
	of Natural Gas	99%	100%	99%	101%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	100%	100%	100%	100%	40%	44%	49%	47%
	of Crude Oil	68%	79%	73%	80%	30%	27%	26%	25%
	of Natural Gas	57%	43%	42%	37%	40%	40%	38%	41%

		2015	*2016*	2017	2018	2019	2020	2021	2022
ELECTRICITY	**Gross Electricity Production (GWh)**	4,933	4,266	4,187	3,511	3,972	5,518	5,079	-
	Combustible Fuels	2,761	1,750	1,324	1,089	1,210	2,550	2,240	-
	Nuclear	0	0	0	0	0	0	0	-
	Hydro	1,024	1,044	1,181	960	948	1,080	1,094	-
	Wind	810	1,136	1,364	1,144	1,499	1,552	1,362	-
	Solar	73	66	68	87	91	129	191	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	265	270	250	232	223	207	193	-
	Net Imports of Electricity (GWh)	7,208	8,275	8,677	9,633	9,344	7,909	9,044	-
	As a % of electricity available for final consumption	71%	78%	79%	85%	82%	71%	76%	-
	Electricity Interconnection (%)	-	-	88.30%	80.87%	86.5%	77.0%	81.4%	69.2%

		2015	2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	2.5	2.2	2.3	2.3	2.2	2.4	2.3	1.6
	Gas Imports - by type (in bcm)	3.0	3.6	3.7	3.3	4.3	4.5	4.0	-
	Gas imports - pipeline	2.6	2.3	2.5	2.3	2.7	2.9	2.4	-
	Gas imports - LNG	0.5	1.4	1.2	1.0	1.6	1.7	1.5	-
	Gas Imports - by main source supplier (in bcm)* (1)								
	United States	0.0	0.0	0.4	0.0	0.2	1.2	1.9	-
	Russia	2.1	0.9	1.3	1.3	1.2	1.2	0.9	-
	Norway	0.9	2.8	1.8	2.0	3.0	2.1	0.5	-
	Trinidad and Tobago	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-
	Others	0.0	0.0	0.2	0.0	0.0	0.0	0.4	-

		2019	2020	2021	2022
	LNG Terminals				
	Number of LNG Terminals (2)	1	1	1	1
	LNG Storage capacity (m3 LNG)	170,000	170,000	170,000	170,000
	Underground Storage				
	Number of storage facilities	0	0	0	0
	Operational Storage Capacity (bcm)	0	0	0	0

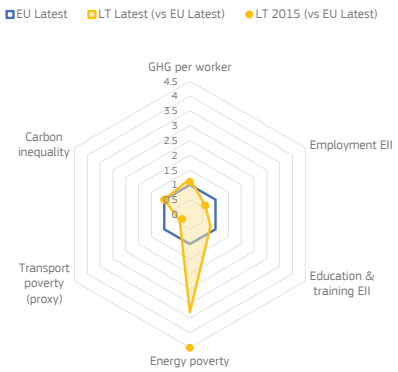
		2019	2020	2021	2022
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)**	0.2	1.5	21.1	n.a.
	as a % of total VC investments in Lithuania	0.6%	0.9%	5.3%	n.a.
	Research & Innovation spending in Energy Union R&i priorites (2)				
	Public R&I (EUR mln)	10.7	11.3	9.5	n.a.
	Public R&I (% GDP)	0.022%	0.023%	0.017%	n.a.
	Private R&I (EUR mln)	3.3	n.a.	n.a.	n.a.
	Private R&I (% GDP)	0.01%	n.a.	n.a.	n.a.

(1) The ranking of the main suppliers is based on the latest available figures (for 2021)
(2) FSRU included
(3) Venture Capital investments include Venture Capital deals (all stages) and Private Equity Growth/Expansion deals (for companies that have previously been part of the portfolio of a VC investment firm).

Source: Source: Eurostat, Gas Infrastructure Europe (Storage and LNG Transparency Platform), JRC SETIS (2022), JRC elaboration based on PitchBook data (06/2022)

This Annex monitors Lithuania's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. To ensure a fair green transition in line with the Council Recommendation ([59]) and to successfully implement REPowerEU, the number of jobs in Lithuania's green economy has increased, while employment in the sectors most affected by the green transition remains stable. Under the recovery and resilience plan (RRP), a pilot project by the Public Employment Service will support entrepreneurship and job creation in the green sector ([60]). The European Social Fund Plus (ESF+) contributes to creating new and better jobs, with particular attention to skills for the green transition and circular economy.

Graph A8.1: **Fair transition challenges in Lithuania**



Source: Eurostat, EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (see Table A8.1).

Employment in Lithuania's sectors most affected by the green transition remains stable while the green economy is expanding, but workers in declining activities need active support. Between 2015 and 2020, the greenhouse gas (GHG) emissions intensity of Lithuania's workforce increased from 14.4 to 16.5 tonnes per worker, and is now above the EU average of 13.7 in 2021 (see Graph A8.1 and Table A8.1). Employment in Lithuania's energy-intensive industries (EII) represented 1.9% of total employment in 2020 (EU average: 3.0%). Employment in mining and quarrying as well as in the manufacture of motor vehicles increased considerably, but was offset by reductions in other areas, such as the manufacture of basic metals and other (non-metallic) products. Total jobs in the environmental goods and services sector grew by 27.7% in 2015-2019 (EU: 8.3%), reaching 3.5% of total employment (EU: 2.2%) (see Annex 9 for circular jobs specifically). In 2022 the job vacancy rate in construction, which is key for the green transition, was 1.9%, compared to 4.0% in the EU ([61]).

Upskilling and reskilling in declining and transforming sectors decreased and labour shortages are relatively limited. Skills are key to smooth labour market transitions and preserving jobs in transforming sectors. In energy-intensive industries, workers' participation in education and training fell from 10.4% in 2016 to 8.1% in 2022, below the EU average (10.4% in 2022). Lithuania is one of the Member States with the lowest share of citizens (21%) who believe they do not have the necessary skills to contribute to the green transition (EU: 38%) ([62]). Specific investments under the Just Transition Mechanism provide training to help reskill workers in regions affected by the transition (more than EUR 5 million is earmarked for this), together with a broader training offer under the RRP and at national level. The RRP also aims at increasing employment support in view of the digital and green transition, including up- and re-skilling programmes in fields such as the circular economy and digital skills. Lithuania committed to submit ESF+ figures for the funding of green skills and jobs during a later stage of the implementation of the RRP, tentatively in 2025.

While energy poverty indicators have improved in recent years, Lithuania remains among the worst performers in the EU and the current spike in energy prices can be expected to worsen the situation. The share of the population unable to keep their homes adequately warm fell from 31.1% in 2015 to 22.5% in 2021 while the EU average in the same period fell from 9.6% to 6.9% ([63]). The same trend can be observed for at-risk-of-poverty population

([59]) Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality (2022/C 243/04) covers employment, skills, tax-benefit and social protection systems, essential services and housing.

([60]) See also 2022 Country Report (Annex 6).

([61]) Eurostat (JVS_A_RATE_R2).

([62]) Special Eurobarometer 527. Fairness perceptions of the green transition (May – June 2022).

([63]) Energy poverty is a multi-dimensional concept. The indicator used focuses on an outcome of energy poverty. Further indicators are available at the Energy Poverty Advisory Hub.

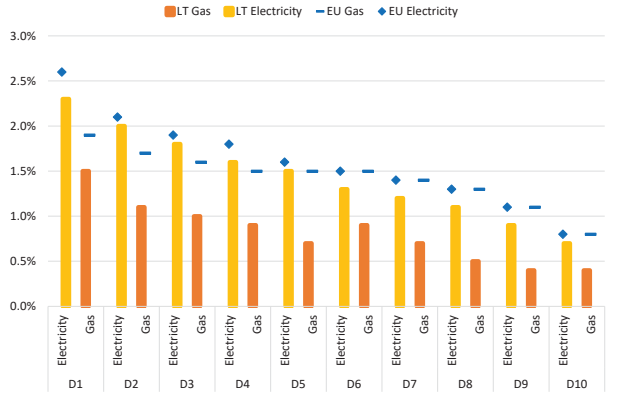
Table A8.1:**Key indicators for a fair transition in Lithuania**

Indicator	Description	LT 2015	LT Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	14.4	16.5 (2021)	13.7 (2021)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29) - %	1.7	1.9 (2020)	3 (2020)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %		8.1 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	31.1	22.5 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	12.2	13 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	5	4.9 (2020)	5 (2020)

Source: Eurostat (env_ac_ainah_r2, nama_10_a64_e, ilc_mdes01), EU Labour Force Survey (break in time series in 2021), EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (WID).

(AROP), with values falling but remaining well above the EU average (30.9% vs 16.4% in 2021). However, 24.6% of lower middle-income households (income deciles 4-5) were affected in 2021 (EU: 8.2% in 2021). Before the energy price hikes, an estimated 39.0% of the total population and 62.8% of the (expenditure-based) AROP population had residential expenditure budget shares on electricity, gas and other fuels ([64]) above 10% of their household budget (still above the estimated EU average of 26.9% and 48.2%, respectively).

Graph A8.2: **Distributional impacts of energy prices due to rising energy expenditure (2021-2023)**



Mean change of energy expenditure as a percentage (%) of total expenditure per income decile (D) due to observed price changes (August 2021 – January 2023 relative to the 18 months prior), excl. policy support and behavioural responses.
Source: EMPL-JRC GD-AMEDI/AMEDI+ projects, based on Household Budget Survey 2015 and Eurostat inflation data for CP0451 and CP0452.

The increased energy prices in 2021-2023 negatively affect households' budgets, in particular for low-income groups. As a result of energy price changes during the August 2021 to January 2023 period relative to the 18 months prior (cf. Annex 7), in the absence of policy support and behavioural responses, the share of individuals living in households which spend more than 10% of their budget on energy would have increased by 27.0 percentage points (pps) for the whole population and by 19.9 pps among the AROP population, while the EU-level would have increased by 16.4 pps and 19.1 pps, respectively ([65]). The expenditure shares of low and lower-middle income groups would have increased the most in line with EU-wide patterns, for both electricity and gas, as shown in Graph A8.2. Among the (expenditure-based) AROP population, the share of individuals living in households with budget shares for private transport fuels ([66]) above 6% would have increased less than the EU average (0.8 pps vs 5.3 pps), reaching 13.0% in January 2023 (below the EU average of 37.1%) due to the increase in transport fuel prices.

Access to public transport displays an urban-rural divide, and availability in particular is perceived in rural areas below the EU average. Citizens in Lithuania perceive public transport to be available (58% vs 55% in the EU), affordable (63% vs 54% in the EU) and of good quality (69% vs 60% in the EU). In rural areas, perceptions are above the EU average for affordability (53% vs 48%) and quality (59% vs 55%), but below it for availability (42% vs 46%). The average carbon footprint of the top 10% of emitters among the population in Lithuania is 4.9 times that of the bottom 50% (see Graph 8A.1), while the EU average is 5.0 times higher. In Lithuania, the average levels of air pollution in 2020 stood below the EU average (9.8 vs 11.2 µg/m PM2.5), with 32% of the population living in regions exposed to critical levels of air pollution ([67]), leading to significant health impacts,

([64]) Products defined according to the European Classification of Individual Consumption according to Purpose (ECOICOP): CP045.

([65]) EMPL-JRC GD-AMEDI/AMEDI+ ; see details in the related technical brief.

([66]) ECOICOP: CP0722.

([67]) Twice higher the recommendations in the WHO Air Quality Guidelines (annual exposure of 5µg/m3).

in particular on vulnerable groups, and 1 462 premature deaths annually ([68]).

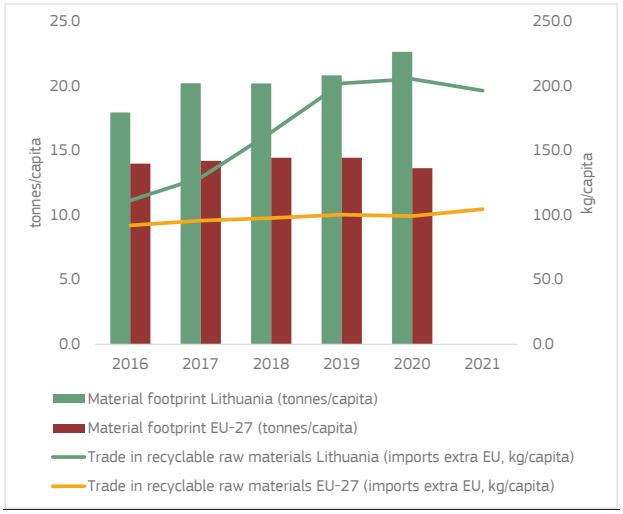
([68]) EEA- Air Quality Health Risk Assessment.

The circular economy transition is key to delivering on the EU's climate and environmental goals and provides large socio-economic benefits. It spurs job growth, innovation and competitiveness and fosters resilience and resource security. The circularity transition of industry, the built environment and agri-food can generate significant environmental improvements (see Annex 6), as they rank among the most resource-intensive systems.

Lithuania has room to improve the pace of its circular economy transition to meet the EU's circular economy goals. The EU's 2020 circular economy action plan (CEAP) aims at doubling the circular material use rate between 2020 and 2030. Lithuania's use of circular materials decreased from 4.6% in 2016 to 4% in 2021. This rate is almost three times below the EU 2021 average of 11.7%. The CEAP also aims to significantly decrease the EU's material footprint. In 2020, Lithuania's material footprint (22.7 tonnes per capita) was above the EU-27 average (13.7 tonnes per capita), with an upward trend since 2016. The labour market benefits of the circular transition are more evident than in many other EU Member States, with 2.8% employed in direct circular jobs in 2021 (EU-27 average 2.1%). Lithuania launched an ambitious public procurement reform in 2021. As a result, levels of green procurement uptake across Lithuanian public institutions have increased from 5% of public procurement spending by value in 2020 to 59.3% in 2022. Programme of Lithuania's Government sets a goal to make green public procurement the dominant type of public procurement in Lithuania from 2023.

The guidelines for Lithuania's transition to a circular economy until 2035 could help Lithuania bring about the necessary systemic change and create a fertile business environment for circular economy practices. These guidelines correspond to a reform included in Lithuania's recovery and resilience plan, to be adopted in the first half of 2023. The guidelines will focus on waste prevention, recycling, product design and the use of secondary raw materials, green innovation, and legal and fiscal measures promoting long-term circular solutions. They will complement the roadmap for Lithuania's industrial transition to a circular economy developed in 2021. The national progress plan for Lithuania sets an ambitious target to reach the EU average of circular material use rate by 2025.

Graph A9.1: **Trend in material use**



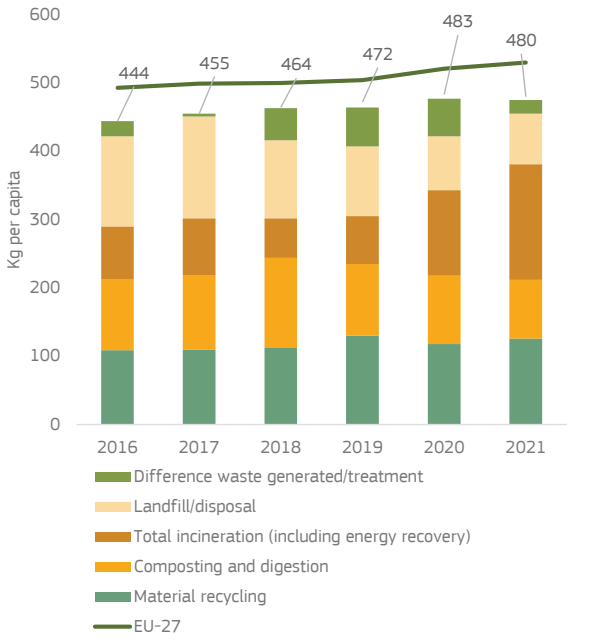
Source: Eurostat

Moving towards a circular economy requires further improvements in waste management. With a municipal waste recycling rate of 44.3% in 2021, Lithuania missed the EU target for recycling of 50% by 2020. Lithuania is at risk of missing the EU's municipal waste recycling target for 2025. The landfilling rate in 2021 was 16%, below the EU average. Lithuania will need to make efforts to meet the EU recycling targets by 2035 through improvements in separate collection and treatment of waste.

The industrial system is yet to transition to a circular model. The economy, particularly industry, is considerably less efficient at using materials to produce wealth than the EU average, with a resource productivity of 1.4 purchasing power parity standard per kilogramme vs 2.3 for the EU (see Annex 5). The roadmap for Lithuania's industrial transition to a circular economy concludes that the transition is in its initial stages and suggests focusing not only on strategic industrial sectors, but also on other sectors with high potential for circular innovations such as textiles, construction, furniture, packaging and plastics, food and waste. The roadmap identifies the main challenges for Lithuanian industry as being the creation of greater added value, integration into European value chains and cooperation between the public sector and businesses. Lithuania is encouraged to create

more business accelerators and incubators for industrial start-ups and development.

Graph A9.2: **Treatment of municipal waste**



Source: Eurostat

The built environment system depletes resources less than the EU average. The recovery rate of construction and demolition waste in Lithuania has increased since 2016 and is above the EU average (98% vs 89%). Soil sealing progressed between 2016 and 2018 but is still slightly below the EU average. The remaining challenges are related to the energy efficiency of buildings and the adoption of circular principles to the built environment.

The agri-food system has yet to design out food waste and improve composting and digestion. Lithuania's composting and anaerobic digestion per capita increased up to 2018 and then slid back to 86 kg per capita in 2021, below the EU average of 100 kg per capita. While the implementation of a national separate food waste collection system is in progress, speeding it up could have beneficial effects in terms of recycling targets. Compost and digestate from biowaste treatment plants can be used for land improvement and fertiliser uses. There remains scope to use more efficient farming techniques and spread good practices to enable the shift towards circularity.

There remains a financing gap in the circular economy, including waste management. Additional investments will be required to address growing needs. The financing gap was estimated at EUR 64 million per year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 213 million per year, while investment baselines were EUR 149 million per year (see Annex 6). Investment areas such as eco-design, repair, reuse and remanufacturing as well as the uptake of new business models will be necessary to reach the EU's circular economy objectives. Lithuania is already using funds from the ERDF and the Cohesion Fund, but further investments are needed.

Table A9.1:**Overall and systemic indicators on circularity**

AREA	2016	2017	2018	2019	2020	2021	EU-27	Latest year EU-27
Overall state of the circular economy								
Material footprint (tonnes/capita)	18.0	20.2	20.2	20.9	22.7	-	13.7	2020
YoY growth in persons employed in the circular economy (%)[1]	-1.1	3.0	-	1.5	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	0.5	0.3	0.6	0.7	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.4	1.3	1.4	1.4	1.3	1.4	2.3	2021
Circular material use rate (%)[2]	4.6	4.5	4.3	3.9	4.0	4.0	11.7	2021
Recycling rate (% of municipal waste)	48.0	48.1	52.6	49.7	45.3	44.3	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%)[3]	97.0	-	99.0	-	98.0	-	89.0	2020
Soil sealing index (base year = 2006)[4]	102.9	-	107.8	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita)[5]	-	-	-	-	137.0	-	131.0	2020
Composting and digestion (kg per capita)	104.0	109.0	131.0	105.0	100.0	86.0	100.0	2021

(1) Persons employed in the circular economy only tracks direct jobs in selected sub-sectors of NACE codes E, C, G and S; (2) the circular material use rate measures the share of material recovered and fed back into the economy in overall material use; (3) the recovery rate of construction and demolition waste includes waste which is prepared for reuse, recycled or subject to material recovery, including through backfilling operations; (4) soil sealing: 2016 column refers to 2015 data; (5) food waste includes primary production, processing and manufacturing, retail and distribution, restaurants and food services, and households.
Source: Eurostat, European Environment Agency

Digital transformation is key to ensuring a resilient and competitive economy. In line with the Digital Decade Policy Programme, and in particular with the targets in that Programme for digital transformation by 2030, this Annex describes Lithuania's performance on digital skills, digital infrastructure/connectivity and the digitalisation of businesses and public services. Where relevant, it makes reference to progress on implementing the Recovery and Resilience Plan (RRP). Lithuania allocates 32% of its total RRP budget to digital (EUR 0.7 billion) ([69]).

The Digital Decade Policy Programme sets out a pathway for Europe's successful digital transformation by 2030. The Programme provides a framework for assessing the EU's and Member States' digital transformation, notably via the Digital Economy and Society Index (DESI). It also provides a way for the EU and its Member States to work together, including via multi-country projects, to accelerate progress towards the Digital Decade digital targets and general objectives ([70]). More generally, several aspects of digital transformation are particularly relevant in the current context. In 2023, the European Year of Skills, building the appropriate skillset to make full use of the opportunities that digital transformation offers is a priority. A digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains ([71]). Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ([72]).

The lack of information and communication technology (ICT) specialists remains a key challenge for Lithuania. In digital skills, the country scores below the EU average for the proportion of people with at least basic and above basic digital skills (49% vs 54% and 23% vs 26%). Lithuania has a higher-than-average percentage of female ICT specialists, but the scarcity of ICT specialists overall remains a key challenge.

The country could further improve on digital infrastructure/connectivity, where broader network coverage could enable wider use of digital technologies. Very high capacity network (VHCN) coverage is higher than the EU average (78% vs. 73%), as is the overall 5G coverage (90% vs the EU average of 81%). But 5G coverage on the 3.4-3.8 GHz spectrum band, which is essential for enabling advanced applications requiring large spectrum bandwidth, is 36%, slightly below the EU average of 41%. However, this may change soon as 5G-dedicated spectrum bands have been auctioned in 2022 and the related investments are ongoing.

Lithuania's performance on the digitalisation of businesses is mixed; the uptake of advanced technologies by SMEs remains a key challenge. The share of small and medium-sized enterprises with at least basic digital intensity is below the EU average. The use of advanced technologies like artificial intelligence, big data and cloud computing services is also lower than the EU average.

Lithuania performs well on digital public services. It is most notable in the availability of digital public services for businesses, where it performs comfortably above the EU average. In the provision of digital services for citizens, its performance is slightly lower, although still above the EU average. In the access to electronic health records, it scores 91 out of 100, considerably above the EU average. The country has one electronic identification (eID) scheme notified under the eIDAS Regulation. A considerable proportion of the Lithuanian digital RRP measures will be focused on public services including measures to support the digital transformation of healthcare and implement a government cloud infrastructure and projects that aim to increase interactivity for end users and increase the use of advanced technologies such as artificial intelligence in digital public services.

([69]) The share of financial allocations that contribute to digital objectives has been calculated using Annex VII of the RRF Regulation.

([70]) The Digital Decade targets as measured by DESI indicators and complementary data sources are integrated to the extent currently available and/or considered particularly relevant in the MS-specific context.

([71]) See for example OECD (2019): OECD Economic Outlook, Digitalisation and productivity: A story of complementarities, OECD Economic Outlook, Volume 2019 Issue 1 | OECD iLibrary (oecd-ilibrary.org).

([72]) The need and possible actions for a digitalisation of the energy system are laid out in the Communication 'Digitalisation the energy system – EU action plan' (COM(2022)552).

Table A10.1:**Key Digital Decade targets monitored by DESI indicators**

	Lithuania			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	**NA**	**49%**	**49%**	**54%**	**80%**
% individuals		2021	2021	2021	2030
ICT specialists ([1])	**3.3%**	**3.8%**	**3.8%**	**4.5%**	**20 million**
% individuals in employment aged 15-74	2020	2021	2021	2021	2030
Digital infrastructure/connectivity					
Fixed Very High Capacity Network (VHCN) coverage	**67%**	**78%**	**78%**	**73%**	**100%**
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ([2])	**67%**	**78%**	**78%**	**56%**	**-**
% households	2020	2021	2022	2022	2030
Overall 5G coverage	**0%**	**33%**	**90%**	**81%**	**100%**
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	**NA**	**NA**	**36%**	**41%**	**-**
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**64%**	**69%**	**90%**
% SMEs			2022	2022	2030
Big data ([3])	**11%**	**11%**	**11%**	**14%**	**75%**
% enterprises	2020	2020	2020	2020	2030
Cloud ([3])	**NA**	**28%**	**28%**	**34%**	**75%**
% enterprises		2021	2021	2021	2030
Artificial Intelligence ([3])	**NA**	**5%**	**5%**	**8%**	**75%**
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	**NA**	**82**	**84**	**77**	**100**
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	**NA**	**93**	**94**	**84**	**100**
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	**NA**	**NA**	**91**	**71**	**100**
Score (0 to 100)			2023	2023	2030

(1) The 20 million target represents about 10% of total employment.
(2) The Fibre to the Premises coverage indicator is included separately as its evaluation will also be monitored separately and taken into consideration when interpreting VHCN coverage data in the Digital Decade.
(3) At least 75 % of Union enterprises have taken up one or more of the following, in line with their business operations: (i) cloud computing services; (ii) big data; (iii) artificial intelligence.

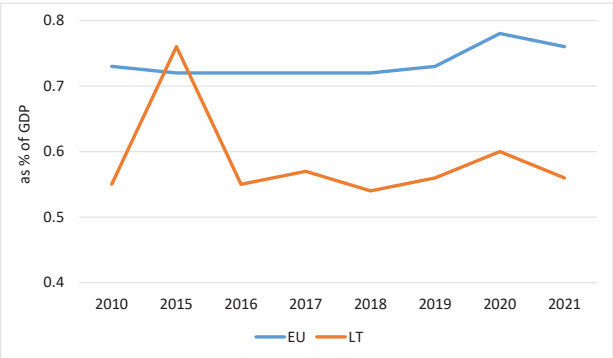
Source: Digital Economy and Society Index

This Annex provides a general overview of the performance of Lithuania's research and innovation system, which is essential for delivering the twin green and digital transition.

Lithuania is a 'moderate innovator' but it has steadily improved its performance over the last decade. According to the 2022 edition of the European Innovation Scoreboard (EIS) ([73]), the gap between its performance and the EU average is narrowing, thanks to increases in venture capital and non-R&D innovation expenditure. However, human resources continue to lag behind, the number of foreign doctorate students has declined and R&D expenditure in the public sector has not improved.

R&D intensity ([74]) has fluctuated over the years and reached 1.11% of GDP in 2021. It is less than half of the EU average and is well below the government's target of 1.5% of GDP for 2024. Public expenditure on R&D has stagnated for the last 6 years at 0.56% of GDP in 2021, the same investment level as in 2007 ([75]). In 2021, despite some significant progress in past years, private R&D expenditure reached 0.54% of GDP, still just over a third of the EU average (1.49% of GDP).

Graph A11.1: **Public R&D intensity 2010-2021**



Source: Eurostat 2023

Insufficient public funding, a fragmented research and innovation (R&I) landscape and unattractive research careers have led to below the EU average science results. The public investment in R&D is low and dispersed, and not used effectively, due to a still fragmented community of research institutions. Over the last decade researchers have had low productivity and scientific excellence, as evidenced by the number of top-quality publications, which is below the EU average but increasing ([76]). The number of new graduates in science and engineering is decreasing, as is the number of foreign doctorate students. International ties with excellent research institutions are limited.

The Lithuanian recovery and resilience plan (RRP) has introduced measures to address the fragmentation of the research system and raise public R&D funding. The measures encompass the whole knowledge production chain – from raising the quality of higher education to ensuring new frontier research. The situation is expected to improve with the introduction of a new funding structure with a stronger R&D focus, coupled with newly defined missions for higher education institutions (HEIs) and incentives for reorganisation and mergers amongst HEIs. Furthermore, the RRP will fund scholarships for foreign students and support the design of three joint science and innovation missions based on the smart specialisation strategy and implemented by three new excellence centres. The country so far has no credible plans for ensuring the sustainability of increased R&I investment beyond the RRP.

Innovation by Lithuanian businesses is slowly progressing, but science-business linkages remain weak. The country performs poorly in terms of technology development, reflected by the low and stagnant number of patents ([77]), and structural change towards higher-tech activities. The proportion of manufacturing firms classed as high- and medium-high-tech has diminished slightly over the last decade and most value added is created by low- and medium-tech companies. At the same time, Lithuania has a booming and successful start-ups ecosystem. Innovative businesses collaborate mainly with one another, and less so with public research

([73]) 2022 European Innovation Scoreboard (EIS), Country profile, Lithuania: https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-lt.pdf. The EIS provides a comparative analysis of innovation performance in EU countries, including the relative strengths and weaknesses of their national innovation systems (also compared to the EU average).

([74]) defined as gross domestic expenditure on R&D as a percentage of GDP.

([75]) 0.57% of GDP in 2007 (source: Eurostat).

([76]) Lithuanian top 10% most cited scientific publications worldwide equal to 5.6% and EU average to 9.9% in 2019, (source: Eurostat).

([77]) 0.6 patent applications filed under PCT per billion GDP (in PPS) in both 2008 and 2019.

Table A11.1:**Key innovation indicators**

Lithuania	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	0.78	1.04	0.99	1.16	1.11	*2.26*
Public expenditure on R&D as % of GDP	0.55	0.76	0.56	0.6	0.56	*0.76*
Business enterprise expenditure on R&D (BERD) as % of GDP	0.23	0.29	0.43	0.56	0.54	*1.49*
Quality of the R&I system						
Scientific publications of the country within the top 10% most cited publications worldwide as % of total publications of the country	2.8	4.4	5.6	:	:	*9.8*
Patent Cooperation Treaty patent applications per billion GDP (in PPS)	0.4	0.4	0.6	:	:	*3.3*
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	5.2	4.6	7.1	5.7	5.2	*7.1*
Public expenditure on R&D financed by business enterprise (national) as % of GDP	0.082	0.091	0.041	:	:	*0.054*
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	23.3	18.4	15.9	:	:	*16*
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	0.068	0.083	0.126	:	:	*0.194*
R&D tax incentives: foregone revenues as % of GDP	0.013	0.021	0.026	:	:	*0.1*
Green innovation						
Share of environment-related patents in total patent applications filed under Patent Cooperation Treaty (%)	36.1	19	3.7	:	:	*13,3*
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.0003	0.026	0.008	0.012	0.04	*0.074*
Employment in fast-growing enterprises in 50% most innovative sectors	4.5	2.1	4.1	:	:	*5.5*

(1) EU average for the latest available year or the year with the highest number of country data.
Source: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPO's Patent Statistical database), Invest Europe

institutions ([78]), except in the usual niches of life sciences or lasers.

The Lithuanian RRP has introduced measures to strengthen public-private linkages and innovation demand. It aims to improve innovation and science-business linkages through: financial incentives for innovative public procurement to boost demand for innovation; acceleration services to support the start-up ecosystem; the creation of three specialised knowledge-transfer Industry 4.0 Labs to develop green products and technologies; and the three joint missions for science and innovation mentioned above.

Measures to improve the governance of the R&I system and address fragmentation are underway. Historically, R&I governance was spread across several agencies, resulting in an uncoordinated policy mix. Under the RRP, a new unifying Innovation Agency has been created. This Agency will need to have the autonomy of action to establish its operational model, to ensure tailor-made investments and low red tape for businesses ([79]). The Research Council of Lithuania will serve as a one-stop shop for science. Finally, the implementation of a coherent policy mix is underway, as well as the introduction of science and innovation officers in all ministries aimed at ensuring a cross-cutting and coordinated science and innovation policy approach throughout the government.

([78]) Public-private scientific co-publications as percentage of total number of publications increased very slightly over the decade and still lags behind the majority of the EU countries.

([79]) Policy Support Facility report Lithuania 'Fit for Future' (2016) SS%20Lithuania_Final%20Report.pdf (europa.eu).

Lithuania showed relatively strong investment growth in recent years, which is now dampened by recent cost increases and declining business confidence. In recent years, public investment has been directed mainly to digital and green infrastructure, energy security, healthcare and R&I projects. This is mainly supported by recurring European funding programmes. Although private investment has been contributing to economic growth, the Lithuanian Productivity Board draws attention to a rather low rate of investment per employee in Lithuania, which ranks only 22 out of 27 EU Member States in 2020 ([80]). This contributes to the relatively low labour productivity, where Lithuania only reaches 73% of the EU (in purchasing power parity standards). Decreasing investor and consumer confidence, mainly due to the Russian invasion of Ukraine, high inflation, supply chain disruptions and high prices for energy raw materials weigh on households' real disposable income, corporate profitability and thus on private investment.

Skills shortages and uncertainty are hampering investment. While job creation continued and unemployment fell continuously despite the COVID crisis, labour market tightness, measured as the ratio of job vacancies to the unemployed, was at its highest in 15 years ([81]), although declining end of 2022. This points to skills mismatches and skills shortages, which are of great concern for Lithuanian firms according to the 2022 EIB investment survey (79% of surveyed firms), especially in the construction sector (ECFIN Business and Consumer survey). In autumn 2022, short-term uncertainty indicators reached their highest levels since 2000, similar to Latvia and Estonia. Especially in the export-oriented manufacturing, construction and services sectors, uncertainty is increasing, while expectations in the retail trade sector are rather positive. Investment in construction (civil engineering buildings and structures) and transport equipment declined already at the end of 2022, while investment in energy-saving projects (category: other capital goods) and residential construction by households continued growing.

Although the general availability of financing and well-functioning financial markets are favourable for firms, access to finance and late payments remain the main problems especially for SMEs. Firms' financial liabilities increased substantially in 2022 ([82]), mainly by using trade credit financing, due to deferred settlements. This is also illustrated by the large share of SMEs (50%) experiencing late payments ([83]). In addition, firms' financial assets declined because (i) firms tried to refill their stocks of imported raw materials and products, which was more expensive due to overall price increases and (ii) pandemic support measures from the government ended. According to the SAFE survey, for 15% of Lithuanian SMEs (7% in the EU) access to finance is one of the main problems, which reduces productivity improvements and investment. This is specifically relevant for young and expanding firms in Lithuania ([84]). The development of the fintech sector and the use of venture capital, especially via private management, has further potential, particularly in targeting start-ups in their later life cycle ([85]). The ratio of financially constrained firms in Lithuania is one of the highest in the EU ([86]). Additionally, a large share of SMEs (34% in Lithuania vs. 24% in EU) are relying on relatively expensive bank credit or credit overdraft.

Productivity is improving in tradable sectors, secured by growing export market shares, albeit in somewhat medium-low technology products and services. Productivity growth in tradable sectors, specifically in manufacturing (see graph A12.1), has increased above the EU average. This helped to steadily increase world export market shares in goods (chemical and food/agriculture products) and services (transport services) over the last decade. The strong wage growth, even in the non-tradeable sectors, was broadly in line with productivity advances, resulting in broadly constant real unit labour costs. However, with continuing wage pressure due to labour shortages, combined with increasing energy

([80]) National Productivity Board Lithuania (2022). Assessment of labour productivity developments in Lithuania. Investment and labour productivity in the EU. Annual Report.

([81]) Central Bank of Lithuania (2022). Lithuanian Economic Review, September 2022.

([82]) Central Bank of Lithuania (2023). Lithuanian Economic Review, March 2023.

([83]) SAFE Survey (2022).

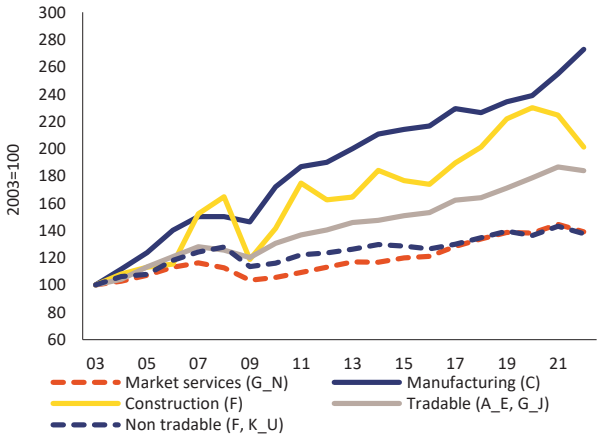
([84]) Foda, K., Shi, Y., and M. Vaziri (2022): Financial Constraints, productivity, and investment, evidence from Lithuania, IMF WP/22/249.

([85]) OECD (2022). Economic surveys : Lithuania, October 2022.

([86]) EIB (2022) Investment survey.

prices, rising unit labour costs endanger the competitive position of Lithuanian firms. This could be improved by advances in innovation and investment. The relatively low productivity level attained is due to the structure of the economy, which is concentrated in less knowledge-intensive activities ([87]). Despite this, Lithuania succeeded in increasing its high/medium-high-tech and medium-tech exports, albeit from a rather low starting level (OECD 2022). Additionally, R&D business expenditure as a share of GDP grew from 0.23% in 2010 to 0.55% in 2021), with the current level still far below the EU average of 1.5% (see Graph A12.2 and Annex 11) ([88]).

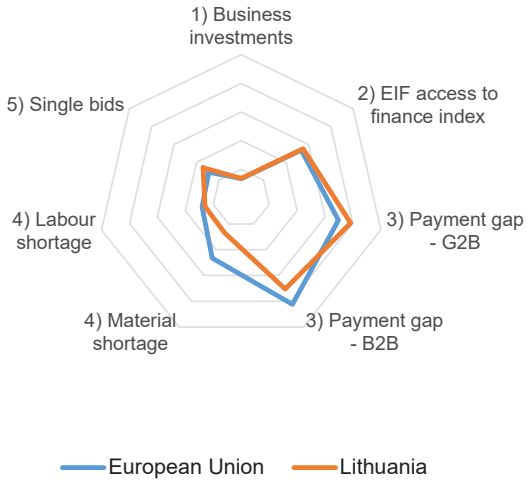
Graph A12.1: **Labour productivity per sector**



Source: European Commission.

Although the Lithuanian economy is well integrated into the single market, with a trade integration of 58.6% of GDP, some regulatory barriers remain. Regulatory restrictiveness in Lithuania is higher than the EU average for architects, civil engineers, patent agents and tourist guides. Among the professions analysed, restrictiveness is the highest for lawyers ("advokatas") and architects. ([89]) Recent reforms facilitated the use of legal services and land acquisition for non-residents. Licensing procedures in services such as healthcare are gradually being eliminated, to reduce compliance costs. Lithuania still faces some challenges related to the public procurement market and its lack of competition. The percentage of single bids has increased significantly in the last two years (28% in 2020 to 34% in 2022). Moreover, the number of contracts awarded based on the lowest price remains above the EEA average at 93%. However, according to the OECD (2022), reducing and reforming state-owned enterprises in several sectors (network industries, but also agriculture, forestry and financial services), especially at municipal level, could increase GDP per capita by up to 5%.

Graph A12.2: **Business environment and productivity drivers**



Source: 1) % of GDP, 2021 Eurostat;
2) composite indicator, 2021 European Investment Fund access to finance index;
3) average payment delay in number of days, 2022 Intrum;
4) % of firms in manufacturing facing constraints, 2022 European Commission business consumer survey;
5) proportion of contracts awarded with a single bidder, 2022 Single Market Scoreboard.

Lithuania's ambitious carbon emission targets set in 2021 require a shift in the energy mix and therefore substantial investment in renewables, which also supports the energy security. Although carbon emissions per capita are below the EU average (5.4 kt CO_2 equivalents in Lithuania versus 7 kt in the EU as a whole) ([90]), the transport, industry and agricultural sectors are contributing to a steady increase in emissions. Lithuania has started implementing measures to increase its share of renewables and other non-hydrocarbon energy. Within the Single Market Enforcement Taskforce (SMET) initiative for streamlining the permitting procedures for wind and solar energy projects,

([87]) European Commission (2022). SME country fact sheet for Lithuania. https://ec.europa.eu/docsroom/documents/50695.

([88]) Eurostat, RD_E_BERDPFR2.

([89]) European Commission (2021). Communication on updating the reform recommendations for regulation in professional services, COM(2021)385. 9/7/2021).

([90]) European Environment Agency (EEA) greenhouse gases – data viewer (latest data from 2020).

Lithuania committed to simplify rules on land use and land repurposing and proposed to shorten burdensome administrative procedures and clarify necessary requirements. The package of legislative amendments has been adopted and came into force in July 2022. The successful implementation and the real impact on renewables capacities will be closely monitored.

Table A12.1:**Industry and the Single Market**

	POLICY AREA	INDICATOR NAME	2018	2019	2020	2021	2022	EU27 average (*)
HEADLINE INDICATORS	Economic structure	Net private investment, level of private capital stock, net of depreciation, % GDP [1]	7.9	8.4	6.5	8.7	8	**3.7**
		Net public investment, level of public capital stock, net of depreciation, % GDP [1]	0.6	0.5	1.8	0.7	0.9	**0.4**
		Real labour productivity per person in industry (% yoy)[2]	-1.4	4.7	2.8	5.3	6.5	**1.4**
	Cost competitive-ness	Nominal unit labour cost in industry (% yoy)[2]	6.1	6.4	0	3.4	6.6	**2.9**
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % [3]	10	9	9	21	27	**47**
		Labour shortage using survey data (industry), firms facing constraints, % [3]	18	16	12	22	26	**28**
		Vacancy rate (business economy)[4]	1.5	1.4	1.3	2	1.9	**3.1**
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials [5]	0.21	0.2	0.2	0.2	0.17	**0.18**
		Installed renewables electricity capacity, % of total electricity produced [6]	48.5	48.9	49.3	52.6	n.a.	**50.9**
SINGLE MARKET	Single market integration	EU trade integration, % [7]	47.1	47.6	45.4	51.5	58.6	**45.8**
	Restrictions	EEA Services trade restrictiveness Index [8]	0.03	0.03	0.03	0.03	0.03	**0.05**
	Public procurement	Single bids, % of total contractors [9]	24	28	28	30	34	**29**
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle [10]	22.6	24.5	21.1	22.4	22.6	**29.6**
	Business demography	Bankruptcies, index (2015=100)[11]	107.3	78.1	40.8	38.3	53.9	**86.8**
		Business registrations, index (2015=100) [11]	116	123.4	131.2	144.8	138.9	**121.2**
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment [12]	3	2	16	12	12	**13**
		Payment gap - public sector, difference in days between offered and actual payment [12]	4	-1	17	11	18	**15**
		Share of SMEs experiencing late payments in past 6 months, % [13]	n.a.	55	52.2	52.8	50.6	**43**
	Access to finance	EIF Access to finance index - loan, composite: SME external financing over last 6 months, index values between 0 and 1 [14]	0.55	0.54	0.65	0.34	n.a.	**0.46**
		EIF Access to finance index - equity, composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1 [14]	0.13	0.13	0.25	0.54	n.a.	**0.23**

(*) Last available year

Source: (1) AMECO, (2) Eurostat, (3) ECFIN BCS, (4) Eurostat, (5) COMEXT and Commission calculations, (6) Eurostat, (7) Eurostat, (8) OECD, (9) Single Market Scoreboard, (10) EIB survey, (11) Eurostat: (12) Intrum, (13) SAFE Survey, (14) EIF SME Access to Finance Index.

This Annex outlines the performance of Lithuania's public administration, which is essential for providing services and carrying out reforms. The effectiveness of public administration in Lithuania remains around the EU average. ([91]) Lithuania's recovery and resilience plan (RRP) envisages significant investments in customer-oriented services and the management of data and digital services for the public. Other measures aim to improve civil servants' skills in developing and managing policies. The 2022-2030 public governance development programme contains more initiatives to improve the quality of interaction between the local, regional and national administrations.

Lithuania performs well above the EU average in e-government. The share of individuals who interact with public authorities online has grown steadily over the past few years. Under the recovery and resilience plan, Lithuania has created a competence centre for open data and digital transformation, which aims to provide *ex ante* assessments of digital solutions. This is expected to reduce duplication and promote ease of use, affordability and higher standards for the proposed digital technologies. Furthermore, Lithuania has launched an overhaul of the data management, in line with its RRP commitments.

Regulatory governance in Lithuania is well-established while further progress is foreseen when ensuring quality control. Impact assessments and public consultations are done systematically for both primary and secondary legislation ([92]). The country has been working to further develop its capacities to improve the quality of impact assessments and evaluations, strategic planning, and the use of evidence ([93]) and foresight ([94]) in policymaking. Through a multiannual legislative plan, the government aims to promote all these methods to improve the quality and predictability of legislation.

Lithuania has a comparatively young and skilled civil service but it faces problems attracting talent. The ratio of 25-49- to 50-64-year-old employees, the share of civil servants with higher education, and their rate of participation in adult learning, are above the EU average (Table A13.1). However, the declining share of employees with higher education illustrates the challenges that the public administration faces in attracting talent. Gender parity in senior civil service positions is in the top third of EU Member States but has worsened since 2017. The launch of the civil service transformation reform, partly supported by the RRP, ([95]) aims to improve the efficiency, competitiveness and the attractivity of public sector employment. The proposed amendments in the Civil Service Code include simplification of procedures to select and appoint heads of institutions and change the rules for compensation of civil servants ([96]). This will align the regulation of the civil service to the Labour Code and is expected to help attract more talented managers. Furthermore, the reform envisages the establishment of a Public Administration Agency.

Lithuania is above average in public financial management, scoring in line with, or above, EU averages in the Commission medium-term budgetary framework index and the indicator on the strength of fiscal rules (Table A13.1). However, there remain challenges with respect to public procurement systems, related to the high number of awards with a single bidder, low levels of centralised procurement and reliance on price criteria for making award decisions (see Annex 12). In response to country-specific recommendation 1 of the 2022 European Semester report, Lithuania aims to introduce reforms to promote the centralisation of public procurement and the professionalisation of staff. Lithuania will introduce a new public procurement platform and annual assessments of procurement practices, with the aim of spotting and addressing

([91]) Worldwide Governance Indicators, 2021.

([92]) OECD, Indicators of Regulatory Policy and Governance 2021, Lithuania (https://www.oecd.org/gov/regulatory-policy/lithuania-country-profile-regulatory-policy-2021.pdf).

([93]) Chancellery of the Government of the Republic of Lithuania (https://lrvk.lrv.lt/lt/apie-vyriausybes-kanceliarija/lrvk-projektu-portfelis/igyvendinami-projektai/strata-projektas).

([94]) Chancellery of the Government of the Republic of Lithuania, Lithuania 2050 (https://lrvk.lrv.lt/lt/naujienos/lietuva-2050-apibrezti-keturi-galimi-salies-scenarijai-ekspertai-juos-gilins-teminese-diskusijose).

([95]) Public Management Development Programme 2022-2030, Ministry of Interior (https://www.e-tar.lt/portal/lt/legalAct/9ba13c90a4f911ec8d9390588bf2de65).

([96]) Lithuanian Republic Government Report: 2022 03 30 (p. 25-27). https://lrv.lt/uploads/main/documents/files/Vyriausybes%202021%20m_%20veiklos%20ataskaita(2)(1).pdf)

Table A13.1:**Public administration indicators**

LT	Indicator ([1])	2017	2018	2019	2020	2021	2022	EU-27([2])
E-government and open government data								
1	Share of individuals who used the internet within the last year to interact with public authorities (%)	61.7	63.1	66.5	68.9	70.4	n/a	64.8
2	E-government benchmark overall score ([3])	n/a	n/a	n/a	80.7	83.4	85.1	72.9
3	Open data and portal maturity index	n/a	0.5	0.5	0.9	0.9	0.9	0.8
Educational attainment level, adult learning, gender parity and ageing								
4	Share of public administration employees with tertiary education (levels 5-8, %)	78.4	77.0	79.3	79.9	77.2 (b)	75.1	52.0
5	Participation rate of public administration employees in adult learning (%)	12.2	14.2	14.4	12.4	17.2 (b)	17.7	16.9
6	Gender parity in senior civil service positions ([4])	1.0	5.6	0.8	2.4	4.4	7.4	11.0
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	1.9	1.7	1.9	2.1	2.0 (b)	1.7	1.5
Public financial management								
8	Medium term budgetary framework index	0.7	0.7	0.7	0.8	0.8	n/a	0.7
9	Strength of fiscal rules index	2.2	2.7	2.7	2.7	2.7	n/a	1.5
Evidence-based policy making								
10	Regulatory governance	1.77	n/a	n/a	n/a	1.85	n/a	1.7

([1]) High values denote a good performance, except for indicator # 6. ([2]) 2022 value. If not available, the 2021 value is shown. ([3]) Measures the user centricity (including for cross-border services) and transparency of digital public services as well as the existence of key enablers for the provision of those services. ([4]) Defined as the absolute value of the difference between the percentage of men and women in senior civil service positions.
Flags: (b) break in time series; (d) definition differs; (u) low reliability.
Source: ICT use survey, Eurostat (# 1); E-government benchmark report (# 2); Open data maturity report (# 3); Labour Force Survey, Eurostat (# 4, 5, 7), European Institute for Gender Equality (# 6); Fiscal Governance Database (# 8, 9); OECD Indicators of Regulatory Policy and Governance (# 10).

weaknesses. Lithuania is centralising public procurement above 15 000 euro of institutions under municipalities from 2023 and plans in several phases to centralise public procurement of health institutions at government level by 2026 (about 40 contracting authorities). Additionally, the central purchasing body CPO LT is significantly expanding the range of goods, services and works it offers for purchase through the use of the framework agreements it has developed and dynamic purchasing systems. In 2022, the value of contracts concluded via CPO LT reached 13.4% of total public procurement spending by value.

The justice system performs efficiently, although new challenges are emerging. In 2020, the time it took to hand down a decision in first instance increased in civil, commercial and administrative cases. While the case backlog remains comparatively small, progress in reducing backlogs has been interrupted, with more cases entering the system than those resolved in 2020, in all the categories looked at. The overall quality of the justice system is good. However, there are concerns regarding the level of financial and human resources of the justice system. The use of digital tools is very advanced, and procedural rules allow the use of digital technology in courts in civil, commercial, administrative and criminal cases. New rules have been adopted on the use of videoconferencing tools in criminal, civil and administrative cases, to ensure that hearings are open to the public. As regards judicial independence, no systemic deficiencies have been reported ([97]).

([97]) For a more detailed analysis of the performance of the justice system in Lithuania, see the 2023 EU Justice Scoreboard (forthcoming) and the country chapter for Lithuania in the 2023 Rule of Law Report (forthcoming).

ANNEX 14: EMPLOYMENT, SKILLS AND SOCIAL POLICY CHALLENGES IN LIGHT OF THE EUROPEAN PILLAR OF SOCIAL RIGHTS

The European Pillar of Social Rights is the compass for upward convergence towards better working and living conditions in the EU. This Annex provides an overview of Lithuania's progress in implementing the Pillar's 20 principles and EU headline and national targets for 2030 on employment, skills and poverty reduction.

Table A14.1:**Social Scoreboard for Lithuania**

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	4.8
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	48.84
	Youth NEET rate (% of population aged 15-29, 2022)	10.7
	Gender employment gap (percentage points, 2022)	0.8
	Income quintile ratio (S80/S20, 2021)	6.14
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	79
	Unemployment rate (% of active population aged 15-74, 2022)	6
	Long term unemployment (% of active population aged 15-74, 2022)	2.3
	GDHI per capita growth (2008=100, 2021)	143.1
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	23.5
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	21.6
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	35.28
	Disability employment gap (percentage points, 2021)	23.9
	Housing cost overburden (% of total population, 2021)	2.7
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	21.4
	Self-reported unmet need for medical care (% of population 16+, 2021)	2.4

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

(1) Update of 27 April 2023. Members States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories. For methodological details, please consult the Joint Employment Report 2023. Due to changes in the definition of the individuals' level of digital skills in 2021, exceptionally only levels are used in the assessment of this indicator; NEET: neither in employment nor in education and training; GDHI: gross disposable household income.
Source: Eurostat.

Despite the current unstable economic environment, the labour market in Lithuania continued to make a robust recovery in 2022 as shown by growing employment and low unemployment rates. Following the phasing out of the COVID-19-related short-time work schemes in Q3-2021, the employment rate reached a record high of 79.0% in 2022, well above the EU average (74.6%). The unemployment rate dropped to 6.0% in 2022, below the EU average of 6.2%. Long-term unemployment also decreased significantly, reaching 2.3% in 2022 (EU: 2.4%), but still higher than pre-COVID-19 levels of 2% in Q3-2019. The active labour market policy (ALMP) system suffers from low capacity and investment and relies heavily on EU funding. This results in a fragmented implementation of policies, a limited range of measures and a lack of outreach to certain groups of unemployed people. As part of its recovery and resilience plan (RRP), Lithuania introduced in July 2022 a reform to improve the integration of unemployed people into the labour market. The reform includes profiling (according to their preparedness to work) and targeted labour market measures. Together with other RRP measures and more than EUR 250 million of European Social Funding Plus (ESF+) financing focused on tailored ALMP measures, these efforts will further support progress towards the national employment rate target of 80.7% by 2030.

The fall-out of Russia's war of aggression against Ukraine may hamper the labour market's recovery. About half of the working-age Ukrainians that fled to Lithuania had found employment by October 2022. However, there is uncertainty if such a rate can be maintained. Furthermore, this did not stop the unemployment rate of low-skilled people rising from 14.9% in Q1-2022 to 15.5% in Q4-2022 (vs. EU: 6.5% respectively). Finally, many companies in Lithuania have urged the government to take measures to cushion the unprecedented surge in energy prices, signalling possible mass redundancies or even bankruptcies. The government responded by adopting a package of support measures for businesses (see Annex 8).

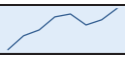
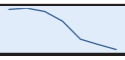
Labour shortages continue to pose problems, exacerbated by skills mismatches. In Q3-2022, more than 20% of employers reported labour shortages in the manufacturing and construction sectors, and more than 30% in the services sector, the latter having diminished to 24% in Q4-2022. Some of the main drivers of labour shortages and skills mismatches are: (i) an insufficient labour market relevance of and relatively low enrolments in vocational education and training (see Annex 15); (ii) fragmented career

guidance and adult learning systems; and (iii) low adult learning levels. Participation of adults (aged 25-64) in learning activities over the past 4 weeks stood at 8.5% in 2021 (vs EU: 10.8%) and was especially low among low-qualified people (2.7% vs. EU: 4.3%). In 2021, the share of individuals who have basic or above basic overall digital skills was 48.8% (vs. EU: 53.9%), thus hindering the country's digital transition. To address this, the Lithuanian RRP provides for the creation of a one-stop-shop model for lifelong learning based on individual learning accounts in 2023, and the reform of the career guidance introducing it in schools. This will give access to quality assured learning content, supported by around EUR 16 million of RRF and EUR 64 million of ESF+ funding. The RRP includes other measures to strengthen VET, and the ESF+ supports implementing the Lithuanian skills strategy. This is all expected to contribute to achieving the target of at least 53.7% of all adults participating in training every year by 2030 (starting from 25% in 2016). Despite the increase to 21.4% in 2021, the percentage of children aged less than 3 years in formal childcare remains below the 2019 (pre-COVID-19) level of 26.6% and significantly below the EU average (36.2%). This has the potential to harm the educational and labour market outcomes in the longer term.

Income inequality remains critically high. The income of the top 20% of the income distribution exceeded those of the bottom 20% by 6.14 times in 2020 and 2021 (vs. EU: 4.89% and 4.97% respectively). Although the share of people at risk of poverty or social exclusion (AROPE) decreased slightly to 23.5% in 2021, it remains substantially higher than the EU average (21.7%). The situation is particularly difficult outside the capital region (see Annex 17) for older people and women. Pensions are among the lowest in the EU relative to work incomes. The situation of vulnerable households may deteriorate further due to soaring energy prices and inflation. As part of its RRP, in 2022 Lithuania introduced a reform on pension calculation to increase both common and individual parts of pensions. Along with other efforts ([98]) (e.g., single-person benefits, etc.) the measures introduced could help address structural challenges of high levels of poverty, including energy poverty. This is highlighted by the share of the population unable to keep their homes adequately warm at 22.5% (vs. EU: 6.9%) (see also Annex 8). Despite high levels of poverty and social exclusion among persons with disabilities, there is a shortage of person-centred community-based services. More than EUR 175 million of ESF+ funding is allocated to address the need for personalised services to persons with disabilities and other vulnerable groups. In addition, recent reforms on disability assessment and labour market participation of persons with disabilities are aimed to address the issues mentioned above.

([98]) European Commission, Joint Research Centre, EUROMOD simulation. The combined effect of the increase in basic social allowance and state supported income in January 2023 is expected to reduce poverty risk for the whole population (3.4%) and especially for single parents with children (12.7%). The increase in the single-benefit in January 2023 is expected to reduce poverty among single older individuals (-1.1%).

Table A14.2:**Situation of Lithuania on 2030 employment, skills and poverty reduction targets**

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	79.0 (2022)		81	78
Adult learning[1] (%)	25.0 (2016)		54	60
Poverty reduction[2] (thousands)	-51 (2021)		-223	-15 000

(1) Adult Education Survey, adults in learning in the past 12 months.
(2) Number of persons at risk of poverty or social exclusion (AROPE), reference year 2019.
Source: Eurostat, DG EMPL.

The adequacy of the social safety net remains low. The minimum income is only equal to 50% of the poverty threshold and 33% of the income of the low-wage earner in 2021 (vs EU: 59% and 47% respectively). Government expenditure on social protection increased to 16.3% of GDP in 2020 but remained very low (vs. EU: 21.9%). On average, just 9.6% of those below the at-risk-of-poverty threshold received social assistance in 2020. To address this, Lithuania introduced a reform to proactively identify vulnerable people in need of social assistance and committed to a reform of the minimum income scheme under the RRP. In 2021, unmet needs for medical care (2.4%) have surpassed the EU average (2%) and the out of-pocket expenditure on healthcare (28.7%) was almost twice the EU average in 2020 (14.4%), pointing to challenges in access to services (see Annex 16). Life expectancy is 5.3 years below the EU average. More than one third of older people needed long-term care in 2020, but access to formal care (paid services) is limited by high out-of-pocket costs. To tackle these issues, the government plans under the RRP to introduce a new long-term care model in 2024.

This and other measures will contribute to achieving the national target of 223 000 fewer people at risk of poverty or social exclusion by 2030.

This Annex outlines the main challenges for Lithuania's education and training system in light of the EU-level targets and other contextual indicators under the European Education Area strategic framework, based on the 2022 Education and Training Monitor.

Participation in early childhood education (ECE) keeps increasing. In 2020, 90.9% of 3-6-year-olds participated in ECE, an increase of 3.6 percentage points (pps) since 2015, but still below the EU average of 93%. Planned investments for 2021-2027 financed through national and EU funds could further increase participation. They aim to address infrastructure gaps in rural and urban areas. The arrival of Ukrainian displaced children has exacerbated the problem of limited early childhood education and care provision in urban areas. The implementation of measures to strengthen monitoring and evaluation and to improve the educational content are underway.

Steps are being taken to address teacher shortages. Starting in 2022, students in their final year who sign a three-year employment contract with a school or a municipality receive a scholarship. In addition, the government is planning to expand funding and opportunities for in-service teacher training, for them to obtain an additional specialisation to teach a second subject to address shortages. In 2021, qualification requirements for teachers were made more flexible to allow motivated professionals who do not have a teacher qualification to work as a teacher. In 2022, 388 professionals were admitted to the course to become teachers. All places were funded by the state. In 2021, state-funded places totalled about 200. Ageing of the teacher workforce and planned reforms such as the universalisation of childcare as of 2023 call for a close monitoring of teacher supply and demand.

Improving working conditions and career progression may promote the attractiveness of the teaching profession. To do so, Lithuania is working on a review of the career model. The reorganisation of the school network may also improve working conditions by reducing the number of small schools with a low number of teaching hours and providing better learning environments. The low relevance of continuous professional development remains an issue.

To improve student performance, a reform of school curricula and of the student assessment system is ongoing. Teachers will be prepared for the implementation of the competence-based curriculum. Mandatory tests on pupils' achievements in grades 4, 8 and 10 have been introduced.

Addressing inequalities in school education remains a key challenge. Currently, student performance is closely related to socio-economic background. Disadvantaged pupils are more likely to be attending the same schools. Lithuanian schools enjoy great autonomy; differing approaches to setting school and programme admission criteria can exacerbate differences between schools and increase segregation. Although not compulsory, admissions based on academic performance are common at lower secondary level. This practice risks perpetuating the stratification of students not only by ability, but also by socio-economic background. Grouping pupils by ability is also a common practice in lower secondary schools, but one that risks increasing the performance gap between students from disadvantaged and more affluent backgrounds. Overcrowding of public schools in the bigger cities due to internal migration has fostered the dramatic expansion in the number of students enrolled in private schools ([99]). Students in these schools tend to perform much better than their peers in public schools. The Millennium School programme envisaged in the recovery and resilience plan may help to provide equal opportunities for all children irrespective of their place of living, and to improve overall student achievement. Lithuania is investing in the integration of special needs students into mainstream schools as of 2024.

Measures are underway (see Annex 14) to improve the quality and attractiveness of vocational education and training (VET). Compared with the EU average (48.7%), only 24.7% of upper secondary pupils in 2020 were enrolled in VET. The share of VET graduates (20-34) benefiting from exposure to work-based learning during their vocational education (ISCED 3-4) was 46.7% in 2022, below the EU average (60.1%).

([99]) The number of pupils enrolled in private schools increased by 49.5% between 2015 and 2020 (EU 4.7%). The share of students attending private schools is relatively low; it stood at 4.4% in 2020.

Table A15.1: **EU-level targets and other contextual indicators under the European Education Area strategic framework**

Indicator			Target	2015 Lithuania	2015 EU27	2022 Lithuania	2022 EU27
[1] Participation in early childhood education (age 3+)			96%	87.3%	91.9%	90.9% 2020	93.0% 2020
[2] Low achieving 15-year-olds in:		Reading	< 15%	25.1%	20.0%	24.4% 2018	22.5% 2018
		Mathematics	< 15%	25.4%	22.3%	25.6% 2018	22.9% 2018
		Science	< 15%	24.7%	21.1%	22.2% 2018	22.3% 2018
Early leavers from education and training (age 18-24)	[3] Total		< 9 %	5.5%	11.0%	4.8%	9.6%
	[3] By gender	Men		6.9%	12.5%	5.5%	11.1%
		Women		4.0%	9.4%	4.0% u	8.0%
	[4] By degree of urbanisation	Cities		2.2% u	9.6%	1.7% u	8.6%
		Rural areas		8.3%	12.2%	6.7%	10.0%
	[5] By country of birth	Native		5.5%	10.0%	4.8%	8.3%
		EU-born		: u	20.7%	: u	20.3%
		Non EU-born		: u	23.4%	: u	22.1%
[6] Equity indicator (percentage points)				:	:	20.4 2018	19.3 2018
[7] Exposure of VET graduates to work based learning	Total		≥ 60% (2025)	:	:	46.7%	60.1%
Tertiary educational attainment (age 25-34)	[8] Total		45%	54.8%	36.5%	58.2%	42.0%
	[8] By gender	Men		45.0%	31.2%	49.5%	36.5%
		Women		64.9%	41.8%	67.1%	47.6%
	[9] By degree of urbanisation	Cities		68.2%	46.2%	72.5%	52.2%
		Rural areas		39.6%	26.9%	43.7%	30.2%
	[10] By country of birth	Native		54.8%	37.7%	58.0%	43.0%
		EU-born		: u	32.7%	: u	39.5%
		Non EU-born		55.3% u	27.0%	63.2%	35.7%
[11] Share of school teachers (ISCED 1-3) who are 50 years or over				46.7%	38.3%	55.8% 2020	39.2% 2020

Data is not yet available for the remaining EU-level targets under the European Education Area strategic framework, covering underachievement in digital skills and participation of adults in learning. The equity indicator shows the gap in the share of underachievement in reading, mathematics and science (combined) among 15-year-olds between the lowest and highest quarters of socio-economic status.

Source: (1,3,4,5,7,8,9,10,11) = Eurostat; 2 = OECD (PISA); 6 = European Commission (Joint Research Centre).

A high proportion of young people (25-34) have attained tertiary education but disadvantaged students have less possibility to access university. The overall tertiary attainment rate is quite high, at 58.2%, compared with the EU average of 42.0%. However, it is much lower among young men and in rural areas. In 2020, only 17% of upper secondary students from low-income families entered tertiary education, compared with 68% from high-income families ([100]). State-funded study places at tertiary level are allocated based on the results of school leaving exams. This merit-based approach does not sufficiently support the participation of students from vulnerable groups. As of 2024, up to 10% of state-funded places will support access for disadvantaged students. Career guidance services are often not available to the same standard throughout the country. Making the provision of career guidance mandatory, as envisaged in the recovery and resilience plan, may also help improve equity in access to higher education.

Academic excellence and labour market relevance of tertiary institutions are relatively low. The alignment of admission requirements for state-funded and non-state-funded tertiary education study places will come into effect in 2024. Currently, the requirements for non-state-funded places are considerably lower and a large share of higher education institutions rely on tuition fees of low-performing students. The aim of the alignment is to raise the achievements of students entering into tertiary education. Lithuania is reorganising the college network and reforming funding arrangements to favour quality and efficiency in colleges and universities. The new funding formula allocates a significant share of public funding according to performance targets related to study effectiveness, internationalisation, graduates' careers and other quality metrics. This may pave

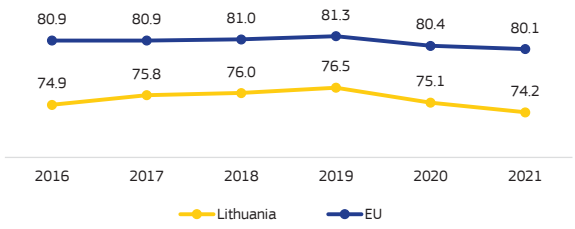
([100]) OECD (2021). OECD Skills Strategy Lithuania: Assessment and Recommendations, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/14deb088-en.

the way for further consolidation of the tertiary education network.

A healthy population and an effective, accessible and resilient health system are prerequisites for a sustainable economy and society. This Annex provides a snapshot of population health and the health system in Lithuania.

Life expectancy in Lithuania remains among the lowest in the EU, having further dropped by 0.6 years in 2021 compared to 2020. This reflects the increase in COVID-19 mortality in 2021 (more than doubled compared to 2020 ([101])). Levels of preventable and treatable mortality in Lithuania remain high compared to the EU overall, suggesting that the effectiveness of healthcare lags behind. In 2020, the leading causes of death were diseases of the circulatory systems ("cardiovascular diseases") followed by cancer and external causes. Lithuania made progress in reducing historically high mortality rates from suicide, but it remains an important cause of death, particularly among men. At the same time, mortality in the economically active age groups as a share of total mortality is among the highest in the EU.

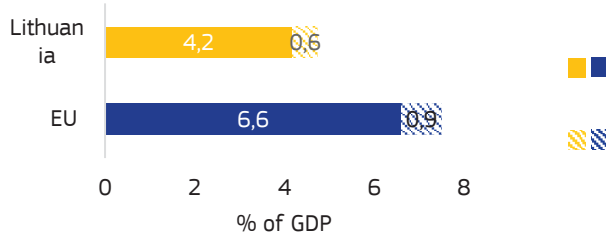
Graph A16.1: **Life expectancy at birth, years**



Source: Eurostat

Health expenditure in Lithuania is among the lowest in the EU and only 70.1% of it was publicly funded in 2020. Spending on pharmaceuticals and medical devices is below the EU average while spending on outpatient care is above. In 2020, total healthcare spending increased to 7.5% of GDP, up from 7.0% in 2019. This is in line with the upward trend in all Member States in 2020. In Lithuania, this increase is mainly attributable to higher spending per capita (against a backdrop of stagnating GDP growth in 2020). This said, as a share of total public spending, health spending dropped from 14.6% in 2019 to 13.9% in 2020. In 2020, the share of out-of-pocket healthcare spending was almost double the EU average, at 28.7%. However, recent policies reducing co-payments for medicines are expected to lessen the financial burden on the most vulnerable households. Public expenditure on health is projected to increase by 0.6 percentage points (pps) of GDP by 2070 (compared to 0.9 pps for the EU overall). This projection is based on the age profile of the Lithuanian population.

Graph A16.2: **Projected increase in public expenditure on healthcare over 2019-2070**



AWG reference scenario
Source: European Commission / EPC (2021)

In 2020, spending on prevention in Lithuania amounted to 3.9% of total spending on healthcare, compared to 3.4% for the EU overall. Between 2020 and 2019, spending on prevention in Lithuania increased by 56%, compared to a 26% increase for the EU overall. Across the EU, this increase was primarily driven by spending on disease detection, surveillance, control and response programmes as part of the public health response to COVID-19**.** Between 2019 and 2020, a remarkable proportional increase in reported spending was noted in Lithuania for programmes for epidemiological surveillance, risk and disease control, as well as for disaster preparedness and emergency response. For the latter in particular, Lithuania reported the highest proportional increase of all Member States. However, a substantial budget decrease was noted for information, education and counselling, which are essential to increase participation in preventive programmes.

Lithuania faces shortages and an uneven distribution of health workers. Lithuania had 7.8 nurses per 1 000 population in 2020, below the EU average of 8.3. At the same time, the number of doctors was among the highest in the EU, at 4.5 per 1 000, compared to an EU average of 3.9. While the number of doctors continues to

([101])Based on data provided directly by Member States to ECDC under the European Surveillance System (data current as of 13 April 2023).

Table A16.1:**Key health indicators**

	2017	2018	2019	2020	2021	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	184.9	185.6	181.0	199.7	NA	91.7 (2020)
Cancer mortality per 100 000 population	273.6	272.7	271.5	276.5	NA	242.2 (2020)
Current expenditure on health, % GDP	6.5	6.5	7.0	7.5	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	66.1	67.2	66.4	70.1	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	2.2	2.3	2.7	3.9	NA	3.4 (2020)
Acute care beds per 100 000 population	544	530	520	497	506	387.4 (2019)
Doctors per 1 000 population *	4.6	4.6	4.6	4.5	NA	3.9 (2020)
Nurses per 1 000 population *	7.7	7.8	7.7	7.8	NA	8.3 (2020)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day (total consumption for CY and CZ) **	14.4	14.0	13.8	11.9	11.7	14.5 (2021)

Note: The EU average is weighted for all indicators, except for (*) and (**), for which the EU simple average is used. The simple average for (*) uses data for 2020 or most recent year if former not available. Doctors' density data refer to practising doctors in all countries except EL, PT (licensed to practice) and SK (professionally active). Nurses' density data refer to practising nurses in all countries except FR, PT, SK (professionally active) and EL (nurses working in hospitals only).

Source: Eurostat; except: ** ECDC

grow, the number of nurses has not kept pace. As part of the reorganisation of the network of healthcare institutions, Lithuania has identified the need to finance the training of an additional 1 000 nursing assistants in 2022. According to forecasts, the shortage of nurses could reach more than 3 000 in 2030. Working conditions are an important issue, with low remuneration being a deterrent to entering the profession, in particular for nurses (whose remuneration level is the lowest of the EU when put in relation to national average wage levels). In November 2021, the Ministry of Health signed a collective agreement with trade unions. The wage mechanism was revised, linking it to the country's average wage. The agreement envisages a steady improvement of wages and contains additional guarantees and plans to improve workers' mental health and work-life balance. Further, the geographical spread of doctors presents a challenge. The biggest concentration of doctors is in the Vilnius and Kaunas districts. In 2020, the average number of doctors per 1 000 inhabitants in Vilnius and Kaunas was 6.2, more than twice the level in the rest of the country. Measures are taken to attract medical graduates and encourage them to establish themselves in regions with fewer doctors. Moreover, investments from cohesion policy funds are planned to make working conditions in these regions more attractive for young people. However, the results are still to be seen.

Through its recovery and resilience plan (RRP), Lithuania plans to invest EUR 257 million (11.6% of the RRP's total value) in healthcare. Measures aim to strengthen emergency care, tackle infectious diseases, develop digital health infrastructure, build capacity for advanced medical therapies, create a competence platform for healthcare professionals, and set up a system to monitor quality of care. The implementation of the RRP is progressing, with several ongoing measures, for example the action plan for improved cooperation between healthcare institutions and modernisation of infrastructure for emergency situations, and the updated action plan on family medicine development for 2016-2025. Historical levels of investment in healthcare, measured as gross fixed capital formation, are low.

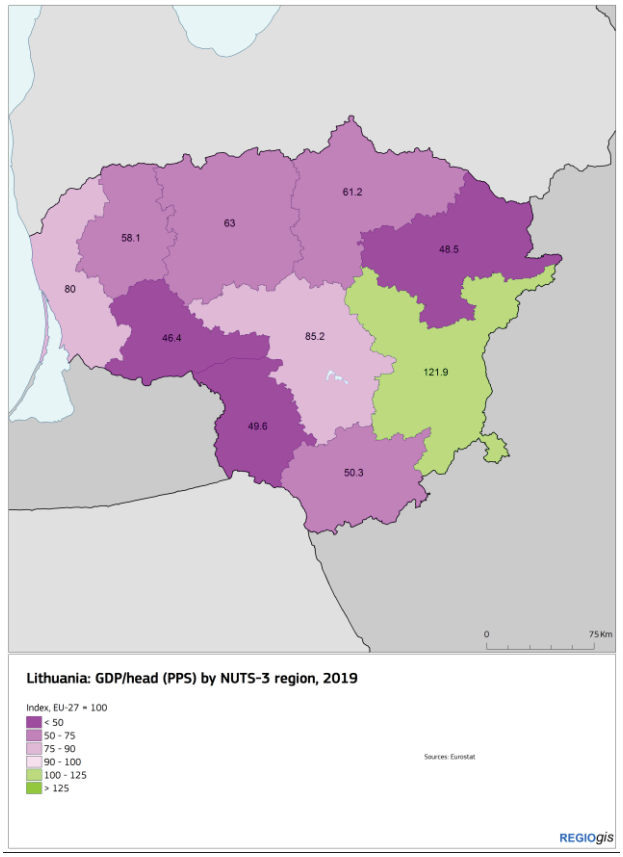
Primary care and disease prevention face longstanding challenges in Lithuania, mainly linked to structural underfunding of the health sector and insufficient resources. The high reliance on inpatient care with very high levels of avoidable hospital admissions and varying quality of care is a longstanding issue, that hints at the underdeveloped role of primary care in care coordination. Lithuania is working on transforming the hospital network, moving away from hospital care to a model based on stronger primary care. This work, combined with further innovative solutions (e.g. digital ones) have the potential to increase the efficiency and resilience of the health system. However, the results are still to be seen. Levels of preventable and treatable mortality in Lithuania remain high. Recent quality checks on the treatment of heart attack and stroke patients show that not all providers are appropriately equipped to provide high-quality care for conditions that are among the deadliest for the population. There is also scope for improvement in cancer care – in both screening coverage and survival rates for many treatable cancers. The highest rate of mortality from suicide in the EU is reported for Lithuania (2019 data), suggesting a potential for preventive measures to foster mental wellbeing. Analytical work to ensure

the quality of healthcare is planned to be carried out together with the development of an action plan. New indicators to measure the performance and quality of public and budgetary bodies have been validated. A tool is in place to assess patients' feedback on the provision of health services.

This Annex showcases the economic and social regional dynamics in Lithuania, providing an update on economic, social and territorial cohesion in Lithuania's regions compared with the EU as a whole and its main regional economic recovery challenges.

Regional disparities in Lithuania remain high. In 2021 GDP per capita was above the EU average only in Vilnius county at around 126%, but was less than half the EU average in several NUTS 3 regions, going as low as 48% in Tauragė county, which borders Russian Federation's exclave Kaliningrad.

Graph A17.1: **GDP per capita (in purchasing power standard) in Lithuania by NUTS-3 region, 2020**



Source: Eurostat, DG REGIO calculations

GDP per capita has grown at a fast pace in most of the country. Šiauliai, Tauragė, and Kaunas counties have grown fastest between 4.76% and 5.02% per annum in 2011-2020. This compares with 4.5% for the whole country. Vilnius county grew close to the national average – 4.27%, while Telšiai county, bordering with Latvia in the North, grew at the slowest rate (2.86% per annum).

Labour productivity is generally on the rise but remains low in Lithuania and is characterised by significant regional differences. Vilnius, Kaunas and Klaipėda counties had the highest labour productivity in 2021 at around 90% of the EU average. At the other end of the spectrum, labour productivity in Tauragė county was only 52% of the EU average.

Significant disparities remain in social indicators. Only 50% of the population aged 30-34 was tertiary educated outside the capital region (at NUTS 2 level) in 2021 – compared with around 75% in the Capital region itself. The population living outside the Capital region also faces a less advantageous labour market: in the region of Central-Western Lithuania, employment rate is 75% and unemployment is 8%, while the respective indicators in the Capital region are more positive: employment rate is 84% and unemployment 5%. Overall, this results in a larger share of the population at risk of poverty or social exclusion (AROPE) outside the Capital region. While the AROPE rate is 19% in the Capital region, it as high as 27% in Central-Western Lithuania.

Analysing statistics by the degree of urbanisation reveals significant regional disparities. The unemployment rate in cities was on average as low as 5.8% in 2021 but much higher in towns and suburbs and in rural areas (both at 8.3%). Highly skilled workers tend to concentrate in cities in Lithuania. Around 60% of workers in cities are tertiary educated but only around 30% in towns and suburbs, and rural areas. The AROPE rate in cities (18%) was lower than the EU average (21.7%) in 2021 but much higher in towns and suburbs, and in rural areas (26% and 28% respectively).

Lithuanian is undergoing rapid depopulation, particularly outside the Capital region. Lithuania's population decreased by 8.8% in 2011-2020. The population increased in Vilnius county by 3.6%, but there were significant falls in all the other counties (as much as -20 per 1000 in Tauragė and Utena counties). Population ageing is becoming a challenge in some counties. The share of elderly people aged 65 and above has increased sharply since 2014 to over 30% in Utena, Panevėžys and Alytus counties.

Table A17.1:**Selected indicators at regional level - Lithuania**

NUTS 3 Region	GDP per head (PPS)	GDP per head growth	Productivity (GVA (PPS) per person employed)	Real productivity growth	Population growth	Net migration
	EU27=100, 2021	Avg % change on preceding year, 2011-2020	EU27=100, 2021	Avg % change on preceding year, 2011-2020	Avg annual change per 1000 residents, 2011-2020	Avg annual change per 1000 residents, 2011-2020
European Union	100	0.59	100	0.23		
Lithiania	88	4.49	82	2.48	-8.80	-4.80
Vilnius county	126	4.27	89	0.71	3.60	4.40
Alytus county	53	3.80	56	2.54	-17.36	-9.43
Kaunas county	89	5.02	94	4.06	-5.88	-1.71
Klaipėda county	81	2.93	89	2.78	-3.70	-1.09
Marijampolė county	54	4.02	61	2.96	-18.55	-12.30
Panevėžys county	65	4.73	77	3.71	-19.08	-11.63
Šiauliai county	67	4.76	76	3.89	-13.89	-7.74
Tauragė county	48	4.93	52	3.43	-20.65	-14.60
Telšiai county	60	2.86	61	0.32	-16.60	-12.65
Utena county	52	2.90	62	2.35	-20.73	-9.55

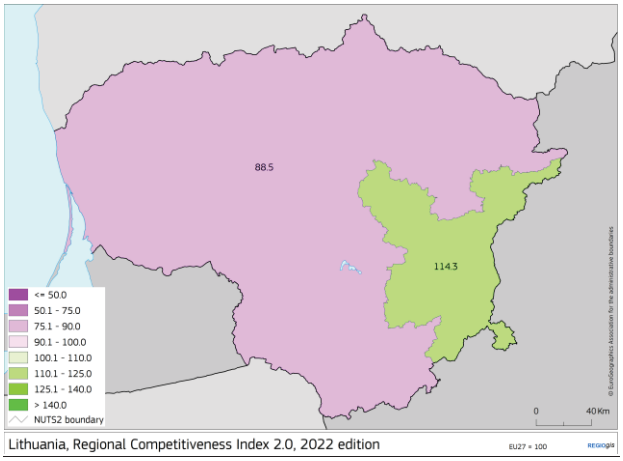
Source: Eurostat, EDGAR database

The digital divide between urban and rural areas remains sizeable. 88.8% of all Lithuanian households had fixed broadband at the end of June 2021 but only 64.0% of rural households were subscribed to fixed internet at rural level (the EU average for rural households was 91%) ([102]).

Significant disparities between the two NUTS2 regions persist according to the Regional Competitiveness Index 2022. The Capital region stands substantially better than Central-Western Lithuania on aspect such as innovation, business sophistication, higher education and lifelong learning.

Lithuania's economy and labour market have showed strong resilience to the COVID-19 pandemic. The most significant decline in GDP per capita in Vilnius county (-1.3%) was offset by the mild impact in other counties, ranging from a negligible decrease in Marijampolė county to an increase in Telsiai county (+1.9%). Unemployment at NUTS 2 level picked up in both regions by more than 2 percentage points (pps) in 2020 and swiftly fell back to the 2019 level (+0.4 pps in the capital region and +1 pps in the central-western region). The upward trend in employment similarly fell back slightly in 2020, remaining just around the 2019 level (-0.3 pps in the capital region and -1.1 pps in the central-western region).

Graph A17.2: **Lithuania, Regional Competitiveness Index, 2022**



Source: European Commission

([102])Source: Report on broadband coverage in Europe 2021.

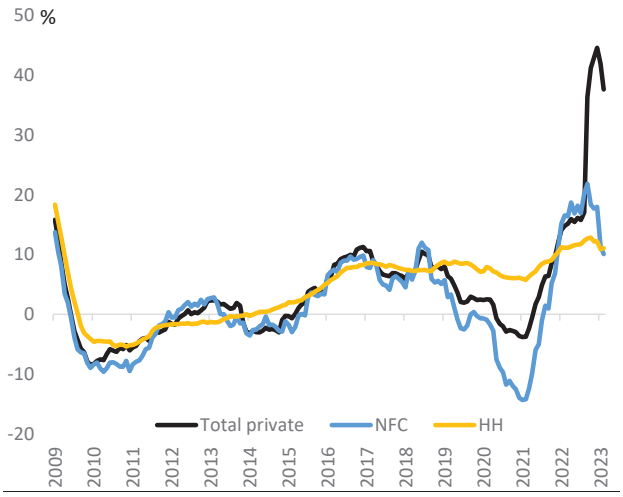
ANNEX 18: KEY FINANCIAL SECTOR DEVELOPMENTS

The Lithuanian banking sector is relatively small compared with other EU countries and is exposed to concentration and spill-over risks due to its integration with the Nordic and Baltic banking systems. At the end of Q3-2022 banks' assets were equivalent to 85.6% of GDP. The two largest banking groups, Swedbank and SEB (representing 35% and 26% of total banking-sector assets respectively), are owned by their parent banks in Sweden. Lithuania's banking sector remains one of the most concentrated in the EU, which implies a high dependency of the sector on individual banks. The parent companies of the two largest banks also serve the housing market in Sweden, so developments in Sweden may also impact their Lithuanian business.

Most performance indicators for banks operating in Lithuania are among the best in the EU. Profitability remains below pre-pandemic levels but above those of euro-area peers. For example, at the end of Q3-2023 return on equity was 13.6% vs 6.1% in the euro area, and return on assets 0.8% vs 0.5% in the euro area. At 19.8%, the capital adequacy ratio remains well above the required minimum. Although the historically high liquidity-coverage ratio decreased from 743% in 2020 to 269.6% at the end of Q3-2022, the banking sector remains highly liquid. Thanks to the strong and stable domestic customer-deposit base credit institutions do not need to draw additional funding from financial markets. This mitigates their exposure to possible global financial stress and capital flight in times of market volatility. It also limits their reliance on cross-border parent banking groups. The cost-to-income ratio for banks operating in Lithuania, which historically is one of the lowest in the EU, increased from 48.6% in 2020 to 51.6% in Q3-2022, partly impacted by a low loan-to-deposit ratio of 62.7%. The leverage ratio stood at 6.1% at the end of Q3-2022. As the health of companies and households improved in recent years, the share of non-performing loans in banks fell to 1.0%, its lowest level since 2008.

Geopolitical and inflationary pressures risk lowering loan demand and asset quality of financial institutions. The disposable income and purchasing power of households is being eroded by: (i) falling demand; (ii) high inflation; and (iii) market disruptions triggered by Russia's war against Ukraine. These factors are also damaging companies' profits, which in turn weakens the repayment capacity of debtors. Debt-service ratios will increase as a result of monetary-policy tightening. These pressures risk reducing financial institutions' loan demand and asset quality. Moreover, banks anticipate that they will tighten their credit standards, and that their lending will soon become more cautious. If the share of non-performing loans increases significantly, then there may be a decline in banks' risk appetite, credit volumes, and profitability. On the other hand, there are some factors that may mitigate these risks. For example, many households increased their savings during the pandemic, and credit institutions were able to accumulate large capital reserves. If required, these will act as a buffer to withstand even significant losses. In fact, stress tests by the Bank of Lithuania the country's central bank, suggest that the system would be able to absorb losses under a severe-downside scenario, assuming a cumulative decline in output and real-estate prices of 7.5% and 17.5% respectively over 2 years.

Graph A18.1: **Evolution of credit activity**



Source: ECB.

Loans to Lithuanian households and to non-financial corporations rose significantly over the course of 2022. By the end of Q3-2022, their annual growth rate stood at 12.3% and 17.3%, respectively. Mortgages still account for the largest share of bank assets, driven by low interest rates and strong household income, against the backdrop of rapidly rising residential real-estate prices (up 75% since 2015). Although these dynamics seem to be in line with fundamentals, the recent acceleration in house prices may be a sign of overheating. In general,

Table A18.1: **Financial soundness indicators**

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	67.5	66.1	65.8	79.6	79.0	85.6	276.8	207.9
Share (total assets) of the five largest banks (%)	90.1	90.9	90.4	91.8	89.8	-	-	68.7
Share (total assets) of domestic credit institutions (%)[1]	8.4	8.9	9.5	9.7	11.6	25.8	-	60.2
NFC credit growth (year-on-year % change)	5.4	5.1	-0.7	-14.0	11.2	17.9	-	9.1
HH credit growth (year-on-year % change)	7.6	8.6	7.1	6.1	10.4	12.2	-	5.4
Financial soundness indicators:[1]								
- non-performing loans (% of total loans)	3.2	2.6	1.7	2.2	1.2	1.0	1.8	1.8
- capital adequacy ratio (%)	19.1	18.6	19.9	21.9	23.5	19.8	18.6	19.8
- return on equity (%)[2]	9.1	12.3	14.5	10.0	10.4	13.6	6.1	6.6
Cost-to-income ratio (%)[1]	48.9	44.9	47.0	48.6	60.3	51.6	60.6	51.8
Loan-to-deposit ratio (%)[1]	78.8	79.5	77.2	63.3	61.8	62.7	88.6	78.0
Central bank liquidity as % of liabilities	1.2	0.7	0.2	0.5	4.1	3.1	-	2.9
Private sector debt (% of GDP)	56.2	56.1	55.2	54.4	53.9	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	-0.8	-8.7	56.3	73.3	53.3	-52.8	-	93.3
Market funding ratio (%)	18.0	21.7	22.3	36.7	36.2	-	50.8	40.0
Green bonds issued to all bonds (%)	2.0	4.6	4.1	3.3	3.1	2.9	3.9	2.3

1-3	4-10	11-17	18-24	25-27	Colours indicate performance ranking among 27 EU Member States.

(1) Last data: Q3 2022.
(2) Data is annualized.
Source: ECB, Eurostat, S&P Global Capital IQ Pro.

nearly half of real-estate transactions do not involve a mortgage, suggesting that the house-price increase was not exclusively credit driven.

To address potential risks to the financial sector from rising residential real-estate prices and the banking sectors' increased exposure to mortgage loans, the Bank of Lithuania has implemented a series of macroprudential measures. These include stricter down-payment requirements for second and subsequent mortgage loans (from January 2022) and an additional, sectoral systemic risk buffer of 2% for all retail-loan exposures that are secured by residential property (applying from July 2022). Loan-to-value ratios on new loans have fallen since the measure was implemented. Incipient signs of risk to financial stability may require either further tightening of borrower-based measures or increasing the countercyclical capital buffer.

The swift expansion of FinTech companies brings new challenges for anti-money laundering supervision. Growth of Lithuania's FinTech hub gained momentum after the adoption of a FinTech strategy in 2016. With a continuously improving business and regulatory environment since then (e.g. thanks to the 2021 FinTech action plan), Lithuania became the largest FinTech hub in the EU as measured by the number of licensed companies. Core business activities include payment services, financial software, lending, digital banking, and blockchain. The Lithuanian central bank has set up a regulatory 'sandbox' to allow both existing and potential FinTech companies to test out innovations. The FinTech expansion was also facilitated by enabling financial-services providers such as payment institutions and electronic money institutions to use the Bank of Lithuania's CENTROlink payment system to access single-euro-payments-area infrastructure in 2020. As a result, cross-border payment transactions soared, and these transactions were mostly conducted by non-residents, including with higher-risk jurisdictions. In addition, Lithuania's registration regime for virtual-asset service providers involves a low level of entry checks and requirements, and this has attracted many new entrants, significantly reshaping the financial sector and its risk profile. To ensure commensurate resources and capacity for effective supervision, regulation, and law enforcement across different government agencies, the Bank of Lithuania has now entrusted the growth strategy of digital finance to a specialised Centre for Financial Market Development. In addition to an active payments market, the Centre will focus on attracting new participants in other segments such as the credit, capital and insurance markets. The Bank of Lithuania has also decided to upgrade CENTROlink.

This Annex provides an indicator-based overview of Lithuania's tax system. It includes information on the tax structure (the types of tax that Lithuania derives most of its revenue from), the tax burden on workers, and the progressivity and redistributive effect of the tax system. It also provides information on tax collection and compliance.

Lithuania's tax revenues are relatively low in relation to its GDP. Table A19.1 shows that Lithuania's tax revenues as a percentage of GDP were considerably below the EU aggregate in 2021, though they increased by 1.4 percentage points (pps) compared to 2020. Lithuania's revenues from labour and capital taxes are significantly lower as a percentage of GDP than the EU aggregate. Revenues from consumption taxes and environmental taxes were close to the EU aggregate as a share of GDP, but higher as a share of total taxation (see Graph A19.1). Revenues from recurrent property taxes, which are among the taxes least detrimental to growth, are very low. This indicates that there is potential for an increased use of the income, property, and environmental tax bases. The Lithuanian government has made a commitment to find a national consensus on what the future level of tax revenues as a share of GDP should be to fund a significant increase in public spending and guarantee fiscal sustainability.

Lithuania's Recovery and Resilience Plan (RRP) includes tax reforms to address current challenges. Planned reforms, which are currently pending, include broadening the tax base coming from sources less detrimental to economic growth and abolishing inefficient or environmentally unfriendly tax exemptions and special tax regimes (see also Annex 6). The reform is expected to create a more adequate and sustainable revenue base and increase the redistributive capacity of the tax and benefit system. It should also address the highly differentiated tax treatment of different income sources, reduce incentives for tax arbitrage and make the system simpler, more transparent, and fairer.

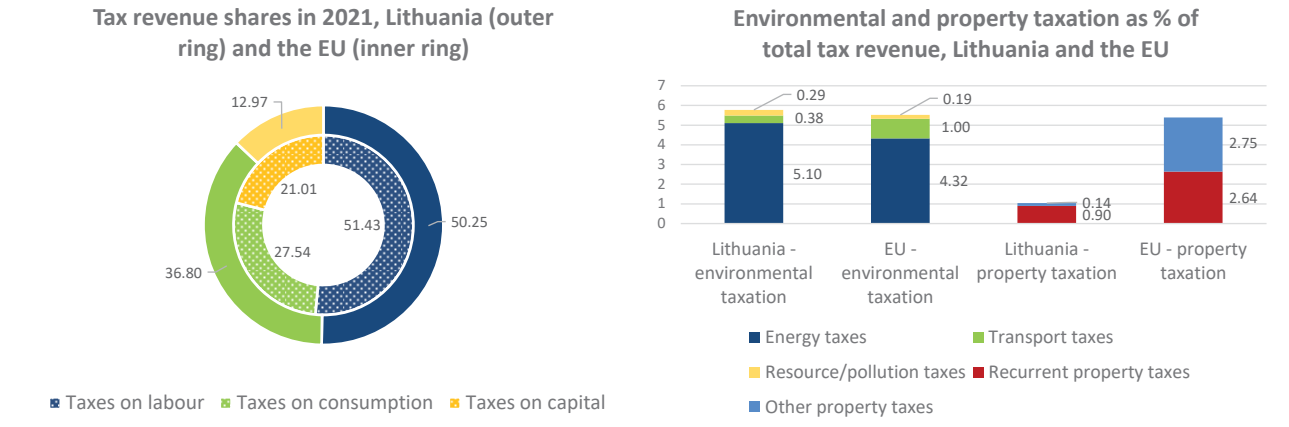
Lithuania has a fragmented and distortive taxation of income. A recently published report by the World Bank pointed to 72 differentiated income tax treatments by (i) type of entity, (ii) size, (iii) type of activity, and (iv) sources of income (capital/labour). This could be simplified and harmonised. The personal income tax system currently lacks efficiency and equity, with large variations in marginal and average tax rates paid at a given overall level of income. Wages are generally taxed significantly more than other forms of income. Besides issues related to fairness, this creates incentives to engage in tax arbitrage. The under-taxation of some types of

Table A19.1: **Taxation indicators**

		Lithuania					EU-27				
		2010	2019	2020	2021	2022	2010	2019	2020	2021	2022
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	28.3	30.2	30.8	32.2		37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	14.1	15.4	15.8	16.2		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	11.2	11.3	11.5	11.9		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	2.9	3.5	3.5	4.2		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	0.7	0.3	0.3	0.3		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	0.4	0.3	0.3	0.3		1.1	1.2	1.2	1.1	
	Environmental taxes as % of GDP	1.8	1.9	1.9	1.9		2.4	2.4	2.2	2.2	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	36.9	31.8	29.9	31.0	29.3	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	40.6	37.7	37.1	37.6	38.2	41.0	40.1	39.9	39.7	39.7
	Corporate income tax - effective average tax rates (1) (*)		13.7	13.7	13.7			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	6.2	5.8	6.8	7.4		8.6	7.7	8.1	7.8	
Tax administration & compliance	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		4.8	12.1				31.6	40.7		
	VAT Gap (% of VAT total tax liability, VTTL)		20.9	19.3				11.0	9.1		

(1) Forward-looking effective tax rate (OECD).
(2) A higher value indicates a stronger redistributive impact of taxation.
(*) EU-27 simple average
For more data on tax revenues as well as the methodology applied, see European Commission, Directorate-General for Taxation and Customs Union, *Taxation trends in the European Union: data for the EU Member States, Iceland, Norway and United Kingdom: 2021 edition*, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2778/843047 and the *Data on Taxation* webpage, https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en.
For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, *VAT gap in the EU: report 2022*, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2778/109823.
Source: European Commission, OECD.

Graph A19.1: **Tax revenues from different tax types, % of total revenue**

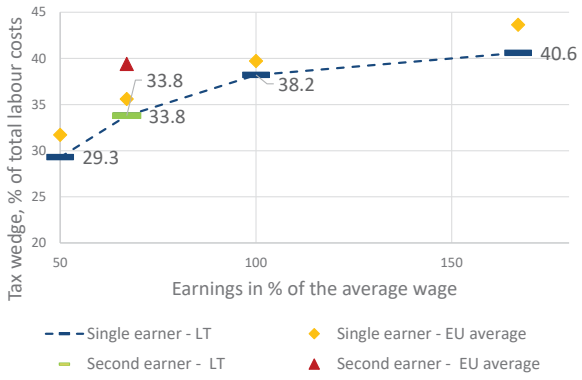


Source: European Commission

income also contributes to Lithuania's low overall

income tax revenues and reduces the fiscal and policy scope to reduce Lithuania's high level of income inequality. The average forward-looking effective corporate income tax rate is also significantly below the EU average. A reduced rate tax system for small firms that is based on turnover rather than profits has distortive threshold effects that encourages firms to limit their growth or under-declare their income.

Graph A19.2: **Tax wedge for single and second earners, % of total labour costs, 2022**



Note: Second earner tax wedge assumes first earner at 100% of the average wage and no children. For the methodology of the tax wedge for second earners see OECD (2016) "Taxing Wages 2014-2015".
Source: European Commission

Lithuania's labour tax burden is lower than the EU average and slightly less progressive. Graph A19.2 shows that the labour tax wedge for Lithuania in 2022 was lower than the EU average for single people earning 50% of the average wage, and significantly lower than the EU average at higher levels of income. The special tax treatment of some types and sources of income further reduces the overall progressivity of the tax system. Second earners at a wage level of 67% of the average wage, whose spouses earn the average wage, are subject to a lower tax wedge than the EU average. As part of its RRP, Lithuania has published an OECD-prepared assessment of the effectiveness of the tax-benefit system in preventing poverty and reducing inequality. It has also made a commitment to following this up with relevant reforms to the personal taxation and social security systems.

Lithuania is improving its tax administration and low tax compliance. Its RRP includes measures to enhance tax administration by improving data analytics, developing IT tools, developing staff competences, and limiting cash transactions to shrink the shadow economy. Lithuania recently prohibited cash payments of over EUR 5 000 and acted to improve transparency and tax compliance in the sale of used vehicles. It has also reformed its tax administration, including through digitalisation projects. Tax arrears increased significantly by 7.3 pps in 2020 to 12.1% of total net revenue. This remains significantly below the EU-27 average of 40.7%, although that average is distorted by very large values in a few Member States. The VAT gap (the gap between revenues actually collected and the theoretical tax liability) remains relatively large in Lithuania at 19.3% (more than double the EU average of 9.1%), though it has been gradually decreasing. Lithuania has the lowest on-time filing rate of corporate income tax returns among EU Member States for which this data is available.

Table A20.1:**Key economic and financial indicators**

	2004-07	2008-12	2013-19	2020	2021	2022	forecast 2023	forecast 2024
Real GDP (y-o-y)	8.2	-0.4	3.5	0.0	6.0	1.9	0.5	2.7
Potential growth (y-o-y)	6.2	1.8	2.6	4.1	4.5	3.5	2.9	2.6
Private consumption (y-o-y)	11.0	-2.2	3.7	-2.4	8.0	0.5	0.1	3.1
Public consumption (y-o-y)	2.9	-0.7	0.1	-1.4	0.9	0.5	0.5	0.2
Gross fixed capital formation (y-o-y)	17.2	-6.8	6.8	-0.2	7.8	2.6	2.7	4.5
Exports of goods and services (y-o-y)	10.6	7.3	6.1	0.4	17.0	11.9	1.9	4.8
Imports of goods and services (y-o-y)	15.7	2.1	5.7	-4.5	19.9	12.3	2.0	4.9
Contribution to GDP growth:								
Domestic demand (y-o-y)	11.8	-3.5	3.7	-1.8	6.5	0.9	0.7	2.8
Inventories (y-o-y)	0.1	-0.1	-0.5	-1.8	-0.2	0.7	0.0	-0.1
Net exports (y-o-y)	-3.7	2.8	0.3	3.5	-0.3	0.2	-0.1	0.1
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	-0.1	-0.7	0.3	0.4	1.2	0.9	0.4	0.1
Capital accumulation (y-o-y)	2.7	1.1	1.4	1.6	1.8	1.7	1.6	1.6
Total factor productivity (y-o-y)	3.6	1.4	1.0	2.1	1.5	0.9	0.8	0.9
Output gap	4.8	-4.4	1.6	-0.3	1.1	-0.5	-2.7	-2.6
Unemployment rate	7.3	13.2	8.4	8.5	7.1	6.0	6.6	6.5
GDP deflator (y-o-y)	6.2	3.3	2.0	1.9	6.3	16.8	10.4	3.1
Harmonised index of consumer prices (HICP, y-o-y)	3.3	4.7	1.4	1.1	4.6	18.9	9.2	2.2
HICP excluding energy and unprocessed food (y-o-y)	2.4	3.5	2.0	2.5	3.2	13.6	9.9	3.0
Nominal compensation per employee (y-o-y)	15.2	2.6	7.1	6.6	11.9	10.6	10.4	6.2
Labour productivity (real, hours worked, y-o-y)	6.1	2.5	2.4	6.1	3.1	-3.3	0.7	2.0
Unit labour costs (ULC, whole economy, y-o-y)	6.8	0.6	4.7	4.9	6.8	14.0	9.1	3.1
Real unit labour costs (y-o-y)	0.6	-2.7	2.7	3.0	0.5	-2.4	-1.2	0.0
Real effective exchange rate (ULC, y-o-y)	4.4	-1.5	3.3	0.7	6.2	9.6	2.8	-0.6
Real effective exchange rate (HICP, y-o-y)	1.1	1.9	0.8	1.5	1.8	7.9	.	.
Net savings rate of households (net saving as percentage of net disposable income)	-0.9	0.1	-2.5	9.1	2.2	.	.	.
Private credit flow, consolidated (% of GDP)	16.6	-1.3	2.6	0.3	5.9	.	.	.
Private sector debt, consolidated (% of GDP)	56.9	72.1	55.7	54.3	53.9	.	.	.
of which household debt, consolidated (% of GDP)	17.4	28.0	22.4	24.2	23.6	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	39.4	44.0	33.3	30.2	30.4	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	0.7	11.9	4.5	1.3	0.7	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-8.0	6.1	6.0	11.7	2.6	-3.5	1.8	2.1
Corporations, gross operating surplus (% of GDP)	33.4	35.6	34.8	31.6	31.7	33.0	34.2	34.0
Households, net lending (+) or net borrowing (-) (% of GDP)	-0.3	0.1	-2.8	4.3	1.0	-0.1	-0.1	0.2
Deflated house price index (y-o-y)	18.1	-9.9	4.3	6.1	11.0	0.3	.	.
Residential investment (% of GDP)	2.5	2.5	2.7	3.2	3.0	3.6	.	.
Current account balance (% of GDP), balance of payments	-10.3	-3.2	0.9	7.3	1.1	-5.1	-0.9	0.1
Trade balance (% of GDP), balance of payments	-9.4	-3.5	1.8	9.3	4.5	-2.0	.	.
Terms of trade of goods and services (y-o-y)	1.8	-0.3	0.6	1.5	-5.2	-7.4	4.4	0.6
Capital account balance (% of GDP)	1.3	3.3	2.1	1.7	1.4	1.5	.	.
Net international investment position (% of GDP)	-47.0	-56.5	-39.3	-15.7	-7.4	-6.7	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	-15.4	-25.6	-9.4	15.1	22.3	21.5	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	51.2	71.6	68.2	70.6	69.6	59.4	.	.
Export performance vs. advanced countries (% change over 5 years)	73.9	39.5	10.0	39.5	44.2	.	.	.
Export market share, goods and services (y-o-y)	6.5	4.4	2.3	8.9	3.4	7.7	-0.7	1.0
Net FDI flows (% of GDP)	-3.9	-1.1	-1.1	-1.1	-2.2	-2.5	.	.
General government balance (% of GDP)	-0.7	-6.2	-0.3	-6.5	-1.2	-0.6	-1.7	-1.4
Structural budget balance (% of GDP)	.	.	-0.9	-6.4	-1.6	-0.4	-0.6	-0.3
General government gross debt (% of GDP)	17.4	31.1	38.6	46.3	43.7	38.4	37.1	36.6

(1) Domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.
(2) Net international investment position (NIIP) excluding direct investment and portfolio equity shares.
Source: Eurostat and ECB as of 2 May 2023, where available; European Commission for forecast figures (Spring forecast 2023).

This Annex assesses fiscal sustainability risks for Lithuania over the short, medium and long term. It follows the same multi-dimensional approach as the European Commission's 2022 Debt Sustainability Monitor, updated based on the Commission 2023 spring forecast.

1 - Short-term risks to fiscal sustainability are low overall. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A21.2). ([103]) Gross financing needs are expected to remain low at around 5% of GDP in the short term (2023-2024), considerably below the recent peak in 2020 (Table 1 of Table A21.1). Financial markets' perceptions of sovereign risk are positive, as confirmed by the ratings of the main agencies.

2 - Medium-term risks to fiscal sustainability are low overall.

The baseline DSA for Lithuania shows that the government debt ratio is projected to decline over the medium term, to around 33% of GDP in 2033 (Graph 1). ([104]) ([105]) The assumed structural primary balance (a surplus of 0.3% of GDP) contributes to these developments. It appears ambitious compared with past fiscal performance. At the same time, the baseline projections up to 2033 benefit from a favourable (although declining) snowball effect, with real GDP growth averaging 2.1% in 2025-2033. Gross financing needs are expected at around 4% of GDP for most of the projection period.

The baseline projections are stress tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). For Lithuania, reverting to historical fiscal trajectories under the 'historical structural primary balance (SPB)' scenario would lead to a higher government debt ratio. If the SPB gradually converged to a deficit of 1.3% of GDP (its historical 15-year average), the projected debt-to-GDP ratio would be 44% in 2033, 11 pps. above the baseline. A permanent worsening of the macro-financial conditions, as reflected under the 'adverse interest-growth rate differential' scenario (i.e. 1 pp. higher than the baseline) would result in a debt-to-GDP ratio about 3 pps. higher than the baseline projection. A temporary worsening of financial conditions, as captured by the 'financial stress' scenario, results in a debt projection similar to the baseline. The same holds for the 'lower structural primary balance (SPB)' scenario (i.e. SPB level permanently reduced by half of the cumulative forecast change).

Additionally, stochastic debt projections indicate low risks (Graph 2). ([106]) These stochastic simulations point to a 34% probability of the debt ratio in 2027 being greater than in 2022, entailing low risk given the initial low level of debt. In addition, such shocks point to some uncertainty (i.e. the difference between the 10th and 90th debt distribution percentiles) surrounding the government debt baseline projections.

([103]) The S0 is a composite indicator of short-term risk of fiscal stress. It is based on a wide range of macro-financial and fiscal variables that have proven to perform well in the past in detecting situations of upcoming fiscal stress.

([104]) The assumptions underlying the Commission's 'no-fiscal policy change' baseline notably comprise: (i) a structural primary surplus, before ageing costs, of 0.3% of GDP as of 2024; (ii) inflation converging linearly towards the 10-year forward inflation-linked swap rate 10 years ahead (which refers to the 10-year inflation expectations 10 years from now); (iii) the nominal short- and long-term interest rates on new and rolled over debt converging linearly from current values to market-based forward nominal rates by T+10 (as for all Member States); (iv) real GDP growth rates from the Commission 2023 spring forecast until 2024, followed by EPC/OGWG 'T+10 methodology projections between T+3 and T+10, i.e. for 2025-2033 (on average 2.1%); (v) ageing costs in line with the 2021 Ageing Report (European Commission, Institutional Paper 148, May 2021). For information on the methodology, see the 2022 Debt Sustainability Monitor (European Commission, Institutional Paper 199, April 2023).

([105]) Table 1 shows the baseline debt projections and its breakdown into the primary balance, the snowball effect (the combined impact of interest payments and nominal GDP growth on the debt dynamics) and the stock-flow adjustment.

([106]) These projections show the impact on debt of 2000 different shocks affecting the government's primary balance, economic growth, interest rates and exchange rates. The cone covers 80% of all simulated debt paths, therefore excluding tail events.

3 - Long-term risks to fiscal sustainability are low overall. ([107])

The S2 sustainability gap indicator (at 1.2 pps. of GDP) points to low risks, suggesting that Lithuania would need to improve its structural primary balance only to a limited extent to ensure debt stabilisation over the long term. This required effort results from the projected increase in ageing costs (1.3 pps.), in particular for health care and long-term care (Table 2).

Given low long-term debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as low. Indeed, the S1 sustainability gap indicator signals that a small consolidation effort of 0.6 pp. of GDP would suffice to bring debt to 60% of GDP by 2070. This result is driven by the projected rise in ageing costs (1.4 pps. of GDP), with the current low debt level (-0.4 pp.) and favourable budgetary position (-0.4 pp.) reducing the required effort (Table 2).

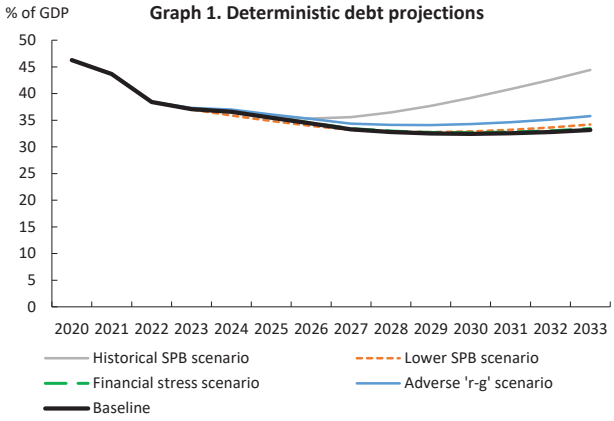
Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors include the recent increase in interest rates, and the relatively large share of public debt held by non-residents. On the one hand, risk-mitigating factors include the fact that debt is fully denominated in euro and the low share of short-term debt in total debt. In addition, the structural reforms under the NGEU/RRF, if fully implemented, could have a further positive impact on GDP growth in the coming years, and therefore help to mitigate debt sustainability risks.

([107])The S2 fiscal sustainability gap indicator measures the permanent fiscal effort (SPB adjustment) in 2024 that would be required to stabilise public debt over the long term. It is complemented by the S1 fiscal sustainability gap indicator, which measures the permanent fiscal effort required in 2024 to bring the debt-to-GDP ratio to 60% in the long term (by 2070). For both the S1 and S2 indicators, the risk assessment depends on the amount of fiscal consolidation needed: 'high risk' if the required effort exceeds 6 pps. of GDP, 'medium risk' if it lies between 2 pps. and 6 pps. of GDP, and 'low risk' if the effort is negative or below 2 pps. of GDP. The overall long-term risk classification brings together the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 when it signals a higher risk than S2. See the 2022 Debt Sustainability Monitor for further details.

Table A21.1: **Debt sustainability analysis – Lithuania**

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	**46.3**	**43.7**	**38.4**	**37.1**	**36.6**	**35.5**	**34.4**	**33.3**	**32.8**	**32.5**	**32.5**	**32.6**	**32.8**	**33.2**
Changes in the ratio	10.5	-2.6	-5.3	-1.3	-0.5	-1.1	-1.1	-1.1	-0.5	-0.3	-0.1	0.1	0.2	0.4
of which														
Primary deficit	5.8	0.7	0.3	1.3	0.7	0.5	0.3	0.1	0.3	0.4	0.5	0.7	0.8	0.9
Snowball effect	0.0	-4.8	-6.6	-3.3	-1.4	-1.6	-1.4	-1.2	-0.8	-0.7	-0.6	-0.5	-0.5	-0.5
Stock-flow adjustments	4.6	1.5	1.1	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	15.3	6.0	5.2	5.7	4.8	4.4	4.1	3.8	3.9	4.0	4.2	4.3	4.4	4.6

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2023-2027

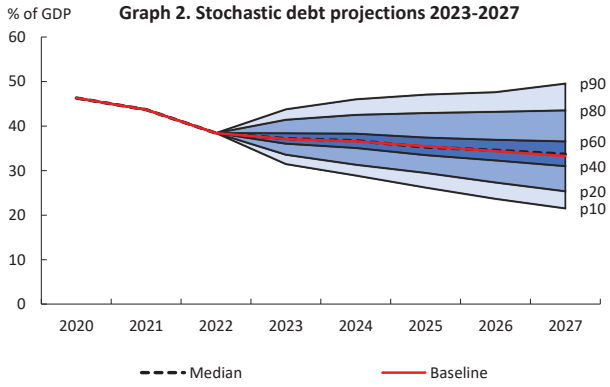


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	**S2**
Overall index (pps. of GDP)		**0.6**	**1.2**
of which			
Initial budgetary position		-0.4	-0.1
Debt requirement		-0.4	
Ageing costs		1.4	1.3
of which	*Pensions*	0.6	0.2
	Health care	0.4	0.5
	Long-term care	0.4	0.6
	Others	0.0	0.0

Source: Commission services.

Table A21.2: **Heat map of fiscal sustainability risks – Lithuania**

Short term	**Medium term - Debt sustainability analysis (DSA)**							**Long term**		
			Deterministic scenarios							
Overall (S0)	**Overall**		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	**Stochastic projections**	**S2**	**S1**	**Overall** (S1 + S2)
LOW	**LOW**	Overall	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**
		Debt level (2033), % GDP	33.2	44.5	34.2	35.8	33.4				
		Debt peak year	2022	2033	2022	2022	2022				
		Fiscal consolidation space	16%	55%	20%	16%	16%				
		Probability of debt ratio exceeding in 2027 its 2022 level						34%			
		Difference between 90th and 10th percentiles (pps. GDP)						28.0			

(1) *Debt level* in 2033. Green: below 60% of GDP. Yellow: between 60% and 90%. Red: above 90%. (2) The *debt peak year* indicates whether debt is projected to increase overall over the next decade. Green: debt peaks early. Yellow: peak towards the middle of the projection period. Red: late peak. (3) *Fiscal consolidation space* measures the share of past fiscal positions in the country that were more stringent than the one assumed in the baseline. Green: high value, i.e. the assumed fiscal position is plausible by historical standards and leaves room for corrective measures if needed. Yellow: intermediate. Red: low. (4) *Probability of debt ratio exceeding in 2027 its 2022 level*. Green: low probability. Yellow: intermediate. Red: high (also reflecting the initial debt level). (5) The *difference between the 90th and 10th percentiles* measures uncertainty, based on the debt distribution under 2000 different shocks. Green, yellow and red cells indicate increasing uncertainty.

Source: Commission services.

The Macroeconomic Imbalance Procedure matrix presents the main elements of the in-depth review undertaken for Lithuania ([108]). Lithuania was selected for an in-depth review in the 2023 Alert Mechanism Report. This in-depth review on the prevention and correction of macroeconomic imbalances presents the main findings on the gravity and evolution of the challenges identified, as well as policy responses and potential policy needs. Findings cover all areas of vulnerability assessed in the in-depth review.

In Lithuania, vulnerabilities relating to price competitiveness, external balances and house price developments are increasing but seem to be contained. Household savings increased during the COVID-19 lockdown and reached record levels in 2020, which boosted consumption and housing purchases in the following years. This together with increases in construction costs and a temporary COVID-19-related slowdown of housing supply growth, led to house price growth picking up significantly in 2021 and accelerating further in 2022. The recent energy and commodity price shocks raised production costs and pushed up core inflation. Wage growth has been relatively rapid over the last decade, helped by catching up effects and labour shortages. As wages have been growing faster than productivity, this led to a gradual increase in unit labour costs (ULCs) and an appreciation of REERs. As a result of all these factors, Lithuania experienced one of the highest levels of HICP inflation in the EU and significant inflation differentials with respect to the EA in 2022. On the other hand, export market shares have held up well and in Lithuania's main exporting sectors (such as manufacturing), profits have continued to grow and domestic factors have not affected export prices yet to a great extent. The recent deterioration of Lithuania's current account was driven almost exclusively by increasing prices of energy imports; and the current account is projected to return to positive territory by 2024. Lithuania's international investment position (NIIP) continued its decade long improving trend, reaching -6.7% of GDP in 2022. Overall, there are no signs of relevant house prices and real effective exchange rate overvaluations. While the current account recorded values below those suggested by economic fundamentals, the NIIP was close to the fundamental threshold.

Going forward, house price growth is expected to slow down and external balances to improve with the energy prices coming down, while the longer-term structural drivers of increasing ULCs are expected to persist. House price growth is likely to undergo a period of moderation, given the interest rate rises and the economic slowdown underway. This adjustment is likely to slow down construction and private consumption. However, risks of a sudden disorganised adjustment on the housing market are considered low, as the household debt is relatively low and the financial sector is well capitalised, highly profitable and benefits from currently low levels of non-performing loans. Lithuania's current account balance is projected to gradually recover as energy prices decrease to -0.9% of GDP in 2023 and 0.1% in 2024. Given Lithuania's sound stock position, Lithuania has a buffer to absorb even several years of moderate current account deficits without the NIIP declining towards prudential thresholds. Finally, inflation is expected to subside this year to 9.2% and to 2.2% in 2024, while ULC growth is expected to slow down to 9.1% in 2023 and 3.1% in 2024. At the same time, the labour market shortages which are putting upward pressure on wages, are expected to become even more severe over the medium to long-term, and catching up effects may continue to play a role as well.

Certain policies could help to better address the identified vulnerabilities. In particular, Lithuania does not make full use of immovable property taxation, which could also dampen real-estate cycles. More focus on some specific structural policies could also help to manage price pressures, such as fostering competition in the domestic market or increasing local energy production and energy efficiency. The issue of rising ULCs could be addressed with either improving labour supply (through investments in the skills and health of the population) or with investments into innovation, thus supporting the transition to a high value-added economy.

Based on this assessment, the Commission considered in its communication European Semester – 2023 Spring Package (COM(2023)

([108]) European Commission (2023), In-Depth Review for Lithuania, Commission staff working document (COM(2023) 637 final), in accordance with Article 5 of Regulation (EU) No 1176/2011 on the prevention and correction of macroeconomic imbalances.

Table A22.1:**Assessment of macroeconomic imbalances matrix**

	Gravity of the challenge	Evolution and prospects	Policy response
	Unsustainable trends, vulnerabilities and associated risks		
House price growth	House price growth was in line with income growth until 2019, accelerated in 2021 and in the first half of 2022, but since then it is slowing down. By Q4 2022, house prices are estimated to be only marginally overvalued by around 2.2%. Prices were boosted by rising incomes and low interest rates, the post-COVID economic surge (which was relatively strong in Lithuania) and increasing construction costs (especially costs of construction materials, products and machinery). Nevertheless, household debt is relatively low, below fundamental thresholds.	House price growth is expected to slow down, given the interest rate rises and the economic slowdown underway, already reflected in a decline in transactions. This adjustment can be expected to slow down construction and private consumption. However, risks of a disorderly adjustment are considered low, as the household debt is relatively low, and the financial sector is well capitalised, highly profitable and benefits from currently low NPLs.	Some policy measures could be considered in response to the recent house price increase. Bank of Lithuania introduced a requirement for financial institutions to have a 1% countercyclical capital buffer starting from October 2023. Furthermore, in 2022 a loan-to-value ratio has been reduced to 70% for second and subsequent housing loans. However, Lithuania does not make full use of immovable property taxation, which could dampen real-estate cycles.
External sustainability	Since the financial crisis of 2008, Lithuania's current account has remained broadly in balance, with a significant swing into surplus during the pandemic (2019-21). The current account deficit of -5.1% in 2022 is mostly related to high energy prices, which translated into higher energy imports in value terms. However, Lithuania's net international investment position (NIIP) is only slightly negative at -6.7% of GDP in 2022 and it is positive (at 21.5%) if non-defaultable instruments are excluded.	In 2023-2024 the current account balance is expected to gradually improve to -0.9% and +0.1% of GDP respectively, helped by the decline in energy prices. Given Lithuania's sound stock position, Lithuania has a buffer to absorb even several years of moderate current account deficits without the NIIP declining towards prudential thresholds.	Steps to increase the country's energy independence and energy efficiency could help to reduce external sectors' vulnerabilities. Should energy price compensation measures be reactivated, they should be more targeted and preserve the price signal to reduce energy demand and increase energy efficiency.
Cost competitiveness /ULC	HICP inflation was in check prior to 2022, but has since surged, to 18.9% in 2022, well above the EA and EU average. This increase not only reflected energy price increases, but also domestic factors. Over the past decade, the core inflation-based REER (compared to 42 main trading partners) appreciated by roughly 13% and Lithuania's ULC growth was very high, at 5.9% annually on average, compared to an EU average of 1.6%. Wage growth was also above a benchmark of economic fundamentals. Nevertheless, Lithuania has been steadily gaining export market share since 2016, with exports continuing to grow not only in value but also in volumes.	Lithuania's inflation differential to the euro is estimated not to pose an immediate risk to its cost competitiveness. HICP inflation is estimated to decrease to 9.2% in 2023 and to 2.2% in 2024, helped by the decline in energy prices. ULC growth is expected to moderate from 14.0% in 2022 to 9.1% in 2023 and 3.1% in 2024. As yet, export market shares and profits in the tradables sector have been holding up quite well, suggesting that the export sector still has room to absorb some ULC growth.	Policy actions related to improving competition in the domestic market, and increasing local energy production and energy efficiency, could help to ease price pressures. The issue of rising ULCs could be addressed with either improving labour supply (through investments in the skills and health of the population) or with investments into innovation, thus supporting the transition to a high value-added economy.

Source: European Commission

600 final) that Lithuania does not experience imbalances.