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Foreword

This Survey is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.

The Secretariat's draft report was prepared for the Committee by Urban Sila and Erik Frohm under the supervision of Mame Fatou Diagne. Statistical research assistance was provided by Corinne Chanteloup and editorial assistance by Emily Derry.

The economic situation and policies of the Czech Republic were reviewed by the Economic and Development Review Committee on the 31 January 2023 with participation of representatives of the Czech authorities. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 28 February 2023. The previous Survey of the Czech Republic was issued in December 2020.

Information about the latest as well as previous Surveys and more information about how Surveys are prepared is available at http://www.oecd.org/eco/surveys.

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BASIC STATISTICS OF CZECH REPUBLIC, 2021

(Numbers in parentheses refer to the OECD average)[1]

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million)	10.5		Population density per km²	136.1	(38.7)
Under 15 (%)	16.0	(17.4)	Life expectancy at birth (years, 2020)	78.2	(79.0)
Over 65 (%)	20.5	(17.7)	Men (2020)	75.3	(76.2)
International migrant stock (% of population, 2019)	4.8	(13.2)	Women (2020)	81.3	(82.0)
Latest 5-year average growth (%)	-0.1	(0.5)	Latest general election	October-2021	
ECONOMY					
Gross domestic product (GDP)			Value added shares (%)		
In current prices (billion USD)	281.7		Agriculture, forestry and fishing	2.0	(2.6)
In current prices (billion CZK)	6107.0		Industry including construction	33.3	(26.6)
Latest 5-year average real growth (%)	1.8	(1.6)	Services	64.7	(70.8)
Per capita (thousand USD PPP)	45.6	(50.8)			
GENERAL GOVERNMENT Per cent of GDP					
Expenditure	46.5	(46.2)	Gross financial debt	48.5	(110.4)
Revenue	41.4	(38.7)	Net financial debt	13.1	(70.6)
EXTERNAL ACCOUNTS					
Exchange rate (CZK per USD)	21.68		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	12.75		Machinery and transport equipment	55.7	
In per cent of GDP			Manufactured goods	14.9	
Exports of goods and services	72.7	(29.8)	Miscellaneous manufactured articles	12.1	
Imports of goods and services	69.7	(29.9)	Main imports (% of total merchandise imports)		
Current account balance	-0.8	(0.2)	Machinery and transport equipment	46.2	
Net international investment position	-15.4		Manufactured goods	16.2	
			Chemicals and related products, n.e.s.	12.4	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate (aged 15 and over, %)	58.1	(56.2)	Unemployment rate, Labour Force Survey (aged 15 and over, %)	2.8	(6.1)
Men	66.4	(64.1)	Youth (aged 15-24, %)	8.2	(12.8)
Women	50.1	(48.7)	Long-term unemployed (1 year and over, %)	0.8	(1.7)
Participation rate (aged 15 and over, %)	59.8	(60.3)	Tertiary educational attainment (aged 25-64, %)	26.5	(39.9)
Average hours worked per year	1,753	(1,716)	Gross domestic expenditure on R&D (% of GDP, 2020)	2.0	(3.0)
ENVIRONMENT					
Total primary energy supply per capita (toe)	4.0	(3.8)	CO_2 emissions from fuel combustion per capita (tonnes)	8.5	(7.9)
Renewables (%)	12.0	(11.6)	Water abstractions per capita (1 000 m³, 2020)	0.1	
Exposure to air pollution (more than 10 µg/m³ of PM 2.5, % of population, 2019)	99.7	(61.7)	Municipal waste per capita (tonnes, 2020)	0.5	(0.5)
SOCIETY					
Income inequality (Gini coefficient, 2019, OECD: latest available)	0.248	(0.315)	Education outcomes (PISA score, 2018)		
Relative poverty rate (%, 2019, OECD: 2018)	5.6	(11.7)	Reading	490	(485)
Median disposable household income (thousand USD PPP, 2019, OECD: 2018)	21.5	(25.5)	Mathematics	499	(487)
Public and private spending (% of GDP)			Science	497	(487)
Health care (2020)	9.2	(9.7)	Share of women in parliament (%)	25.0	(32.4)
Pensions (2019)	8.5	(9.5)	Net official development assistance (% of GNI, 2017)	0.2	(0.4)
Education (% of GNI, 2020)	3.7	(4.4)			

Note: The year is indicated in parentheses if it deviates from the year in the main title of this table.

1. Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 80% member countries.

Source: Calculations based on data extracted from the databases of the following organisations: OECD, International Energy Agency, International Monetary Fund.

Executive Summary

The economic outlook has deteriorated

Russia's war of aggression against Ukraine has derailed the Czech Republic's post-pandemic recovery and further disrupted the impressive catch-up with OECD average incomes seen in the previous two decades. Steep rises in energy and commodity prices and disruptions in gas and oil imports from Russia triggered a cost-of-living crisis with a risk of broader energy shortages. Lower global growth, constraints in global supply chains and higher uncertainty have dampened activity.

Inflation has risen to high levels and become entrenched. Core inflation was persistently among the highest in the European Union throughout 2022. Inflation expectations have increased markedly, with corporates expecting around 7% inflation at a three-year horizon. The authorities had reacted swiftly and decisively to support the economy during the COVID-19 crisis. However, in hindsight, loose overall macroeconomic policy in 2020-21 contributed to high inflation by boosting demand over supply capacity.

The unemployment rate remains very low but rising prices have eroded domestic demand. High uncertainty and the looming energy crisis have resulted in large falls in consumer and business sentiment, lowering private consumption and investment. Real wages have fallen steeply.

Economic growth will be subdued in 2023 and pick up in 2024 amid reduced supply disruptions and resuming expansion in trading partners. High energy prices, tightened financing conditions and low sentiment will hold back private investment in 2023. Private consumption will be constrained by rising prices. Inflation will start falling from the currently very high levels but will only approach the 2% target towards the end of 2024.

Risks around the projections are considerable. Renewed rises in commodity and energy prices, a strong depreciation of the koruna and de-anchored inflation expectations could further feed inflation pressures and trigger a destabilising wage-price spiral. On the other hand, a deeper recession and lower confidence would lower inflation more quickly.

Table 1. Growth is slowing

	2022	2023	2024
Real GDP growth, %	2.4	0.1	2.4
Unemployment rate, %	2.3	2.6	2.8
Consumer price index, % change	15.1	13.0	4.1
Fiscal balance (% of GDP)	-3.8	-4.3	-3.7

Source: Calculations based on OECD Economic Outlook 112 database.

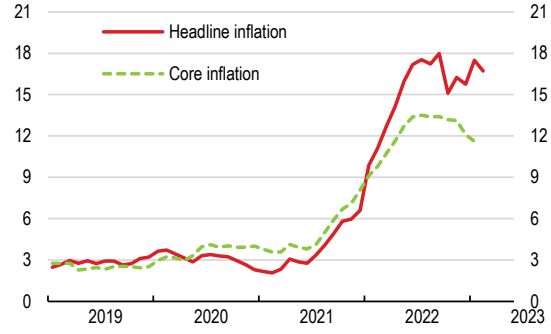
A tight macroeconomic policy stance is needed to fight inflation

Monetary policy has rightly been tightened to counter rising prices and manage inflation expectations. Fiscal policy should avoid boosting aggregate demand, while providing support to cushion living standards.

The Czech National Bank (CNB) raised the policy interest rate from 0.25% to 7% between June 2021 and June 2022, after which it paused. The CNB has also intervened on the exchange rate market to prevent excessive fluctuation and stem depreciation pressures on the koruna.

Figure 1. Inflation has risen sharply

Consumer price index, y-o-y % changes



Source: Czech Statistical Office.

StatLink https://stat.link/uazbd2

Public spending pressures have intensified. The Czech Republic has welcomed the highest number of Ukrainian refugees per capita among European countries, providing basic services and income support. Countering the adverse impact of the energy crisis and rising prices of essential goods on the vulnerable has necessitated further public spending. Moreover, the need for defence spending has risen. Support measures provided to households and firms should be temporary and targeted at the most vulnerable to avoid fuelling inflation and designed to preserve incentives for energy savings.

Safeguarding long-term fiscal sustainability

The Czech Republic faces high fiscal pressures in the medium to long term that threaten fiscal sustainability. Action on both the expenditure and revenue sides should be considered to close expected future gaps in public budgets.

Recent expansionary fiscal policy helped preserve jobs and incomes, but it has led to a high deficit and increased public debt. Untargeted cash transfers and a permanent cut in tax revenues from late 2020, whereby fiscal revenues fell by roughly 2 percentage points of GDP in structural terms, aggravate the fiscal challenge. Fiscal rules have been loosened and there is no clear path towards fiscal consolidation. Looking ahead, population ageing will result in future steep rises in public spending on pensions, health, and long-term care, significantly pushing up the debt-to-GDP ratio. Without reform, a substantial increase in fiscal revenues would be required to counter the rise in expenditures. Raising the effectiveness in the public sector and continuing to fight corruption would also help curb increases in public spending.

There is scope to revise the tax system to better align economic, environmental and societal objectives. The tax burden on labour is high due to significant social security contributions. Personal income taxes remain low and are only weakly progressive. There is strong reliance on reduced VAT rates that have been shown to be poorly targeted to fight poverty. On the other hand, environmental and real estate taxes, which are less distortive to growth, are low.

Pensions are set to exert pressures on public spending. Pension spending is estimated to rise by 3.5 percentage points of GDP by 2060. Yet, Czech workers retire much earlier than in most OECD peers. The employment rate - while high overall - falls sharply after the age of 60. The current system of regularly reviewing the statutory retirement age relies too much on recurring government initiatives, raising the risk that the retirement age might not be increased in a timely and sufficient manner to curtail spending pressures. Moreover, under current provisions, early retirement age is set to remain at 60.

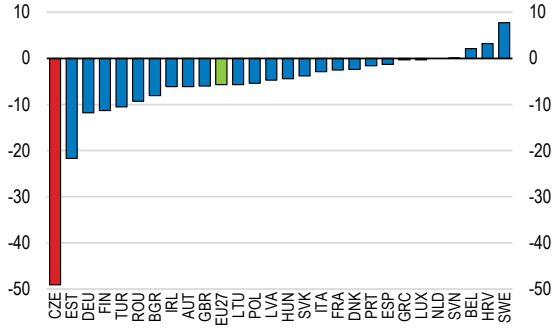
Tackling recurring labour and skills shortages

The Czech labour market is strong: the unemployment rate is very low, and the employment rate and job security are high. However, chronic labour shortages are a major obstacle to growth.

Mothers could be better integrated into the labour market. Female employment falls significantly and for a prolonged period after childbirth, adversely impacting women's subsequent careers. The gender wage gap is sizeable. Very long parental leave and generous family cash benefits discourage mothers from returning to work. The lack of childcare capacity is another constraint and enrolment of children under three in early childhood education and care is among the lowest in the OECD.

Figure 2. Female employment falls significantly after childbirth

Employment gap between mothers[1] and women without children, % points, 2021



1. With one child under 6 years old. Source: Eurostat database.

StatLink https://stat.link/qtv17c

Labour migration policy is not geared to attract skilled foreign workers. Labour shortages have prompted Czech employers to look for workers from abroad. Immigration has been rising steadily. Despite rising skills needs, close to 90% of foreign workers from non-EU countries work in low- to medium-skilled jobs. Conditions in terms of permit duration, family reunification and labour market mobility in the Czech Republic for highly skilled workers are less favourable than in peer countries.

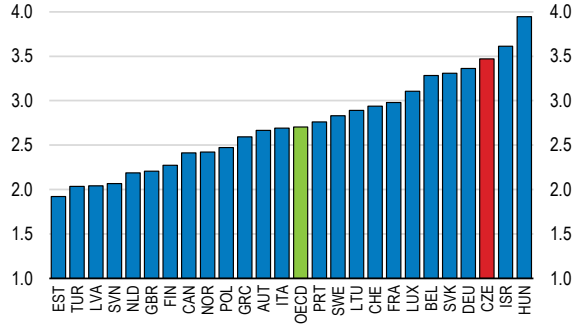
The education sector could contribute more effectively to building skills in demand. Many

jobs in the future will require high education and skills, and demand is growing for core and technical competences. Yet, tertiary educational attainment, despite progress in recent years, lags significantly behind OECD peers and skills shortages in growing sectors remain large. Despite workers' good basic digital skills, the economy lacks specialists in information and communication technology. Modernised vocational education and training, better adapted to adult learning, can effectively build skills in demand and raise the economy's adaptability to structural change.

Inequalities in education persist. Parents' socio-economic status has a strong impact on performance in school. Drop-out rates vary widely across regions, and teacher quality in disadvantaged schools is low. Abolishing early tracking, reducing differences in school quality - including by closing small local schools - and attracting better teachers to disadvantaged schools would help raise equality of opportunity. Explicitly targeting disadvantage in school funding could help in this regard.

Figure 3. Parents' socio-economic status strongly affects school performance

Likelihood of low performance among disadvantaged students (vs. non-disadvantaged students), odds ratio



Note: A socio-economically disadvantaged student is from the bottom quarter of the PISA index of economic, social and cultural status. Source: OECD (2019), PISA 2018 Results (Volume II).

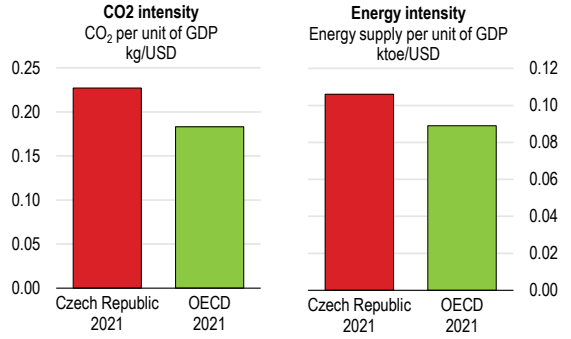
StatLink https://stat.link/isxftm

Pursuing the climate agenda

The Czech Republic has made significant headways in reducing greenhouse gas (GHG) emissions over the past three decades. Still, GHG-intensity remains high, largely driven by the extensive use of coal for electricity production and heat generation. Reliance on heavy industry coupled with older and poorly insulated dwellings make the Czech economy highly energy intensive. Major investments are needed to alter the energy mix and improve energy efficiency.

Current environmental policies are not stringent enough to effectively curb emissions. Effective carbon tax rates are among the lowest in the OECD. The Czech Republic does not have an explicit carbon price. Furthermore, tax exemptions are applied on various fuels, which decreases end-use prices and limits incentives to save energy or to switch to cleaner fuels.

Figure 4. Emissions and energy intensity are high



Source: OECD Green Growth Indicators; IEA World Energy Statistics and Balances.

StatLink https://stat.link/6i5kwx

Low energy efficiency in buildings and use of coal in heating inhibit the green transition. Czech buildings have among the highest energy consumption per square meter in the EU and a large number of households still rely on coal for residential heating. Existing regulation and subsidies do not provide sufficient incentives to raise investment for boosting energy-efficiency. Permitting processes are complex, impeding spending on green technologies and infrastructure.

Inclusive labour policies can ease the green transition. On the path towards net zero the Czech economy will have to restructure. Relative prices will shift, jobs will be shed while others will be created. Some sectors and some groups of workers are more at risk and policy should ensure a fair green transition. Retraining and other active labour market policies can help displaced workers find jobs more quickly and effectively match jobseekers with emerging opportunities.

MAIN FINDINGS	KEY RECOMMENDATIONS
Weathering the economic slowdown without aggravating macroeconomic imbalances	
Inflation and inflation expectations have risen steeply. Inflation has become entrenched at high levels and is broad-based.	Maintain a tight monetary policy stance until inflation is firmly on the path towards the 2% target.
Fiscal policy has been expansionary and macroeconomic policies are not sufficiently coordinated.	Start fiscal consolidation while providing targeted support to households and firms if needed.
Ensuring long-term fiscal sustainability	
High fiscal pressures in the medium to long term (including those related to population ageing) threaten sustainability. Without reform, the debt-to-GDP ratio is set to rise dramatically.	Prepare a more ambitious and credible medium-term fiscal consolidation plan, including the path for improvements in the structural balance.
The 2020 tax package - changes to the personal income tax and abolished real estate stamp duty - permanently reduced tax revenues. Personal income taxes are low and only weakly progressive.	Strengthen tax revenues, including through more progressive personal income taxation.
Revenues rely heavily on social security contributions and result in a high tax wedge. Lower reliance on direct taxation of labour and higher revenues from property and indirect taxes, including environmental taxes, could boost growth sustainably.	Shift towards real estate, consumption and environmental taxes, and reduce social security contributions.
The population is ageing rapidly and age-related spending will rise steeply over the coming decades. Almost one-third of people retire before the statutory retirement age. Even when the statutory age rises to 65, under current provisions the early retirement age will remain at 60.	Continue to raise the statutory and minimum early retirement ages and link them to life expectancy.
Indicators of control and perceived corruption in the public sector suggest that the Czech Republic underperforms compared to OECD peers. Czech citizens tend to think that corruption is widespread. The 2021 Rule of Law Report of the European Commission noted a lack of progress.	Continue efforts to fight corruption.
Tackling recurrent labour and skills shortages	
Childbirth has a large impact on labour market activity of mothers. The gender wage gap is sizable. Family cash benefits and tax breaks are generous while public childcare support is low, particularly for children under the age of three.	Keep expanding the supply of affordable and high-quality childcare facilities. Lower untargeted family cash benefits and gradually reduce the maximum duration of parental leave.
Current permit conditions are restrictive and not geared towards attracting and retaining high-skilled foreign workers. Conditions in terms of permit duration and associated family reunification and labour market mobility for highly skilled workers are less favourable than in many OECD peers.	Increase the duration of initial work permits to five years for highly skilled migrants and offer immediate temporary residence and work rights for accompanying family members.
Socio-economic factors have a large impact on student performance and attainment. Much of the inequality stems from variation between schools. Many schools are too small to provide education effectively.	Introduce explicit and objective criteria (based on school, student or local area characteristics) in the funding formula for schools to further address inequalities and disadvantage.
Disadvantaged schools are more likely to have staff shortages and they employ the least experienced teachers.	Offer better career paths to teachers and increase incentives for high-quality teachers to work in remote areas.
Skills shortages in many technical fields remain large with a particular lack of ICT specialists. Besides higher and more specialised skills, strong core skills can ensure that workers are resilient to change. Education should provide workers with the right skill sets and easy access to learning, including for adults.	Modernise VET education, as planned in the 2030+ education strategy, by modernising curricula, strengthening core skills, involving employers more closely and better adapting it to adult learning.
Pursuing the climate agenda	
The Czech Republic remains highly reliant on fossil fuels for electricity production and heat generation. Greater reliance on renewable sources of energy will require grid investments. Moreover, increases in energy efficiency are urgently needed to move towards medium to long term climate targets.	Upgrade the grid and provide adequate incentives for scaling up renewable and low-emission energy capacity and boosting energy efficiency.
Coal remains one of the main fuels for electricity generation and residential heating and accounts for close to a third of the primary energy supply.	Keep commitments to phase out coal from the energy mix by 2033.
Effective carbon rates are among the lowest in the OECD. Current policies result in too low a price on carbon and do not provide a consistent price signal across fuels and energy uses. Carbon price trajectories can enable planning and facilitate long-term investment in low-carbon technologies.	Once energy prices subside from their current high levels, introduce an explicit carbon price (with a pre-announced price trajectory) to cover all emissions for sectors outside the EU ETS.
Low energy efficiency in buildings and use of coal in heating inhibit the green transition. Czech buildings have among the highest energy consumption per square meter in the European Union and approximately 300 000 households still use inefficient individual coal boilers to heat their homes.	Strengthen incentives for installing efficient green heating technologies in residential buildings. Scale up investments into energy efficiency retrofits of buildings.
Cumbersome regulations and lengthy construction processes, restrictive spatial planning and complex process for obtaining electricity production licenses are severe barriers to green investment.	Streamline permitting processes for renewable investments and simplify regulations and processes in construction and spatial planning.
Some groups of workers could be more adversely affected by the green transition. Low-skilled workers rarely take part in adult education programmes. Spending on training for the unemployed could be boosted.	Expand active labour market policies - including targeted training and reskilling programmes - to help displaced workers find jobs more quickly and to effectively match jobseekers with emerging opportunities.

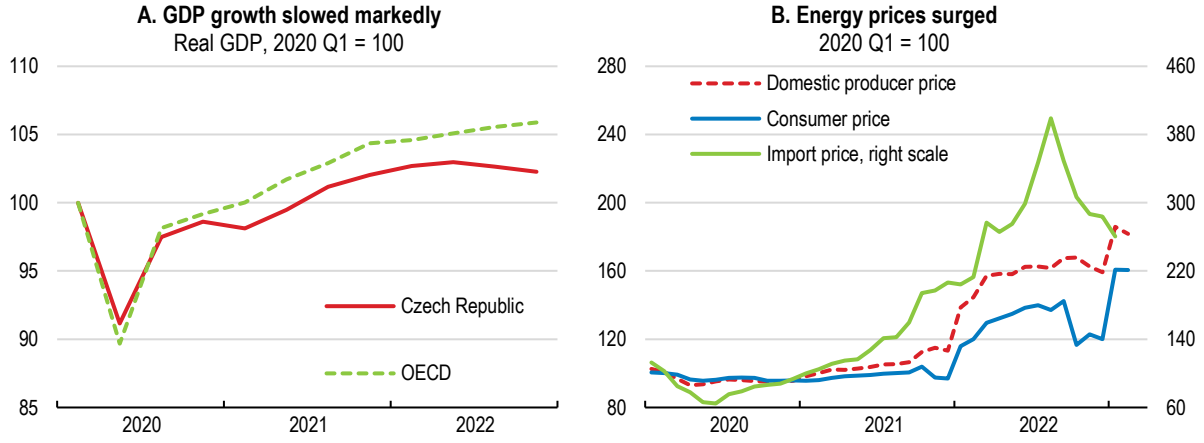
1 Key Policy Insights

Steep rises in energy and commodity prices and disruptions in gas and oil markets linked to Russia's aggression in Ukraine triggered a cost-of-living crisis and created a risk of energy shortages. Lower global growth, supply chain bottlenecks and higher uncertainty dampened activity and economic prospects. Monetary policy has been tightened to counter inflationary pressures and should remain tight. Supportive fiscal policy helped preserve jobs and incomes but has weakened a strong fiscal position. Pressures linked to population ageing call for structural measures to improve fiscal sustainability. The labour market has performed well but faces chronic labour and skills shortages. Making employment easier for mothers can help in this regard. Raising skills would boost productivity, which still lags behind the OECD average. The Czech economy remains highly energy intensive, relies heavily on coal and records high greenhouse gas emissions. The current energy crisis is an opportunity to strengthen the resolve to reach climate commitments.

Introduction

The Czech economy was on track to recover from the COVID-19 crisis when, in early 2022, Russia's war of aggression against Ukraine brought new challenges. Steep rises in energy and commodity prices (Figure 1.1) and supply disruptions in gas and oil imports from Russia triggered a cost-of-living crisis and created a risk of energy shortages. Lower global growth, persistent constraints in global supply chains and higher uncertainty dampened activity. To counter steep and broadening inflationary pressures, and rising inflation expectations, the central bank raised policy interest rates in a timely way, tightening financing conditions. GDP growth slowed markedly (Figure 1.1).

Figure 1.1. Russia's war against Ukraine brought new challenges



Source: OECD Economic Outlook database; Czech Statistical Office.

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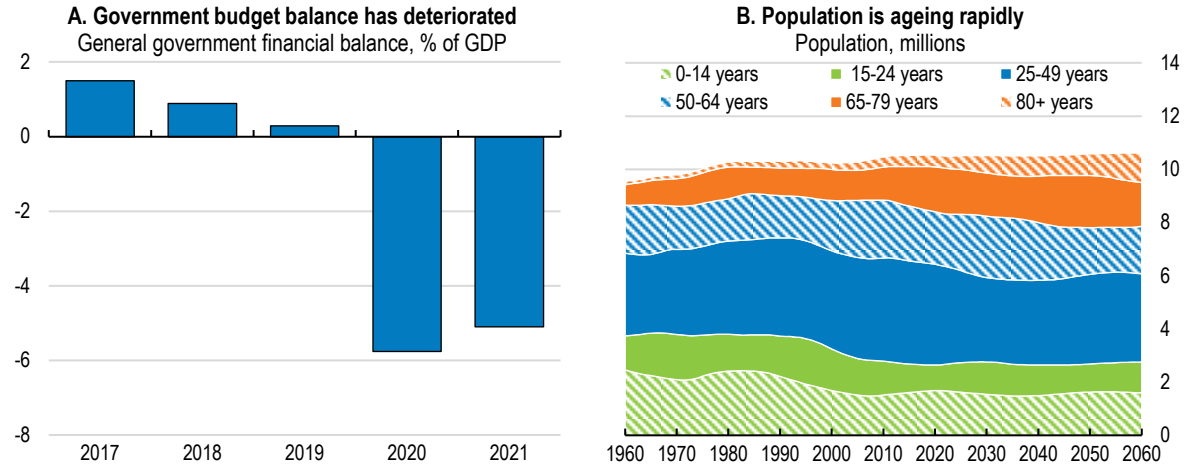
Loose fiscal policy during the pandemic, measures to cushion the impact of high energy prices and unresolved structural issues linked with population ageing have worsened fiscal sustainability. The expansionary fiscal policy helped preserve jobs and incomes, but has led to a large deficit (Figure 1.2) and increased public debt. Several tax cuts have aggravated the structural budget balance and untargeted cash transfers to families with children and pensioners have continued (see Box 1.1). The Czech Republic has welcomed a large number of Ukrainian refugees. Yet, expenditures to cover the cost of basic services and income support to the refugees, together with commitments to increase defence spending add to the fiscal pressures. High core inflation, an overheated labour market and relatively high growth in household incomes over 2020-21 indicate that the accommodative overall macroeconomic policy stance contributed to domestic inflationary pressures. Monetary policy tightening started early, but fiscal policy has yet to initiate a firm consolidation path.

Figure 1.2. Fiscal sustainability pressures have increased



Note: In Panel B youth are shown in green, 25-64 year-olds in blue and seniors in orange. After 2021 data are from the "medium variant" of UN scenarios.

Source: OECD Economic Outlook database; United Nations (2022), World Population Prospects: The 2022 Revision, Online Edition.

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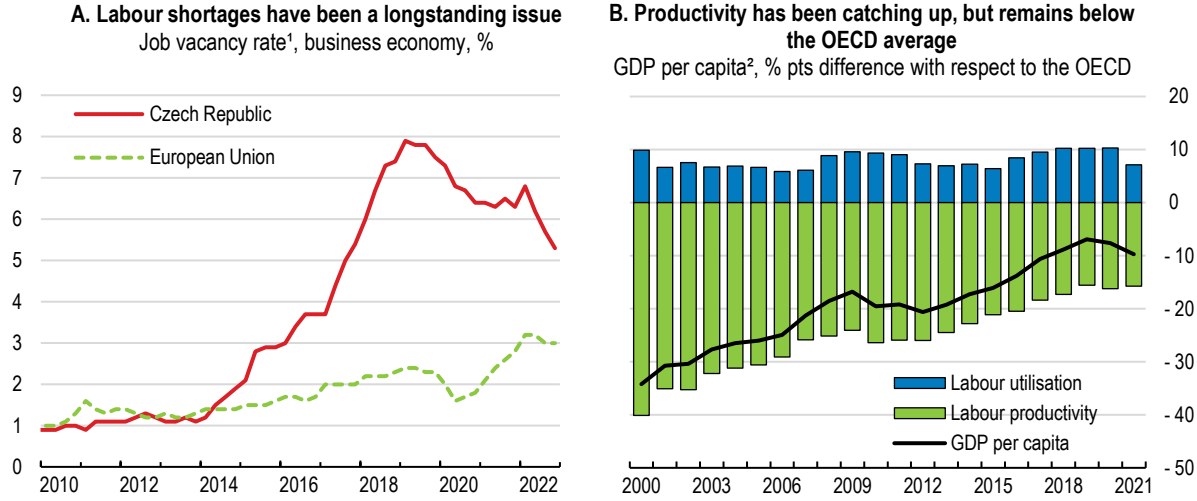
The labour market has performed well, also thanks to the substantial government support during the pandemic, with a very high employment rate and one of the lowest unemployment rates in the OECD. Yet, chronic labour (Figure 1.3) and skills shortages are set to become worse with ageing. Raising labour participation further - notably of underrepresented groups - could aid growth, incomes and equity. Reducing the sizable gender labour income gap and bringing more mothers to work will help in this regard. Increasing labour participation of older workers would limit growing imbalances in the pension system. Raising skills could also boost productivity, which after an impressive period of catch-up still lags behind the OECD average (Figure 1.3). More equitable provision of education and skills and effective lifelong learning would help tackle skills shortages and spur growth. The Czech Republic could also better attract and retain skilled foreign labour.

Figure 1.3. Tackling labour shortages and lifting productivity would increase living standards



1. The job vacancy rate is the number of job vacancies expressed as a percentage of the sum of the number of occupied posts and the number of job vacancies.

2. GDP is measured by GDP at current prices, current PPPs. Labour productivity is measured by GDP per hour worked and labour utilisation is the total number of hours worked divided by the population.

Source: Eurostat; OECD Productivity database.

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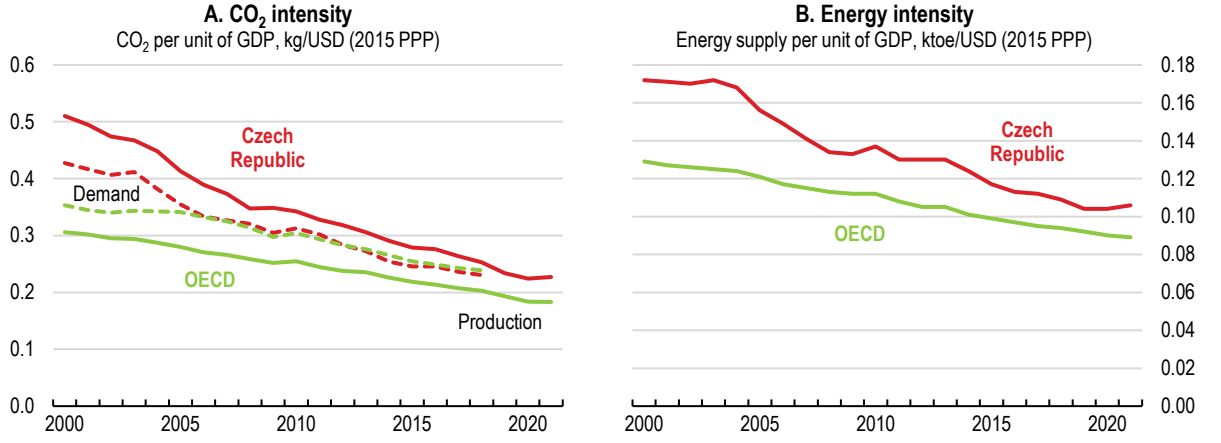
The current energy crisis is an opportunity to strengthen the resolve for climate commitments. The Czech economy is highly energy intensive, still heavily relies on coal and records high greenhouse gas (GHG) emissions (Figure 1.4). In addition, public support for the climate agenda is relatively weak - albeit growing. Steep rises in energy prices - notably gas - present genuine hardship for many households and companies, and the government has introduced measures to cushion their impact. However, incentives to encourage energy-saving behaviour and investments into alternative and renewable sources of energy should be maintained. The availability of considerable recovery funds at the EU level will be an opportunity to step up investments to decarbonise the economy. A stable policy environment, an improved investment climate and a lower regulatory burden can help boost investment and lift growth in a sustainable way.

Figure 1.4. Greenhouse gas emissions and energy intensity are high



Source: Green Growth Indicators, OECD Environment Statistics; IEA World Energy Statistics and Balances.

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Against this background, the main messages of this Survey are:

- A tight macroeconomic policy is warranted until inflation and inflation expectations are firmly under control. While providing targeted support, steady fiscal consolidation is called for to rebuild buffers and contribute to the fight against inflation. An overdue reform of the pension system would help contain steep future rises in public expenditures due to population ageing.
- Higher labour participation would help address chronic labour shortages and support growth. Lengthening the working lives of workers as well as bringing more mothers into employment could raise incomes. Stronger education and skills – notably of disadvantaged children and low-skilled adults – would raise productivity and make growth more equitable. Focusing immigration policy on welcoming high-skilled foreign labour and boosting retention would also raise workforce skills.
- Policies to reduce the reliance on coal and greenhouse gas emissions would boost well-being. Once high market prices of energy abate, more ambitious and more equitable pricing of carbon should be pursued. Increased public funding and an improved business climate would boost investment in renewable energy sources and energy efficiency. At the same time, active labour market policies to support workers in job search and reskilling would aid green restructuring.

Box 1.1. Key government policy priorities

Following the general election in October 2021, a new five-party centre-right coalition government was formed. Its current priority is to steer the economy and society in the face of rising costs of living, an energy crisis, slowing economy and the remaining risks stemming from the COVID-19 pandemic.

Key priorities of the current government include the following (as listed in its January 2022 Policy Statement):

- Stabilisation of public finances: the need for responsible budgetary policy, including in the long term, by reforming and improving public spending without raising the tax burden on the economy.
- Focus on the European Union and NATO: emphasis on stable partnerships with democracies around the world and the protection of human rights and democracy.
- Pension reform: based on a society-wide consensus that would ensure economic safety in old age for all.
- Education: improving education and skills of all, via effective teachers, improved teaching techniques and modern curricula.
- Free market support: promoting small and medium-sized enterprises and fostering competition.
- Environment: recognising the immediate need to tackle climate change and finding solutions to help protect the environment.
- Housing: offering solutions to support owner-occupied and rented housing, including social housing, notably by accelerating building permit proceedings.
- Science and research: building on the existing high-quality human capital and innovative potential to further support science and research.
- Modern government and digitisation: making public administration modern, lean and flexible by bringing the best talent to provide high-quality services to citizens. Digitising state processes to make state administration more efficient and cheaper, and to deter corruption more effectively.
- Responsibility to voters and political culture: improving political culture by relying on honest, competent and trustworthy individuals without conflict of interests; increasing the transparency of the political process.

The economic outlook has deteriorated

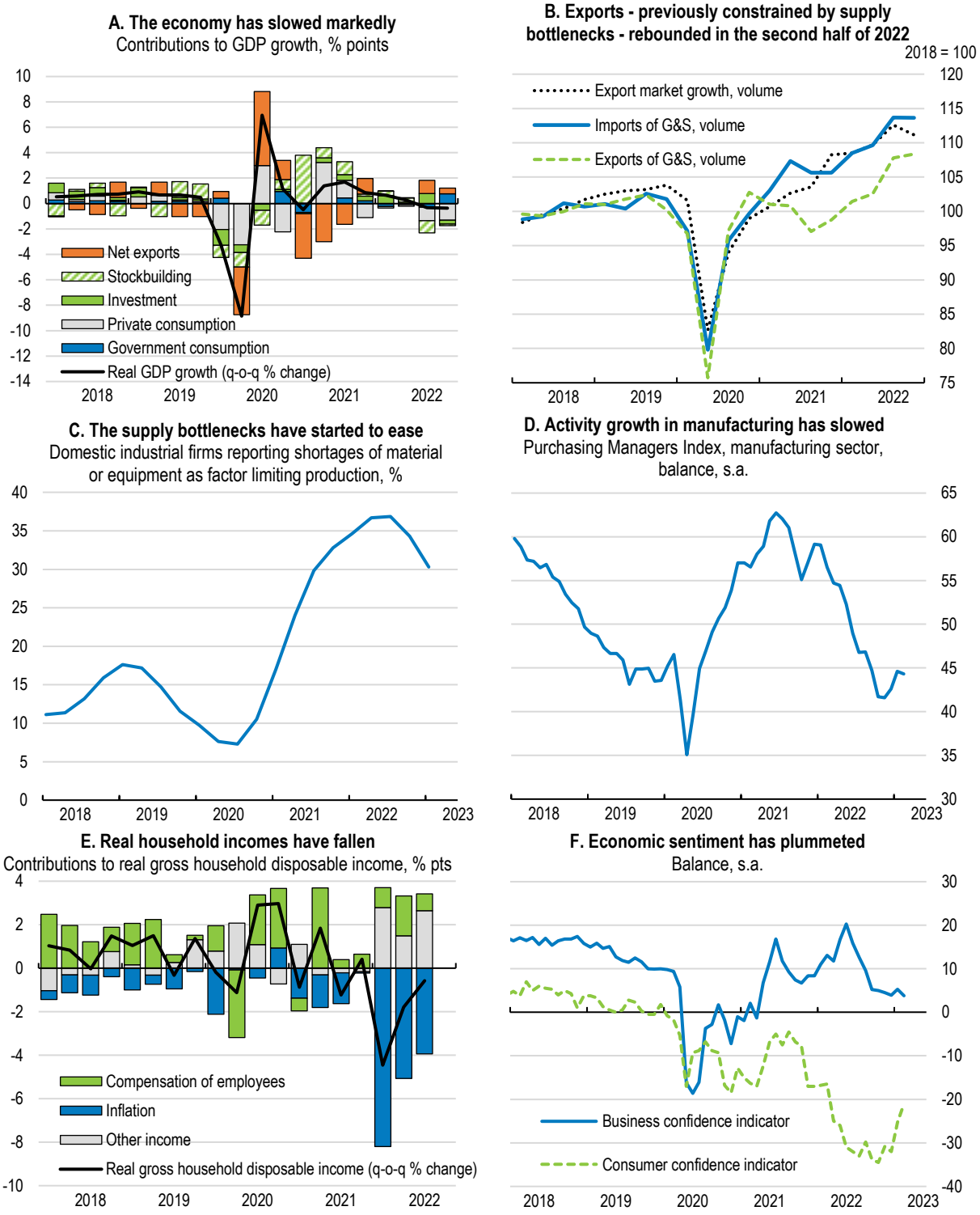
The economy has slowed and inflation has risen

The Czech Republic has been strongly affected by Russia's war against Ukraine through lower global demand, rising energy prices, the risk of energy shortages and generally higher uncertainty. Before the war, virtually all natural gas was imported from Russia, contributing to roughly one third of heat and 8% of electricity production. Russia accounted for more than half of crude oil imports, some of which were delivered through the Druzhba pipeline, which has been exempted from the EU's oil embargo. Total domestic gas reserves at end-2022 stood at 85% of the total capacity, a high level for the time of year. Through October-December 2022, Czechs consumed roughly 19% less gas compared to the same period over the last three years.

The economy has slowed markedly due to rising costs and weakening domestic demand. Russia's war against Ukraine has added to pressures on energy and commodity prices. Rising consumer prices have squeezed real household incomes (Figure 1.5). High uncertainty related to the war and the looming energy crisis have contributed to a sharp drop in consumer and business sentiment (Figure 1.5), dampening household consumption and private investment. The services industries, such as accommodation and

catering, which had rebounded in early 2022 following the removal of pandemic restrictions, have slowed due to weakened demand and rising input costs. On the other hand, exports – that were for a long time constrained by disruptions in the supply of raw materials and components – rebounded in the second half of 2022 (Figure 1.5), as supply chain bottlenecks started easing.

Figure 1.5. The economy has slowed



Source: OECD Economic Outlook database; Czech National Bank; Refinitiv, Eurostat; Czech Statistical Office.

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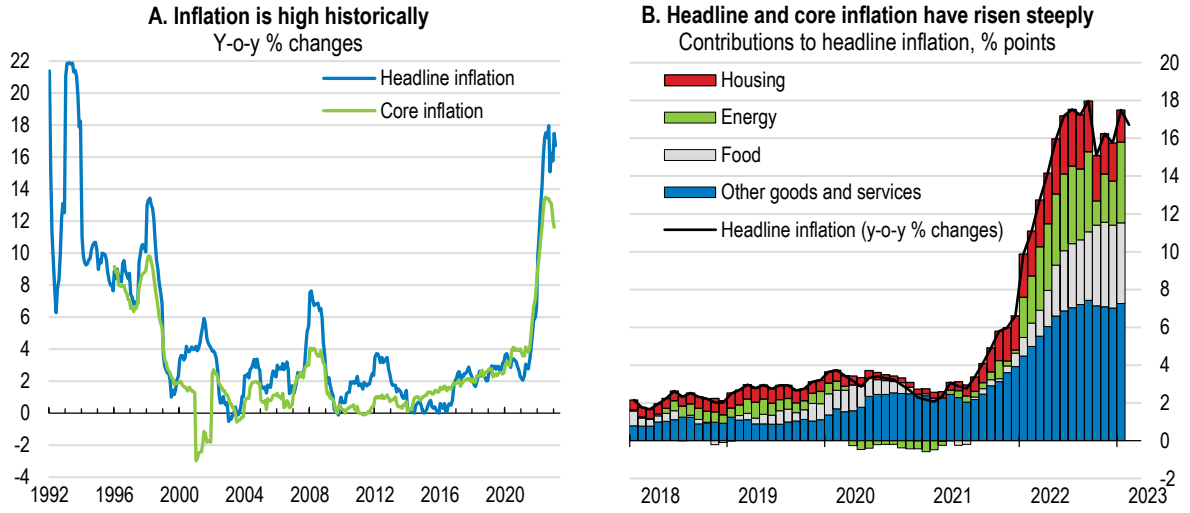
Inflation has risen to very high levels. Consumer price inflation peaked at 18% in September 2022, the highest level in almost 30 years (Figure 1.6). The labour market remains tight (Figure 1.7) and the unemployment rate - at 2.1% in 2022 Q4 – has been the lowest in the OECD. Like prior to the COVID-19 crisis, Czech companies in almost all sectors are once again experiencing labour shortages (Ministry of Finance, 2022a). Yet, nominal wages have risen more slowly than prices, and, in real terms, wages have fallen steeply (Figure 1.7). A large influx of Ukrainian refugees has eased labour market tightness slightly and with high labour demand, they found employment easily. More than a third of refugees of working age were employed as of end-February 2023.

Figure 1.6. Inflation has risen to very high levels



Source: OECD Consumer Prices Indices database.

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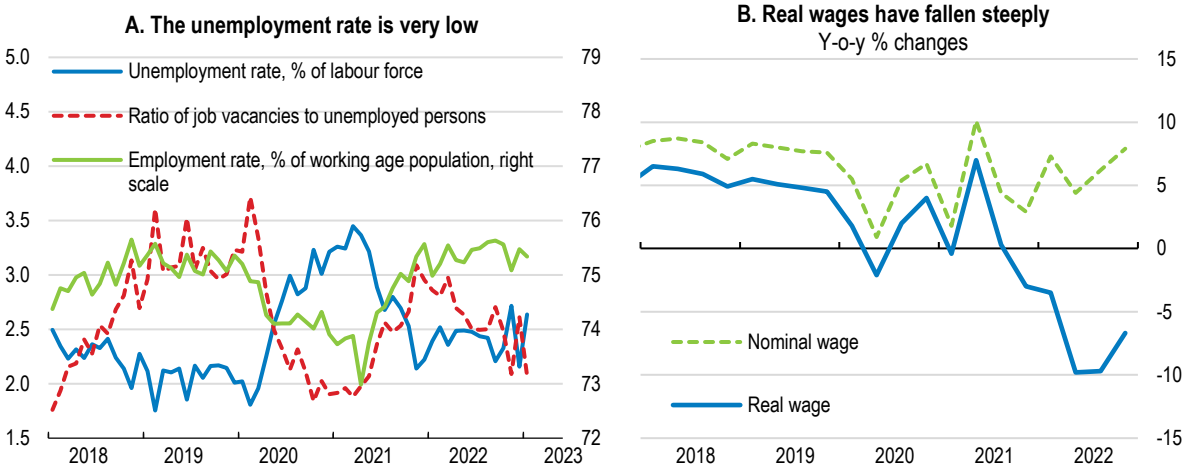
Figure 1.7. The labour market remains tight



Source: Czech Statistical Office; Refinitiv.

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Growth will remain moderate, with considerable risks

The economy entered a recession in the second half of 2022, on the back of high energy prices, the threat of energy shortages and continued high uncertainty due to Russia's war against Ukraine. Annual GDP growth will be subdued in 2023, before picking up in 2024. Private consumption will remain weak due to elevated inflation and diminished household savings that had been accumulated during the coronavirus

pandemic. Activity will pick up in 2024 amid eased global supply disruptions. Resuming growth in trading partners will spur exports and trade. In 2023, inflation will start falling from currently very high levels. Real wage growth will turn positive in 2024. Nonetheless, tight financing conditions and slowing public investment due to the transition to the European Union's new multiannual financial framework will be a drag on GDP growth. The unemployment rate will remain below 3%.

Table 1.1. Macroeconomic indicators and projections

Annual percentage change, volume (2015 prices)

	2019 Current prices (billion CZK)	2020	2021	Estimates and projections 2022	2023	2024
Gross domestic product (GDP)	**5,793.9**	**-5.5**	**3.5**	**2.4**	**0.1**	**2.4**
Private consumption	2,712.0	-7.2	4.1	-0.9	-2.7	2.4
Government consumption	1,134.5	4.2	1.4	0.7	3.0	1.2
Gross fixed capital formation	1,568.2	-6.0	0.8	6.2	1.3	0.9
Final domestic demand	5,414.7	-4.5	2.5	1.4	-0.3	1.7
Stockbuilding[1]	29.8	-0.9	4.8	0.9	-0.7	0.0
Total domestic demand	5,444.5	-5.4	7.6	2.3	-1.0	1.6
Exports of goods and services	4,284.6	-8.1	6.8	5.7	4.2	4.1
Imports of goods and services	3,935.2	-8.2	13.2	5.7	2.9	3.0
Net exports[1]	349.4	-0.4	-3.6	0.2	0.9	0.8
Other indicators (growth rates, unless specified)						
Potential GDP	. .	1.7	1.5	3.2	1.2	1.2
Output gap[2]	. .	-1.1	0.9	0.1	-0.9	0.2
Employment[3]	. .	-1.3	-0.6	-0.5	0.1	0.0
Unemployment rate (% of labour force)	. .	2.5	2.8	2.3	2.6	2.8
GDP deflator	. .	4.3	3.3	8.4	9.1	4.2
Consumer price index	. .	3.2	3.8	15.1	13.0	4.1
Core consumer price index[4]	. .	3.6	5.0	12.2	9.5	4.1
Household saving ratio, net (% of disposable income)	. .	14.7	14.8	8.3	7.9	7.6
Current account balance (% of GDP)	. .	2.0	-0.8	-5.9	-4.7	-5.1
General government financial balance (% of GDP)	. .	-5.8	-5.1	-3.8	-4.3	-3.7
Underlying government primary financial balance[2]	. .	-2.4	-3.5	-2.3	-1.8	-2.4
General government gross debt (% of GDP)	. .	47.0	48.5	51.0	54.0	56.5
General government gross debt (Maastricht, % of GDP)	. .	37.6	42.0	44.5	47.5	50.0
Three-month money market rate, average	. .	0.9	1.1	6.3	7.1	5.5
Ten-year government bond yield, average	. .	1.1	1.9	4.3	5.0	3.9

1. Contribution to changes in real GDP.
2. Percentage of potential GDP.
3. Following the 2021 Population and Housing Census, new demographic weights were applied in the LFS statistics starting in Q1 2022, leading to a substantial reduction in the number of employed and unemployed persons. Thus, there is a break in the time series and data are not directly comparable. Relative indicators (e.g., unemployment or participation rates) have not been affected by this change.
4. Consumer price index excluding food and energy.
Source: Calculations based on OECD Economic Outlook 112 database.

The outlook is clouded by very high uncertainty. Disruption in supply of energy, notably natural gas in case of depleted storages later in 2023, could restrict economic activity over the next two years. Unexpected further rises in commodity and energy prices, steep high depreciation of the koruna exchange rate and derailed inflation expectations could feed inflationary pressures and make inflation more persistent. A breakdown of trust among social partners could result in a wage-price spiral. Social unrest due to energy shortages and rising energy prices could prompt excessively loose fiscal policy, further fuelling inflation and destabilising public finances. In contrast, deeper recessions domestically and abroad and lower confidence would reduce inflationary pressures. Rising unemployment and higher interest rates could push some debtors in default and dampen demand. A new strain of the coronavirus could dampen growth should restrictive measures be required.

Table 1.2. Events that could lead to major changes in the outlook

Shock	Possible impact
Global energy and food crisis	An intensification of energy and food supply disruptions would further accelerate inflation and cause a contraction in global trade, leading to a deep recession.
Further heightened geopolitical tensions	Geopolitical instability would increase uncertainty and weaken both domestic and external demand, with negative budgetary repercussions.
Major house price correction and sudden steep rises in interest rates	A large correction in housing prices could expose vulnerabilities in the financial system, causing a crisis in the financial sector that could feed back to the real economy. In addition, sudden rises in interest rates would sharply increase debt-servicing costs for highly leveraged households and investors, raising the risk of defaults.
Outbreak of a new vaccine-resistant COVID variant	Further waves of infections could potentially lead to new containment measures and lower domestic and foreign demand (and supply).

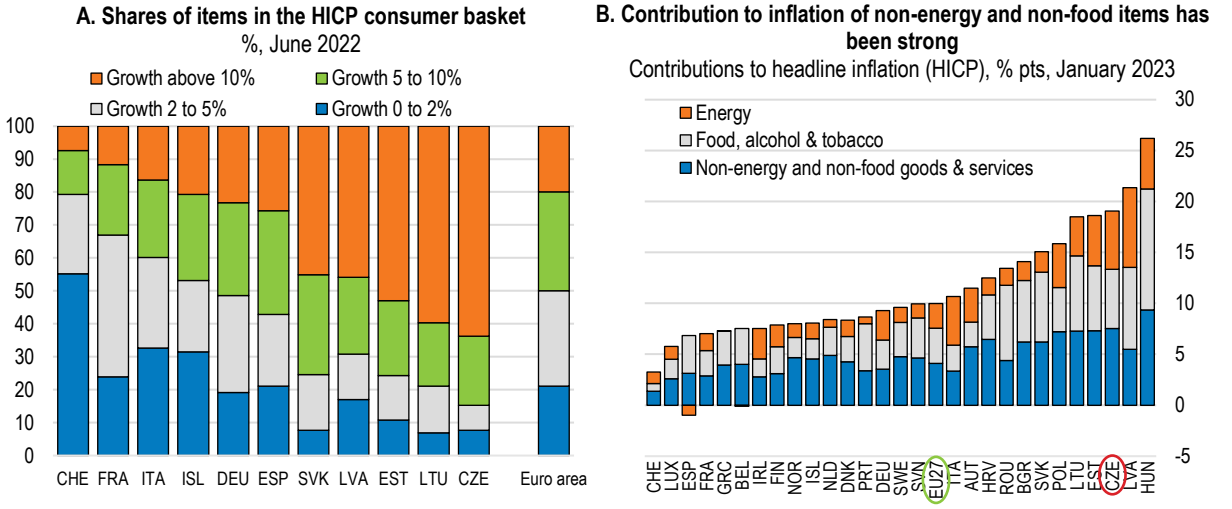
A tight macroeconomic policy stance is warranted

The policy stance fell short of containing inflation

Inflation has risen steeply and become entrenched. Steep rises in volatile prices of energy and food items from abroad only partly account for the take-off of inflation. Price rises have rapidly spread and become broad-based. Core inflation reached 14% in October 2022. The Czech Republic recorded the highest core inflation rates (HICP excluding energy, food, alcohol and tobacco) among EU economies between December 2021 and October 2022. According to the Czech National Bank (2022a), prices of more than two thirds of the items in the HICP basket rose by more than 10% year-on-year by June 2022, the highest share in the European Union (Figure 1.8). Moreover, the contribution of non-energy and non-food goods and services prices to headline HICP inflation has also been among the strongest in the EU (Figure 1.9).

In hindsight, the combined fiscal and monetary policy stance in 2020-21 was overly accommodative. This boosted demand over supply capacities, resulting in strong inflationary pressures, as manifested in broad-based and steeply rising core inflation and a very tight labour market. Despite an average annual fall in real GDP of 1% over 2020-21, Czech households recorded a 2.8% growth in real incomes (Figure 1.9), boosted by fiscal transfers and tax cuts. This contributed to demand pressures and enabled firms to pass on growing costs to consumers (Czech National Bank, 2022a).

Figure 1.8. Inflation is broad-based



Source: Czech National Bank; OECD calculations based on Eurostat.

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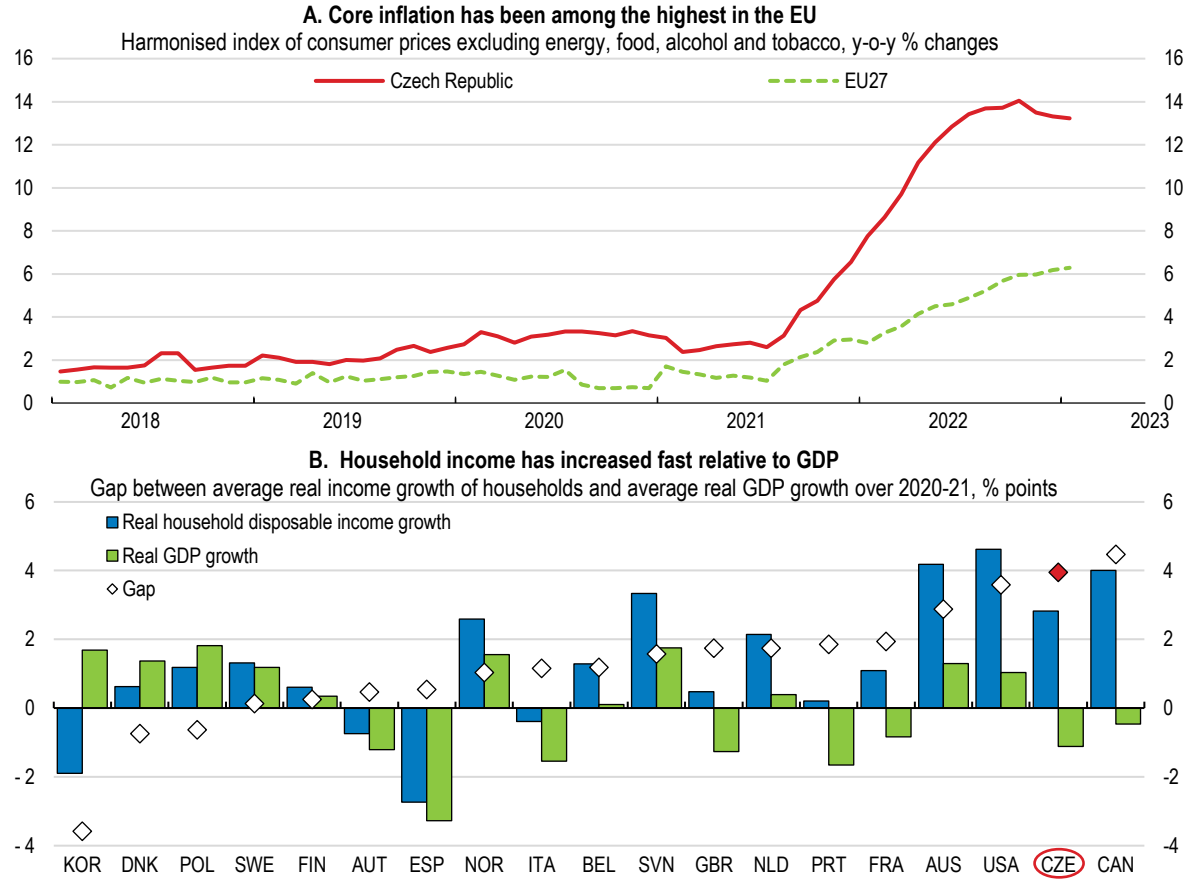
Figure 1.9. Inflation has soared amid growth in household incomes over 2020-21



Source: Eurostat; OECD calculations based on OECD Economic Outlook database.

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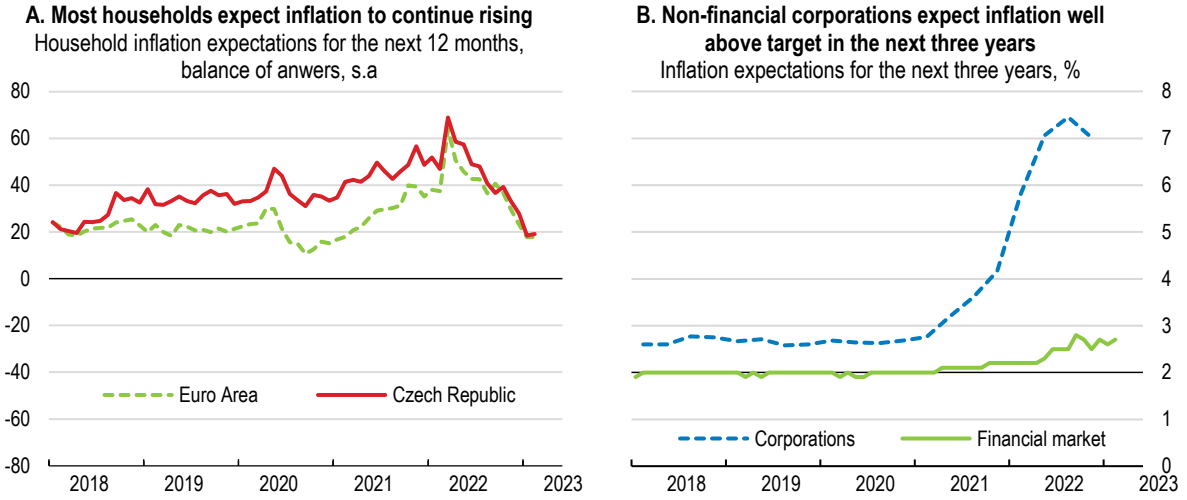
Monetary policy should remain tight

Inflation expectations have increased markedly. Most households expect inflation to continue rising in the next 12 months (Figure 1.10). Surveys show that between June and January 2023, market analysts expected inflation of at least 2.5% at a three-year horizon - above the 2% target level (CNB, 2023, 2022b and 2022f). In contrast, corporations show greater doubts about the ability of the Czech National Bank (CNB) to control inflation, with expectations of inflation at around 7% in three-years' time (Figure 1.10; CNB, 2022d).

Faced with rising prices and a risk of de-anchored inflation expectations, the CNB has rightly tightened monetary policy. Between June 2021 and June 2022, it raised the policy interest rate from 0.25% to 7%, after which it paused its hiking cycle. In August 2022, the CNB announced that its monetary policy decision was based on a 18-24 month horizon, half a year longer than before, and in November 2022 it based its monetary policy decision on a 15-21 month horizon. Shifting the horizon has been a temporary reaction of the Bank Board to uncertainty connected to the war in Ukraine and its repercussions. Consequently, the inflation target of 2% is now to be reached further away in the future compared with decisions made prior to August 2022.

Figure 1.10. Inflation expectations have increased markedly



Note: Panel A shows balances - differences between the percentages of respondents giving positive and negative replies to a question "In comparison with the past 12 months, how do you expect consumer prices will develop in the next 12 months?", with possible answers: Increase more rapidly, increase at the same rate, increase at a slower rate, stay about the same, or fall.
Source: European Commission surveys; Czech National Bank.

StatLink https://stat.link/nl1mfs

The CNB has intervened on the foreign exchange market to reduce volatility and to stem depreciation pressures on the koruna. Interventions started in March 2022 and intensified between May and September 2022. In cumulative terms, between May and September, the CNB used 26 billion euros of its international reserves in foreign exchange trading.

The monetary policy stance should remain tight until inflation is firmly on course to decline towards the 2% target. Managing inflation expectations is of paramount importance to prevent costly re-anchoring of expectations. The CNB should continue to weigh carefully the mix of demand and supply pressures on inflation and the high risks surrounding the current outlook. It should reinforce communication about its stated policy goals and tools to achieve them, to give market participants clear and straightforward guidance. While inflation is high and inflation expectations rising, reforms to the central bank's communication strategy or policy framework can be risky. Moreover, the key policy rate should remain the main monetary policy tool. Foreign exchange interventions should primarily be used to prevent excessive fluctuations of the koruna. Interventions are not a sustainable tool to stave off persistent depreciation pressures, particularly so given the expected narrowing of the interest rate differential with the rest of the world.

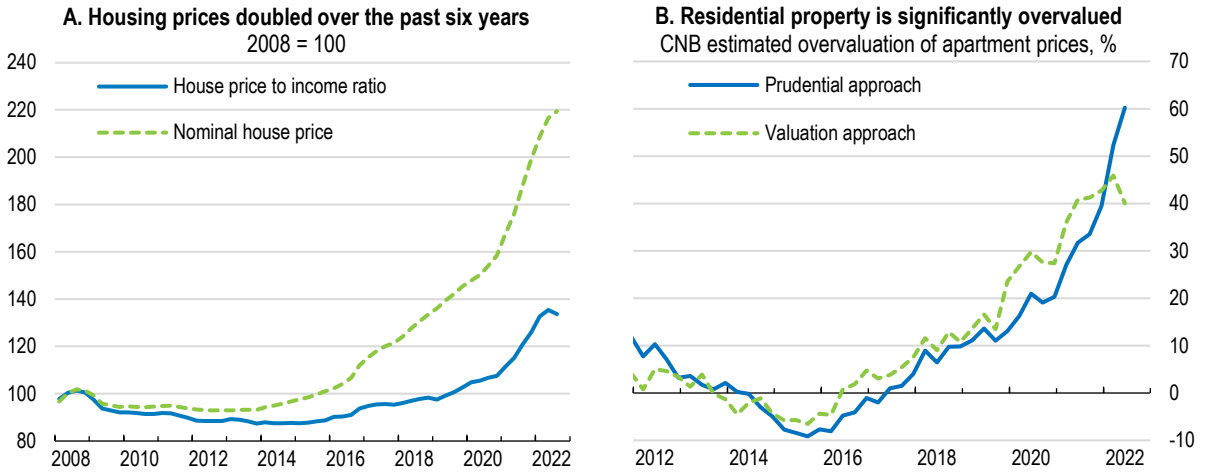
The financial sector is resilient but risks stemming from the housing market should be closely monitored

The Czech financial sector is stable and resilient overall. In 2021 and the first half of 2022, it saw solid growth in total assets and profitability. Banks are well capitalised and benefit from ample liquidity. This in part reflects favourable effects of the post-pandemic economic recovery on non-financial corporations and a very low corporate default rate in 2021 and early 2022. Stress tests of the CNB (2022c and 2022e) show that thanks to strong capital buffers the banking sector can absorb shocks and would comply with the regulatory limits on capital and leverage ratios even after a significant shock.

Housing prices continued rising steeply in early 2022 and residential property is increasingly overvalued. Year-on-year growth in residential property prices stood at 25% in Q1 2022. Housing prices doubled over the past six years and grew much faster than incomes (Figure 1.11). The CNB (2022e) estimates that apartments are 40-60% overvalued (Figure 1.11). Worsening affordability has bolstered demand for

increasingly outsized loans to allow real estate acquisition. The total amount of new mortgage loans was high in 2021, while credit standards remained relatively relaxed between the second half of 2020 and April 2022. This occurred in part due to looser regulatory requirements on individual mortgage loans. These had been relaxed by the CNB at the start of the coronavirus crisis to support banks' ability to provide credit. Over this period, the amount of mortgage loans with risky characteristics rose significantly (CNB, 2022c, ESRB, 2022).

Figure 1.11. Housing prices continued rising steeply



Source: OECD, Analytical House Price Indicators database; CNB Financial Stability Report – Autumn 2022.

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The domestic banking sector has become increasingly concentrated on property financing loans over the years. Their share in loans to the private non-financial sector reached 63% at the end of 2021. At the same time, the implicit risk weights on housing loans used by banks reached record low levels (CNB, 2022c). Czech households are not highly indebted in international comparison. Yet, a sudden correction of real estate prices or a shock to household incomes would jeopardise their ability to repay and could therefore have a system-wide impact on regulatory capital buffers with potential spillovers to financial stability. With tightening financing conditions, lending to households for house purchase has started to slow significantly. The volume of pure new loans for house purchase fell by roughly 80% year on year in December 2022 (CNB, 2023). The previous high growth in residential property prices, a rising degree of overvaluation and slowing lending activity are creating potential for a significant price correction in the future.

To counter the build-up of systemic risks in the property sector, the CNB reintroduced and tightened limits on new mortgage loans. From April 2022, the basic LTV (loan-to-value) limit is set at 80%, the upper limit on the DTI (debt-to-income) ratio at 8.5 times net annual income and that on the DSTI (debt-service-to-income) ratio at 45% of net monthly income. Higher limits – an LTV of 90%, a DTI of 9.5 and a DSTI of 50% – apply to applicants under the age of 36. In addition, since the amendment to the CNB Act in 2021, the CNB now has legally binding powers to set these limits, as also recommended in the previous *OECD Economic Survey* (OECD, 2020a). Before, the CNB could only issue recommendations in this area. However, a general exception applies, where lenders can, in specific cases, approve loans that are not within the prescribed limits, but such loans cannot exceed 5% of the total volume of loans. To monitor and control risks in the property sector beyond what is prescribed under general legally binding provisions, the CNB still uses recommendations.

The CNB has also appropriately raised the countercyclical capital buffer rate to 2.5%, effective from April 2023. This follows the reduction of the countercyclical capital buffer to 0.5% at the onset of the pandemic (from 1.75% applicable at that time) to support bank credit activity. As credit growth resumed, the lower rate was no longer needed. Meanwhile, a deteriorated outlook and higher uncertainty have raised the potential for materialisation of credit risks which calls for higher capital buffers.

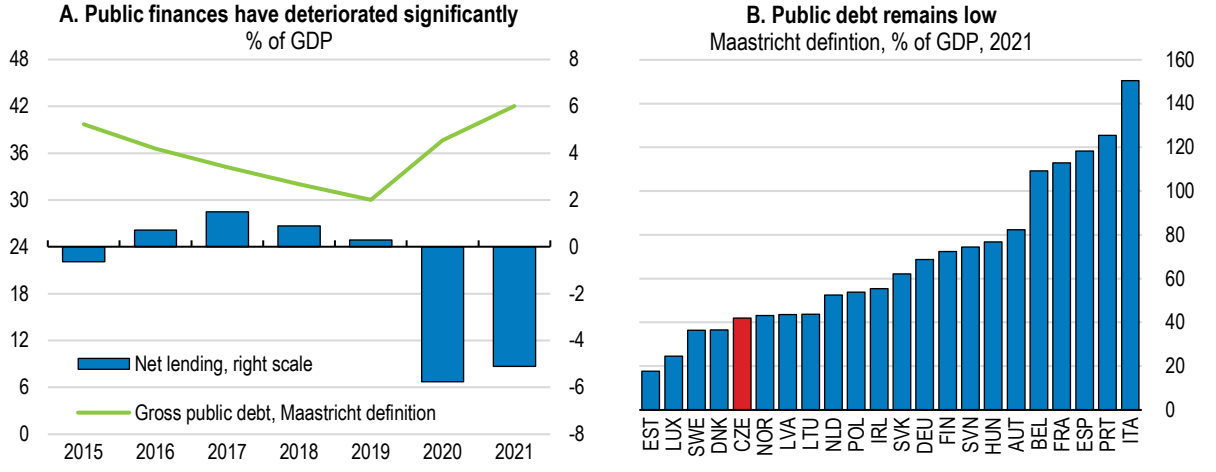
Risks stemming from the imbalances in the property market should be closely monitored and macroprudential measures and limits on mortgage loans appropriately adjusted, if needed. When setting the countercyclical buffer rate, the CNB considers the situation on the property market. However, the CNB has acknowledged that the downward trend in risk weights might not appropriately reflect the associated systemic risks (CNB, 2022c). This trend might reverse with the worsened economic outlook and as risks materialise. Also, tighter financing conditions are taking some steam out of the housing market (CNB, 2022e). But risk weights used by banks will rise only slowly. Should imbalances and the risks from the property market continue to grow, the CNB could consider applying the sectoral systemic risk buffer or setting minimum risk weights.

Imbalances also stem partly from a limited and inelastic supply of housing. As discussed in the previous Survey (OECD, 2020a), the process for obtaining construction permits is one of the slowest and most cumbersome in the OECD and among Central and Eastern European countries. Such delays in planning and issuing permits contribute to rising house prices by limiting the supply of residential housing. Furthermore, protracted processes slow down infrastructure investment - including green investment - with repercussions for the wider economy. To speed up and streamline the processes, the government is preparing a comprehensive overhaul of the legislation and regulations related to construction permits. Easier issuance of construction permits, together with reduced red tape, would help drive investment, unleash the entrepreneurial potential and lift productivity growth.

Returning to prudent fiscal policy

Expansionary fiscal policy, notably over 2020 and 2021, has weakened the public finance position. The fiscal balance of the general government went from a small surplus in 2019 to a large deficit of more than 5% of GDP in 2020 and 2021 (Figure 1.12). Public debt rose by 12 percentage points, to 42% of GDP in 2021, and is expected to grow further, to 50% in 2024. Fiscal expansion effectively aided the economy during the coronavirus pandemic by providing a needed fiscal impulse. However, not all measures were well-targeted or linked to the pandemic and, while the pandemic was temporary, some measures permanently worsened the fiscal balance. Most notably, a tax package (lowering personal income taxes and abolishing the real estate stamp duty) adopted in late 2020 permanently reduced tax revenues by close to 2 percentage points of GDP (Czech Fiscal Council, 2021).

Figure 1.12. Expansionary fiscal policy has weakened a strong fiscal position



Source: OECD Economic Outlook database.

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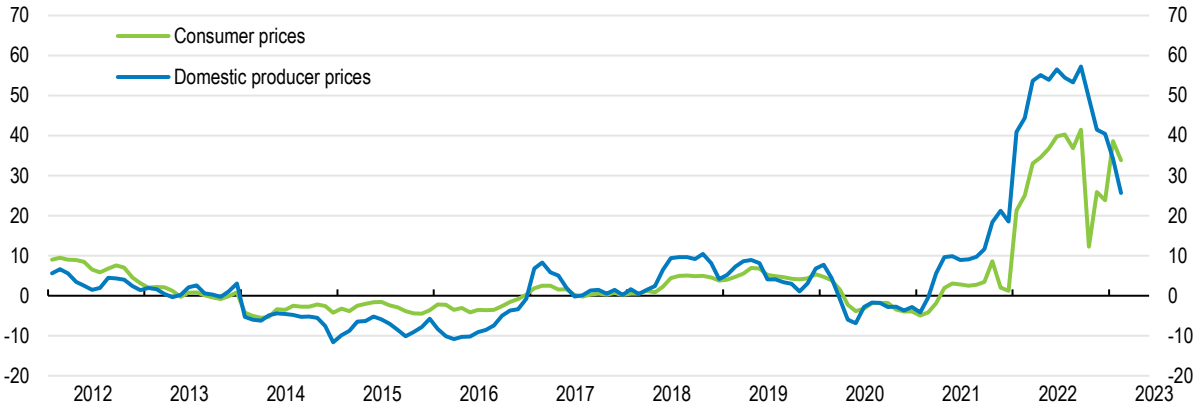
In the current challenging situation, amid the war in Ukraine and rising costs of living, pressures on public spending have risen further. Reflecting NATO targets, the government has committed to raise defence

spending more quickly, from the current 1.3% to 2% of GDP by 2024. Czech households are among the most exposed to high gas and electricity prices in Europe due to a high share of energy spending in total consumption (Ari et al., 2022). To counter high prices of energy (Figure 1.13), and high prices of other goods and services the government has introduced several support measures (Table 1.3). Most notably, it has boosted cash benefits and social transfers in kind to help vulnerable households. Additional income support to households and firms highly affected by rising energy prices has been introduced. Several price measures have also been introduced. The government has offered help with energy bills for households, it has eliminated the road tax, temporarily lowered excise tax rates on diesel and petrol and waived the renewable energy levy.

Figure 1.13. Energy prices have risen steeply

Energy prices, year-on-year % change



Source: OECD Consumer and Producer prices indices.

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The Czech Republic faces high fiscal pressures in the medium to long term that threaten fiscal sustainability. Both the European Commission and the Czech Fiscal Council have expressed concerns about the fiscal situation (European Commission, 2022a; Czech Fiscal Council 2021 and 2022a). As in many other OECD economies, population ageing will result in steep rises in public spending on pensions, health, and long-term care. Whereas the debt-to-GDP ratio remains relatively benign in international comparison (Figure 1.12), it is set to rise dramatically in the future. Based on long-term OECD scenarios (Guillemette and Turner, 2021), without reform, government debt would rise to 170% of GDP in 2060 (Figure 1.14). In other words, a substantial increase in revenues would be required - - by up to 11 percentage points of GDP in 2060 - to counter the expected rise in expenditures and maintain a constant public debt ratio. Another option would be to cut other spending programmes with potentially adverse effects on equity, productivity, and climate.

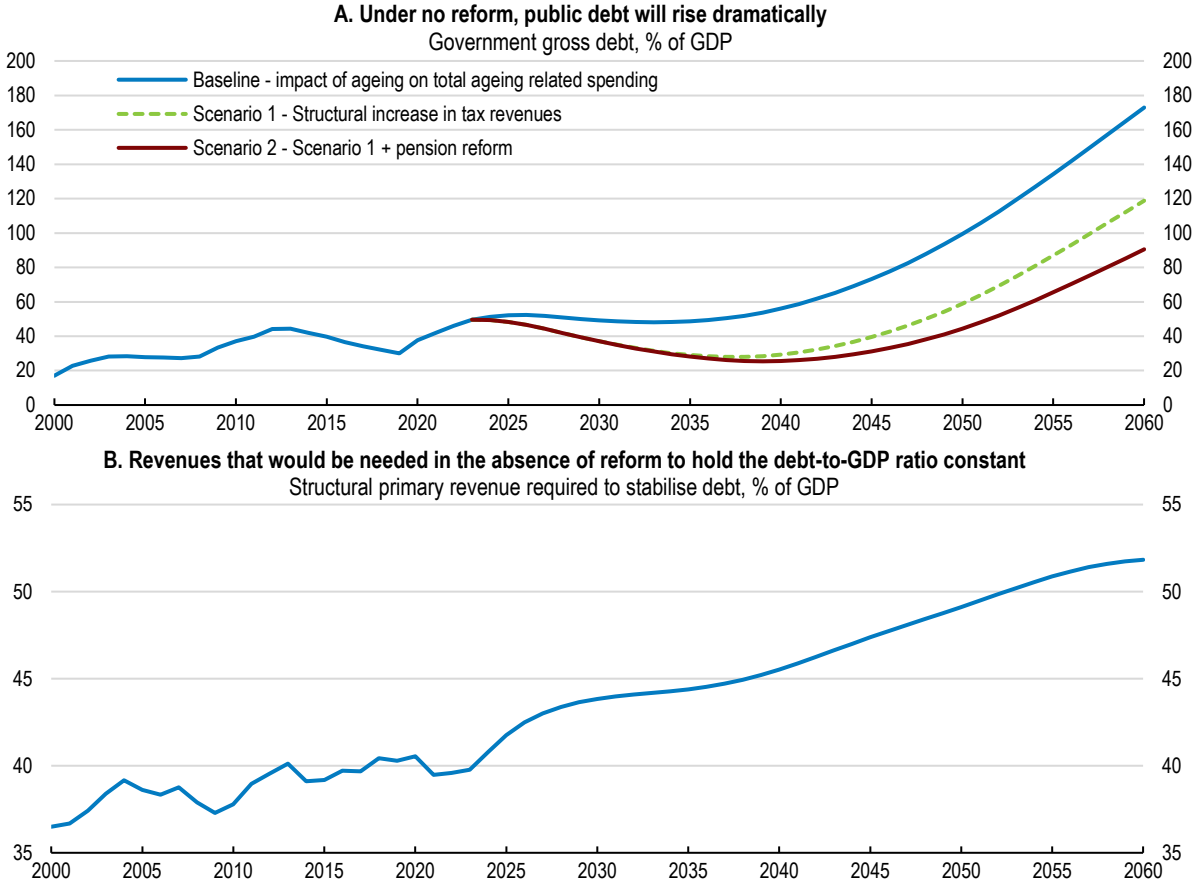
With very high inflation and a worsened fiscal situation, fiscal policy should carefully balance the need to cushion living standards with the need to avoid further macroeconomic stimulus. The fiscal policy stance should tighten to support monetary policy in fighting inflation. The role of fiscal policy is to protect the most vulnerable rather than provide blanket support. However, recently introduced measures to counter high prices of energy have been poorly targeted. The tendency to hand out non-targeted cash transfers has continued. For instance, discretionary increases in pensions above statutorily prescribed levels have persisted. Despite already generous cash benefits for families, the government introduced in 2022 a one-off allowance of CZK 5 000 (EUR 200) per child under age 18 for families with children under a certain income threshold, covering 90% of families.

Table 1.3. The government's policies to offset energy price increases

Measure	Description	Total amount (billion CZK)
Waiving of VAT on electricity and gas	Temporary waiving between November and December 2021.	5.4
Aid to Households and Entrepreneurs Act	Targeted assistance for those significantly affected by rising energy prices. Small and medium enterprises that have experienced increases of their energy bills of more than 100% are offered a state-backed guarantee with a 0% interest rate to meet the costs of their operational expenses.	…
Cash support to households	One-off allowance CZK 5,000 per child for families with annual gross income up to CZK 1 million (covers about 90% of families). Increase in subsistence and subsistence minimum amounts by 10% from April 2022 and by 8.8% from July 2022. A further increase (by 5.2%) is planned in 2023. The government also increased the housing benefit and changed its parameters. In 2023, the child allowance will be increased by CZK 200. Foster care benefits will also increase.	13.6 in 2022 and 7.8 in 2023
Reduced transport taxes and similar	The government cancelled road taxes for cars, buses and trucks up to twelve tons for 2022. The obligation to add more expensive biofuels to gasoline and diesel was removed. Temporary reduction of duties on petrol and diesel by CZK 1.5 per liter (from June 1 to September 30, 2022). The temporary reduction on diesel was extended until the end of 2023.	10.9 in 2022 and 13.8 in 2023
Liquidity lines	CEZ, the largest utility company operating in the country, signed a credit agreement with the Ministry of Finance in July 2022 for up to EUR 3 billion, providing needed liquidity to the company.	74
Energy Savings Tariff and other support	The government has provided support to all households facing high energy prices from October to December 2022. That is, those who use electricity, gas and households that produce heat through domestic boiler rooms and through central heating.	21.9
Waiver of renewable fees	The government will waive fees for supported renewable energy sources (POZE). This is expected to generate savings of 599 CZK for every megawatt hour of electricity consumed by households and firms.	4.6 in 2022 and 18.4 in 2023
Energy price cap	Energy prices are capped for the year 2023. The cap applies to all households, small and medium-sized enterprises, government institutions, schools, providers of health and social services, operators of urban mass transit, and other entities. Electricity prices are capped at CZK 6.05/kWh, including VAT covering the total consumption for low voltage users (households, SMEs, the self-employed). For small and medium-sized enterprises connected to high and very high voltages, the capping applies to 80% of the highest monthly consumption for that specific month over the past five years (or 80% of the actual consumption in a month if higher than the reference consumption). Gas prices are capped at CZK 3.025/kWh, including VAT, for households and small-volume customers for up to 630 MWh/year. For all small and medium-sized enterprises, it applies only to 80% of their highest monthly consumption over the past five years in that specific month (or 80% of actual consumption if higher). The government has also introduced a price cap on electricity and gas for large enterprises and customers, which are not covered by the measures targeted to SMEs, for the year 2023.	approx. 83 for households and SMEs and 40 for large energy-intensive enterprises
Temporary electricity and gas support to companies	Companies with gas supply contracts with an annual consumption of more than 630 MWh will be eligible. Companies that use high or very high voltages and are at an operating loss will also be eligible for support. However, at least fifty percent of the operating loss should be due to the increase in natural gas and electricity costs. Support will be provided from November 2022.	30

The support to counter high energy prices should be better targeted to vulnerable households and price measures should be avoided. Such support can be very costly and tends to predominantly benefit high-income households that are the biggest consumers. In case price measures are introduced, they should be well designed so that they remain strictly temporary and contingent on market price developments. Moreover, price caps should be sufficiently high to preserve incentives for energy-saving behaviour and energy efficiency investments. Any support to firms should also be temporary, targeted to otherwise viable firms, and include incentives to reduce energy use. The Czech Republic should build institutional and statistical capacity to operate a sophisticated transfer and social welfare system that can target vulnerable populations based on several criteria. Besides income, additional criteria could include housing location and quality, household composition and access to public infrastructure (OECD, 2022f).

Figure 1.14. Medium to long term fiscal pressures threaten fiscal sustainability



Note: The projections are illustrative. The OECD Long-term model considers demographics but also the Baumol effect – i.e., the tendency for the relative price of services to increase over time. It is also assumed that other primary expenditures (other than health and pensions) are affected by ageing. The assumption is that governments would seek to provide a constant level of services in real per capita terms. This translates into higher fiscal pressure when the employment / population ratio falls. In addition, the scenarios assume that public pensions will grow roughly at the pace of wages, keeping average benefit ratio constant (Guillemette and Turner, 2021). Panel A shows the required increase in public revenues to keep debt-to-GDP ratio steady amid rising costs due to ageing. Panel B assumes that rising ageing costs are financed with deficits. In scenario 1, we assume an illustrative reversal of the 2020 tax package, resulting in an improvement in structural balance of 2 percentage points of GDP. Scenario 2 adds a pension reform, where statutory retirement age for both genders is raised to 67 by 2037 and rises by half of the expected gain in life expectancy thereafter.
Source: OECD calculations.

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Measures on both the expenditure and revenue side should be considered to bring down the deficit. Reversing the recent structural cut in tax revenues, for example by making personal income taxes more progressive, would help close expected future gaps in public budgets. In addition, reducing high social security contributions and shifting towards real estate, consumption and environmental taxes would make the tax mix more supportive of inclusive and sustainable growth. The Ministry of Finance has proposed a temporary windfall tax – in line with EU guidelines – to tax excess profits of firms in energy supply and trading, and fossil fuels as well as large banks. Effective from January 2023 with a duration of three years, it will tax 60% of excess profits that are defined as profits higher than average taxable income over 2018-21, augmented by 20%. Taxing excessive windfall profits of energy producers can be acceptable, as long as it does not discourage investment or put further pressures on prices. However, it undermines tax certainty and might thus worsen the investment climate. Moreover, the commitment and incentives to diversify energy sources and raise investment into renewables should also continue.

Table 1.4. The fiscal position has deteriorated

General government, % of GDP

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total revenues	**41.4**	**40.5**	**41.3**	**40.5**	**40.5**	**41.5**	**41.3**	**41.5**	**41.4**
Taxes	20.1	19.5	19.8	20.3	20.4	20.4	20.3	19.9	19.2
Social contributions	14.6	14.5	14.3	14.7	14.9	15.4	15.5	15.9	16.6
Other revenues	6.6	6.6	7.2	5.5	5.2	5.6	5.5	5.6	5.6
Total expenditures	**42.7**	**42.6**	**41.9**	**39.8**	**39.0**	**40.6**	**41.1**	**47.2**	**46.5**
Social protection	13.8	13.4	12.9	12.7	12.3	12.4	12.5	14.3	13.6
Education and health	12.1	12.1	11.9	11.4	11.5	12.1	12.4	14.4	14.9
General public services	5.2	5.2	4.7	4.6	4.2	4.4	4.4	4.7	4.6
Economic affairs	5.9	6.4	6.6	6.1	5.8	5.9	6.1	7.7	7.5
Other[1]	5.6	5.6	5.8	5.1	5.2	5.8	5.7	6.1	5.8
Net lending	**-1.3**	**-2.1**	**-0.6**	**0.7**	**1.5**	**0.9**	**0.3**	**-5.8**	**-5.1**
Primary balance	-0.2	-1.0	0.3	1.5	2.1	1.5	0.8	-5.2	-4.5
Gross debt	**56.1**	**55.0**	**51.7**	**47.5**	**43.3**	**40.1**	**37.8**	**47.0**	**48.5**
Gross debt, Maastricht definition	**44.4**	**41.9**	**39.7**	**36.6**	**34.2**	**32.0**	**30.0**	**37.6**	**42.0**
Net debt	15.6	17.8	17.8	16.7	11.5	8.7	8.0	13.6	13.1

1. Defence; public order and safety; housing and community amenities; recreation, culture and religion; environment protection.
Source: OECD National Accounts database; Economic Outlook database.

On the expenditure side, priority should be given to targeted support to the vulnerable, raising skills, boosting labour participation, as well as productivity-enhancing and green investment. Substantial funding from the EU Recovery and Resilience Facility (2.9% of GDP, Box 1.2) is an opportunity to pursue a more ambitious consolidation without an overly negative growth impact. Stopping unwarranted cash benefits to pensioners and families could help contain rising public expenditures. There is also room to improve public spending efficiency. Reforms to the pension system and efforts to contain other ageing-related expenditures should be pursued. Based on the long-term OECD model, a structural increase in revenues coupled with later retirement would go a long way to slow the rise in public debt (Figure 1.14).

A more credible fiscal framework is also needed. Current medium-term plans of a structural deficit staying close to 3% until 2025 (Ministry of Finance, 2022c; Czech Fiscal Council, 2022b and 2022d) are not sufficiently ambitious, given the expected future deterioration of public finances. A credible framework to undertake meaningful fiscal consolidation has been lacking since the fiscal rules, described in more detail in the previous *OECD Economic Survey* (OECD, 2020a), were loosened in 2020. While the debt brake rule is still in place (with a debt-to-GDP limit of 55%, after deducting cash reserves), the structural deficit rule has been loosened and there is no firm requirement for the pace of fiscal consolidation (Czech Fiscal Council, 2022a; 2022c; Ministry of Finance, 2022c). The Czech economy would benefit from re-establishing the requirement of a 0.5 percentage point improvement per annum in the structural balance up to a predetermined objective (1% of GDP structural deficit as prior to the amendments to fiscal rules).

Box 1.2. EU funds to support a resilient recovery and the green and digital transition

The EU's Recovery and Resilience Facility (RRF) was set up to support economic recovery after the pandemic and facilitate the green and digital transformation.

The Czech Republic is set to receive EUR 7 billion (2.9% of 2021 GDP) in grants, to be disbursed by 2026. In addition to supporting the climate and digital transitions as described below, several programmes are geared to reinforce economic and social resilience. The plan allocates EUR 222 million to improve the business environment. Reforms and investment of EUR 393 million will help foster equal access to education, notably through increasing access to affordable pre-school care, reinforced support for disadvantaged schools and additional tutoring for children at risk of failure. Investments of EUR 823 million will increase the resilience of healthcare services.

Climate objectives

42% of the RRF grants will support Czech climate objectives. Of this, EUR 1.4 billion will finance large-scale renovation programmes to increase the energy efficiency of residential and public buildings, including childcare and social care facilities. The RRF also supports the decarbonisation of transport through EUR 1.1 billion of investments in railway infrastructure and to promote electric charging stations and cycling pathways. Furthermore, EUR 480 million will be invested in installation of renewable energy sources for both businesses and households. EUR 141 million will be invested in the circular economy, including recycling infrastructure and support for circular economy solutions and water savings in businesses. Reforms in forestry management aim at increasing the sustainability of Czech forests.

The EU launched its REPowerEU Plan after Russia's invasion of Ukraine to scale up renewable energy sources, boost energy efficiency measures and reduce dependence on Russian fossil fuels. The plan adds additional grants of EUR 20 billion (beyond the initial RRF allocation) to accelerate the implementation of the climate and energy saving plans of member states. The allocation of grants will take into account member states' dependence on fossil fuels. However, the final allocation remains to be decided.

Digital transition

The Czech Republic will use 22% of the RRF grants for investments and reforms in skills, e-government, digital connectivity and digital transformation of businesses. EUR 585 million will be for digital equipment of schools, training for teachers, new higher education programmes in digital fields and upskilling and reskilling courses. In addition, EUR 585 million will support the digital transformation and cyber-security of public administration, the justice system and health care. EUR 650 million will be invested in the digital transformation of businesses, European digital innovation hubs, testing and experimentation facilities for Artificial Intelligence in manufacturing, very high-capacity networks and 5G networks.

Source: European Commission.

Box 1.3. Potential impact of reforms

Structural reforms can boost economic growth and incomes. Table 1.5 quantifies the impact on growth of some of the reforms recommended in this Survey (quantification is not feasible for all of them) based on the OECD long-term model and OECD estimates of relationships between reforms and total factor productivity, capital deepening and the employment (Égert, 2017). The analysis suggests that if the Czech Republic implemented the selected set of reforms (see below), per capita income could increase by about 6% in 10 years and up to 17% in 25 years. The estimates are illustrative.

Table 1.5. Potential impact of structural reforms on per capita GDP

	10 years	25 years (up to 2050)
Strengthen tax revenues, including through more progressive personal income taxation, shift towards real estate, consumption and environmental taxes, and reduce social security contributions.	0.6%	0.7%
Reduce inequities in schools and modernise VET education.	1.3%	7.2%
Improve investment climate and business environment (lower administrative burden, modernise construction permits).	2.7%	6.1%
Boost active labour market policies.	0.6%	0.7%
Keep expanding the supply of affordable and high-quality childcare facilities.	0.4%	0.6%
Pension reform (increasing the age of retirement).	0.4%	2.0%
Package of reforms	**6.0%**	**17.3%**

Note: Simulations are based on the OECD Economics Department Long-term Model with a no policy change scenario used as the baseline. The following changes in policy/outcomes are assumed. The tax reform assumes a reduction in the average tax wedge by 2 percentage points of labour costs (the 2020 reform implied a 4-percentage point reduction, but here a partial reversal is assumed). Reform in education is assumed to be equivalent to an increase in average years of schooling by 0.7 years over 15 years (to close half of the gap with the current level in Germany). Improvement in the business environment assumes the PMR components "Simplification and Evaluation of Regulations" and "Administrative Burden on Start-ups" reach the average of the top five OECD performers over five years. Active labour market policies are boosted to reach the average of five top performers in the OECD (as % of GDP per capita per unemployed person). Expanding childcare is modelled as family benefits in kind (% of GDP) increased to OECD average. Pension reform: retirement age goes up to 67 for both men and women by 2037, and then by half of the expected gain in life expectancy thereafter.
Source: OECD calculations.

The estimates in Table 1.6 quantify the direct fiscal impact of selected recommendations included in the Survey, and do not seek to incorporate any dynamic effects. The estimates are illustrative.

Table 1.6. Illustrative direct fiscal impact of selected recommended reforms

Reform	Fiscal impact (savings (+)/ costs (-)) (% of GDP)
Strengthen tax revenues, including through more progressive personal income taxation, shift towards real estate, consumption and environmental taxes, and reduce social security contributions.	+2%
Reduce inequities in schools and modernise VET education.	-0.7%
Improve investment climate and business environment (lower administrative burden, modernise construction permits).	Negligible
Boost active labour market policies.	-0.2%
Keep expanding the supply of affordable and high-quality childcare facilities.	-0.4%
Pension reform (increasing the age of retirement).	+1.3% (by 2050)
Investing in the green transition	-1.3% to - 2.0%
Total net effect of listed reforms	**+0.0% - +0.7%**

Note: The fiscal cost of the education reform is based on the estimated long-term increase in the cost of education from the 2022 Convergence programme of the Czech Republic. The fiscal cost of the green transition represents the low- to mid-point estimates in Ščasný et al. (2022) of the cost of investment up to 2030. The fiscal cost has been adjusted for the EU funds from the RRF and REPowerEU, as well as the anticipated increase in GDP. The fiscal dividend of the pension reform is computed by taking a difference between the required increase in government revenues to keep debt-to-GDP ratio stable in “baseline” and “pension reform” scenarios. Based on simulations of the OECD Economics Department Long-term Model.
Source: OECD calculations.

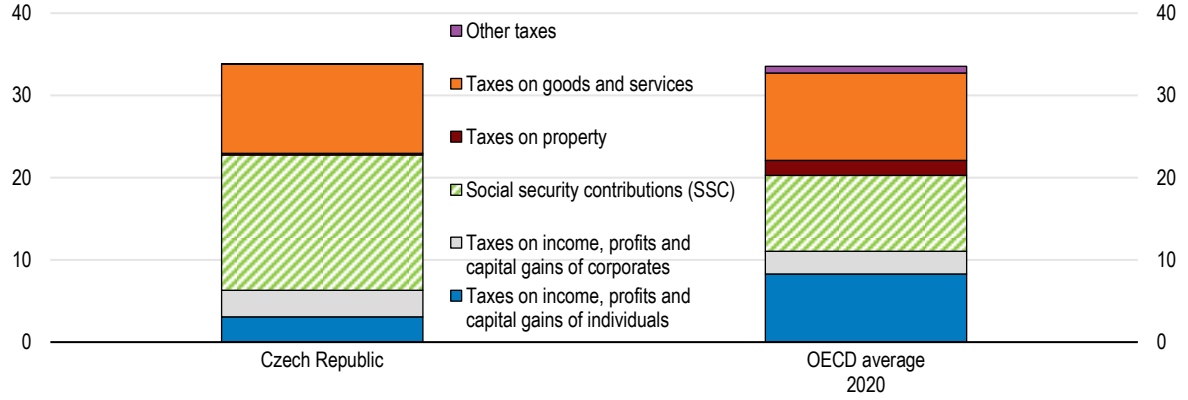
Safeguarding long-term fiscal sustainability

Strengthening public revenues

Efforts to bolster tax revenue should also aim to improve the tax mix. Tax revenue collection as a share of GDP is close to the OECD average. However, the Czech Republic relies significantly more on social security contributions (Figure 1.15) and less on personal income taxes (PIT) and property taxes than other OECD countries. The average tax wedge – the gap between the take-home pay of workers and their costs to employers – is high in international comparison due to elevated social security contributions (Figure 1.16). Evidence shows that high average tax wedges can raise costs for companies and slow growth (Arnold et al., 2011, Akgun et al., 2017). Lower reliance on social security contributions and higher revenues from property taxes and indirect taxes, including environmental taxes, could boost growth durably and reduce the exposure of government revenue to ageing. A lower tax wedge could also help ease labour market tightness by giving room to attract workers at the margins of the labour market.

Figure 1.15. Tax revenues rely heavily on social security contributions

General government tax revenues, % of GDP, 2021



Source: OECD Revenue Statistics database.

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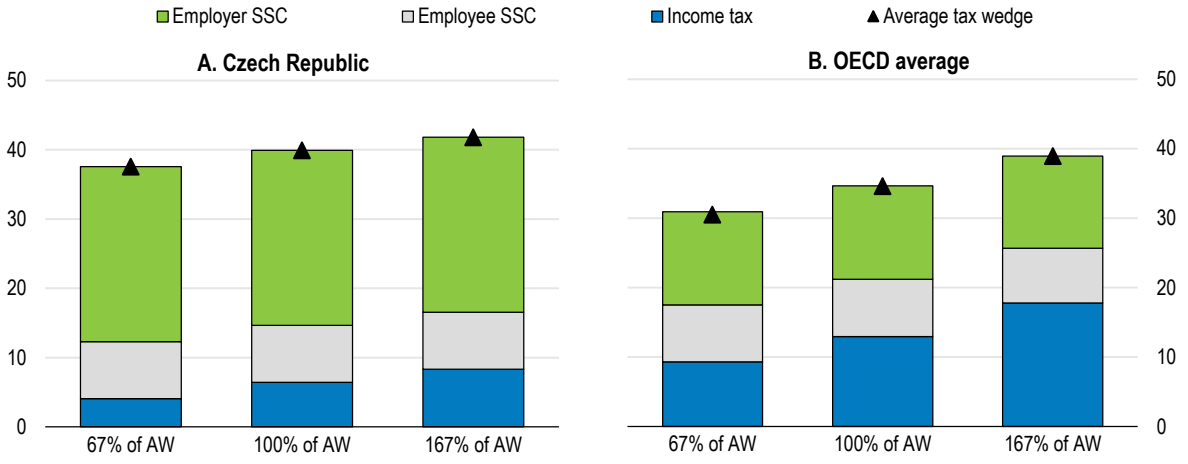
Figure 1.16. The tax wedge is high

Average tax wedge decomposition, % labour costs, 2021



Note: Single individual without children at different income levels of the average worker (AW).
Source: OECD Taxing Wages database.

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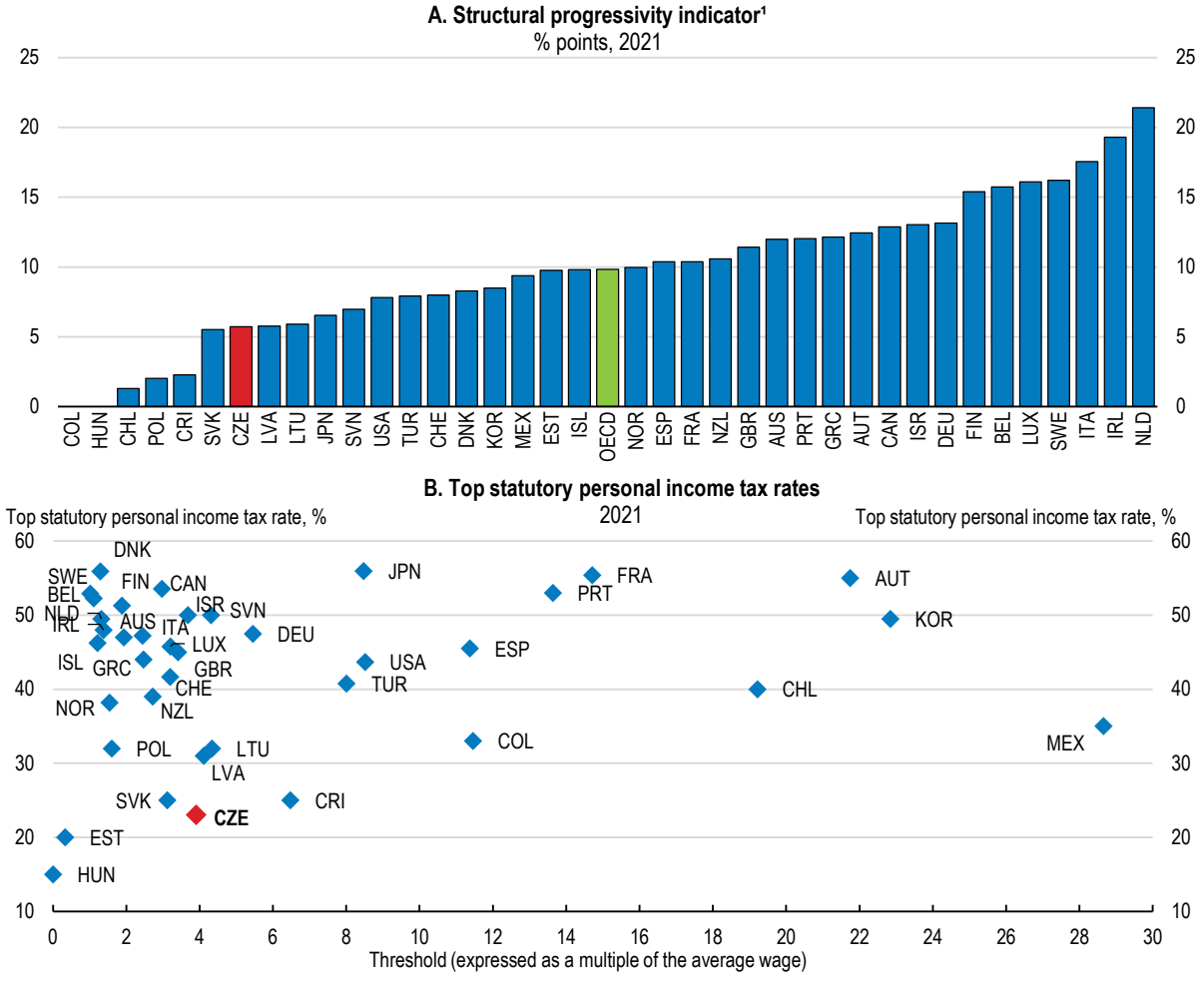
The 2020 PIT tax reform - effective since January 2021 - has permanently reduced tax revenues. The concept of "supergross wage" (which included the social security contributions of employers) as a tax base for PIT from employment income was abandoned. Instead, the tax base is now determined based on gross income, with employment income taxed on gross wage. A previously flat PIT tax rate at 15% (and solidarity surcharge of 7% for very high incomes) was replaced with a progressive tax schedule, with marginal rates of 15% and 23%, with the second bracket starting at a gross income of four times the average wage (OECD, 2022). In addition, the general tax credit was raised in total by 24% and tax credits for the second child or more were raised by 15% (OECD, 2022a). As a result, for high-income persons, employment income is effectively taxed at the same rate as before the reform, while some types of non-employment income – capital gains and rental income – will now be taxed at a higher marginal rate of 23%. For most taxpayers, the tax burden has been reduced. Yet, the progressivity of the PIT remains low (Figure 1.17). The recent unfunded cut in the PIT should be reversed to raise revenues for expected rises in public spending. Higher collection of the PIT could be partly achieved by higher progressivity with a higher number of tax brackets and higher top marginal tax rates for high earners.

Figure 1.17. Progressivity of the personal income tax remains low



1. The structural progressivity indicator measures the percentage point change of the average income tax rate for a single person with no children if their income increases from 67% to 167% of the average wage.

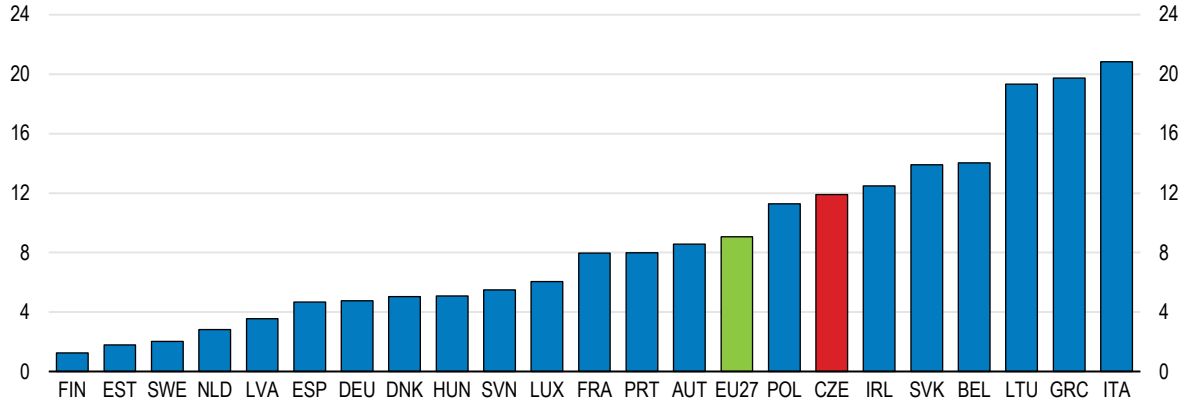
Source: OECD Taxing Wages database; OECD Tax database.

StatLink https://stat.link/097oih

There is room to further improve VAT collection, notably by improving compliance and reversing exemptions and reductions granted in recent years. There has been good progress in tackling tax evasion but the VAT compliance gap at 11.9% remains above the EU average of 9.1% (Figure 1.18; European Commission, 2022c). The project of introducing the electronic registration of sales, whose roll-out was put on hold during the coronavirus pandemic, is to be fully abolished in 2023 due to reportedly poor results and a high administrative burden (Ministry of Finance, 2022b). However, efforts to improve compliance and fight tax evasion and fraud need to continue, including by taking on opportunities offered by digitalisation. According to the VAT Revenue Ratio indicator (OECD, 2020c and 2022g), in 2020, the Czech Republic lost a lower proportion (41%) of its potential VAT revenues than OECD countries on average (44%) due to VAT exemptions, reduced rates, weak enforcement or VAT non-compliance. However, the share has seen a slight increase over the last three years, due to an increasing number of items on reduced VAT rates. Reclassification to lower VAT rates of selected goods and services in 2020 (during the pandemic), including accommodation, sports and cultural events and ski lifts, should be reversed. Overall, the use of reduced VAT rates should be further diminished. International evidence shows that reduced VAT rates are poorly targeted as they benefit richer households proportionally more and are not effective in giving support (OECD, 2019a and 2020d).

Figure 1.18. The VAT tax compliance gap remains above the EU average

VAT gap, % of VAT Total Tax Liability (VTTL), 2020



Note: The VAT GAP is the overall difference between the expected VAT revenue and the amount actually collected.
Source: European Commission, Directorate-General for Taxation and Customs Union, Poniatowski, G., Bonch-Osmolovskiy, M., Śmietanka, A., et al., VAT gap in the EU : report 2022, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2778/109823.

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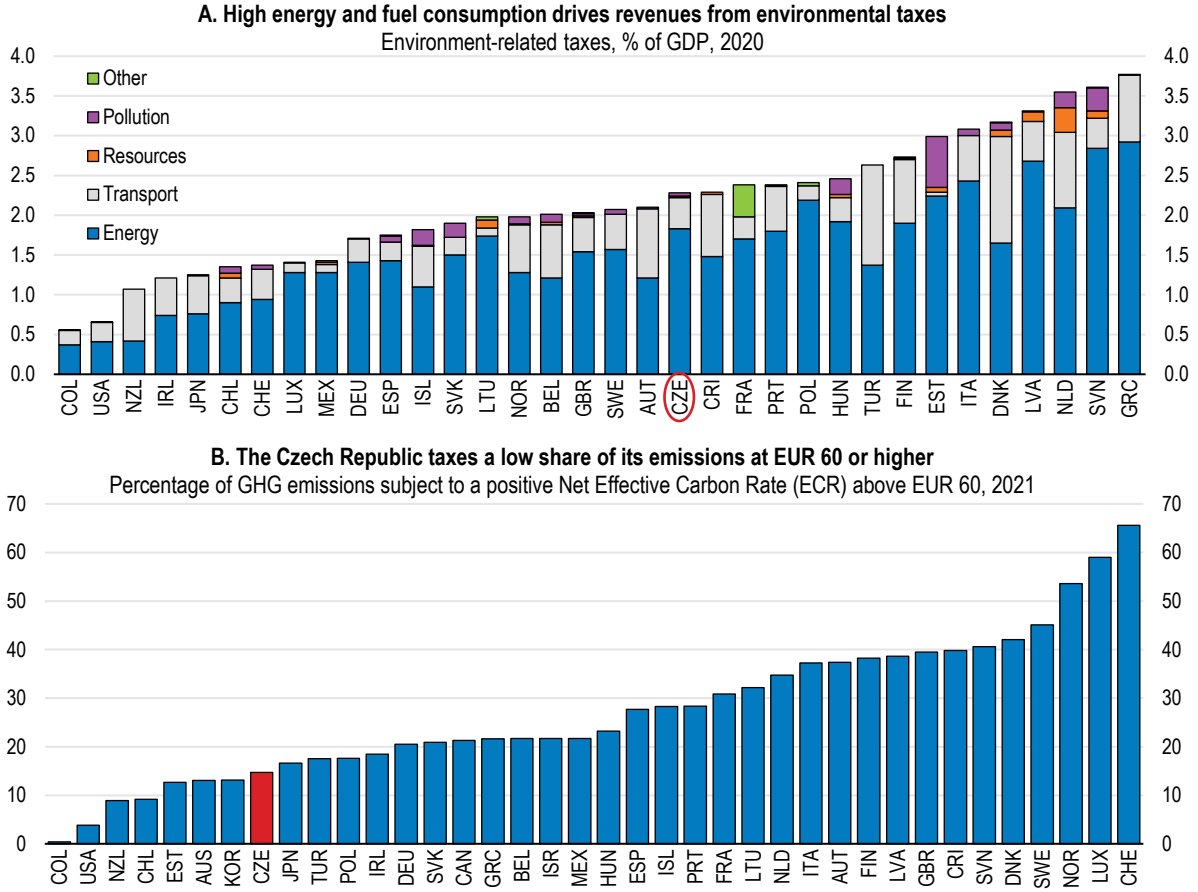
High energy and fuel consumption drives revenues from environmental taxes, but relatively low rates do not effectively discourage polluting behaviour. There is no explicit carbon tax. The OECD (2021b and 2022h) estimates that in effective terms (taking into account emission trading schemes, fuel and other excise duties and carbon tax) the Czech Republic taxes only about 15% of its emissions from energy use at EUR 60 or higher per tonne of CO_2. This is among the lowest shares in the OECD (Figure 1.19). As discussed in more detail in Chapter 2, a revised tax structure could better align economic and environmental objectives to help reach climate goals and alleviate air pollution. Implicit carbon prices are sufficient in the road sector (apart from temporary reductions in 2022 and 2023), but levies on diesel are lower than on gasoline, despite the former's higher carbon content. Taxes on natural gas, coal and other solid fuels and electricity are low and are not adjusted for inflation. Exemptions are applied to various fuel uses that decrease end-use prices and reduce incentives to save energy or switch to cleaner fuels. For instance, exemptions apply for residential heating and in agriculture (OECD, 2018a). The Czech Republic should prepare a plan to phase out these exemptions once the current uncertainty abates.

Figure 1.19. Effective taxation of carbon is low



Source: OECD Environmentally related tax revenue dataset; OECD (2022), Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action, OECD Series on Carbon Pricing and Energy Taxation, OECD Publishing, Paris.

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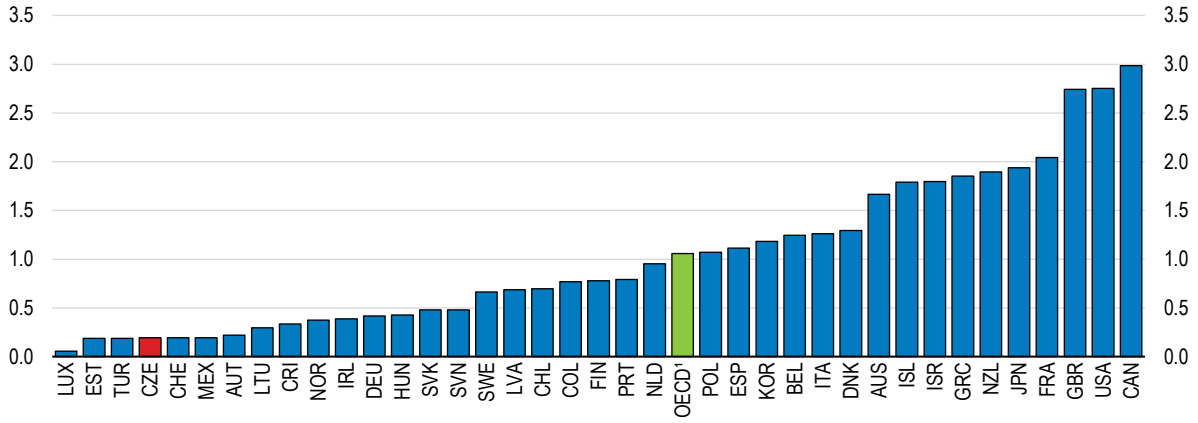
Total revenue from property taxes in terms of GDP is one of the lowest in the OECD (Figure 1.20). Revenues have been reduced further by the abolition of the real estate acquisition tax from January 2021. As discussed in the previous *OECD Economic Survey* (OECD, 2020a), Czech municipalities could benefit from raising more revenue from the property tax. This tax is among the least distortive for growth, can better withstand population ageing and provides relatively stable revenues, which benefits local governments with largely non-cyclical spending (Arnold et al., 2011; Kim and Vammalle, 2012; Blöchliger, 2015; Colin and Brys, 2019). In the Czech Republic, the property tax comprises a land tax and a tax on buildings, and the calculation of the tax is based on the size of property rather than its value. The base rate is set at the central level, but municipalities can raise the rate up to five times the minimum threshold amount. Yet, most municipalities tend to set their local property tax rate at the low level, and many set exemptions, further reducing the tax base (Radvan, 2019). The tax evaluation should be based on regularly updated estimates of property value, as in Denmark, Estonia, Spain and the United Kingdom, among others, rather than size.

Figure 1.20. Property tax revenues are low

Recurrent taxes on immovable property, % of GDP, 2021 or latest available year



1. Unweighted average.
Source: OECD Revenue Statistics.

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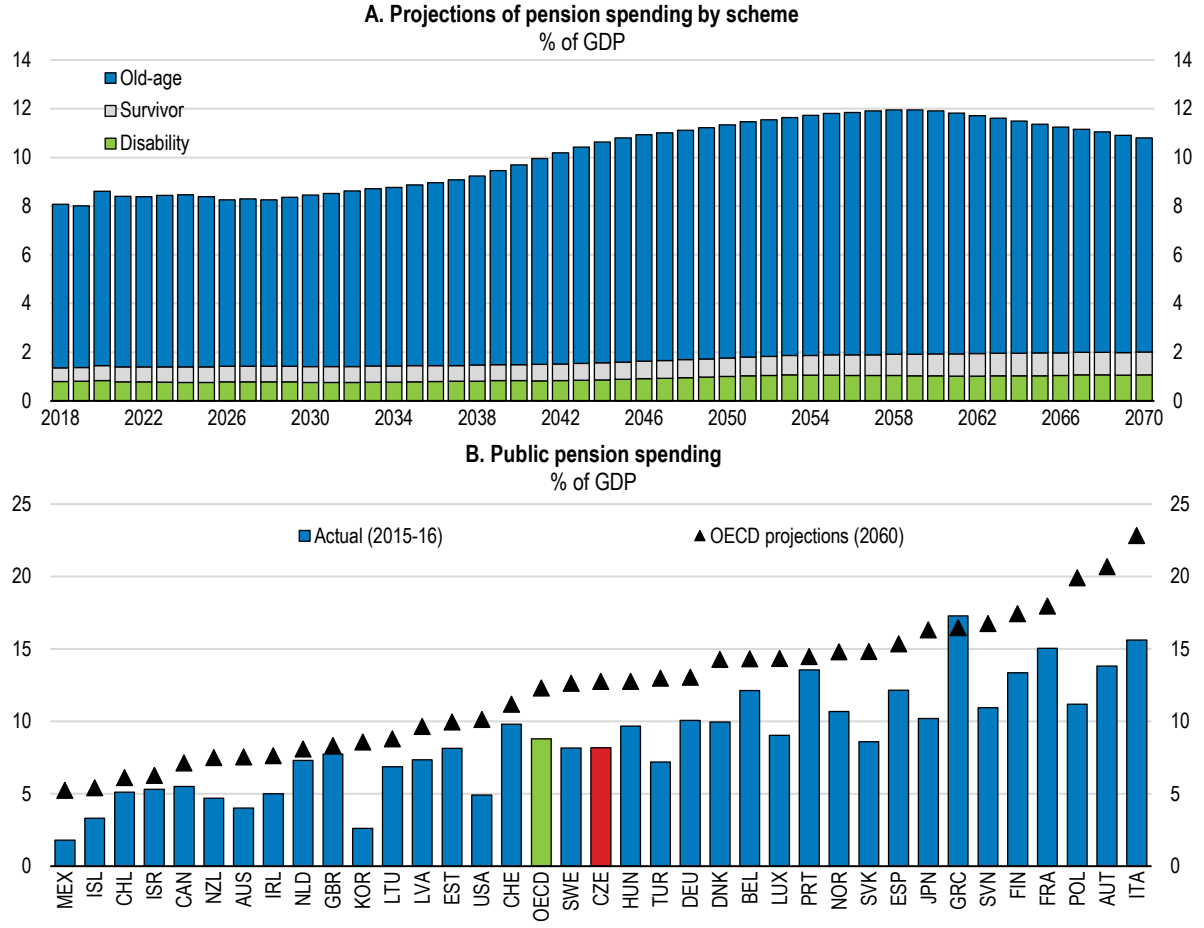
The self-employed continue to benefit from favourable tax treatment, raising concerns about sustainability and fairness. The tax code allows them to deduct between 30% and 80% (depending on occupation) of revenue as cost to derive net income, eliminating the need for cost accounting. A turnover threshold under which a flat rate deduction (instead of expenditures) can be used to narrow the tax base is quite generous, reducing revenues from personal income taxes. Furthermore, the assessment base for social security contributions is set at 50% of net income (with a minimum of 25% of the average wage), effectively lowering the overall contributions of self-employed workers compared to employees. The self-employed enjoy the same rights from the health care system as employees, but they contribute significantly less. They also contribute less towards pensions, resulting in lower benefits, but high solidarity within the pension system redistributes strongly in their favour. According to OECD estimates (2020b), a self-employed worker with net income equivalent to that of an average-wage worker can expect to receive 83% of the pension of the average-wage worker but pays only 67% of the contributions. As recommended by the OECD Pensions Review (OECD, 2020b), the contribution base for the self-employed should be closer to that of employees, for instance at around 75% of net income.

Addressing rising public costs of pensions

Due to rapid population ageing, without further reforms, pensions will exert high pressures on public spending from 2030 (Figure 1.21). The ratio of elderly people (65 and over) to the working-age population (20-64) is projected to rise from 34% to 56% between 2020 and 2050 (OECD, 2021a). Considering the increase in the statutory retirement age to 65 in the coming years, the economic dependency ratio (ratio of the population at and over the retirement age to the working-age population) will remain stable until 2035, before rising steeply until about 2060 (Figure 1.22). According to the simulations made with a cohort model (OECD, 2020b), pension spending will remain stable at around 8.5% of GDP until 2030. It will then increase progressively to peak at 11.9% of GDP in 2059 and then decline along with the size of the elderly population (Figure 1.21).

Figure 1.21. Pensions will exert high pressures on public spending from 2030



Note for panel B: 2050 for Australia, Canada, Iceland Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Republic of Türkiye and the United States. OECD projections refer to Guillemette, Y. (2019), "Recent improvements to the public finance block of the OECD's long-term global model", OECD Economics Department Working Papers, No. 1581, OECD Publishing, Paris, https://dx.doi.org/10.1787/4f07fb8d-en.
Source: OECD (2020b), OECD Reviews of Pension Systems: Czech Republic, OECD Reviews of Pension Systems, OECD Publishing, Paris, https://doi.org/10.1787/e6387738-en

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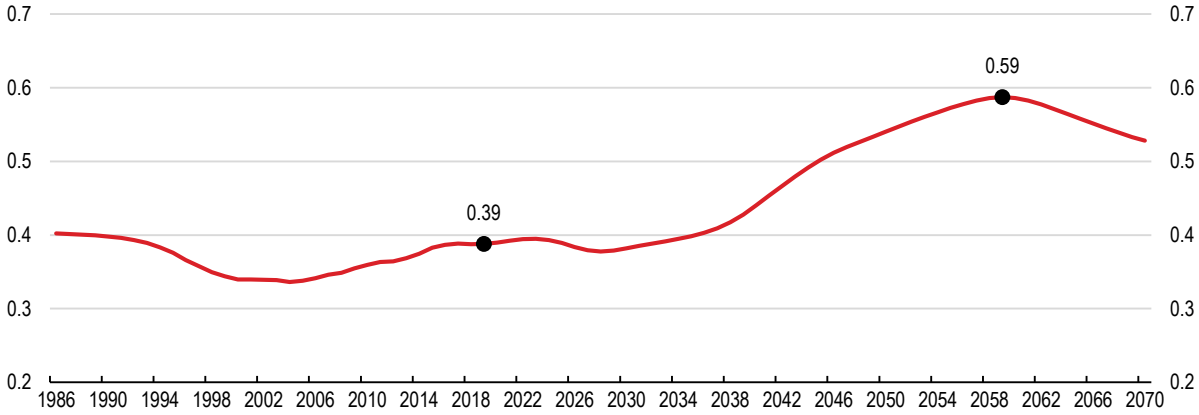
Figure 1.22. The economic old-age dependency ratio will rise

Ratio of elderly (statutory retirement age (SRA) and over) to working-age adults (19-SRA)



Note: The economic old-age dependency ratio is the ratio of the population at and over the statuary retirement age (SRA) to the working-age population.
Source: OECD (2020b), OECD Reviews of Pension Systems: Czech Republic, OECD Reviews of Pension Systems, OECD Publishing, Paris, https://doi.org/10.1787/e6387738-en

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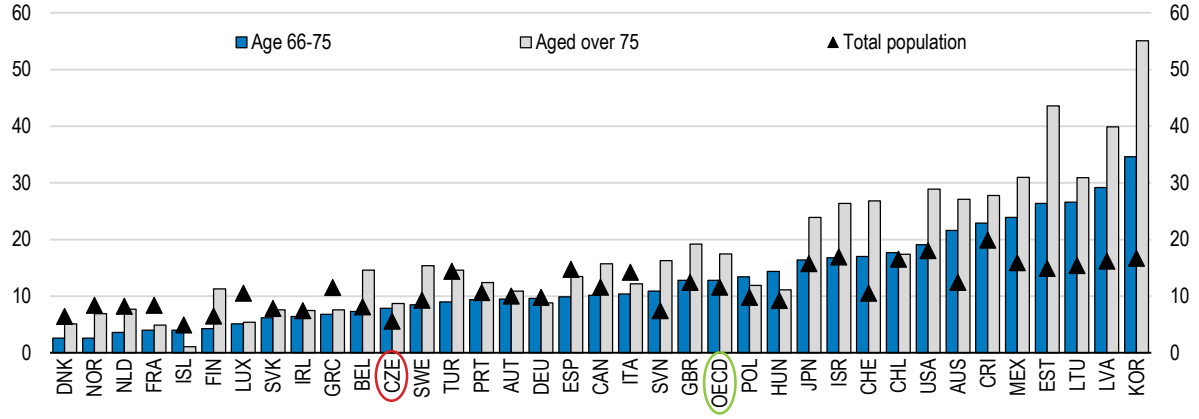
The Czech pension system is strongly redistributive. The old-age pension consists of a flat-rate component (basic pension) and an earnings-based component with strong caps on pensions of higher-earners, weakening the link between pension contributions and future benefits. The resulting benefit structure is highly compressed. Rates of poverty in old age are low (Figure 1.23). The net replacement rates are close to the OECD average (Figure 1.24) but are relatively high for low earners and low for high earners. To the latter, the system offers a very low internal rate of return to paid contributions (OECD, 2020b). In the Czech old-age pensions system, high earners (twice the average wage) have replacement rates well below average-wage earners (46% versus 65%), a large gap by international comparison (55% versus 62% for the OECD on average).

Figure 1.23. The old-age poverty rate is relatively low

Relative poverty rates (50% of median income), 2019 or latest available year



Source: OECD Income Distribution Database - http://oe.cd/idd

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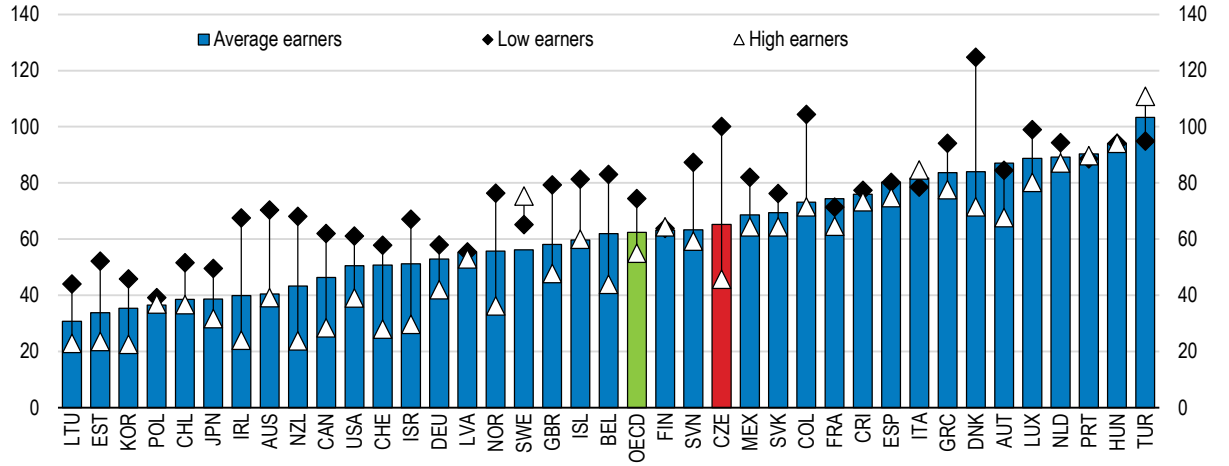
Figure 1.24. Net replacement rates are close to the OECD average, but low for higher earners

Net pension replacement rates, %



Note: The values of all pension system parameters reflect the situation in 2020 and onwards. The calculations show the pension benefits of a worker who enters the system that year at age 22 – that worker is thus born in 1998 – and retires after a full career.
Source: OECD (2021a), Pensions at a Glance 2021.

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To increase replacement rates for high earners, the recent OECD Pension Review (OECD, 2020b) proposes to finance some of the redistributive part of the system (e.g., basic pensions) through general taxes, which could allow for higher accrual rates, in particular for higher earners. In the Czech Republic, redistribution takes place exclusively within the pension system as all pension revenues come from contributions levied on wages (except for transfers from the budget to cover any deficit in the system). In contrast, many countries finance part of pension spending through taxes. Financing parts of the system through taxes would help to strengthen the link between paid contributions and benefits. Furthermore, it could help to ease some of the burden of very high mandatory social security contributions.

Pensions are indexed to a combination of the consumer price index (or pensioners' cost of living index, whichever is higher) and half of the real wage growth. The indexation is carried out once a year on 1st January. But if inflation reaches at least 5% since the end of the previous reference period, an extraordinary round of indexation during the year is triggered. However, pensions have been frequently increased beyond the statutory prescribed levels. For instance, it has been decided to give an additional CZK 1000 (around EUR 40) per month to all pensioners of age 85 and over, starting in 2019 (Ministry of Finance, 2019). In 2019, the flat-rate component of pension benefits was increased from 9% to 10% of the average wage, resulting in an overall increase of the average monthly pension by CZK 900 (EUR 37) in 2020. In addition, as a solidarity measure during the pandemic, all pensioners were given a one-time lump sum of CZK 5 000 (around EUR 200) at the end of 2020. The overall cost of the listed discretionary measures amounted to roughly 0.5% of GDP in 2020 (Ministry of Finance, 2020 and 2021), half of it with a permanent effect. Furthermore, while statutory indexation of pensions implied high increases due to high inflation, pensioners were given CZK 300 (EUR 12) per month from January 2022 on top of statutory indexation. From January 2023, pensioners - primarily women - will start receiving a benefit (CZK 500 per month) for each child raised, which will amount to an additional cost of roughly 0.3% of GDP.

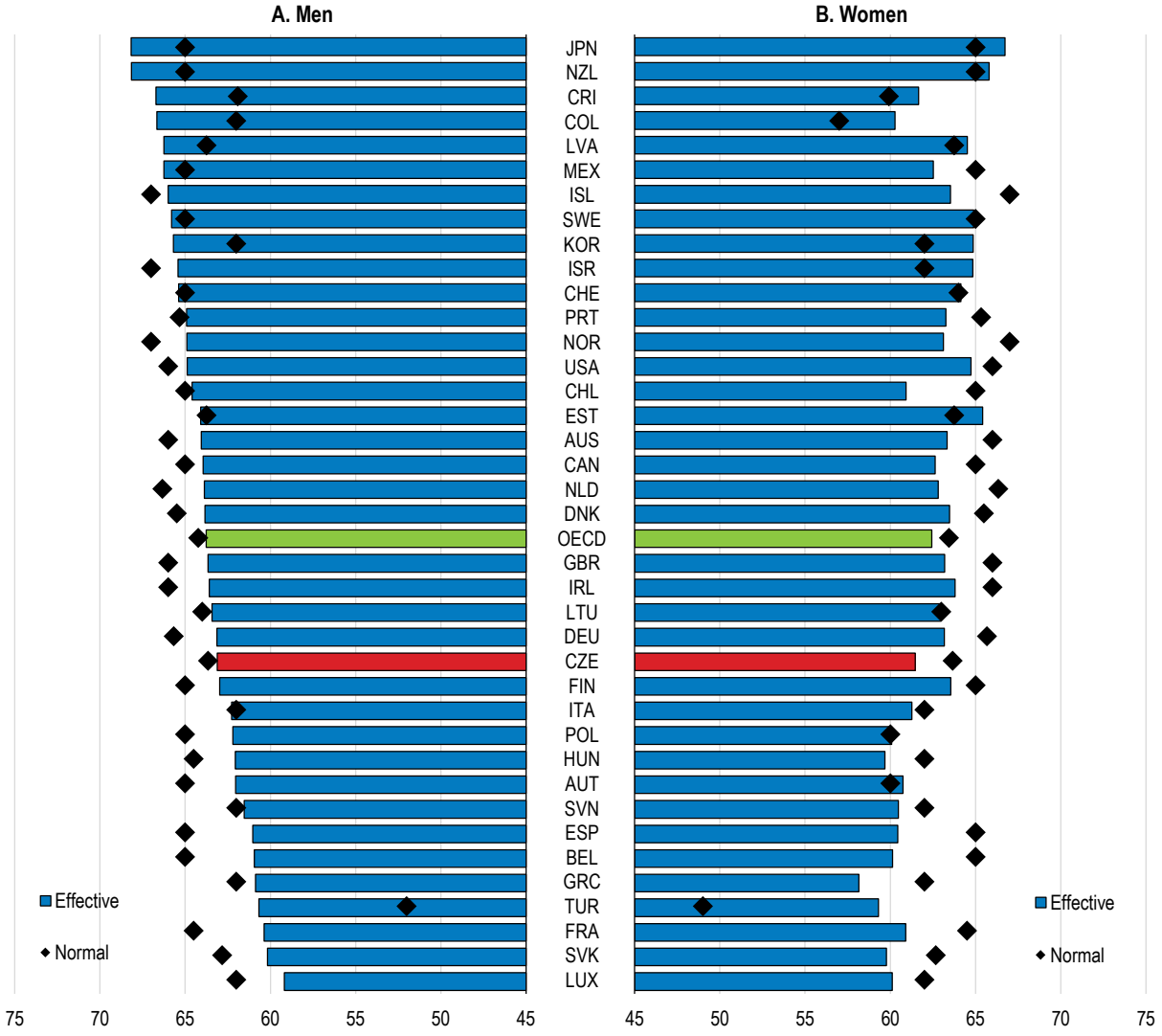
Discretionary measures to increase pensions beyond the statutory indexation add to steep spending increases and hamper pension sustainability. To maintain pension adequacy, the focus should rather shift to prolonging working lives by increasing the statutory retirement age.

Czech workers retire too early. Currently, the effective age of labour market exit is among the lowest in the OECD (Figure 1.25). Employment – while high overall – falls sharply after the age of 60 to markedly below the OECD average (Figure 1.26). Rises in the statutory retirement age are already legislated. For men it

will reach 65 in 2030. The Czech Republic is among the few OECD countries that still have gender-specific retirement ages, but the retirement age of women is also set to rise and will equal that of men in 2037, which is welcome. Yet almost one-third of people retire before the statutory retirement age (OECD, 2020b). Under current parameters, even once the statutory age of retirement will reach 65, early retirement will still be possible from age 60. The risk is that too many people might retire early, which would imply lower pensions.

Figure 1.25. The effective age of retirement is low

Average effective age of labour-market exit and normal retirement age, 2020



Note: Effective labour market exit age is shown for the six-year period 2015-20. Normal retirement age is shown for individuals retiring in 2020 after a full career from labour market entry at age 22.
Source: OECD (2021a), Pensions at a Glance 2021.

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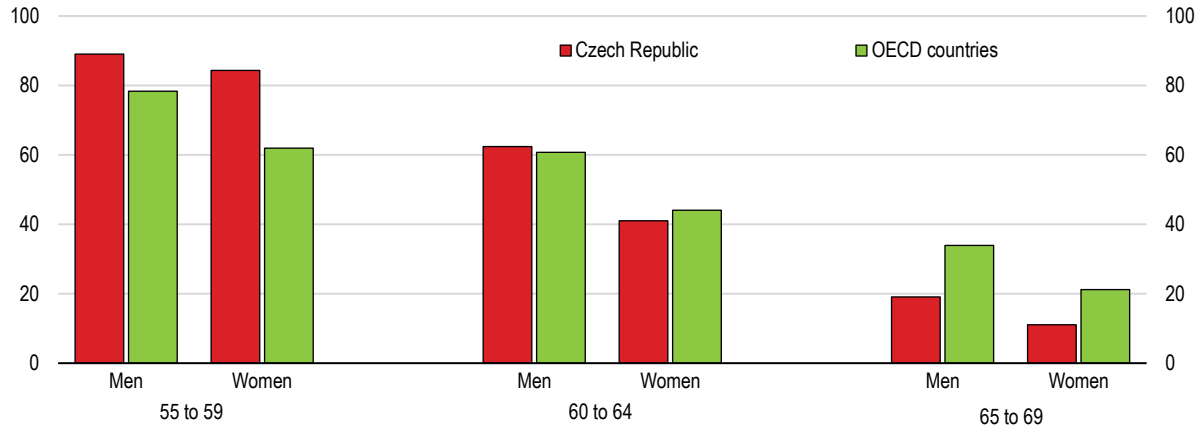
Figure 1.26. Employment rates fall sharply after 60

Employment rate, % of respective population, 2021



Source: OECD Employment and Labour Market Statistics database.

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Adjusting the retirement age further is key to limit increases in pension spending and help maintain adequacy of benefits. In 2017, the automatic mechanism for increasing the statutory retirement age was withdrawn and the ceiling at the age of 65 was introduced. Every five years, the Ministry of Labour and Social Affairs is tasked to prepare a report on life expectancy and to suggest a shift in the statutory retirement age, provided that on average people spend a quarter of their life in retirement. Following the first report in 2019, no change ensued, and the next round is scheduled for 2024. Under this mechanism, the retirement age may not be increased in a timely and sufficient manner to curtail long-term spending pressures. The Czech Republic should (re)introduce a tight and automatic link between retirement age and life expectancy as has already been done in Denmark, Estonia, Finland, Italy, the Netherlands and Portugal. For example, if about two-thirds of gains in life expectancy are transmitted to increasing the retirement age, the balance between the time spent working and in retirement would be stabilised (OECD, 2020b). Under a similar rule, the Czech Fiscal Council (2021) estimates that linking the statutory retirement age to life expectancy would improve the balance of the pension system by 1.1-1.4% of GDP from 2050 and lower the debt-to-GDP ratio by 45 percentage points in 2071.

The minimum age of early retirement should also be increased in line with the statutory age, reaching at least 62 in 2030, and then be linked to life expectancy. Given longer life expectancy, the age of 60 for the future eligibility to early retirement is too low. This age reference contributes to shaping social norms and influencing behaviours by both employees and employers about working at older ages and is not consistent with other efforts to enhance the labour supply of older workers (OECD, 2020b).

Policies to delay retirement should be accompanied by labour market policies that foster employability, labour demand and incentives to work longer (OECD, 2019g). Currently, penalties and bonuses within the old age pension system discourage early retirement and incentivise deferred retirement. Yet, many retire early and only a few defer retirement (OECD, 2020b). It is likely that high replacement rates for low earners combined with the fact that older workers are less skilled and earn less than prime-age workers reduce incentives to work longer. According to the OECD Older Worker Scoreboard 2021, full-time earnings of older workers (55-64) in the Czech Republic are 5% below earnings of prime age workers, while in the OECD on average older workers earn 6% more. Raising the skills of older workers, through targeted adult learning, as recommended in the previous *OECD Economic Survey* (OECD, 2020a) could help promote longer working lives.

Table 1.7. Past recommendations on strengthening fiscal sustainability and improving the tax mix

Recommendations in previous Surveys	Action taken
Shift taxation from labour towards real estate, consumption and environmental taxes.	In 2020 a reform of the personal income tax dropped the concept of supergross wage. Property transfer tax was abolished. As a result, tax revenues are lower in structural terms by 2 percentage points of GDP. The reform was unfunded and part of it goes against the OECD recommendation. Phasing in of the electronic registration of sales was stopped and the project abolished.
Reduce the advantages of self-employment in terms of social contributions and personal income tax.	No action taken.
Take steps to secure an increasing effective retirement age. Link tightly retirement age to life expectancy. Continue to ensure that the indexation of pensions does not lead to old-age poverty problems. Consider options for diversifying income sources for pensioners.	No action taken. Government has recently taken steps to improve the adequacy of pensions by raising pensions beyond statutory required levels without addressing sustainability concerns. Government is supposed to discuss every five years whether to raise the statutory pension age (which is currently gradually rising to reach 65 in 2030 for men and in 2037 for women). In 2019, the government decided not to raise the statutory retirement age and to discuss the issue again in five years.
Introduce a carbon component in energy taxation for carbon emissions outside the EU system.	No action taken.
Realign the excise tax rate on all fossil energy sources and products, based on their carbon content and other environmental externalities, notably by increasing the relative taxation of diesel. Remove several excise tax reliefs on fuel use.	No action taken.

Raising the effectiveness of the public sector

Increasing the efficiency of public administration can help to improve fiscal sustainability and raise the quality of services provided to citizens. The size of the public sector in the Czech Republic has remained relatively moderate and stood below the OECD and EU averages in terms of general government expenditures (47% of GDP in 2020) and of employment (16.6% of total employment). However, despite its moderate size, the Czech public administration faces a number of challenges in modernising and improving its effectiveness. The Czech Republic has one of the most fragmented territorial and municipal administrations in the OECD (OECD, 2020a), undermining policy co-ordination between the national and subnational levels. The management of the COVID-19 crisis over 2020-21 also highlighted weaknesses in citizen engagement and in agility to respond to challenges.

The recent Public Governance Review done by the OECD in cooperation with the Czech government reports that the lack of strategic steering capacities and alignment from the centre have led to the multiplication of strategies and an absence of consistency and implementation across policies. Strategic decisions, regulations and policies are also insufficiently based on evidence. This calls for strengthening the strategic coordination of the Government Office and boosting analytical capacities across public administration.

The Czech Republic has initiated a number of important public administration reforms to enhance the effectiveness of public administration, increase citizen orientation and engagement, and develop capabilities to address crosscutting challenges, including crisis management and digitalisation. Efforts have been made to improve analytical capabilities notably through the creation of a Government Analytical Unit in the Government Office. To accelerate its digital transition, the government is implementing a new digital governance structure including through the creation of a Digital Agency. The current public administration reform (PAR) strategy (“Client-oriented public administration 2030”) aims to address a number of challenges. At the same time more could be done to align the PAR strategy with current government priorities, particularly on raising effectiveness of public administration, improving management and recruitment within the civil service and strengthening cooperation between central and local government levels.

Since 2020, the Czech Republic has been implementing spending reviews as a means to systematically analyse existing spending, align expenditure to changing priorities of the government and improve value for money. Significant progress has been made in setting up the framework and piloting one spending review. However, the Czech administration is facing some challenges to fully institutionalise and scale up the use of spending reviews. These include very limited access to performance data, weak programme and performance budgeting frameworks, capacity constraints and limited collaboration with line ministries. Such challenges are not unique to the Czech Republic and are commonly reported by many OECD countries (OECD, 2020e).

Moving forward, the Czech Republic should institutionalise spending reviews by improving data accessibility through the use of performance budgeting, expanding the piloting phase to refine the framework, strengthening capacity-building efforts, creating incentives to participate in spending reviews and establishing sound governance arrangements. Having a strong spending review framework that builds on OECD Best Practices for Spending Reviews (Tryggvadottir, 2022) will make the Czech administration better equipped to face emerging fiscal pressures in the medium and long run and will enable it to better respond to changing government priorities. In 2023, a unit within the Ministry of Finance was set up with a task to carry out several spending reviews each year to help build capacity, a welcome step in the right direction.

Addressing corruption to raise the effectiveness of public spending and investment

Improving governance and fighting corruption can improve the effectiveness of government spending and value-for-money of public investment. It is also vital for maintaining the Czech Republic's attractiveness as a destination for foreign direct investment (OECD, 2016a; Blundell-Wignall and Roulet, 2017).

In accordance with the Government Anti-Corruption Strategy for 2018-22 (Government of the Czech Republic, 2018), and the Anti-Corruption Action Plan 2021-22 (Ministry of Justice, 2020) the authorities aim at reinforcing corruption prevention and addressing integrity risk areas where corruption is still perceived as a concern, such as lobbying and interconnections between business and politics, conflicts of interest, and protection of whistleblowers. The government plans to advance on prevention of excessive accumulation of political, economic and media power; enforcing rules on beneficial owners of companies receiving subsidies, investment incentives and public contracts; and establishing clear rules for media ownership and the use of public funds (Government of the Czech Republic, 2022).

Fighting corruption in the Czech Republic is well institutionalised and backed by governmental anti-corruption documents at both high and operational levels. Overall, the quality of the strategic framework is good. Yet, deficiencies remain in the areas of financial sustainability and inclusiveness and transparency of public consultations. On financial sustainability, while implementing authorities do not report financing shortages, more forward-looking financial plans and better links with the medium-term expenditure framework would be expected. Moreover, more detail on estimated expenditures at the level of individual action plans would be beneficial. There is also room for improvement on making public consultation processes for public integrity strategies more inclusive and transparent. Notably, inter-governmental and public consultation processes should be made mandatory for all public integrity strategies and making draft strategies and all supporting material publicly available on the public consultation portal would increase transparency.

Indicators of control and perceived risks of corruption in the public sector suggest that the Czech Republic performs poorly compared to most OECD countries (Figure 1.27). Control of corruption improved from 2012 onwards, but this progress has stalled recently (Figure 1.27). According to a survey by the European Commission (2020), 87% of Czech citizens think that corruption is widespread, significantly above the EU average (71%), and they point to officials awarding public tenders, political parties and politicians at all levels of government as the most corrupt. Respondents further believe that there are not enough

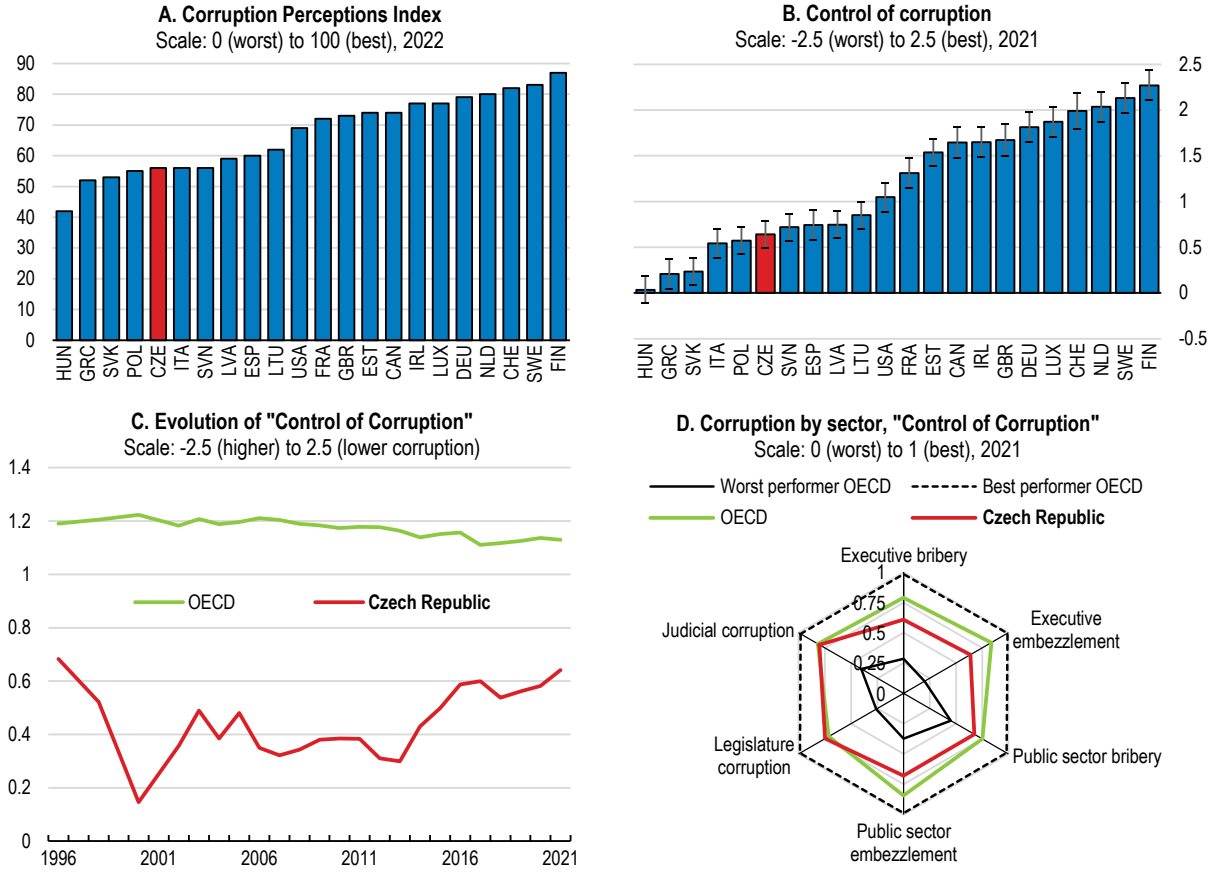
successful prosecutions to deter corruption and the majority perceive government efforts to combat corruption as ineffective.

The 2021 Rule of Law Report of the European Commission notes a lack of progress in the implementation of the Government Anti-Corruption Strategy 2018-22. Notably, the COVID-19 pandemic slowed down anti-corruption reforms in some areas, particularly in the healthcare sector (European Commission, 2021a). Numerous important reform initiatives, such as on lobbying and on whistleblower protection, are still pending in Parliament. As regards high-level corruption, investigation and audits at national and European level of the use of EU funds have recently found evidence of conflicts of interest at the top executive level that led to a case with the European Public Prosecutor's Office. In a related EU subsidy fraud case, national investigators recently recommended indictment (European Commission, 2021a). More is therefore needed to address public integrity across all branches of government.

In its fourth evaluation round, the Council of Europe anti-corruption body, the Group of States against Corruption (GRECO, 2016), listed 14 recommendations to improve public integrity in the Czech Republic. In the follow-up report two years later (GRECO, 2018) it found the level of compliance with the recommendations "globally unsatisfactory", and this assessment was confirmed two years later in an interim follow-up report (GRECO, 2020). Several recommendations aimed at improving integrity for members of parliament, but the implementation of the recommendations remains very slow. No measures have been taken to increase the transparency of the legislative process. The draft law on regulation of lobbying has been submitted to parliament but not yet adopted and a code of conduct for parliamentarians and accompanying implementing measures have still not been adopted. Efforts also need to continue to improve integrity and the independence of judges and public prosecutors.

Efforts to increase the detection, investigation and prosecution of foreign bribery should also be stepped up by implementing the OECD Anti-Bribery Convention (Figure 1.28). The Czech Republic is highly export-oriented, and its exports include high-risk sectors for bribery, such as machinery and defence materials, to destinations at high risk of corruption (OECD, 2017d). Despite this, only one case of foreign bribery has been prosecuted so far. Progress has been made, nevertheless. Following a recommendation by the OECD Working Group on Bribery, all judgements concerning foreign bribery will be automatically published (OECD, 2021g). Efforts have been underway to enhance detection of foreign bribery through certain key government agencies, in particular the Financial Intelligence Unit. The Supreme Public Prosecutor's Office published comprehensive guidance on corporate liability. On the other hand, further efforts are needed to guarantee greater independence to prosecutors so that political factors do not impact on foreign bribery investigations and prosecutions. Another area of concern is the lack of appropriate protection from discriminatory or disciplinary action of whistleblowers, both in the public and private sector (Dell and McDevitt, 2018; OECD, 2019f). A law has been adopted by the government reflecting the new EU standards on whistleblower protection, which is positive, but has not yet been passed by the parliament.

Figure 1.27. Performance in control of corruption and perceived corruption is poor



Note: Panel B shows the point estimate and the margin of error. Panel D shows sector-based subcomponents of the "Control of Corruption" indicator by the Varieties of Democracy Project.

Source: Panel A: Transparency International; Panels B & C: World Bank, Worldwide Governance Indicators; Panel D: Varieties of Democracy Project, V-Dem Dataset v12.

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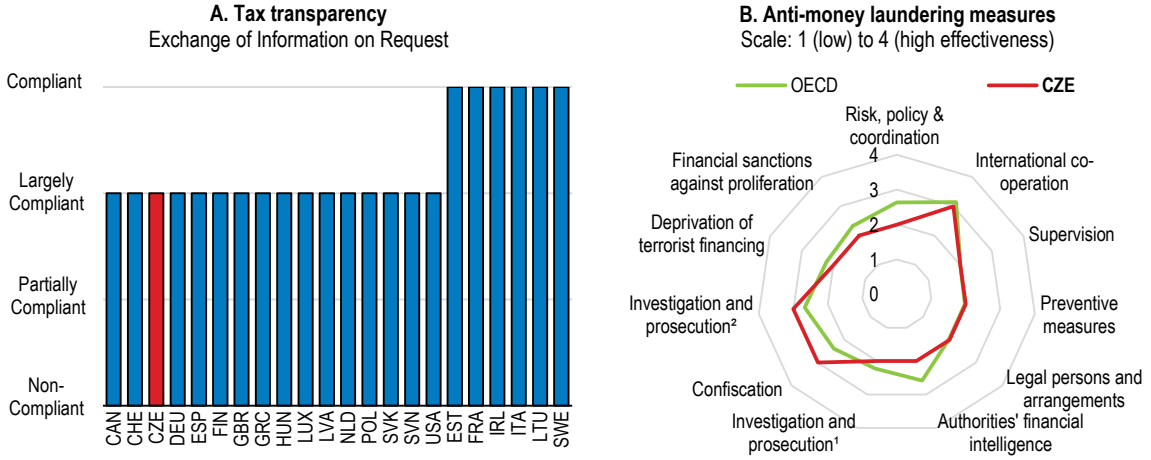
Figure 1.28. There is scope to strengthen anti-bribery enforcement across borders



Note: Panel A summarises the overall assessment on the exchange of information in practice from peer reviews by the Global Forum on Transparency and Exchange of Information for Tax Purposes. Peer reviews assess member jurisdictions' ability to ensure the transparency of their legal entities and arrangements and to co-operate with other tax administrations in accordance with the internationally agreed standard. The figure shows results from the ongoing second round when available, otherwise first round results are displayed. Panel B shows ratings from the FATF peer reviews of each member to assess levels of implementation of the FATF Recommendations. The ratings reflect the extent to which a country's measures are effective against 11 immediate outcomes. "Investigation and prosecution¹" refers to money laundering. "Investigation and prosecution²" refers to terrorist financing.

Source: OECD Secretariat's own calculation based on the materials from the Global Forum on Transparency and Exchange of Information for Tax Purposes; and OECD, Financial Action Task Force (FATF).

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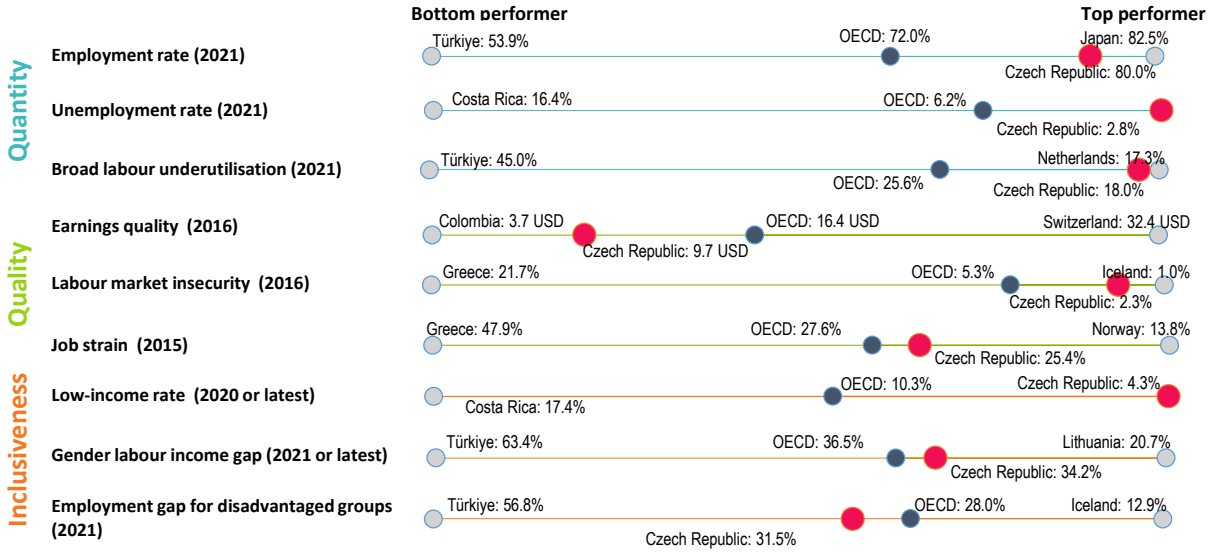
Tackling recurring labour and skills shortages

The Czech labour market is strong in many respects (Figure 1.29). The employment rate is comparatively high. The unemployment rate is one of the lowest in the OECD and has remained low even in times of crisis (Figure 1.30). As a result, job security is high. Only a very small minority of the working-age population live in relative poverty.

However, labour shortages have been a longstanding issue. After some easing during the COVID-19 crisis, the labour market has become tight again. Companies complain of labour shortages as a major obstacle to growth. Raising labour participation of disadvantaged groups (Figure 1.31), reducing the gender labour income gap and bringing more mothers to work can help in this regard. Moreover, attracting skilled foreign labour would lift growth as well as raise incomes. To attract skilled workers from abroad it is important to increase the relatively weak earnings quality (Figure 1.29) through increasing investment in innovation and R&D, improving the business environment and moving up the value chain.

Figure 1.29. The Czech labour market is strong in many respects

Dashboard of the labour market according to the OECD Jobs Strategy



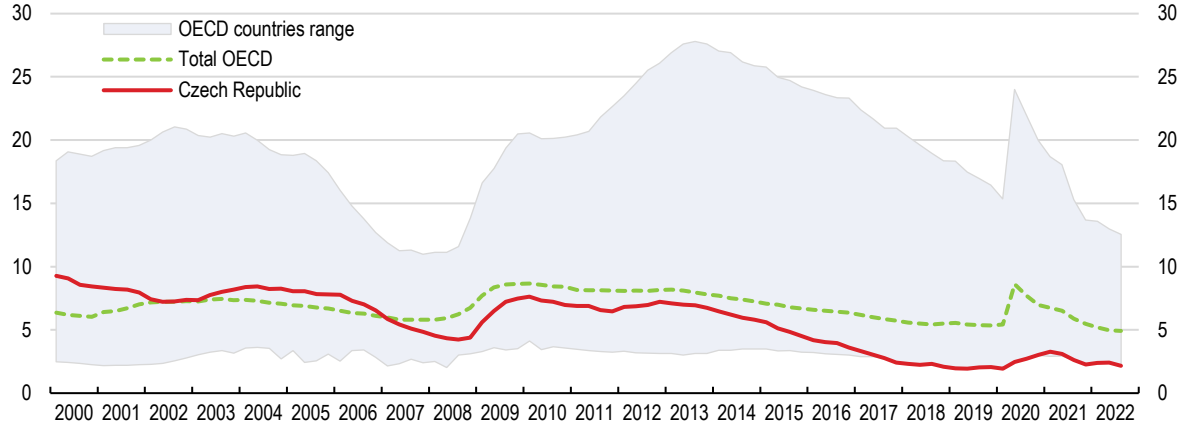
Note: Employment rate: share of working-age population (20 to 64) in employment (%). Unemployment rate: share of persons in the labour force (15+) in unemployment (%). Broad labour underutilisation: share of inactive, unemployed or involuntary part-timers (15 to 64) in the population (%), excluding youth (15 to 29) in education and not in employment. Earnings quality: gross hourly earnings in US dollars adjusted for inequality. Labour market insecurity: expected monetary loss associated with becoming and staying unemployed as a share of previous earnings. Job strain: share of workers in jobs in which there typically exists a high level of professional demand and insufficient resources to meet that demand. Low-income rate: share of working-age persons living with less than 50% of median equivalised household disposable income. Gender labour income gap: difference between average annual earnings of men and women divided by average earnings of men (%). Employment gap for disadvantaged groups: average employment gap between prime-age male workers and five disadvantaged groups (women with children, young people not in education or full-time training, workers aged between 55 and 64), as a percentage of the employment rate for prime-age male workers.

Source: OECD calculations based on statistics for 2021 or the last available year and various sources.

StatLink https://stat.link/jcuzxe

Figure 1.30. The unemployment rate has remained one of the lowest in the OECD

Unemployment rate, national definitions, % of the labour force



Source: OECD Economic Outlook database.

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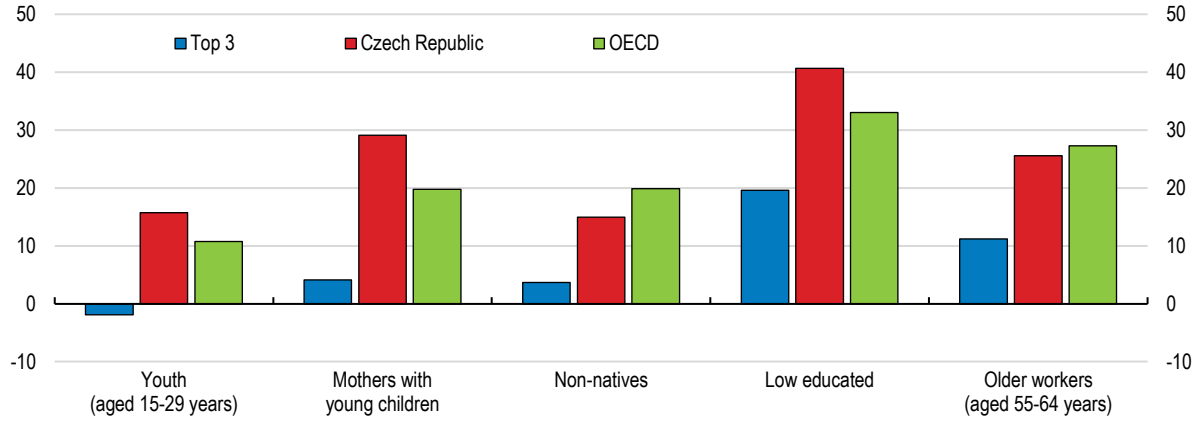
Figure 1.31. The employment gaps of certain groups are large

Employment gap[1], per cent, 2021 or 2020



1. The employment gap is defined as the difference between the employment rate of prime-age men (aged 25-54 years) and that of the group, expressed as a percentage of the employment rate of prime-age men. Youth excluding those in full-time education or training. Mothers with young children refers to working-age mothers with at least one child aged 0-14 years. Non-natives refers to all foreign-born people with no regards to nationality.

Source: OECD calculations based on OECD Employment database, OECD International Migration database, OECD Education Database and OECD Family database.

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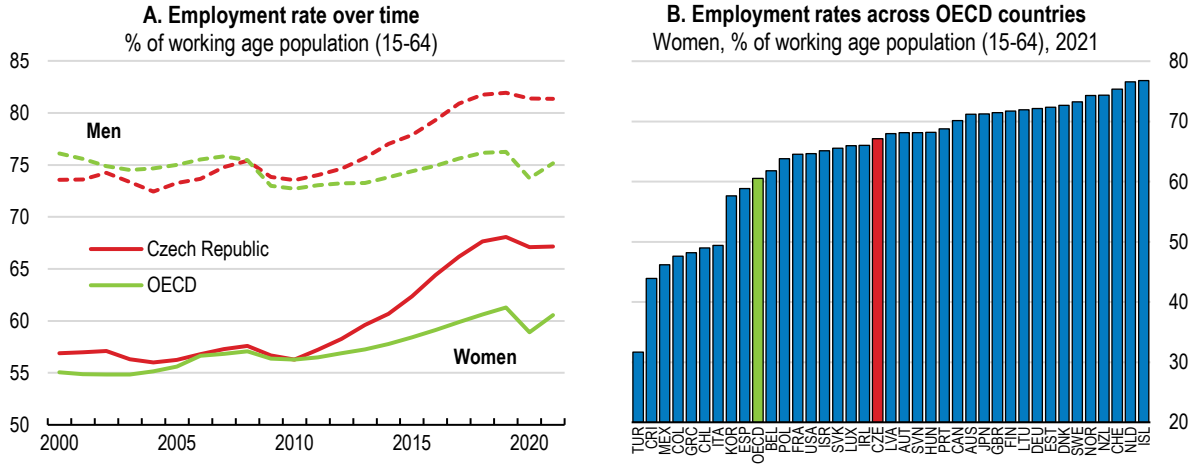
Raising employment of mothers

The employment rate of mothers with young children is very low in the Czech Republic. Employment of women is high overall, but after childbirth, female employment falls for several years (Figure 1.32 and Figure 1.33). Long absences from the labour market during childbearing age impact women's subsequent careers, and the gender wage gap is sizeable. Women also retire earlier than men. Shorter careers and the labour income gap contribute to a markedly higher risk of poverty in old age for women (Figure 1.34).

Figure 1.32. The overall employment rate of women is high and has risen over time



Source: OECD Labour Force Statistics.

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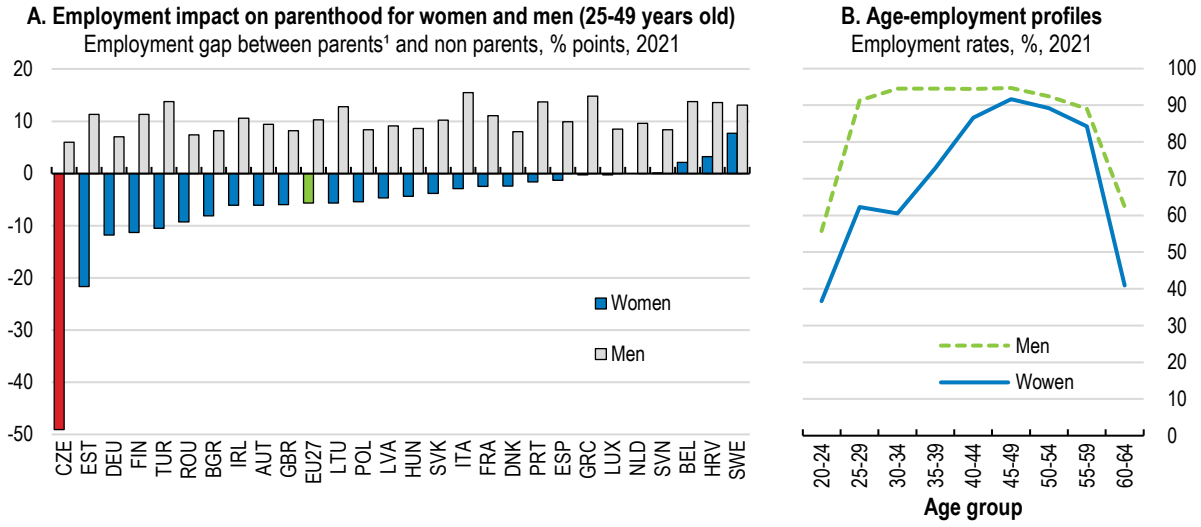
Figure 1.33. Motherhood has a big effect on employment



1. With one child under 6 years old.
Source: Eurostat database; OECD Labour Force Statistics.

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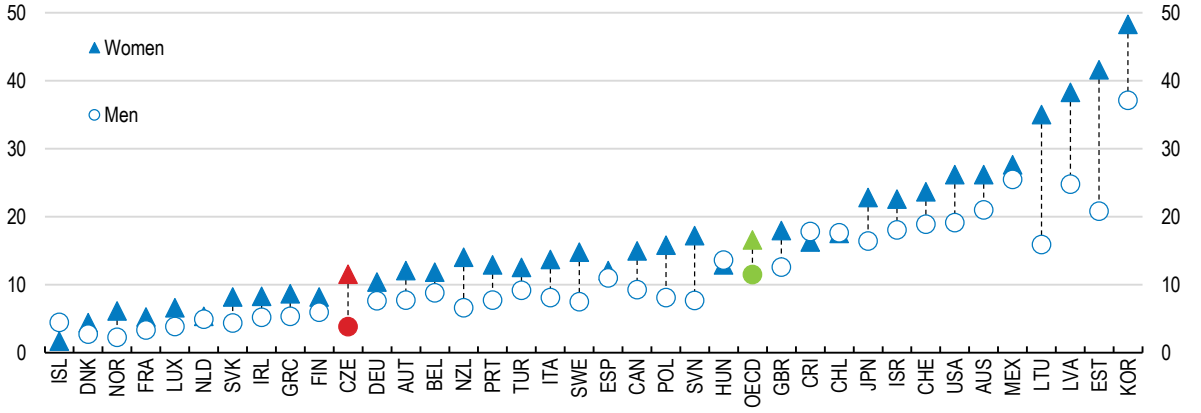
Figure 1.34. The risk of poverty in old age is significantly higher for women

Relative poverty rates (50% of median income) of elderly people (66 years old and over), 2019 or latest available year



Note: Data are ranked according to the entire elderly population.
Source: OECD Income Distribution Database - http://oe.cd/idd

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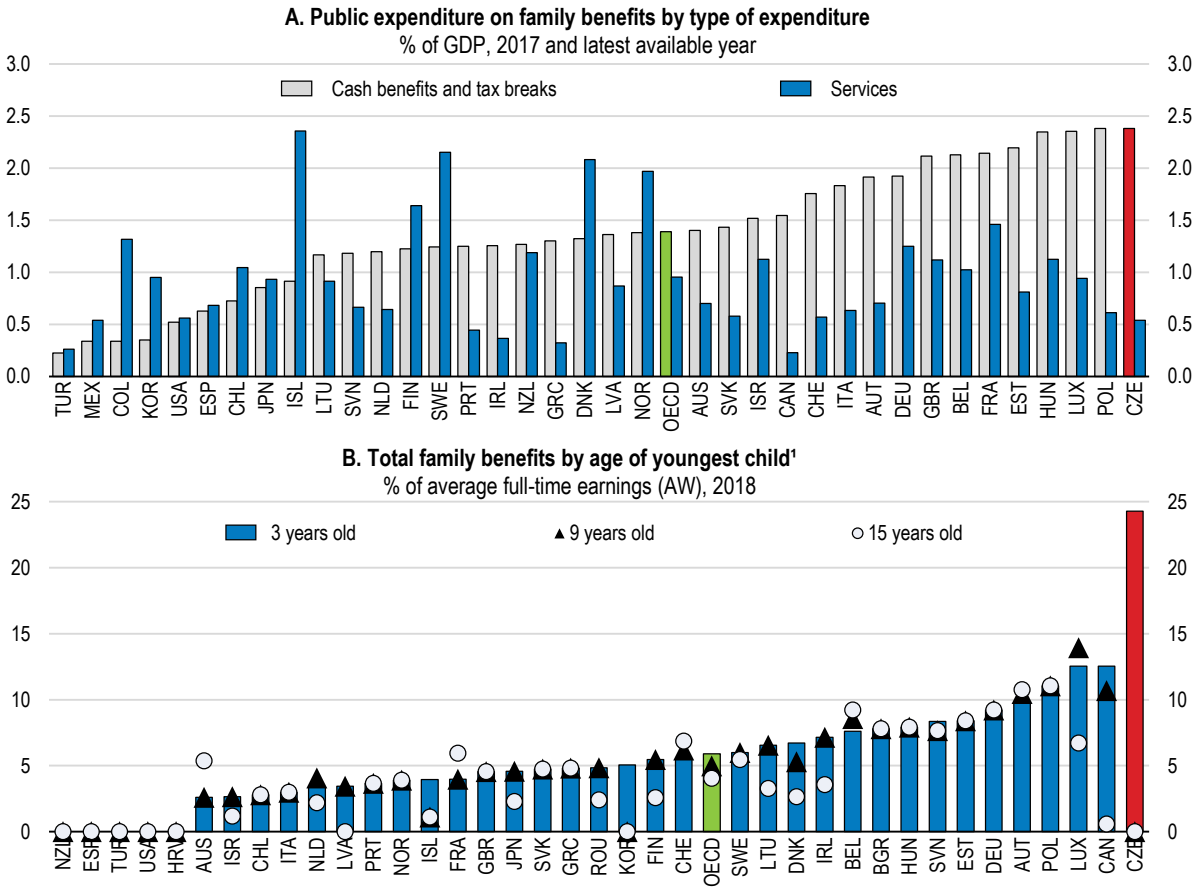
Very long parental leave and relatively generous associated family cash benefits and tax breaks (Figure 1.35) discourage women from returning to work. One parent – in the vast majority of cases the mother (Office of the Government of the Czech Republic, 2021) – can stay at home until the youngest child reaches three years of age without losing reintegration rights with their employer. Moreover, they can receive the parental allowance for a year longer. In addition, the dependent tax credit raises the marginal tax for second earners and provides a disincentive for parents to return to work. Evidence shows that overly long - longer than two years in particular - parental leave can have negative consequences for subsequent careers in terms of lower employment and lower wages (Thévenon and Solaz, 2013). Mothers on shorter leave end up in higher-skilled jobs later in their careers, presumably due to higher accumulated work-related skills and lower depreciation of human capital during their absence (Pertold-Gebicka, 2020).

Bringing mothers back to work earlier would therefore ease labour shortages while reducing the gender income gap.

Figure 1.35. Public support to families is tilted towards cash benefits



1. Estimates based on a two-parent, two-earner, two-child family, with one parent working full-time (40 hours per week) and one parent working part-time (20 hours per week), both on wages at the median of the full-time earnings distribution. The two children are aged three years apart, with the youngest child at the given age.

Source: OECD Family database, http://www.oecd.org/social/family/database.htm.

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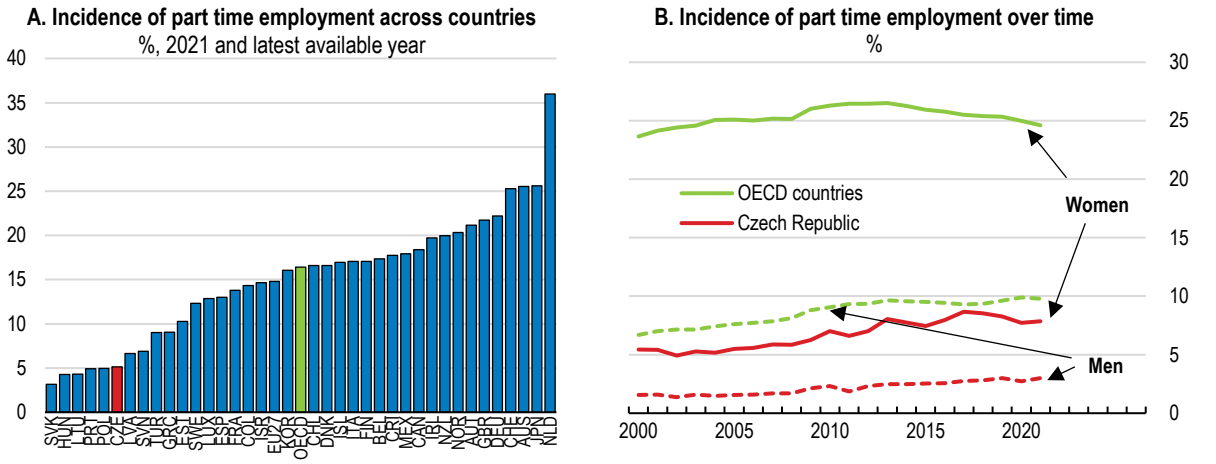
Over the years, more flexibility has been introduced to give parents a choice over the length of parental leave and to allow those receiving parental allowance to put their children in childcare, to be able to work. Yet, a relative lack of work flexibility and low availability of part-time work prevents mothers of young children from working. The Czech labour market has long had a smaller proportion of part-time work compared to other OECD economies, although the share of part-time workers has been on the rise, especially for women (Figure 1.36). Increasing the use of part-time work and incentivising employers to provide flexible work options suitable for mothers with pre-school children is one of the priorities set out in the government's Gender Equality Strategy for 2021-30 (Office of the Government of the Czech Republic, 2021). In 2020, job sharing was legislated with the aim of encouraging a higher uptake of part-time work by mothers. In 2022, the government introduced further incentives for employers to create part-time jobs for selected groups of employees, including parents of children under nine. Higher flexibility of jobs, better enforcement of rights for part-time work and flexible teleworking arrangements can support the re-entry of women into the market. The expansion of work flexibility and teleworking during the COVID-19 pandemic has perhaps acted as a catalyst for change, but it is too early to say whether this will have a permanent and positive effect on the employment of mothers.

Figure 1.36. The use of part-time work is low, but rising



Note: Part-time employment is based on a common 30-usual-hour cut-off in the main job.
Source: OECD Labour Force Statistics database.

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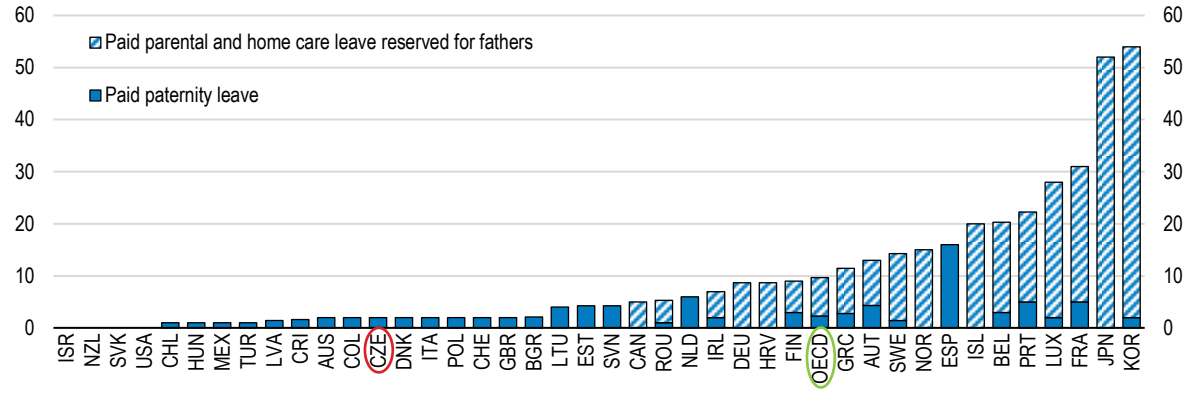
More could be done to encourage fathers to take active part in the care for small children. While parental leave and allowance are not gender specific, since 2010, the share of men among those receiving parental allowance has stayed between 1.5% and 2% (Office of the Government of the Czech Republic, 2021). The reasons cited are persistent gender stereotypes as well as financial concerns: two thirds of surveyed men reported having higher earnings than their wives (Office of the Government of the Czech Republic, 2021). In 2018, paternity leave - postpartum care benefit for fathers of up to seven calendar days - was introduced. Starting in 2022, it has been extended to two weeks. While a step in the right direction, total paternity and parental leave specific to fathers together remain almost eight weeks shorter than in the OECD on average (Figure 1.37). Yet, only about 40% of eligible fathers in the Czech Republic draw on this benefit and the share has not increased since its introduction (Office of the Government of the Czech Republic, 2021). Several OECD countries - Luxembourg, Sweden, Norway and Iceland - have reserved parts of parental leave for fathers of between 12 and 26 weeks at replacement rates (for average earners) from 73% to 96% (OECD, 2021c). In these countries, sufficiently generous replacement rates together with the loss of the leave entitlement for the couple if not taken by the father provide strong incentives for fathers to stay at home for a longer period.

The lack of childcare availability is another constraint hindering mothers' return to work. Enrolment of children under three in early childhood education and care is among the lowest in the OECD (Figure 1.38). Supporting affordable, accessible and high-quality early childhood education and care services is one of the government's priorities, and progress has been made in the number of available places. Children can stay either in kindergartens (under the Ministry of Education) or children's groups (under the Ministry of Labour and Social Affairs). However, despite steady progress, there is demand for 71 000 places for children under the age of three in these facilities, but only about 80% can be placed in kindergartens (64%) or children's groups (17%). Around 36 000 applications for a spot in kindergartens were rejected for the 2019/2020 school year, of which many applications were for children under the age of three (Office of the Government of the Czech Republic, 2021). While the number of applications does not equal the number of children, as parents can submit several applications for the same child, the Ministry of Education does not gather data on rejected children. The lack of data should be remedied, as offering an adequate supply of childcare capacities has been a clear strategic priority of the government.

Figure 1.37. Parental leave specific to fathers is short

Paid paternity leave and paid parental and home care leave reserved (or effectively reserved) for fathers, in weeks, 2022



Source: OECD Family database, http://www.oecd.org/social/family/database.htm

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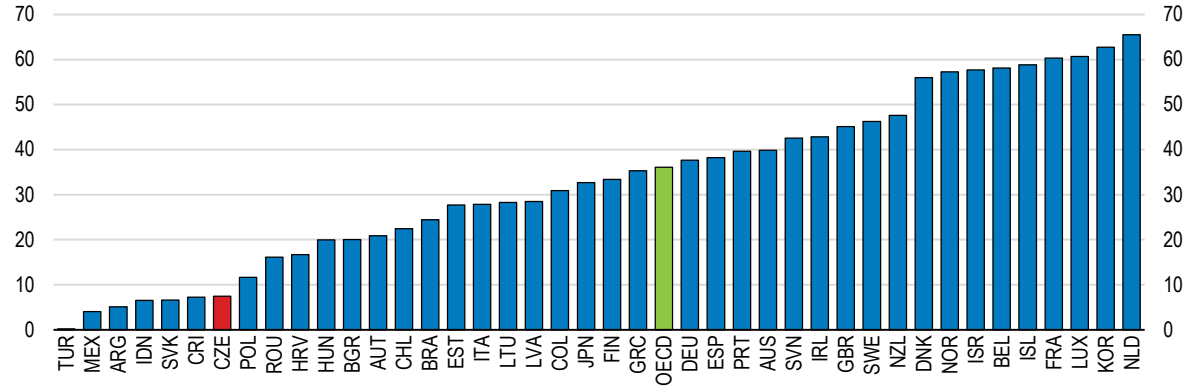
Figure 1.38. Enrolment of children under three in early childhood education and care is among the lowest

Children enrolled in early childhood education and care services, 0 to 2-year-olds, %, 2019 or latest available year



Note: Data generally include children enrolled in early childhood education services (ISCED 2011 level 0) and other registered ECEC services.
Source: OECD Family database, http://www.oecd.org/social/family/database.htm

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Further expansion of childcare capacity should continue. At the same time, the duration of parental leave should be shortened and the amount of commensurate cash benefits reduced. Public spending on family support in the Czech Republic is tilted towards generous cash benefits for families with young children (Figure 1.35), which have increased further in recent years (OECD, 2020a). Total cash benefits accruing to families with young children - relative to the average wage - are the highest in the OECD (Figure 1.35). In contrast, public spending on services - childcare provision and support and early childhood education - is low. More spending could therefore be directed towards increasing childcare capacity, towards parental leave of fathers and transfers should be better targeted towards families in hardship.

Quality of early childhood education and care is also important. International evidence shows that early childhood education and care provides a crucial foundation for future learning and is important for success later in life (OECD, 2021d; 2018b; 2017a). Access to high quality early childhood education and care for everyone raises equality of opportunity. This is perhaps even more vital in the Czech Republic, where

socio-economic factors have a strong effect on student performance and educational attainment (OECD, 2019b).

Growing numbers of early childhood education and care providers of different types can become a challenge with respect to ensuring quality. Notably, in the Czech Republic, kindergartens must follow a framework education programme prepared by the Ministry of Education, while children's groups do not follow any centralised education programme, raising risks that the quality of provided services differs significantly. Furthermore, different parts of the sector fall under different ministries, adding to complexity. The authorities should ensure effective coordination and monitoring to safeguard quality across providers, including by making sure that children benefit from minimum standards of learning and development opportunities across various types of establishments. A further boost to the sector could be achieved by requiring a qualified workforce, while offering opportunities for professional development and career progression, to ensure quality and job satisfaction (OECD, 2019c and 2019d).

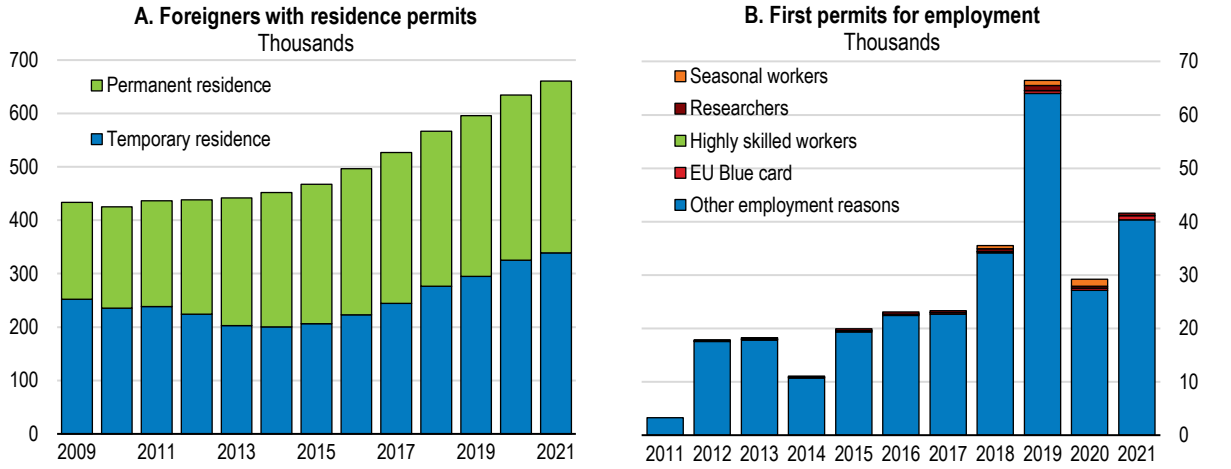
Table 1.8. Past recommendations on tackling labour shortages

Recommendations in previous Surveys	Action taken
Keep expanding the supply of affordable childcare facilities.	It is one of successive governments' priorities. • Since the school year 2017/2018, the compulsory enrolment in pre-school for children aged five was introduced. • The Ministry of Labour and Social Affairs continues to support the implementation of children's groups and pilot testing of "micro-nurseries". • The government also aims to improve the quality of the services provided in childcare and provide a system of national funding for these facilities.
Reduce the maximum duration of parental leave and incentivise fathers to take more of the parental leave.	The duration of parental leave remains the same, but paternity leave - postpartum care benefit for fathers of up to seven calendar days - was introduced in 2018 and extended to two weeks, starting in 2022.
Increase the flexibility of jobs by better enforcement of rights for part-time work, flexible teleworking and shared jobs.	Job sharing was introduced in legislation in June 2020 to increase flexibility.

Attracting and retaining skilled foreign workers

Recurring labour shortages and a tight labour market prompted Czech employers to look for workers from abroad and immigration has been rising steadily. Between 2014 and 2021, the number of foreigners with a residence permit (temporary and permanent) rose by 46% (Figure 1.39, Ministry of the Interior 2020; 2021). The number of first permits issued for employment grew rapidly. In 2019 it was more than three times higher than in 2015 and it is now rebounding quickly following the pandemic-related suspension of new entries (Figure 1.39). To fill labour shortages, employers in the Czech Republic have been increasingly looking to migrants from outside the European Union (third-country nationals). The number of third-country nationals in the Czech Republic with a work authorisation exceeded 150 000 in 2022, up from just 16 700 in 2015 (OECD, 2022b). Yet, despite rising skills needs, 96% of work-permit holders (normally with an up to 90-days visa) and 87% of Employee Card holders (work and residence permit) had contracts for low- to medium-skilled jobs in 2019 ((Figure 1.40, OECD, 2022c).

Figure 1.39. Immigration has been rising steadily



Source: Ministry of the Interior (2020, 2021), Annual Report on Migration and Integration of Foreigners in the Territory of The Czech Republic; Eurostat.

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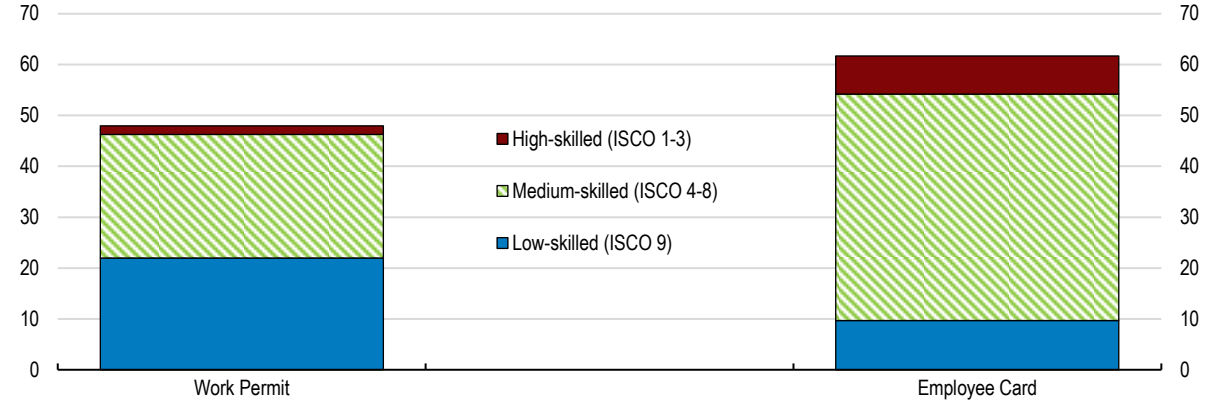
Figure 1.40. Most work contracts for third country nationals are for medium- and low-skilled positions

Active contracts for third country nationals, by occupations (ISCO), thousands, 2019



Note: Work permits are for short-term contracts, with a visa for a stay of up to 90 days. Employee Card includes work and residence permit.
Source: OECD, 2022c.

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Slow revival of cross-border migration amid the post-pandemic economic recovery worsened labour and skills shortages. The war in Ukraine added further challenges. The Czech labour market has relied heavily on Ukrainian workers. In 2021, Ukrainians (all, not only those working) made up close to one third of all residence permit holders and 45% of residence permit holders among non-EU nationals (Ministry of the Interior, 2022a). Prior to the war, the Ukrainian labour force in the Czech Republic consisted mostly of low-skilled men, working in manufacturing, many of them as temporary workers on short-term 90-day visas. Once the general mobilisation prevented most men aged 18 to 60 from leaving Ukraine, the inflow of this type of workers stopped. Instead, the large inflow of Ukrainian refugees that followed consisted mostly of women and children (Box 1.4). While many have already found employment, they cannot substitute for migrant workers. Moreover, uncertainty remains about their willingness to stay and work in the Czech Republic in the long term.

Current permit conditions for workers coming to the Czech Republic are not geared towards attracting and retaining high skilled foreign workers. A select group of workers can benefit from priority processing, simultaneous processing of family applications, and reduced documentary requirements, determined by

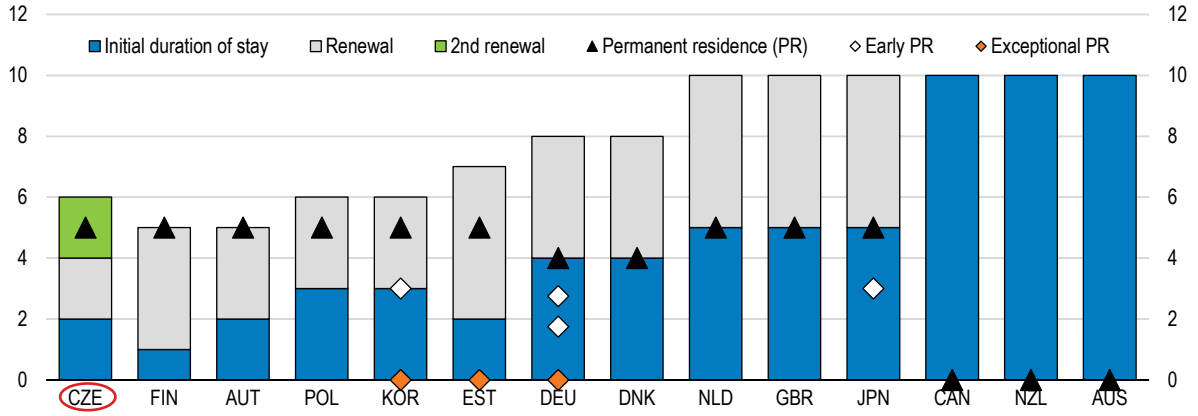
employer assessments and occupation skill level. However, the basic permit conditions (maximum duration, requirement to remain with employer, time allowed to find a new job in case of unemployment, residence period prior to eligibility to apply for permanent residence) are the same for all migrants. Permit durations are limited to two years for economic migrants of all skills levels, after which they must be renewed. Labour migrants can become eligible for permanent residence after five years.

The basic framework of the labour migration policy is a labour-market tested (i.e., allowing recruitment of third-country nationals only if resident/EU workers cannot fill the vacancy), employer-driven temporary migration system, with renewals subject to initial conditions and eventual eligibility for permanent residence. There is no general skill threshold and salaries must meet the national minimum. Employee Card holders must remain at least six months with the employer for which they were first approved to enter the Czech Republic. Changing employers is allowed after six months, although subject to a new labour market test and notification of the Ministry of Interior. For Employee Card holders, family reunification can be requested after a six-month residence, and once family members receive their residence permit for the purpose of family reunification, they enjoy free access to the labour market. Statutory processing time is up to 270 days for family members, reduced to 180 days for the family of Employee Card holders. The average processing time in 2022 was 100 days. Family members of migrants admitted in the Highly Qualified Worker Programme or the Key and Research Staff Programme have the right to apply immediately for a national long-stay visa for family-related purposes in order to accompany them. However, this does not grant labour market access. Family members are required to obtain a work permit from the labour office if they want to take up employment.

Conditions in terms of permit duration and labour market mobility in the Czech Republic for highly skilled workers are less favourable than in neighbouring and competing countries (Figure 1.41). Highly skilled workers are likely to choose destinations with more favourable conditions and where they can easily relocate with their family. Many countries offer the highest-skilled migrants permanent residence, if not immediately, at least at the end of the first temporary work permit or during the validity of the first renewal. Neighbours of the Czech Republic (Germany and Poland) and many other EU destinations (e.g., Estonia and the Netherlands) are already offering direct permanent residency, longer stay permits (up to five years), exemptions from labour market testing, simultaneous processing of family applications, immediate work rights for spouses, reduced documentary requirements, rapid processing and other benefits for the most talented migrants. In contrast, all vacancies for which employers seek economic migrants in the Czech Republic (both low and high skilled) must undergo initial labour market testing. This applies also for any subsequent job changes by a migrant. Moreover, all labour migrants must go through at least two permit renewals before they become eligible to apply for permanent residence (OECD, 2022b).

Figure 1.41. Conditions for highly skilled migrant workers are less favourable than in OECD peers

Years



Source: OECD (2022), "An Approach to Points Based Migration for the Czech Republic", Final Report.

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Longer duration permits and better family reunification conditions can aid in attracting and retaining high skilled migrant workers. Evidence suggests that economic migrants and their employers are interested in longer-term stays in the Czech Republic. Despite the short duration of the Employee Card and the EU Blue Card, 65% of permit holders stay over two years. Preliminary data from the Czech Labour Office indicate that almost half of work contracts for third country nationals holding Employee Cards are already open-ended (OECD, 2022b). A duration of stay of five years, for example, would create a direct link between the temporary stay of the migrant and the residency requirement for permanent residence. In addition, immediate temporary residence granting work rights for all accompanying family members will improve the support available to the primary highly skilled migrants and is likely to lead to better labour market integration and retention.

To be able to select and retain migrants with the highest potential for labour market and social integration over the long term, the Czech Republic should consider implementing the points-based system (PBS), as developed by the Ministry of Labour and Social Affairs, with support from the OECD and funding from DG Reform (OECD, 2022c). In this way, high levels of human capital (age, language, education, experience) and job characteristics (skill level and salary) can lead to advantageous permit conditions and reduce barriers to long-term stay. Several OECD countries use a PBS to successfully attract and retain high-skilled foreign workers. Australia, Canada and New Zealand offer immediate permanent residence, while Austria and Japan use the PBS to provide high-scoring migrants with favourable permit conditions.

The PBS is a sorting system which places migrants into categories according to their likelihood of successful integration into the labour market and Czech society. The system would award points to highly skilled, highly remunerated, highly educated migrants and offer advantages to migrants who have gained professional qualifications and experience in the Czech Republic. Functional Czech language skills also bring points. Younger migrants will also have an advantage in this system, since they are best placed to adapt to future changes and can contribute to taxes and social contributions over a longer working life, before retirement. Providing points to younger migrants also acts as a corrective mechanism, given that points for high salary and experience naturally select older workers. Similarly, additional points can be available for a small set of strategic occupations identified by the Czech authorities.

Together, the points earned by potential migrants help identify which migrants the Czech Republic should target for selection and retention. For instance, as discussed in OECD (2022c), high-scoring migrants could be eligible for five-year permits and medium-scoring migrants for three-year permits. Both types of migrants should also be allowed to sponsor their accompanying family from the outset, in their initial application, ensuring a seamless transition to living and working in the Czech Republic for the whole family unit. This said, any PBS requires continuous evaluation and adjustment, evolving in step with labour market needs and strategic priorities.

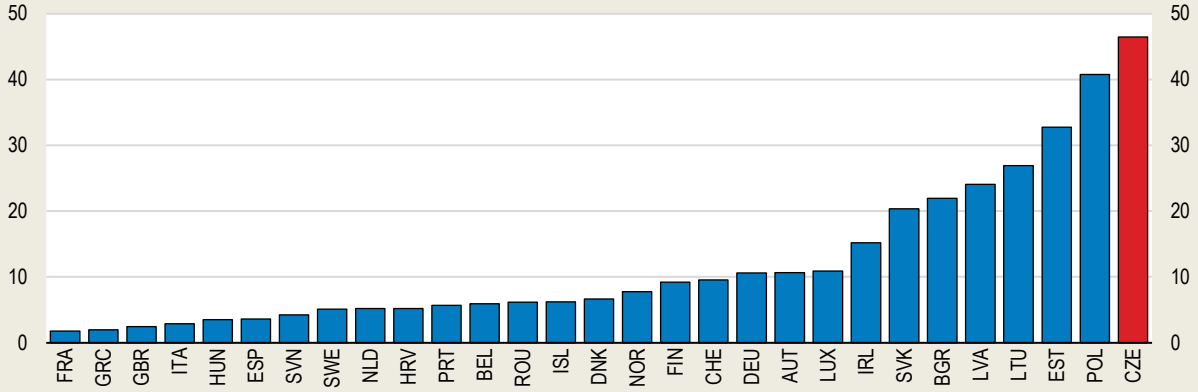
Box 1.4. The financial and labour market impact of Ukrainian refugees

Since the Russian aggression against Ukraine on February 24, 2022, the number of total international displacements from Ukraine approached 15.5 million by early 2023 (UNCHR). While not a neighbouring country, the Czech Republic experienced a large inflow of Ukrainian refugees. By early March 2023, it is estimated that in total close to 496 000 refugees have been registered for Temporary Protection (UNCHR), equivalent to about 4.7% of the total Czech population, the highest ratio in relative terms of all receiving countries (Figure 1.42). Some Ukrainian refugees have also already returned to their homes.

According to the data from the Ministry of the Interior (2022b), one third of the refugees given temporary protection are children (aged 0-17), and close to two thirds are adults of working age (18-64). Of these, 70% are women. The Ministry of Education estimates that slightly over 57 000 Ukrainian refugee children attended Czech schools at the end of September 2022, including kindergartens, primary and secondary schools. Furthermore, 5 500 Ukrainian students attended higher education.

Figure 1.42. The Czech Republic has received the highest inflow of Ukrainian refugees per capita

Number of refugees from Ukraine registered for Temporary Protection or similar national protection schemes, per thousand population



Note: last updated 7 March 2023.
Source: OECD calculations based on UNCHR, Operational data portal.

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European Union member states approved the implementation of the Temporary Protection Directive on March 4, 2022, to protect displaced persons from Ukraine. As a result, people fleeing from Ukraine enjoy a minimum set of basic rights, which include access to the labour market, education, health as well as minimum subsistence support and housing in all EU countries.

In the Czech Republic, Ukrainian refugees have access to health care, education and housing, with costs covered by the government. Refugees are also eligible for a financial subsidy enabling them to cover daily basic living expenses and to access accommodation, depending on their exact situation. For example, a typical refugee family - one adult and one child - in independent housing in the Czech Republic is eligible to receive roughly EUR 400 per month. Czech households hosting Ukrainian refugees are also entitled to financial support for a limited duration (EUR 120 per month per accommodated person). Under various assumptions, summing the estimated costs of financial and housing support with the estimated education and health costs, OECD (2022d) computed that the total budget cost of hosting Ukrainian refugees in 2022 would amount to EUR 1.96 billion in the Czech Republic, roughly 0.7% of GDP.

The Czech Republic will bear a high budgetary cost compared to other EU countries, but part of the cost will be covered by common EU sources. The EU Commission has proposed several financial measures to help mutualise the cost: funds redirected from European Structural and Investment Funds (ESIF), the fund for European aid for the Most Deprived (FEAD) and the 2022 tranche of the EU recovery plan

(EU_REACT). In total, an estimated EUR 17 billion will be made available to assist EU Member States in receiving refugees fleeing Ukraine. This compares to the total estimated budgetary cost for all European countries for 2022 at EUR 27 billion (OECD, 2022d). The common EU sources will cover roughly two thirds of the cost by members. However, the exact distribution across recipient countries has not yet been determined.

The Ukrainian refugees have the right to work in the Czech Republic. In total, 205 000 refugees found employment in the Czech labour market at some point in time between the start of the conflict and end-February. In late February 2023, roughly 98 000 refugees were employed, more than one third of Ukrainian refugees of working age (Labour Office of the Czech Republic, 2023).

The fact that the Czech labour market is very tight facilitates the absorption of the newly arrived refugees. A large existing Ukrainian diaspora can also act as a valuable resource for incoming refugees. Information available indicates that the share of incoming refugees who have tertiary education is higher than among other refugee groups and they are also more highly educated than the general Ukrainian population (OECD, 2022e). Nevertheless, psychological distress, the fact that most refugees are mothers with children, and the lack of knowledge about the labour market and of the local language can still hamper rapid labour market integration. Moreover, considerable uncertainty remains regarding the length of stay of these refugees in the Czech Republic.

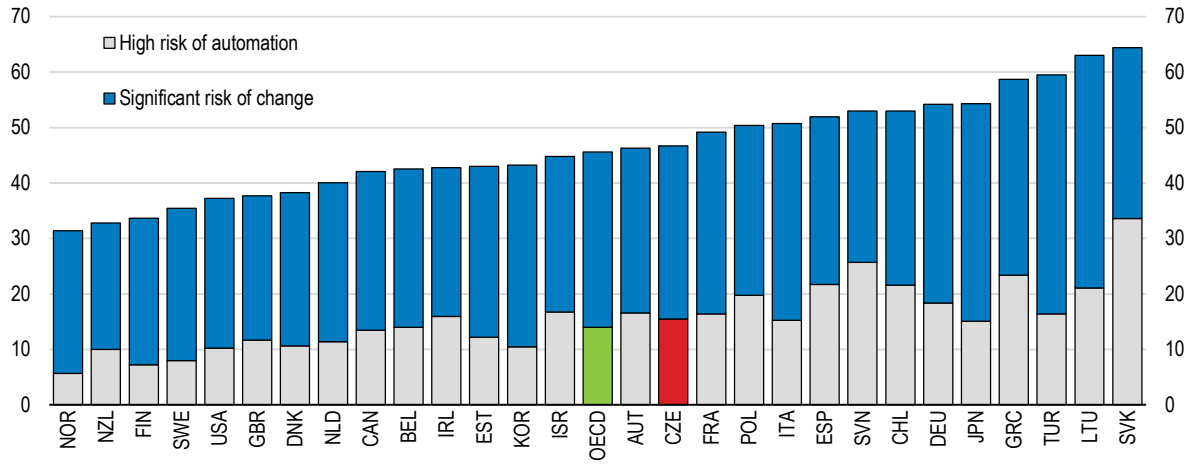
Improving inclusiveness and adaptability of education and skills provision

Technological progress, changes in the labour market and shifts in the demand for skills present significant opportunities and challenges (OECD 2019e and 2017b). These trends have likely been accelerated by the shifting labour market requirements during the coronavirus outbreak. Like other OECD economies, the Czech Republic has experienced a rise in demand for high-skilled jobs and this is set to continue. Close to half of current jobs (Figure 1.43) face a high risk of automation or would be significantly changed by technology (Nedelkoska and Quintini, 2018). The KOMPAS project has shown there will be an increasing demand for higher educated workers in the mid to long term. The LEON, quantitative component of the KOMPAS project, predicts a 16% increase in the overall demand for tertiary educated workers over the next five years. Demand predicted by LEON in some occupations requiring high levels of education (e.g., civil engineering, natural sciences) is expected to grow by up to 26% (OECD, 2022b).

With time, occupations will increasingly require professional training and/or tertiary education. Moreover, over the span of their careers, Czech workers will likely change jobs and employers, and will need to reskill. Besides higher and more specialised skills, strong core skills such as information processing, problem solving and communication can ensure that individuals are resilient to change (OECD, 2017c and 2016b). It is therefore crucial that education and skills provision systems provide workers with the right skill sets and easy access to learning. In turn, higher attained education and improved skills will help raise productivity and move the Czech economy up the global value chains. Yet, a high share of Czech 15-year-old students still expect to work in occupations that are projected to decline in the future (Figure 1.44, OECD, 2021f).

Figure 1.43. Close to half of current jobs face a high risk of automation or may be significantly changed by technology

Risk of automation or significant change[1], % of jobs at risk by degree of risk



1. Jobs are at high risk of automation if the likelihood of their job being automated is at least 70%. Jobs at risk of significant change are those with the likelihood of their job being automated estimated at between 50 and 70%.
Source: OECD Employment Outlook 2019.

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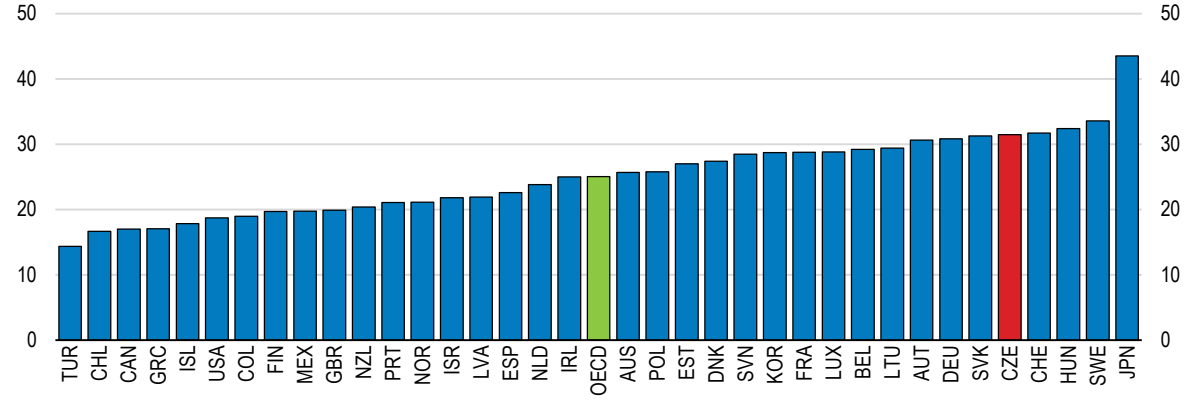
Figure 1.44. A high share of 15-year-old students expect to work in occupations projected to decline

Share of students who indicate they expect to work in an occupation expected to shrink, %



Note: Based on students' reports on the job they expect to hold at age 30 and linked to projections from the U.S. Bureau of Labor Statistics. A shrinking occupation is defined as 4-digit occupations at the bottom quartile of the projected change in employment share between 2019 and 2029.
Source: OECD (2021), OECD Skills Outlook 2021: Learning for Life, OECD Publishing, Paris, https://doi.org/10.1787/0ae365b4-en.

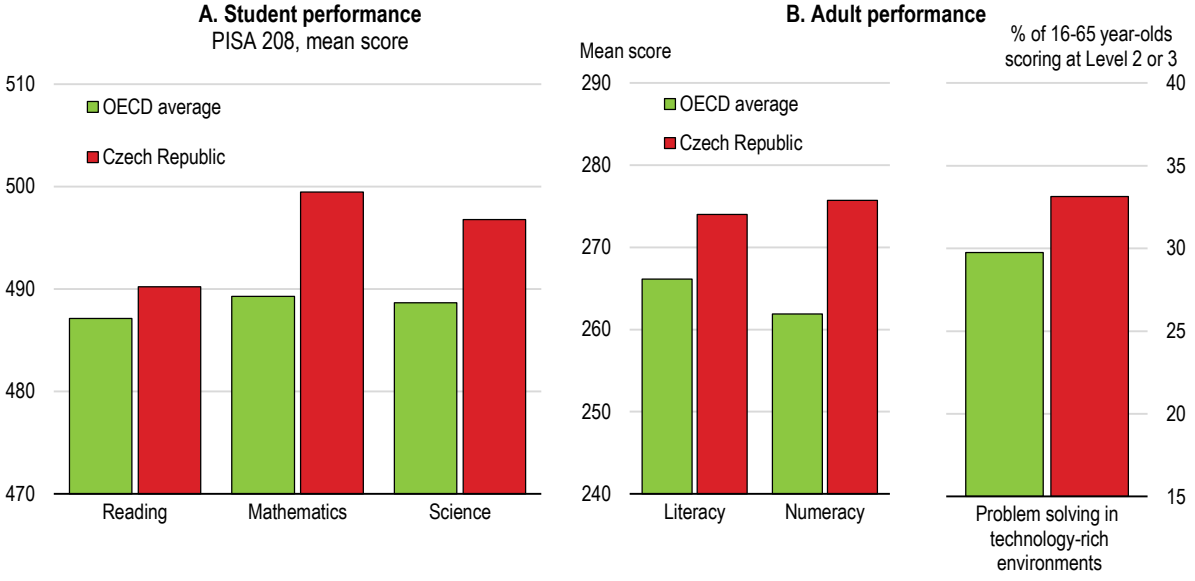
StatLink https://stat.link/c8zl6t

The Czech Republic scores well on various measures of skills and quality of education. 15-year-old students perform well in PISA tests, and adult skills are above the OECD average in literacy, numeracy and problem solving in technology-rich environments (Figure 1.45). EU data also indicate high basic digital skills (European Commission, 2022b). Overall, education attainment is high, with 92% of 25-34-year-olds having at least upper secondary education, and school leaving rates are low (OECD, 2021e; European Commission, 2022b).

However, there are challenges to the flexible and effective provision of skills to match current and future labour market needs. The PISA tests point to a decline in performance in mathematics and science over

the last 15 years (Figure 1.46). Furthermore, while overall educational attainment is high, tertiary attainment still lags significantly behind other OECD peers despite progress in recent years (Figure 1.47). Skills shortages in growing sectors remain large. Despite workers' good basic digital skills, the economy lacks information and communication technology (ICT) specialists. According to Eurostat, 76% of Czech enterprises reported difficulties in finding ICT specialists, which is the highest percentage in the European Union. The share of female ICT specialists is the second lowest EU-wide (European Commission, 2022b). An OECD assessment of skills shortages found extensive shortages in technical knowledge areas such as engineering, mechanics and technology, mathematics, and computer and electronics (OECD, 2018c).

Figure 1.45. The Czech Republic scores well on various measures of skills and quality of education



Source: OECD (2019), PISA 2018 Results (Volume I): What Students Know and Can Do, PISA, OECD Publishing, Paris, https://doi.org/10.1787/5f07c754-en; OECD (2021), The Assessment Frameworks for Cycle 2 of the Programme for the International Assessment of Adult Competencies, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/4bc2342d-en.

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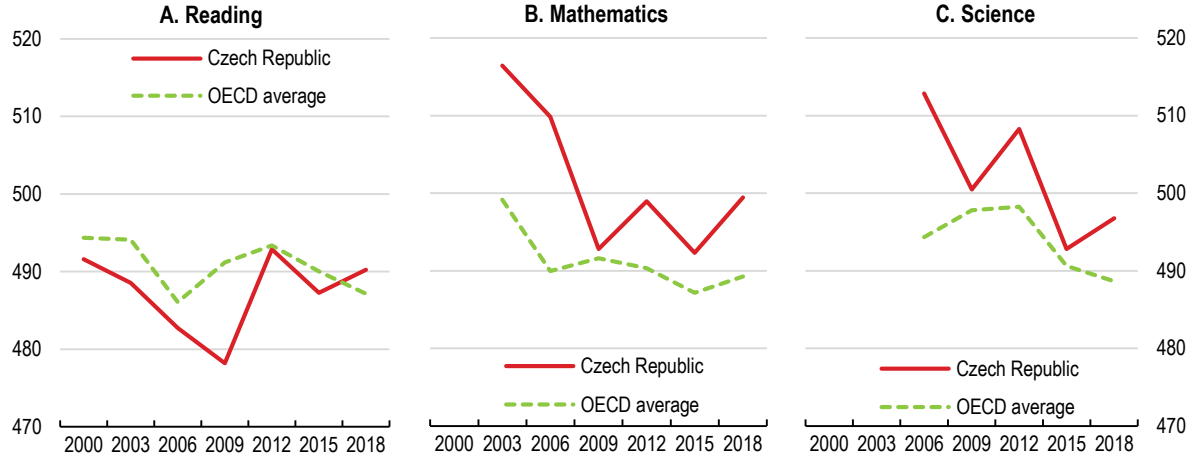
Figure 1.46. PISA tests indicate a decline in performance in mathematics and science

PISA mean performance score



Note: The number of available OECD countries may vary over the time period shown.
Source: OECD (2019), PISA 2018 Results (Volume I).

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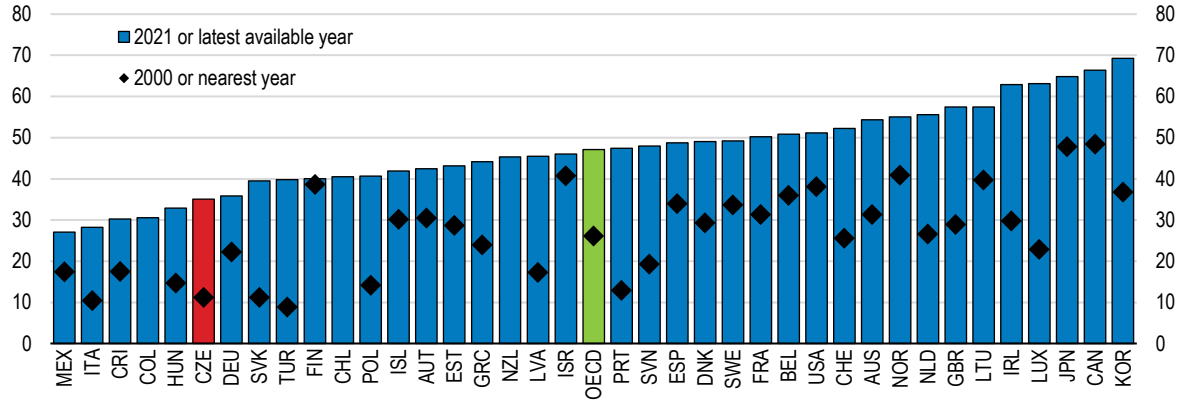
Figure 1.47. Tertiary attainment still lags behind OECD peers

Share of population (25-34 year-olds) with tertiary educational attainment, %



Source: OECD Education at a Glance database.

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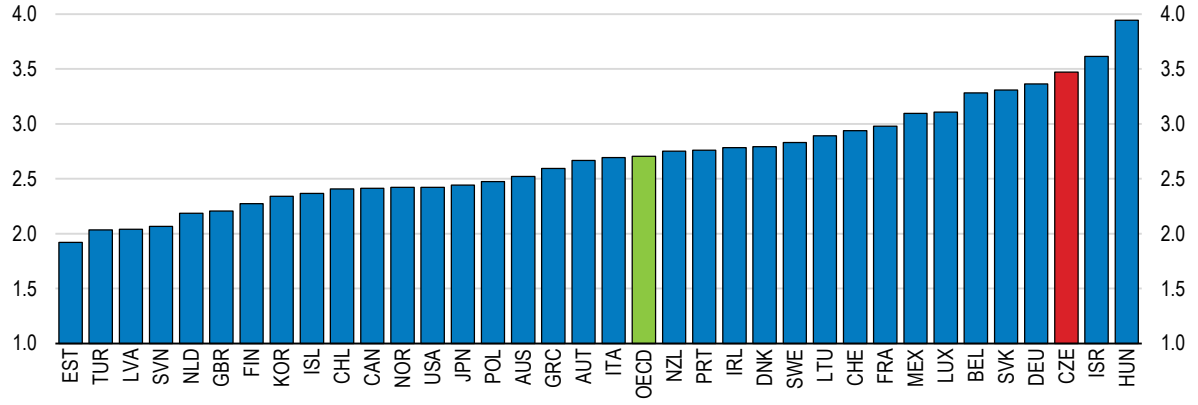
To strengthen the resilience of Czech workers' skill sets and to help make skills provision more relevant to the labour-market, the 2030+ education strategy (Ministry of Education, Youth and Sports, 2020) puts a welcome emphasis on reforming the Vocational Education and Training (VET) sector. It aims at postponing specialisation and reducing the total number of study fields, modernising them, and making them more interdisciplinary. Professional and transferable competences will be strengthened. VET education will increasingly shift to modular curricula that are better adapted to adult learning. More (practical and theoretical) teaching will be carried out in cooperation with employers. Employers' organisations and business representatives will also be more involved in curriculum development and updates. Developing digital skills is also an important part of the 2030+ education strategy, with the aim to strengthen education and training on digital skills at all levels of education. The Czech Republic will draw on the available funds from the EU Recovery and Resilience Facility to provide digital equipment to schools, improve digital skills of teachers, revise the IT curriculum, and expand life-long learning in digital technologies. These efforts should continue.

Good overall scores in skills and education performance also mask persistent inequalities, whereby socio-economic status of parents has a strong impact on performance in school (Figure 1.48). This translates into weaker outcomes in terms of labour market performance and health later in life (OECD, 2021e). School drop-out rates vary substantially across regions, with the disadvantaged ones recording over twice the national rate (6.4%) of early school leavers (European Commission, 2022b). Moreover, 57% of Roma students left school early in 2016 (European Commission, 2022b). Inequalities in schools can be linked partly to the low attractiveness of the teaching profession. The teaching workforce lacks diversity, as teachers are quite old on average and predominantly female (OECD, 2021e). There is limited career progression and teacher salaries are low (Figure 1.49), although there have been rises in salaries in recent years (Ministry of Finance, 2021). Evidence reported in the OECD Skills Outlook (OECD, 2021f) indicates that teacher enthusiasm and teacher stimulation are inferior in disadvantaged schools (Figure 1.50). The proportion of teachers who have received training in teaching in a multicultural or multilingual setting or communicating with people from different cultures or countries is one of the lowest in the OECD (Figure 1.50). This is of concern, given the currently high inflow of Ukrainian refugees and the desire to attract more foreign workers and their families.

Reducing inequalities in education has been a longstanding priority. The introduction, in 2017, of compulsory participation in pre-primary education for one year prior to primary school will help in this regard. However, abolishing early tracking, reducing differences in the quality of schools and attracting better teachers to disadvantaged schools would go further in raising equality of opportunities for everyone.

Figure 1.48. Socio-economic background has a strong impact on performance in school

Likelihood of low performance among disadvantaged students, relative to non-disadvantaged students, odds ratio



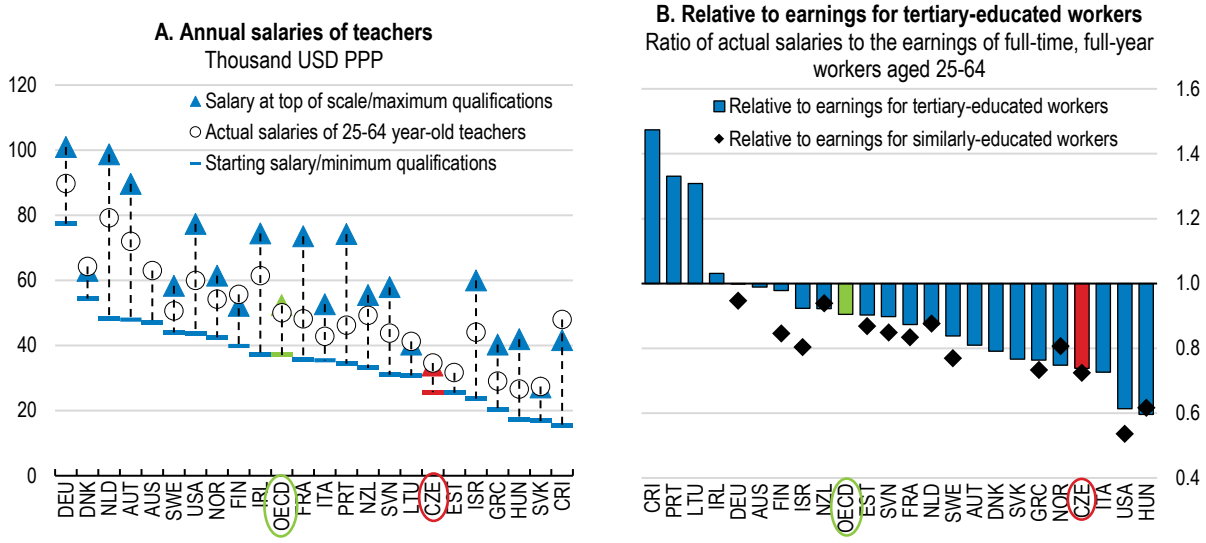
Note: A socio-economically disadvantaged student is a student in the bottom quarter of ESCS (PISA index of economic, social and cultural status) in his or her own country/economy.

Source: OECD (2019), PISA 2018 Results (Volume II): Where All Students Can Succeed, PISA, OECD Publishing, Paris, https://doi.org/10.1787/b5fd1b8f-en.

StatLink https://stat.link/bahnsr

Figure 1.49. The attractiveness of the teaching profession is low

Annual salaries of teachers in public institutions, lower secondary, 2021



Note: Actual salaries include bonuses and allowances.

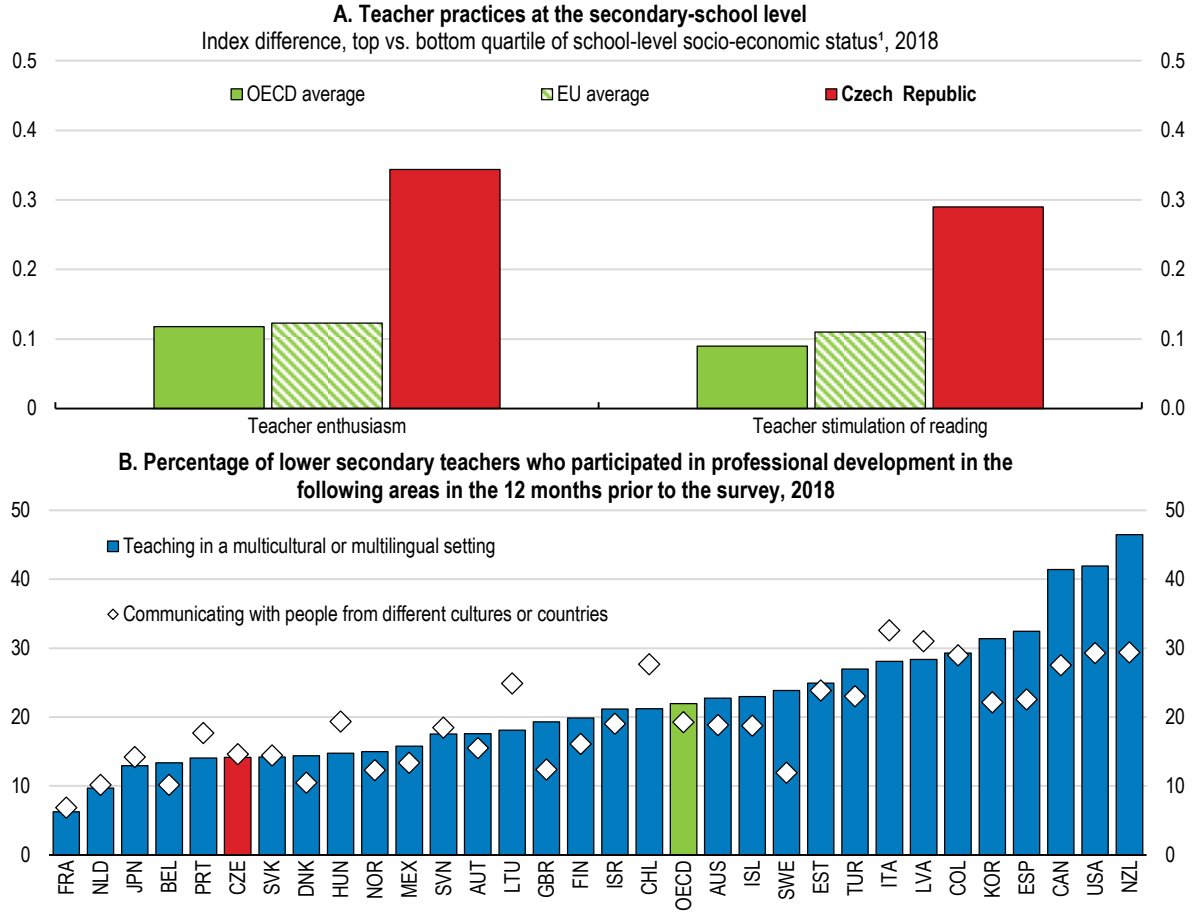
Source: OECD (2022), Education at a Glance 2022: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/3197152b-en.

StatLink https://stat.link/d534on

Tracking into prestigious general education pathways in multi-year grammar schools (gymnasium) occurs very early, at age 11/12, when students can apply for a long academic track, the 8-year gymnasium. A second but much less significant tracking stage occurs at age 13/14 (6-year gymnasium). Students are selected into the different pathways by admission examinations and aptitude tests, and those with the strongest academic performance usually opt for general tracks such as gymnasium and lyceum. As discussed in the special chapter on education in the 2014 *OECD Economic Survey* (OECD, 2014), evidence suggests that family background matters more than academic ability in explaining access to the more prestigious academic tracks (Koucký et al., 2004; Münich, 2005). Moreover, early student selection has an adverse impact on students assigned to lower tracks and does not raise average performance

(OECD, 2012). This is recognised as an issue also in the new 2030+ education strategy. Therefore, tracking should be postponed and combined with increased possibilities to transfer between different education tracks.

Figure 1.50. Teachers could be better prepared to deliver on strategic priorities



1. Based on reports of students near the end of their compulsory studies, reporting on the level of enthusiasm of teachers and whether they put in place pedagogical approaches to stimulate reading. On average, students in schools with an advantaged socio-economic composition reported that their teachers had greater levels of enthusiasm compared to those attending schools with a socio-economically disadvantaged composition. Differences smaller than 0.3 are considered small, differences between 0.3 and 0.5 are considered large and differences over 0.5 are considered very large.

Source: OECD (2021), Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris, https://doi.org/10.1787/b35a14e5-en; OECD (2021), OECD Skills Outlook 2021: Learning for Life, OECD Publishing, Paris, https://doi.org/10.1787/0ae365b4-en.

StatLink https://stat.link/2a4m8b

Inequalities could be further addressed by reducing differences in quality between schools that are related to high regional disparities (Shewbridge et al., 2016). Recent changes to funding of schools (primary and secondary) go some way towards this goal by funding based on the actual extent of education in a school, rather than per-student funding. In this way, small schools with fewer children are not penalised with lower funding. However, the highly fragmented territorial administration of the Czech Republic fosters the existence of many small schools, although many localities face a declining school-aged population and as such can hardly sustain school units of appropriate “size efficiency” (Shewbridge et al., 2016; OECD, 2020a). Further consolidation of the school network is therefore desirable and could raise efficiency and quality. For instance, small schools could be encouraged to cooperate by sharing resources and common services. Clusters of schools could be formed, that would come under the umbrella of common school leadership and a shared pool of administrative staff.

Funding formulae are the most commonly used basis for allocation of funding to educational institutions among OECD countries (OECD, 2021e). However, the Czech Republic is one of only six countries that do not use a funding formula. Funding formulae can be useful, as financing can be explicitly targeted towards important strategic areas, such as providing support for disadvantaged students or schools based on well-defined criteria. The latter can be based on student characteristics, school characteristics and/or population characteristics in the local area. Adding explicit and objective criteria in the funding formula for schools to target economic and other disadvantages could therefore help address the inequalities. For instance, since a recent reform in Australia, funding is based on a "standard" which comprises a base funding amount for every student plus six additional "loadings" that provide extra funding for disadvantage (disability, low English proficiency, Aboriginal and Torres Strait Islanders, socio-educational disadvantage, school location and school size). The criteria and specific loadings can then evolve in step with strategic priorities of the government.

The uneven distribution of qualified teachers across schools is a concern. Disadvantaged schools are more likely to report shortages of qualified or competent teachers (Shewbridge et al., 2016; Schleicher, 2014). However, the Czech Republic does not have targeted programmes or incentives to motivate teachers to work in remote or regional areas (Shewbridge et al., 2016). The Ministry of Education, Youth and Sports should increase incentives for highly qualified teachers to work in remote areas to help reduce disparities in the quality of schooling. In this, both financial and non-financial factors are important in motivating teachers. Professional factors matter, such as opportunities to take on extra responsibilities and positions of influence, reforms and innovation, and developing strong leadership and collegiality in professional development (Mourshed et al., 2010; OECD, 2012; Rice, 2010). The Ministry should help create an environment where disadvantaged schools can attract the best teachers by offering meaningful careers, good working conditions and opportunities for reward. The overall reform to the career system of teachers - also part of the 2030+ education strategy - would be helpful and consistent with this approach.

Table 1.9. Past recommendations on education and skills

Recommendations in previous Surveys	Action taken
Increase resources to education, skilling, reskilling and upskilling and better target disadvantage.	Public funding for education has increased as a share of GDP. From 01/01/2020, funding of education is changed: per capita funding was replaced by a normative (amount) per educational worker, and schools will receive funds according to the number of lessons taught.
Foster flexible courses for adult education, in particular targeted at low-skilled workers.	The Ministry of Labour and Social Affairs is preparing an "employment package" including support for those employees who are threatened by job losses related to the introduction of new technologies or manufacturing processes. The project POVEZ II for the support of vocational training of employees is still ongoing (since 1/12/2015). The 2030+ education strategy puts emphasis on reforming the Vocational Education and Training (VET) sector. It aims at postponing specialisation and reducing the total number of study fields, modernising them, and making them more interdisciplinary. VET education will increasingly shift to modular curricula that are better adapted to adult learning. Employer organisations and business representatives will also be more involved in curriculum development and updates.

Table 1.10. Recommendations

MAIN FINDINGS	RECOMMENDATIONS (key recommendations in bold)
Weathering the economic slowdown without aggravating macroeconomic imbalances	
Inflation and inflation expectations have risen steeply. Inflation has become entrenched at high levels and is broad-based. The CNB has intervened on the foreign exchange market, to reduce excess fluctuation, but also to stem depreciation pressures on the koruna. Interventions started in January 2022 but intensified between May and September 2022.	**Maintain a tight monetary policy stance until inflation is firmly on the path towards the 2% target.** Keep the key policy rate as the main monetary policy tool. Use foreign exchange operations primarily to dampen volatility in the forex market.
Housing and residential property prices are high. Mortgage loans with risky characteristics have risen significantly. A sudden correction of real estate prices or a shock to household incomes can have system-wide impacts with potential spillovers to financial stability.	Closely monitor risks stemming from the imbalances in the property market and adjust macroprudential measures and limits on mortgage loans appropriately. Consider setting minimum risk weights or applying the sectoral systemic risk buffer.
Fiscal policy has been expansionary and macroeconomic policies are not sufficiently coordinated.	**Start fiscal consolidation while providing targeted support to households and firms if needed.**
Ensuring long-term fiscal sustainability	
High fiscal pressures in the medium to long term (including those related to population ageing) threaten sustainability. Without reform, the debt-to-GDP ratio is set to rise dramatically.	**Prepare a more ambitious and credible medium-term fiscal consolidation plan, including the path for improvements in the structural balance.**
The 2020 tax package - changes to the personal income tax and abolished real estate stamp duty - permanently reduced tax revenues. Personal income taxes are low and only weakly progressive.	**Strengthen tax revenues, including through more progressive personal income taxation.**
Revenues rely heavily on social security contributions and result in a high tax wedge. Lower reliance on direct taxation of labour and higher revenues from property and indirect taxes, including environmental taxes, could boost growth sustainably.	**Shift towards real estate, consumption and environmental taxes, and reduce social security contributions.**
The VAT compliance gap remains above the EU average and the share of forgone revenue is likely rising due to decreasing compliance and an increasing number of items with reduced VAT rates. Notably, a large variety of goods and services were reassigned to reduced rates during the pandemic in 2020.	Gradually broaden the base for the VAT, including by reversing the VAT exemptions introduced during the pandemic.
The self-employed benefit from tax advantages vis-à-vis employees, resulting in significantly lower social security contributions.	Reduce tax advantages for the self-employed, including by increasing the assessment base for social security contributions.
The population is ageing rapidly and age-related spending will rise steeply over the coming decades. Almost one-third of people retire before the statutory retirement age. Even when the statutory age rises to 65, under current provisions, the early retirement age will remain at 60.	**Continue to raise the statutory and minimum early retirement ages and link them to life expectancy.**
The Czech pension system is strongly redistributive with low poverty in old age. However, replacement rates for high earners are low and the link between paid contributions and future benefits is low, giving high earners a very low internal rate of return.	Consider financing some redistributive components of the public pension system (e.g., basic pensions) through general taxes and lowering burdensome social security contributions.
Increasing the efficiency of public administration can help to improve fiscal sustainability and raise the quality of services provided to citizens. The Czech Republic has one of the most fragmented territorial and municipal administrations in the OECD. There is a lack of strategic steering capacities and alignment from the centre. Strategic decisions, regulations and policies are also insufficiently based on evidence.	Strengthen the strategic coordination role of the Government Office and boost analytical capacities across public administration levels. Enable the expansion of the use of spending reviews by building capacity and improving data accessibility.
Tackling recurrent labour shortages	
Childbirth has a large impact on labour market activity of mothers. The gender wage gap is sizable. Family cash benefits and tax breaks are generous while public childcare support is low, particularly for children under the age of three.	**Keep expanding the supply of affordable and high-quality childcare facilities. Lower untargeted family cash benefits and gradually reduce the maximum duration of parental leave.**
It is almost exclusively women who stay at home on parental leave with young children, due to persistent gender stereotypes as well as financial concerns. Total paternity and parental leave specific for fathers together remain short in international comparison.	Reserve part of parental leave for fathers at sufficiently generous replacement rates.

Current permit conditions are restrictive and not geared towards attracting and retaining high-skilled foreign workers. Conditions in terms of permit duration and associated family reunification and labour market mobility for highly skilled workers are less favourable than in many OECD peers.	**Increase the duration of initial work permits to five years for highly skilled migrants and offer immediate temporary residence and work rights for accompanying family members.** Consider implementing a points-based immigration system where high levels of human capital (age, language, education, experience) and job characteristics (skill level and salary) lead to advantageous permit conditions.
Enhancing skills for higher growth	
Socio-economic factors have a large impact on student performance and attainment. Much of the inequality stems from variation between schools. Many schools are too small to provide education effectively.	**Introduce explicit and objective criteria (based on school, student or local area characteristics) in the funding formula for schools to further address inequalities and disadvantage.** Consolidate the school network to ensure quality of education in all schools and encourage small schools to cooperate and share administrative resources.
Tracking occurs very early (at age 11), and evidence shows that family background matters more than academic ability in explaining access to the more prestigious academic tracks. Moreover, early student selection has a negative impact on students assigned to lower tracks.	Postpone education tracking and expand possibilities for transferring between different education tracks.
Disadvantaged schools are more likely to have staff shortages and they employ the least experienced teachers.	**Offer better career paths to teachers and increase incentives for high-quality teachers to work in remote areas.**
Skills shortages in many technical fields remain large with a particular lack of ICT specialists. Besides higher and more specialised skills, strong core skills can ensure that workers are resilient to change. Education should provide workers with the right skill sets and easy access to learning, including for adults.	**Modernise VET education, as planned in the 2030+ education strategy, by modernising curricula, strengthening core skills, involving employers more closely and better adapting it to adult learning.**
Raising public integrity	
Indicators of control and perceived risks of corruption in the public sector suggest that the Czech Republic underperforms compared to OECD peers. Czech citizens tend to think that corruption is widespread. The 2021 Rule of Law Report of the European Commission noted a lack of progress.	**Continue efforts to fight corruption.**
Public integrity should be improved further.	Adopt measures to strengthen the management and prevention of conflict of interest in Parliament. Improve integrity and transparency in lobbying.
Exports include high-risk sectors for foreign bribery, such as machinery and defence materials. Only one case of foreign bribery has been prosecuted so far.	Continue efforts to guarantee greater independence to prosecutors and enact appropriate protection to whistleblowers from discriminatory or disciplinary action.

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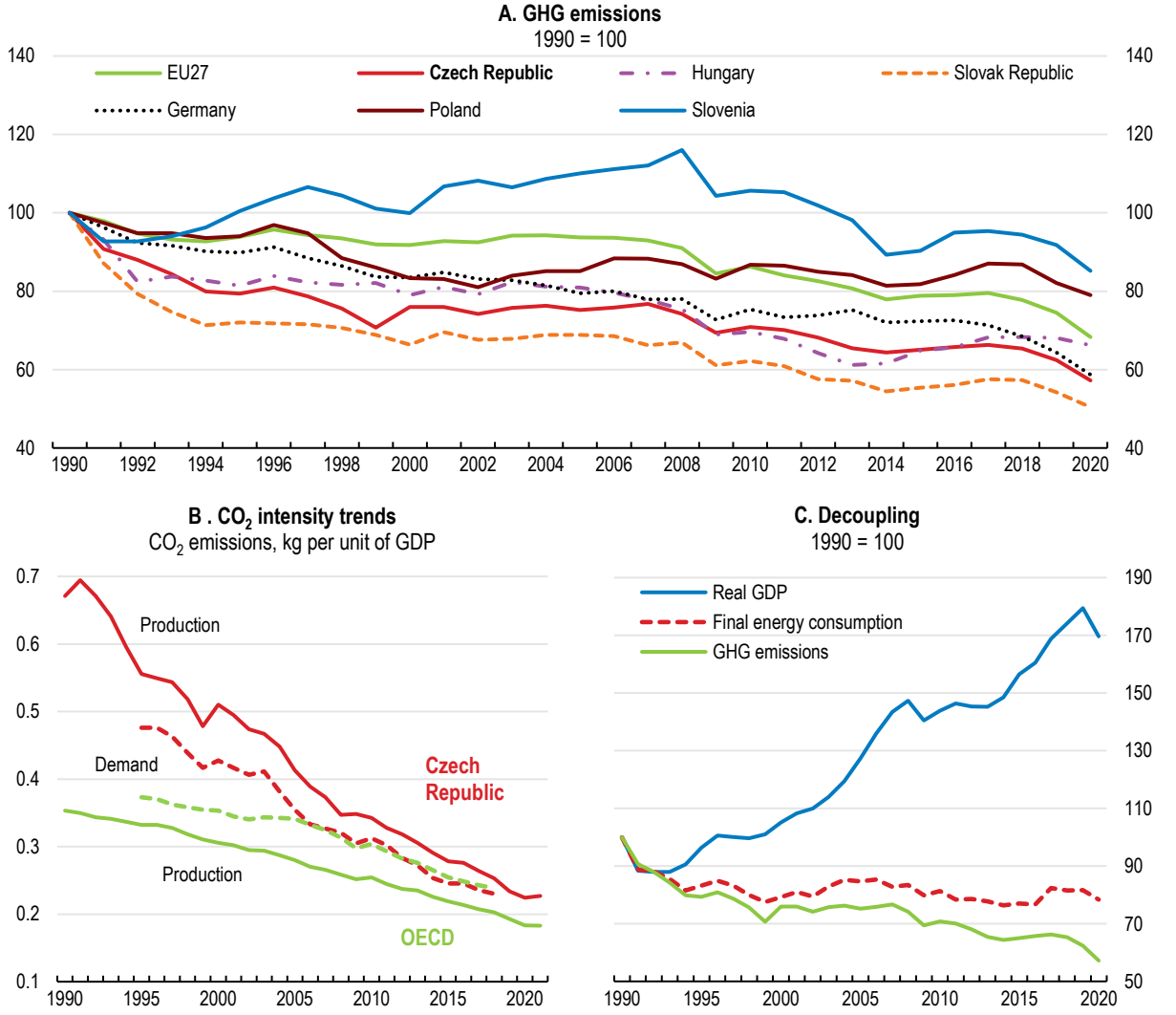
2 Towards net zero

The Czech economy is very carbon-intensive and has among the highest greenhouse gas emissions per unit of GDP in the OECD. Getting on the path towards net zero will require rapid emission reductions over the coming decades. Coal still makes up close to one third of the energy supply and the government has pledged to phase it out by 2033, which will require a swift expansion in the use of renewable energy sources as well as increased energy efficiency. This can be achieved by adopting a comprehensive policy package that includes widely applied carbon pricing, incentives to raise energy efficiency, spending on renewable energy and cutting red tape hindering green investments. Compensating policies and adjustment support will be essential to mitigate the socio-economic impacts of climate policies and to increase public support. Active labour market policies including higher spending on re-training for the unemployed is key to facilitate the green transition.

Introduction

The Czech Republic has made significant headways in reducing its greenhouse gas (GHG) emissions over the past three decades (Figure 2.1A). Progress was achieved at a rapid pace in the 1990s, slowed in the 2000s but gathered pace again in the 2010s. Over the same period, the Czech economy experienced strong economic growth with convergence of living standards towards the European average and was able to decouple energy use and environmental pressures from economic activity (Figure 2.1B and Figure 2.1C). Restructuring and technological progress in the industrial sector and construction have been major drivers behind the emission reductions, alongside a reduced use of coal for power-generation and for heating of residential buildings.

Figure 2.1. Significant GHG reductions, especially over the 1990s



Source: OECD (2022), Green Growth Indicators, OECD Environment Statistics (database); IEA (2021), IEA World Energy Statistics and Balances (database); OECD National Accounts database.

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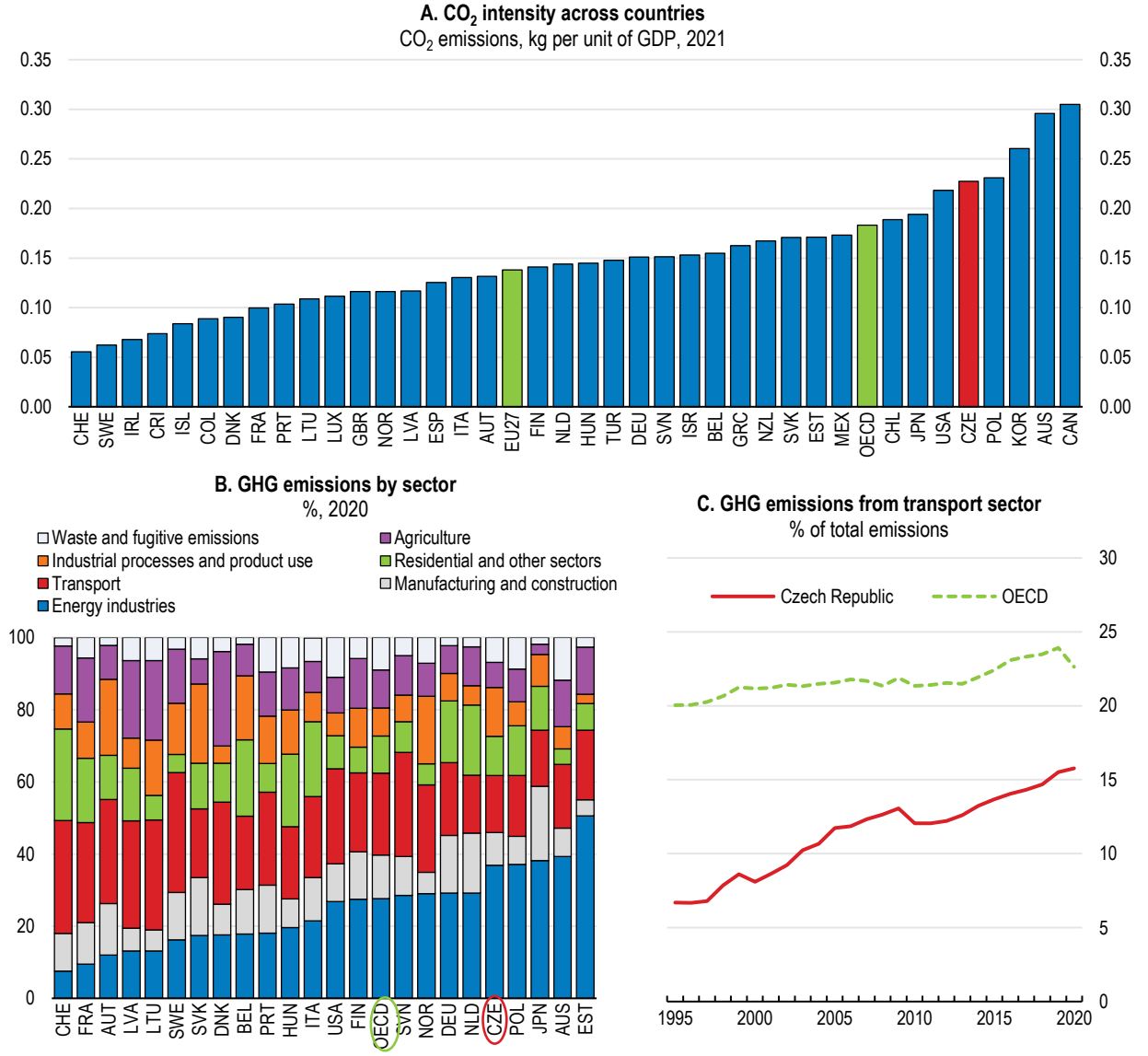
Despite this progress, the Czech Republic remains highly energy dependent and reliant on fossil fuels, with GHG-emission intensities among the highest in the EU (see Figure 2.2A). Per unit of GDP, emissions are higher than the OECD average and in all neighbouring economies, except for Poland. This picture is very similar on a per capita basis. The share of coal in the primary energy supply has declined from more than half in 2000 to 29% in 2021. Yet coal remains one of the main fuels for electricity generation and for

residential housing heating and its share in the energy supply remains high, resulting in a very high share (37%) of emissions from the energy sector in the OECD (Figure 2.2B).

Energy intensity per unit of GDP is also considerably higher than in many other OECD countries, driven by the energy-inefficient stock of residential buildings, coal-fuelled heating systems and a large industrial sector. Industrial processes make up 13% of emissions. Rising rates of car ownership and increased reliance on road traffic have had knock-on effects on transport emissions that make up 16% of total GHG-emissions (Figure 2.2C), albeit among the lowest shares in the OECD. Due to higher consumption and inadequate waste management policies, GHG emissions from waste have also increased and make up about 7% of total emissions (OECD, 2018a). The share of renewables in gross final consumption has increased over time, however it remains markedly lower than in many other OECD countries, at 18% in 2021.

Figure 2.2. CO_2 intensity remain among the highest in the OECD because of fossil fuel use in energy industries



Note: Energy industries include electricity and heat production, petroleum refining and manufacturing of solid fuels.
Source: OECD (2022), Green Growth Indicators, OECD Environment Statistics (database).

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The Czech Republic has experienced rising temperatures at a faster rate than the world average over the past two decades and warming is projected to continue (IEA, 2022a). Climate change will cause substantial economic and social costs, also in the nearer term (International Monetary Fund, 2022). This is especially true for the Czech Republic that has suffered among the highest economic costs per capita in the European Union due to extreme weather and climate-related events since the 1980s (European Environment Agency, 2019).

Adverse effects of climate change include loss of biodiversity, changes in the water regime and risks of more frequent and severe floodings as well as wildfires, and increasing prevalence of vector-borne diseases (parasites, viruses and bacteria) resulting in increased mortality. Flooding can affect water, sanitation and water infrastructure and services, and can contaminate water with bacteria from run-off or sewer overflow. The Czech Republic has already seen a notable increase in the number of days with heavy rainfall, while droughts have become more frequent and longer in duration (Ministry of the Environment, 2019a). In August 2010 flash floods struck Central Europe and caused severe economic and social costs in some Czech regions. Moreover, droughts have several adverse social, economic and environmental consequences, one of which is increasing the prevalence of insects such as bark beetles that attack forests. Particularly large outbreaks since 2015 have caused the Czech Republic land use, land-use change and forest (LULUCF) sector to turn from a carbon sink to a net CO_2 emitter (see Box 2.1). To restore the LULUCF-sectors role as a carbon sink and to support forest management and deal with the consequences of the bark beetle outbreak, the government has provided 18.6 billion CZK during 2015-21, alongside legislative amendments to the Forest Law (Law No. 289/1995 Coll.).

The last Czech interim review of climate vulnerabilities was carried out in 2019. The overall assessment demonstrated a high degree of vulnerability of some sectors of the economy to climate change (Ministry of the Environment, 2021). The Strategy on Adaptation to Climate Change (Ministry of the Environment, 2015) was updated in September 2021. Implementation of the measures outlined in the strategy (to prevent long-term droughts, address floods and wildfires) would reduce vulnerabilities and raise the economy's resilience to climate damages.

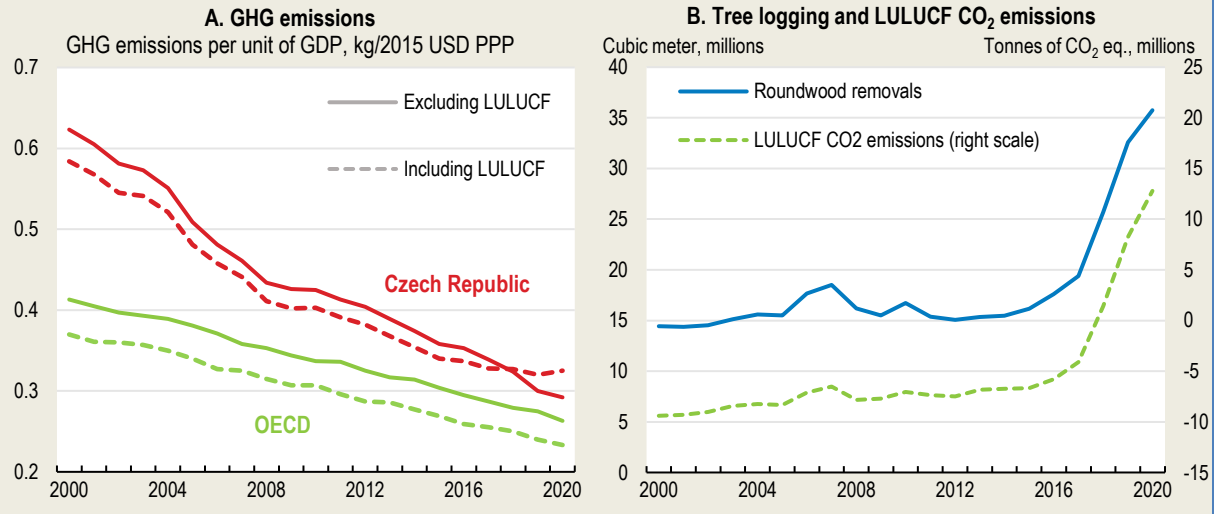
Box 2.1: Forests: from a carbon sink to a source of CO_2 emissions

Forests absorb carbon dioxide from the atmosphere and store it in different repositories, which include trees, root systems, undergrowth, the forest floor and soils. Therefore, the LULUCF sector often helps reduce CO_2-emissions (Figure 2.3A). In recent years, severe bark beetle outbreaks in the Czech Republic have sparked an increase in salvage felling to slow the infestation and to save timber (Figure 2.3B), which has turned the LULUCF-sector from a carbon sink to a source of CO_2-emissions.

The Czech Republic has sizable forest areas, with forests covering 2.67 million hectares (34% of the land area), making large bark beetle outbreaks particularly impactful. The cause of severe outbreaks is multifaceted, including the composition of Czech forests where spruce accounts for 50% of the forest area, and a dryer climate that weaken the trees' natural defences and help spawn the insects, creating an infestation (Hlásny et al., 2021). As the frequency and severity of droughts may continue to increase with climate change, further outbreaks are likely to occur in the future.

Other European countries have also been affected by bark beetle outbreaks. In Sweden, a collaborative task force was set up in 2018 between the Swedish Forest Agency, businesses, and other organisations to deal with severe outbreaks more effectively and to mitigate their effects. The main priorities of the group have been to pool resources to deal with outbreaks and to do preventive surveillance (Skogsstyrelsen, 2022). Managing the bark beetle outbreaks and increasing the volume of living biomass in forests in the Czech Republic will help reach national climate targets. McKinsey (2020) estimates that if logged areas in the Czech Republic are successfully reforested by 2030, the LULUCF sector could once again act as a net carbon sink up to 2050, at similar levels as during 1990-2015. Reforestation, improved forest management practices and early-detection systems could help to manage future outbreaks and the effects of droughts and other adverse effects of climate change.

Figure 2.3: Sanitary logging to contain insect infestation has increased LULUCF GHG-emissions



Note: LULUCF covers emissions and removals of greenhouse gases resulting from direct human-induced land use, land-use change and forestry activities.

Source: OECD (2022), Green Growth Indicators, OECD Environment Statistics (database); Czech Statistical Office.

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Key priorities to move towards net zero are to replace coal in the energy supply with greener energy sources, as well as make the economy more energy efficient. The 2019 Czech Coal Commission recommended that coal use should be phased out by 2038, with natural gas filling its role in the interim period before nuclear power, hydrogen and renewable sources could make up the lion's share of the energy supply (IEA, 2021a). The ambition was raised further in January 2022 when the government announced its aim to phase out coal by 2033 (Vlada, 2022a). However, setting policies to reach net zero

has become significantly more challenging due to Russia's invasion of Ukraine and the concomitant rise in energy prices (see the). The Czech Republic does not produce any significant amounts of natural gas and almost all the imports originated in Russia before the war, raising questions about energy security. Nonetheless, the Czech Republic has not announced strategies or targets for phasing out Russian natural gas (IEA, 2022b). This makes it even more urgent to transition towards a net zero economy through the scaling up of reliable, sustainable, and affordable domestic energy production and to improve energy efficiency in the economy.

The increased cost of living brought on by high energy prices has raised demands for cost-reducing measures for consumers and firms. A crucial policy challenge is to ensure that the measures to tackle the energy crisis are temporary, properly designed and targeted, so that they remain consistent with long-term goals of phasing out coal and reducing GHG emissions (Buckle et al., 2020). Reaching internationally agreed climate targets and moving towards net zero will require even greater structural changes to production and consumption patterns than has been the case in the past, with likely significant socio-economic challenges. Adapting to increased demand for low-emission products is particularly important for a small open economy like the Czech Republic, that is highly integrated in global supply chains and reliant on a strong manufacturing base. Moreover, major shifts in employment across regions, sectors and firms can be expected and it is therefore important that the effective emission reduction policies ensure a fair and inclusive transition by supporting workers and regions most exposed to the changes.

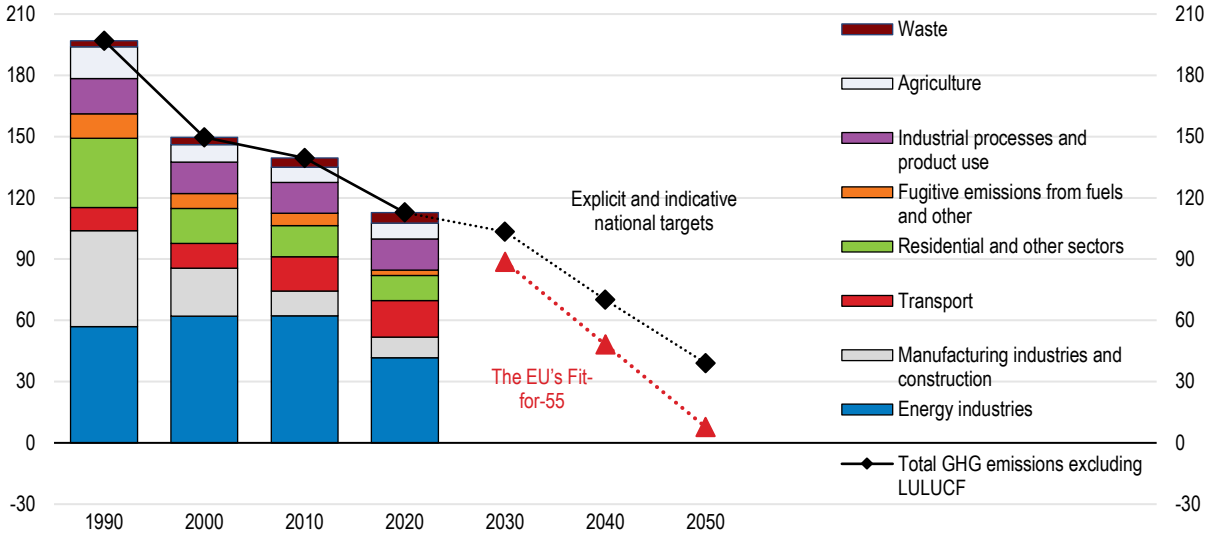
Against this backdrop, the rest of this chapter discusses the path towards a comprehensive and inclusive reduction in GHG emissions in the Czech Republic. The outline of the chapter follows the framework discussed in (D'Arcangelo et al., 2022a). It focuses on the policies needed to reach the climate goals, their economic consequences and the associated trade-offs and mitigating policies. First, it briefly reviews the Czech Republic's strategy to cut emissions. Second, it discusses key emission reduction policies and finally how complementary policies can address distributional and labour transition effects.

Designing a strategy to effectively manage the transition

The Czech State Environmental Policy (SEP), approved in 2021, outlines overarching environmental priorities, objectives and strategies (Ministry of the Environment, 2021a). EU recommendations and legislation strongly influence the core policies: the Climate Protection Policy (Ministry of the Environment, 2017) and the National Energy and Climate Plan (NECP) (Ministry of Industry and Trade, 2019). The Climate Protection Policy outlines explicit national GHG-reduction targets for 2030 and indicative emission levels for 2040 and 2050: by 2030 GHG emissions are expected to be reduced by 44 million tonnes compared to 2005 and GHG-emission levels are envisaged at 70 Mt CO_2 and 39 Mt CO_2 in 2040 and 2050 respectively (Figure 2.4). The GHG-emission reduction targets are currently being revised to fully incorporate the more ambitious goals in the EU's Fit-for-55 agenda (European Commission, 2020a). Matching the EU's ambition would roughly entail GHG emission levels in the Czech Republic of 89 Mt CO_2 by 2030 and a more rapid path towards net zero (Figure 2.4).

Figure 2.4. Achieving long-term climate goals will require accelerating emission reductions

GHG emissions, tonnes of CO_2 equivalent, millions



Note: The 2050 target under the Fit-for-55 assumes that the LULUCF sector contributes as a carbon sink of about the same level as its average in 2000-15.

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Reaching the emission reduction goals for 2030 outlined in the EU's Fit-for-55 agenda will require stricter climate policies to achieve the longer-term targets of net zero. Although emissions fell sharply in 2020 because of the COVID19-pandemic that triggered a sharp decrease in mobility, road traffic, and economic activity, this progress is unlikely to persist under current policies. There may be some permanent environmental effects from the pandemic such as new working patterns and increased teleworking (OECD, 2021a). However, the prevalence of telework appears to be more limited in the Czech Republic than among other OECD countries (Ker et al., 2021).

The NECP includes intermediate targets for the desired energy mix, renewables' share in energy use and energy efficiency targets to achieve the GHG-emission reductions (Ministry of Industry and Trade, 2019). Similarly to the Czech Climate Protection Policy, the targets in the NECP have not yet been updated to reflect the EU Fit-for-55 or the new geopolitical situation following Russia's war of aggression against Ukraine:

- The desired energy mix by 2040 includes a continued shift away from fossil fuels like coal and oil by increasing the use of nuclear energy, hydrogen, renewable sources and gaseous fuels. The NECP foresees that from 2019, coal's share in the total energy supply would have to fall by an additional 12-18 percentage points and oil and petroleum products' share by 5-8 percentage points, while nuclear energy, hydrogen, gaseous fuels and renewables would rise to make up the lion's share (Table 2.1).

Table 2.1. The envisaged energy mix in 2040 foresees a shift towards renewables and nuclear

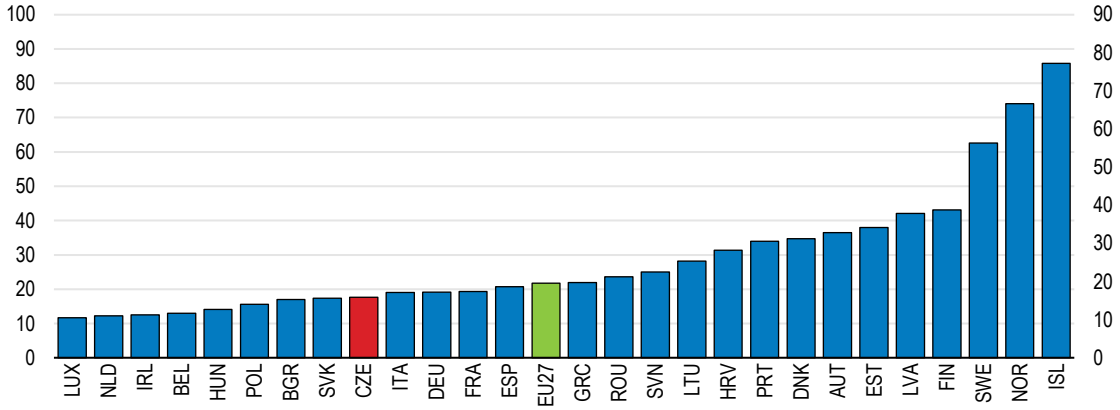
Fuel source	2021 share	Required change to reach targets (from 2019, in percentage points)	2040 target share
Coal	29%	-12 to -18	11-17%
Oil and petroleum products	22%	-5 to -8	14-17%
Gaseous fuels	18%	+0 to +7	18-25%
Nuclear energy	19%	+6 to +14	25-33%
Renewable and secondary energy	13%	+4 to +9	17-22%

Note: The 2021 shares do not add up to 100% because of rounding.
Source: IEA and Ministry of Industry and Trade (2019).

- Besides targets for the share of renewables in the energy supply, the NECP also includes a target for their share in total energy consumption. The 2030 target is set at 22%, requiring an increase of four percentage points from 2021, with sub-targets for electricity consumption (16.9%), transport (14.0%) and heating and cooling (30.7%). The European Commission assessed that the minimum share of renewables in total energy consumption in 2030 should be 23% for the Czech Republic (European Commission, 2020b). By comparison, the European Union reached a 22% renewable share in final energy consumption already in 2021 with many countries having achieved significantly greater shares (Figure 2.5). In this context, the Czech Republic is lagging its EU peers, and significantly more progress in renewable energy is needed to move towards net zero (IEA, 2021b). There is untapped potential for raising the share of solar and wind in power generation. The use of these sources, especially solar power, rose rapidly in the late 2000s and early 2010s due to substantial feed-in-tariffs (FITs). However, the FITs were too generous and the government introduced a special tax in 2010 on solar plant owners. The FITs were finally abolished for solar energy at the end of 2013. The retroactive change of compensation resulted in a strong decline in new solar capacity, as investor confidence was severely undermined. Public support waned, and the overall growth of non-combustible renewable electricity generation capacity has stalled since.
- Gross final energy consumption by 2030 is targeted as a share of GDP and is set at 0.16 megajoule (MJ) per unit of GDP, compared to a level of 0.22 in 2020. Energy savings have been reached in several areas with financial incentives (investment subsidies and low interest loans) through the New Green Savings Programme, the Operational Programme Environment and the Operational Programme Enterprise and Innovation for Competitiveness (Odyssee-Mure, 2020a). Energy efficiency has increased in industry by 3.1% per year since 2000, 1.4% in the residential building sector and 1.3% in services. The government expects that further energy savings are to be achieved primarily through financial measures and voluntary changes and to a lesser extent through regulation and taxation (Ministry of Industry and Trade, 2019). At the same time, low enthusiasm among households to implement energy-saving measures to increase energy efficiency is a barrier. This stems from a low awareness among the public of the wider benefits of energy-saving measures (Ministry of Industry and Trade, 2019), but can also reflect insufficient incentives and/or problematic administrative processes. Nonetheless, the current crisis with very elevated energy prices and issues regarding energy security has spurred public interest in energy efficiency measures and renewable energy sources.

Figure 2.5. The share of renewables is low

Share of renewable energy in gross final energy consumption, 2021



Source: Eurostat.

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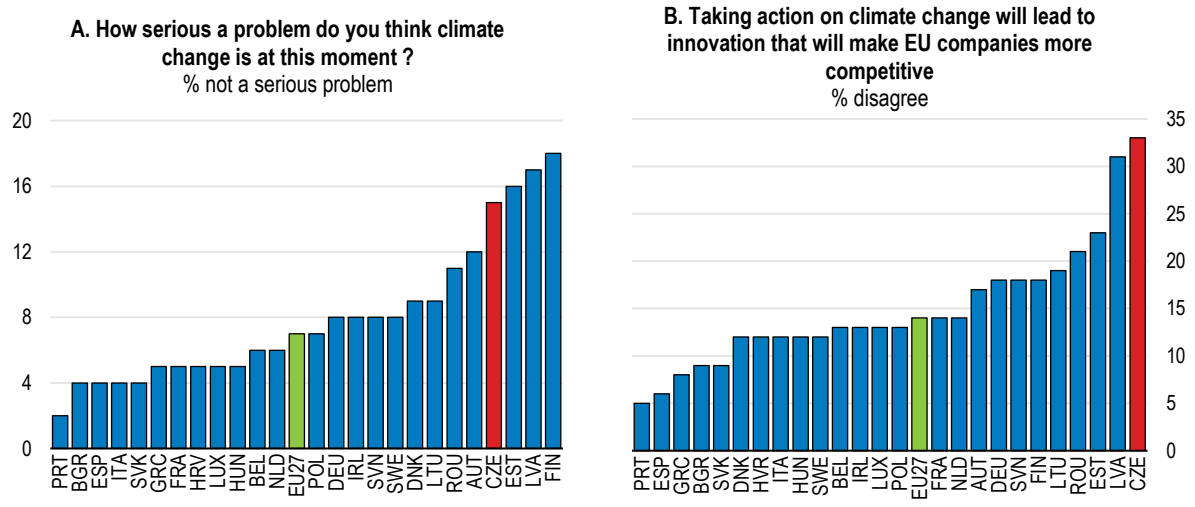
Raising transparency and public support for climate policies

The success of climate policies hinges on sustained political and public support. Low or fragmented support may lead to resistance towards reforms (Tompson, 2009) and can intensify concerns about job losses and distrust towards climate policies (Morgenstern et al., 2002). The yellow vest movement in France and protests by farmers in the Netherlands against climate action illustrate the significant backlash that can occur when policies are perceived as unjust and do not have enough public support.

Awareness of the adverse impacts of climate change in the Czech Republic has grown since 2015 according to the Eurobarometer survey (European Commission, 2021a). The share of respondents agreeing that climate change is a very serious problem has risen by 7 percentage points during 2017-21 to 64%. Moreover, roughly three quarters of Czech respondents in the European Investment Bank's (EIB) climate survey believe that climate change and its consequences are the biggest challenges currently facing humanity (European Investment Bank, 2022a). Yet despite improvements, a large share of Czechs compared to other Europeans still believe that climate change is not a serious problem (Figure 2.6A). Furthermore, Czech respondents in the Eurobarometer survey are generally less enthusiastic than Western Europeans about various climate policies and tend to disagree with statements that the green transition will make companies more competitive, increase energy security and benefit the EU economically (Figure 2.6B). Similarly, Czechs react negatively to environmental policies that raise household's costs or are expected to decrease living standards (Krajhanzl et al., 2021). For example, Czechs are less in favour of taxes on environmentally damaging products/services, replacing short-distance flights by fast low-polluting trains and strengthening education and awareness of sustainable consumption than many other Europeans (European Investment Bank, 2022b).

Figure 2.6. A relatively large share of Czechs disagree that climate change is a serious problem



Source: European Commission (2021), Special Eurobarometer 513 on Climate Change.

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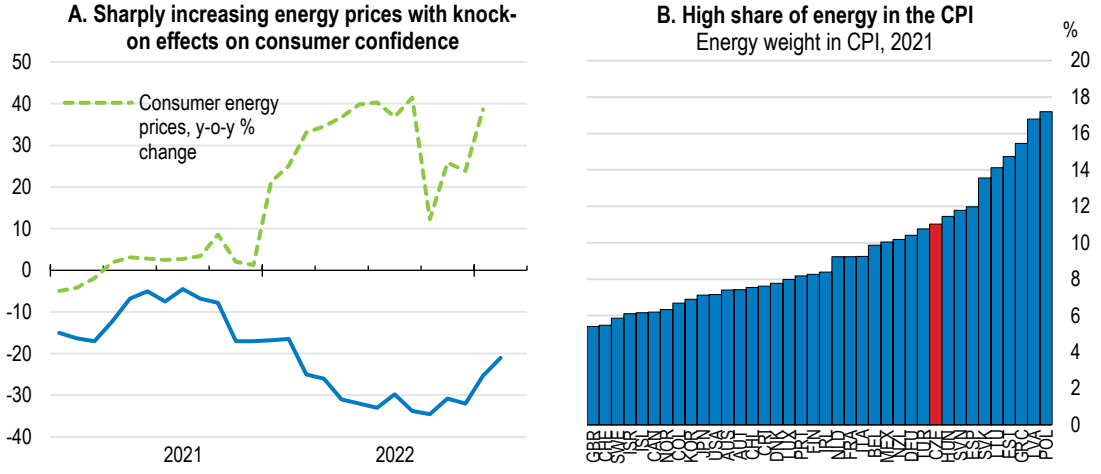
Raising awareness and spreading knowledge about climate change can increase public support for more stringent climate policies and aid in their implementation. Although the Czech authorities have carried out several information campaigns and subsidy programmes and launched surveys of perceptions about climate change, there is still room for improvements as seen in Figure 2.6. A combination of communication/education campaigns should be prioritised. Measuring the public's understanding and receptiveness to messages can indicate the success of campaigns, help further clarify messages, and inform the design of training materials and activities needed (OECD, 2021b). Introducing complementary compensating policies can also increase public support for climate policies (see the next two sections).

Moreover, promoting transparent and accessible information on the design and rationale of climate policies can raise trust and support for government intentions. One example is green budgeting instruments, which can help to increase transparency and accountability of governments' budgetary policies (OECD, 2020a). They can also help increase transparency towards the public and strengthen political commitment to the amount of green expenditure (D'Arcangelo et al., 2022a). For example, France presented a comprehensive approach to green budget tagging in its 2021 budget, stemming from its participation in the OECD Paris Collaborative on Green Budgeting. The approach has helped to assess potentially negative or positive spill-over effects from one environmental sphere to another and to identify expenditure measures that are harmful to France's climate goals ('brown') and the ones ('green') that instead would help to meet them. Expenditures and tax policy that focuses on the long-run benefits in terms of people's well-being, environmental protection, and resilience to climate change and future problems can also increase public acceptance (OECD, 2021c).

Ensuring energy security while pursuing climate goals

Rapidly rising demand amid the post-pandemic recovery, combined with Russia's large-scale invasion of Ukraine, sent Czech energy prices soaring in the beginning of 2022. Moreover, some Czech electricity distribution companies went bankrupt (most notably Bohemia Energy, which had around 900,000 customers) at a time when market prices of gas and electricity were already high and rising. Czech households are particularly sensitive to higher energy prices as energy products make up a comparatively high share of consumption and the situation had knock-on effects on consumer confidence (Figure 2.7). To shield consumers from the higher cost of living, the government introduced a variety of fiscal support measures (see Chapter 1), including a temporary reduction in the excise duty on diesel and petrol, state guarantees for loans to firms affected by rising energy costs, a delay of VAT payments for firms in the transport sector, waived fees for renewable energy, an energy price subsidy ("energy savings tariff") and an energy price cap from 2023.

Figure 2.7. Czech households are very vulnerable to high energy prices



Source: OECD Consumer Prices Indices database; Refinitiv.

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Although the support measures have helped offset some of the rising costs for households and firms, they have been poorly targeted. Support should instead target vulnerable people, and if needed firms, and aim to preserve incentives to save energy (OECD, 2022a). Cash grants that are unrelated to energy consumption but are based on disposable income for households or revenues for firms could help shield the worst off while preserving incentives for energy savings. One example is the "Household Support Fund" enacted by the government in the United Kingdom in the winter of 2021/2022 to disperse funds to vulnerable households (GovUK, 2021). Another option is to compensate households and firms for modest

energy consumption, while higher levels of consumption face market prices. This ensures incentives to preserve energy while still providing support. A variant of such a scheme is currently in place in Norway (RME, 2022).

Natural gas plays a significant role in industry, the residential sector and for heat generation. Existing climate plans have counted on natural gas being available before renewable sources and nuclear power make up the bulk of the energy supply, gradually replacing coal. Simultaneously reducing natural gas imports from Russia and phasing out coal will require a significant shift towards gas suppliers within the EU and outside, including a large increase in the imports of LNG (IEA, 2022c). Together with EU member states, the Czech government has taken steps to ensure natural gas purchases with other suppliers in line with the EU's REPowerEU Plan (European Commission, 2022e). Nevertheless, even with these efforts, coal will likely have to make up a sizable share for heating and electricity production in the shorter run to prevent supply disruptions and to ensure energy security.

To move towards net zero and meet longer-term climate targets, the government should keep its commitments to phase out coal by the 2033 deadline and rapidly scale up investment into renewable and low-emissions energy sources. This includes continued collaboration with other EU member states on energy and energy security, an expansion of solar power and stepping up efforts with respect to wind power, the use of geothermal, green hydrogen and bio-methane.

Key policy instruments to reach net zero – a comprehensive policy mix is needed

A successful decarbonisation strategy for the Czech Republic needs to be comprehensive, cost-effective and inclusive (D'Arcangelo et al., 2022a). Market-based instruments (environmental taxes or cap-and-trade schemes) are the most cost-effective tools to incentivise emission reductions. Such measures should form the basis of any successful decarbonisation strategy. Nonetheless, no single policy instrument dominates the others across all desirable assessment criteria: emission reductions at minimum economic cost, low administrative complexity, strong incentives to spur innovation, predictability and ability to deal with uncertainty, progressive distributional effects or public acceptability (Table 2.2).

Table 2.2. Assessment and implementation of key climate policies in the Czech Republic

Policy instruments	Cost-effectiveness	Administrative burden	Distributional consequences	Public acceptability	Implementation in the Czech Republic
Emissions pricing instruments and other incentive-based instruments					
GHG emissions tax	High.	Potentially high as pricing requires monitoring emissions. Revenue raising.	Moderate concerns of competitiveness, job loss and income distribution.	Low to moderate.	No.
Emissions trading scheme	High.	High as it requires legal framework and institutions. Revenue raising.	Moderate concerns of international competitiveness, job loss and income distribution. Free allocation can favour only some firms.	Low to moderate.	Yes, ETS through the EU.
Excise taxes on fuels/road taxes	Low to high.	Low. Revenue raising.	Moderate.	Low.	Yes. Transport fuel excise duties. Road tax for businesses.
Regulations, standards, subsidies and other instruments					
Environmental regulation	Low to high. High monitoring costs. Regulations does not encourage to innovation. The design can increase efficiency, for example with tradable performance standards.	High, as it requires knowledge about the specifics of industries and technologies.	Concerns of tax-regressively if compliance is costly. Firms and households that have more resources have relatively lower compliance costs. No fiscal revenue raised.	Moderate.	Applied at domestic and the EU level (e.g. fuel performance and directives for increasing energy efficiency).
Environmental subsidies	Low to high. Good design can boost cost-efficiency. Geared towards incumbents and penalise new entrants. Can play a role to support research and development.	Moderate to high. Requires information on specific technologies and information about firm's and households receiving the subsidies.	Concerns of regressivity. Larger firms and emitters are probably able to receive more.	High.	Yes. Subsidies for green investments and R&D spending. Available funding both through EU funds and the national budget.
Green financial policy	Low to high. Can contribute to better-priced assets and to reduce financial risks. Lets investors act on preferences for green investment.	Potentially high to achieve broad monitoring and reporting of emissions, as well as linking emissions and physical climate exposures of firms back to credit providers.	Low.	High.	The Czech National Bank will undertake stress tests that will incorporate macroeconomic effects from climate change.

Source: Adapted from D'Arcangelo et al. (2022a).

Existing policies and tools result in relatively low environmental stringency

To reach the ambitious emission reductions goals in the EU's Fit-for-55 agenda, the Czech Republic must step up its efforts to create a comprehensive and cost-effective policy mix that influences all sectors of the economy. The OECD's Environmental Protection Stringency Index (EPS) (Botta and Koźluk, 2014) is one internationally comparable indicator that captures a broad set of environmental policies related to climate change and air pollution that can be used to track the stringency of environmental policies over time and across countries. This indicator has recently been revised and updated until 2020, covering 40 countries and 13 policy instruments (Kruse et al., 2022).

The updated EPS shows that environmental policies in the Czech Republic became increasingly stringent in the 2000s as EU directives were transposed into domestic legislation (Figure 2.8A). Progress was however slow in the 2010s and the country ranked among the bottom half of OECD countries in 2020 (Figure 2.8B). The sluggish progress in environmental policy stringency in the 2010s – also in other OECD countries – owes mostly to reduced technology support measures (R&D spending, feed-in tariffs and

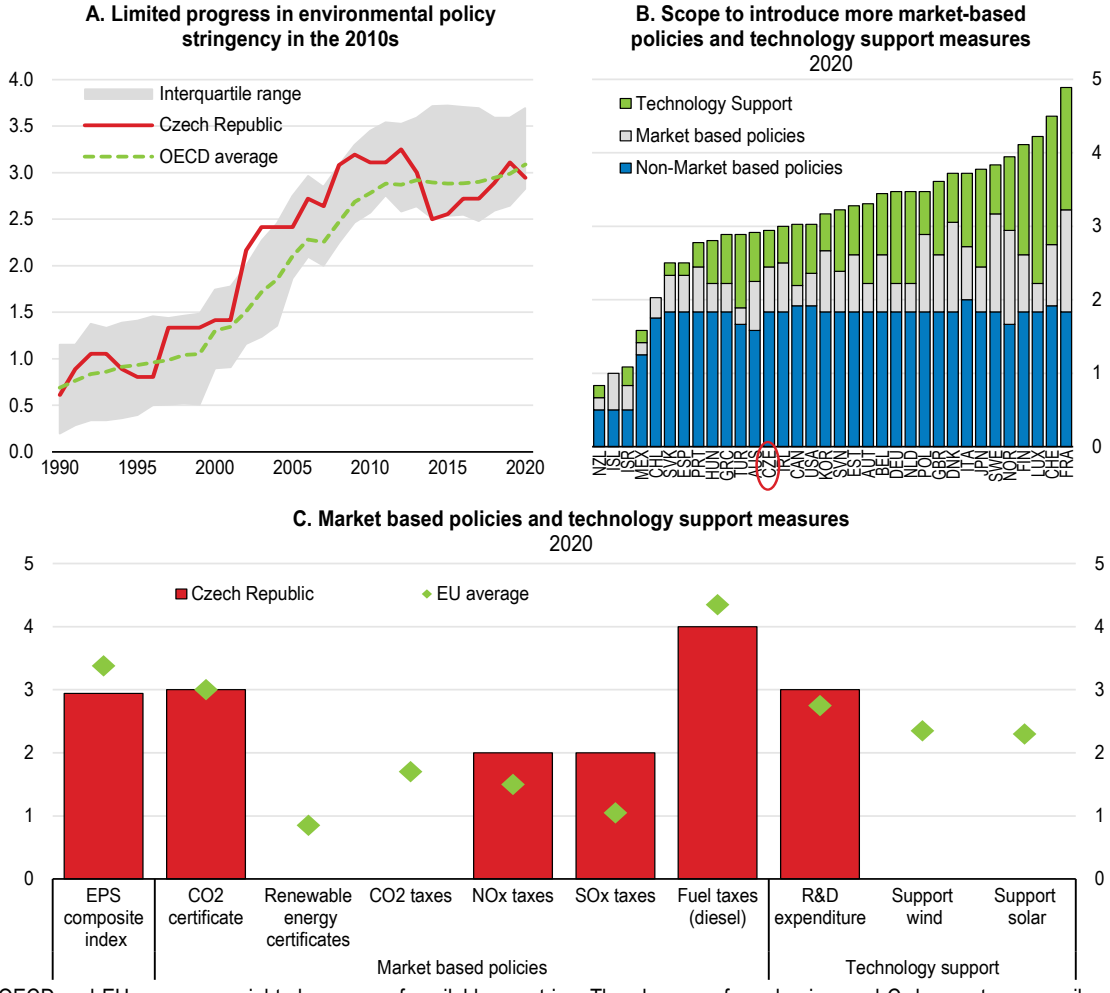
adoption support) attributed to fiscal consolidation after the years following the Great Recession (Kruse et al., 2022).

Non-market policies, including standards and regulations that follow EU legislation, are already quite stringent and make-up most of the Czech EPS (Figure 2.8B). Technology support measures, notably adoption support for wind and solar technologies, lag the EU average, primarily due to the abolishing of feed-in tariffs for solar energy in at the end of 2013. Market-based policies in the Czech Republic have progressed, mostly in areas that are covered by EU legislation, including the EU's Emissions Trading System (ETS) and taxes on NO_X, SO_X and diesel. At the same time, many other EU countries have expanded their market-based polices and several have introduced a carbon price and renewable certificates to supplement EU legislation (Figure 2.8C).

Empirical estimates suggest that raising the EPS would help reduce CO_2-emissions in the Czech Republic. The potential for emissions reduction is largely in the energy-generating sectors and the estimates show that progress can be achieved by phasing out coal as well as reducing natural gas and diesel use (Box 2.2). The empirical estimates also indicate that environmental policy would have to become significantly more stringent over the 2020s to meet the EU's Fit-for-55 emission reduction targets by 2030.

Figure 2.8: Progress in environmental policy stringency stalled in the 2010s

The OECD Environmental Policy Stringency Index, from 0 (not stringent) to 6 (highest degree of stringency)



Note: OECD and EU are an unweighted average of available countries. The absence of a value in panel C does not necessarily mean the absence of a policy, but rather that the policy only affects smaller installations below a cut-off. See OECD (2022).
Source: OECD (2022), ECO WP 1703.

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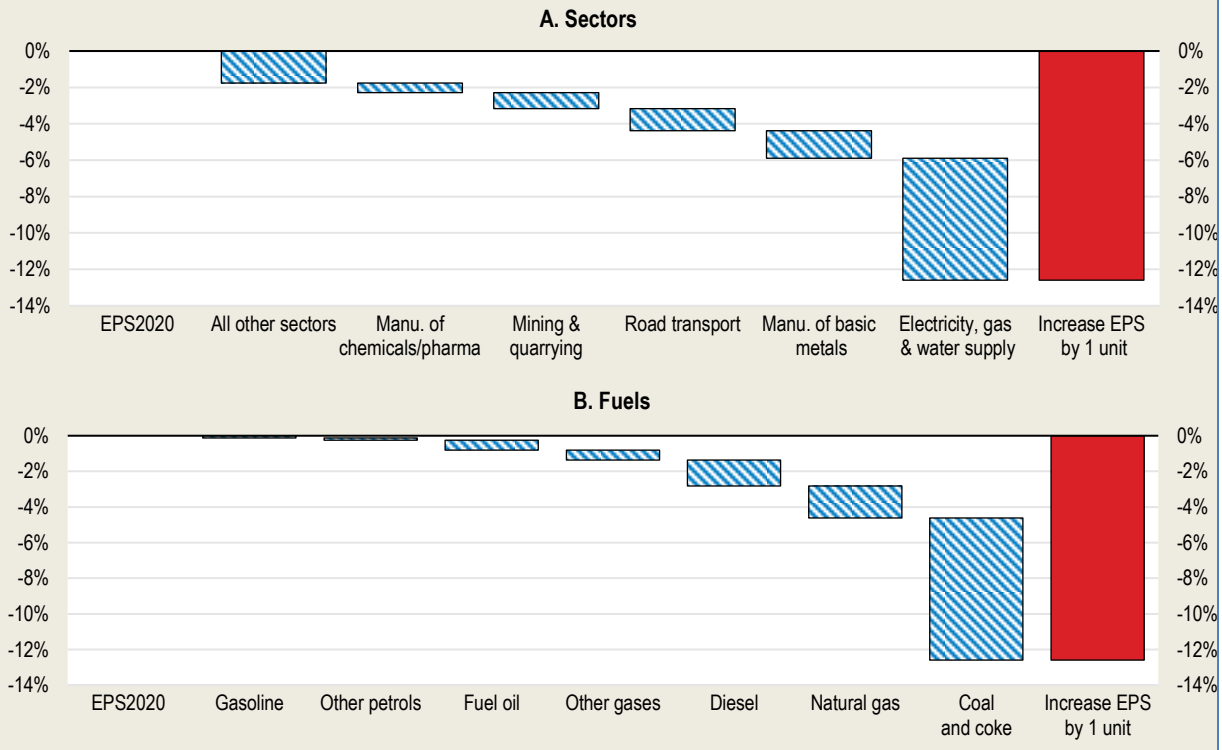
Box 2.2: Environmental Protection Stringency and CO_2-emissions

Environmental policies affect the explicit and implicit costs of emissions. Frohm et al. (Forthcoming) estimates that an increase in the EPS is associated with significant reductions in CO_2-emissions, both in the shorter and longer-term. The impacts are heterogeneous across sectors and depend on their fossil fuel intensity. This box utilises the results from this study to analyse which sectors and fuels could contribute to emissions reductions in the Czech Republic through two thought-experiments: the first investigates which sectors and fossil fuels could drive the emissions reductions as the EPS increases; the second explores how the Czech EPS would have to evolve over time to achieve the 55% emissions reduction by 2030 compared to 1990, envisaged in the EU's Fit-for-55.

A one unit increase in the EPS is associated with significant emissions reductions in the longer run (10 years). The emissions reduction potential is 13% and primarily stems from the energy-supply sector (electricity, gas and steam), but also manufacturing of basic metals, road transport and mining and quarrying (Figure 2.9A). In terms of energy sources, the greatest emissions reduction could come from phasing out coal and natural gas use, primarily in electricity and heating, but also diesel in the road transport sector (Figure 2.9B).

Figure 2.9. Raising the EPS can significantly reduce CO_2-emissions



Notes: The effects are calculated using the point estimates from a fixed-effects panel regression of the (log of) CO2-emissions on current and up to 10 years lags of the EPS indicator and its interaction with country-sectors shares of fossil fuels in total energy use, as well as additional control variables, including the current and lagged sectoral (log of) real gross output and country (log of) real GDP, linear country and sector time-trends, as well as country-sector and year fixed effects. The aggregate and sectoral effects in the Czech Republic are obtained using each sector's weight in CO2-emissions in 2016. The sector classification is based on ISIC Rev. 4. Fossil fuels include coal, coke and crude, fuel oil, gasoline, diesel, natural gas, other gases and other types of petrol. For more details, see Frohm et al. (forthcoming).

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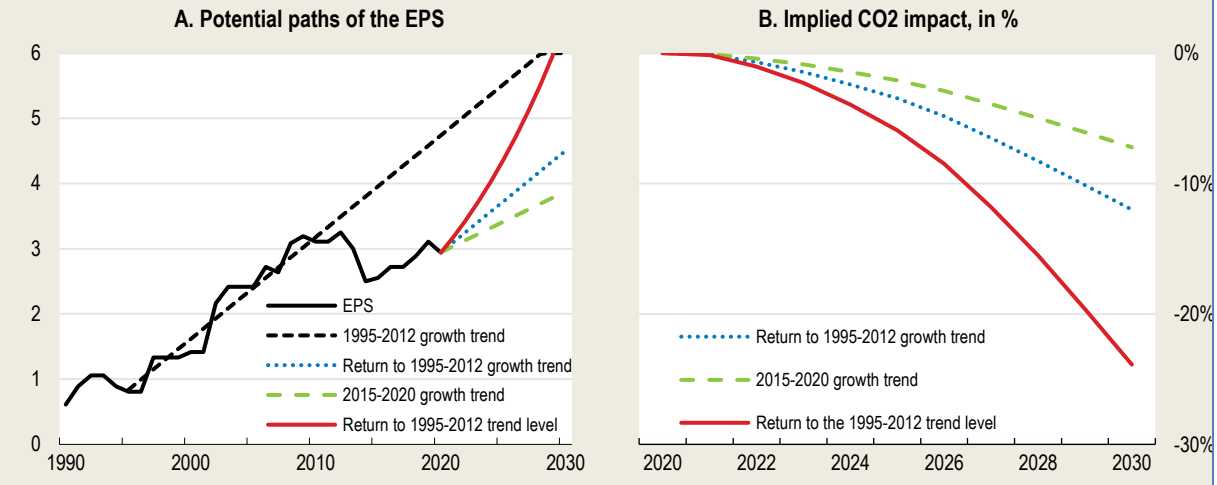
A significant tightening of environmental policies will be needed to meet the EU's Fit-for-55 targets. Catching up with the EPS level implied by the 1995-2012 trend in 2030 (Figure 2.10A), would correspond to reductions of CO_2-emissions by more than 20% (Figure 2.10B) as compared to 2020. This represents close to a 60% reduction in emissions compared to 1990. Returning to the 1995-2012

growth trend would reduce emissions by 12% compared to 2020 or 53% compared to 1990, close to the 55% envisaged in the EU's Fit-for-55. The less ambitious policy regime (green line) that would imply policies equivalent to average progress in the EPS over the past six years, is estimated to reduce emissions by less than 10% by 2030, or by 50% as compared to 1990.

The results are only illustrative and subject to several caveats. First, the thought-experiments should not be interpreted as projections but rather an assessment of effects, other factors being held constant. Second, it is assumed that the association between the EPS and CO_2-emissions is the same for future EPS changes as it has been in the historical period covered by the estimation. As such, the uncertainty about the estimated effects increases the further into the future they are extrapolated. Third, fossil fuel intensities and the contribution of sectors to national CO_2-emissions could change over time which could alter the estimated effects.

Figure 2.10. Reaching the EU's Fit-for-55 necessitate a rapid tightening of environmental policies



Note: See Figure 2.9.
Source: Frohm et al. (Forthcoming).

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Sufficiently and consistently pricing emissions

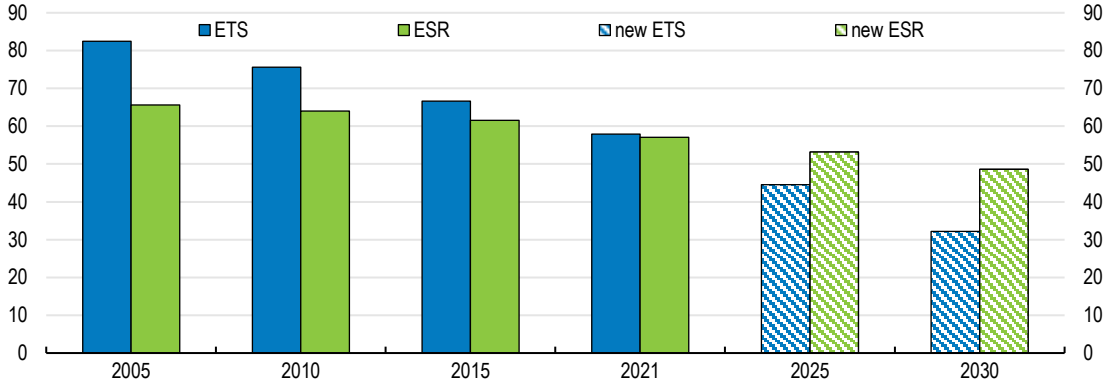
Much of the progress in emissions reductions in the Czech Republic since 2005 has been achieved through the EU's ETS (Ministry of the Environment, 2021b). The ETS covers emissions from industry, electricity and heat generation as well as intra-EU aviation and covers more than half of the Czech Republic's total GHG-emissions (Ministry of the Environment, 2019b). In the system, tradable emissions permits are issued and sold, or handed out to participants who can trade them freely. The available permits sum up to the overall quantity of emissions (the "cap") and this cap is reduced over time to ensure that targets are met (European Commission, 2022a). Czech emissions in the sectors covered by the ETS fell on average by 2.8% per year during 2005-19 while emissions outside the ETS, covered by the Effort Sharing Regulation (ESR), including transport, agriculture, waste, buildings or activities of smaller installations, fell on average by merely 0.5% per year over the same period (Figure 2.11).

The current policy-mix results in a too low price of carbon to be fully effective. Moreover, carbon is inconsistently priced across sectors of the economy. As a result, a very low share of emissions in the Czech Republic are being priced above 60 EUR per tonne of CO_2 (see Figure 2.12). Tax exemptions are also applied to various fuels, for residential heating and in agriculture, which decrease end-use prices and limit incentives to save energy or to switch to cleaner fuels. Moreover, the existing taxes do not generally

reflect other environmental costs from energy use, such as noise, congestion and air pollution, which does not encourage polluters to internalise these costs (OECD, 2018a).

Figure 2.11. Czech GHG-emissions outside the ETS have fallen only slightly

Emissions reduction in the ETS (EU Emissions Trading System) and ESR (Effort Sharing Regulation), Mt CO2-eq.



Source: OECD Environmental Statistics and EEA (https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1/)

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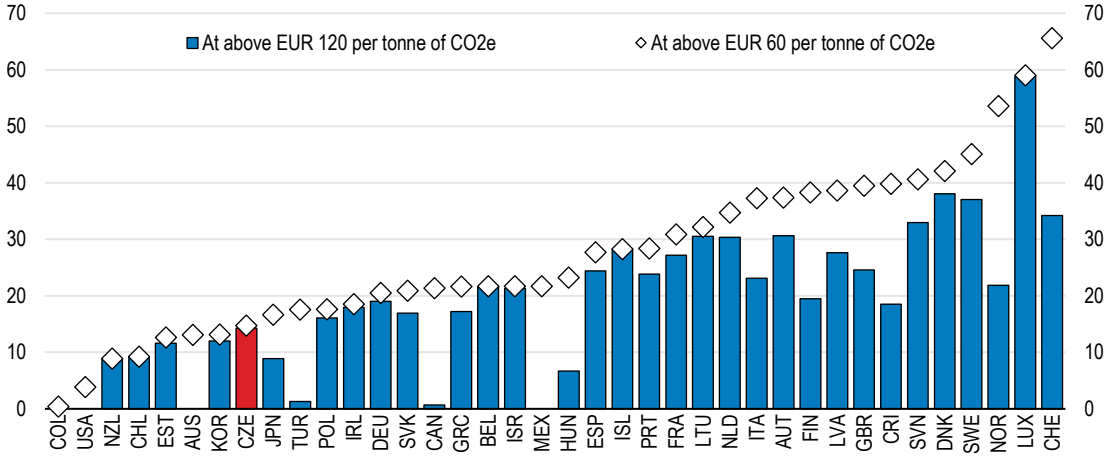
Excise taxes on natural gas, solid fuels and electricity were introduced in 2008 following EU directives. However, they were set at a generally low level by European standards (European Commission, 2021b) and have not been adjusted for inflation. As in many other countries, the reason for the relatively low tax rates are affordability concerns. However, environmental taxes should provide sufficient incentives for households to improve their energy efficiency and to switch to cleaner fuels and technologies (see the next section). Meanwhile, the government should provide targeted income support to groups of vulnerable households. Although fuel taxes and tariffs are significant (OECD, 2019a), they remain low compared to the EU (European Commission, 2022b). Taxes on diesel are lower than on gasoline, resulting in a lower price of diesel despite its high carbon content and air pollutant emissions, which has led to an increase in diesel consumption (OECD, 2018a). The Czech Republic does not levy a purchase tax on passenger vehicles and a road tax only applies to vehicles used for business purposes such as heavy goods vehicles, buses and coaches. Other than through toll prices and fuels taxes, vehicle emissions are not taxed in any other way.

Figure 2.12. Effective carbon rates are among the lowest in the OECD

Percentage of GHG emissions subject to a positive Net Effective Carbon Rate (ECR), 2021



Source: OECD (2022), Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action, OECD Series on Carbon Pricing and Energy Taxation, OECD Publishing, Paris.

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The absence of a unified carbon price produces uneven conditions for activities within and outside the ETS. This is particularly apparent in the Czech heating sector, where larger district heating systems fall under the ETS whereas smaller heating systems for residential buildings as well as individual systems are not covered, regardless of their energy sources or CO_2-emissions. The smaller installations therefore enjoy a competitive edge over the larger district heating systems, even if they are less environmentally friendly. In fact, the share of district heating systems in total heat supply has been shrinking in recent years (IEA, 2021a) although such systems have the possibility to leverage renewable sources, provide heat more efficiently and with lower local air pollution in densely populated areas than individual systems.

Once the currently elevated prices of energy subside, the introduction of an explicit carbon price would send consistent signals across the economy and incentivise households and firms to shift consumption patterns and investment decisions towards products with lower GHG-emissions. Research shows that an increase in the OECD's Effective Carbon Rates (ECR) of 10 EUR can decrease emissions by 3.7% in the long run (D'Arcangelo et al., 2022b). With the introduction of a carbon price, the current composition of fuel taxes in the Czech Republic should be shifted so that all prices of fuels and the use of energy better reflect their carbon content and impacts (OECD, 2022b).

To avoid inconsistent price signals across sectors and systems of taxation, as well as to ensure competitiveness and harmonisation with EU policies, the introduction of a carbon price in the Czech Republic could aim to trail emissions prices in the current EU ETS within a pre-defined path or corridor. This would align price incentives across the economy and ensure national emissions reductions consistent with EU plans. Price trajectories are key for planning and will help facilitate long-term investment in low-carbon technologies as they reduce uncertainty about future costs. Indeed, higher uncertainty surrounding environmental policies tend to be associated with lower investment, especially among capital-intensive and high-productivity firms (Berestycki et al., 2022). Many countries that have recently introduced a carbon price have implemented transparent price trajectories (Box 2.3).

Box 2.3: Introducing carbon prices with emissions price trajectories

Several OECD countries have implemented carbon prices, following the lead of the Nordic countries that have long used such environmental tools. The introduction of carbon prices has often come with price trajectories that aim to provide households and firms with a planning horizon to adapt to future costs of carbon.

Canada

The Pan-Canadian Pricing on Carbon Pollution guarantees a coherent carbon price ambition across Canadian provinces but leaves the choice to provinces whether to implement a tax or trading system. Provinces implementing a carbon levy should start at a minimum price level of CAD 20 per tonne of CO_2-equivalent in 2019 that increases over time by CAD 10 per tonne annually, reaching CAD 50 per tonne in 2022. From 2023-30, the carbon price is set to increase by CAD 15 per tonne annually.

Germany

Germany decided to implement national carbon pricing in sectors that are not covered by the EU ETS, in particular heating and transport. The national trading system entered into force in 2021 with a fixed price of EUR 25 per tonne of CO_2-equivalents. Prices will rise subsequently according to a predefined corridor, reaching EUR 55-65 per tonne in 2026.

The Netherlands

The Dutch government proposed the introduction of a national carbon levy in the industry sector, taking the form of a supplement on top of the EU ETS price for emissions that exceed a tax-free base per facility. The total carbon levy (i.e., ETS price and national supplement) includes a price trajectory that was originally set to start at EUR 30 per tonne of CO_2-equivalents in 2021 and was proposed to rise in linearly to EUR 125-150 per tonne in 2030.

Source: OECD (2020a).

Carbon prices are cost effective and efficient instruments to reduce emissions. However, public support for carbon prices tends to be much lower when compared to other types of environmental policies. A recent study by Dechezleprêtre et al., (2022) shows that public support for subsidies for low-carbon technologies and public investment into infrastructure are the most popular. Support is also high for the mandatory and subsidised insulation of residential buildings. The study also finds that public opinion for a carbon price may be stronger when it is made clear how the new revenues are to be used: support tends to be greater when the carbon price is combined with the financing of environmental infrastructure, subsidies for low-carbon technologies or reductions of other income taxes.

Revenues from the existing Czech environmental taxes are fully or partially earmarked for specific programmes: ETS revenues are dedicated to spending on programmes for energy savings, including renovation. Roughly 9% of the revenues from excise fuel taxes are for spending on various transport-related investments, such as maintenance (Melanie and van Dender, 2019). Explicit revenue earmarking should generally be discouraged as it creates inflexibility in spending priorities and can lead to inefficient allocation of resources. However, earmarking can also be a useful tool for governments to commit and clearly communicate how additional revenues derived from a carbon price will be used and thereby to gain public acceptability for the tax (Dechezleprêtre et al., 2022).

The additional revenues raised by a carbon price could be used to lower distortionary social security contributions or to fund transfer programmes towards those more affected by the emissions prices, such as lower income households. Revenues can also be put towards public infrastructure or investments into renewable technologies (Melanie and van Dender, 2019). Existing subsidy programmes tend to enjoy strong public support and the Czech economy already has a redistributive system of transfers. Given the strong need to increase energy efficiency and to scale up renewable energy production in the Czech Republic, a share of the new tax revenues could be dedicated to support these goals and used as transfers to households, to maintain public acceptance and political feasibility.

Phasing out coal by investing in alternatives and improving energy efficiency

It is imperative that the Czech Republic phases out coal's large share in the energy mix (Figure 2.13A) to ensure a credible path towards net zero emissions. Coal is one of the most carbon-intensive fuels. One megawatt hour of electricity produced by lignite coal results in between 800-1300 kilos of CO_2-equivalents, whereas natural gas result in 380-1000 kilos, nuclear power 3-35 kilos and hydropower 2-20 kilos (Turconi et al., 2013). The European Union's revised ETS will reduce the number of emissions allowances at a faster rate compared to the existing system, which will raise the cost of coal in energy production more rapidly. Phasing out coal will require significant – and potentially challenging – structural changes in many domains in the Czech Republic. It will necessitate reshaping power and heat generation and require large investments to modernise technical equipment and to raise the energy efficiency of buildings and industrial processes. Historical reliance on coal also means that jobs in some industries (mining, industry and heat and power generation) concentrated in a few regions will be disproportionally affected (see the next section).

To accommodate a higher share of renewable energy sources, upgrades to the electrical grid will also be required. In December 2022, the European Investment Bank granted a EUR 790 million loan to the Czech utility company ČEZ for the expansion of the national electricity distribution network and to accelerate the modernisation of the grid. The funds will be used to install automation technology and remotely controlled energy supply systems. ČEZ will also make upgrades to increase the reliability of the electricity supply in nine regions of the Czech Republic. With the new infrastructure, ČEZ will be able to integrate up to 2.2 GW of new renewable energy sources.

Most of the coal-based energy in the Czech Republic is used by the industrial sector (Figure 2.13D). The sector has exhibited great improvements in energy efficiency since the 2000s and the energy intensity in Czech industrial production is lower than the EU average (Odyssee-Mure, 2020a). These improvements

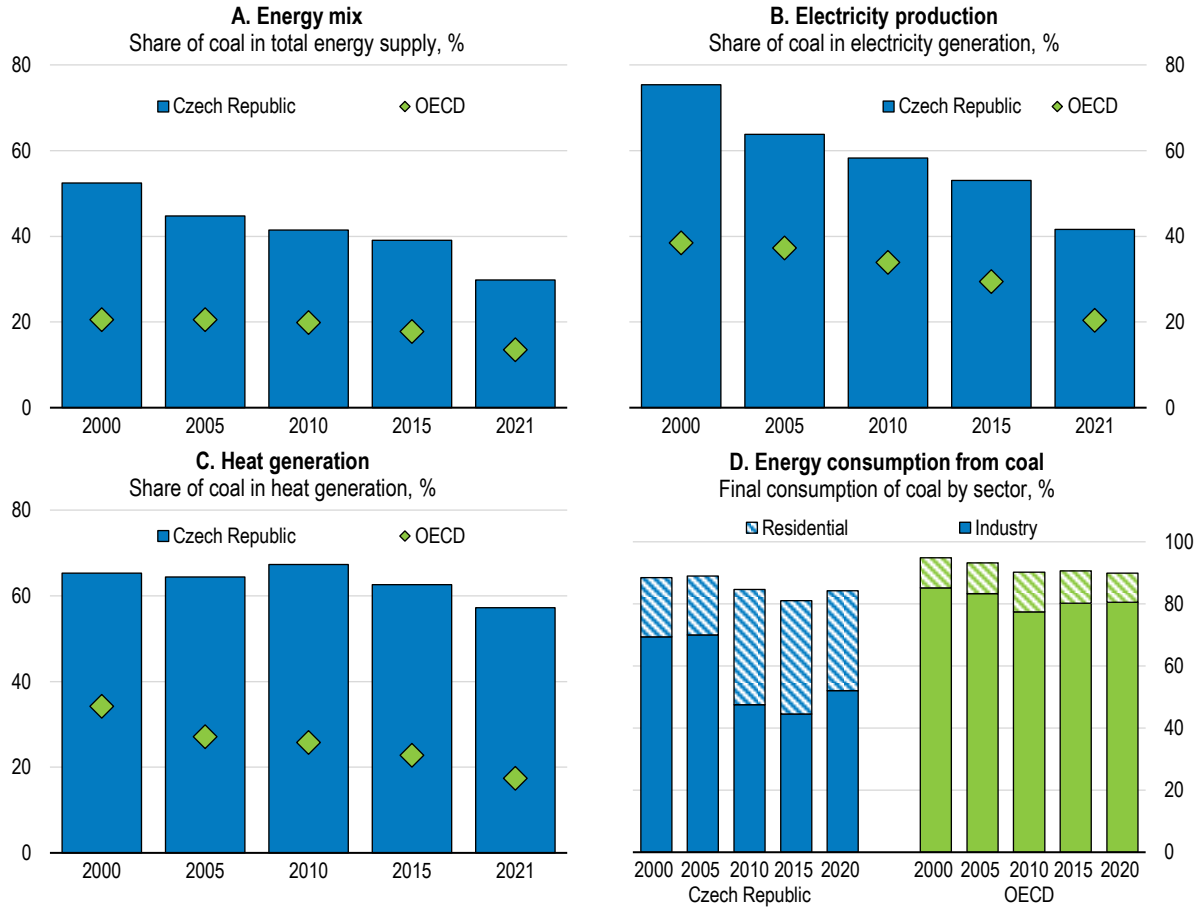
are due to compositional changes (relatively energy inefficient subsectors now make up a smaller share of industry) and energy efficiency gains (Odyssee-Mure, 2020b). Subsidies for research, development and innovation among small and medium-sized enterprises are available from the Operational Programme for Technologies and Applications for Competitiveness (OPTAK). The programme contains support for activities that raise energy efficiency and can cover 35-65% of the total cost. This includes investments such as replacement of energy-inefficient machines, lighting technologies, insulation of buildings, use of renewable energy sources and modern measurement systems. Progress in improving industrial energy efficiency in the Czech Republic should be maintained and the composition of existing subsidy programmes should be closely monitored to ensure that energy savings continue.

Boosting private investment in renewable energy to lower reliance on coal

Coal currently accounts for 42% of Czech electricity production and 57% of heat generation (Figure 2.13B and Figure 2.13C). Apart from nuclear capacity that will be expanded from the mid-2030s, there is currently no new large generating capacities under construction nor planned for the 2020s (IEA, 2021a). Most of the domestic electricity production potential comes from raising the share of renewables in total generation as solar photovoltaic and wind only generated about 3.2% of electricity in 2021. A key priority to achieve the coal phase-out is thus to raise the share of renewables to allow electricity and heat production to expand with a smaller carbon footprint.

Policy scenarios for the EU's Fit-for-55 agenda that include the 2033 coal phase-out and with assumptions of a limited supply of natural gas (see Ščasný et al., 2022 and Box 2.4) point to a significant role of renewables in the energy mix by 2035. For electricity and heating, the use of non-combustible renewable sources would rise significantly, from 2% in 2020 to 12% by 2035. However, models that assume more rapid investments into the transmission grid and better construction regulations entail a faster deployment of wind and solar power (Ščasný et al., 2022). Phasing out coal from the energy mix with a limited supply of natural gas will therefore require rapid progress on many fronts. This includes significant improvements in energy efficiency, research into low carbon technologies and carbon storage options, as well as electricity imports. The Czech transmission grid is well connected with neighbouring countries, with a capacity to transport electricity across borders of 30% of its total electricity production. This high cross-border capacity can help the country ensure security of supply in the transition period towards an energy mix without coal (IEA, 2021a).

Figure 2.13: Coal remains core to the energy mix



Source: IEA (2022), IEA World Energy Statistics and Balances (database).

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The Czech State Environmental Fund manages several subsidy programmes to increase investments in green technologies with funds from national and EU sources. The subsidies are designed to support the public sector, businesses and households, and can be used to improve heating systems, energy savings measures as well as funding of green infrastructure of cities and municipalities. In May 2022, the government announced an additional CZK 4.75 billion (194 million EUR) in funds for 2022 for operating support related to the development of new renewable and other supported energy sources (Vlada, 2022b). Importantly, the Act on Promoted Energy Sources (Act No. 165/2012) was amended in 2022 to provide additional support for existing and new power plants with renewable energy sources. A key feature of the legislation was to move away from existing feed-in-tariffs and to introduce competitive bidding and auctions for renewable power generators and to offer green bonuses, also for heat generation. The revised legislation opens the door for support for renewable sources that has largely been lacking since the end of 2013.

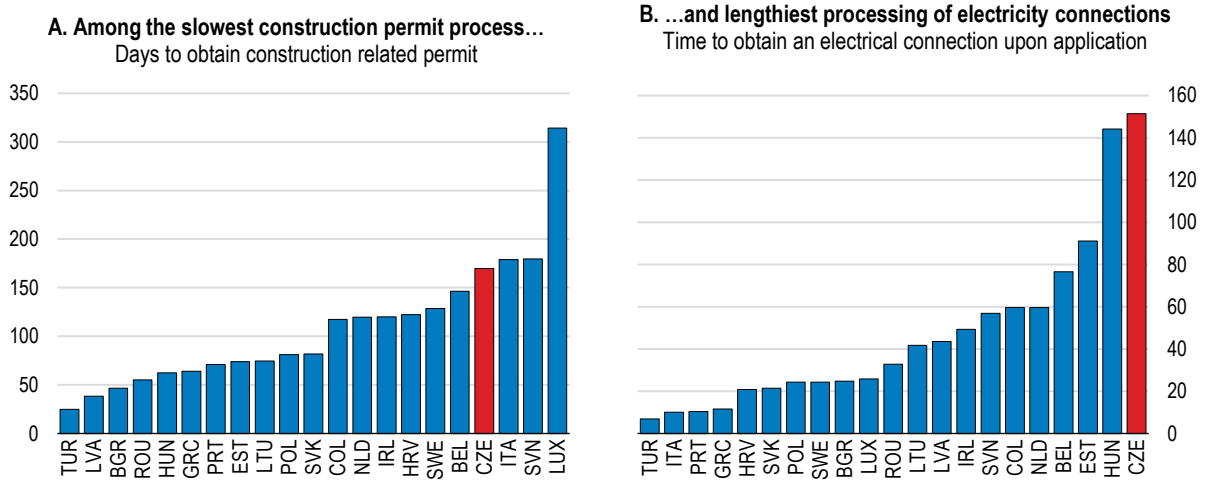
Cumbersome regulations and lengthy construction processes are severe barriers to green investments in the Czech Republic. The process for obtaining building permits is among the slowest in the OECD (Figure 2.14A) (OECD, 2020b), spatial planning is restrictive and the process for obtaining electricity production licenses is complex (Figure 2.14B). Streamlined permitting processes for renewables (such as adopting one-stop-shops), increasing the thresholds for requiring building permits and simplifying access to available grid capacity, and making processes more transparent would be beneficial. Finally, measures to encourage renewable energy self-consumption, private purchasing agreements and energy

communities could stimulate private investment and help increase the comparatively low share of renewables in energy consumption.

The new Building Act (No. 283/2021 Coll.) has made important changes by aiming to reduce the red tape and waiting times associated with renovations or new construction projects. The law is currently being amended and is expected to come into force on 1 July 2023 for so-called “reserved buildings”, which are the largest infrastructure projects, and on 1 July 2024 for all other buildings. Moreover, two amendments of the Energy Act No. 458/2000 Coll. aim to reduce the barriers for renewables investment. The first increases the threshold for the obligation to hold a license for electricity generation from 10 kW to 50 kW. The same threshold will also apply for building permits, thus significantly decreasing construction lead times. The second introduces rules and obligations for energy communities to promote decentralised production of energy from renewable energy sources.

Figure 2.14. Cumbersome and lengthy processes hamper green investments

Number of days, 2020 or latest available year



Source: World Bank, Alternative Doing Business Indicators.

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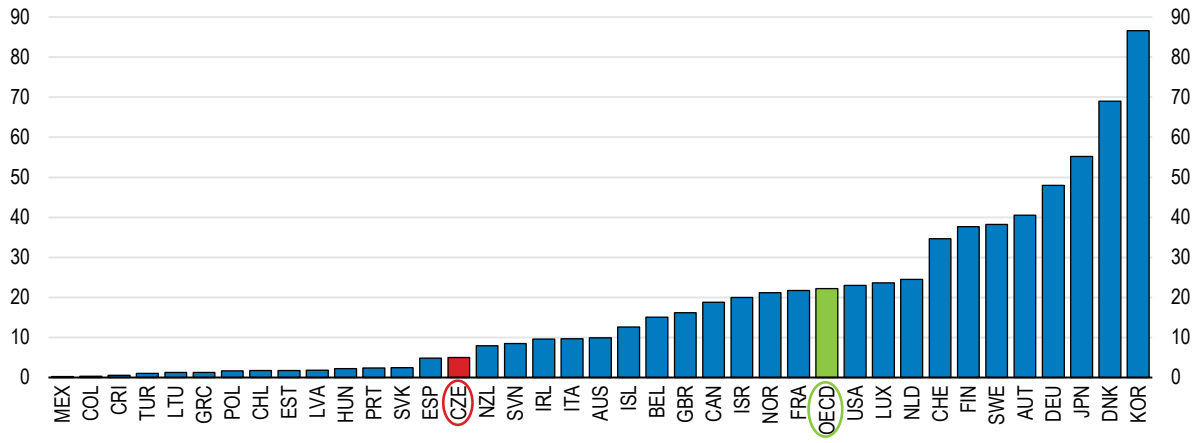
There is scope to increase environmental R&D as a share in total R&D spending in the Czech Republic. Development of environment-related technologies lags other OECD countries (Figure 2.15). The THÉTA programme was launched to raise the green innovative capacity in the Czech economy by supporting applied experimental research and innovation in the area of green technologies, which has helped boost green R&D spending (TACR, 2016). The programme has run tenders from 2018 and will continue up to 2025 with the allocation of CZK 4 billion in public funds, with an average of 70% support per project. A full take-up of the programme would entail private funds of CZK 1.75 billion, yielding 5.75 billion in total. As of 2021, 232 projects have been supported (TACR, 2021). Most of the existing spending involves research related to nuclear power but there are also opportunities to use or expand the THÉTA programme in a range of other energy sources, especially low-carbon technologies, including advances in cleaner fossil fuel applications. The government could consider scaling up support for the building of new facilities for renewable energy production, while still adhering to principles of strict cost-benefit analysis for approving new projects.

Figure 2.15. Environmental R&D spending is relatively low

Development of environment-related technologies, inventions per capita, 2019



Source: OECD Environment Statistics.

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Start-ups and young firms often play a leading role in steering the economy towards the technological frontier and can play an important role for raising innovation in green technologies. However, many young and dynamic Czech firms lack sufficient sources of funding suited to their needs. Although bank credit is readily available to SMEs and financing conditions are not significantly worse than for large companies, capital markets are underdeveloped. The unavailability of venture capital creates a financing gap for early-stage innovative companies (OECD, 2020b). To help remedy the lack of venture capital, the Czech government has concluded agreements with various funds (European Investment Fund, Central Europe Fund of Funds), that may invest in innovative start-ups and emerging growth-oriented companies seeking capital for their further development. The National Development Bank also provides guarantees for SMEs and innovative projects. Such efforts and broader efforts to better develop capital markets should be pursued further.

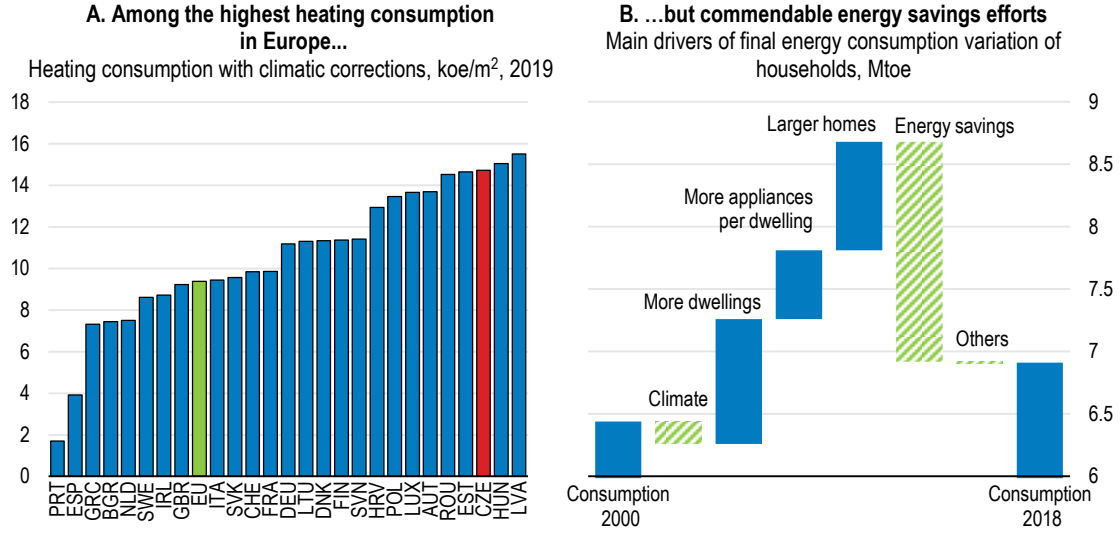
Reducing coal-based energy use in heating

Approximately 300 000 Czech households' – many of them low income – still use individual coal boilers to heat their homes (IEA, 2021a). Given the limits of relying on natural gas, further use of renewables in the existing district heating systems and the use of sustainable biomass and waste as alternative energy sources will be needed to reduce coal use. Well-designed district heating systems can provide heat efficiently (Cournède et al., Forthcoming). Such systems already cover 40% of Czech households. Modern networks with low operating temperature can run fully on renewable sources to supply energy-efficient buildings. Inefficient solid fuel boilers will be banned in the Czech Republic from 2024, and the government is currently focussing on the replacement of existing non-compliant heaters in roughly 110 000 households (Ministry of the Environment, 2019b). New construction projects should be incentivised to include green heating technologies, like heat pumps.

Several subsidy programmes aim to incentivise private investment into energy-efficient heating systems by offering favourable financing conditions. However, low awareness of the wider benefits of energy-saving measures have hampered the programme's uptake (Ministry of Industry and Trade, 2019). The government should investigate whether the financing conditions are sufficient to prompt energy-savings investment, assess the difficulty of the administrative processes to receive the subsidies and provide further information about the social and economic benefits of more energy efficient heating systems. Information campaigns about how investments into energy-saving measures lower energy bills and reduce the risk of shortages should also be prioritised as energy prices may remain elevated for some time.

The energy use in Czech dwellings, per square meter, is among the highest in the European Union (Figure 2.16A), in part due to a large share of older dwellings (European Commission, 2022c). Despite some progress since the year 2000 (Figure 2.16B), the country is far from reaching energy savings agreed under the EU Energy Efficiency Directive (European Commission, 2022d). There is vast potential for reducing energy use in residential buildings by stepping up the pace of renovations and scaling up efforts to insulate older buildings, including government buildings. The Czech Long-Term Renovation Strategy includes several instruments to stimulate private investment into energy savings: grants for residential and non-residential buildings financed through structural funds and sales of emission allowances, technical assistance for energy efficiency projects and education measures among others. However, even in an optimal scenario considered in the strategy, energy savings from 2019 onwards are expected to be only 9% by 2030 and 24% by 2050, which is not ambitious enough (European Commission, 2021c). The government should rapidly expand investments into energy efficiency retrofits of the stock of public buildings and further incentivise private investment in energy savings efforts.

Figure 2.16: Heating consumption in residential spaces is high



Source: ODYSEE-MURE.

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Improving incentives and regulations to lower road transport emissions

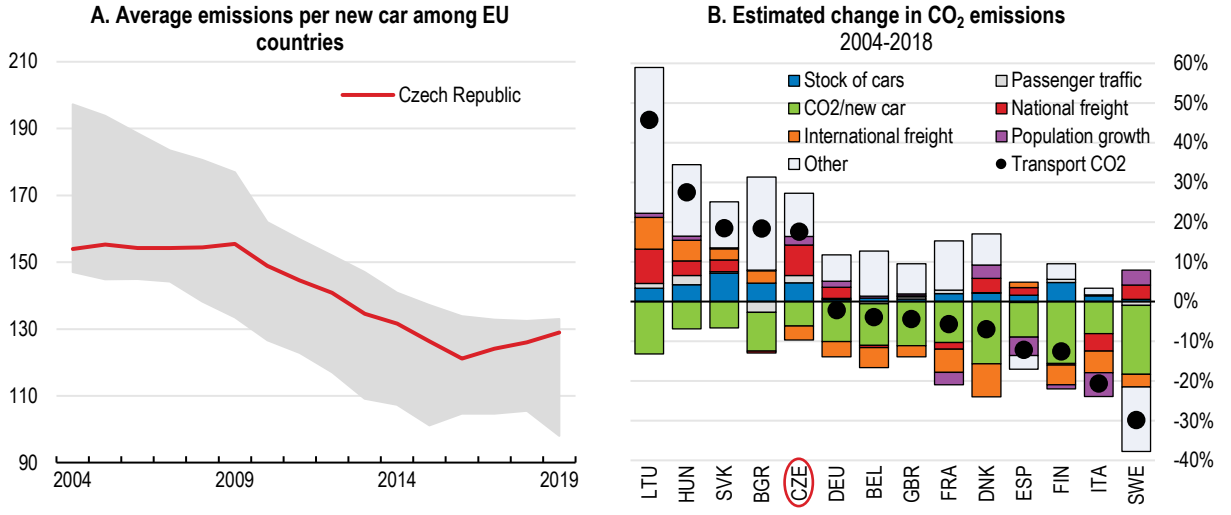
A lack of infrastructure for electric vehicles, ineffectual incentives and comparatively weak public support for hybrid or electric vehicles have contributed to one of the oldest car fleets in the European Union. Cars in circulation are on average 15.3 years old, 3.5 years higher than the EU average (ACEA, 2022). Sales of more fuel-efficient and battery-electric vehicles have increased (Ministry of Transport, 2022), but CO_2-emissions of new cars remain among the highest in the EU (Figure 2.17A). Estimates following (broadly) the methodology in the 2021 Economic Survey for Denmark (OECD, 2021d) can gauge how various transport-related factors correlate with emissions. The results show that increasing the CO_2-efficiency of new cars is crucial in reducing transport sector emissions, especially when road traffic is rising (Figure 2.17B).

The Transport Policy of the Czech Republic is a key strategic document that aims to raise the CO_2-efficiency of the vehicle fleet (Ministry of Transport, 2021). The plan leans on legal requirements, direct incentives for purchasing alternative fuel vehicles, the building of infrastructure and various incentives. To achieve a faster replacement of the vehicle fleet, the government could also consider offering specific incentives to scrap old vehicles and replace them with newer models. A scrapping scheme should ensure that larger and dirtier vehicles that are currently in use are replaced by lighter and cleaner vehicles

(International Transport Forum, 2011). Regulations can also help reduce transport emissions by discouraging the use of inefficient vehicles. Setting minimum emission standards could encourage drivers to upgrade to cleaner vehicles. Similarly to carbon-price trajectories, communicating a long-term timetable that sets out how minimum standards will become stricter over time can provide a powerful signal to households and the broader transport sector and facilitate long-term planning.

Promoting the introduction of low- and zero-emission vehicles and shifting individual road transport needs towards lower emissions modes like rail or public transport require large infrastructure investments. Moreover, well-designed regulations and standards can help overcome coordination failure and realise network effects, for example by setting technical standards for electric vehicle charging stations and connectors. The Transport Policy contains several strategies that are expected to change passenger and freight transport volumes. Transport volumes are predicted to shift from road towards rail and road passenger transport allocated towards cycling, bus and public transport modes. The shift will be induced by the continued building of a network of cycle paths and development of standards for cycle parking spaces adjacent to passenger terminals, as well as building of car parks, primarily on the outskirts of large cities, in connection with public transport hubs. The strategy also plans to introduce a uniform tariff for all modes of public transport to stimulate public transport modes further. Connections to all regional cities with a high-quality railway network (in Bohemia to Prague, in Moravia to Prague and to Brno by 2040) are envisaged. In the strategy, electric trains will be favoured, as a penalty surcharge for the operation of a diesel vehicle on an electrified train line (with exceptions) will be implemented from 2025. Moreover, the government will no longer contribute to regional transport services if they operate vehicles with internal combustion engines on electrified lines (Ministry of Transport, 2021). The strategy estimates that a successful implementation would reduce transport CO_2-emissions by 32% by from 2019 to 2050. If the plans are not fulfilled, the Transport Policy estimates that CO_2-emissions in the transport sector could increase 21% by 2050. A key factor for the strategy to be fulfilled is that red tape related to green infrastructure is cut, especially decreasing the number of days it takes to receive a construction permit.

Figure 2.17. More environmentally friendly vehicles can help reduce transport CO_2 emissions



Notes: The shaded area in (a) represents the min-max of average emissions per new car in the EU, except for Croatia and including the United Kingdom. Panel (b) reports the (log) change in transport CO_2-emissions between 2004-2018 (starting in 2005 for Slovakia and 2007 for Bulgaria. Ending in 2016 for Belgium and Denmark and 2018 for Lithuania) and the contribution of explanatory variables. The estimates utilises 239 observations for the countries marked on the x-axis and the explanatory variables included are in the chart legend. Country and year fixed effects are included as controls and are part of "Others" in the chart, alongside residuals. The parameter estimates for all explanatory variables are statistically significant at the 5% level, with the exception for stock of cars that has a p-value of 0.073 and road traffic (p-value=0.345). All variables are expressed in logs, except for population growth that is in percentage changes (x100).
Sources: European Environmental Agency, Eurostat and the International Transport Forum.

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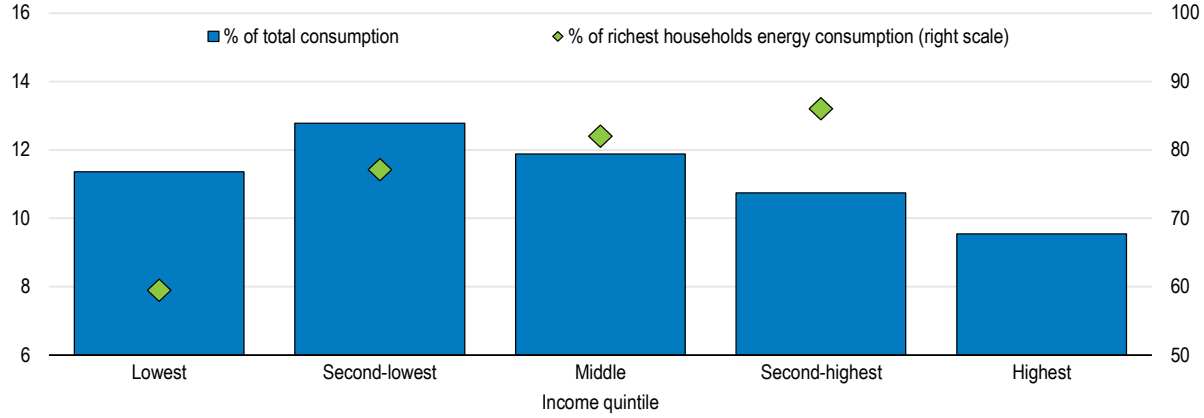
Addressing the distributional and labour transition effects of climate policies

The Czech Republic maintains comprehensive programmes for redistribution through taxes and cash transfers which, together with high employment rates, have resulted in one of the lowest income inequality rates (after taxes and transfers) in the OECD. The path towards net zero will result in higher prices of consumer products with a high carbon content, such as fuels, electricity and heating and reshape economic activity with distributional consequences (OECD, 2021e). Energy accounts for roughly 10% of private consumption expenditures in the Czech Republic, among the highest shares in the OECD (see Figure 2.7B) due to lower real income per capita and poor energy efficiency (Odyssee-Mure, 2022). Expenditure shares on electricity, gas and heating are particularly high among poorer households (Figure 2.18). As with most structural changes, the people who are already vulnerable are likely to bear the heaviest burden of the transition (D'Arcangelo et al., 2022a). Therefore, the comprehensive policy framework to facilitate green growth needs to be inclusive and ensure that the economic costs and gains are shared.

Figure 2.18. Poorer households spend a larger share on energy

Household consumption expenditure on electricity, gas and other fuels, average 2017-21



Source: OECD calculations based on the Household Budget Survey (HBS).

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Although evidence shows small aggregate effects of climate policies on jobs (Ciccarelli and Marotta, 2021; OECD, 2021f), regional and local labour market effects can be large and distributional consequences sizable (Känzig, 2022). Without a commensurate policy response, the economic burden from the transition would fall disproportionally on certain regions, sectors, firms and households. For example, the planned phase-out of coal in the Czech Republic will directly affect jobs in mining and energy production, primarily in the Northwest regions of the country. Between 20 000 and 30 000 jobs in coal mining and power-generation in these regions could be at stake (Heuer, 2018).

Model-based simulations can help assess the distributional consequences of policies that aim to reduce emissions. Scenarios for the Czech economy suggest that implementing the EU Fit-for-55 targets could lower real GDP and total employment by 2% and 1% respectively during the transition period, compared to a scenario with only existing climate policies (see Box 2.4). However, the economic effects vary across sectors. Industries that supply goods and services that facilitate the transition, like construction and advanced manufacturing, could experience increasing employment whereas sectors such as basic manufacturing, the emissions-intensive energy supply sectors and agriculture, could see large declines. The simulations also show that implementing policies to achieve the emission reduction goals in EU's Fit-for-55 could reduce real income and consumption across the income distribution compared to the baseline. However, there is significant heterogeneity: lower income households are likely to see the largest reduction in real consumption expenditures, although the distributional consequences hinge on how environmental tax revenues are used to support households.

Box 2.4: Model simulations of the impacts of the EU Fit-for-55 on the Czech Republic

This box summarizes policy scenarios that gauge the climate, macroeconomic and distributional impacts on the Czech economy from implementing major parts of the EU's Fit-for-55 agenda. The analysis utilises macro-climate models and was prepared for the Czech government by Cambridge Econometrics and Charles University Environment Centre (Ščasný et al., 2022).

The environmental objectives are achievable if addressed with a sense of urgency and sufficiently stringent policies. Regarding the energy sector, two major decarbonisation policy options have been modelled. One where new renewables installations are limited and the decarbonisation would rely heavily on energy savings, carbon capture and storage technology and electricity imports. A second with significantly higher development of photovoltaic and wind energy, but also with extensive transmission network investments. The scenarios include the 2033 coal phase-out, assume a limited availability of natural gas due to Russia's war against Ukraine and further electrification of the economy.

Table 2.3 shows the energy mix following the first policy option. Nuclear energy has the largest share in the energy mix for electricity and district heating in 2035, supported by non-combustible renewables (solar, wind and hydropower) and biomass and biofuels, which account for 12% and 12-14% in 2035 compared to 2% and 6% in 2020 (Table 2.3). However, models that entail more investments into the transmission grid and better construction regulations see significantly greater shares of non-combustible renewable energy sources in the energy mix by 2035 (Ščasný et al., 2022).

Table 2.3. A significant shift towards renewables in electricity and heat generation by 2035

Fuel source	2020 consumption In PJ (and %)	2035 consumption In PJ (and %) across scenarios
Coal	393 (47%)	0 (0%)
Nuclear	324 (38%)	319 (60-63%)
Natural gas	43 (5%)	32-62 (6 -12%)
Solar, wind and hydro	21 (2%)	61-62 (12%)
Biomass and biofuels	50 (6%)	63-71 (12-14%)
Other sources	14 (2%)	22-24 (4-5%)

Note: All scenarios include a decrease in primary energy consumption by 2050 ranging from 22 to 28% compared to 2020, reflecting energy efficiency measures. Other sources include other oils, gases, waste and geothermal. The range of values in 2035 is determined by the assumed availability of natural gas.
Source: Ščasný et al. (2022).

Three scenarios for recycling revenues from the European Union's ETS are considered: 1) a scenario where the revenues are partly used for green projects such as low carbon hydrogen, energy efficiency in industry, electric vehicles or renewable technologies, compensation for low-income households, but also for general government spending. 2) a scenario where all revenues are dedicated to green initiatives and support to low-income households and 3) an environmental tax reform that uses all revenues to lower other taxes (income, labour and sales taxes) proportionally.

Across scenarios, the impact on real GDP varies in the range of -1.8 percentage points to +2.2 percentage points relative to the baseline by 2030 and the impact on employment is roughly half of the GDP impacts. The employment effects differ remarkably across sectors, with rising employment in construction and to a smaller extent in advanced manufacturing. A reason for this increase is that these sectors supply inputs and capital goods that support the transition towards net zero. Employment in basic manufacturing, the energy supply sector and agriculture would at the same time decline.

Impacts at the household-level also differ. Changes in energy prices lead to a demand reduction and/or to a reduction in the consumption of other products, which affects households across consumption deciles differently. All scenarios foresee real consumption decreases relative to the baseline, with

regressive impacts: households with lower incomes are more adversely impacted than richer households. Revenue recycling can reduce the overall negative effect on consumption expenditures across the income distribution. Moreover, the environmental tax reform using all revenues to reduce income, labour and sales taxes equally would have the smallest impact on consumption expenditures on average, while being most regressive.

According to the models, the revenue recycling is most progressive when used for climate investments across sectors with a special focus on low-income households (combining social support and energy savings).

Source: Ščasný et al. (2022).

Cushioning the impact of climate policies on vulnerable households

The Czech government should make use of its existing tax and benefit system to offset some of the higher costs of energy associated with climate policies that disproportionally fall on the lowest income households. Other OECD countries have implemented several types of compensating policies, both untargeted and targeted. For example, Switzerland addressed the energy affordability concerns of a carbon price with the introduction of special lump-sum rebates on social security contributions and reimbursements to firms proportional to their wage bill. In Canada's British Columbia, a carbon price was introduced alongside complementary support to firms, income tax cuts, property tax rebates to rural areas and targeted transfers to low-income households. Several EU countries have shifted taxation away from labour income towards environmentally harmful behaviour since the early 2000s (European Environmental Agency, 2018).

To maintain incentives to improve energy efficiency and the use of low-emission products and fuels, support measures should be geared towards households that are the worst-off. New or expanded climate policies that result in additional tax revenues, such as an explicit carbon price, should be combined with redistribution that support households to mitigate energy affordability concerns and to ensure public acceptance of the policies. As noted in the previous section, some share of the new tax revenue should be used to fund infrastructure benefitting especially the poor. Many of the existing Czech subsidy programmes already focus on such investments, like the New Green Savings Program, and could be scaled up. The government could also consider creating a green social fund that distributes new environmental revenue towards different ends (D'Arcangelo et al., 2022a). This could help signal the country's commitment to achieve a fair transition toward net zero and increase acceptability of climate policies.

Boost active labour market policies to facilitate labour reallocation

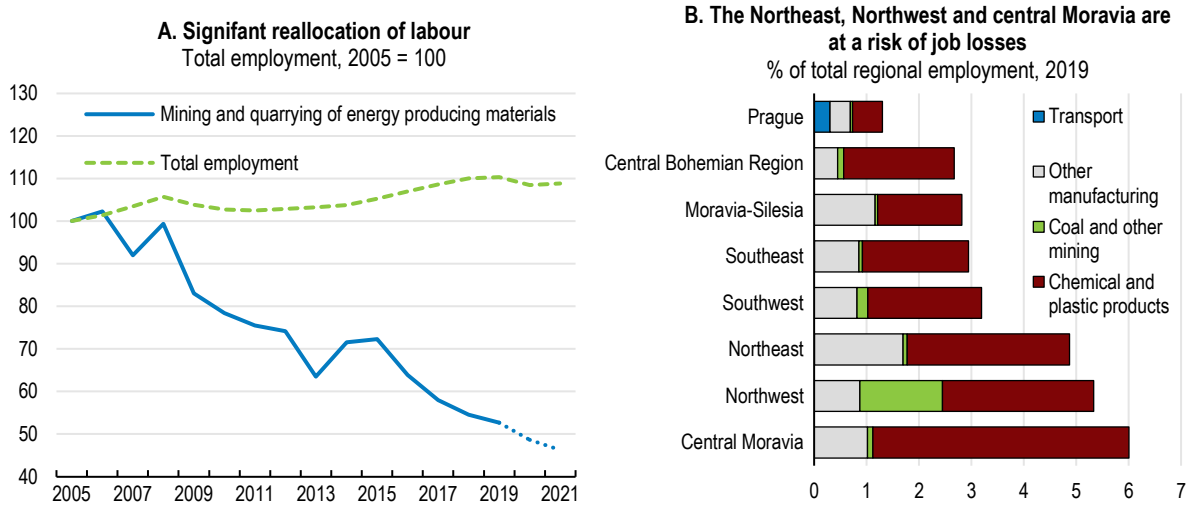
Employment opportunities will shift across regions, sectors and firms as the Czech economy moves towards net zero. Moreover, the skills required in many emissions-intensive jobs are only partially transferable to greener jobs (ILO (International Labour Organisation), 2011). Some "green" jobs require higher level of skills than in comparable occupations in other industries (OECD, 2012). Skills shortages are already very high in the Czech Republic (OECD, 2022c) and improving reskilling and matching in the labour market can help ease labour shortages and at the same time facilitate the green transition.

Some of the reallocation has already started in the Czech Republic. Employment in mining and quarrying of energy-related materials (mostly coal) has decreased rapidly – by more than 50% since 2005. In the meantime, total employment increased by almost 10%. The large decline of jobs in the coal sector and simultaneous increase in total employment illustrates that although one sector is exposed to a structural change, developments in other sectors can more than offset the impact.

Structural change that arises from climate mitigation can be very challenging for workers and regions despite small aggregate effects. Three Czech regions - the Northeast, Northwest and central Moravia –

have more than 5% of jobs in sectors at risk of job losses related to climate mitigation (OECD, 2021g). The jobs at risk are primarily in the manufacturing of chemical and plastic products and in the mining of coal and lignite (in the Northwest). The economic hardship and risk of poverty in the Northwest are exacerbated by the fact that the region is already lagging the rest of the country with GDP per capita close to 30% below the national average (Czech Statistical Office (CZSO), 2022a), a lower employment rate, higher unemployment rate and higher share of economically inactive people. Moreover, the share of workers in simpler occupations is almost twice that of the national average (Czech Statistical Office (CZSO), 2022b). To ease the adjustment in coal-related industries, Czech governments have since the 1990s implemented an array of policies to support workers (Rečková et al., 2017). Compensation-based support was given as social allowances, early retirement and/or compensation for lost earnings. Adjustment policies focussed on retraining programmes for miners and job search, as well as regional transport allowances.

Figure 2.19. Labour reallocation will continue with some regions and sectors more at risk



Note: In panel A, from 2019, data for employment in mining and quarrying of energy producing materials are estimates based on total employment in mining and quarrying.

Source: STAN structural indicators (iSTAN); Eurostat database; OECD Regional Statistics database.

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Tackling the adverse socioeconomic consequences in coal regions

Coal mining and power-generation activities are primarily concentrated in the regions Usti nad Labem and Karlovy Vary (lignite coal), and Moravia-Silesia (hard coal). Switching towards renewable energy production can create new green jobs in these regions. Lessons learned from transitions in other countries suggest that a just and successful coal phase-out can be achieved through comprehensive place-based strategies that have wider socioeconomic focus beyond jobs. Such policies can help to overcome public discontent with the transition by promoting economic development and should include ways of connecting workers with new opportunities, financial support to regional governments as well as relocation grants to support geographic mobility and on-site career counselling (see Box 2.5).

Box 2.5: Experiences of other OECD countries in industrial transitions

Germany

The Ruhr region is one of Germany's most densely populated areas and about 80% of the country's hard coal was mined there for most of the 20th century (Reitzenstein et al., 2021). The region experienced a 50-year-long decline of its hard-coal industries before coal was finally phased out in 2018. Key lessons from the transition are to combine policies that address jobs and investments with measures that improve infrastructure, education, research facilities and "soft" location factors like cultural and leisure time possibilities, environmental issues as well as to avoid subsidising jobs in the coal sector (Oei et al., 2020).

The German parliament passed legislation in July 2020 to phase out remaining coal-fired power generation by 2038 and the new government aims to bring the date forward to 2030. To achieve a fair transition, the federal government has pledged significant fiscal support to affected coal mining regions, focusing on infrastructure, innovation and job markets, as well as financial support for early retirement (amounting to about EUR 580 000 per affected employee). The government has also pledged to pay EUR 4.35 billion to lignite coal-fired power plants' owners to address potential future costs from legal remedies, which are counter to a "polluter pays" principle and should be discouraged. Distributional impacts are addressed by reducing renewables-generated electricity prices (OECD, 2020c).

United Kingdom

The oil and gas industry underwent a contraction in 2014-17 due to the decline in global prices. An estimated 120,000 jobs were lost and the prospects for workers were dimmed by a projected 5% annual decline in domestic oil and gas production after 2022 (OECD, 2022d). The UK government's Oil & Gas Workforce Plan aim at supporting displaced workers and retaining sectoral expertise. For example, systems engineers or signal designers can be employed in the railway sector while the growing oil and gas decommissioning industry can offer opportunities to workers with expertise in mechanics. The UK government is planning to deploy "Skills connect", a web-based tool, helping displaced workers to identify occupations in other sectors that require similar set of competencies and relevant technical trainings.

Canada

The Government of Alberta accelerated its phasing out of coal-fired power generators in 2015. Coal-fired utilities account for almost 55% of total provincial electricity generation and employ more than 3,000 people. Several initiatives accompany this structural adjustment. The revenues of the carbon levies represent the bulk of a fund to promote innovation and economic diversification. In addition, a dedicated Advisory Panel on Coal Communities has been established to ensure that the concerns of local communities and workers are considered. Building also on the recommendations elaborated by the Panel, numerous initiatives have been designed to support workers during the transition. These include top-ups to the employment insurance benefit, relocation grants to support geographic mobility and on-site career counselling (Botta, 2019).

The Czech RE:START strategy was initiated in 2015 to support the economic restructuring and fair transformation in the coal regions. A key feature of RE:START is its governance structure that links the central government to regional units from the public and private sector as well as civil society. RE:START targets the wider economic, social and environmental issues in the concerned areas beyond the impact of the immediate employment losses, with a focus on entrepreneurship, direct investment, research and development, education, social stabilisation, the environment, infrastructure and public services in the affected regions (Ministry of Regional Development, 2016). So far, 38 measures in RE:START have been accomplished and CZK 10.2 billion (425 million EUR) have been channelled into Czech regions, which

include the revitalisation of properties for the use of businesses and the regeneration of previously unusable land, so-called “brownfields” as well as additional financial support for higher education and secondary schools. Ongoing projects relate to support for digitalisation/robotisation, attracting skilled workers to the regions and developing the regional labour offices (Ministry of Regional Development, 2022). In September 2022, the European Commission approved CZK 40 billion (1.64 billion EUR) through the Just Transition Fund (JTF) to support the transition to green energy in the Czech coal regions. The funds can be used to mitigate the socioeconomic impacts linked to the closure of mines and coal-fired power generation, including the retraining of staff, renewable sources of energy, and relevant research and development, thus supporting RE:START.

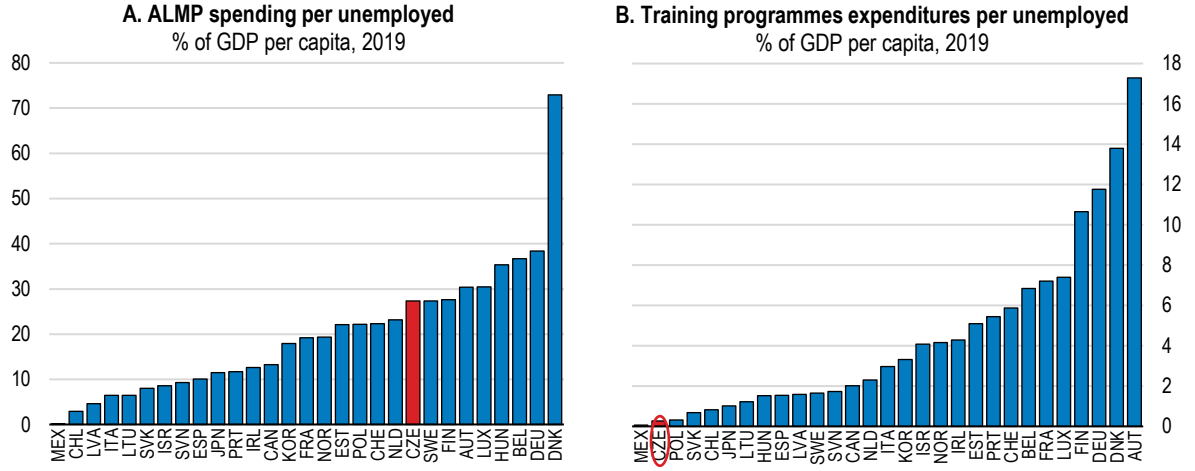
Engaging stakeholders to identify investment priorities requires an inclusive and interactive bottom-up process in which participants from different environments uncover and produce information about potential new activities (OECD, 2021g). RE:START provides a strong foundation for a just transition in the coal regions. However, although support grants are available through the programme, there is insufficient absorption capacity in the regions, and the strategy lacks sufficient in-depth assessment of the expected outcomes to support the social, economic and skills transition (European Commission, 2019). Political and public support is key for the long-term success and sustainability of the strategy. Therefore, providing information to various stakeholders and securing their participation should be a priority.

Boosting training programmes for the unemployed

Active labour market policies are an important tool to ensure labour market resilience and flexibility, by helping workers displaced by the green transition find jobs more quickly and to effectively match jobseekers with emerging job opportunities (Botta, 2019). The Czech Republic spends close to the OECD average on active labour market policies for the unemployed (Figure 2.20A) but very little on training programmes compared to OECD peers (Figure 2.20B). The structural transformation brought on by the green transition demands a review of these policies. For example, Baretto et al., (Forthcoming) show with German data that older workers and those with lower levels of education in highly carbon intensive industries are particularly adversely affected by mass lay-offs.

Labour market programmes should thus support displaced workers in their job search and be targeted to the low skilled and older workers. Training programmes should also focus on youth to ensure that they have the essential skills required by a greener economy. Most of the training needed for green jobs may take the form of a ‘top-up’ education, allowing already qualified workers to adapt their skills and knowledge to suit green jobs’ practices and technologies (Jagger et al., 2014). Green re-skilling programmes can take many forms. In Latvia, a circular e-learning platform has been developed for textile designers and in Germany there is a sustainability academy for construction professionals, focussing on sustainable planning and building as well as sustainable real estate management. The Germany academy has so far certified more than 6 000 professionals (DGNB-Akademie, 2021).

Figure 2.20. Spending on training programmes is low



Source: OECD Labour Force Statistics.

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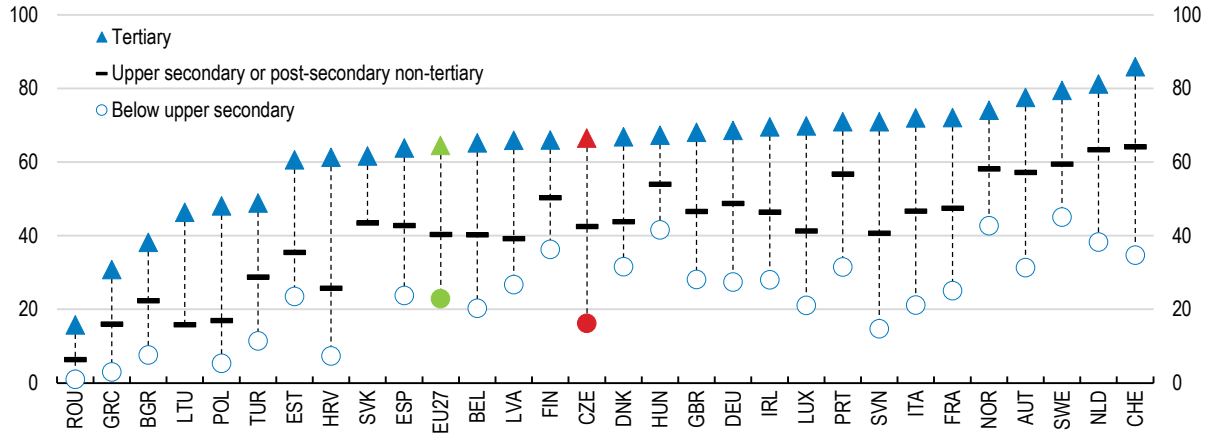
The OECD Priorities for Adult Learning Dashboard points to large gaps in providing adult learning to the unemployed in the Czech Republic (OECD, 2019b). Low-skilled workers rarely take part in adult education programmes (Figure 2.21), despite government support to employers that retrain their workers through the "Support for Vocational Training for Employees II" (POVEZ II) programme. Sponsored retraining policies lowers the cost of participating and can increase their up-take among low-income groups (D'Arcangelo et al., 2022a). Short and flexible vocational training courses can also be adapted to deliver education to (full-time employed) adults (OECD, 2019c). For example, in the Netherlands, employers are subsidised to actively engage in the development of Sector Plans to enhance local labour markets through retraining and upskilling their current or future employees. Training levies, such as the Italian Training Funds, are another funding mechanism by which employers pay a (compulsory or voluntary) contribution to a pooled fund out of which training is financed. This can have a redistributive effect from larger to smaller enterprises (OECD, 2020d).

In the longer run, the Czech education system will need to be adapted to accommodate the demand for skills needed in a greener economy. Anticipating structural changes in skills demand in the labour market and adapting programmes as early as possible is crucial (ILO (International Labour Organisation), 2015; OECD, Forthcoming). Vocational education and training programs (including continuing training) must include the relevant green skills. In this respect, coordination with the private sector can generate synergies as seen in the Flanders region in Belgium. There, public training providers and the construction industry set up a joint task force to identify technical green skills needed in the industry; for example, modular training in "energy efficiency building" including the handling of condensation boilers, heat pumps and solar panels (OECD, 2017).

Figure 2.21. Adult training should be geared towards workers with less education

Participation in formal and non-formal education and training, Adult Education Survey (AES), 25-64 year-olds, %, 2016



Source: Eurostat database.

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Allowing for creative destruction

Stricter climate policy will create challenges for some firms. How different firms are affected and adapt will depend on their financial strength, use of emission-intensive inputs and their ability to pass on price increases to customers. Empirical studies show that larger, more productive, low-emission and well-managed firms can be better equipped to respond to more stringent environmental policies and raise their productivity to gain higher market shares, while other firms that do not adapt sufficiently suffer negative effects (Albrizio et al., 2017). There is also evidence that environment-related innovation rises following stricter environmental policy (Koźluk and Zipperer, 2014; Ciccarelli and Marotta, 2021; Känzig, 2022). A shift of consumers preferences towards low-emission products will challenge existing business models in the Czech Republic. An example is the automotive industry where global demand is rapidly changing towards electric vehicles away from those with combustible engines (see Box 2.6).

The competitive framework in the Czech Republic is within the mid-range of OECD countries and the insolvency framework is strong. Even so, there is scope to reduce the administrative burden on start-ups (Figure 2.22) and to lower the cost of resolving insolvencies. A business-friendly climate that eases the entry and exit of low- and high emission firms can aid in the diffusion of new green technologies and the associated expertise. Transformative innovations often arise from new firms, in particular those that challenge the business models of incumbents (OECD, 2015). Competitive pressures also tend to stimulate technology adoption and innovation and more competition is associated with more capital formation and productivity growth (Andrews et al., 2015). Effective insolvency procedures are crucial to minimise barriers to corporate restructuring and spur productivity-enhancing capital reallocation (OECD, 2020b). Still, the cost of resolving insolvencies is too high in the Czech Republic and need to be lowered to allow for creative destruction, boost green investment and allow new innovative firms to bring low-carbon technologies to the market while inefficient high-carbon firms exit.

Box 2.6: The transformation of the automotive sector

The automotive sector is a key industry for the Czech economy. Manufacturing of motor vehicles, trailers and semi-trailers make up more than 6% of the value added and 4% of total employment, the highest share among OECD economies (Figure 2.23A). The importance for the domestic economy is even higher if one also considers the value-added and employment of sectors supplying the automotive sector (Klein et al., 2021). However, labour productivity per hour worked lags other OECD countries (Figure 2.23B) and there is scope for the industry to raise the value added by upgrading processes and products (OECD, 2018b).

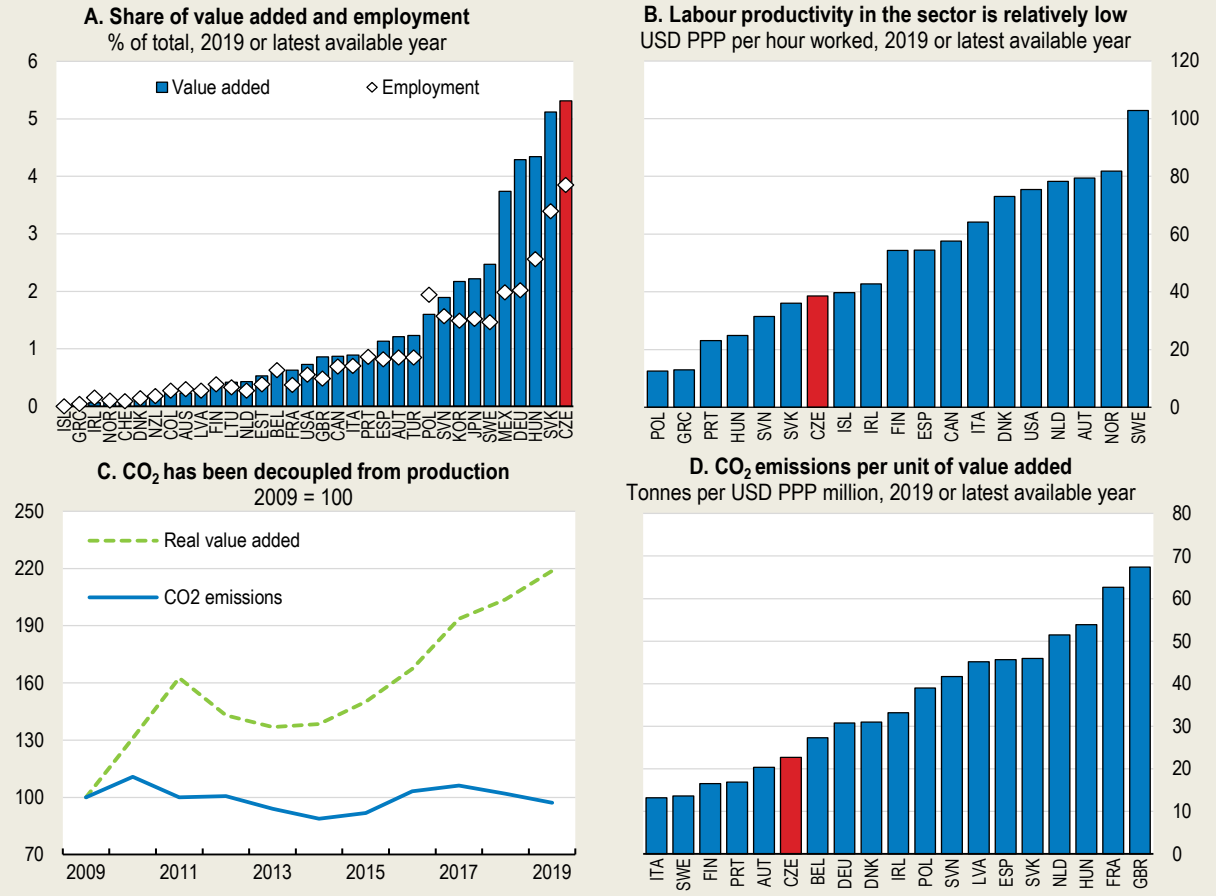
Advancing the green agenda poses significant challenges for the automotive industry, as global competition has increased from both new entrants and existing companies in the Asia Pacific. The adjustment and control of supply chains, electric vehicle and battery manufacturing and overall digitalisation calls for innovation and higher productivity to make manufacturers ready for the upcoming changes (Ecorys, 2021). In terms of its CO_2-footprint, the Czech automotive industry is well placed to take advantage of the green transition. Firms in the sector have managed to disconnect CO_2-emissions from production (Figure 2.23C) and the Czech automotive sector is among one of the most carbon efficient producers in Europe (Figure 2.23D).

Demand for electric or hybrid cars in the EU has increased by more than 67% between 2019 and 2020. The market share of vehicles fuelled without gasoline or diesel reached almost 22% in 2021, up from 2% in 2014 (Figure 2.24A) and is expected to expand more rapidly as the EU's Fit-for-55 envisages only allowing new sales of net zero vehicles from 2035 (European Commission, 2020c, McKinsey 2022). Although Czech automotive production is still largely focused on internal combustion engines, exports of cars with alternative engines (largely hybrid or fully electric) have increased rapidly since 2020 and accounted for roughly 22% of overall automotive exports in the fourth quarter of 2022 (Figure 2.24B). Automotive producers in the Czech Republic have thus started to adapt their operations to benefit from the rising demand for electric and alternative fuel vehicles, with a shift of production toward electric cars. Major automotive producers in the country have also outlined longer term strategies for how to adapt production:

- Škoda is pursuing a "Next Level – Škoda Strategy 2030," under which the company expects to have increased the share of all-electric car sales in Europe to between 50-70% while maintaining jobs (Škoda, 2022).
- South Korea–based Hyundai began making the Kona Electric in 2020 in the Czech Republic and is planning on taking a large part of Europe's electric car market (Hyundai, 2020).
- Toyota have not announced specific plans for their Czech factory, but the brand has a global goal of having 100% of its luxury vehicles in Europe, North America, and China running on electric power by 2030 and all its cars by 2035 (Toyota, 2021).

Figure 2.22. The automotive sector is a driver of value added and is relatively CO_2-efficient

Manufacture of motor vehicles, trailers and semi-trailers



Source: OECD (2022), STAN structural indicators (iSTAN); OECD (2021), OECD Air emissions Accounts.

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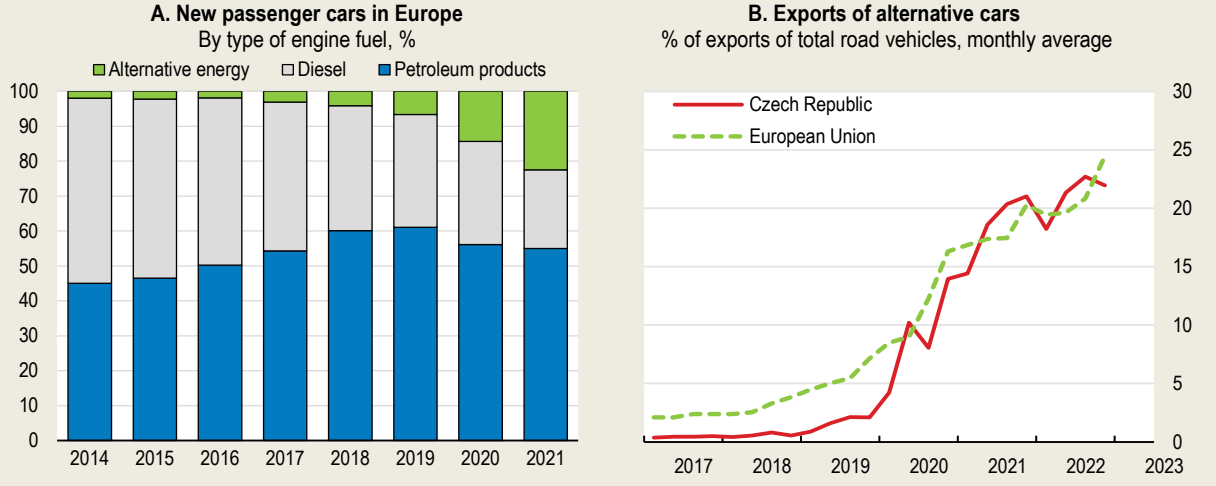
Figure 2.23. Electric and hybrid electric make up a large share of the European car market



Notes: Alternative fuel is a type of motor energy other than the conventional fuels petrol and diesel. Alternative fuels include electricity, LPG, natural gas (NGL or CNG), alcohols, mixtures of alcohols with other fuels, hydrogen, biofuels (such as biodiesel), etc. Alternative fuels do not include unleaded petrol, reformulated petrol or city (low-sulphur) diesel.

Source: OECD calculations based on Eurostat data.

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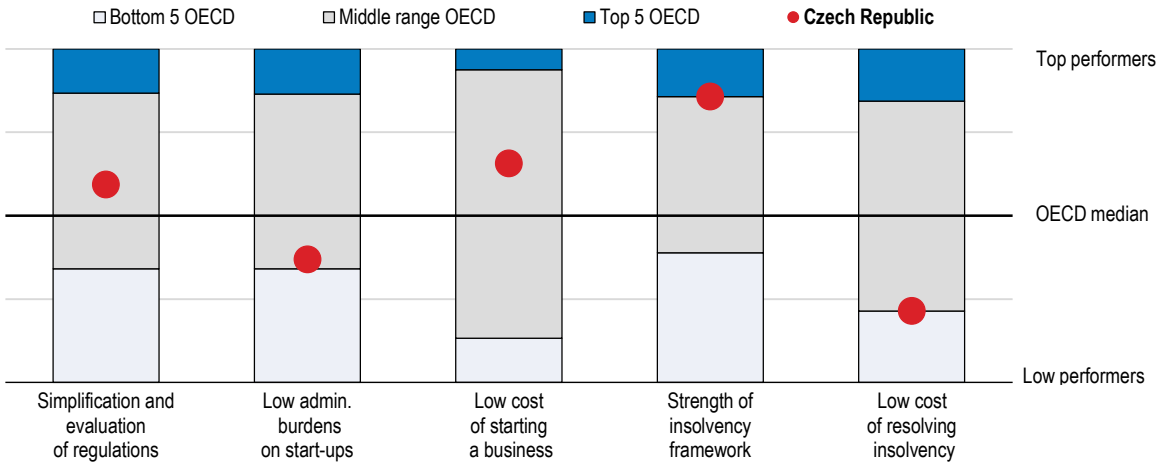
Figure 2.24. There is room to reduce the administrative burden on start-ups

Entrepreneurship regulatory framework, index of performance



Source: OECD SME and Entrepreneurship Outlook 2021.

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Higher carbon prices increase the costs for domestic firms, raising concerns about international competitiveness. Czech firms and households seem highly concerned about external competitiveness in relation to climate policies. For example, a third of respondents in the Eurobarometer survey (the highest among EU countries) disagree with the statement that "action on climate change will lead to innovation that will make companies more competitive" (European Commission, 2021a). The Czech government introduced a partial compensation scheme for energy-intensive companies under the EU ETS to prevent carbon leakages. Aid amounts will be calculated based on electricity consumption efficiency benchmarks, which ensure that the beneficiaries are encouraged to save energy. The government may disburse up to EUR 1.4 billion to energy-intensive industries and subsectors deemed at risk of carbon leakage until 2030 according to the scheme.

There is some evidence from OECD countries that competitiveness losses have not been associated with stringent environmental policies so far (OECD, 2021f). Moreover, Schotten et al. (2021) find that the introduction of a 50 EUR carbon price would only have small adverse effects on overall EU competitiveness, but a higher impact for the Czech Republic and other central eastern European economies. Nonetheless, evaluation and mitigation of competitiveness effects require a general framework, as companies tend to base their decisions on where to locate production and investments on a range of factors including political stability and business climate, access to skills, input factors, infrastructure and markets.

Key recommendations for moving towards net zero

MAIN FINDINGS	RECOMMENDATIONS
Ensuring energy security while pursuing climate goals	
The Czech Republic remains highly reliant on fossil fuels for electricity production and heat generation. Greater reliance on renewable sources of energy will require grid investments. Moreover, increases in energy efficiency are urgently needed to move towards medium to long term climate targets.	**Upgrade the grid and provide adequate incentives for scaling up renewable and low-emission energy capacity and boosting energy efficiency.**
Coal remains one of the main fuels for electricity generation and residential heating and accounts for close to a third of the primary energy supply.	**Keep commitments to phase out coal from the energy mix by 2033.**
Fiscal support measures have helped reduce the impact on households and firms of rising energy costs. However, they have been broad-based and untargeted, which can damage energy savings incentives and discourage investments to energy efficiency.	Better target fiscal support to households and firms if needed, while maintaining incentives to save energy.
Czechs are more sceptical than other EU citizens about climate policies. Opposition to climate policies can be serious impediment to the transition towards net zero.	Introduce a combination of communication/education campaigns on climate change and climate policies.
Effectively pricing emissions and boosting green investments	
Effective carbon rates are among the lowest in the OECD. Current policies result in too low a price on carbon and do not provide a consistent price signal across fuels and energy uses. Carbon price trajectories can enable planning and facilitate long-term investment in low-carbon technologies.	**Once energy prices subside from their current high levels, introduce an explicit carbon price (with a pre-announced price trajectory) to cover all emissions for sectors outside the EU ETS.**
Low energy efficiency in buildings and use of coal in heating inhibit the green transition. Czech buildings have among the highest energy consumption per square meter in the European Union and approximately 300 000 households still use inefficient individual coal boilers to heat their homes.	**Strengthen incentives for installing efficient green heating technologies in residential buildings. Scale up investments into energy efficiency retrofits of buildings.** Expand information campaigns to increase awareness of existing subsidies and about the benefits of investments into energy efficiency.
District heating systems can provide heat in efficient ways and be adapted to more sustainable energy sources.	Increase the use of renewables, biomass and waste as alternative energy sources in district heating systems.
Cumbersome regulations and lengthy construction processes, restrictive spatial planning and complex process for obtaining electricity production licenses are severe barriers to green investment.	**Streamline permitting processes for renewable investments and simplify regulations and processes in construction and spatial planning.**
Development of environment-related technologies lag other OECD countries. Most of the research spending involves nuclear power.	Boost programmes for green R&D, especially low-carbon technologies, including advances in cleaner fossil fuel applications.
The Czech Republic has one of the oldest car fleets in the EU and CO_2-emissions of new cars remain among the highest.	Introduce specific incentives to scrap old cars and replace them with newer models. Use regulatory measures to discourage the use of energy inefficient vehicles.
Cushioning the impact of climate policies and facilitating reallocation	
Climate policies will raise prices of products with high-emissions content. The higher costs will mostly affect lower-income households. Support for climate policies tends to be higher when they are combined with policies that cushion the impact on vulnerable households.	Recycle part of the revenues from environmentally related taxes to shield vulnerable households from the adverse impacts of the green transition.
Some groups of workers could be more adversely affected by the green transition. Low-skilled workers rarely take part in adult education programmes. Spending on training for the unemployed could be boosted.	**Expand active labour market policies - including targeted training and reskilling programmes - to help displaced workers find jobs more quickly and to effectively match jobseekers with emerging opportunities.**
The regulatory framework for entrepreneurship is supportive overall. However, there is high administrative burden on start-ups and resolving insolvencies is costly.	Reduce the administrative burden on start-ups and lower the cost of resolving insolvencies.

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OECD Economic Surveys

CZECH REPUBLIC

Spillovers from Russia's war of aggression against Ukraine have derailed the Czech Republic's post-pandemic recovery and further disrupted the impressive catch-up with OECD average incomes seen in the previous two decades. Inflation is high and a tight macroeconomic policy stance is needed to restore price stability. Fiscal pressures have risen. Reforming pensions and taxes could help maintain fiscal sustainability. The Czech labour market remains strong. The unemployment rate is low, and the employment rate and job security are high. However, severe labour and skills shortages are a major obstacle to growth. Bringing more mothers to work and increasing labour participation of older workers can help in this regard. More equitable provision of education and skills, effective lifelong learning and attracting and retaining skilled foreign labour would ease skills shortages and spur growth. The Czech economy remains highly energy intensive, still relies heavily on coal and records high greenhouse gas emissions. Major investments are needed to alter the energy mix and to improve energy efficiency. More ambitious environmental policies and an improved investment climate could help make growth more sustainable.

SPECIAL FEATURE: TOWARDS NET ZERO

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