



European
Commission

ISSN 2443-8014 (online)

2023 Country Report

Poland

INSTITUTIONAL PAPER 245 | JUNE 2023

EUROPEAN ECONOMY



Economic and
Financial Affairs

Secretariat-General
Recovery and
Resilience Task Force

European Economy Institutional Papers are important reports analysing the economic situation and economic developments prepared by the European Commission's Directorate-General for Economic and Financial Affairs, which serve to underpin economic policy-making by the European Commission, the Council of the European Union and the European Parliament.

This paper has also been published as Staff Working Document SWD(2023) 621.

This specific report was prepared in cooperation with the Secretariat-General Recovery and Resilience Task Force, with valuable contributions from Eurostat, Directorate-General for Employment, Social Affairs and Inclusion, Directorate-General for Climate Action, Directorate-General for Environment, Directorate-General for Regional and Urban Policy, Directorate-General for Structural Reform Support, Joint Research Centre, Directorate-General for Energy, Directorate-General for Mobility and Transport, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, Directorate-General for Communications Networks, Content and Technology, Directorate-General for Research and Innovation, Directorate-General for Education, Youth, Sport and Culture, Directorate-General for Migration and Home Affairs, Directorate-General for Health and Food Safety, Directorate-General for Financial Stability, Financial Services and Capital Markets Union, Directorate-General for Taxation and Customs Union, Directorate-General for Justice and Consumers, and Directorate-General for Translation.

LEGAL NOTICE

Neither the European Commission nor any person acting on behalf of the European Commission is responsible for the use that might be made of the information contained in this publication.

This paper can be downloaded from https://economy-finance.ec.europa.eu/ecfin-publications_en.

Luxembourg: Publications Office of the European Union, 2023

PDF ISBN 978-92-68-03212-1 ISSN 2443-8014 doi:10.2765/755853 KC-BC-23-052-EN-N

© European Union, 2023

Reuse is authorised provided the source is acknowledged. The reuse policy of European Commission documents is regulated by Decision 2011/833/EU (OJ L 330, 14.12.2011, p. 39). For any use or reproduction of material that is not under the EU copyright, permission must be sought directly from the copyright holders.

CREDIT

Cover photography: © iStock.com/Teka77

European Commission

Directorate-General for Economic and Financial Affairs

Secretariat-General

Recovery and Resilience Task Force

2023 Country Report

Poland



Brussels, 24.5.2023
SWD(2023) 621 final

COMMISSION STAFF WORKING DOCUMENT

2023 Country Report - Poland

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

**on the 2023 National Reform Programme of Poland and delivering a Council opinion on
the 2023 Convergence Programme of Poland**

{COM(2023) 621 final}

ECONOMIC AND EMPLOYMENT SNAPSHOT

Russia's war of aggression against Ukraine has impacted the economy

The Polish economy recovered quickly from the COVID-19 pandemic, but economic growth is expected to stall in 2023. Poland was one of the fastest-growing economies in the EU during the post-pandemic period, benefiting from strong policy support, low unemployment, and continued inflows of foreign direct investment. However, Russia's invasion of Ukraine has put significant pressure on the economy. Elevated commodity prices are weighing on both real disposable incomes (i.e. incomes adjusted for inflation) and consumption growth, especially given the high share of energy in the consumer basket. High uncertainty, a deteriorating business sentiment, and the increased cost of borrowing are impacting economic activity, particularly investment. As a result, the Commission's forecast projects economic growth to slow considerably in 2023 and stand below the EU average.

Inflation has soared amid rising global energy prices and domestic demand pressures. Poland's inflation rate is expected to remain one of the highest in the EU in 2023 and 2024. The energy-price shock in 2022 came on top of global supply-chain disruptions and strong growth in global commodity prices. This has increased operating costs for businesses, which – given exceptionally high demand – encouraged firms to raise the prices they charge for consumer goods. As the economy decelerates, inflation is set to start gradually decreasing amid an easing of supply bottlenecks, weakening domestic demand and a fall in global commodity prices. Nevertheless, risks of persistently elevated inflation exist given high inflation expectations

and nominal wage growth, as well as an expansionary fiscal stance.

Unemployment remains at historically low levels and one the lowest in the EU, giving rise to acute labour shortages. A record low unemployment rate has led to the re-emergence of shortages of workers. Low labour market participation of some population groups, and a decline in the working-age population keep weighing on labour supply. This is in turn holding back Poland from fully implementing the European Pillar of Social Rights and achieving its national employment target for 2030 (see Annex 14). At the same time, business surveys suggest that firms are having problems finding people with the right skills, pointing to significant skills mismatches. The labour market adjustment to the expected slowdown in economic growth is expected to come from lower wage growth rather than from an increase in unemployment, as firms are reluctant to lay-off workers given the strong difficulties they face in hiring. The 2022 'Polish Deal' tax reform is estimated to have lowered the tax burden on labour benefitting more the lower income employees as well as older workers delaying retirement, while it increased the tax wedge⁽¹⁾ for higher-income self-employed. The reform should also boost the labour supply over the medium term⁽²⁾.

The successful integration of displaced persons from Ukraine has helped the labour market, but challenges remain. The

⁽¹⁾ The tax wedge is the ratio of personal income tax and employer and employee social-security contributions (SSCs) less family benefits divided by total labour costs.

⁽²⁾ European Commission, Joint Research Centre, calculation based on the EUROMOD model version 15.0+. Labour-supply reactions are estimated through EUROLAB (for details, see Narazani, E., Colombino, U. and Palma B., (2021) 'EUROLAB: A Multidimensional Labour Supply-Demand Model for EU Countries', European Commission, JRC127383).

unprecedented support to the roughly 1 million displaced persons from Ukraine ⁽³⁾ who settled in Poland contributed to their speedy integration into the jobs market. According to the OECD ⁽⁴⁾, these are estimated to have increased labour supply in Poland by 2.1% by the end of 2022, easing the shortage of workers, especially in services. Although 60% of those settled in Poland by April 2022 had found work, many face underemployment and skills mismatches ⁽⁵⁾. Moreover, the sudden increase in population has added to housing needs in regions where these were already considerable before the war, and it puts strain on public services, including the education system (see Annex 17). In 2022/23, over 192 000 out of an estimated 500 000 displaced children from Ukraine in Poland were enrolled in schools and pre-schools, which increased the total numbers of children in school and pre-school by 3%, and by even more in large urban areas ⁽⁶⁾.

Poland's competitiveness has remained resilient to the energy shock and the rising labour costs. The rise in energy prices globally led to a strong terms-of-trade shock over 2022, which contributed to a significant deterioration in Poland's current account balance. Still, cost-competitiveness remained stable on the back of a depreciation of the zloty and gains in labour productivity. This was reflected in strong exports, as evidenced in an increase in global market share by Polish exporters, as well as strong inflows of foreign direct investment. Poland's labour costs remain among the lowest in the EU.

The banking sector is showing resilience. The Polish banking sector recovered rapidly from the pandemic, driven by strong GDP growth in 2021 and early 2022. Solvency remains adequate, while funding and liquidity

are at solid levels and well above regulatory minima. Banking profitability improved significantly following the increase in interest rates, but could suffer in the future from the costs associated with the potential annulment in courts of legacy foreign-currency-denominated mortgages in addition to costs of the mortgage repayment holidays adopted by the government in July 2022. This could also have implications for credit supply (see Annex 18). Private sector lending, in particular housing loans, cooled down rapidly in 2022 amid a rise in borrowing costs and stricter bank lending standards.

Public finances are under strain. According to the Commission's forecast, the budget deficit is expected to increase from 3.7% of GDP in 2022 to 5.0% of GDP in 2023. Total spending on defence is also expected to increase, while continued energy support measures are also weighing on the budget. Total expenditures on aid to displaced persons from Ukraine, which in 2022 were the highest in the EU, are set to decrease. While most of the energy support measures are assumed to be withdrawn, the personal income tax reform (the 'Polish Deal') introduced in 2022 has permanently lowered government revenues (see Annex 19). In 2024, the deficit is forecast to decrease to 3.7% of GDP. The ratio of public debt to GDP is set to remain below 60%, while increasing moderately until 2024.

Challenges remain in the sustainability, efficiency, and transparency of public finances. Retaining the very low retirement age (for women and some professional groups) amid a rapidly ageing population risks either a future increase in old-age poverty or substantial increases in future public spending on pensions. This could put pressure on the sustainability of government finances over the medium-to-long term. In recent years, improved tax compliance has contributed to higher government revenues, but there remains considerable scope to increase the efficiency of public spending on social benefits, public investment, and public procurement. The role of both independent fiscal oversight and the medium-term budgetary framework remains limited, and recent budgetary practices relying on off-

⁽³⁾ The distinctive number of persons holding a refugee status was 997 thousand as of 27 March 2023.

⁽⁴⁾ OECD (2022), 'The potential contribution of Ukrainian refugees to the labour force in European host countries', OECD Publishing, Paris.

⁽⁵⁾ OECD (2023), OECD Economic Surveys: Poland 2023, OECD Publishing, Paris.

⁽⁶⁾ Union of Polish Cities (2022), [Urban hospitality: unprecedented growth, challenges and opportunities](#).

budget funds reduce transparency and the role of the parliament.

Tackling structural challenges will support sustained growth

Productivity growth has been strong, but Poland's growth potential is being held back by low levels of investment and innovation as well as challenges in the education system. Labour productivity in Poland has been expanding at one of the fastest rates in the EU, benefiting from Poland's integration in global value chains, technology transfer, and a relatively skilled population (see Annex 12). The comparatively high birth and death rate of Polish firms suggests there are low obstacles to resource allocation⁽⁷⁾. Nevertheless, labour productivity levels remain well below the EU average, with great variations between Poland's regions (see Annex 17). The green and digital transitions are being held back by a lack of digital skills among workers in particular specialists in information and communications technology (see Annexes 5 and 10), as well as by low rates of adult participation in learning (see Annex 14). Low shares of graduates in STEM subjects could limit the country's research and innovation potential (see Annex 11). The adoption of technology in businesses remains poor compared to the EU average, while SMEs show meagre levels of innovation. The education system continues to be challenged by teacher shortages in some subjects and by student overcrowding in big cities. This leads to worse educational outcomes and deepens inequalities.

Weaknesses in the business environment are holding back private investment.

Private investment as a share of GDP remains below the EU average and the levels in peer countries, stifled by the burdensome and unstable regulatory environment. Administrative effectiveness and digital public administration also rank below the EU average

⁽⁷⁾ Business 'churning' is above the EU average (18.9% vs 16.1% in 2020) as is the share of high-growth enterprises (9.8% vs 9.4%).

amid: (i) a deterioration in indicators of governance quality; (ii) a lack of effective public consultation; and (iii) weaknesses in public procurement (see Annexes 12 and 13). Concerns persist over the rule of law in Poland, including the independence of the judicial system. The perceived level of effectiveness of investment protection by the law and courts is very low among companies compared with the EU average (see Annex 12).

Further challenges remain in the healthcare system and long-term care, as health outcomes have deteriorated.

The pandemic has taken a heavy toll, visible in the abrupt decline in life expectancy and high mortality relative to the EU average (see Annex 16). Weaknesses persist in the healthcare system amid a weak primary care system and high levels of unmet health and long-term care needs. This is underlined by shortages of medical staff, as the share of doctors and nurses in Poland is one of the lowest in the EU relative to population. Poland is also one of the countries with the lowest use of digital health services in the EU. The long-term care system is insufficient to meet the needs of the ageing population due to low availability of community-based care (see Annex 14).

To put the economy on a more sustainable growth path, accelerating the energy and green transitions will be key.

The Polish energy mix is dominated by fossil fuels and was, until early 2023, heavily reliant on Russian imports. To effectively decarbonise its economy and improve energy security and affordability at the pace required by the EU climate and energy targets, Poland should scale up the deployment of renewable energy sources (RES). RES currently account for only around 11% of the country's energy mix.

Poland is progressing moderately well on some United Nations Sustainable Development Goals (SDGs), but its performance remains below the EU average in SDGs focusing on climate action, zero hunger, innovation, sustainable cities, and gender equality.

Although the country is improving on certain SDG indicators related to environmental

Box on the energy policy response in Poland

Poland has adopted measures to cushion the impact of energy price inflation. For 2023, the gross budgetary costs for energy support measures are projected to amount to 1.7% of GDP. Most measures do not preserve the price signal and do not target the most vulnerable. In general, the energy support measures are valid until the end of 2023.

In 2023, the government replaced the first set of measures, which consisted mainly in reducing VAT rates on energy and granting universal cash subsidies to households depending on their heating source, with adjusted price schemes for electricity and gas. For electricity, a two-tier price scheme is in place, freezing the price of electricity at the 2022 level for households within limits based on average household consumption. Above these limits, the price is capped at a higher level. The upper price cap is also applicable to SMEs. For gas, prices are also frozen at 2022 levels for households and vulnerable entities, without consumption limits. The gas-price scheme features a targeted element: low-income households can claim a refund of the sum equivalent to VAT for every paid bill. The scheme for electricity prices includes a mechanism to fund the upper price cap based on taxing windfall profits. The government has introduced levies limiting the revenues of energy producers and vendors in line with the Council Regulation 2022/1854. The levies are collected by a dedicated fund (*Fundusz Wyłaty Różnicy Ceny*) that compensates companies selling energy for the lost revenue due to selling below the market price. Thus, the scheme is assumed to be deficit neutral.

Poland applies the EU solidarity contribution in application of Council Regulation (EU) 2022/1854 ⁽⁸⁾.

On the security of energy supply, Poland has decreased its dependency on fossil fuel imports from Russia and implemented significant infrastructure projects to diversify supply. This includes the 'Baltic Pipe' and the two gas interconnectors with Slovakia and Lithuania. Poland has also taken several measures to promote energy efficiency, including the 'Clean Air Plus' programme and energy savings.

sustainability, it is moving away from targets on affordable clean energy (SDG 7), life below water (SDG 14), and zero hunger (SDG 2). On affordable clean energy, Poland has witnessed an increase in per capita net greenhouse-gas emissions (SDG 13: climate action), despite having made progress in increasing the final share of renewable energy in gross final energy consumption. Additionally, Poland is improving on decent work and economic growth (SDG 8) and industry, innovation and infrastructure (SDG 9), although it is lagging on quality education (SDG 4) when compared to its EU counterparts. Finally, expenditure on law courts (SDG 16) has increased, but further measures to strengthen judicial independence in the country are needed.

In addition to the support from the Recovery and Resilience Facility aimed at tackling many of the key challenges it is facing (see Section 2), Poland also benefits from a significant volume of EU cohesion funds amounting to EUR 88.3 billion over 2021-2027 (see Annex 4).

⁽⁸⁾ A mandatory, temporary contribution with a rate of at least 33% applied on the extraordinary and unexpected profits of businesses active in the extraction of crude petroleum, natural gas, coal, and refinery sectors. It is calculated on taxable profits from the fiscal year starting in 2022 and/or in 2023, which are above a 20% increase of the average yearly taxable profits of the business in 2018-2021.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Poland's recovery and resilience plan (RRP), approved in June 2022, addresses many of the main challenges the country is facing. The RRP contains measures with an overall value of EUR 35.4 billion structured around six key policy areas: the green transition; digitalisation; health; competitiveness and innovation; sustainable transport; and the quality of institutions. It is estimated that the economic impact of the NextGenerationEU fund in Poland could lead to an increase in GDP of between 1.1% and 1.8% by 2026 and translate into as many as 105 000 additional jobs. Additional grant resources available to Poland through the REPowerEU chapter amount to EUR 2.76 billion.

Due to its late adoption in June 2022, the implementation of Poland's recovery and resilience plan has been significantly delayed. Strengthening the independence and impartiality of courts and remedying the situation of judges affected by the decisions of the Disciplinary Chamber of the Supreme Court in disciplinary cases and judicial immunity cases are a precondition for the Commission to disburse any payment to the country and ensure the protection of the financial interests of the Union, allowing for a swift and steady implementation of the plan. Poland has started to implement key measures in the RRP, among which reforms in the areas of the fiscal framework, healthcare, digital transition, energy efficiency and labour market. Although Poland has not officially submitted addenda to the plan nor a REPowerEU chapter, ongoing discussions with the Commission are taking place. Additionally, the country has announced its intention to take up additional loans.

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

The RRP includes reforms to modernise and simplify the management of public finances. These reforms include the introduction of a new model of budget management, the introduction of a new medium-term budgetary framework, and the extension of the scope of the stabilising expenditure rule to more general government units.

The RRP contains several labour market measures to increase the employment rate, strengthen institutions, and address shortages of workers. These measures include: (i) increasing the availability of childcare facilities; (ii) modernising public employment services; and (iii) addressing segmentation in the jobs market by reducing disparities in social-security contributions between various types of work contracts.

Reforms to improve coordination in several areas of education and training are set to give workers skills that are more in demand among employers and increase participation in adult learning. Additional measures are in the area of research and innovation and include the creation of a legal framework to accelerate the processes of robotisation, digitalisation, and innovation in the industry. The RRP also includes changes in the internal governance of research institutes aimed at improving cooperation between science and industry. Poland's decision to buy digital equipment for schools and adopt a strategic framework for digital-skills development will improve the digital skills of students and adults.

Reforms in healthcare are expected to make the healthcare system more effective and efficient and to improve accessibility and quality of health services, including by making greater use of digital solutions. Further measures aim to develop the skills of healthcare staff and

strengthen capacity in the training of medical personnel.

The green transition and the digital transformation of the economy are at the core of the policy response in Poland's RRP.

About 43% of the total allocation of Poland's RRP is dedicated to green objectives. The envisaged green reforms and investments aim at: (i) increasing renewable energy production, (including onshore energy, photovoltaics, offshore energy, smart grids, renewable hydrogen, and low-carbon hydrogen); (ii) increasing energy efficiency; (iii) improving air quality; and (iv) developing sustainable transport. Implementation of these measures is expected to help Poland achieve its 2030 climate and energy objectives.

About 21.3% of the total allocation of Poland's RRP is dedicated to digital objectives.

Measures include: (i) improving connectivity; (ii) updating laws and the infrastructure of public administration systems; (iii) introducing electronic structured invoices; and (iv) significantly improving the country's cybersecurity systems.

The RRP includes reforms to reduce administrative and regulatory burden, improve the quality of law-making, and revise spatial-planning regulation.

These reforms include increasing the role of impact assessments and involving stakeholders more in the policy and law-making processes. Additional measures are set to strengthen the independence and impartiality of courts and ensure an effective audit and monitoring of the RRP. In particular, these additional measures include reforming the disciplinary regime for judges and ensuring that judges affected by decisions of the Disciplinary Chamber of the Supreme Court have the right to have their case reviewed.

Poland has started to implement key aspects of the RRP (see Annex 3).

The implementation of reforms underway includes reforms in the areas of the fiscal framework, healthcare, the digital transition, energy efficiency, childcare, the labour market, the business environment including the judiciary, science, and industry. They also lay the

foundation for the launch of significant investments, for instance in energy-efficient housing, the roll-out of broadband across Poland, or sustainable water management. The 37 milestones under the first instalment of the plan worth EUR 4.22 billion are yet to be formally assessed. Key measures currently being implemented include:

- increasing access to high-quality childcare for children up to the age of 3 under the 'Maluch+' programme;
- amendments to the Act on Public Finances extending the scope of the stabilising-expenditure rule to increase the transparency and efficiency of public-finance management;
- changes to the law on higher education and science strengthening cooperation mechanisms between science and industry;
- legislative changes to reduce administrative burden on businesses and the public;
- a new law to support the automation, digitalisation and innovation capacity of enterprises by introducing tax relief for using more robots;
- an amendment to the act on investments in onshore wind farms and regulatory changes promoting electricity generation in offshore wind farms to improve the conditions for the development of renewable energy sources.

- Poland committed to **reform the disciplinary regime for judges** and to set up a review process before an independent court for judges affected by decisions of the Disciplinary Chamber of the Supreme Court.
- **Entry into force of an amendment to the Investment Zone Act**, to create a new model for granting financial support to businesses undertaking activities in special economic zones.
- **Adoption of a new law on spatial planning**, which will introduce a requirement for all municipalities to draw up and adopt a long-term strategy for land development in the municipality.
- **Limiting segmentation in the jobs market**, by ensuring that all civil-law employment contracts are subject to social-security contributions.
- **Strategic review of long-term care to identify reform priorities to improve efficiency and quality.**
- **Reform to improve the conditions for developing hydrogen technologies and other decarbonised gases.** This is to be achieved by: (i) the entry into force of a law laying down rules for hydrogen; and (ii) the issuance of environmental permits for hydrogen refuelling stations.
- **Reform to improve the conditions for developing renewable energy sources.** An amendment to the Renewable Energy Act is expected to introduce better conditions for the operation of energy clusters and the implementation of collective models of energy 'prosumers' ⁽⁹⁾.
- **Publication of a framework to co-finance broadband projects ensuring universal access to high-speed internet.** This is part of a broader reform aiming at guaranteeing universal access to high-speed internet and digital services throughout Poland.
- **Signature of contracts following open and competitive tenders to electrify 478 km of railway lines and upgrade them to TEN-T standards ⁽¹⁰⁾.**
- **Entry into force of a legislative act safeguarding the system for monitoring and checking the supply of medicines.** The objective of the reform is to introduce a regulatory framework facilitating the production of medicines in Poland and attracting investment in new facilities to produce medicines in the country.

⁽⁹⁾ Prosumers are businesses and households that both produce their own electricity (for example from rooftop solar panels) and consume electricity. Prosumers can sell excess electricity that they produce – but do not need – to the electric grid, and then consume electricity from the grid when their solar panels are not producing enough electricity for their immediate needs.

⁽¹⁰⁾ Trans-European Transport Network (TEN-T) is a network of roads, railways, waterways, and airports that connect EU member states and other European countries. TEN-T was established by the European Commission to promote the development of a sustainable and efficient transport system that enhances economic growth, job creation, and the well-being of citizens.

FURTHER PRIORITIES AHEAD

Beyond those tackled by the RRP, Poland faces additional challenges not fully covered in the plan. The rapidly ageing population is putting the pension system under pressure. The efficiency of public spending on social policies and investment remains a challenge amid weaknesses in the transparency of public finance. Further steps are needed to address skills mismatches and shortcomings in the education system. Additional measures are also required to reduce reliance on fossil fuels and accelerate the green transition. Moreover, enhancing the investment climate would boost private investment. Addressing these challenges would also help Poland to make further progress in achieving the Sustainable Development Goals (SDGs) where it currently shows some room for improvement, in particular on the SDGs for affordable clean energy (SDG 7) and quality education (SDG 4) (see Annex 1).

Ensuring efficient, sustainable, and transparent public finances as the population ages

The rapidly ageing population is putting the pension system under pressure. Poland is one of the fastest-ageing countries in the EU. Within four decades, the share of people above the age of 80 is expected to nearly triple, from 4% of the population in 2019 to 12% in 2060, with a sharp increase occurring from 2040. However, the existing pension system assumes a retirement age that doesn't increase even as average life expectancy and years spent in retirement continue to rise. This implies that benefits from the public pension system will decline rapidly in relative terms and old-age poverty

would increase⁽¹¹⁾. Women would be more affected by this due to their shorter contributory periods and lower overall pensionable earnings. To broadly maintain the current level of pension adequacy without lengthening working lives, the government would have to increase public spending on pensions by 6.7% of GDP in 2070⁽¹²⁾. Benefits from voluntary saving schemes⁽¹³⁾ under the so-called third pension pillar would likely be insufficient to compensate for the loss of old-age income given the low contributions made to these voluntary saving schemes, although some solutions like the auto-enrolment mechanism in the Employee Capital Plans (PPK) mitigate this risk.

Recent changes in the general and special pension systems have made pension payouts more generous to current pensioners but they come at a price. Recently introduced 13th and 14th pension benefits⁽¹⁴⁾ increased annual old-age pension spending by close to 10%⁽¹⁵⁾. Benefits from the farmers' special pension system were also expanded in recent years and include: (i) the 13th and 14th pension payment; (ii) the right

⁽¹¹⁾ Future benefits from the public pension system for new retirees will drop significantly in relative terms: from 54% of final salary in 2019 to about 25% in 2060.

⁽¹²⁾ Commission calculations based on The 2021 Ageing Report: Economic and Budgetary Projections for the EU Member States (2019-2070), Institutional Paper 148, 2021, Brussels.

⁽¹³⁾ Savings schemes include: PPE – pracownicze programy emerytalne; IKE – indywidualne konto emerytalne; IKZE – indywidualne konto zabezpieczenia emerytalnego; and PPK – pracownicze plany kapitałowe.

⁽¹⁴⁾ Since 2019, the 13th month pension payment (i.e. an extra payment made in addition to the standard monthly pension payment) has been paid to all pensioners at the level of the minimum pension. Since 2021, a 14th month pension has also been paid at the level of the minimum pension, with higher-income pensioners receiving a reduced amount.

⁽¹⁵⁾ OECD (2021), Pensions at a Glance 2021: OECD and G20 Indicators, OECD Publishing, Paris.

to continue to work while drawing the benefit (since June 2022); and (iii) a supplement to match the general old-age minimum pension⁽¹⁶⁾. These changes reduce incentives for workers to work longer than the relatively low retirement age as well as to switch from the farmers' special pension system (KRUS) to the general pension system (ZUS). One of the changes introduced by the 2022 reform of the income-tax system under the 'Polish Deal' included reduction of the tax burden on workers delaying retirement beyond the statutory age to prolong working lives (see Annex 19).

Tax compliance has improved, but considerable scope exists to boost the efficiency of public spending on social benefits and public investment. The VAT compliance gap fell to 11.3% in 2020 but remains above the level observed in most other EU countries, suggesting scope for further improvements⁽¹⁷⁾ (see Annex 19). Social benefits remain largely untargeted and without means-testing at household level, in particular for costly child benefits (the 'Family 500+' programme). This has resulted in a welfare system with limited redistributive power. Much of public spending is captured by high-income households, as the richest 20% of Poles receive the same share of public cash transfers as the poorest 20%⁽¹⁸⁾. In 2022, new – mostly universal – support measures were introduced to offset rising energy and living costs. However, these measures did not sufficiently encourage reduction in energy demand (see Annex 7). Furthermore, about one third of public investment spending in Poland did not result in an increase in the level or quality of infrastructure that would have been achieved by the most efficient countries with comparable levels of public capital stock per capita⁽¹⁹⁾. Areas with relatively weak

performance include the coordination between entities, budget comprehensiveness and unity, maintenance funding, project selection, and portfolio oversight and management. The process of spending reviews that could support spending efficiency is being re-evaluated.

Independent fiscal oversight remains scattered, reducing transparency in the budgetary framework. Poland does not have a fully-fledged independent fiscal institution and activities related to the monitoring of fiscal rules are scattered among several bodies, with the Supreme Audit Office (NIK) taking a central role. Compliance with fiscal rules can currently be assessed by three public institutions, each of which use different methodologies with conflicting conclusions and communications, as was the case in the assessment of the 2021 budget act⁽²⁰⁾. The mandate of the NIK does not cover macroeconomic or budgetary forecasting, and no independent institution is tasked with an assessment of the long-term sustainability of public finances or with providing costing estimates to the parliament. Weaknesses persist in the medium-term budgetary framework (see Graph 3.1).

⁽¹⁶⁾ For more details on the changes see <https://www.krus.gov.pl/>.

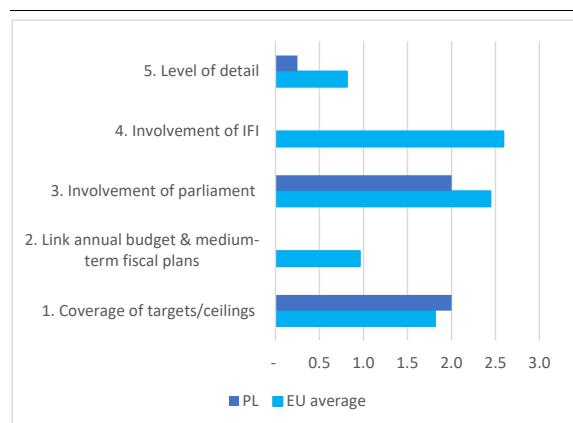
⁽¹⁷⁾ European Commission (2022) 'VAT gap in the EU: report 2022', Publications Office of the European Union.

⁽¹⁸⁾ OECD (2023), OECD Economic Surveys: Poland 2023, OECD Publishing, Paris.

⁽¹⁹⁾ IMF (2022) Republic of Poland: Technical Assistance Report-Public Investment Management Assessment, Country Report No. 2022/321.

⁽²⁰⁾ Poland's Ministry of Finance publishes an annual [report](#) on budget execution, which also covers fiscal rules. The Monetary Policy Council submits to the parliament an [ex ante assessment](#) of the draft budget covering macroeconomic forecasts and, in the past, compliance with the stabilisation-expenditure rule. The NIK submits to the parliament a [report](#) on the execution of the Budget Act, including compliance with national fiscal rules.

Graph 3.1: **Medium-term budgetary framework index**



Poland scores 0 on the 'link between budget & medium-term fiscal plans' and 'involvement of independent fiscal institutions'.

Source: Commission Fiscal Governance Database, 2021 values

The practice of channelling new spending via extra-budgetary funds leads to an accumulation of debt outside the coverage of regular budgetary practices and rules. Public debt outside the perimeter of the national debt brake is set to increase from 11% of GDP in 2022 to 14% of GDP in 2024 according to the government's own projections⁽²¹⁾. This is mainly on account of rising debt of off-budget funds managed by the Polish development bank (BGK), with the scope of activities supported by BGK funds constantly broadening. Bonds issued by the BGK likely have a higher premium and yields compared to state treasury issued bonds leading to overall higher public borrowing costs other things being equal. The diminished role of the Budget Act in recent years reduces transparency and undermines the role of the parliament in public finances⁽²²⁾. The 2023 Convergence Programme includes plans to integrate some of the extra-budgetary funds in the budget, in particular the COVID-19 Fund, and a gradual reduction in borrowing by off-budget funds to finance public spending.

⁽²¹⁾ Ministry of Finance (2022) [The Public Finance Sector Debt Management Strategy in the years 2023-2026](#), Warsaw.

⁽²²⁾ NIK (2022) Analysis of execution of the state budget and monetary-policy assumptions in 2021, Warsaw.

Challenges remain to an efficient public procurement process. The 2021 reform improved openness and transparency in the public procurement systems. In 2022, approximately half of public tenders had only one bidder participating (see Annex 12), which was the highest percentage among all EU countries. The World Bank estimates that potential savings amount to 5% of procurement costs per year if Poland used a more cost-effective procurement strategy without necessarily altering the existing regulatory framework⁽²³⁾.

Remaining weaknesses in education and healthcare

The pandemic has exacerbated existing challenges related to the quality and inclusiveness of education, and initial evidence shows that students' basic skills deteriorated over this period. Teacher shortages have become more acute and more widespread in 2023. Problems with recruiting and retaining teachers persist, mainly due to low salaries, the poor image of the teaching profession, and deteriorating working conditions⁽²⁴⁾. Despite a wide range of training opportunities to become a qualified teacher, the proportion of teachers below the age 30 ranges from less than 5% to 6%, compared to around 40% of teachers aged 50 or older. Trainee teachers account for only 2.8% of all employed schoolteachers⁽²⁵⁾. Due to multiple changes in the schooling system, schools and classes are overcrowded, especially in larger cities. The focus on key competences is limited in both the new core curricula and in the new upper-secondary school leaving exam. Because the central subsidy for education is increasing more slowly than expenditure, local governments have had to reduce investments in educational infrastructure and extra-curricular activities for

⁽²³⁾ World Bank (2022) Poland Public Finance Review. Washington, D.C., World Bank Group.

⁽²⁴⁾ WUP Krakow (2023). [Barometer of professions](#).

⁽²⁵⁾ Statistics Poland (2022) [Education in the 2021/2022 school year](#).

children. These reductions affect children from disadvantaged socio-economic backgrounds⁽²⁶⁾. Against this backdrop, Poland is aiming to make education more inclusive with the help of EU funds. Efforts to improve the quality of higher education continue to face challenges, as the results of the first evaluation of higher education institutions under the new rules are questioned.

Labour shortages in key sectors necessary for the green transition have increased in recent years.

In 2022, labour shortages were reported in Poland for 33 occupations that required specific skills or knowledge for the green transition. These occupations included plumbers, pipe fitters, roofers, building electricians, and related specialist electricians⁽²⁷⁾. In 2022, labour shortages were reported as a factor constraining production in industry (for 63.4% of firms) and construction (for 74.6% of firms)⁽²⁸⁾. The job-vacancy rate has increased across key sectors such as construction (from 1.0% in 2015 to 2.5% in 2021) and manufacturing (from 0.6% in 2015 to 1.1% in 2021), although both sectors still stand below the EU average for vacancies in these sectors in 2021 of 3.6% and 1.9%, respectively⁽²⁹⁾. Upskilling and reskilling for the green transition and promoting inclusive labour markets are essential policy levers to accelerate the transition to net-zero and ensure its fairness (see Annex 8).

Despite the comprehensive reform of the healthcare system planned in the RRP,

⁽²⁶⁾ NIK (2022), Financing education by local governments.

⁽²⁷⁾ Data on shortages are based on European Labour Authority (2023), EURES Report on labour shortages and surpluses 2022. National authorities report through a questionnaire, based on administrative data and other sources as submitted by the EURES National Coordination Offices (definitions of shortages differ, so data are not comparable across countries and cover a wide variety of sectors). Skills and knowledge requirements are based on the ESCO (European Skills Competences and Occupations) taxonomy of skills for the green transition (for occupations at ISCO 4-digit level of which there are 436 in total). Examples are identified based on their ESCO 'greenness' score and relevant sectors.

⁽²⁸⁾ European Business and Consumer Survey.

⁽²⁹⁾ Eurostat (JVS_A_RATE_R2).

some areas require further action. This is especially the case for preventive health services, primary care and psychiatric care. Health-promotion and sickness-prevention programmes have been underdeveloped, despite high rates of reported preventable mortality, and the share of spending on preventive care fell in 2019. Because the number of psychiatrists relative to the population is the lowest in the EU, psychiatric healthcare in Poland does not provide comprehensive and accessible care, especially for children and adolescents and those living in smaller towns and rural areas⁽³⁰⁾. Additionally, the prevalent hospital-based model of mental healthcare is not efficient. The Ministry of Health has initiated reforms that are based on providing more care in community-based settings.

Reducing reliance on fossil fuels and accelerating the green transition

The Polish energy mix remains heavily dominated by fossil fuels.

Approximately 90% of Poland's energy mix in 2021 was derived from fossil fuels. Coal alone accounts for around 60% of the energy mix and 72% of total electricity generation. Renewable energy sources (RES), which continue to be substantially less subsidised than fossil fuels, only accounted for around 13% of the energy mix and only 18% of total electricity generation (see Annex 6). Poland allocates more than the EU average to fossil-fuel subsidies, especially for coal and oil. The mining of hard coal is expected to phase out gradually and only by 2049⁽³¹⁾. While energy prices have decreased, uncertainty remains regarding next winter, which requires continued efforts to structurally reduce gas demand.

⁽³⁰⁾ [Maps of health needs](#) – System and Implementation Analysis Database, Ministry of Health Poland.

⁽³¹⁾ International Energy Agency. Poland 2022 – Energy Policy Review.

Poland has undertaken a number of steps to reduce its dependence on Russian imports of fossil fuels. In 2021, Russia accounted for 53% of the value of Polish fuel imports ⁽³²⁾. Poland has recently completed a number of gas-infrastructure investments funded from national and EU cohesion-policy funds, which made it possible for the country to substantially diversify its natural-gas supply and increase energy security starting in the second half of 2022 (see Annex 7). Beyond this, the reduction of Poland's reliance on fossil fuels is an essential part of ensuring security of supply.

Current measures to decarbonise the economy are not well aligned with the EU's 2030 climate and energy targets. Poland has been decarbonising at a substantially slower rate than other EU Member States. Compared with 2005, Polish greenhouse-gas emissions fell by only 1% in 2021 against an EU average reduction of 24% ⁽³³⁾. Emissions from the energy sector remain high, as do the impacts of the carbon price on the economy. Poland is also behind in reducing emissions in the non-ETS sectors, including buildings and transport (see Annex 6). The government's 2019 National Energy and Climate Plan (NECP) prescribes that the share of RES in the energy mix to increase to between 21% and 23% of gross final energy consumption by 2030. This RES target is not sufficiently ambitious in light of the 32% overall EU renewable energy target set for 2030 in 2018. Although an update of the NECP is expected in 2023, the lack of an up-to-date energy policy is holding back decarbonisation efforts while the absence of a long-term strategy for climate neutrality hinders long-term planning. This is further exacerbated by the fact that, as laid out in its national strategy 'Energy Policy of Poland until 2040', Poland plans a considerable expansion of gas-fired generation capacity and intends to considerably increase its natural gas consumption. Poland is one of the top revenue-generating members of the EU ETS,

⁽³²⁾ E. (2022, November 15). 'Poland on the way to independence from Russian fuels' | Obserwator Finansowy: Ekonomia, Debata, Polska, Świat.

⁽³³⁾ EU Climate Action Progress Report, 2022.

but only designates 50% of these revenues – the minimum percentage required by the ETS Directive – to climate and energy-related initiatives. Achieving carbon neutrality by 2050 will require a shift towards energy efficiency, a diffuse electrification of the economy, a significant deployment of RES and scaling up the manufacturing of clean technologies ⁽³⁴⁾.

Despite a number of measures in place to contain energy demand, further efforts are needed to improve energy efficiency, especially for residential buildings and district heating systems. Final energy consumption in Poland was 75,2 Mtoe in 2021, and it has mostly been on the rise throughout the last decade (see Annex 6). Currently, more than half of the energy demand of residential buildings for heating is satisfied by coal, either through direct use or indirectly in district heating. However, residential buildings remain largely energy inefficient, contributing to higher investment needs compared to other EU countries. Additionally, the district-heating sector requires targeted reforms and stepped-up investments to accelerate its decarbonisation and to ensure its long-term financial viability. On the positive side, because of the rise in energy prices, heat-pump sales have increased substantially in recent months, making Poland one of the EU's fastest growing markets for heat pumps. The RRP and the 2021-2027 cohesion-policy programmes include a broad range of measures to improve energy efficiency in: (i) selected economic sectors; (ii) private and public buildings; and (iii) district heating systems. However, further efforts are needed to adequately address these challenges.

Increasing energy generation from renewable energy sources is key to decarbonising the Polish economy and to achieving climate neutrality. Although RES account for a small share of the energy mix, national and EU support for photovoltaic (PV) installations has resulted in Poland becoming one of the fastest growing PV markets in the EU, with installed capacity reaching 11 GW. In 2022, Poland installed 4.9 GW of solar capacity, equivalent to 12% of the EU's total

⁽³⁴⁾ Net Zero Industry Act. COM(2023) 161.

newly installed capacity that year. The 2020 Offshore Wind Act outlines the framework for the development of offshore wind farms. On onshore wind energy, Poland has introduced a law to amend the minimum distance between onshore wind installations and residential buildings to 700 metres. Although the recent revision boosts investment in onshore wind capacity, the 700-metre-distance rule reduces the surface area available to build installations compared with the initially envisaged 500-metre limit (see Annex 7). Accelerated investment in renewable hydrogen generation could enable the country to fast-track decarbonisation in the transport and industry sectors. Finally, further investment in biomethane could increase the security of energy supply and decrease dependence on fossil fuels.

To unleash the potential of renewable energy sources, Poland needs to: (i) improve its internal networks for energy transmission and distribution; and (ii) reform its regulatory environment. In particular, Poland should implement measures to remove barriers to RES permitting: (i) accelerating the inclusion of RES in spatial plans; (ii) setting up renewables go-to areas; (iii) amending rules on grid-connection permits; and (iv) reforms and investments to modernise obsolete and inefficient distribution networks. Poland still has a long way to go to dismantle regulatory and administrative barriers to accelerate the deployment of RES. Further reforms are needed to: (i) enable industry to benefit from clean energy through arrangements such as power purchase agreements (PPAs); (ii) remove restrictions on energy communities; and (iii) promote the deployment of renewables in the district heating sector.

Decarbonising the transport sector will be essential to reducing greenhouse-gas emissions. In the absence of coordinated decarbonisation measures, emissions from transport in Poland have continued to rise, and even tripled between 1990-2019. Moreover, 90% of these emissions stem from road transport. Public urban transport and rail transport are still not attractive alternatives compared with private cars, thus exacerbating

air pollution and traffic congestion. Between 2008 and 2018, regional and suburban bus lines were reduced, resulting in approximately 65% of the rural population now being unable to access public transportation. Against this backdrop, although the RRP includes measures to promote sustainable mobility via public urban transport, clean vehicles, and investments in railways, a strategic framework to decarbonise the transport sector is needed.

Strengthening the business environment and investment

Low levels of investment could limit future productivity gains and economic growth in Poland. Private investment as a percentage of GDP in 2022 was low at 19.1%, well below the EU-wide average (25.8%) and that of regional peers such as Czechia (29.1%) and Hungary (35.0%). Investment is particularly weak in the most productive sectors, such as information and communications technology, where rapid technological progress requires high investment outlays (see Annex 12). The share of buildings and infrastructure investment in total investment was 51.5%, while intangible assets (e.g. R&D investment and intellectual property) accounted for just 9.7%, limiting the ability of the economy to move up the value chain. The country is also performing below the EU average on innovation indicators (see Annex 11). Overall, increasing capital investments in high-productivity sectors will be crucial to sustaining Poland's strong economic performance and facilitating the shift towards a greener growth model.

Social dialogue is poor. No impactful measures have been implemented in 2022 to strengthen consultations with – and the involvement of – social partners in the legislative process and improve the overall quality of social dialogue (see Annex 14). The collective bargaining coverage remains limited.

Serious concerns related to the rule of law continue to impair the investment climate in Poland. The perception of judicial independence among the general public and

companies is very low (see Annex 12). The Commission's 2022 Rule of Law Report⁽³⁵⁾ highlights persistent concerns that affect the independence of the judiciary. Since July 2021, the Court of Justice of the EU and the European Court of Human Rights have delivered several rulings on the issues identified by the Commission. Poland refused to comply with interim measures orders of the European Court of Human Rights and has so far failed to fully comply with an interim measures order of the Court of Justice of the EU of 14 July 2021 pertaining to the disciplinary regime for judges. In view of notable progress in the implementation of the aforementioned interim measures order, in April 2023, the Court of Justice of the European Union reduced the daily financial penalty imposed on Poland from 1 million EUR to 0.5 million EUR⁽³⁶⁾. In its RRP, Poland committed to reforming the disciplinary regime for judges and to setting up a review process before an independent court for judges affected by decisions of the Disciplinary Chamber of the Supreme Court. To this end, Poland adopted a law, which entered into force on 15 July 2022. On 13 January 2023, the Polish Parliament adopted another law to further address the commitments in its RRP. The President of the Republic referred this law to the Constitutional Tribunal. Therefore, it has not yet entered into force. At the time of Poland's first payment request, the Commission will carefully assess the satisfactory fulfilment of the milestones committed to by Poland. Poland has not addressed the serious concerns related to the National Council for the Judiciary following the reform of the country's justice system in 2017. Furthermore, on 15 February 2023, the Commission decided to refer Poland to the Court of Justice of the EU for violations of EU law by the Polish Constitutional Tribunal and its case law, which, according to the Commission, challenged notably the primacy of EU law⁽³⁷⁾. The Commission's 2022 Rule of Law Report also highlighted concerns in a

number of other areas. These included shortcomings in the independence of the prosecution service and in the functioning of the Supreme Audit Office, both of which affect the effectiveness of the fight against corruption.

⁽³⁵⁾ [EUR-Lex - 52022SC0521 - EN - EUR-Lex \(europa.eu\)](#).

⁽³⁶⁾ <https://curia.europa.eu/jcms/upload/docs/application/pdf/2023-04/cp230065en.pdf>

⁽³⁷⁾ https://ec.europa.eu/commission/presscorner/detail/en/ip_23_842.

KEY FINDINGS

Poland's RRP includes measures to address a series of structural challenges through:

- improving the efficiency of public spending and making the public finances more transparent;
- addressing disparities in labour market participation such as the gender employment gap; ensuring more Poles are covered by social-protection systems; strengthening public employment services; and fostering quality education and demand-driven skills;
- improving the resilience, accessibility, and effectiveness of the health system, including through increased access to e-health services;
- strengthening collaboration between researchers and businesses to improve innovation;
- improving the further digitalisation of schools, businesses, and public administration, including through the development of appropriate infrastructure;
- significantly accelerating investments in decarbonisation, energy transformation, and sustainable transport;
- improving the investment climate, in particular by raising the standard of certain aspects of judicial protection;
- ensuring effective public consultations and the involvement of social partners in the policy-making process;

Poland should urgently fulfil the required milestones and targets related to the protection of the financial interests of the Union with a view to allow for a swift and

steady implementation of its recovery and resilience plan.

Beyond the reforms and investments in the RRP and in the 2021-2027 cohesion-policy programmes, Poland would benefit from:

- taking measures to improve the sustainability of the pension system, and strengthening independent fiscal oversight;
- improving the efficiency of spending on social benefits and public investment, as well as continuing to improve public procurement;
- taking further steps to tackle skills mismatches and addressing challenges related to the quality and inclusiveness of education and training;
- stepping up efforts to reduce its reliance on fossil fuels and improving energy efficiency, in particular of the building stock; increasing energy generation from renewable energy sources, including by streamlining permitting procedures; improving the energy distribution networks, increasing transparency of grid connection procedures and planning; promoting sustainable public transport modes; enhancing investments in green skills and key energy transition technologies;
- further enhancing the investment climate, including by safeguarding judicial independence; and improving the social dialogue.

ANNEXES

Cross-cutting indicators	22
A1. Sustainable Development Goals	22
A2. Progress in the implementation of country-specific recommendations	25
A3. Recovery and resilience plan - overview	28
A4. Other EU instruments for recovery and growth	29
A5. Resilience	32
Environmental sustainability	33
A6. European Green Deal	33
A7. Energy security and affordability	38
A8. Fair transition to climate neutrality	44
Productivity	47
A9. Resource productivity, efficiency and circularity	47
A10. Digital transformation	49
A11. Innovation	51
A12. Industry and single market	53
A13. Public administration	57
Fairness	59
A14. Employment, skills and social policy challenges in light of the European Pillar of Social Rights	59
A15. Education and training	62
A16. Health and health systems	65
A17. Economic and social performance at regional level	67
Macroeconomic stability	70
A18. Key financial sector developments	70
A19. Taxation	72
A20. Table with economic and financial indicators	74
A21. Debt sustainability analysis	75

LIST OF TABLES

A2.1. Summary table on 2019-2022 CSRs	25
A3.1. Key elements of Poland's RRP	27

A5.1.	Resilience indices summarising the situation across RDB dimensions and areas	31
A6.1.	Indicators tracking progress on the European Green Deal from a macroeconomic perspective	32
A7.1.	Key energy indicators	37
A8.1.	Key indicators for a fair transition in Poland	43
A9.1.	Overall and systemic indicators on circularity	47
A10.1.	Key Digital Decade targets monitored by DESI indicators	49
A11.1.	Key innovation indicators	50
A12.1.	Industry and Single Market	54
A13.1.	Public administration indicators	56
A14.1.	Social Scoreboard for Poland	58
A14.2.	Situation of Poland on 2030 employment, skills and poverty reduction targets	59
A16.1.	Key health indicators	64
A17.1.	Selected indicators at regional level - Poland	67
A18.1.	Financial soundness indicators	69
A19.1.	Taxation indicators	71
A20.1.	Key economic and financial indicators	73
A21.1.	Debt sustainability analysis - Poland	75
A21.2.	Heat map of fiscal sustainability risks - Poland	76

LIST OF GRAPHS

A1.1.	Progress towards the SDGs in Poland in the last 5 years	23
A2.1.	Poland's progress on the 2019-2022 CSRs (2023 European Semester)	24
A3.1.	Share of RRF funds contribution to each policy pillar	27
A4.1.	Cohesion policy funds 2021-2027 in Poland: budget by fund	28
A4.2.	Synergies between cohesion policy funds and RRF six pillars in Poland	28
A4.3.	Cohesion policy funds contribution to the SDGs in 2014-2020 and 2021-2027 in Poland	29
A6.1.	Thematic – greenhouse gas emissions from the effort sharing sectors in Mt CO ₂ eq, 2005-2021	32
A6.2.	Energy mix (top) and electricity mix (bottom), 2021	33
A6.3.	Thematic – environmental investment needs and current investment, p.a. 2014-2020	34
A7.1.	Underground gas storage levels in Poland	37
A7.2.	Share of gas consumption per sector, 2021	38
A7.3.	Share of gas consumption per industrial sector, 2021 (% of industry total gas consumption)	38
A7.4.	Poland's retail energy prices for industry (top) and households (bottom)	39
A7.5.	Public (top) and Private (bottom) R&I investment in Energy Union R&I priorities	41
A8.1.	Fair transition challenges in Poland	43
A8.2.	Distributional impacts of energy prices due to rising energy expenditure (2021-2023) in Poland	44
A9.1.	Trend in material use	46
A9.2.	Treatment of municipal waste	47
A11.1.	R&D intensity in Poland over time	50
A12.1.	Investment, % GDP	52
A12.2.	Nominal labour productivity per hour worked (EU=100)	53
A12.3.	Business environment and productivity drivers	54
A13.1.	Poland. E-government maturity and e-government users	56
A13.2.	Poland. a) Regulatory impact assessment, b) Stakeholder engagement and c) Ex post evaluation of legislation	57
A15.1.	Age profile of teachers in Poland	61
A16.1.	Life expectancy at birth, years	64
A16.2.	Projected increase in public expenditure on healthcare over 2019-2070	64
A17.1.	GDP (PPS) per capita (2010) and GDP growth (2010-2020) in Poland	66
A18.1.	Credit growth	69
A19.1.	Tax revenues from different tax types, % of total taxation	72
A19.2.	Tax wedge for single and second earners, % of total labour costs, 2022	72

LIST OF MAPS

A17.1.	Poland GDP per capita (PPS) by NUTS 2 region, 2020	66
--------	--	----

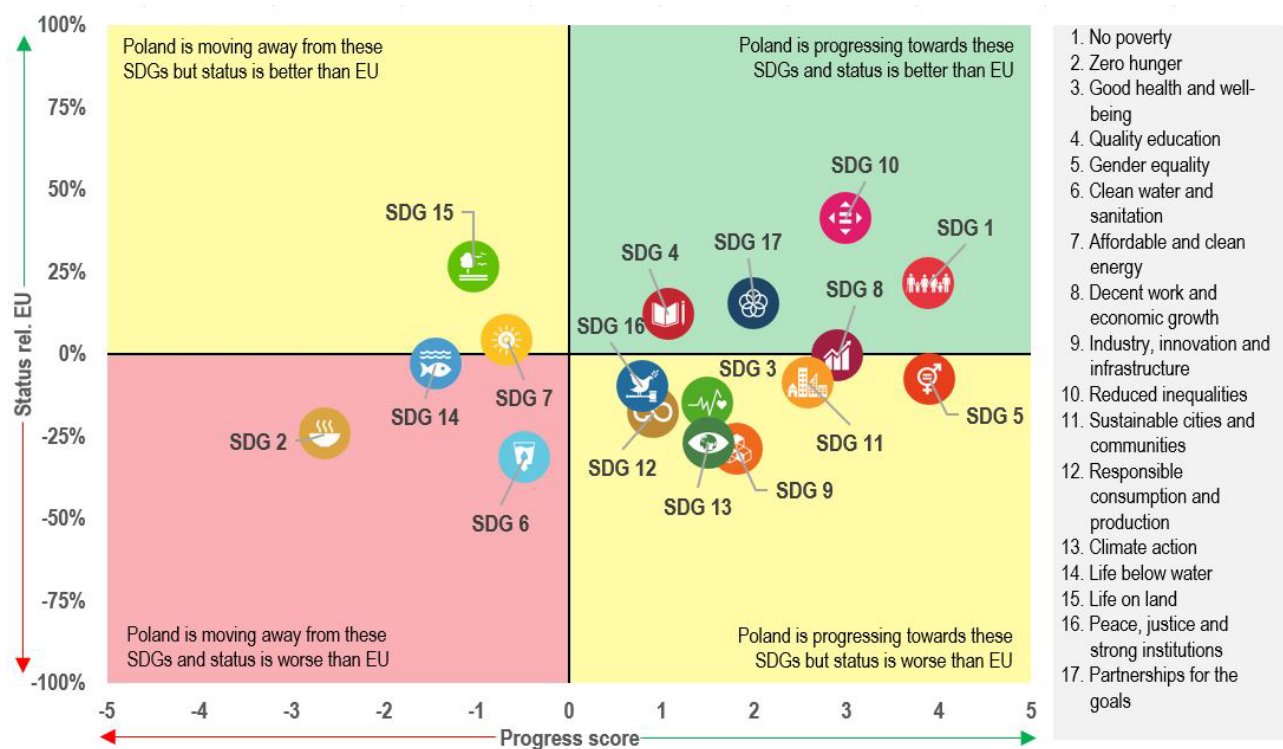


This Annex assesses Poland’s progress on the Sustainable Development Goals (SDGs) along the four dimensions of competitive sustainability. The 17 SDGs and their related indicators provide a policy framework under the UN’s 2030 Agenda for Sustainable Development. The aim is to end all forms of poverty,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

While Poland is improving on some of the SDG indicators related to environmental sustainability, it is moving away from SDG 7 (Affordable and clean energy), SDG 14 (Life below water) and SDG 15 (Life on land).

Poland has made some progress on energy consumption indicators including the share of renewable energy in gross final energy consumption (SDG 7; from 11.4% in 2016 to 15.6% in 2021; EU average 21.8%). However, it is moving away from the EU average on per capita net greenhouse gas (GHG) emissions (SDG 13; 10.1 tonnes in 2021 compared to 9.6 tonnes in 2016; EU average of 7.4 tonnes in 2021). Moreover, Poland is rapidly losing carbon sinks, with the net GHG emissions from land use and forestry (LULUCF) increasing from -122.7 tonnes CO₂ eq. per km² in 2016 to -67.9 in 2021, compared to the EU average of -50.1). Moreover, Poland’s energy import dependency has increased (from 19.8% in 2015 to 42.8% in 2020; EU average 57.5%). As for affordable energy (SDG 7), the percentage of the Polish population unable to keep their homes adequately warm was lower (3.2% in 2021) than the EU average (6.9%). Poland’s recovery and resilience plan (RRP) includes measures to address some of the energy-

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



For detailed datasets on the various SDGs, see the annual Eurostat report ‘Sustainable development in the European Union’; for details on extensive country-specific data on the short-term progress of Member States: [Key findings - Sustainable development indicators - Eurostat \(europa.eu\)](#). The status of each SDG in a country is the aggregation of all the indicators for the specific goal compared to the EU average. A high status does not mean that a country is close to reaching a specific SDG, but signals that it is doing better than the EU on average. The progress score is an absolute measure based on the indicator trends over the past 5 years. The calculation does not take into account any target values as most EU policy targets are only valid for the aggregate EU level. Depending on data availability for each goal, not all 17 SDGs are shown for each country.

Source: Eurostat, latest update of early April 2023, except for the EU Labour Force Survey (LFS) indicators released on 27 April 2023. Data mainly refer to 2016-2021 or 2017-2022.

related challenges, namely on the energy renovation of buildings, energy efficiency of business and the decarbonisation of energy production. On SDG 14, Poland is not progressing, as shown, in particular, by its low and decreasing share of coastal water bathing sites with excellent water quality (44.8% in 2021; EU average 78.2%). While Poland is improving on several SDG indicators related to SDG 11 (Sustainable cities and communities), its share of buses and trains in total passenger transport has decreased (from 21.3% in 2015 to 12.4% in 2020; EU average 12.8%) and the country needs to reduce premature deaths due to exposure to fine particulate matter (PM2.5) (96 in 2020; EU average 54).

While Poland is improving on most SDG indicators related to fairness (SDGs 1, 3, 5, 8 and 10), it still needs to catch up on SDG 2 (zero hunger) and is moving away from SDG 4 (quality education). Poland performs well on the indicators for people at risk of poverty or social exclusion (SDG 1; 16.8% in 2021 compared to 20.6% in 2016 and the EU average of 21.7% in 2021) and for income distribution (SDG 10; 4.0 in 2021 compared to 4.8 in 2016 and the EU average of 5.0 in 2021). In addition, Poland has improved on several fairness-related indicators such as the long-term unemployment rate (SDG 8; 0.9% in 2022 compared to 1.5% in 2017 and the EU average of 2.4%). However, Poland needs to reduce avoidable mortality (SDG 3; 418.9 deaths per 100 000 persons in 2020, compared to the EU average of 271.7) and improve on the indicator on people outside the labour force due to caring responsibilities (SDG 5; 1.1 pps in 2022, compared to the EU average of 1.2 pps). Moreover, the country is moving away from SDG 4 on several indicators related to quality education, including tertiary educational attainment (40.5% in 2022 compared to 43.6% in 2017; EU average: 42% in 2022) although it seems to have reversed the negative trend on early leavers from education and training (4.8% in 2022, compared to 5.0% in 2017 and the EU average of 9.6% in 2022) and still performs better than the EU average on both indicators. Poland is also moving away from the EU average on several indicators related to food and farming (SDG 2), including the indicator regarding the area under organic farming (3.5% in 2020 compared to 4% in 2015 and the EU average of 9.1% in 2020).

Poland is improving on some SDGs on productivity (SDGs 8 and 9), but it is moving away from the EU average on SDG 4 (Quality education). Poland performs well on its employment rate (SDG 8; 76.7% in 2022 compared to 70.0% in 2016 and the EU average of 74.6% in 2022). On the negative side, Poland is moving away from the EU average on the indicator for the investment share of GDP (SDG 8; 17% in 2021 compared to 18.5% in 2016 and the EU average of 22.4% in 2021). Therefore, the Polish RRP includes several measures aimed at improving the investment climate. Poland is improving but still performs far below the EU average on indicators related to R&D and innovation, and sustainable industry (SDG 9), including gross domestic expenditure on R&D (1.44% of GDP in 2021, compared to the EU average of 2.27%) and air emissions intensity of fine particulate matter (PM2.5) from industry (0.28 g per euro in 2020, compared to the EU average of 0.07 g). On the share of households with a high-speed internet connection, Poland has made considerable progress and is close to achieving the EU average of 70.2% in 2021. However, the share of adults with at least basic digital skills (SDG 4) remains low (42.9% in 2021, compared to the EU average of 53.9%).

Poland is improving on SDG indicators related to macroeconomic stability (SDGs 8 and 16), but still needs to catch up compared to the EU. It has improved on SDG 8 (Decent work and economic growth), although real GDP per capita (EUR 14 600 in 2022) remains below the EU average of EUR 28 820. As regards justice and strong institutions (SDG 16), Poland has increased its general government total expenditure on law courts (SDG 16) (EUR 78.1 per capita) but needs to catch up with the EU average of EUR 100.7. However, perceptions of the independence of the justice system have become more negative, with the percentage of people who consider the judiciary to be fairly good and very good declining steeply from 50% in 2017 to 24% in 2022 (the EU average is 53%). Poland's Corruption Perceptions Index has also deteriorated (from 60 in 2017 to 55 in 2022, compared to the EU average of 64). On the positive side, Poland performs well on the 'population with confidence in the European Parliament' index (55% of the population in 2022, compared to 43 in 2017 and the EU average of 50 in 2022). The Polish RRP includes measures related to the independence of the justice system.

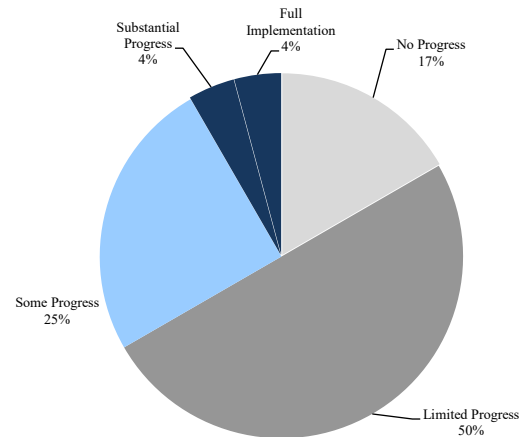
As the SDGs form an overarching framework, any links to relevant SDGs are either explained or depicted with icons in the other Annexes.



ANNEX 2: PROGRESS IN THE IMPLEMENTATION OF COUNTRY-SPECIFIC RECOMMENDATIONS

The Commission has assessed the 2019-2022 country-specific recommendations (CSRs) ⁽³⁸⁾ addressed to Poland as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 15 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by Poland to date ⁽³⁹⁾ and the commitments in its recovery and resilience plan (RRP) ⁽⁴⁰⁾. At this stage of RRP implementation, 33% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 50% recorded 'limited progress' (see Graph A2.1). As the RRP is implemented further, considerable progress in addressing structural CSRs is expected in the years to come.

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



Source: European Commission

⁽³⁸⁾ 2022 CSRs: [EUR-Lex - 32022H0901\(21\) - EN - EUR-Lex \(europa.eu\)](#)

2021 CSRs: [EUR-Lex - 32021H0729\(21\) - EN - EUR-Lex \(europa.eu\)](#)

2020 CSRs: [EUR-Lex - 32020H0826\(21\) - EN - EUR-Lex \(europa.eu\)](#)

2019 CSRs: [EUR-Lex - 32019H0905\(21\) - EN - EUR-Lex \(europa.eu\)](#)

⁽³⁹⁾ Including policy action reported in the national reform programme and in Recovery and Resilience Facility (RRF) reporting (twice a year reporting on progress in implementing milestones and targets and resulting from the payment requests assessment).

⁽⁴⁰⁾ Member States were asked to effectively address all or a significant subset of the relevant country-specific recommendations issued by the Council in 2019 and 2020 in their RRP. The CSR assessment presented here considers the degree of implementation of the measures included in the RRP and of those carried out outside of the RRP at the time of assessment. Measures laid down in the Annex of the adopted Council Implementing Decision on approving the assessment of the RRP, which are not yet adopted or implemented but considered credibly announced, in line with the CSR assessment methodology, warrant 'limited progress'. Once implemented, these measures can lead to 'some/substantial progress or full implementation', depending on their relevance.

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

Poland	Assessment in May 2023*	RRP coverage of CSRs until 2026	Relevant SDGs
2019 CSR 1	Some progress		
<i>Ensure that the nominal growth rate of net primary government expenditure does not exceed 4.4% in 2020, corresponding to an annual structural adjustment of 0.6% of GDP.</i>	Not relevant anymore	Not applicable	SDG 8, 16
<i>Take further steps to improve the efficiency of public spending, including by improving the budgetary process.</i>	Some progress	Relevant RRP measures planned as of 2021, 2022, and 2025.	SDG 8, 16
2019 CSR 2	Limited progress		
<i>Ensure the adequacy of future pension benefits and the sustainability of the pension system by taking measures to increase the effective retirement age and by reforming the preferential pension schemes.</i>	Limited progress	Relevant RRP measures planned as of 2022.	SDG 8
<i>Take steps to increase labour market participation, including by improving access to childcare and long-term care, and remove remaining obstacles to more permanent types of employment.</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, and 2026.	SDG 3, 4, 5, 8
<i>Foster quality education and skills relevant to the labour market, especially through adult learning.</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025, and 2026.	SDG 4
2019 CSR 3	Limited progress		
<i>Strengthen the innovative capacity of the economy, including by supporting research institutions and their closer collaboration with business.</i>	Some progress	Relevant RRP measures planned as of 2022, and 2025.	SDG 9
<i>Focus investment-related economic policy on innovation</i>	Limited progress	Relevant RRP measures planned as of 2022, 2024, 2025 and 2026.	SDG 9, 10, 11
<i>[Focus investment-related economic policy on] transport, notably on its sustainability</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 10, 11
<i>[Focus investment-related economic policy on] digital [infrastructure]</i>	Substantial progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 9, 10, 11
<i>[Focus investment-related economic policy on] energy infrastructure</i>	Some progress	Relevant RRP measures planned as of 2024, 2025 and 2026.	SDG 7, 9, 10, 11, 13
<i>[Focus investment-related economic policy on] healthcare</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 3, 10, 11
<i>[Focus investment-related economic policy on] cleaner energy, taking into account regional disparities</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 7, 9, 10, 11, 13
<i>Improve the regulatory environment, in particular by strengthening the role of consultations of social partners and public consultations in the legislative process.</i>	No progress	Relevant RRP measures planned as of 2022, and 2023.	SDG 16
2020 CSR 1	Limited progress		
<i>Take all necessary measures, in line with the general escape clause of the Stability and Growth Pact, to effectively address the COVID-19 pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.</i>	Not relevant anymore	Not applicable	SDG 8, 16
<i>Improve resilience, accessibility and effectiveness of the health system, including by providing sufficient resources and accelerating the deployment of e-health services.</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 3
2020 CSR 2	Limited progress		
<i>Mitigate the employment impact of the crisis, in particular by enhancing flexible and short time working arrangements.</i>	Some progress	Relevant RRP measures planned as of 2023.	SDG 8
<i>Better target social benefits and ensure access to those in need.</i>	No progress		SDG 1, 2, 10
<i>Improve digital skills.</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 4
<i>Further promote the digital transformation of companies and public administration.</i>	Some progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 9, 16
2020 CSR 3	Limited progress		
<i>Continue efforts to secure access to finance and liquidity for companies.</i>	Full implementation		SDG 8, 9
<i>Front-load mature public investment projects</i>	Some progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 8, 16
<i>and promote private investment to foster the economic recovery.</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 8, 9
<i>Focus investment on the green and digital transition, in particular on digital infrastructure,</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 9, 10, 11
<i>clean and efficient production and use of energy,</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 7, 9, 10, 11, 13
<i>and sustainable transport,</i>	Limited progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 10, 11
<i>contributing to a progressive decarbonisation of the economy, including in the coal regions.</i>	Limited progress	Relevant RRP measures planned as of 2022, and 2023.	SDG 6, 10, 11, 12, 15
2020 CSR 4	No progress		
<i>Enhance the investment climate, in particular by safeguarding judicial independence.</i>	No progress	Relevant RRP measures planned as of 2022 and 2023.	SDG 16
<i>Ensure effective public consultations and involvement of social partners in the policymaking process.</i>	No progress	Relevant RRP measures planned as of 2022, and 2023.	SDG 16
2021 CSR 1	Some progress		
<i>In 2022, pursue a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment.</i>	Full implementation	Not applicable	SDG 8, 16
<i>When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.</i>	Some progress	Not applicable	SDG 8, 16
<i>At the same time, enhance investment to boost growth potential. Pay particular attention to the composition of public finances, on both the revenue and expenditure sides of the budget, and to the quality of budgetary measures in order to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, in particular investment supporting the green and digital transition.</i>	Substantial progress	Not applicable	SDG 8, 16
<i>Give priority to fiscal structural reforms that will help provide financing for public policy priorities and contribute to the long-term sustainability of public finances, including, where relevant, by strengthening the coverage, adequacy and sustainability of health and social protection systems for all.</i>	No progress	Not applicable	SDG 8, 16

(Continued on the next page)

Table (continued)

2022 CSR 1	Limited progress		
<i>In 2023, ensure that the growth of nationally financed primary current expenditure is in line with an overall neutral policy stance, taking into account continued temporary and targeted support to households and firms most vulnerable to energy price hikes and to people fleeing Ukraine. Stand ready to adjust current spending to the evolving situation.</i>	No progress	Not applicable	SDG 8, 16
<i>Expand public investment for the green and digital transitions, and for energy security taking into account the REPowerEU initiative, including by making use of the Recovery and Resilience Facility and other Union funds.</i>	Limited progress	Not applicable	SDG 8, 16
<i>For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.</i>	Some progress	Not applicable	SDG 8, 16
<i>Improve the efficiency of public spending, including by continuing the reform of the budget system.</i>	Some progress	Relevant RRP measures planned as of 2021, 2022, and 2025.	SDG 8, 16
<i>Ensure the adequacy of future pension benefits and the sustainability of the pension system by taking measures to increase the effective retirement age and by reforming the preferential pension schemes.</i>	Limited progress	Relevant RRP measures planned as of 2022.	SDG 8
2022 CSR 2			
<i>Swiftly finalise the negotiations with the Commission of the 2021-2027 cohesion policy programming documents with a view to starting their implementation.</i>	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	Limited progress		
<i>Increase labour market participation, including by improving access to childcare and longterm care, and remove remaining obstacles to more permanent types of employment.</i>	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, and 2026.	SDG 3, 4, 5, 8
<i>Foster quality education and skills relevant to the labour market, especially through adult learning and improving digital skills.</i>	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 4
<i>Better target social benefits and ensure access to those in need.</i>	No Progress		SDG 1, 2, 10
2022 CSR 4	Limited progress		
<i>Improve the resilience, accessibility and effectiveness of the health system, including by providing sufficient resources to reverse the pyramid of care and accelerating the deployment of e-health services.</i>	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 3
<i>Strengthen the innovative capacity of the economy, including by supporting research institutions and their closer collaboration with business.</i>	Some Progress	Relevant RRP measures planned as of 2022, 2024, 2025 and 2026.	SDG 9
<i>Enhance further digitalisation of businesses and public administration, including through development of infrastructure.</i>	Some Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 9, 16
2022 CSR 5	Limited progress		
<i>Enhance the investment climate, in particular by safeguarding judicial independence.</i>	Limited Progress	Relevant RRP measures planned as of 2022 and 2023.	SDG 16
<i>Ensure effective public consultations and involvement of social partners in the policymaking process.</i>	No Progress	Relevant RRP measures planned as of 2022, and 2023.	SDG 16
2022 CSR 6	Limited progress		
<i>Reduce overall reliance on fossil fuels</i>	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 7, 9, 13
<i>by removing regulatory, administrative and infrastructural barriers to accelerate permitting procedures and deployment of renewable energy sources.</i>	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 7, 8, 9, 13
<i>Reform building renovation policies and support schemes to incentivise deeper energy efficiency, promote energy savings and faster phase-out of fossil fuels in heating and accelerated deployment of heat pumps.</i>	Some Progress	Relevant RRP measures planned as of 2022, 2023, and 2026.	SDG 7
<i>Accelerate modal shift towards public transport and active mobility and promote faster uptake of electric vehicles with incentives and investment in charging infrastructure.</i>	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 11
<i>Improve long- and medium-term strategic planning of the green transition by updating national energy policies in line with the European Green Deal objectives and the REPowerEU Communication to provide certainty to the business community and use funding effectively with a view to accelerating clean energy investments.</i>	No Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026.	SDG 7, 9, 11, 13

Note:* See footnote ⁽⁴⁰⁾.

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

Source: European Commission



ANNEX 3: RECOVERY AND RESILIENCE PLAN - OVERVIEW

Table A3.1: Key elements of Poland's RRP

	Current RRP
Scope	Initial plan
CID adoption date (date of submission)	17 June 2022
Total allocation	EUR 23.9 billion in grants (6.2% of 2021 GDP) and EUR 11,5 billion in loans
Investments and reforms	53 investments and 49 reforms
Total number of milestones and targets	223

Source: RRF Scoreboard

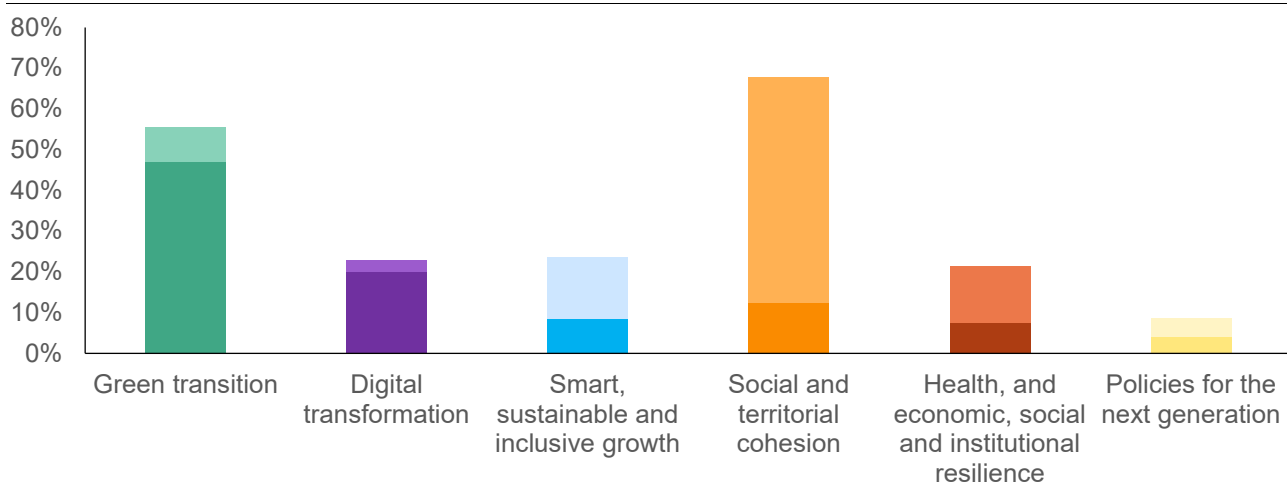
The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to help it recover from the COVID-19 pandemic, speed up the twin transition and strengthen resilience against future shocks. The RRF also contributes to implementation of the SDGs and helps to address the Country Specific Recommendations (see Annex 2). Poland submitted its current recovery and resilience plan (RRP) on 3 May 2021. The Commission's positive assessment on 1 June 2022 and Council's approval on 17 June 2022 paved the way for disbursing EUR 23.9 billion in grants and EUR 11.5 in loans under the RRF over the 2022-2026 period.

Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contribution for Poland was moreover updated on 30 June 2022 to an amount of EUR 22.5 billion in grants.

Poland's progress in implementing its plan is published in the [Recovery and Resilience Scoreboard](#). The Scoreboard also gives an overview of the progress made in implementing the RRF as a whole, in a transparent manner.

No disbursements have yet been made to Poland. Due to the late submission of the RRP, Poland was not eligible for pre-financing. Disbursement of the allocation for Poland will depend on the progress in implementing the plan.

Graph A3.1: Share of RRF funds contribution to each policy pillar



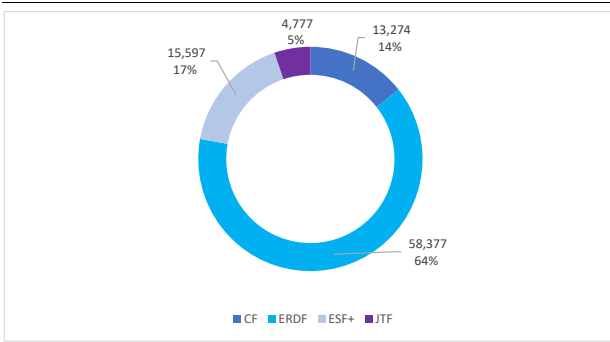
Note: Each measure contributes towards two policy areas of the six pillars, therefore the total contribution to all pillars displayed on this chart amounts to 200% of the estimated cost of the RRP. The bottom part represents the amount of the primary pillar, the top part the amount of the secondary pillar.

Source: RRF Scoreboard



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

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



(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)

Source: European Commission, Cohesion Open Data

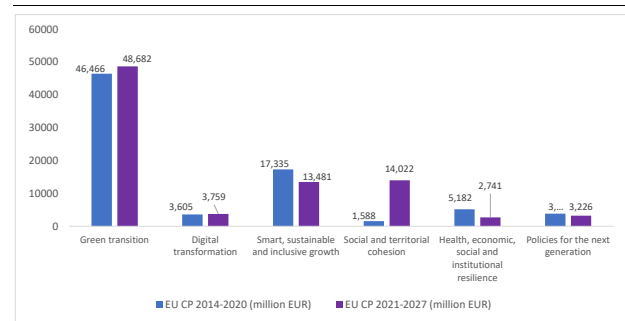
In 2021-2027, in Poland, cohesion policy funds ⁽⁴¹⁾ will invest EUR 48.7 billion in the green transition and EUR 3.8 billion in the digital transformation as part of the country's total allocation of EUR 92 billion. In particular, the European Regional Development Fund (ERDF) will support the energy transition, a strategic priority in Poland in 2021-2027. It will increase by 601 MW the capacity to produce renewable energy. Together with the Cohesion Fund (CF), it will improve the energy performance of over 259 470 dwellings. The ERDF will also invest in sustainable transport by supporting 840 km of railway lines and an additional 1 685 km of cycling roads. The ERDF will support equal access to internet, providing access to ultra-fast broadband to more than 880 000 households and businesses. Due to a significant increase in repayable forms of support, particularly in the energy sector, financial instruments should be used strategically. The Just Transition Fund (JTF) will help workers and businesses in five (post) coal-mining regions to find new jobs and activities. In Silesia, the largest EU coal region, the JTF will support 1 940 businesses, create 27 000 new jobs, and generate

⁽⁴¹⁾ European Regional Development Fund (ERDF), Cohesion Fund (CF), European Social Fund+ (ESF+), Just Transition Fund (JTF), excluding Interreg programmes. The total amount includes national and EU contributions. Data source: [Cohesion Open Data](#).

EUR 874 million in additional private investment. It will also help to improve the energy performance of 21 380 dwellings in Lower Silesia. Under the European Social Fund Plus (ESF+), Poland allocates EUR 2.8 billion to education and EUR 1.3 billion to lifelong learning and skills. It will strengthen green and digital skills by aligning vocational education and training (VET) with labour market demand and supporting upskilling in the green and digital economy, with a focus on women and vulnerable groups. EUR 900 million is allocated to measures to achieve gender balance in the labour market.

Of the investments mentioned above, EUR 12.7 billion will be invested in line with REPowerEU objectives. This is on top of the EUR 6.7 billion dedicated to REPowerEU under the 2014-2020 budget. EUR 8 billion (2021-2027) and EUR 3.2 billion (2014-2020) is for improving energy efficiency; EUR 2.1 billion (2021-2027) and EUR 3.5 billion (2014-2020) is for renewable energy and low-carbon R&I; and EUR 2.6 billion (2021-2027) is for smart energy systems.

Graph A4.2: Synergies between cohesion policy funds and RRF six pillars in Poland



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

Source: European Commission

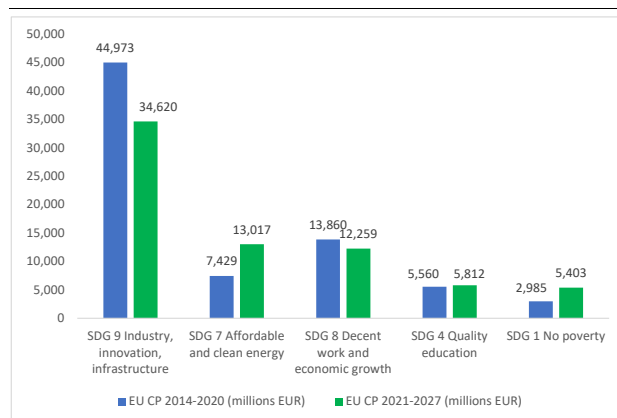
In 2014-2020 cohesion policy funds made EUR 78.8 billion available to Poland ⁽⁴²⁾, with an absorption of 91% ⁽⁴³⁾. Including national financing, the total investment amounts to EUR 92.6 billion - around 0.1% of GDP for 2014-2020.

⁽⁴²⁾ Cohesion policy funds include the ERDF, CF, ESF and the Youth Employment Initiative (YEI). ETC programmes are excluded here. According to the 'N+3 rule', the funds committed for 2014-2020 must be spent by 2023. REACT-EU is included in all figures. Total amount including EU and national co-financing. Data source: [Cohesion Open Data](#).

⁽⁴³⁾ 2014-2020 Cohesion policy EU payments by MS is updated daily on [Cohesion Open Data](#).

Poland continues to benefit from cohesion policy flexibility to support economic recovery, step up convergence and provide vital support to regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument (REACT-EU)⁽⁴⁴⁾ under NextGenerationEU provides EUR 1.9 billion on top of the 2014-2020 cohesion policy allocation for Poland. On this, EUR 304 million has been allocated to the ‘digital commune’ project on digital maturity, resistance and cybersecurity in the 2 437 local governments most affected by the COVID-19. REACT-EU also supported 2 000 primary healthcare centres. In addition, Cohesion’s Action for Refugees in Europe (CARE) supports Poland and its regions in providing emergency assistance to people fleeing from Russia’s invasion of Ukraine, with a total budget of EUR 90 million. With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised to support vulnerable households, jobs and companies particularly affected by high energy prices.

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



(1) 5 largest contributions to SDGs in million (EUR) current prices

Source: European Commission

In both 2014-2020 and 2021-2027, cohesion policy funds have contributed substantially to the Sustainable Development Goals (SDGs). These funds support 11 of the 17 SDGs, notably SDG 9 ‘Industry, innovation, infrastructure’ and SDG 7 ‘Affordable and clean energy’⁽⁴⁵⁾.

⁽⁴⁴⁾ REACT-EU allocation on [Cohesion Open Data](#).

⁽⁴⁵⁾ Other EU funds contribute to the implementation of the SDGs, in 2014-2022 this includes both the European Agricultural Fund for Rural Development (EARD) and the European Maritime and Fisheries Fund (EMFF).

Other EU funds make significant resources available for Poland. The common agricultural policy (CAP) made EUR 42.0 billion available in 2014-2022, and will continue to support Poland with EUR 22.1 billion in 2023-2027. The two CAP Funds (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development) contribute to the European Green Deal while ensuring long-term food security. They promote social, environmental and economic sustainability and innovation in agriculture and rural areas, in coordination with other EU funds. The European Maritime and Fisheries Fund made EUR 531 million available to Poland in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund allocates EUR 512 million in 2021-2027.

Poland also benefits from other EU programmes, notably the Connecting Europe Facility, which under CEF 2 (2021-2027) has so far allocated EU funding of EUR 1.36 billion to 15 specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated more than EUR 153 million to Polish R&I actors on top of the EUR 746 million earmarked under the previous programme (Horizon 2020). The Public Sector Loan Facility set up under the Just Transition Mechanism makes EUR 292 million of grant support from the Commission available for projects in Poland for 2021-2027, which will be combined with loans from the EIB to support investments by public sector entities in just transition regions.

Poland received support under the European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) to finance short-time work schemes, similar measures, and ancillary health-related measures, to mitigate the impact of COVID-19. The Council granted financial assistance to Poland of EUR 11.3 billion in loans, which supported around 20% of workers and 10% of firms in 2020.

The Technical Support Instrument (TSI) supports Poland in designing and implementing growth-enhancing reforms, including those set out in its recovery and resilience plan (RRP). Poland has received significant technical support since 2017, including⁽⁴⁶⁾ support to reform the budgetary process, develop digital competences, strengthen

⁽⁴⁶⁾ Country factsheets on reform support are available [here](#).

the competitiveness of the railway sector and enhance green mobility.



This Annex illustrates Poland’s relative resilience capacities and vulnerabilities using the Commission’s resilience dashboards (RDB) (47). Comprising a set of 124 quantitative indicators, the RDB provide broad indications of Member States’ ability to make progress across four interrelated dimensions: social and economic, green, digital, and geopolitical. The indicators show vulnerabilities (48) and capacities (49) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. To this end, the RDB help to identify areas that need further efforts to build stronger and more resilient economies and societies. They are summarised in Table A5.1 as synthetic resilience indices, which illustrate the overall relative situation for each of the four dimensions and their underlying areas for Poland and the EU-27 (50).

According to the set of resilience indicators under the RDB, Poland generally displays a similar level of vulnerabilities compared to the EU average. Poland shows medium-high vulnerabilities in the digital dimension of the RDB, medium vulnerabilities in the social and economic and the green dimensions, and medium-low vulnerabilities in the geopolitical dimension. It has higher vulnerabilities than the EU average in the areas ‘sustainable use of resources’ and ‘digitalisation for industry and public space’. Poland has relatively low vulnerabilities in relation to ‘raw material and energy supply’, ‘cybersecurity’, ‘inequalities and social impact of the transitions’, ‘security and demography’, and ‘economic and financial stability and sustainability’.

Compared to the EU average, Poland shows an overall lower level of capacities across all

RDB indicators. It has medium resilience capacities in all four dimensions of the RDB. Poland shows stronger capacities than the EU average in the areas ‘raw material and energy supply’ and ‘value chains and trade’. There is room for improving capacities compared to the EU with respect to ‘financial globalisation’, ‘climate change mitigation and adaptation’, digitalisation, ‘security and demography’ and ‘inequalities and social impact of the transitions’.

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

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

Vulnerabilities Index

- High
- Medium-high
- Medium
- Medium-low
- Low
- Not available

Capacities Index

- High
- Medium-high
- Medium
- Medium-low
- Low
- Not available

(1) Data are for 2021, and EU-27 refers to the value for the EU as a whole. Data underlying EU-27 vulnerabilities in the area ‘value chains and trade’ are not available as they comprise partner concentration measures that are not comparable with Member States’ level values.

Source: JRC Resilience Dashboards - European Commission

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

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

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

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

Poland's green transition requires continued action on several aspects including advancing the deployment of renewables, improving energy efficiency, and reducing emissions from road transport. Implementation of the European Green Deal is underway in Poland; this Annex provides offers a snapshot of the key areas involved ⁽⁵¹⁾.

Poland has not yet defined all the climate policy measures it needs to reach its 2030 climate target for the effort sharing sectors ⁽⁵²⁾. Data for 2021 on greenhouse gas emissions in these sectors are expected to show the country generated slightly less than its annual emission allocations ⁽⁵³⁾. Current policies in Poland are projected to keep the increase of these emissions contained at 6% relative to 2005 levels in 2030. This is too high to comply with the effort sharing target even before the target was made more ambitious to meet the EU's 55% objective. The additional measures tabled would reduce the greenhouse gas emissions of these sectors by 12%, meeting the present target but not reaching the new target to reduce by 17.7% ⁽⁵⁴⁾. In its recovery and resilience plan (RRP), Poland has

⁽⁵¹⁾ The overview in this Annex is complemented by the information in Annex 7 on energy security and affordability, Annex 8 on the fair transition to climate neutrality and environmental sustainability, Annex 9 on resource productivity, efficiency and circularity, Annex 11 on innovation, and Annex 19 on taxation.

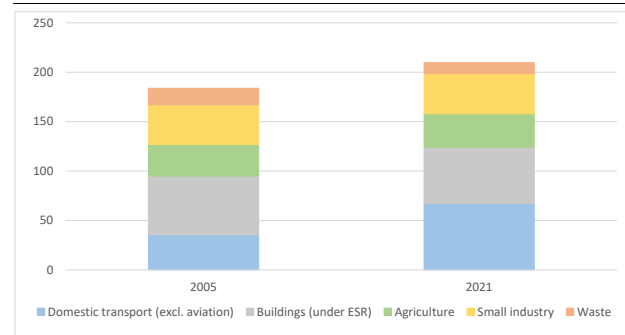
⁽⁵²⁾ Member States' greenhouse gas emission targets for 2030 ('effort sharing targets') were increased by Regulation (EU) 2023/857 (the Effort Sharing Regulation) amending Regulation (EU) 2018/842, aligning the action in the concerned sectors with the objective to reach EU-level, economy-wide greenhouse gas emission reductions of at least 55% relative to 1990 levels. The Regulation sets national targets for sectors outside the current EU Emissions Trading System, notably: buildings (heating and cooling), road transport, agriculture, waste, and small industry. Emissions covered by the EU ETS and the Effort Sharing Regulation are complemented by net removals in the land use sector, regulated by Regulation (EU) 2018/841 (the Land Use, Land Use Change and Forestry (LULUCF) Regulation) amended by Regulation (EU) 2023/839.

⁽⁵³⁾ Poland's annual emission allocations for 2021 were some 210.4 Mt CO₂eq, and its approximated 2021 emissions were at 209.7 Mt (see European Commission, *Accelerating the transition to climate neutrality for Europe's security and prosperity: EU Climate Action Progress Report 2022*, SWD(2022)343).

⁽⁵⁴⁾ See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as of 15 March 2021.

attributed 42.7 % of its Recovery and Resilience Facility allocation to key reforms and investments to attain climate objectives ⁽⁵⁵⁾. According to its national energy strategy, Poland aims to reduce economy-wide greenhouse gas emissions by 30 % by 2030 compared to 1990 ⁽⁵⁶⁾.

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



Source: European Environmental Agency.

Poland is not on track to meet its net carbon removals target for 2030 for its land use sector. Poland's net removals have been in decline mainly due to forest land management. For 2030, Poland's land use, land use change and forestry (LULUCF) target implies to remove 38 098 kt CO₂eq, significantly higher than the present level of net removals (see Table A6.1) ⁽⁵⁷⁾.

Poland's economy still heavily depends on fossil fuels, particularly coal. In 2021, fossil fuels provided for almost 90% of Poland's energy mix, with coal alone accounting for 42%. Despite positive progress on solar PV power generation, renewables provided only 13% of the energy mix in 2021. Poland's electricity mix also relies highly on coal, which in 2021 provided 72% of total

⁽⁵⁵⁾ For example, reforms and investments in renewables (onshore and offshore wind, photovoltaic energy, energy communities) and green hydrogen, decarbonisation of heating and thermal modernisation of buildings, greening of cities and public transport, and improving water management.

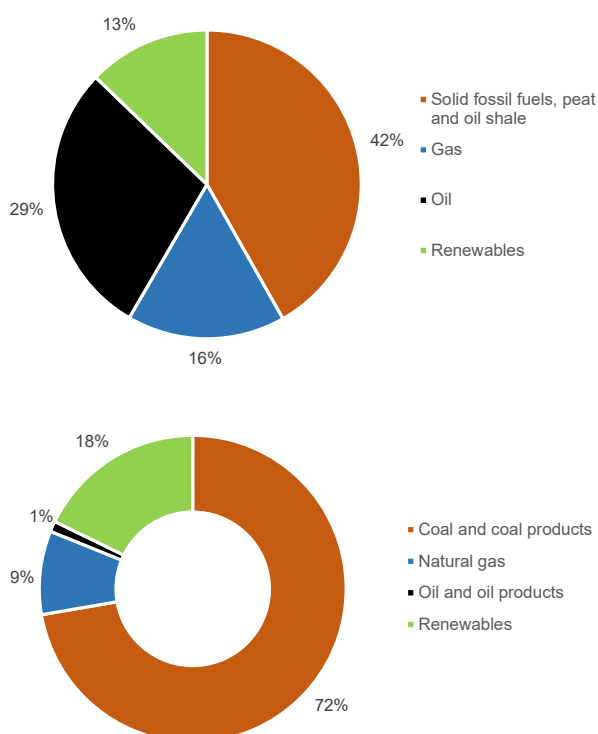
⁽⁵⁶⁾ Under [Poland's national energy strategy with an outlook for 2040](#). The target is not included in Poland's national energy and climate plan. An update of the plan, mandated by Regulation (EU) 2018/1999 (the Governance Regulation), is underway. The national energy strategy is expected to be updated together with the plan.

⁽⁵⁷⁾ This value is indicative and will be updated in 2025 (as mandated by Regulation (EU) 2023/839).



electricity, while 18% came from renewable sources. According to its national energy and climate Plan (NECP), in 2030, the share of renewable energy in Poland's energy mix should increase to between 21 and 23% of gross final energy consumption. This target was considered unambitious in the Commission 2020 assessment. Poland will need to substantially strengthen its renewable energy target in the updated NECP to reflect the more ambitious EU climate and energy targets in the Fit for 55 Package and in the REPowerEU Plan.

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



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

Source: Eurostat

Untapping the potential of renewable energy is crucial to decarbonising Poland's energy system. Against this backdrop, a successful implementation of Poland's RRP could have a transformative impact and shift the country's energy mix towards low and zero-carbon technologies. The plan includes funding for offshore wind energy plants and terminal infrastructure, as well as crucial changes to the regulatory environment aimed at speeding up the

construction of onshore wind energy plants. The plan also envisages support for the development of renewable and low-carbon hydrogen technologies, and local renewable energy sources by energy communities. It also envisages significant investments in the development of transmission and distribution networks and of smart electricity infrastructure, to further enable renewables to be integrated into the energy mix. Poland has also started studies and investments to achieve mid-term goals in the field of civilian nuclear power and as regards small modular reactors to decarbonise its energy consumption.

Reducing energy consumption by improving energy efficiency across Poland's economy is indispensable to decreasing the country's dependency on fossil fuels and carrying out the energy transition in a cost-effective manner. Poland's NECP targets for primary and final energy consumption (PEC and FEC) were considered of modest ambition in the Commission 2020 assessment. Final energy consumption in Poland was 75.2 Mtoe in 2021, mainly increasing throughout the last 10 years, except in 2020, due to the exceptional COVID-19 measures, which was followed by a rebound in 2021, equal to a 5.6% increase. Based on the energy consumption trajectory for 2018-2021, Poland is not expected to be on track to meet its 2030 target for PEC and FEC, as these were notified in its NECP ⁽⁵⁸⁾.

The energy component of Poland's RRP strongly focuses on energy efficiency. It includes measures to optimise i) support to energy efficiency investments in private and public buildings, ii) changes in the heating sources, iii) reforms to reduce the energy consumption of companies as well as iv) updates to the clean air priority programme, Poland's main vehicle for the reducing emissions in buildings, which encourages complementing the replacement of coal boilers with energy efficiency measures (thermo-modernisation). The plan also envisages investment to modernise district heating systems, which focuses on replacing heat sources. This investment is to be complemented by funding from the regional programmes that will focus on network refurbishment.

⁽⁵⁸⁾ After the conclusion of the negotiations for a recast EED, the ambition of both the EU and national targets as well as of the national measures for energy efficiency to meet these targets is expected to increase

In Poland, a shift to sustainable mobility still lies ahead, especially in road passenger transport.

The market development for zero-emission passenger cars is lagging behind the overall trend in the EU. The electrification of the railway network, however, is more advanced than in the EU on average. At the same time, individual transport exacerbates problems with air pollution and traffic congestion, with significant health and economic costs in Poland's cities. Poland has the potential to rely more on environmental taxes to further internalise the cost of air pollution, in line with the polluter pays principle⁽⁵⁹⁾. As transport taxes represented only 0.18% of GDP (EU average of 0.42%) in 2020, Poland would have scope to introduce a circulation tax, with a tax base related to emissions, on passenger car taxes (see Annex 19).

Poland would benefit from investing more in environmental protection and in measures protecting biodiversity and ecosystems⁽⁶⁰⁾.

Between 2014 and 2020, environmental investment needs were estimated to be at least EUR 15.7 billion while yearly investment was at just under EUR 7 billion, with a gap of at least EUR 8.7 billion, per year (see Graph A6.3)⁽⁶¹⁾. Poland still needs to allocate sufficient resources to protecting and managing the Natura 2000 network⁽⁶²⁾. Investment is also urgently needed for preventing and controlling pollution, where the gap has been estimated at more than EUR 4.1 billion per year between 2014 and 2020 (1.3% of GDP). These investments would help diminish the health costs of air pollution (1 095 years of life lost for 100 000 inhabitants due to PM2.5 in 2020, the third highest number in the EU) and support the country's resilience.

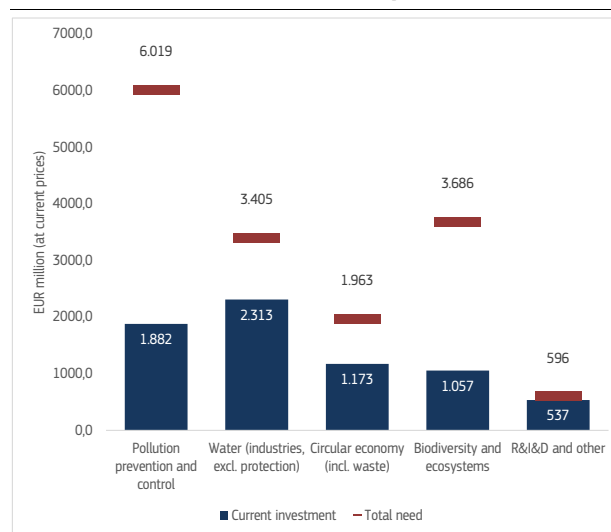
⁽⁵⁹⁾ European Commission, 2021, Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay, [Ensuring that polluters pay \(europa.eu\)](https://ec.europa.eu/eip/eip_environmental_instruments_en).

⁽⁶⁰⁾ Environmental objectives include pollution prevention and control, water management and industries, circular economy and waste, biodiversity and ecosystems (European Commission, 2022, Environmental Implementation Review, [country report Poland](https://ec.europa.eu/eip/eip_environmental_instruments_en)).

⁽⁶¹⁾ When also accounting for needs estimated at EU level only (e.g. water protection, higher circularity, biodiversity strategy).

⁽⁶²⁾ In 2021, Poland had 39.6% terrestrial protected areas (Natura 2000 and nationally designated areas), against the EU average of 26.4% (European Environment Agency, 2023, [Natura 2000 Barometer](https://www.eea.europa.eu/en/press/2023/04/04)).

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



Source: European Commission.

Climate change is affecting many key sectors in Poland⁽⁶³⁾.

Agriculture and forestry, energy, the built environment, transport, health, and tourism are all under pressure, as the frequencies and intensities of extreme weather events (droughts, storms, floods, and heatwaves) are rising⁽⁶⁴⁾. Longer droughts and heavy rainfall disturb the growing season and depress agricultural yields. Heat-related mortality and morbidity linked to pollution and allergens are rising. In both urban and rural areas, spatial planning needs to anticipate the impacts of climate change. Further action also requires boosting the penetration and coverage of insurance against environmental perils. Poland's RRP includes measures on sustainable water management and pollution management in the Baltic Sea as well as others on greening the built environment in cities. A revision of the plan offers an opportunity to scale up action in climate adaptation. This entails factoring climate adaptation considerations into sectoral policies, e.g. concerning increasingly scarce water supplies for the cooling of conventional energy plants, agricultural production, and drinking water. Poland needs to prioritise sustainable water management by restoring terrestrial, marine, and freshwater ecosystems.

⁽⁶³⁾ European Environmental Agency, Advancing towards climate resilience in Europe, forthcoming.

⁽⁶⁴⁾ According to the [6th IPCC climate adaptation report](https://www.ipcc.ch/report/ar6/wg2/), in southern Europe, more than a third of the population will be exposed to water scarcity at 2°C.

Poland provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring food and energy security and mitigating social effects. Poland's fossil fuel subsidies have been on the rise, especially for coal (0.20% of GDP in 2020) and petroleum products (0.08% of GDP). Poland allocates more to fossil fuel subsidies than to renewable energy subsidies. This puts low carbon alternatives at a disadvantage. Environmentally harmful subsidies have been identified, via an initial assessment, in the agriculture, forestry and fishing, electricity, gas, steam and air conditioning, transportation and storage, mining and quarrying and services sectors. Examples of such subsidies include the flat rate taxation of privately used company cars, the reduced VAT rate for fertilisers and pesticides, the excise tax refund for diesel fuel used in agriculture, the excise tax exemption on the use of natural gas or the reduced CO₂ tax rate on diesel used in agriculture⁽⁶⁵⁾. A mapping of all environmentally harmful subsidies by Poland would help prioritise candidates for reform.

By earmarking a higher share of the EU Emissions Trading System (ETS) revenue for climate action, Poland could reduce its exposure to the cost of carbon. Poland collects some of the highest revenues from the EU ETS both overall and per capita⁽⁶⁶⁾. However, on average it allocated just 50% to climate and energy-related purposes, the minimum as set out in the ETS Directive.

⁽⁶⁵⁾ Fossil fuel figures in EUR of 2021 from the 2022 State of the Energy Union report. Initial assessment of environmentally harmful subsidies done by the Commission in [the 2022 toolbox for reforming environmentally harmful subsidies in Europe](#), using OECD definitions, and based on the following datasets: OECD Agriculture Policy Monitoring and Evaluations; OECD Policy Instruments for the Environment (PINE) Database; OECD Statistical Database for Fossil Fuels Support; IMF country-level energy subsidy estimates. [Annex 4](#) of the toolbox contains detailed examples of subsidies on the candidates for reform.

⁽⁶⁶⁾ With ETS revenue increasing due to higher carbon prices, in 2021, Poland's revenue from the EU ETS amounted to some EUR 5.6 billion.

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

								'Fit for 55'			
		2005	2017	2018	2019	2020	2021	2030 target/value	Distance		
								WEM	WAM		
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors ⁽¹⁾	Mt CO ₂ eq; %; pp	180,0	18%	18%	16%	14%	-	-17,7%	-23,7	-5,7
	Net carbon removals from LULUCF ⁽²⁾	kt CO ₂ eq	-48.019	-37.389	-36.748	-18.295	-18.958	-20.095	-38098	n/a	n/a
								National contribution to 2030 EU target			
	Share of energy from renewable sources in gross final consumption of energy ⁽³⁾	%	7%	11%	15%	15%	16%	16%	21-23%		
Energy efficiency: primary energy consumption ⁽³⁾	Mtoe	88,0	99,1	104,1	100,2	96,8	103,9	91,3			
Energy efficiency: final energy consumption ⁽³⁾	Mtoe	58,5	70,9	74,9	73,7	71,1	75,2	67,1			
		Poland						EU			
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	2,7	2,7	2,7	2,5	2,5	2,9	2,4	2,2	2,2
	Environmental taxes (% of total taxation) ⁽⁴⁾	% of taxation	8,1	7,9	7,7	7,2	7,1	7,8	5,9	5,6	5,5
	Government expenditure on environmental protection	% of total exp.	1,0	0,9	1,2	1,3	1,2	1,3	1,7	1,6	1,6
	Investment in environmental protection ⁽⁵⁾	% of GDP	0,3	0,3	0,5	0,5	-	-	0,4	0,4	0,4
	Fossil fuel subsidies ⁽⁶⁾	EUR2021bn	2,1	2,7	2,1	1,4	1,9	-	53,0	50,0	-
Climate protection gap ⁽⁷⁾	score 1-4					1,6	1,5			1,5	
Climate	Net greenhouse gas emissions	1990 = 100	84,0	88,0	87,0	83,0	84,0	84,0	76,0	69,0	72,0
	Greenhouse gas emission intensity of the economy	kg/EUR10	0,96	0,95	0,90	0,82	0,80	-	0,31	0,30	0,26
	Energy intensity of the economy	kgoe/EUR10	0,23	0,23	0,23	0,21	0,21	-	0,11	0,11	-
Energy	Final energy consumption (FEC)	2015=100	106,9	113,8	120,2	118,4	114,2	120,6	102,9	94,6	-
	FEC in residential building sector	2015=100	104,5	105,4	118,5	110,3	110,9	116,3	101,3	101,3	106,8
	FEC in services building sector	2015=100	108,4	102,6	101,1	99,6	96,7	108,3	100,1	94,4	100,7
Pollution	Smog-precursor emission intensity (to GDP) ⁽⁸⁾	tonne/EUR10	2,7	2,7	2,4	2,4	2,1	-	0,9	0,9	-
	Years of life lost due to air pollution by PM _{2.5}	per 100.000 inh.	1440,9	1494,8	1536,6	1191,5	1095,4	-	581,6	544,5	-
	Years of life lost due to air pollution by NO ₂	per 100.000 inh.	139,4	135,0	151,1	120,8	101,5	-	309,6	218,8	-
Biodiversity	Nitrates in ground water	mg NO ₃ /litre	-	-	-	-	-	-	21,0	20,8	-
	Land protected areas	% of total	38,3	39,8	-	39,6	39,6	39,6	26,2	26,4	26,4
	Marine protected areas	% of total	21,8	-	-	21,8	-	21,9	10,7	-	12,1
Organic farming	% of total utilised agricultural area	3,7	3,4	3,3	3,5	3,5	-	8,5	9,1	-	
Mobility	Share of zero-emission vehicles ⁽⁹⁾	% in new registrations	0,1	0,1	0,3	0,8	1,6	2,6	5,4	8,9	10,7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	1759	2767	3295	188626	330028	432518
	Share of electrified railways	%	63,6	63,7	64,2	64,2	64,2	64,2	56,6	n/a	56,6
	Hours of congestion per commuting driver per year		25,0	24,4	25,2	25,2	n/a	n/a	28,7	n/a	n/a

Sources: (1) Historical and projected emissions, as well as Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Decision (for 2020) are measured in global warming potential (GWP) values from the 4th Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Member States' climate policy targets and 2005 base year emissions under the Effort Sharing Regulation (for 2030) are in GWP values from the 5th Assessment Report (AR5). The table above shows the base year emissions 2005 under the Effort Sharing Decision, using AR4 GWP values. Emissions for 2017-2021 are expressed in percentage change from 2005 base year emissions, with AR4 GWP values. 2021 data are preliminary. The table shows the 2030 target under Regulation (EU) 2023/857 that aligns it with the EU's 55% objective, in percentage change from 2005 base year emissions (AR5 GWP). Distance to target is the gap between Member States' 2030 target (with AR5 GWP values) and projected emissions with existing measures (WEM) and with additional measures (WAM) (with AR4 GWP values), in percentage change from the 2005 base year emissions. Due to the difference in global warming potential values, the distance to target is only illustrative. The measures included reflect the state of play as of 15 March 2021.

(2) Net removals are expressed in negative figures, net emissions in positive figures. Reported data are from the 2023 greenhouse gas inventory submission. 2030 value of net greenhouse gas removals as in Regulation (EU) 2023/839 amending Regulation (EU) 2018/841 (LULUCF Regulation) – Annex IIa, kilotons of CO₂ equivalent, based on 2020 submissions.

(3) Renewable energy and energy efficiency targets and national contributions are in line with the methodology established under Regulation (EU) 2018/1999 (Governance Regulation).

(4) Percentage of total revenue from taxes and social contributions (excluding imputed social contributions). Revenue from the EU Emissions Trading System is included in environmental tax revenue.

(5) Expenditure on gross fixed capital formation for the production of environmental protection services (abatement and prevention of pollution) covering government, industry, and specialised providers.

(6) European Commission, Study on energy subsidies and other government interventions in the European Union, 2022 edition.

(7) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters. This indicator is based on modelling of the current risk from floods, wildfires and windstorms as well as earthquakes, and an estimation of the current insurance penetration rate. The indicator does not provide information on the split between the private/public costs of climate-related disasters. A score of 0 means no protection gap, while a score of 4 corresponds to a very high gap (EIOPA, 2022).

(8) Sulphur oxides (SO₂ equivalent), ammonia, particulates < 10 µm, nitrogen oxides in total economy (divided by GDP).

(9) Battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV).

Poland's supply diversification efforts in recent years have helped mitigate the impact of the halt in Russian supplies and avoid major disruptions. Gazprom no longer supplies it with natural gas as of 28 April 2022, by unilateral decision, following Poland's refusal to pay for gas supplies in roubles. This Annex ⁽⁶⁷⁾ sets out actions carried out by Poland to achieve the REPowerEU objectives, including through the implementation of its recovery and resilience plan (RRP), in order to improve energy security and affordability while accelerating the clean energy transition, and contributing to enhancing the EU's competitiveness in the clean energy sector ⁽⁶⁸⁾.

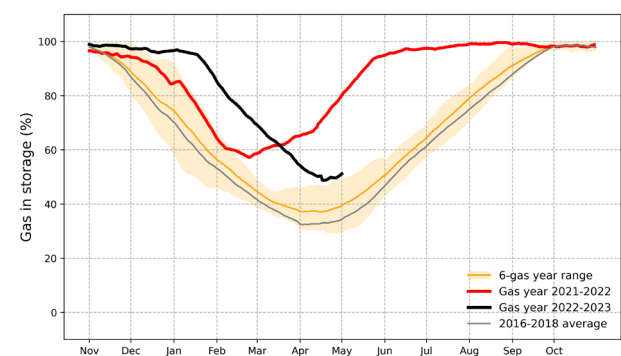
Since 2014, Poland had already significantly reduced its exposure to Russian gas through strategic investments aimed at diversifying gas supply routes. Its dependency on Russian gas has been decreasing in the last decade, from around 76% in 2014 to 55% in 2021. Before Russia invaded Ukraine, it received the equivalent of 10 billion cubic metres (bcm)/year of natural gas from Gazprom, around 45% of its domestic demand. The liquefied natural gas (LNG) terminal in Świnoujście, opened in 2016, with a maximum regasification capacity of 5 bcm (54.4 TWh) per year. Poland plans to expand this LNG terminal, already expanded to 6.2 bcm/year in 2022, to 8.3 bcm/year in 2023. Key infrastructure projects have been completed and became operational in 2022, including the interconnector with Lithuania, the Baltic Pipe, and the interconnector with Slovakia. These projects became operational in November 2022 and their completion gave Poland enough import capacity to entirely replace lost imports from Russia. In particular, the Baltic Pipe allows transporting up to 10 bcm/year of gas from the Norwegian shelf through Denmark and the Baltic Sea to Poland. The interconnector with Lithuania gives Poland access to the Klaipėda LNG terminal in Lithuania and – thanks to bilateral flows – makes it possible to adjust gas flows to the shifting regional demand-supply dynamics, while the interconnector with Slovakia enables the

transmission of 5.7 bcm to Poland. Additionally, Poland plans to open a Floating Storage and Regasification Unit on the Baltic Sea near Gdansk in 2026, with an expected capacity of 6bcm of gas per year.

Since 25 February 2023, Russia has stopped oil supplies via the Druzhba pipeline, however Russia accounted only for about 10% of overall oil supplies and Poland is well positioned to swiftly replace RU oil with alternative sources.

Poland is on track to fulfil its gas storage obligations. It fulfilled its gas storage obligations last winter, reaching 98.91% by 1 November, and ended the heating season with its gas storage filled at 50.15% on April 15th 2023 ⁽⁶⁹⁾. Its total storage capacity (3.73 bcm) is, however, relatively small compared to its annual consumption of around 20 bcm/year. GSP, the owner and operator of Poland's seven gas storage facilities ⁽⁷⁰⁾, is considering further expanding the total capacity.

Graph A7.1: **Underground gas storage levels in Poland**



Source: JRC calculation based on AGSI+ Transparency Platform, 2022 (Last update 1 May 2023)

Poland has taken several measures to decrease energy consumption and promote energy efficiency. On 15 July, the clean air plus programme was launched, giving up to a 90% subsidy to households for thermal modernisation; replacing outdated heating boilers, including

⁽⁶⁷⁾ It is complemented by Annex 6 as the European Green Deal focuses on the clean energy transition, by Annex 8 on the actions taken to mitigate energy poverty and protect the most vulnerable ones, and by Annex 9 as the transition to a circular economy will unlock significant energy and resource savings, further strengthening energy security and affordability.

⁽⁶⁸⁾ In line with the Green Deal Industrial Plan COM(2023) 62 final, and the proposed Net-Zero Industry Act COM(2023) 161 final.

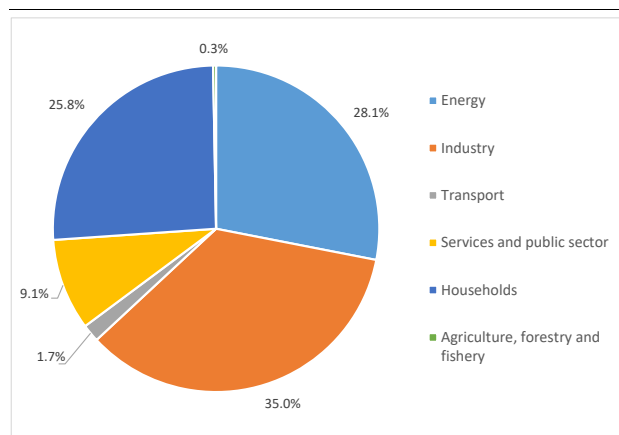
⁽⁶⁹⁾ Regulation of the European Parliament and of the Council amending Regulations (EU) 2017/1938 and (EC) No 715/2009 with regard to gas storage and Implementing Regulation (EU) 2022/2301 of 23 November 2022 setting the filling trajectory with intermediary targets for 2023 for each Member State with underground gas storage facilities on its territory and directly interconnected to its market area.

⁽⁷⁰⁾ UGS Wierzchowice, VGS GIM Kawerna (Kosakowo, Mogilno) and VGS GIM Sanok (Brzeznicza, Husow, Strachocina, Swarzew).

district heating connections. Moreover, as of January 3, the government has increased the funding for thermal modernisation of houses and heat sources replacement. Other measures to promote energy savings include extending the white certificate scheme to the transport sector; a programme supporting energy efficiency in businesses using energy performance contracts; and developing an energy savings registry. Recent measures and high prices led to a gas demand reduction of about 13% over the period August 2022 – March 2023, narrowly missing the 15% target. The government has also imposed a mandatory 10% electricity consumption cut on national and local government administrations.

Natural gas plays a relatively small role in Poland’s energy mix, with a share of 17%. Most of the gas is consumed by industry (35%), followed by the energy sector (25.8%) and households (25.8%).

Graph A7.2: **Share of gas consumption per sector, 2021**



Source: Eurostat

Poland still has few electricity interconnections with neighbouring countries.

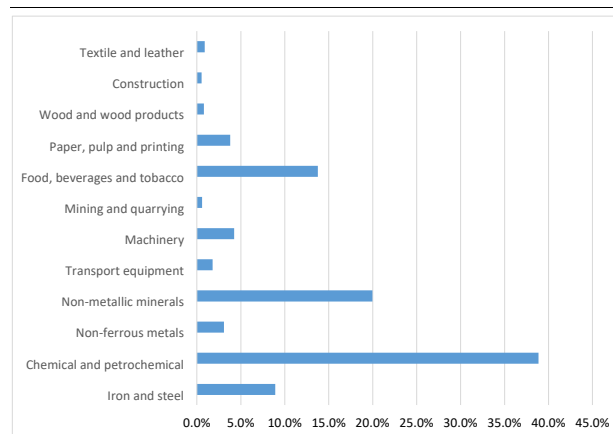
The Polish allocation constraint also regularly limits cross-border capacity, which is often down to zero, negatively affecting Poland’s price signal. Poland is participating as a constructing country in the project for synchronising the three Baltic countries with the European continental grid. To this end, it is constructing three new electricity lines and modernising another three in the northeast of the country. These will enable the full functionality of the Harmony Link, the undersea high-voltage cable planned to be constructed with Lithuania. With its development delayed due to the current geopolitical context, it is now estimated to be completed in 2028. These investments will also

significantly improve the ability of Poland to integrate offshore energy into its grid. Under the RRP, Poland has also committed itself to investing in transmission networks, including extensions to link northern with southern parts of the country. It plans to develop 400 kV transmission lines with relevant stations, to develop a data hub and to do a power quality analysis of the electricity market.

Further reinforcements of its internal transmission and distribution grids are needed to sustain the growth of renewable capacity.

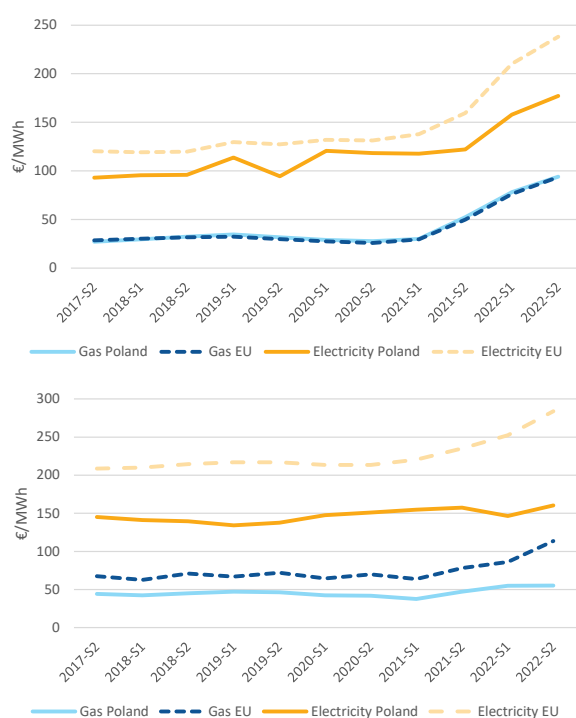
Increased variable, renewable-based generation, coupled with the expected growth in electricity demand cause by the electrification of the economy, will have an impact on both distribution and transmission grid infrastructure. Change in the electricity generation portfolio will need to be accompanied by more efficient use, smartening of and additional investments in the electricity network. The energy regulator (URE) estimates that until 2030 some 100 billion PLN should be invested to adapt the distribution grid to variable renewable and distributed energy sources. In addition, up to 2032 over 32 billion PLN are planned to be invested in modernising the transmission network and enabling the transmission of offshore wind electricity to southern Poland, where industry is located.

Graph A7.3: **Share of gas consumption per industrial sector, 2021 (% of industry total gas consumption)**



Source: Eurostat

Graph A7.4: Poland's retail energy prices for industry (top) and households (bottom)



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

Source: Eurostat

Recent price schemes for electricity provide some incentives to save energy, but the newly established gas price cap does not encourage consumption reductions.

Poland has been among the EU countries less affected by the rise in energy prices. For electricity, this is also due to the relatively small role of gas in Poland's power mix. In December 2022, retail electricity prices were EUR 188/MWh, vs the EU average of EUR 318/MWh. Similarly, retail gas prices of EUR 55/MWh were around one third of the EU average. Poland has introduced a cap on electricity prices for households, public interest organisations, small and medium-sized enterprises, and local authorities. Electricity prices, expected to increase significantly due to the tripling of coal prices and the coal intensity of Poland's power mix, are frozen at their 2022 level. Individuals will pay approximately PLN 420/MWh + VAT (approx. 90€) for their electricity consumption up to 2 000 kWh. Households who consume above this threshold will pay PLN 693/MWh (around 150€). The cap is PLN 785/MWh (170€) for the other entities/companies the measures cover. Households and SMEs that reduce their electricity use in 2023 by 10% compared to 2022 will also be rewarded with a

10% discount on their electricity bills. National and local authorities were obliged to reduce their electricity consumption by 10% starting on 1 October 2022. Gas prices for Polish consumers – except businesses – are capped at EUR 43/MWh following a bill passed in December, with an additional VAT refund for the most vulnerable people who use gas for heating purposes.

Renewables still play a minor role in Poland's energy mix, but recent years have seen several positive developments, especially in solar energy. The renewable energy in the final energy consumption amounts at 15.62% (2021).

Between 2020 and 2022, installed solar PV capacity in the country almost quadrupled, from 3.9 GW to 11 GW⁽⁷¹⁾, also thanks to a very popular subsidy scheme for rooftop solar panels. Prosumers account for more than 70% of total installed solar capacity. There are several incentive schemes to install and generate solar power for systems of all capacity ranges. On offshore wind, projects with a total capacity of approximately 8.4 GW are currently in the pipeline (5.9 GW under Phase I and 2.5 GW under Phase II), and electricity from the first Polish offshore wind farm is scheduled to be fed into the grid in 2026. By contrast, onshore wind capacity has been growing slowly. The development of wind power capacity, in 2022 equal to around 8 GW⁽⁷²⁾, has been constrained by the distance law (10 H), which has the effect of limiting maximum installed capacity to around 10GW. Poland has committed itself to reforming the distance rule in its RRP. The amendment of the distance law ("10H") has been adopted in March 2023, lowering the minimum distance between turbines and housing to 700m. While this will have a positive impact on onshore wind development, it will leave significant part of onshore wind potential untapped. Compared to the original government proposal to set the minimum distance at 500m, the approved bill not only reduces the surface area available for onshore wind substantially but in many cases will also require new planning procedures which would cause additional delays. The Polish Wind energy association estimates that 10 GW new onshore wind capacity could be installed by 2030 with a 500m distance rule, while a rule of 700m would reduce this to 4 GW.

⁽⁷¹⁾ IRENA Renewable Energy Capacity Statistics

⁽⁷²⁾ IRENA Renewable Energy Capacity Statisticsprosu

Renewable hydrogen could play a significant role in decarbonising the energy system, particularly for parts of the industry and transport sectors that are hard to decarbonise. Poland is the third biggest hydrogen producer in the EU, mostly grey hydrogen produced by refineries and chemical plants. The government adopted a national hydrogen strategy in November 2021. The strategy sets a target of 2 GW of installation capacity by 2030 and is mostly focused on low-carbon hydrogen, but does not clarify the sources of the additional electricity necessary for hydrogen production. The strategy foresees end-use applications of hydrogen in the transport, industry and energy sectors. Poland has the potential to produce and use biomethane from organic waste, sludge and farming. It has no strategy or pilot plants to support the use of biogases and has not done any studies on appropriate locations for such plants.

Structural renovation measures could help improve the energy performance of Poland's building stock and alleviate energy poverty by helping households and business cope with high energy prices. In the last decade, energy demand in the building sector has decreased considerably, thanks both to energy efficiency improvements and the decline in the energy intensity of space heating systems. However, the sector still has a high saving potential. The building stock is old, with 65% of buildings over 30 years old. Around a fifth of households in Poland suffer from energy poverty and two-thirds of the building stock still lack proper insulation⁽⁷³⁾. Coal covers around half of residential buildings' heating demand. Major renovations, together with thermal renovations to move away from fossil fuel-based energy sources, will be crucial for Poland to attain the long-term renovation strategy's 2030 goals. The energy services market is not well developed, despite some supportive elements and framework conditions (e.g. the white certificate scheme).

The transition of the district heating sector is yet another major challenge for the energy transition. Only about 20% of Polish district heating systems qualified as energy-efficient in 2018, in line with the definition of efficient district heating and cooling in the Energy Efficiency Directive, while 76% of district heating supply was

based on coal. The rise in coal prices gave a significant boost to heat pump deployments. Since 2017, annual installations have quadrupled. Poland is one of Europe's fastest growing markets for heat pumps. In 2021 heat pumps sales have increase by around 67% compared to 2020, with more than 93 000 units sold. This positive trend continued in 2022, with a greater than 100% year-on-year increase. This growth needs to become structural to decarbonise the still coal-dependent heating sector.

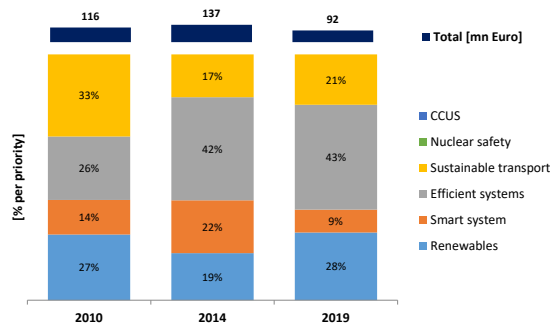
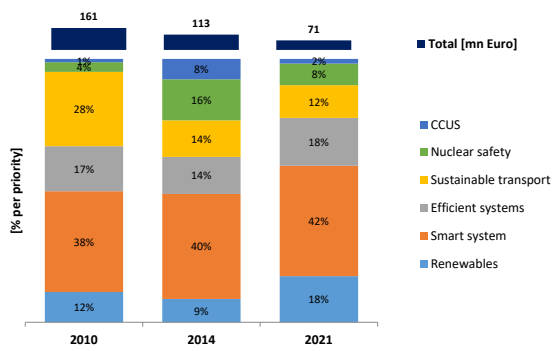
Industrial energy efficiency has improved over the years, following the overall trend of decreasing energy intensity of the Polish economy. The mandatory implementation of the energy audits recommendation, with a short payback period (e.g. less than 5 years), could galvanise investments in energy efficiency in industry, further contributing to the development of energy supply companies and/or the white certificate market and significantly improving the energy efficiency of the industrial sector. Regarding market surveillance activities, Poland is carrying out a relatively low number of checks on products covered by ecodesign and energy labelling. This may imply some concerns as to the compliance levels of the concerned products, and therefore missed energy and CO₂ savings⁽⁷⁴⁾.

In key transition technologies, there has been a dramatic increase in photovoltaic capacity and heat pumps. With the LG Chem batteries gigafactory and Northvolt subsidiaries located in Poland, the country is well placed to further develop the batteries market for the electric vehicles segment, but also for stationary applications, (batteries for the industrial storage, or for homes to be able to store the energy they produce). Despite these positive developments, Poland's public research & development (R&D) spending on Energy Union priorities has been declining in recent years, going from 0.03% of GDP in 2014 to 0.013% in 2020.

⁽⁷³⁾ Polish edition of the Velux Healthy Homes Barometer.

⁽⁷⁴⁾ The internet-supported information and communication system for the pan-European market surveillance.

Graph A7.5: **Public (top) and Private (bottom) R&I investment in Energy Union R&I priorities**



Source: JRC SETIS (2022)

Table A7.1: Key energy indicators

		POLAND				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	Import Dependency [%]	44%	45%	43%	40%	58%	61%	57%	56%
	of Solid fossil fuels	8%	6%	0%	-4%	44%	44%	36%	37%
	of Oil and petroleum products	99%	97%	97%	96%	95%	97%	97%	92%
	of Natural Gas	78%	82%	78%	84%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	68%	65%	74%	66%	40%	44%	49%	47%
	of Crude Oil	77%	68%	72%	63%	30%	27%	26%	25%
of Natural Gas	62%	55%	55%	57%	40%	40%	38%	41%	
		2015	2016	2017	2018	2019	2020	2021	2022
ELECTRICITY	Gross Electricity Production (GWh)	164,944	166,635	170,465	170,039	163,989	158,043	179,631	-
	Combustible Fuels	151,478	151,234	152,295	154,428	145,269	137,254	156,279	-
	Nuclear	0	0	0	0	0	0	0	-
	Hydro	2,435	2,622	3,034	2,387	2,665	2,937	3,101	-
	Wind	10,858	12,588	14,909	12,799	15,107	15,800	16,234	-
	Solar	57	124	165	300	711	1,958	3,934	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	116	67	62	125	237	94	84	-
	Net Imports of Electricity (GWh)	-334	1,999	2,287	5,695	10,623	13,267	888	-
	As a % of electricity available for final consumption	0%	1%	2%	4%	7%	9%	1%	-
Electricity Interconnection (%)	-	-	4.00%	3.97%	4.0%	3.9%	7.0%	6.8%	
		2015	2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	Gas Consumption (in bcm)	18.2	19.1	20.4	20.8	21.3	22.0	23.4	19.5
	Gas Imports - by type (in bcm)	12.3	15.8	17.5	18.5	20.9	21.2	22.6	-
	Gas imports - pipeline	12.1	14.7	15.7	15.8	17.5	17.4	18.5	-
	Gas imports - LNG	0.2	1.1	1.8	2.7	3.5	3.8	4.1	-
	Gas Imports - by main source supplier (in bcm)* (1)								
	Russia	8.8	10.9	10.3	9.7	9.6	9.6	10.5	-
	Qatar	0.3	2.0	3.1	4.6	4.6	4.6	4.7	-
	Germany	3.2	2.7	3.6	3.0	3.9	3.7	3.3	-
	United States	0.0	0.0	0.2	0.2	1.9	2.0	3.2	-
	Others	0.0	0.2	0.3	1.0	0.9	1.4	0.8	-
		2019	2020	2021	2022				
DIVERSIFICATION OF GAS SUPPLIES	LNG Terminals								
	Number of LNG Terminals (2)	1	1	1	1				
	LNG Storage capacity (m3 LNG)	320,000	320,000	320,000	320,000				
	Underground Storage								
Number of storage facilities	10	10	10	10					
Operational Storage Capacity (bcm)	3.5	3.7	3.7	3.7					
		2019	2020	2021	2022				
CLEAN ENERGY	VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)	0.0	10.3	0.9	n.a.				
	as a % of total VC investments in Poland	0.0%	3.9%	0.2%	n.a.				
	Research & Innovation spending in Energy Union R&I priorities (2)								
	Public R&I (EUR mln)	59.7	76.9	70.5	n.a.				
	Public R&I (% GDP)	0.011%	0.015%	0.012%	n.a.				
	Private R&I (EUR mln)	92.2	n.a.	n.a.	n.a.				
Private R&I (% GDP)	0.02%	n.a.	n.a.	n.a.					

(1) The ranking of the main suppliers is based on the latest available figures (for 2021)

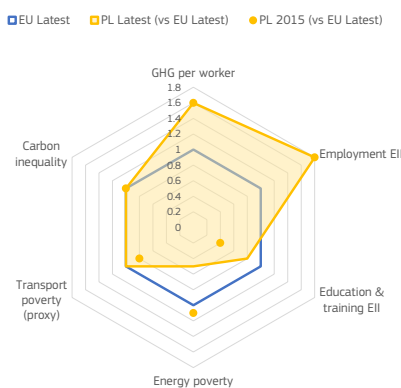
(2) FSRU included

(3) Venture Capital investments include Venture Capital deals (all stages) and Private Equity Growth/Expansion deals (for companies that have previously been part of the portfolio of a VC investment firm).

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

This Annex monitors Poland's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. To ensure a fair green transition in line with the Council Recommendation ⁽⁷⁵⁾, upskilling and reskilling measures will promote smooth labour market transitions and the implementation of REPowerEU. Under the recovery and resilience plan (RRP), crucial reforms and investments for companies in products, services and in the competences of employees and staff support the green transition, complementing the territorial just transition plans and actions financed by the European Social Fund Plus (ESF+). Poland is also the largest recipient of the Just Transition Fund, which will strengthen the transformation in five Polish regions.

Graph A8.1: Fair transition challenges in Poland



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

Employment in Poland's sectors most affected by the green transition remains stable, while the green economy is expanding and workers in declining activities need active support. The greenhouse gas (GHG) emissions intensity of Poland's workforce fell from 21.6 to 21.4 tonnes per worker between 2015 and 2021, well above the EU average of 13.7 in 2021 (see Graph A8.1 and Table A8.1). Employment in Poland's energy-intensive industries (EII) represented 5.4% of total employment in 2020 (EU average: 3.0%). Employment in mining and quarrying has decreased by 17.7% since 2015 (to around 189 000 workers) due to the decline of

coal and lignite mining in Poland. Total jobs in the environmental goods and services sector grew by 40.1% (to 272 537) in 2015-2019 (EU: 8.3%), reaching 1.7% of total employment (EU: 2.2%) (see Annex 9 for circular jobs specifically). The job vacancy rate in construction, which is key for the green transition, is 2.1% (2022) vs 4% (2022) in the EU ⁽⁷⁶⁾. Since Poland had 135 900 mining workers out of 208 100 in the EU as a whole in 2021, it accounts for more than 65% of mining employment in the EU. The increased demand for fossil fuels caused by reduced imports from Russia is expected to temporarily slow the mining industry's previously steady decline in employment.

Upskilling and reskilling in declining and transforming sectors increased slightly and labour shortages are relatively limited. Skills are key for smooth labour market transitions and preserving jobs in transforming sectors. In energy-intensive industries, workers' participation in education and training increased from 4.3% in 2015 to 8.1% in 2022 but remains below the EU average (10.4% in 2022). In Poland, 41% of citizens believe they do not have the necessary skills to contribute to the green transition (EU: 38%) ⁽⁷⁷⁾ (see Annex 15). To address this challenge, specific investments under the RRP and the Just Transition Mechanism provide training to reskill workers in regions affected by the transition, together with a broader training offer at regional level and flexibility mechanisms to encourage in-company training. The ESF+ reinforces the green transition in all 16 regional programmes and in the national ESF+ programme through various interventions that promote and support the deployment of green skills, e.g. by offering new curricula in schools or adapting training for workers. As part of the Just Transition Fund, Silesia, which is Poland's and the EU's main mining region employing the major part of Polish mining sector workers, will receive nearly EUR 200 million for green skills for adults and workers put at risk by the transition.

While people's ability to keep their homes adequately warm has improved significantly in recent years until 2021, the spike in energy prices can be expected to aggravate

⁽⁷⁵⁾ Council Recommendation of 16 June 2022 on ensuring a fair transition towards climate neutrality (2022/C 243/04) covers employment, skills, tax-benefit and social protection systems, essential services and housing.

⁽⁷⁶⁾ Eurostat (JVS_A_RATE_R2)

⁽⁷⁷⁾ Special Eurobarometer 527. Fairness perceptions of the green transition (May – June 2022).



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

Indicator	Description	PL 2015	PL Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	21.6	21.4 (2021)	13.7 (2021)
Employment EI1	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29) - %	5.3	5.4 (2020)	3 (2020)
Education & training EI1	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %	4.3	8.1 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	7.5	3.2 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	28.9	36 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	5	5 (2020)	5 (2020)

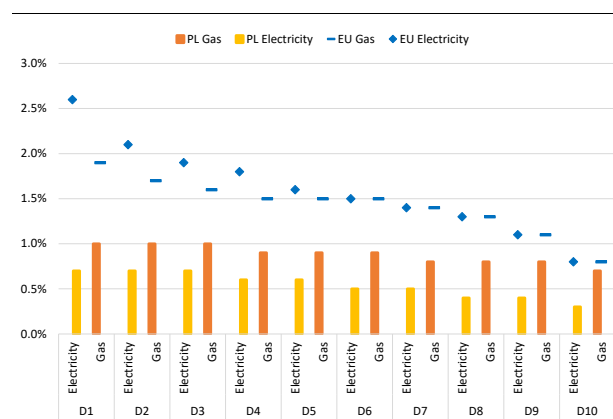
Source: Eurostat (env_ac_ainah_r2, nama_10_a64_e, ilc_mdcs01), EU Labour Force Survey (break in time series in 2021), EMPL-JRC GD-AMEDI/AMEDI+ projects and World Inequality Database (WID).

the situation again. The share of the population unable to keep their homes adequately warm fell from 7.5% in 2015 to 3.2% in 2021⁽⁷⁸⁾. In particular, 8.2% of the population at risk of poverty were affected in 2021 (EU: 16.4% in 2021), as were 2.3% of lower middle-income households (in deciles 4-5) in 2020 (EU: 8.2% in 2021). Before the energy price hikes, an estimated 49.1% of the total population and 56.2% of the (expenditure-based) at-risk-of-poverty (AROP) population had residential expenditure budget shares on electricity, gas, and other fuels⁽⁷⁹⁾ above 10% of their household budget (above the estimated EU average of 26.9% and 48.2%, respectively).

The increased energy prices in 2021-2023 negatively affected households' budgets. As a result of energy price changes during the August 2021 to January 2023 period relative to the 18 months prior (cf. Annex 7), in the absence of policy support and behavioural responses (but accounting for price interventions), the share of individuals living in households which spend more than 10% of their budget on energy would have increased by 8.7 percentage points (pps) for the whole population and by 7.1 pps among the (expenditure-based) AROP population, less than the EU-level increases (16.4 pps and 19.1 pps, respectively)⁽⁸⁰⁾. Almost all citizens (94 %) consider rising energy prices a serious problem⁽⁸¹⁾. In contrast to EU-wide patterns, the expenditure shares would have increased almost evenly across income groups, in particular for gas, as shown in Graph A8.2. Among the (expenditure-based) AROP

population, the individuals living in households with budget shares for private transport fuels⁽⁸²⁾ above 6% would have increased by 7.1 pps (EU average: +5.3 pps), reaching 36.0% in January 2023 (EU: 37.1%) due to the increase in transport fuel prices. Transport fuel price increases in Poland affect the upper-middle and higher incomes the most.

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



Mean change of energy expenditure as a percentage (%) of total expenditure per income decile (D) due to observed price changes (August 2021 - January 2023), without accounting for targeted support measures.

Source: EMPL-JRC GD-AMEDI/AMEDI+ projects, based on Household Budget Survey 2015 and Eurostat inflation data for CP0451 and CP0452.

Access to public transport displays an urban-rural divide. Citizens in Poland perceive public transport to be available (60% vs EU 55%), affordable (60% vs EU 54 %) and of good quality (66% vs EU 60%). As for these perceptions, rural areas outperform rural areas in the EU overall on all three dimensions⁽⁸³⁾. The average carbon footprint of the top 10% of emitters among the population in Poland is 5 times that of the bottom

⁽⁷⁸⁾ Energy poverty is a multi-dimensional concept. The indicator used focuses on an outcome of energy poverty. Further indicators are available at the [Energy Poverty Advisory Hub](#).

⁽⁷⁹⁾ Products defined according to the European Classification of Individual Consumption according to Purpose (ECOICOP): CP045.

⁽⁸⁰⁾ [EMPL-JRC GD-AMEDI/AMEDI+](#) ; see details in the related technical brief.

⁽⁸¹⁾ Special Eurobarometer 527.

⁽⁸²⁾ ECOICOP: CP0722.

⁽⁸³⁾ EU (rural): 46%, 48%, 56% respectively. Special Eurobarometer 527.

50% (see Table A8.1), and is at the same level as the EU average. The RRP includes several measures aimed at shifting the energy mix towards low-carbon technologies by facilitating the deployment of renewables and increasing the use of alternative energy sources, reducing energy consumption by advancing a deep renovation of buildings, and reducing the energy intensity of industry and services as well as households. In Poland, the average levels of air pollution in 2020 stood above the EU average (16 vs 11.2 $\mu\text{g}/\text{m}^3$ PM2.5), with almost all regions exposed to critical levels of air pollution⁽⁸⁴⁾. This has led to significant health impacts, in particular on vulnerable groups, and 36 530 premature deaths annually⁽⁸⁵⁾.

⁽⁸⁴⁾ Double the recommendations in the WHO Air Quality Guidelines. (annual exposure of $5\mu\text{g}/\text{m}^3$)

⁽⁸⁵⁾ [EEA- Air Quality Health Risk Assessment](#)

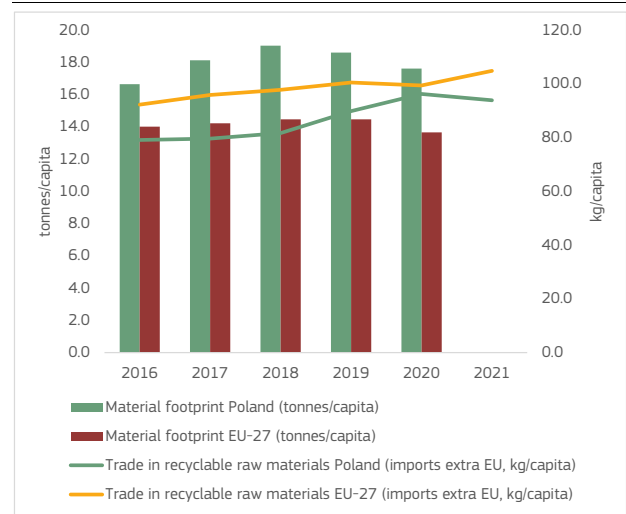
The circular economy transition is key to delivering on the EU’s climate and environmental goals and provides large socio-economic benefits. It spurs job growth, innovation and competitiveness and fosters resilience and resource security. The circularity transition of industry, the built environment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

Poland’s circular economy transition is insufficient and needs accelerating to meet the EU’s circular economy goals. The EU’s 2020 circular economy action plan (CEAP) aims at doubling circular material use by 2030 vs. 2020. Poland’s circular material use decreased from 10.2% in 2016 to 9.1% in 2021, and the gap between Poland’s performance and the EU average of 11.7% has widened. The CEAP also aims to significantly decrease the EU’s material footprint. In 2020, Poland’s material footprint (17.6 tonnes per head) was above the 2020 EU average (13.7 tonnes per head). The labour market benefits of the circular transition have recently started to gain importance, with a growth rate of 2.8% in 2019. People employed in circular economy (CE) sectors represented 10.1% of the EU total in 2018⁽⁸⁶⁾. As concerns health and safety in circular jobs, fatal accidents in waste management and materials recovery are above the average of all economic sectors and above the EU average in Poland⁽⁸⁷⁾.

Poland has adopted a strategy to address circular economy challenges, but more measures are needed. In September 2019, Poland adopted the ‘Roadmap for the transition to Circular Economy’ (CE roadmap), which contains a set of tools, not just legislative, aiming to create conditions for the implementation of a new economic model in Poland. The proposed actions mainly concern analytical and conceptual work, information and promotion, as well as coordination in areas within the competence of individual ministries. The CE roadmap is structured around the following main themes: (i) sustainable

industrial production, (ii) sustainable consumption, (iii) bioeconomy, (iv) new business models, and (v) implementation and monitoring. It sets out more than 40 tasks with a 4-year implementation timeline. Poland also had its 2022 national waste management plan (KPGO 2022 – *Krajowy plan gospodarki odpadami 2022*) approved in 2016 and amended in 2021. A plan with a more forward-looking perspective (KPGO 2028) is being developed; adoption is expected by June 2023.

Graph A9.1: Trend in material use



Source: Eurostat

Waste treatment is starting to see improvements due to recent reforms. Poland missed the 2020 EU target for recycling 50% of municipal waste, only reaching 38.7%. Poland is at risk of missing the 2025 EU recycling targets for municipal and packaging waste. In 2021, about 39% of Poland’s municipal waste was still landfilled, above the EU average (23%). Another major challenge is the low capture rate of bio-waste combined with insufficient recycling capacities for separately collected bio-waste.

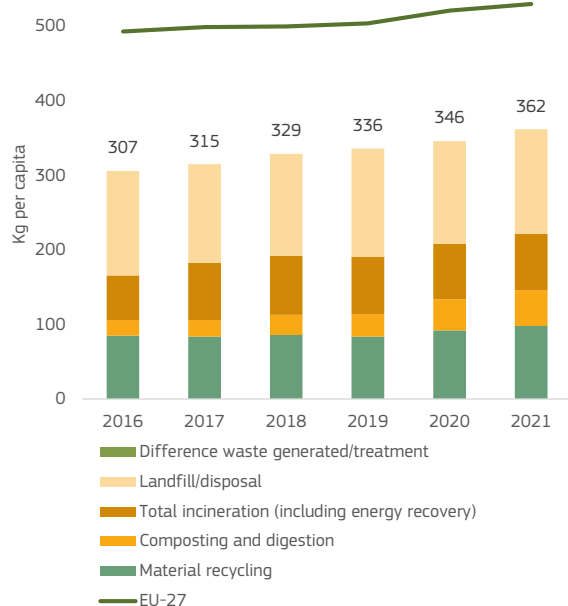
The industrial system is insufficiently circular and efficient. The economy, particularly industry, is less efficient at using materials than the EU average, with a resource productivity of 1.4 purchasing power standard per kilogramme vs 2.3 for the EU-27. There is substantial room for improvement in Poland as regards actions concerning industrial waste, in particular from mining, extraction, industrial processing energy production and supply.

⁽⁸⁶⁾ European Environment Agency, 2022, [Circular economy country profile – Poland](#).

⁽⁸⁷⁾ Eurostat [HSW_N2_02] for NACE Rev. 2 sector E38; 6.94 fatal accidents p. 100 000 employed in 2018-2020 vs 1.34 for all sectors in PL; 6.33 in the EU-27 for sector E38.



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



Source: Eurostat

The built environment system continues to exacerbate the depletion of resources. The recovery rate of construction and demolition waste has decreased since 2016 and remains well below the EU average (74% vs 89%). There is scope for renovating existing buildings instead of constructing new ones, as well as for increasing the share of secondary raw materials used in construction. Energy and resource efficiency

renovations of buildings are among the priorities of the Polish recovery and resilience plan and cohesion policy programmes for 2021-2027. As stipulated in the Partnership Agreement with Poland, solutions supporting CE are to be deployed in renovation projects wherever reasonable.

As for the agri-food system, there is potential to increase composting and digestion and to boost development of organic farming. Poland's composting and anaerobic digestion per head has doubled since 2016, but still remains far below the EU average in 2021 at 48 kg per head vs 100 kg. Increasing composting could enhance Poland's potential for producing organic fertilisers and hence support organic farming, which remains under-developed. With 3.52% of land under organic farming, Poland ranked 23rd out of 27 EU Member States in 2020.

There remains a financing gap in the circular economy, including waste management. Additional investments will be required to address growing needs. The financing gap was estimated at EUR 789 million/year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 2 billion/year while investment baselines were EUR 1.2 billion/year (see Annex 6).

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

AREA	2016	2017	2018	2019	2020	2021	EU-27	Latest year EU-27
Overall state of the circular economy								
Material footprint (tonnes/capita)	16.7	18.1	19.0	18.6	17.6	-	13.7	2020
YoY growth in persons employed in the circular economy (%) ¹	0.0	-0.5	-0.9	2.8	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	10.5	6.4	5.8	8.7	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.2	1.2	1.2	1.3	1.4	1.4	2.3	2021
Circular material use rate (%) ²	10.2	9.9	9.8	10.3	7.5	9.1	11.7	2021
Recycling rate (% of municipal waste)	34.8	33.8	34.3	34.1	38.7	40.3	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%) ³	91.0	-	84.0	-	74.0	-	89.0	2020
Soil sealing index (base year = 2006) ⁴	108.7	-	114.2	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita) ⁵	-	-	-	-	106.0	-	131.0	2020
Composting and digestion (kg per capita)	21.0	22.0	27.0	30.0	42.0	48.0	100.0	2021

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

Source: Eurostat, European Environment Agency

Digital transformation is key to ensuring a resilient and competitive economy. In line with the Digital Decade Policy Programme, and in particular with the targets in that Programme for digital transformation by 2030, this Annex describes Poland's performance on digital skills, digital infrastructure/connectivity and the digitalisation of businesses and public services. Where relevant, it makes reference to progress on implementing the Recovery and Resilience Plan (RRP). Poland allocates 21% of its total RRP budget to digital (EUR 7.5 billion) ⁽⁸⁸⁾.

The Digital Decade Policy Programme sets out a pathway for Europe's successful digital transformation by 2030. The Programme provides a framework for assessing the EU's and Member States' digital transformation, notably via the Digital Economy and Society Index (DESI). It also provides a way for the EU and its Member States to work together, including via multi-country projects, to accelerate progress towards the Digital Decade digital targets and general objectives ⁽⁸⁹⁾. More generally, several aspects of digital transformation are particularly relevant in the current context. In 2023, the European Year of Skills, building the appropriate skillset to make full use of the opportunities that digital transformation offers is a priority. A digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains ⁽⁹⁰⁾. Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ⁽⁹¹⁾.

The low level of basic digital skills is a key challenge for Poland in the human capital dimension. Poland scores below the EU average on the proportion of its population with at least

basic digital skills. Also, ICT specialists account for a lower percentage of the workforce in Poland than the EU average. The percentage of female ICT specialists is also below the EU average. The low share of digital specialists in the Polish workforce is exacerbated by only average rates of enrolment and graduates in ICT-related studies. The RRP measures that aim to introduce more digital themes in education and to provide the digital equipment in schools are expected to contribute to increase the level of digital skills if their implementation is based on sound and well consulted strategies.

Poland has a mixed performance on the indicators for digital infrastructure/connectivity. The very high capacity network (VHCN) coverage matches the EU average, while overall 5G coverage is at 63%, considerably below the EU average. No harmonised radio spectrum for 5G deployment has been yet assigned. For instance, the 3.4-3.8 GHz spectrum band, which is essential for enabling advanced applications requiring large spectrum bandwidth, is not available for providing services to the citizens. The RRP includes significant investments supporting the roll-out of connectivity infrastructure and as well as some relevant legislative action. Swift execution of the 5G spectrum auction is of utmost importance as it would enable investment, both private and also from RRP funds. The delay in spectrum assignment constitutes a major risk for the implementation of the RRP investment supporting the 5G rollout.

Poland is still far below the EU average for most indicators on the digitalisation of businesses. The proportion of SMEs with at least a basic level of digital intensity is much lower than the EU average. The adoption of advanced digital technologies is also considerably below the EU average for big data solutions, cloud computing, and artificial intelligence. The RRP includes several measures to support the adoption of digital technologies by SMEs, which are expected to improve performance in this area.

Poland is still performing below the EU average in the digital public services dimension of DESI. Poland scores below the EU average on the availability of digital public services. Poland has two electronic identification (eID) means notified under the Public Electronic Identification System. The e-ID system (called 'Trusted Profile' - Profil Zaufany) is being used by

⁽⁸⁸⁾ The share of financial allocations that contribute to digital objectives has been calculated using Annex VII of the RRF Regulation.

⁽⁸⁹⁾ The Digital Decade targets as measured by DESI indicators and complementary data sources are integrated to the extent currently available and/or considered particularly relevant in the MS-specific context.

⁽⁹⁰⁾ See for example OECD (2019): OECD Economic Outlook, Digitalisation and productivity: A story of complementarities, [OECD Economic Outlook, Volume 2019 Issue 1 | OECD iLibrary \(oecd-ilibrary.org\)](https://oecd-ilibrary.org/publications/9789264374000).

⁽⁹¹⁾ The need and possible actions for a digitalisation of the energy system are laid out in the Communication 'Digitalisation the energy system – EU action plan' (COM(2022)552).

more than 16 million people, in particular through the mObywatel app that provides access to a number of public services. The same app provides also access to the patient's online account that is needed for the mandatory e-prescriptions system and enables interacting with the health system on other administrative issues. In terms of access to e-health records, Poland scores well above the EU average with a score of 86 out of 100.

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

	Poland			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	NA	43%	43%	54%	80%
% individuals		2021	2021	2021	2030
ICT specialists ⁽¹⁾	3.4%	3.5%	3.5%	4.5%	20 million
% individuals in employment aged 15-74	2020	2021	2021	2021	2030
Digital infrastructure/connectivity					
Fixed Very High Capacity Network (VHCN) coverage	65%	70%	71%	73%	100%
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ⁽²⁾	45%	52%	60%	56%	-
% households	2020	2021	2022	2022	2030
Overall 5G coverage	10%	34%	63%	81%	100%
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	NA	NA	0%	41%	-
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	NA	NA	61%	69%	90%
% SMEs			2022	2022	2030
Big data ⁽³⁾	9%	9%	9%	14%	75%
% enterprises	2020	2020	2020	2020	2030
Cloud ⁽³⁾	NA	19%	19%	34%	75%
% enterprises		2021	2021	2021	2030
Artificial Intelligence ⁽³⁾	NA	3%	3%	8%	75%
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	NA	57	60	77	100
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	NA	70	73	84	100
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	NA	NA	86	71	100
Score (0 to 100)			2023	2023	2030

(1) The 20 million target represents about 10% of total employment.

(2) The Fibre to the Premises coverage indicator is included separately as its evaluation will also be monitored separately and taken into consideration when interpreting VHCN coverage data in the Digital Decade.

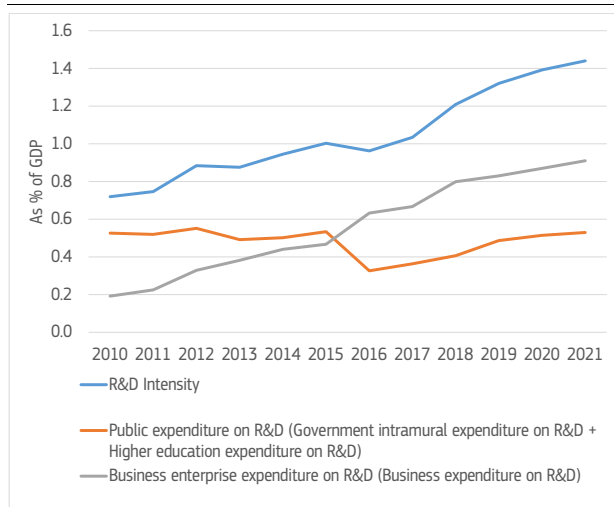
(3) At least 75 % of Union enterprises have taken up one or more of the following, in line with their business operations: (i) cloud computing services; (ii) big data; (iii) artificial intelligence.

Source: Digital Economy and Society Index

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

Poland is an 'emerging innovation performer', slowly bridging the gap between its performance and the EU average. According to the 2022 European Innovation Scoreboard⁽⁹²⁾, Poland has been increasing its innovation score continuously since 2015, though important progress is still needed, as its innovation score is just 60.5% of the average EU performance.

Graph A11.1: R&D intensity in Poland over time



Source: European Innovation Scoreboard, 2022

Business R&D investment and entrepreneurial dynamism contribute to the catching-up process, but several emerging bottlenecks might impede its continuation. A key driver for the catching-up process is the growth of R&D intensity⁽⁹³⁾ (1.44% of GDP in 2021)⁽⁹⁴⁾, entirely due to the strong increase in business R&D investment over the last decade (business intensity⁽⁹⁵⁾ reached 0.91% in 2021, compared with 0.19% in 2010). Several indicators highlight

⁽⁹²⁾ 2022 European Innovation Scoreboard (EIS), Country profile: Poland https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-pl.pdf. The EIS provides a comparative analysis of innovation performance in EU countries, including the relative strengths and weaknesses of their national innovation systems (also compared to the EU average).

⁽⁹³⁾ Defined as gross domestic expenditure on R&D as a percentage of GDP.

⁽⁹⁴⁾ Source: Eurostat.

⁽⁹⁵⁾ Defined as business spending on R&D as a percentage of GDP.

Poland's entrepreneurial dynamism: the share of start-up companies in total employer enterprises almost doubled from 2012 (17.3%) to 2019 (34.9%) and the share of employment in high-growth enterprises in the most innovative sectors was 6.7% in 2019, above the EU average of 5.5%. However, the sustainability of this catching-up process is threatened by several major bottlenecks in the research and innovation (R&I) ecosystem such as a weak propensity to innovate among small and medium-sized enterprises (SMEs), emerging skills shortages and the weaknesses of the public science base⁽⁹⁶⁾.

Development and diffusion of innovative technologies and solutions across the Polish economy, in particular among SMEs, remain very limited, hindering the green and digital transitions. According to the Community Innovation Survey, only 23.7% of Polish firms reported innovation activities, one of the lowest rates in the EU. The gap between Poland and the EU average is much bigger for SMEs than for larger companies: In Poland only 22% of SMEs were considered innovative in 2018, compared with the EU average of 49%; for large companies, the figures are 60.4% for Poland and 77% for the EU average⁽⁹⁷⁾. Such a narrow innovation base restricts the country's capacity to perform the green and digital transition. Additionally, the share of environment-related patents is lower than the EU average.

Shortages of skills in science and engineering limit Polish competitiveness in new technologies and innovative sectors. The number of new graduates in science and engineering per thousand population aged 25 to 34 decreased significantly, from 15.9 in 2010 to 12.0 in 2020. Moreover, the Polish education system trains few doctorate graduates. In terms of new doctorate graduates in STEM per 1000 of population, Poland's figure is just 25.8% of the EU average in 2022, down sharply (by 11.4%) compared to 2021⁽⁹⁸⁾⁽⁹⁹⁾.

Public research must improve qualitatively in order to play a full role in the R&I

⁽⁹⁶⁾ The public science base is the research ecosystem funded by the public sector.

⁽⁹⁷⁾ Source: Community Innovation Survey 2018.

⁽⁹⁸⁾ Source: European Innovation Scoreboard 2022.

⁽⁹⁹⁾ More information on education and skills in Annex 15.

Table A11.1: Key innovation indicators

Poland	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	0.72	1.00	1.32	1.39	1.44	2.26
Public expenditure on R&D as % of GDP	0.53	0.53	0.49	0.51	0.53	0.76
Business enterprise expenditure on R&D (BERD) as % of GDP	0.19	0.47	0.83	0.87	0.91	1.49
Quality of the R&I system						
Scientific publications of the country within the top 10% most cited publications worldwide as % of total publications of the country	2.9	4.2	5.0	:	:	9.8
Patent Cooperation Treaty patent applications per billion GDP (in PPS)	0.5	0.7	0.5	:	:	3.3
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	3.3	3.9	4.9	4.9	4.9	7.1
Public expenditure on R&D financed by business enterprise (national) as % of GDP	0.024	0.019	0.016	:	:	0.054
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	15.9	16.5	13.8	12.0	:	16.0
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	0.030	0.082	0.170	:	:	0.194
R&D tax incentives: foregone revenues as % of GDP	0	0	0.018	:	:	0.100
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	12.1	14.4	10.3	:	:	13.3
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.007	0.006	0.012	0.018	0.022	0.074
Employment in fast-growing enterprises in 50% most innovative sectors	6.3	5.8	6.7	:	:	5.5

(1) EU average for the latest available year or the year with the highest number of country data.

Source: Eurostat, OECD, DG JRC, Science-Metrix (Scopus database and EPO's Patent Statistical database), Invest Europe

ecosystem. Science-business linkages remain limited, as shown by several indicators: both the share of public-private scientific co-publications as a share of all scientific publications and the level of business financing for public R&D remain well below the EU average. Public research's low attractiveness for potential business partners reflects its weak capabilities. Both public R&D intensity, which has stagnated at around 0.53% of GDP since 2010, and the quality of the public science base (as measured by the share of scientific publications within the top 10% most cited publication worldwide) remain well below the EU average, though the measure has been improving significantly, overall, since 2010⁽¹⁰⁰⁾.

Poland's national recovery and resilience plan (RRP) contains measures to enhance its public research capabilities, improve public-private research cooperation, and strengthen the development and diffusion of innovative technologies for the green and digital transitions.

With a direct budget of EUR 1.51 billion, the national RRP helps tackle some of Poland's main innovation challenges. The RRP includes measures to improve science-business links, such as a reform allowing universities and research institutes to become shareholders in companies. Furthermore, the RRP includes a number of investments to modernise research infrastructure in public laboratories and research institutes. The RRP also includes measures to incentivise the uptake of digital technologies in the private sector, and to support the development and diffusion of breakthrough technologies, particularly in the fields of the circular economy and unmanned aviation. Additionally, the RRP features a EUR 273 million investment to support activities linked to innovation spaces such as incubators in the biomedical sector. Spillovers in other sectors will benefit the whole Polish innovation ecosystem.

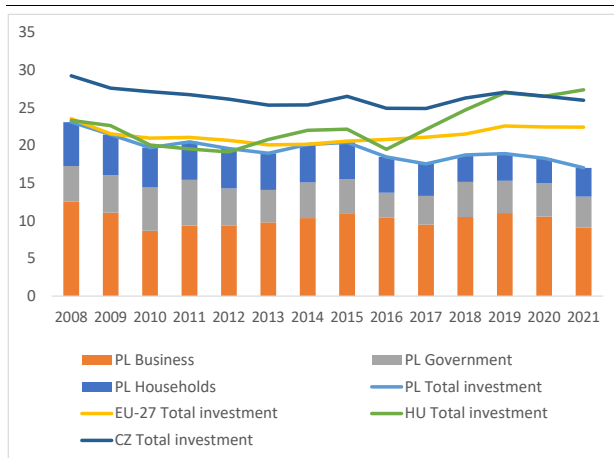
⁽¹⁰⁰⁾Source: Science-Metrix, May 2021.

Higher investment rates, in particular private investment, could boost Poland's long-term growth and facilitate the shift toward a greener growth model. Poland's investment-to-GDP reached 17% in 2021, considerably below the EU average (22.5%, see Graph A12.1) and that of peer countries (Hungary: 27.4%, Czechia: 26%).

Investment performance is negatively affected by a burdensome regulatory environment, the deterioration in the legislative process that increases uncertainty for investors, a low degree of automation and robotisation in Polish industry and skills mismatches and labour shortages (see Table A12.1) that result in rising labour unit costs.

Moreover, in recent months high global commodity prices and energy costs have depressed business sentiment. Poland has one of the lowest shares of investment in intangible assets⁽¹⁰¹⁾. Delays in delivering on the commitments in the country's Recovery and Resilience Plan, related to rule of law issues, risk a further delay in the disbursement of Next Generation EU funds, affecting business confidence, especially among foreign investors, and dampening the outlook for both public and private investment growth.

Graph A12.1: Investment, % GDP



Source: Eurostat

Polish industry accounts for 25.1% of total gross value added and 22.5% of total employment, significantly above EU averages (20% and 15.7%, respectively). As manufacturing contributes to over 90% of exports, the long-term competitiveness of the Polish economy is heavily dependent on reducing the emissions of the industrial firms. Poland is still one of the most

energy and emission-intensive countries in the EU, particularly in the energy and manufacturing sectors (over 40% of total emissions are related to industry). Rising energy prices in 2022 are affecting the competitiveness of industry, particularly in energy-intensive ecosystem.

Throughout 2022, industrial confidence indicators have been the lowest in the EU, as managers' assessments of the current level of overall orders and the production trend observed in recent months keep deteriorating. During the second half of 2022, some fertiliser and ceramics firms in Poland have already announced decreases in production. Although supply chain issues at times affected the automotive industry (11% of industrial production and 3.4% of GDP), Poland's diversified industrial base has diluted their impact. Poland is also a crucial link in a supply chain for several critical raw materials, especially coking coal for steel-making processes (providing 24% of EU supply), copper, silver and elemental sulphur.

Deterioration in governance quality indicators, including government effectiveness and regulatory quality, has the potential to impact growth. Polish firms report more obstacles to climate investment than the EU average, with uncertainty about taxation and regulation cited most frequently⁽¹⁰²⁾. Also, the perceived level of effectiveness of investment protection by the law and courts is very low among companies⁽¹⁰³⁾. Only 25% of companies are very or fairly confident that investment will be protected effectively in Poland, whereas 62% of companies are either fairly unconfident or very unconfident (against a 39% EU average).

The main reasons invoked by companies in that respect are frequent changes in legislation or concerns about the quality of the law-making process, as well as unpredictable, non-transparent administrative conduct and difficulty to challenge administrative decisions in courts. Concerns about the quality, efficiency and independence of the justice system also play a role in this respect.

The lack of adequate public consultation weighs on the stability and predictability of the business environment, substantially lowers the quality of legislation, and hinders

⁽¹⁰²⁾EIB, European Firms and Climate Change 2020/2021, 2021.

⁽¹⁰³⁾For more information please see: EU Justice Scoreboard.

⁽¹⁰¹⁾EIB Investment Survey, Poland overview, 2022.

already low investment. Significant reforms continue to be frequently adopted by by-passing procedures that require adequate consultation: in 2022, 21% of the laws passed were passed using the alternative track and 42% of the laws passed using the regular track had no documented public consultation ⁽¹⁰⁴⁾.

This inconsistency, together with a deterioration in the quality of the social dialogue, is increasingly weighing on the quality of the resulting legislation and consequently on the business environment.

The Polish Recovery and Resilience Plan (RRP) includes some reforms to strengthen the role of consultations by the social partners and the role of public consultations in the legislative process, and to limit the use of fast-track procedures, with the goal of having a better and more stable regulatory framework.

Labour productivity growth has been among the fastest in the EU for several years, but it is still substantially lower than in the EU as a whole. Nominal labour productivity per hour worked amounted to 66.8% of the EU average in 2022 (see Graph A12.2). This difference in labour productivity is not only caused by lower efficiency of production, but also by the lower value of the products manufactured (also, according to the OECD, the gap between large and small firms remains one of the largest in the EU).

Poland's exports are concentrated in lower value-added agriculture, textiles, and metals. The size structure of companies also matters for productivity: in Poland, more than one-third of employees work in micro companies (compared to only one-fifth in Germany) and just 30% of the labour force is employed in large companies with more than 250 employees (41% in Germany) ⁽¹⁰⁵⁾.

Access to finance has substantially improved in Poland in the last years. More than half of firms in Poland (51%) had financed at least some of their investment through external finance (EU average: 45%), with bank finance the most

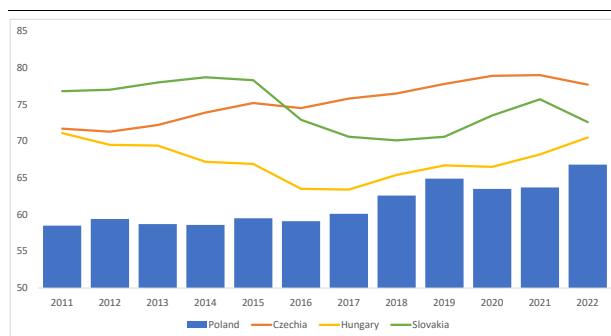
important source of financing for around 80% of Polish firms ⁽¹⁰⁶⁾.

Lack of creditworthiness or lack of collateral remained the reasons for potential credit refusals in approximately 55% of cases. By mid-2022, loan growth had increased by 27.6% annually, related to a rise in large companies' financing needs due to fast growth in prices of commodities and production components.

On the other hand, SMEs are starting to have some financial problems, as 65% of Polish SMEs have experienced late payments in the last 6 months (see Table A12.1). Also, there was a sharp increase in 2022 in the payment gap (the difference between payment terms and the actual payment) in both business and public sector transactions (see Table A12.1) ⁽¹⁰⁷⁾.

Although the number of bankruptcy declarations decreased by 28.7% in 2021 and 7.2% in 2022 (thanks to public support during the pandemic and the introduction of simplified restructuring proceedings), the solvency of Polish firms could be impacted by the slowdown in Poland's external economic environment, heightened exchange rate volatility and the lagging effects of the National Bank of Poland interest rate hikes, constraining the availability of credit and raising its cost.

Graph A12.2: **Nominal labour productivity per hour worked (EU=100)**



Source: Eurostat

Tackling structural weaknesses, including restrictive regulations in services and public procurement competitiveness, would improve productivity. Poland's overall performance on public procurement is below the EU average: despite expectations, the new public procurement law that entered into force in January 2021 did

⁽¹⁰⁴⁾ Grant Thornton. Barometr prawa. Analiza stabilności otoczenia prawnego w polskiej gospodarce Edycja 2022, <https://barometrprawa.pl/wp-content/uploads/2022/03/Barometr-prawa-2022-RAPORT-Grant-Thornton-16-03-2022.pdf>.

⁽¹⁰⁵⁾ World Bank, The Green Transformation in Poland, Country Economic Memorandum, 2022.

⁽¹⁰⁶⁾ EIB, Investment Survey, CESEE overview, 2023.

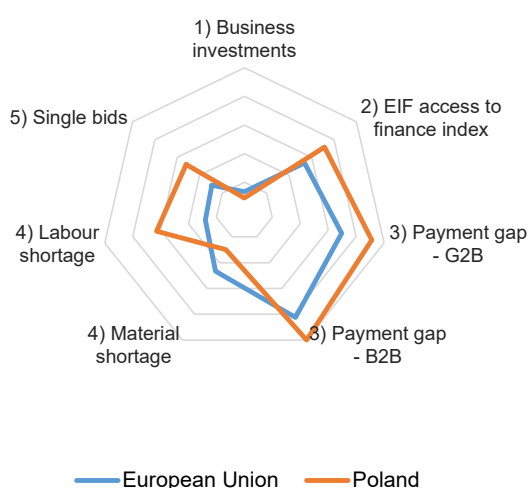
⁽¹⁰⁷⁾ 2022 European Payment Report, Intrum.

not immediately address the key weaknesses in public procurement in Poland.

The public procurement system still suffers from a low number of companies submitting tender offers, resulting in a high share of single offers, which has remained for years at an exceptionally high level (52% in 2022).

Regulatory restrictiveness of regulated professions in important business services is high in Poland, according to the Commission's assessment of restrictiveness in selected professional services (¹⁰⁸). This is notably the case for architects, civil engineers, tax advisers, lawyers and patent agents. As regards retail, the regulatory environment has been made stricter over the past years with the introduction of a retail tax and a complete ban on shops opening on Sundays (¹⁰⁹).

Graph A12.3: **Business environment and productivity drivers**



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

(¹⁰⁸)COM(2021) 385 final.

(¹⁰⁹)Retail Restrictiveness Indicator, European Commission (2022 update), forthcoming.

Table A12.1: Industry and Single Market

POLICY AREA		INDICATOR NAME	2018	2019	2020	2021	2022	EU27 average (*)
HEADLINE INDICATORS	Economic Structure	Net private investment, level of private capital stock, net of depreciation, % GDP ⁽¹⁾	5	5.6	4.4	3.9	3.9	3.7
		Net public investment, level of public capital stock, net of depreciation, % GDP ⁽¹⁾	2.4	2	2.1	1.8	2	0.4
	Cost competitiveness	Real labour productivity per person in industry (% yoy) ⁽²⁾	4.3	4.9	-0.3	1.2	6.7	1.4
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % ⁽³⁾	13	14	7	20	30	47
		Labour shortage using survey data (industry), firms facing constraints, % ⁽³⁾	67	70	61	63	63	28
		Vacancy rate (business economy) ⁽⁴⁾	1.4	1.2	0.7	1.2	1.2	3.1
RESILIENCE	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials ⁽⁵⁾	0.2	0.18	0.18	0.19	0.21	0.18
		Installed renewables electricity capacity, % of total electricity produced ⁽⁶⁾	20.7	21.2	20.5	22.1	n.a.	50.9
SINGLE MARKET	Single Market integration	EU trade integration, % ⁽⁷⁾	36.1	35.7	35.1	39.2	42.2	45.8
	Restrictions	EEA Services Trade Restrictiveness Index ⁽⁸⁾	0.05	0.05	0.05	0.05	0.05	0.05
	Public procurement	Single bids, % of total contractors ⁽⁹⁾	51	51	51	50	52	29
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle ⁽¹⁰⁾	34.4	34.1	35.5	34.3	34.6	29.6
	Business demography	Bankruptcies, Index (2015=100) ⁽¹¹⁾	79.9	78.5	71.7	51.1	47.4	86.8
		Business registrations, Index (2015=100) ⁽¹¹⁾	108.2	105.1	92.1	103.5	108.3	121.2
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment ⁽¹²⁾	5	0	17	10	17	13
		Payment gap - public sector, difference in days between offered and actual payment ⁽¹²⁾	7	0	20	8	21	15
		Share of SMEs experiencing late payments in past 6 months, % ⁽¹³⁾	n.a.	71.8	66.3	65.5	65.2	43
Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1 ⁽¹⁴⁾	0.81	0.65	0.69	0.65	n.a.	0.46	
	EIF Access to finance index - Equity, Composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1 ⁽¹⁴⁾	0.07	0.1	0.2	0.24	n.a.	0.23	

(1) last available year

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



This Annex outlines the performance of Poland's public administration, which is essential for providing services and carrying out reforms. Overall, administrative effectiveness in Poland continues to rank significantly below the EU average⁽¹¹⁰⁾. The downward trend may be linked to increasing levels of politicisation in the senior civil service and to the restructuring of the judiciary⁽¹¹¹⁾.

Poland's performance on regulatory governance is around the EU average (Graph A13.2). Recent changes aimed to strengthen public consultations and impact assessments for government policy proposals. The implementation of these requirements, however, is rather formalistic, and their added value is diminished by over-regulation and frequent changes to legislation. Almost 60% of local government officials give a poor assessment of the quality of law and its impact on the functioning of local government. Just 5% consider it to be of good quality. The vast majority claim that they have difficulties in implementing legal changes in their offices⁽¹¹²⁾. Parliament, which initiated about 21% of the laws passed between 2017 and 2020, does not apply the regulatory requirement set for the public administration⁽¹¹³⁾. The Polish recovery and resilience plan contains a set of actions to further improve the law-making process and expand the public's input.

The Polish civil service is among the youngest in the EU. The share of public administration employees with higher education is among the highest (Poland: 70.5%, EU-27: 52%). The negative trend in gender parity in senior civil service positions is getting worse, with the absolute difference between the share of men and women rising from 1.8% in 2017 to 12% in 2022.

⁽¹¹⁰⁾Worldwide Governance Indicators, 2021.

⁽¹¹¹⁾Mazur S., Możdżeń M. and Oramus M. (2018). 'The Instrumental and Ideological Politicisation of Senior Positions in Poland's Civil Service and its Selected Consequences'. NISPAcee Journal of Public Administration and Policy, Vol.11 (Issue 1), pp. 63-89.

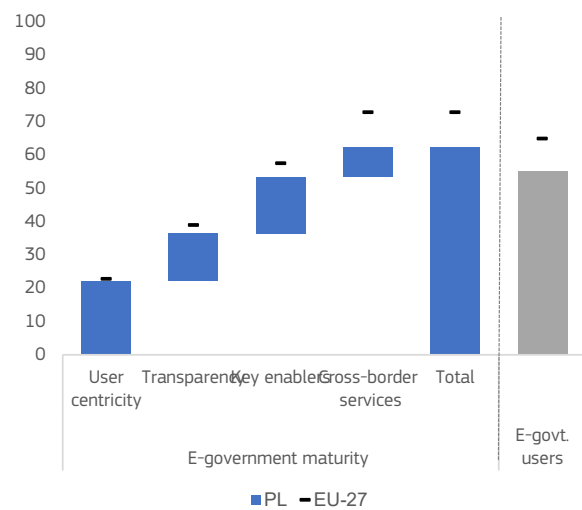
⁽¹¹²⁾'Legal and local government LEXOMETR 2022. Local government units in the era of crises' (<https://www.wolterskluwer.com/pl-pl/solutions/informacje/lexometr-prawno-samorzadowy-2022>).

⁽¹¹³⁾OECD, 2022, [Better Regulation Practices across the European Union 2022](#)

The scope of activities of Poland's Supreme Audit Office only covers part of the typical tasks of an independent fiscal institution. For example, it does not cover macroeconomic or budgetary forecasting. Its performance on the national medium-term budgetary framework, and the strength of its fiscal rules indices, are clearly below the EU average.

Poland continues to score below the EU average on digital public administration (Graph A13.1 and Annex 10). The gaps concern the availability of public services for citizens and businesses that may be completed online⁽¹¹⁴⁾. Digitalisation remains one of the key priorities of the government, with more than 21% of measures in Poland's recovery and resilience plan contributing to the digital transition. These measures are expected to improve the delivery of public services and speed up the digitalisation of the public administration.

Graph A13.1: **Poland. E-government maturity and e-government users**



(1) 2022 data for the e-government maturity indicator and 2021 data for the e-government users indicator.

Source: E-government benchmark report and Eurostat

The judicial system faces challenges to its independence. The overall performance of ordinary and administrative courts remains stable⁽¹¹⁵⁾. In ordinary courts, while the time

⁽¹¹⁴⁾Digital Economy and Society Index 2022 (<https://digital-strategy.ec.europa.eu/en/policies/countries-digitisation-performance>).

⁽¹¹⁵⁾For a more detailed analysis of the performance of the justice system in Poland, see the 2023 [EU Justice Scoreboard](#) (forthcoming) and the country chapter for Poland in the 2023 [Rule of Law Report](#) (forthcoming).

Table A13.1: Public administration indicators

PL Indicator ⁽¹⁾	2017	2018	2019	2020	2021	2022	EU-27 ⁽²⁾
E-government and open government data							
1 Share of individuals who used the internet within the last year to interact with public authorities (%)	39.5	44.8	49.3	49.5	54.7	n/a	64.8
2 E-government benchmark overall score ⁽³⁾	n/a	n/a	n/a	58.0	54.9	62.2	72.9
3 Open data and portal maturity index	n/a	0.7	0.8	0.9	1.0	1.0	0.8
Educational attainment level, adult learning, gender parity and ageing							
4 Share of public administration employees with tertiary education (levels 5-8, %)	67.0	67.6	67.9	69.4	70.0 (b)	70.5	52.0
5 Participation rate of public administration employees in adult learning (%)	7.3	11.4 (b)	8.5	7.0	13.1 (b)	18.8	16.9
6 Gender parity in senior civil service positions ⁽⁴⁾	1.8	4.8	9.6	9.6	9.6	12.0	11.0
7 Ratio of 25-49 to 50-64 year olds in NACE sector O	3.1	3.1	3.2	3.1	3.1 (b)	3.1	1.5
Public financial management							
8 Medium term budgetary framework index	0.5	0.5	0.5	0.4	0.4	n/a	0.7
9 Strength of fiscal rules index	1.2	1.2	1.2	1.2	1.3	n/a	1.5
Evidence-based policy making							
10 Regulatory governance	1.72	n/a	n/a	n/a	1.76	n/a	1.7

⁽¹⁾ High values denote a good performance, except for indicator # 6. ⁽²⁾ 2022 value. If not available, the 2021 value is shown.

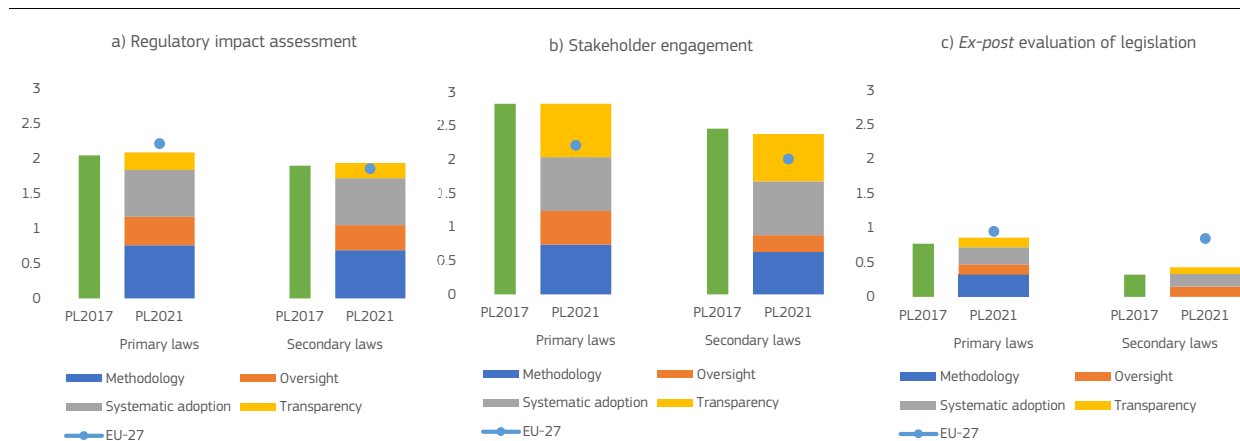
⁽³⁾ Measures the user centricity and transparency of digital public services as well as the existence of key enablers for the provision of those services. ⁽⁴⁾ Defined as the absolute value of the difference between the percentage of men and women in senior civil service positions. Flags: (b) break in time series; (d) definition differs; (u) low reliability.

Source: ICT use survey, Eurostat (# 1); E-government benchmark report (# 2); Open data maturity report (# 3); Labour Force Survey, Eurostat (# 4, 5, 7), European Institute for Gender Equality (# 6); Fiscal Governance Database (# 8, 9); OECD Indicators of Regulatory Policy and Governance (# 10).

needed to resolve civil, commercial, administrative and other cases fell from 110 days in 2020 to 107 days in 2021, an opposite trend is seen in litigious civil and commercial cases, with an increase from 317 days on average in 2020 to 330 days in 2021. The overall quality of the justice system is good, and the level of digitalisation is advanced. Gaps remain in online access to published judgments and in the

availability of electronic communication tools in the prosecution service. Serious concerns regarding judicial independence persist as underlined in the Commission's Rule of Law Reports. Poland also committed to milestones related to the independence of the judiciary in its recovery and resilience plan.

Graph A13.2: Poland. a) Regulatory impact assessment, b) Stakeholder engagement and c) Ex post evaluation of legislation



Source: Indicators of Regulatory Policy and Governance Surveys 2017 and 2021, (<http://oe.cd/ireg>).

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

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

Table A14.1: Social Scoreboard for Poland

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	4.8
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	42.93
	Youth NEET rate (% of population aged 15-29, 2022)	10.9
	Gender employment gap (percentage points, 2022)	12.9
	Income quintile ratio (S80/S20, 2021)	4.03
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	76.7
	Unemployment rate (% of active population aged 15-74, 2022)	2.9
	Long term unemployment (% of active population aged 15-74, 2022)	0.9
	GDHI per capita growth (2008=100, 2021)	146.35
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	16.8
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	16.5
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	35.65
	Disability employment gap (percentage points, 2021)	34.2
	Housing cost overburden (% of total population, 2021)	5.7
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	17.2
	Self-reported unmet need for medical care (% of population 16+, 2021)	2.7

Update of 27 April 2023. Member States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven categories. For methodological details, please consult the Joint Employment Report 2023. Due to changes in the definition of the individuals’ level of digital skills in 2021, exceptionally only levels are used in the assessment of this indicator.

NEET: neither in employment nor in education and training; GDHI: gross disposable household income.

Source: Eurostat

The Polish labour market made a robust recovery in 2022, but some challenges persist, including risks stemming from Russia’s war of aggression against Ukraine. The employment rate of people aged 20-64 recovered from the COVID-19 crisis, reaching a record high of 76.7% in 2022, above the EU

average of 74.9%. The unemployment rate decreased by 0.5 percentage points (pps) between 2021 and 2022 to 2.9% and remains one of the lowest in the EU (EU: 5.9%)⁽¹¹⁶⁾. The high proportion of temporary contracts continues to be a challenge for the Polish labour market, with the share still higher than the EU average (14.9% vs 13.5% in Q4-2022 for people aged 15-64) and over one third of young people (aged 15-29) under such contracts in Q4-2022 (34.2%, which was in line with the EU average of 34.6%)⁽¹¹⁷⁾. At 13%, the coverage of collective bargaining is one of the lowest in the EU⁽¹¹⁸⁾. Social dialogue remains unbalanced, with insufficient quality of involvement of social partners in consultations of legal acts. Poland reported the highest number of displaced people from Ukraine in the EU with 1.5 million⁽¹¹⁹⁾ registered. Around 200 000 of them are working at present; this is about 30% of the working-age Ukrainians who have arrived (mostly women).

Persons with disabilities, women and vulnerable groups continue to face obstacles to labour market participation. At 34.2 pps, the disability employment gap is one of the highest in the EU (EU average: 23 pps) and has been showing an increasing trend in recent years. The activity rate of persons with disabilities (around 50%) is on the rise, but still well below the EU average of 61.6%⁽¹²⁰⁾. The employment rate for women aged 20-64 continued to grow, and in 2021, it was higher than the EU average for the first time since 2012 (68.4% vs 67.7% in the EU) and it rose further to 70.2% in 2022. However, the gender employment gap (12.9 pps in 2022) remains above the EU average of 10.6 pps. This gap is mainly due to the low employment rate of women aged 55-64 (44.6% vs 56.3% in the EU in 2022)⁽¹²¹⁾. This is largely a result of the different

⁽¹¹⁶⁾Source: Eurostat, online data codes: LFSI_EMP_Q, and UNE_RT_Q

⁽¹¹⁷⁾Source: Eurostat, online data code: LFSQ_ETPGA

⁽¹¹⁸⁾OECD and AIAS (2021), Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, OECD Publishing, Paris, OECD/AIAS ICTWSS database - OECD.

⁽¹¹⁹⁾Social Insurance Institution (ZUS) data as of January 2023.

⁽¹²⁰⁾European comparative data on Europe 2020 and persons with disabilities - Publications Office of the EU (europa.eu)

⁽¹²¹⁾Source: Eurostat, online data code: LFSI_EMP_A



statutory retirement ages for men (65 years) and women (60 years). The participation of children aged less than 3 years in formal childcare is much lower than the EU average (17.2% vs 36.2% in the EU). However, since 2020 the rate has increased by 6 pps, mainly thanks to EU funding. In Poland, 76% of crèches are private, which results in high costs for parents⁽¹²²⁾. The social allowances system for caregivers of persons with disabilities prevents carers from working (while being insufficient to avert the risk of poverty). In 2022, the share of Polish young people not in education, employment or training (NEET) (10.9%) was slightly below the EU average (11.7%)⁽¹²³⁾. Youth unemployment remains low (6.8% vs 11.3% in the EU in 2022 in the age group 15-29)⁽¹²⁴⁾, reflecting the fact that the number of economically inactive young people within the NEET group has been increasing. The employment rate of older workers, especially those with low skills, lags behind the EU average. In Poland, older people aged 55 to 64 make up more than 32% of the economically inactive working-age population (15-64 yrs, 2021)⁽¹²⁵⁾. The European Social Fund Plus (ESF+) will support measures to improve access to employment, particularly for young people, women, older people, long-term unemployed people and other disadvantaged groups. Several of the country's recovery and resilience plan (RRP) reforms are expected to be adopted in 2023 to improve labour market participation and strengthen public employment services. Addressing these challenges would support progress towards the national employment rate target of 78.3% by 2030.

The low level of individuals' digital skills and low adult learning participation remain challenges to be tackled, which is also necessary for the green and digital transitions. Digital skills have improved in recent years, but, as shown in the EU Digital Economy and Society Index (EU DESI), Poland is one of the EU countries with the lowest performance in terms of digital skills. Only 43% of people had at least basic digital skills in 2021, compared to 54% in the EU. Adult participation in learning (over the

past 4 weeks) is still far below the EU average of 10.8% despite its increase from 4.8% to 5.4% between 2019-2021. The RRP and the ESF+ will support training measures to strengthen the green and digital transitions.

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

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	76.7 (2022)		78	78
Adult learning ¹ (%)	20.9 (2016)		52	60
Poverty reduction ² (thousands)	-283 (2021)		-1 500	-15 000

(1) Adult Education Survey, adults in learning in the past 12 months.

(2) Number of persons at risk of poverty or social exclusion (AROPE), reference year 2019.

Source: Eurostat, DG EMPL.

Poland is experiencing an increase in labour shortages and skills mismatches. Labour shortages as reported by employers increased rapidly during the post-pandemic recovery and reached levels that are comparatively high in the EU, yet do not exceed pre-pandemic levels. On average, in 2021 81% of employers had difficulties filling open positions⁽¹²⁶⁾ and 91% of companies reported skills shortages, however 73% admitted that they do not invest in skills⁽¹²⁷⁾. In 2022, shortages started to taper off, while in Q4-2022, 36% of employers in industry, 25% in services and 31% in construction still stated that the availability of labour was a factor that limited production. Macroeconomic skills mismatches improved in the last decade due to the increase in the average skills level of the working-age population. In the 2021-2027 period, the ESF+ will support flexible upskilling and reskilling opportunities. These measures will contribute to reaching the national target of having at least 51.7% of all adults participating in education and training every year by 2030.

Social indicators in Poland are still broadly stable, but some challenges remain. In 2021,

⁽¹²²⁾ <https://stat.gov.pl/obszary-tematyczne/dzieci-i-rodzina/dzieci/zlobki-i-kluby-dzieciece-w-2020-roku,3.8.html>

⁽¹²³⁾ <https://ec.europa.eu/eurostat/web/european-pillar-of-social-rights/indicators/social-scoreboard-indicators>

⁽¹²⁴⁾ Source: Eurostat, online data code: UNE_RT_A

⁽¹²⁵⁾ Source: Eurostat, online data code: LFSA_IGAN

⁽¹²⁶⁾ ManpowerGroup Employment Outlook Survey Q3 2021 Poland Results.

⁽¹²⁷⁾ Dębowska, K., Kłosiewicz-Górecka, U., Szymańska, A., Ważniewski, P., Zybortowicz, K. (2022), Kompetencje pracowników dziś i jutro, Polski Instytut Ekonomiczny, Warszawa, <https://pie.net.pl/wp-content/uploads/2022/04/Kompetencje-pracow-20.07.2022-kopia.pdf>

the share of people at risk of poverty or social exclusion in the total population (16.8%) and children (16.5%) stood below the EU averages. However, the at-risk-of-poverty rate is much higher for people in non-standard forms of work (15.8%) than in standard forms of work (4.1%). Material and social deprivation is the highest among part-time workers and self-employed people (14.3% vs 10.6% in the EU). Older people are at a slightly higher risk of poverty, especially women (22.1% vs 13.2% for older men). A fast ageing population, combined with the low statutory and effective retirement age, will likely cause pension benefits to decrease, raising concerns on pension adequacy, especially for women. Further social policy action would help Poland reach the national target of having at least 1.5 million fewer people at risk of poverty by 2030.

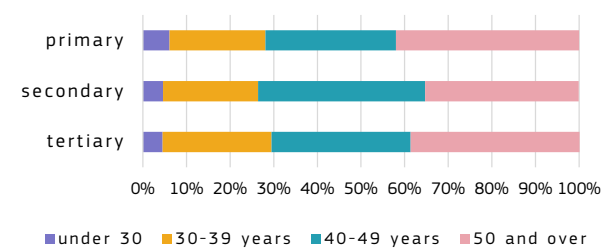
The long-term care (LTC) system is inadequate to meet the needs of the ageing population. Quality and access to professional LTC remains very limited. The share of population aged 65 and over with LTC needs exceeds the EU average (35.9% vs 26.6% in the EU in 2019). The unmet needs for LTC are also high, with 46.7% of people aged 65 and over reporting a lack of assistance in personal care or household activities. Only 18.8% of the population aged 65 and over with LTC needs use home-care services, compared to 28.6% in the EU in 2019. Publicly provided or funded home-care services for the population aged 65 and over are also below the EU average (3.4% vs 5.8% in the EU in 2019). LTC quality assurance is fragmented between the healthcare and social sectors. Public spending on LTC is among the lowest in the EU (0.8% vs 1.7% in the EU in 2019). Workforce levels and salaries are also low. In 2019, there were only 0.6 LTC workers per 100 people aged 65 and over (OECD-32 average: 5.2). Poland has a very low number of LTC beds per 100 000 inhabitants (194.4). The ESF+ will finance training, psychological help and respite care for informal carers and support the provision of home and community-based LTC. There is a further need to assess working conditions, skills requirements, and challenges facing informal carers.

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

Teacher shortages are a major challenge ⁽¹²⁸⁾.

The teaching profession has faced many challenges over the past years, leading to teacher demotivation and shortages although the number of students was also falling prior to 2022 due to demographic trends. National statistics ⁽¹²⁹⁾ confirm shortages in many counties, mainly in large cities, and among teachers of vocational education and training (VET), early childhood education and care (ECEC), science, technology engineering and mathematics (STEM), and foreign languages, and teachers with a background in special needs education. Teacher salaries in Poland are among the lowest in the EU, in particular those of beginner teachers ⁽¹³⁰⁾, ⁽¹³¹⁾, and are not attractive to young graduates in Poland. Around 40% of teachers are 50 or older, while the proportion of those below 30 ranges from less than 5% to 6%.

Graph A15.1: Age profile of teachers in Poland



Source: OECD statistics

Local governments face difficulties in financing educational tasks, the major share of which constitute teacher salaries ⁽¹³²⁾. This

⁽¹²⁸⁾ Supreme Audit (2022) Financing education by local governments. <https://www.nik.gov.pl/aktualnosci/edukacja-i-nauka/wciaz-za-malo-pieniedzy-na-szkoly-i-przedszkola.html>

⁽¹²⁹⁾ <https://barometrzawodow.pl/en/module/forecasts-on-maps>.

⁽¹³⁰⁾ European Commission/EACEA/Eurydice, 2021. Teachers' and School Heads' Salaries and Allowances in Europe – 2019/20.

⁽¹³¹⁾ OECD (2022), Education at a Glance 2022: OECD indicators. <https://doi.org/10.1787/3197152b-en>

⁽¹³²⁾ Supreme Audit (2022), Financing education by local governments. <https://www.nik.gov.pl/aktualnosci/edukacja-i-nauka/wciaz-za-malo-pieniedzy-na-szkoly-i-przedszkola.html>

leads to reduced investments in both educational infrastructure and extracurricular activities. The central government subsidy for education is increasing more slowly than education expenditure: in 2021, local governments covered almost 46% of spending on ECEC and school education, in contrast to 2012, when it was around 20% ⁽¹³³⁾. Teacher minimum statutory salary increases in 2022 and 2023 (by 7.8% from January) did not cover the increased cost of living and are below the growth in wages in the private sector. The Supreme Audit recommended carrying out an in-depth analysis of the problems and developing a comprehensive approach to address teacher supply issues and the needs of local governments in financing education.

Participation of children in ECEC continues to increase, but some provision gaps persist.

In 2020, the rate reached 90.8%, up by 0.5 pps from 2019. The participation of 3-year-olds (78.5%) is still below the EU average. The rate continues to be low in rural areas, where provision has been insufficient, and in some regions (*Warmińsko-Mazurskie, Kujawsko-Pomorskie*).

School education is facing multiple challenges, affecting the educational process and deepening inequalities.

The Supreme Audit found negative impacts of remote teaching during the pandemic on the educational process, leading to deepened inequalities, learning losses, and a deterioration in student and teacher well-being ⁽¹³⁴⁾. In addition to the challenges related to the implementation of the 2016 reform, upper secondary schools, mainly in cities, struggle with overcrowding due to an increased cohort, by around 50%, of primary school graduates in 2022/23. Also in 2022/23, almost 188.000 displaced children from Ukraine are enrolled in kindergartens and schools, however, still around 55% of school-aged children from Ukraine remain outside the Polish schooling system. Stakeholders and the Ombudsman ⁽¹³⁵⁾ indicate a

⁽¹³³⁾ <https://stat.gov.pl/en/topics/education/education/education-in-the-20212022-school-year,1,18.html>

⁽¹³⁴⁾ Supreme Audit (2022), Schools in pandemic times. <https://www.nik.gov.pl/aktualnosci/edukacja-i-nauka/szkoly-w-czasach-pandemii.html>

⁽¹³⁵⁾ Centre for Civic Education, 2022. https://ceo.org.pl/wp-content/uploads/2022/11/CEO_uczniowie_uchodzacy_pazdziernik_2022-fin-1.pdf. The Ombudsman, 2022. <https://bip.brpo.gov.pl/pl/content/rpo-edukacja-ukraina-dzieci-rekomendacje-mein-odpowiedz>

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

Indicator	Target	2015		2022			
		Poland	EU27	Poland	EU27		
¹ Participation in early childhood education (age 3+)	96%	84.3%	91.9%	90.8% ²⁰²⁰	93.0% ²⁰²⁰		
² Low achieving 15-year-olds in:	Reading	< 15%	14.4%	20.0%	14.7% ²⁰¹⁸	22.5% ²⁰¹⁸	
	Mathematics	< 15%	17.2%	22.3%	14.7% ²⁰¹⁸	22.9% ²⁰¹⁸	
	Science	< 15%	16.3%	21.1%	13.8% ²⁰¹⁸	22.3% ²⁰¹⁸	
Early leavers from education and training (age 18-24)	³ Total	< 9%	5.3%	11.0%	4.8%	9.6%	
	³ By gender	Men		7.2%	12.5%	5.7%	11.1%
		Women		3.2%	9.4%	3.7%	8.0%
	⁴ By degree of urbanisation	Cities		4.5%	9.6%	4.7%	8.6%
		Rural areas		6.1%	12.2%	4.7%	10.0%
		Native		5.3%	10.0%	4.8%	8.3%
	⁵ By country of birth	EU-born		: ^u	20.7%	: ^u	20.3%
		Non EU-born		: ^u	23.4%	: ^u	22.1%
	⁶ Equity indicator (percentage points)				10.6 ²⁰¹⁸	19.3 ²⁰¹⁸	
	⁷ Exposure of VET graduates to work based learning	Total	≥ 60% (2025)	:	:	16.4%	60.1%
Tertiary educational attainment (age 25-34)	⁸ Total	45%	43.2%	36.5%	40.5%	42.0%	
	⁸ By gender	Men		34.0%	31.2%	31.2%	36.5%
		Women		52.8%	41.8%	50.1%	47.6%
	⁹ By degree of urbanisation	Cities		58.2%	46.2%	58.1%	52.2%
		Rural areas		30.0%	26.9%	28.0%	30.2%
		Native		43.1%	37.7%	40.2%	43.0%
	¹⁰ By country of birth	EU-born		: ^u	32.7%	: ^u	39.5%
		Non EU-born		66.9% ^u	27.0%	60.7%	35.7%
¹¹ Share of school teachers (ISCED 1-3) who are 50 years or over			29.0%	38.3%	37.2% ²⁰²⁰	39.2% ²⁰²⁰	

Source: (1,3,4,5,7,8,9,10,11) = Eurostat; 2 = OECD (PISA); 6 = European Commission (Joint Research Centre). Notes: Data is not yet available for the remaining EU-level targets under the European Education Area strategic framework, covering underachievement in digital skills and participation of adults in learning. The equity indicator shows the gap in the share of underachievement in reading, mathematics and science (combined) among 15-year-olds between the lowest and highest quarters of socio-economic status.

need for better systemic solutions, in particular support for teachers.

Poland's tertiary educational attainment rate has dropped below the EU average; the higher education institutions (HEI) evaluation process needs improvement. In 2022, the tertiary educational attainment rate of people aged 25-34 was 40.5% (EU 42%), similar to 2021 (40.6%), but lower by 1.9 pps compared with 2020 and 3 pps compared with 2019. The reasons for the decrease are not clear. In 2020, the proportion of STEM graduates fell to 19.4% (EU 24.9%). The proportion of graduates in natural sciences, maths and statistics is particularly low at 3.2% (EU 6.2%), and that of ICT graduates is slightly below the EU average (3.7% vs 3.9%); this is expected to hinder the research and innovation potential of Poland (¹³⁶). The first evaluation of HEIs resulted in disproportionately better results for small HEIs in a specific discipline, or those with new faculties,

than for the more experienced institutions (¹³⁷), which questions the evaluation process reliability (¹³⁸).

Poland plans to develop a digital strategy for schools and digital competences; higher education is not digital-ready. A digital divide among students and teachers continues, and teachers still lack training in digital teaching methods (¹³⁹). In its recovery and resilience plan, Poland adopted a national digital competence programme, including training of teachers, and, for schools, it plans to develop a digitalisation strategy and minimum standards for ICT equipment. However, HEIs also lack sufficient ICT infrastructure and skills for online teaching and

(¹³⁷) <https://serwis.gazetaprawna.pl/edukacja/artwykuly/8511517.edukacja-uczelnie-ewaluacja-zastrzezenia-ocena-dzialalnosci.html>

(¹³⁸) <https://oko.press/ewaluacja-nauki-to-porazka-jej-wyniki-nicie-mowia-i-nikomunie-sa-potrzebne-wywiad/>

(¹³⁹) Supreme Audit (2022), Schools in pandemic times. <https://www.nik.gov.pl/aktualnosciedukacja-i-nauka/szkoly-w-czasach-pandemii.html>

(¹³⁶) For more information, see Annex 11, innovation.

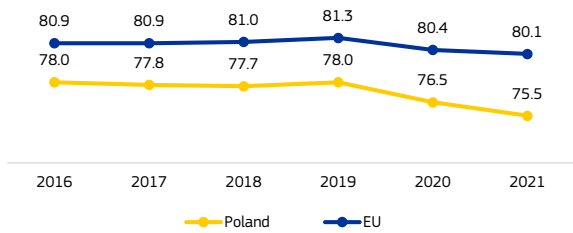
working, and a concept for developing and using digital educational materials in HEIs ⁽¹⁴⁰⁾.

⁽¹⁴⁰⁾Supreme Audit (2022), Digital Poland? A long way to go.
<https://www.nik.gov.pl/aktualnosci/kompetencje-cyfrowe.html>

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

Life expectancy in Poland is among the lowest in the EU and in 2021, it fell back to the level of 13 years earlier. This reflects the increase in COVID-19 mortality in 2021, (more than a doubling compared to 2020⁽¹⁴¹⁾). Mortality per 100 000 population from preventable causes (deaths that can be mainly avoided through public health and primary prevention measures) (222, versus 160 for the EU overall) and treatable causes (144, versus 92 for the EU overall) is higher than the EU average. Diseases of the circulatory system and cancer were the main causes of death before the pandemic, but COVID-19 has accounted for a substantial share of deaths in recent years.

Graph A16.1: Life expectancy at birth, years



Source: Eurostat

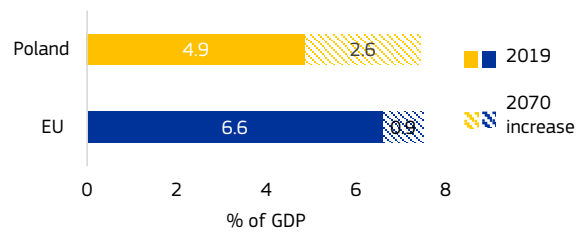
Health spending relative to GDP in Poland is among the lowest in the EU. This said, in 2020, total healthcare spending increased to 6.5% of GDP. This is in line with the upward trend in all Member States in 2020. In Poland, this increase is fully explained by the GDP contraction observed (by 2%, compared to 5.7% in the EU overall), as nominal annual healthcare spending moderately decreased from EUR 34.4 billion to EUR 34.1 billion. This is also corroborated by the fact that, as a share of total public spending, health spending decreased by 0.6 percentage points (pps).

Spending on prevention decreased, bucking a trend for increasing budgets observed in all other Member States. Poland is one of the few

EU countries in which the share of preventive care in total healthcare expenditure decreased between 2019 (2.1%) and 2020 (1.9%). Across the EU, overall spending on prevention increased by 26% on average, mostly driven by spending on disease detection, surveillance, control and response programmes as part of the public health response to COVID-19.

The public share of health spending is comparatively low (72.3% in 2020 versus 81.2% for the EU overall). Household out-of-pocket payments are relatively high (19.6%, versus 14.4% for the EU overall). Public spending on health is projected to increase by 2.6 pps of GDP by 2070 (compared to 0.9 pps for the EU overall), due to demographic pressures and a substantial increase in public spending from 4.9% of GDP in 2019 to 6.0% in 2025 (see Annex 21).

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



AWG reference scenario

Source: European Commission / EPC (2021)

⁽¹⁴¹⁾Based on data provided directly by Member States to ECDC under the European Surveillance System (data current as of 13 April 2023)

Table A16.1: Key health indicators

	2017	2018	2019	2020	2021	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	132.0	133.1	133.7	144.2	NA	91.7 (2020)
Cancer mortality per 100 000 population	290.5	291.2	283.4	279.7	NA	242.2 (2020)
Current expenditure on health, % GDP	6.6	6.3	6.5	6.5	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	69.3	71.5	71.8	72.3	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	2.4	2.3	2.1	1.9	NA	3.4 (2020)
Acute care beds per 100 000 population	485	473	435	437	NA	387.4 (2019)
Doctors per 1 000 population *	2.4	NA	NA	NA	NA	3.9 (2020)
Nurses per 1 000 population *	5.1	NA	NA	NA	NA	8.3 (2020)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day (total consumption in CY and CZ) **	23.8	23.0	22.2	17.1	18.8	14.5 (2021)

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

Source: Eurostat; except: ** ECDC

Poland has the lowest number of doctors and nurses in the EU (per 1 000 population), with an ever-increasing share of health staff in the higher age brackets.

According to the National Statistical Office, in 2021, the number of doctors and nurses licensed to practice, increased in absolute terms compared to the previous year, by 4 063 and 5 300, respectively ⁽¹⁴²⁾. In 2021, all age groups of doctors saw a nominal increase in numbers except the group of 40–49 years. As in previous years, those aged between 50 and 59 were the most numerous group (almost 32 000), accounting for 20.6% of the total number of doctors licensed to practice (21.1% in 2020). On a positive note, with a difference of 3 300, the highest increase occurred in those aged up to 29 years. In 2021, this group accounted for 11.7% of the total of doctors licensed to practice, up from 9.8% the previous year. In 2021, the number of nurses of doctors licensed to practice increased by 5 300 to 305 800, with 61% being over 50 years old.

Under the Recovery and Resilience Facility, Poland is using both grants and loans for investments in health, worth a total of EUR 4.2 billion (12% of the total budget).

Under the grant component, Poland is proposing three reforms (with four subsequent investments). The first reform introduces comprehensive measures to restructure public hospitals. The second reform improves the match between needs and availability of medical professionals in Poland. The third reform improves the quality and efficiency of the healthcare system by supporting research and development in the medical and health fields.

Under the loan component, Poland is proposing two reforms (with two subsequent investments). The first reform is to support the transformation of district hospitals into long-term care and geriatric care units or centres. The second reform is to introduce a regulatory framework to help attract the production of medicines and active pharmaceutical substances to Poland and increase this production.

Costly hospital care accounts for a disproportionate share in total expenditure, with a weak primary care system and high unmet health needs.

In 2020, there was a decrease in the number of outpatient clinics and a decrease in the number of medical practices that provided advice under a contract signed directly with the Narodowy Fundusz Zdrowia (the national health fund). There were 44 million (15%) fewer visits than in the previous year ⁽¹⁴³⁾. However, actions are being taken to strengthen the role of primary care in the health care system. In October 2022, regulations introducing coordinated care for the most common diseases and improving access to a specialist doctor came into force.

The low proportion of hospitals that use electronic health records (10%) and the low proportion of primary care centres (30%) further hamper the integration of care provision.

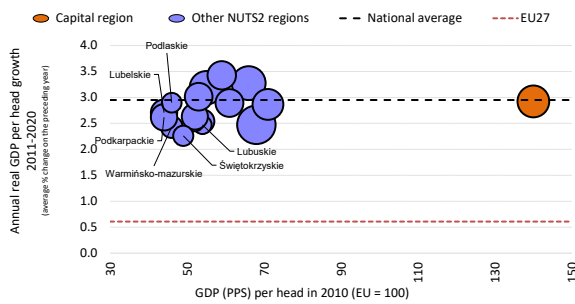
⁽¹⁴²⁾ See: [Statistics Poland / Topics / Health / Health / Outpatient health care in 2021](#).

⁽¹⁴³⁾ See: [Statistics Poland / Topics / Health / Health / Outpatient health care in 2021](#).

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

Regional disparities in Poland have remained high in last years. However, convergence on the EU average has continued. Internal convergence in 2011-2020 was hampered by the relatively sluggish growth in the less developed regions ⁽¹⁴⁴⁾. At the extreme, the average annual real GDP per capita growth rate was lowest in Świętokrzyskie, Warmińsko-Mazurskie and Lubuskie all below 2.9% of the country average ⁽¹⁴⁵⁾ (Graph A17.1), but convergence on the EU average has continued ⁽¹⁴⁶⁾. All Poland's regions had a higher average annual real GDP per capita increase than the EU as a whole.

Graph A17.1: GDP (PPS) per capita (2010) and GDP growth (2010-2020) in Poland



(1) Bubble sizes correspond to population size
 Source: EUROSTAT, DG REGIO elaboration

Regional disparities are driven by the labour productivity gaps within the country. Labour productivity, measured as gross value added per person employed, stands at 80% of the EU average. In the capital city region, productivity was 139% of the EU average, while it was below the EU average in all other regions. It was lowest at 57-62% in the least developed regions (Lubelskie,

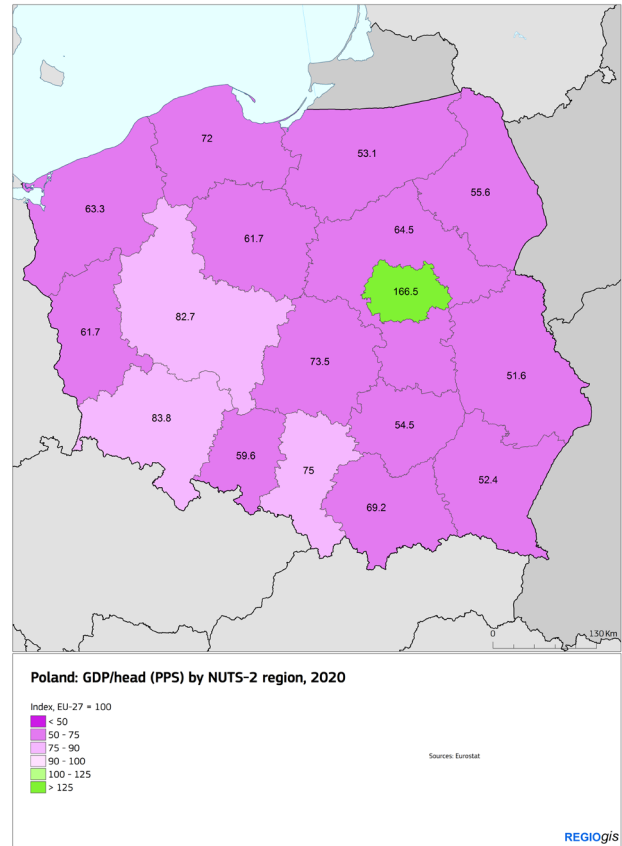
⁽¹⁴⁴⁾ The terms 'Less/least developed' and 'more/most developed' are comparisons between Poland's regions. These terms should not be confused with the classification for cohesion policy funds eligibility criteria.

⁽¹⁴⁵⁾ The lowest growth was in Świętokrzyskie (2.3%), Warmińsko-Mazurskie (2.4%) and Lubuskie (2.5%).

⁽¹⁴⁶⁾ GDP per capita was as follows: Lubelskie (52%), Podkarpackie (53%), Warmińsko-Mazurskie (54%), Świętokrzyskie (55%) and Podlaskie (56%).

Świętokrzyskie, Warmińsko-Mazurskie, Podkarpackie and Podlaskie ⁽¹⁴⁷⁾).

Map A17.1: Poland GDP per capita (PPS) by NUTS 2 region, 2020



All Polish regions except the capital region rank below the EU average in terms of competitiveness ⁽¹⁴⁸⁾. According to the last edition of the Regional Competitiveness Index, the competitiveness of the Warsaw region is at 118.8% of the EU average. The second most competitive region (Slaskie) is at 96.9% while the least competitive one (Warmińsko-mazurskie) bottoms at 75.8%.

⁽¹⁴⁷⁾ Labour productivity was as follows: Lubelskie (57%), Świętokrzyskie (58%), Warmińsko-Mazurskie (61%), Podkarpackie (61%) and Podlaskie (62%).

⁽¹⁴⁸⁾ 2022 Regional Competitiveness Index.



Table A17.1: Selected indicators at regional level - Poland

Region Name	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	Real productivity growth	GDP per head growth	Unemployment rate	R&D expenditure	At risk of poverty or social exclusion	Regional Competitiveness Index (RCI)	GHG emissions
	Index, EU27 = 100, 2021	Index, EU27 = 100, 2020	Average % change on the preceding year, 2011-2020	Average % change on the preceding year, 2011-2020	% of active population, 2021	% of GDP, 2019	% of population, 2020	Index - values range between 0 and 100, 2022	tCO ₂ equivalent per head, 2021
European Union	100.0	100.0	0.2	0.6	7.0	2.3	16.6	100.0	7.2
Poland	77.0	80.1	2.3	3.0	3.4	1.3	17.0	88.7	10.9
Małopolskie	71.0	73.0	1.9	3.2	3.2	2.2	15.1	94.3	9.7
Śląskie	79.0	83.1	1.9	2.5	2.9	0.9	11.4	96.9	15.5
Wielkopolskie	83.0	82.4	1.7	3.3	2.2	0.8	18.1	84.8	8.9
Zachodniopomorskie	64.0	71.2	0.3	2.5	3.5	0.6	15.0	82.1	10.4
Lubuskie	62.0	68.9	2.6	2.5	2.0	0.5	14.2	82.1	7.4
Dolnośląskie	86.0	89.4	1.9	2.9	4.0	1.2	12.7	89.1	9.3
Opolskie	62.0	70.7	1.4	2.5	2.7	0.5	16.3	83.5	22.9
Kujawsko-Pomorskie	62.0	66.5	1.3	2.6	4.4	0.7	19.7	82.1	10.8
Warmińsko-Mazurskie	54.0	60.6	1.9	2.4	3.5	0.8	24.2	75.8	7.7
Pomorskie	75.0	76.4	0.9	2.9	2.3	1.7	12.4	90.4	8.5
Łódzkie	73.0	73.0	3.9	3.4	4.4	1.0	16.4	86.1	15.1
Świętokrzyskie	55.0	58.2	3.4	2.3	4.4	0.5	17.2	76.7	12.6
Lubelskie	52.0	57.1	3.7	2.7	5.1	1.1	26.0	79.0	10.9
Podkarpackie	53.0	60.8	2.7	2.6	4.8	1.2	22.0	82.7	7.6
Podlaskie	56.0	61.5	2.4	2.9	3.1	0.8	24.2	78.8	9.9
Warszawski Stołeczny	166.0	138.6	1.2	2.9	2.1	2.6	12.8	118.8	5.3
Mazowiecki Regionalny	67.0	75.9	4.0	3.0	3.8	0.5	24.0	80.3	15.4

Source: EUROSTAT

Regional disparities in labour market conditions remained high in 2021.

The labour market was stronger than in the EU as a whole and only Podkarpackie had an employment rate below the EU average (68% versus 73%). The employment rate ranged from 84% in the capital region to less than the national average (75%) in several regions, including the less developed ones (Podkarpackie, Warmińsko-Mazurskie and Lubelskie⁽¹⁴⁹⁾). The unemployment rate, which is very low in Poland, was lowest at 2-2.1% in the Lubuskie and capital regions and was 5.1% in the least developed Lubelskie region⁽¹⁵⁰⁾.

The COVID-19 pandemic caused the first economic recession in three decades, and the economic fallout was distributed unequally.

Between 2019 and 2020, GDP per capita dropped in all Polish regions except Łódzkie (+1.3%). The impact of the pandemic was particularly severe in some populated and prosperous regions like Warszawski Stołeczny (-4.7%), Śląskie (-5.5%) and Pomorskie (-4.6%). It was much milder in less developed regions, where the fall in GDP per capita

⁽¹⁴⁹⁾Podkarpackie (68%), Warmińsko-Mazurskie (73%), Lubelskie (73%), Świętokrzyskie (74%) were some of the regions with the lowest employment rate (aged 20-64), while it reached 76% in the Podlaskie region.

⁽¹⁵⁰⁾The unemployment rate was as follows: Lubelskie (5.1%), Podkarpackie (4.8%), Świętokrzyskie (4.4%), Warmińsko-Mazurskie (3.5%) and Podlaskie (3.1%). The national average was 3.4%.

ranged from -0.1% in Podlaskie to -1.7% in Lubelskie, although Podkarpackie suffered a severe economic drop of -5.5%.

The labour market was resilient during the COVID-19 pandemic, but the downward trend in unemployment has reversed in some regions.

Unemployment decreased in Wielkopolskie, Opolskie, Pomorskie, Lubelskie, Podkarpackie and Mazowiecki Regionalny between 2019 and 2021, while the rate increased most (by 0.4-0.7 percentage points) in Małopolskie, Kujawsko-Pomorskie, Śląskie, Dolnośląskie and Łódzkie.

The social situation did not deteriorate during the pandemic in most regions, but high regional disparities in poverty persist.

Around a quarter of the population in some of the less developed regions (Lubelskie, Warmińsko-Mazurskie and Podlaskie) remained at risk of poverty or social exclusion (AROPE) in 2021, while the rate was below 13% in Śląskie, Pomorskie, Dolnośląskie and Warszawski Stołeczny.

The large inflow of displaced people from Ukraine increased demand for public services and housing.

This created fiscal pressures in the short term including on local government but has also contributed to increased consumption⁽¹⁵¹⁾. In

⁽¹⁵¹⁾Source: the World Bank, 2022, EU Regular Economic Report: Living up to Potential in the Wake of Adverse Shocks.

January 2023, 1 515 194 refugees from Ukraine had registered for temporary protection in Poland, mostly in Małopolskie, Mazowieckie, Dolnośląskie. Educational assistance is crucial for refugees. 191 150 refugee pupils from Ukraine were registered at schools and assigned to primary and preparatory classes in Polish regions, mostly in Mazowieckie, Śląskie and Dolnośląskie⁽¹⁵²⁾. Civil society has been playing a significant role in assisting the displaced persons fleeing the war in Ukraine.

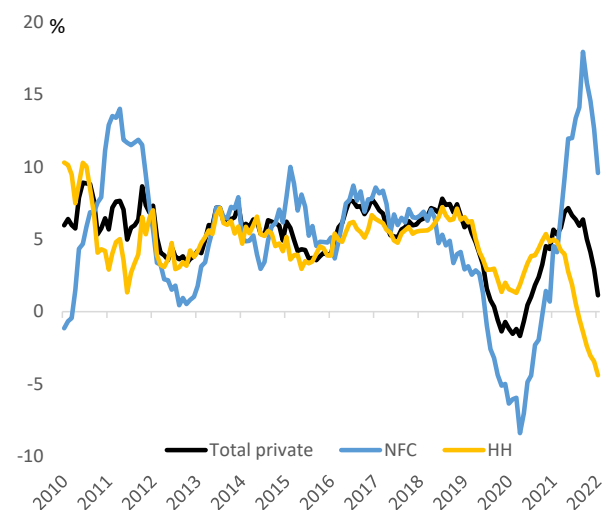
⁽¹⁵²⁾Source: the UN Refugee Agency, 2022, refugees from Ukraine registered in Poland by district.

Polish banks have a solid business profile with limited foreign exposure. With total assets equivalent to the country’s economic output, Poland’s banking sector is one of the largest in central and eastern Europe and by far the largest component of the Polish financial sector. Polish banks are a strong pillar of the economy and have been critical in supporting the country’s rapid economic growth in recent years. The sector is mostly Polish owned, with 56.4% of total banking-sector assets controlled through Polish investors, mostly the Polish state. Local lenders are well diversified and highly competitive – the top five lenders hold some 57% of total banking-sector assets. Notwithstanding some efforts to expand internationally, the sector has a very limited footprint abroad.

The banking system shows strong resilience but faces multiple challenges. The banking sector has recovered rapidly from the pandemic, buoyed by strong GDP growth in 2021 and early 2022. More recently, and given the prevalence in Poland of loans at variable interest rates, monetary-policy tightening has significantly improved the sector’s profitability. However, rising interest rates have also brought a sizeable increase in borrowing costs and considerably increased credit risk for lenders in a context of high inflation and slowing economic growth. Moreover, as in previous years, many local lenders continue to face significant legal risks associated with the legacy portfolio of mortgage loans issued in foreign currencies. Polish lenders have built substantial provisions for these mortgages, and proactively started various voluntary settlement programmes for foreign-currency borrowers. But despite this, legacy foreign-currency mortgages will continue to fuel uncertainty. Additionally, wary of the rapidly rising credit costs and repayment burden faced by borrowers, Polish authorities legislated in mid-2022 for a ‘credit holiday’ on Polish-zloty mortgage loans. The bill allows borrowers to postpone up to eight mortgage instalments over 2022-2023. The aggregate costs (exclusively born by banks) will ultimately depend on uptake, but they are bound to have a sizeable impact on the sector’s profitability. Non-performing loans (NPL) remain higher than the European average (4.6% and 1.8% respectively) but have been trending down since 2017.

Credit growth is faltering as monetary policy normalises. The central bank of Poland has embarked on a campaign to rapidly tighten monetary policy to combat rapidly rising inflation. Higher interest rates have severely depressed demand for credit. Factors such as uncertainty, the rising cost of living, and the worsening macroeconomic outlook have also played a major role in depressing demand. Moreover, stricter supervisory requirements by the Polish Financial Supervision Authority have affected the way in which lenders assess clients’ creditworthiness, and this has weighed on mortgage lending. In contrast, corporate lending (mostly current-account and working-capital loans), remained robust for most of 2022. As firms returned to their regular operations and public pandemic-aid schemes were discontinued, financing lines had to be replaced, mainly through the use of corporate credit. Nonetheless, despite robust GDP growth, the annualised growth rate of private-sector credit started declining by mid-2022, weighed down by declines in household credit. The mortgage-credit segment was particularly affected. Poland’s Credit Bureau reported that the number of submitted applications for mortgage loans declined in December 2022 by over 60% year-on-year, and was negative for every single month since the beginning of 2022.

Graph A18.1: Credit growth



Source: ECB.

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

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	95.5	92.5	92.3	102.1	100.7	92.8	276.8	207.9
Share (total assets) of the five largest banks (%)	47.5	49.5	49.8	54.3	56.6	-	-	68.7
Share (total assets) of domestic credit institutions (%)¹	54.8	53.3	54.0	56.6	57.4	56.6	-	60.2
NFC credit growth (year-on-year % change)	8.6	6.6	2.9	-6.4	4.5	9.6	-	9.1
HH credit growth (year-on-year % change)	6.4	5.6	6.5	1.5	5.0	-4.4	-	5.4
Financial soundness indicators:¹								
- non-performing loans (% of total loans)	6.6	6.2	6.1	6.0	5.0	4.6	1.8	1.8
- capital adequacy ratio (%)	18.0	17.9	17.8	19.6	17.9	17.0	18.6	19.8
- return on equity (%) ²	6.9	7.0	6.9	3.1	4.8	4.5	6.1	6.6
Cost-to-income ratio (%)¹	57.2	56.7	56.0	54.2	54.5	48.6	60.6	51.8
Loan-to-deposit ratio (%)¹	93.7	93.2	91.9	80.3	77.4	78.0	88.6	78.0
Central bank liquidity as % of liabilities	0.0	0.4	0.0	0.0	0.0	0.0	-	2.9
Private sector debt (% of GDP)	77.3	76.7	74.2	76.1	71.4	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	310.3	280.2	260.0	200.8	232.0	491.2	-	93.3
Market funding ratio (%)	48.0	45.7	44.6	48.0	47.8	-	50.8	40.0
Green bonds issued to all bonds (%)	-	0.4	1.2	1.3	1.5	1.7	3.9	2.3
	1-3	4-10	11-17	18-24	25-27			

Colours indicate performance ranking among 27 EU Member States.

(1) Last data: Q3 2022.

(2) Data is annualized.

Source: ECB, Eurostat, S&P Global Capital IQ Pro**Source:**

Legal risks remain elevated as borrowers challenge the validity of legacy loans issued in foreign currencies.

Over a decade after Polish banks stopped issuing Swiss-franc-denominated mortgages, these legacy loans continue to create financial stability risks. Following a set of rulings favourable to Swiss-franc borrowers from the Court of Justice of the European Union (CJEU), an increasing number of borrowers are now challenging the validity of their loan agreements in Polish courts. These borrowers are citing essentially the abusiveness of the indexation clauses embedded in these contracts. The remaining portfolio is of reasonably high quality and relatively small (worth some PLN 50 bn (EUR 10.75 bn) by end-2022, equivalent to about 12% of the outstanding value of mortgage loans). Nevertheless, the legal risk associated with these loans remains a major financial-stability risk. The costs generated by this risk (mainly through provisions) will remain elevated over the coming months as banks need to factor in various outcomes. This includes tail risks that could materialise if court rulings are highly unfavourable to the banks. In this context, guidance by the CJEU will be critically important.

Solvency remains adequate but lower profitability may impact banks' capital positions.

Soundness indicators remain overall at safe levels and indicate that Polish banks are conservatively and prudently managing various incoming risks. Capital ratios were adversely impacted by the decline in the balance-sheet value of government bonds (affected by the rising

interest rates) in 2022 as well as the phasing in of the intermediate MREL target. Funding and liquidity are solid and well above regulatory minima, and banks are efficient overall with strong operational profitability. Nevertheless, banks' financial results – and therefore their capital-generation capacity – will come under pressure from: (i) the large provisions for legacy foreign-currency loans; (ii) losses induced by the mortgage repayment holiday; and (iii) the expected heavier provisioning for future credit risk, mainly in the corporate and consumer loan segments, the two segments heavily affected by the rapid rise in interest rates. Lastly, in the current higher interest rate context, funding is also set to become more expensive.

The insurance sector is coming under pressure.

Domestic insurers are largely well capitalised and are highly solvent according to the solvency capital requirement data. They also have good overall profitability. Nevertheless, the resilience of local insurers can be somewhat overestimated due to the unusually high proportion of expected profits included in future premiums and the double gearing of capital. Moreover, the performance of the insurance sector may be challenged in the future by: (i) inflation at multi-decade highs biting into households' real disposable income; (ii) large foreign-exchange movements; and (iii) rising operating costs.

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

Poland's tax revenues are relatively low in relation to GDP and rely on consumption taxes more than the EU average. Table A19.1 shows that Poland's tax revenues as a percentage of GDP were considerably below the EU aggregate in 2021, even though they increased by about 5 percentage points (pps) since 2010. The share of labour taxes as a proportion of total tax revenues was significantly below the EU aggregate, but revenues from consumption taxes and environmental taxes were above the EU aggregate, as a share of both GDP and total taxation (see Graph A19.1). Revenues from capital and property taxes were close to the EU aggregate. Within environmental taxes, the contribution of energy taxes was relatively high in 2020 (7.1% of tax revenue) when compared with the EU average of 4.3% (see Graph A19.1). However, transport taxes represented only 0.5% of tax revenue (the EU average was 1%). This means that there would be room to introduce a tax on passenger cars with a tax base related to emissions. (For more on

policies related to environmental sustainability, see Annex 6).

Poland's labour tax burden was less progressive than the EU average in 2022.

Graph A19.2 shows that the labour tax wedge for Poland in 2022 was below the EU average for single people across levels of income. The gap is larger for higher levels of income. Second earners at a wage level of 67% of the average wage, whose spouses earn the average wage, were subject to a tax wedge that was below the EU average. In 2021, the ability of the Polish tax and benefit system to reduce income inequality (as measured by its ability to reduce the GINI coefficient) was still comparatively low (Table A19.1).

A major 2022 tax reform ('Polish Deal') is expected to reduce the overall tax burden for employees, especially at lower earnings.

Effective in January 2022, the reform raised the tax-free amount to PLN 30 000, decreased the lower personal income tax rate from 17% to 12%, and increased the threshold to PLN 120 000 from which the 32% upper tax rate applies. Universal tax credit has been extended. The reform also reduced the tax burden on workers delaying retirement beyond the statutory, creating incentives to increase the effective retirement age. These measures are estimated to have reduced

Table A19.1: Taxation indicators

	Poland					EU-27					
	2010	2019	2020	2021	2022	2010	2019	2020	2021	2022	
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	31.6	35.2	35.6	36.8		37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	11.9	14.2	14.3	14.2		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	12.5	12.3	12.4	13.5		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	7.2	8.6	8.9	9.1		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	1.4	1.7	1.7	1.6		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	1.1	1.1	1.1	1.1		1.1	1.2	1.2	1.1	
Progressivity & fairness	Environmental taxes as % of GDP	2.7	2.5	2.5	2.9		2.4	2.4	2.2	2.2	
	Tax wedge at 50% of average wage (Single person) (*)	32.3	34.3	33.4	33.5	29.4	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	34.2	35.6	34.8	34.9	33.6	41.0	40.1	39.9	39.7	39.7
	Corporate income tax - effective average tax rates (1) (*)		15.5	15.5	15.5			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	4.7	5.3	4.6			8.6	7.7	8.1	7.8	
Tax administration & compliance	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		29.8	39.9			31.6	40.7			
	VAT Gap (% of VAT total tax liability, VTTL)		12.7	11.3			11.0	9.1			

(1) Forward-looking effective tax rate (OECD).

(2) A higher value indicates a stronger redistributive impact of taxation.

(*) EU-27 simple average

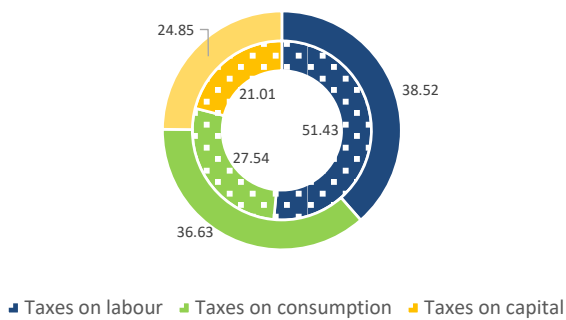
For more data on tax revenues as well as the methodology applied, see European Commission, Directorate-General for Taxation and Customs Union, *Taxation trends in the European Union: data for the EU Member States, Iceland, Norway and United Kingdom: 2021 edition*, Publications Office of the European Union, 2021, <https://data.europa.eu/doi/10.2778/843047> and the *Data on Taxation* webpage, data https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en.

For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, *VAT gap in the EU: report 2022*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2778/109823>.

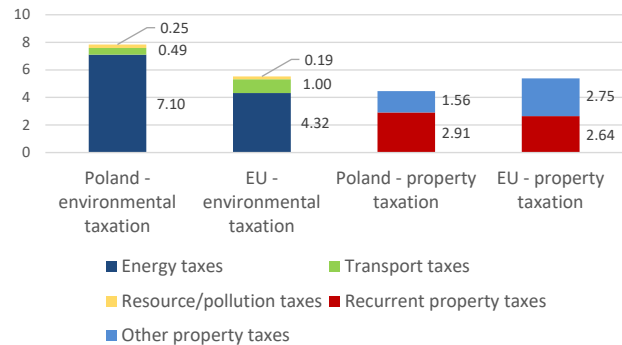
Source: European Commission, OECD.

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

Tax revenue shares in 2021, Poland (outer ring) and the EU (inner ring)



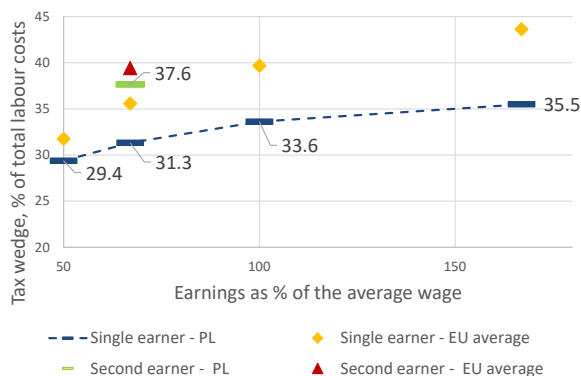
Environmental and property taxation as % of total tax revenue, Poland and the EU



Source: European Commission

the tax burden for most groups of employees, especially at lower earnings (by about 3 ppts for those earning 67% of the average wage).⁽¹⁵³⁾ At the same time, the tax burden for self-employed increased due to higher health insurance contributions.

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



Second earner tax wedge assumes first earner at 100% of the average wage and no children.

Source: European Commission

Poland is relatively advanced in digitally transforming its tax administration, which can help reduce tax arrears. Tax arrears currently amount to around 40% of total tax revenue (which corresponds to the EU average; see Table A19.1). Digitalisation of Poland's tax administration started in 2016, when Poland implemented SAF-T (the international standard for the electronic exchange of accounting data). The corresponding reporting obligation was initially imposed only on large companies but was later

extended to small companies. 2019 saw the introduction of a requirement to make split payments (by which purchasers make parallel payments to suppliers' account and a VAT account) and the modernisation of VAT reporting. A system of structured e-invoices was introduced in 2021 that allows the issue and receipt of electronic structured invoices via the national invoice system. The introduction of an obligation to issue invoices through that system is planned for 2024.

Poland's VAT gap decreased significantly in 2021. Poland has been improving VAT collection since 2015. Poland recorded one of the fastest increases in VAT compliance in the EU between 2016 and 2018. In 2020, the VAT gap (the gap between revenues actually collected and the theoretical tax liability) decreased by approximately 1.4 pps to 11.3 percent (see Table A19.1). A significant increase of nearly 20% in the value of electronic transactions and an approximately 8.5% decline in the bankruptcy rate have probably contributed to the increase in VAT compliance. Poland has not only improved digital transformation by implementing and extending SAF-T, but has also introduced measures against fraud and evasion. The policy gap increased slightly in 2020 due to increased public expenditure.⁽¹⁵⁴⁾

⁽¹⁵³⁾ Calculations by European Commission, Joint Research Centre, based on the EUROMOD model, version 15.0+.

⁽¹⁵⁴⁾ See: "VAT gap in the EU report 2022", prepared by CASE – Center for Social and Economic Research (project leader) and Economisti Associati (consortium leader), p. 110.



ANNEX 20: TABLE WITH ECONOMIC AND FINANCIAL INDICATORS

Table A20.1: Key economic and financial indicators

	2004-07	2008-12	2013-19	2020	2021	2022	forecast	
							2023	2024
Real GDP (y-o-y)	5.4	3.3	3.9	-2.0	6.9	5.1	0.7	2.7
Potential growth (y-o-y)	3.7	4.0	3.5	3.7	3.5	3.4	3.7	3.4
Private consumption (y-o-y)	4.1	3.2	3.5	-3.4	6.1	3.3	-0.1	2.7
Public consumption (y-o-y)	4.0	1.7	3.3	4.9	5.0	-2.0	0.5	2.7
Gross fixed capital formation (y-o-y)	12.3	2.1	4.3	-2.3	1.2	5.0	2.0	3.1
Exports of goods and services (y-o-y)	10.0	4.9	6.7	-1.1	12.3	6.2	2.3	3.6
Imports of goods and services (y-o-y)	12.0	2.7	6.4	-2.4	16.1	6.2	0.0	3.1
Contribution to GDP growth:								
Domestic demand (y-o-y)	5.7	2.7	3.5	-1.5	4.6	2.3	0.4	2.5
Inventories (y-o-y)	0.7	-0.3	0.1	-1.1	3.4	2.6	-1.1	-0.3
Net exports (y-o-y)	-1.0	0.8	0.3	0.6	-1.1	0.2	1.4	0.5
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.3	0.5	0.3	0.7	0.7	0.5	1.1	0.7
Capital accumulation (y-o-y)	1.2	1.8	1.4	1.2	1.2	1.2	1.2	1.2
Total factor productivity (y-o-y)	2.2	1.7	1.8	1.8	1.7	1.7	1.4	1.5
Output gap	-0.2	1.4	0.0	-2.9	0.3	1.9	-1.0	-1.7
Unemployment rate	15.7	9.3	6.6	3.2	3.4	2.9	3.3	3.2
GDP deflator (y-o-y)	3.2	2.9	1.2	4.3	5.3	11.3	11.8	5.8
Harmonised index of consumer prices (HICP, y-o-y)	2.4	3.7	0.7	3.7	5.2	13.2	11.7	6.0
HICP excluding energy and unprocessed food (y-o-y)	1.6	3.0	0.9	4.2	4.2	10.3	10.8	6.2
Nominal compensation per employee (y-o-y)	3.0	6.1	4.7	5.3	4.7	13.2	12.7	8.3
Labour productivity (real, hours worked, y-o-y)	2.7	3.3	3.4	-1.3	0.9	5.5	0.0	2.1
Unit labour costs (ULC, whole economy, y-o-y)	0.4	3.1	1.5	7.5	0.4	8.1	12.1	5.8
Real unit labour costs (y-o-y)	-2.7	0.2	0.4	3.1	-4.6	-2.9	0.3	0.0
Real effective exchange rate (ULC, y-o-y)	3.0	-1.1	-0.3	-0.2	-2.9	1.4	6.9	2.6
Real effective exchange rate (HICP, y-o-y)	4.1	-0.8	-0.4	0.5	-0.5	0.4	.	.
Net savings rate of households (net saving as percentage of net disposable income)	2.2	1.9	2.6	9.5	0.7	.	.	.
Private credit flow, consolidated (% of GDP)	6.5	6.9	3.9	1.8	3.8	1.8	.	.
Private sector debt, consolidated (% of GDP)	46.3	70.6	77.9	76.1	71.3	63.2	.	.
of which household debt, consolidated (% of GDP)	17.3	33.2	35.6	34.6	32.2	26.6	.	.
of which non-financial corporate debt, consolidated (% of GDP)	29.0	37.4	42.3	41.5	39.1	36.6	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	3.9	5.7	5.0	4.0	3.3	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	0.8	4.1	3.4	6.4	2.9	3.3	5.7	5.4
Corporations, gross operating surplus (% of GDP)	22.4	22.8	22.7	23.4	24.4	27.2	26.9	26.1
Households, net lending (+) or net borrowing (-) (% of GDP)	-1.7	-2.2	-1.2	4.2	-2.2	-2.0	-1.2	-1.0
Deflated house price index (y-o-y)	.	-5.4	2.0	6.7	3.7	-2.1	.	.
Residential investment (% of GDP)	3.4	3.2	2.4	2.2	2.3	2.2	.	.
Current account balance (% of GDP), balance of payments	-5.2	-5.0	-1.5	2.5	-1.4	-3.0	-0.7	0.7
Trade balance (% of GDP), balance of payments	-2.6	-2.4	2.2	5.7	3.3	1.9	.	.
Terms of trade of goods and services (y-o-y)	1.5	-0.5	0.9	2.8	-2.0	-3.4	3.0	0.6
Capital account balance (% of GDP)	0.9	1.6	1.6	1.4	0.7	0.3	.	.
Net international investment position (% of GDP)	-44.2	-60.6	-60.2	-43.9	-39.4	-33.8	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	-10.4	-23.1	-20.2	-4.5	0.8	2.3	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	36.8	52.1	55.2	47.2	43.6	40.7	.	.
Export performance vs. advanced countries (% change over 5 years)	69.0	36.4	13.3	34.3	30.6	.	.	.
Export market share, goods and services (y-o-y)	8.9	0.0	4.1	11.3	-0.7	2.2	-0.3	-0.2
Net FDI flows (% of GDP)	-3.5	-1.8	-1.8	-2.4	-4.1	-3.9	.	.
General government balance (% of GDP)	-3.6	-5.4	-2.2	-6.9	-1.8	-3.7	-5.0	-3.7
Structural budget balance (% of GDP)	.	.	-2.1	-5.7	-2.2	-5.0	-4.5	-2.9
General government gross debt (% of GDP)	45.9	52.1	51.4	57.2	53.6	49.1	50.5	53.0

(1) Domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.

(2) Net international investment position (NIIP) excluding direct investment and portfolio equity shares.

Source: Eurostat and ECB as of 2 May 2023, where available; European Commission for forecast figures (Spring forecast 2023).

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

1 - Short-term risks to fiscal sustainability are low overall. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A21.2)⁽¹⁵⁵⁾. Gross financing needs are forecast to remain relatively low. They are expected to increase temporarily to around 11% of GDP in the short term (i.e. over 2023-2024) – due to stock-flow adjustments reflecting a mismatch between the payment and deliveries of military investment – but to remain below the recent peak of 2020 (Table 1 in this annex). Financial markets' perceptions of sovereign risk are overall positive, as confirmed by the ratings of the main agencies.

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

The DSA for Poland shows that, under the baseline, the government debt ratio is projected to increase over the medium term, reaching around 55% of GDP in 2033 (Table 1)⁽¹⁵⁶⁾.⁽¹⁵⁷⁾ The assumed structural primary balance (a deficit of 0.8% of GDP) contributes to

⁽¹⁵⁵⁾The S0 is a composite indicator of short-term risk of fiscal stress. It is based on a wide range of macro-financial and fiscal variables that have proven to perform well in the past in detecting situations of upcoming fiscal stress.

⁽¹⁵⁶⁾The assumptions underlying the Commission's 'no-fiscal-policy-change' baseline notably comprise: (i) a structural primary deficit, before ageing costs, of 0.8% of GDP as of 2024; (ii) inflation converging linearly towards the 10-year forward inflation-linked swap rate 10 years ahead (which refers to the 10-year inflation expectations 10 years from now); (iii) the nominal short- and long-term interest rates on new and rolled over debt converging linearly from current values to market-based forward nominal rates by T+10 (as for all Member States); (iv) real GDP growth rates from the Commission 2023 spring forecast until 2024, followed by EPC/OGWG 'T+10 methodology' projections between T+3 and T+10, i.e. for 2025-2033 (on average 2.4%); (v) ageing costs in line with the 2021 Ageing Report (European Commission, Institutional Paper 148, May 2021). For information on the methodology, see the 2022 Debt Sustainability Monitor (European Commission, Institutional Paper 199, April 2023).

⁽¹⁵⁷⁾Table 1 shows the baseline debt projection and its breakdown into the primary balance, the snowball effect (the combined impact of interest payments and nominal GDP growth on the debt dynamics) and the stock-flow adjustment.

these developments. This position appears relatively ambitious compared with past fiscal performance, indicating that the country only has moderate room for corrective action. At the same time, the baseline projection benefits up to 2033 from a still favourable (although declining) snowball effect, notably thanks to the impact of Next Generation EU, with real GDP growth at around 2.4% over 2025-2033. Government gross financing needs are expected to remain limited over the projection period, at around 9% of GDP in 2033, below the level forecast for 2024.

The baseline projections are stress-tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1).

For Poland, reverting to a historical fiscal position under the 'historical structural primary balance (SPB)' scenario would significantly worsen the government debt trajectory. If the SPB gradually converged its historical 15-year average (a deficit of 1.8% of GDP), the projected debt-to-GDP ratio would be about 7 pps. higher than in the baseline by 2033. The 'lower structural primary balance' scenario (with the SPB level permanently 1.3 pps. lower than in the baseline) would lead to a higher government debt-to-GDP ratio (+11 pps. of GDP by 2033) compared with the baseline. A permanent worsening of the macro-financial conditions, as reflected under the 'adverse interest-growth rate differential' scenario (with a differential 1 pp. higher than the baseline) would also result in a persistently higher debt ratio, by around 4 pps. of GDP by 2033, as compared with the baseline. A temporary worsening of financial conditions, as reflected in the 'financial stress' scenario (with a temporary increase of interest rates by 1 pp.), would only marginally increase the debt ratio by 2033 compared with the baseline.

Additionally, stochastic debt projections indicate low risk (Graph 2).⁽¹⁵⁸⁾ These stochastic simulations point to a 66% probability of the debt ratio in 2027 being greater than in 2022, entailing low risk given the initial low level of debt. The uncertainty (as measured by the difference between the 10th and 90th debt distribution percentiles) surrounding the baseline debt projection is limited.

⁽¹⁵⁸⁾These projections show the impact on debt of 2000 different shocks affecting the government's primary balance, economic growth, interest rates and exchange rates. The cone covers 80% of all simulated debt paths, therefore excluding tail events

3 - Long-term risks to fiscal sustainability are medium overall ⁽¹⁵⁹⁾.

The S2 sustainability gap indicator (at 3.0 pps. of GDP) points to medium risk, suggesting that Poland would need to significantly improve its structural primary balance to ensure debt stabilisation over the long term.

This result is underpinned both by the projected increase in ageing-related costs (contribution of 1.7 pps. of GDP) and by the unfavourable initial budgetary position (contribution of 1.3 pps. of GDP) (Table 2). Long-term developments in ageing costs are primarily driven by the projected increase in health care and long-term care expenditure (joint contribution of 2.5 pps. of GDP). As a result, while a number of investments and reforms in the RRP contribute to supporting the efficiency of the Polish health and long-term care systems, additional measures may be required to further improve its fiscal sustainability. Expenditure on public pensions is projected to decline (contribution of -0.8 pp. of GDP), based however on the assumption of a strong decline in the replacement rate.

Given limited long-term debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as medium.

Indeed, the S1 sustainability gap indicator signals that a consolidation effort of 1.9 pps. of GDP would be needed to bring debt to 60% of GDP by 2070 (Table 2). This gap entirely stems from the initial deficit and the projected increase in ageing costs (contributing 1.1 pps. and 0.9 pp. of GDP, respectively), while debt already stands close to 60% of GDP.

Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to the

recent increase in interest rates, potential legal costs associated with Swiss franc-denominated loans and exposure to non-performing loans. On the other hand, risk-mitigating factors include the lengthening of debt maturity in recent years, relatively stable financing sources (with a diversified and large investor base) and the currency denomination of debt (about three-quarters of outstanding debt is denominated in local currency). In addition, the structural reforms under the NGEU/RRF, if fully implemented, could have a further positive impact on GDP growth in the coming years, and therefore help to mitigate debt sustainability risks.

⁽¹⁵⁹⁾The S2 fiscal sustainability indicator measures the permanent SPB adjustment in 2024 that would be required to stabilise public debt over the long term. It is complemented by the S1 indicator, which measures the fiscal gap in 2024 to bring the debt-to-GDP ratio to 60% in the long term. For both the S1 and S2 indicators, the risk assessment depends on the amount of fiscal consolidation needed: 'high risk' if the required effort exceeds 6 pps. of GDP, 'medium risk' if it lies between 2 pps. and 6 pps. of GDP, and 'low risk' if the effort is negative or below 2 pps. of GDP. The overall long-term risk classification brings together the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 when it signals a higher risk than S2. See the 2022 Debt Sustainability Monitor for further details.

Table A21.1: Debt sustainability analysis - Poland

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	57.2	53.6	49.1	50.5	53.0	52.6	52.2	51.9	52.1	52.4	52.8	53.4	54.1	55.0
Changes in the ratio	11.5	-3.6	-4.5	1.4	2.5	-0.4	-0.3	-0.3	0.2	0.3	0.4	0.6	0.7	0.9
of which														
Primary deficit	5.6	0.7	2.2	3.0	1.7	1.5	1.2	1.0	1.0	1.0	1.1	1.1	1.1	1.1
Snowball effect	0.4	-5.3	-6.2	-3.5	-1.9	-1.9	-1.6	-1.3	-0.9	-0.7	-0.6	-0.5	-0.3	-0.2
Stock-flow adjustments	5.5	1.0	-0.4	1.9	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	15.7	7.6	7.8	11.5	11.4	8.8	8.6	8.4	8.5	8.5	8.6	8.7	8.8	8.9

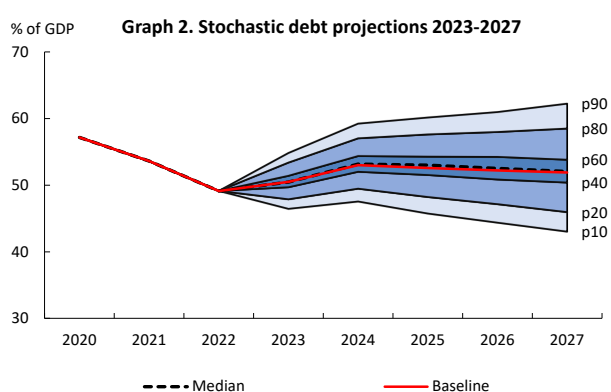
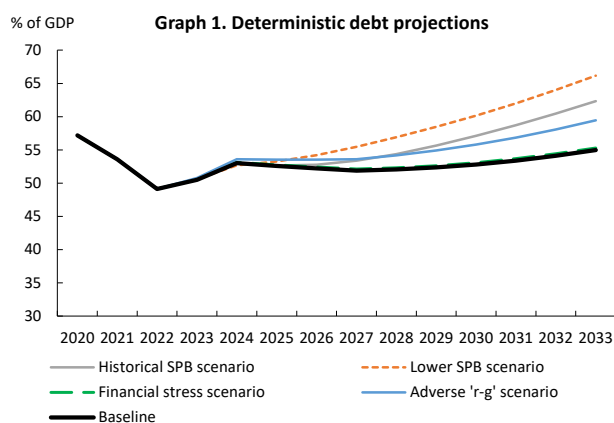


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

	S1	S2
Overall index (pps. of GDP)	1.9	3.0
of which		
Initial budgetary position	1.1	1.3
Debt requirement	-0.1	
Ageing costs	0.9	1.7
of which		
Pensions	-0.6	-0.8
Health care	0.9	1.3
Long-term care	0.8	1.2
Others	-0.1	0.0

Source: Commission services.

Table A21.2: Heat map of fiscal sustainability risks - Poland

Short term	Medium term - Debt sustainability analysis (DSA)							Long term			
	Overall (S0)	Overall	Deterministic scenarios					Stochastic projections	S2	S1	Overall (S1 + S2)
			Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress				
		Overall	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW			
LOW	MEDIUM	Debt level (2033), % GDP	55.0	62.3	66.2	59.4	55.3				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	41%	75%	85%	41%	41%				
		Probability of debt ratio exceeding in 2027 its 2022 level					66%				
		Difference between 90th and 10th percentiles (pps. GDP)					19.2				

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

Source: Commission services.

EUROPEAN ECONOMY INSTITUTIONAL PAPERS SERIES

European Economy Institutional Papers series can be accessed and downloaded free of charge from the following address: [Publications \(europa.eu\)](http://ec.europa.eu/economy_finance/publications/european_economy/index_en.htm).

Titles published before July 2015 can be accessed and downloaded free of charge from:

- http://ec.europa.eu/economy_finance/publications/european_economy/index_en.htm
(the main reports, e.g. Economic Forecasts)
- http://ec.europa.eu/economy_finance/publications/occasional_paper/index_en.htm
(the Occasional Papers)
- http://ec.europa.eu/economy_finance/publications/qr_euro_area/index_en.htm
(the Quarterly Reports on the Euro Area)

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct Information Centres. You can find the address of the centre nearest you at: <http://europa.eu/contact>.

On the phone or by e-mail

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696 or
- by electronic mail via: <http://europa.eu/contact>.

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: <http://europa.eu>.

EU Publications

You can download or order free and priced EU publications from EU Bookshop at: <http://publications.europa.eu/bookshop>. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see <http://europa.eu/contact>).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex at: <http://eur-lex.europa.eu>.

Open data from the EU

The EU Open Data Portal (<http://data.europa.eu/euodp/en/data>) provides access to datasets from the EU. Data can be downloaded and reused for free, both for commercial and non-commercial purposes.

