

# Productivity report 2023: Austria's sustainable competitiveness

## Extended summary

Vienna, June 2023

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## 1. Introduction

With this report, the Austrian Productivity Board fulfills its legal mandate under the Fiscal Advisory Council and Productivity Board Act of 2021 (FPRG 2021) to submit an annual report on Austria's competitiveness. The report provides the Austrian Federal Government and the National Council with a diagnosis and analysis of the long-term drivers of and preconditions for productivity and competitiveness based on transparent and comparable indicators. The Productivity Board's assessment of productivity and competitiveness also includes aspects such as education level, demographic structure, environmental and climate protection and the quality of life in Austria.

In order to fulfill this broad mandate, the Productivity Board has developed a framework for measuring Austria's sustainable competitiveness based on the "beyond GDP" approach. By definition, sustainable competitiveness is achieved when institutions, policies and factors work together in a way that ensures long-term productivity as well as social and environmental sustainability. Social sustainability involves health, inclusion and safety for all members of society, while environmental sustainability refers to the responsible management of natural resources to ensure prosperity today and for future generations. Accordingly, to enable a holistic view, the framework for measuring competitiveness covers economic, social and environmental policies.

In its analyses, the Productivity Board focuses mainly on medium- to long-term challenges. However, these challenges must be placed in the current context of multiple crises faced by households, workers, businesses and policymakers. Hence, the report also contains a chapter on current economic conditions. Our empirical findings focus on European peer countries because of similar geoeconomic and institutional conditions. The most important comparison country group is that of the BENESCAND countries (Belgium, the Netherlands, Denmark, Sweden and Finland), as these are, like Austria, small open economies with similarly advanced economic development and partly similar economic policy frameworks.

## 2. The current macroeconomic and social environment in Austria

In 2022, Austria recorded real GDP growth of 5%, mainly on the back of strong export growth and recovering consumption after the COVID-19 pandemic. In March 2023, due to weak international demand, the Austrian Institute of Economic Research (WIFO) predicted a slowdown in economic growth to 0.3% for 2023, followed by an increase to 1.8% in 2024. In the medium term, economic growth should remain more or less stable until 2027. Other research institutions have published comparable growth forecasts.

Consumer price inflation in Austria reached 8.6% in 2022, the highest level since 1974 and also higher and more persistent than the euro area average. In 2023, Austria's comparatively higher inflation rates have so far been mainly due to the price growth seen for industrial goods, energy and services. Producer prices in manufacturing increased by 22.1% in September 2022 compared to the same month last year and by still 7.7% in March 2023.

The unemployment rate was 6.3% in 2022. Although an average of 263,000 people were registered as unemployed, labor shortages became more severe, especially in services and technical professions. The number of vacant positions reached a new peak in 2022 at an annual average of 206,500, representing an increase of 41.4% compared to 2021.

Real wages fell for the second consecutive year, due to high inflation. Gross wages per capita fell by 3.9% in 2022 and net wages per hour worked by 3.2%. Despite falling real wages, nominal unit labor costs have risen due to high inflation. Together with a projected increase in real effective exchange rates for 2023 and 2024, this could have a negative impact on Austrian companies' cost-based competitiveness.

Gross fixed capital formation decreased by 0.9% in 2022, mainly due to high uncertainty and increased financing costs. Nevertheless, gross fixed capital formation relative to GDP remains high in a comparison with other European countries. Expenditure on research and development in the corporate sector reached an all-time high in 2022, indicating a high level of resilience in investment and innovation behavior.

The energy crisis highlighted the structural vulnerability of major industrial sectors due to their high energy intensity. Although high energy prices have only moderately affected industrial production overall, production has grown more slowly in energy-intensive industries than in other industries since 2015.

The number of people who can no longer afford to meet their basic needs increased in 2022. While the risk of poverty and/or serious material and social deprivation is low in Austria compared with other European countries, high inflation is a particular threat to a growing number of people. COVID-19-related school closures in 2020 and 2021 may have created a need for catching up, especially among children from disadvantaged families.

Greenhouse gas emissions went down by 4.8% in 2022, but the small projected decrease over the next few years is not sufficient for Austria to meet its climate targets. The shortage of energy and raw materials was exacerbated by climate-related extreme weather events in 2022. These affected energy production, the transport of goods and raw materials as well as agriculture, and led to additional price increases.

The crises of recent years have accelerated digital transformation and ecological transition. There has been an increase in investments in digital technologies, intangible assets and measures to reduce greenhouse gas emissions, as well as in energy efficiency.

Current (economic) developments are associated with risks that can have a medium- and long-term impact on Austria's sustainable competitiveness in various areas. These include increasing geopolitical tensions and conflicts, higher inflation, rising financing costs, labor market bottlenecks, the insufficient speed in reducing greenhouse gas emissions and demographic change.

### 3. Austria's competitiveness in an international comparison

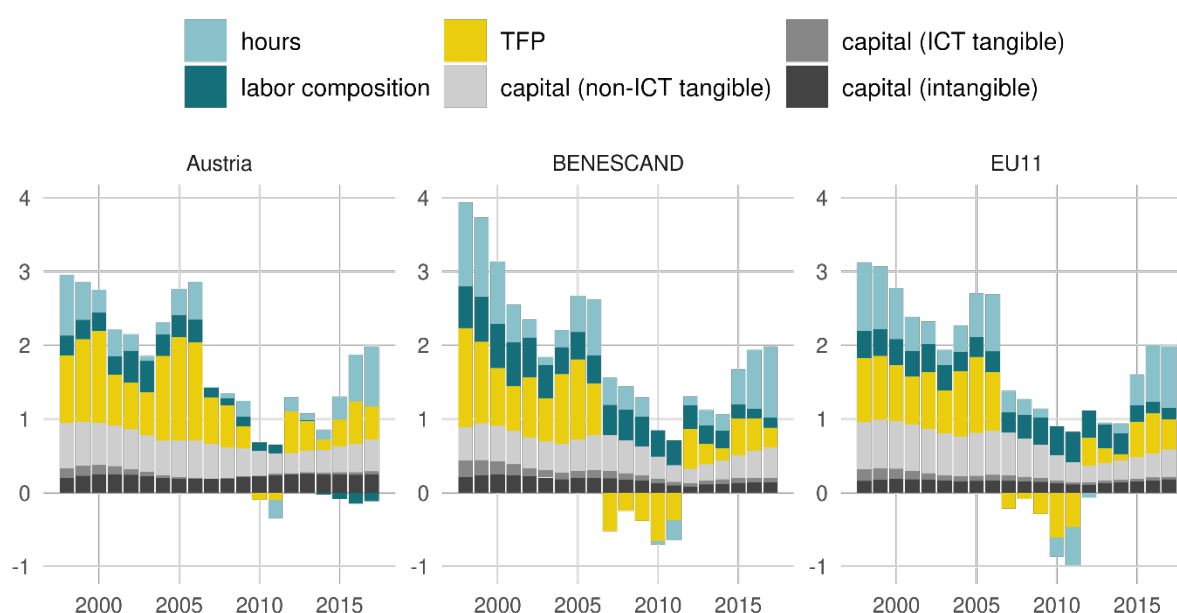
#### 3.1 Economy

Economic output is crucial for material prosperity and subjective well-being in a society. Austria's output is high by international standards; its GDP per capita adjusted for purchasing power ranked sixth in the EU-27 in 2022. The growth of real GDP per capita in Austria averaged 0.82% p.a. between 2010 and 2019, i.e. was lower than the euro area and BENESCAND averages (each 1.0%).

The growth of real value added in 2015–2019 (on average 1.9% p.a.) was primarily driven by growth in hours worked (0.8 percentage points). The contributions of capital and multifactor productivity were 0.7 and 0.4 percentage points, respectively (chart 1). The change in hours worked depends on the growth of the labor force, employment and hours worked per employee.

Chart 1: Contributions to value added growth

Austria and selected groups of countries, 1996–2019 (moving average over five years)



Source: [EUKLEMS & INTANProd database](#), Productivity Board calculations.

Note: BENESCAND, EU-11: simple averages; missing values were ignored. EU-11: AT, BE, CZ, DE, DK, ES, FI, FR, IT, NL, SE (all countries with EUKLEMS data available from at least 1998). DK: wiiw data (available up to 2017; see [Stehrer et al., 2019](#)); SE: up to 2017; ES, IT, FR: up to 2018. Moving average over five years: The bar for year  $n$  shows the average growth rates in years  $n-2$  to  $n+2$ .

In light of demographic change, the possibility of increasing economic growth by increasing hours worked will be limited in the future. Therefore, productivity growth, investment in physical capital, technology and human capital will play an increasingly important role in boosting Austria's economic performance. The increase in labor market participation, in particular among women and older people, will make it possible to mobilize untapped potential for the expansion of hours worked.

Since the financial crisis of 2008–2009, labor and multifactor productivity has grown at a slower pace in many advanced economies, including Austria, than in the 1990s and 2000s. The average annual growth in MFP halved in Austria from 0.8% (1996–2005) to 0.4% (2015–2019). The magnitude of this decline corresponds to that seen in the analyzed peer countries and is due to a slowdown in productivity growth within industries and businesses rather than a shift in the shares of value added between industries/sectors. Although Austria has a high level of knowledge and technology intensity in all industries, knowledge-intensive industries contribute only a relatively small portion to value added. A continuous technological improvement can be observed in all industries. The loss of momentum in the corporate sector, in particular the decreasing rate of startups, could have a negative impact on the competitive environment, structural change and productivity in the medium and long term. Also, the share of young companies (up to five years) in all active companies has steadily decreased. By 2020, it had dropped to 3.8%, falling significantly behind the BENESCAND and CESEE-11 rates (4.4% and 4.5%).

Corporate finance in Austria focuses heavily on bank loans, while equity financing is low by international standards. However, this does not seriously affect Austrian companies' capacity to do business and invest, as only a very small share of enterprises is subject to credit restrictions (2022: 3.4%). At 0.22% of GDP, Austrian venture capital investment in domestic and foreign funds was well below the EU average (0.51%) in 2021. Investments by domestic investment companies in domestic and foreign companies stood at 0.05% in 2021, significantly lower than venture capital investments in Austria. This can be an obstacle in particular for the creation and growth of new technology-intensive or innovative companies. About 300 Austrian start-ups are founded in Austria every year. In 2022, about 56% of them raised external equity.

Education expenditure per student in Austria are above the EU average, in particular for primary and secondary education, although, as a share of GDP, it is low at the primary level and average at the secondary level. Compared to the EU-27, students' skills in Austria are mid-range. In the tertiary sector, the slow increase in the number of graduates in natural and technical sciences is particularly noteworthy, especially in view of the demands created by digital transformation and ecological transition. The ratio of public spending per student indicates inefficiencies in the education system. Similar observations were also made for the ratio of spending on research and development to the innovative output of the economy.

The increase in perceived corruption in Austria has a negative impact on the attractiveness of the business location, although the public sector is functional.

To strengthen Austria's economic competitiveness, we first and foremost need action in the following areas:

- Strengthening startups and business dynamism as a whole.
- Paying more attention to the efficient use of funds in research and innovation.
- Increasing and further adapting the skills and qualifications of the working population is a priority.
- Improving the education system and increasingly promoting basic skills are ongoing concerns.
- Aligning the education and training system more closely with the demands of the labor market and improving working conditions.

Some measures are already in place in these areas, but there is also potential for improvement that should be tapped.

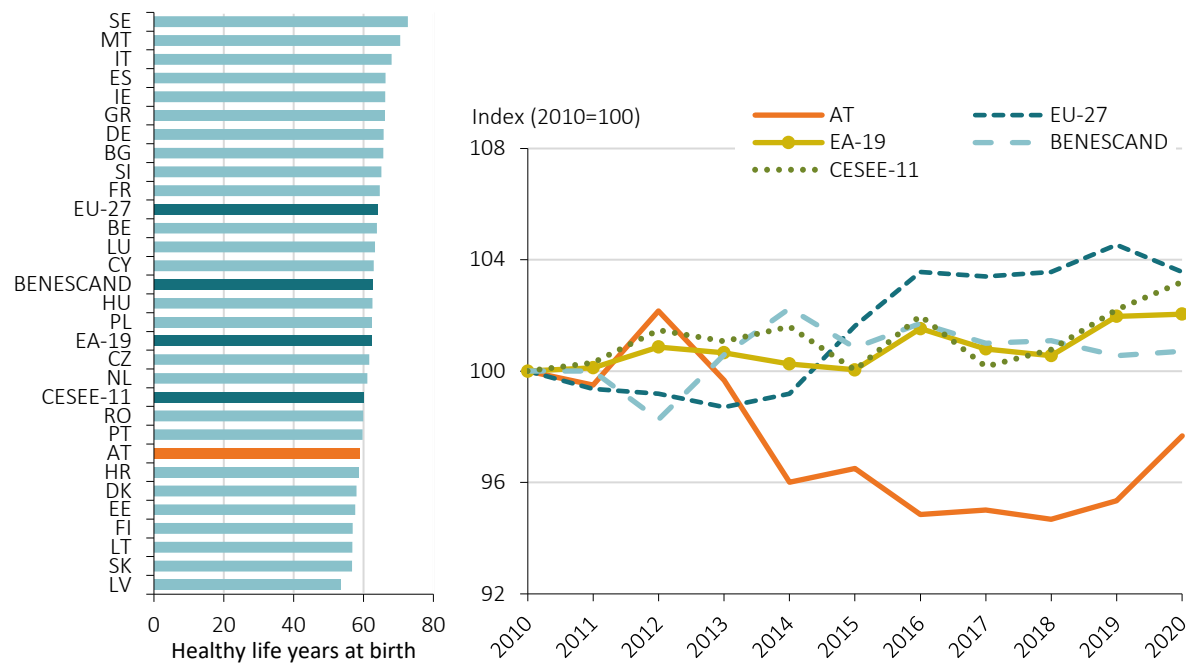
### 3.2 Social issues

The Austrian welfare state is well developed and, thanks to its strongly contribution-oriented age, health and unemployment insurance systems, generally provides a good basis for avoiding social emergencies.

At 32.8% of GDP (2021), social expenditure in Austria is high in an EU comparison. The majority of social spending (86.6% in 2021) is used for pensions and health care, family and child support and unemployment benefits. The COVID-19 pandemic has increased the share of social spending in overall expenditure, but this share will decline again after the expiry of crisis-related support payments.

Large health expenditure in Austria contrast with a relatively small number of healthy years expected at birth (58.6 years) by international comparison. The latter indicator is lower than in all peer country groups. In the EU-27, 64.0 healthy life years can be expected on average (chart 2, left). Notably, in the period 2012–2016, we saw a widening gap between Austria and its peers in this respect (chart 2, right). This finding is relevant, in particular with regard to discussions on increasing the participation of older people in the labor market, as it could prove a limiting factor. The subjective state of health and the share of people with chronic diseases are mid-range compared to other EU countries, while accidents at work are more common in Austria. Overall, health indicators point to significant potential for improving health, which could have a positive impact on labor supply and could help mitigate shortages in the care sector.

Chart 2: **Healthy life years at birth**  
2020 (left); 2010–2020 (right)



Source: EUROSTAT [HLTH\_HYLE].

The unemployment rate in Austria is mid-range if we look at other European countries. Unemployed people represent partially untapped potential for the labor market. The employment rate in full-time equivalents is low at 62.6% (2021) compared to the rest of the EU. There is a large gender gap in employment, mainly due to the high part-time rate among women. The participation rate of older people has increased over time and stood at 16.2% in 2021 but remains low in an EU comparison. The share of young people (15- to 24-year-olds) that are not in education, employment or training (NEET rate) was lower at 9.4% (2021) than in most other EU countries, but a strong increase was observed as a result of the COVID-19 pandemic. Nevertheless, lowering the NEET rate should be an urgent priority for economic and social policymakers.

The share of persons with educational qualifications that go beyond compulsory school has steadily increased in Austria in recent years. However, as the increase in the EU-27 was faster, Austria is no longer above average in this respect. At 14.6%, the share of adults undergoing further training in Austria is well above the 10.6% observed for the EU-27, but Austria lags behind the BENESCAND countries. There is an urgent need to take action to overcome barriers to education for students from underprivileged backgrounds. In Austria, school choice and access to tertiary education are strongly influenced by socioeconomic and educational family backgrounds. Barriers to education are closely related with certain risk categories, such as low parental education level or students' having a first language other than German. These factors also contribute to the risk of absolute poverty (severe material and social deprivation) and long-term youth unemployment (as part of the NEET rate).

More extensive, high-quality early childhood care could have a positive impact on children's development, education and opportunities, and – especially women's – participation in the labor market. The extent to which family and work can be reconciled as well as the quality of early childhood care vary greatly in Austria, both regionally and depending on the age of the children. In its 2002 Barcelona targets for childcare, the European Council defined a childcare ratio of 33% for children under three and 90% for children aged three to five. The share of children under three in early education and care in 2021 is 28.0% in Austria, below the EU-27 average of 36.2%. Because of a low starting level, the provision of early childhood care has expanded much more strongly in Austria than in all peer countries. In the age group of children aged three years up to the minimum school entry age, the childcare rate in Austria is 89.4%, above the EU-27 average (83.4%). The available childcare must be compatible with the full-time employment of both parents. However, the opening times of many childcare centers still fail to meet these requirements. As with the general availability of childcare, there are also strong regional differences in terms of opening hours of care facilities.

The material standard of living in Austria is high in an international comparison. In terms of median equivalent household income, Austria ranked third in the EU (2021, adjusted for purchasing power parities). A share of 1.8% of the population suffers from absolute poverty (severe material and social deprivation). This rate is well below the 6.3% recorded in the EU-27 and is also lower than the average observed in the BENESCAND countries. Since 2015, Austria has reduced material and social deprivation more quickly than all peer country groups. However, recent surveys suggest that disadvantaged households are increasingly struggling to meet their basic needs due to high inflation. In Austria, the share of households at risk of poverty (relative poverty) is 14.7%, i.e. below the EU-27 average. Women are at a 1.3 percentage point higher risk of poverty than men – as in all other EU countries (average: 1.4 percentage points). In Austria, inequality in terms of the income distribution is mid-range in an EU comparison; in terms of the wealth distribution, it is high.

The social sustainability indicators for Austria confirm the functioning of the welfare state. Nevertheless, there are structural problems which policymakers should address:

- Despite high health expenditure, life expectancy in good health is below average in Austria in an international comparison. Investing in prevention could improve health.
- In the face of labor market and structural change, education and skills require special attention and effort. Barriers to education associated with socioeconomic backgrounds must be eliminated. A reduction in the NEET rate is urgently needed.
- Labor market indicators suggest that there is untapped potential in the employment rate of older people and in increasing full-time employment of women. Participation in early childhood care and education is below the EU average. The regional lack of full-day childcare may have a negative impact on the labor market participation of parents.



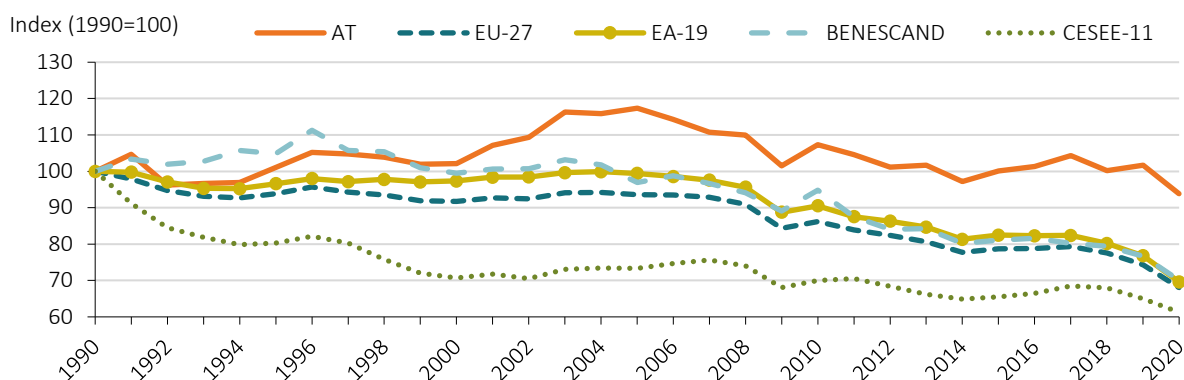
- Absolute poverty (deprivation) and relative poverty (risk of poverty) increased in 2022 as a result of high inflation. In addition to the traditional insurance-based social security systems, policymakers will need to pay more attention to anti-poverty policies again.

### 3.3 Environment

Austria is currently not on track to meet the ambitious national target of climate neutrality by 2040. Greenhouse gas emissions are falling too slowly, and Austria has hardly improved its climate performance over time compared to other groups of countries. In 2020, greenhouse gas emissions per capita (measured in CO<sub>2</sub> equivalents – CO<sub>2</sub>e, excluding land use and forestry) were higher than in all other country groups used for comparison. In terms of its emission reduction efforts, Austria has fallen behind most peer country groups over time, most visibly from 2015 and 2016 onward (chart 3).

Chart 3: Greenhouse gas emissions over time

1990–2020



Source: EUROSTAT [ENV\_AIR\_GGE].

Note: Overall greenhouse gas emissions (excluding LULUCF) in 1,000 tons of CO<sub>2</sub> equivalents.

The use of energy in Austria is high, and progress toward improving energy efficiency has been slow. Resource efficiency is average in an EU comparison. Energy consumption relative to GDP is close to the EU-27 average, but lags behind the BENESCAND countries. Together with increasing energy independence, improving energy and resource efficiency is crucial for the long-term competitiveness of energy-intensive industries in Austria. This should be considered against the background of increasing carbon prices.

Achieving the energy efficiency targets requires, inter alia, the modification of the modal split in freight transport, the thermal insulation of buildings, the improvement or development of new industrial processes and the expansion of renewable energy. In passenger and freight transport, a major source of emissions, Austria has a good starting position in terms of the share of rail and public passenger transport, but a shift toward more emission-intensive road transport is evident in both areas.

Whether the objectives of the Austrian circular economy action plan will be achieved is questionable in view of past patterns. Austria is well behind the EU leaders in most areas of the circular economy. Both domestic consumption of materials and the material footprint are high in a European comparison. Resource productivity (GDP per domestic material input consumed) is mid-range compared to the peer groups. Austria has only recorded very slow improvement in this area in recent years. Since 2014, a sideways movement has been observed.

Despite the large share of ecologically farmed agricultural spaces – an area in which Austria is in the lead in Europe – the biodiversity on farmland has declined. Soil erosion and surface sealing pose serious environmental problems that are very severe in an EU comparison. They threaten ecosystems and biodiversity with potential negative impacts on various sectors of the economy, such as agriculture or tourism, as well as on the use of soil as a carbon sink.

The ecological transition requires a well-coordinated mix of different measures, including mechanisms of carbon pricing, environmental taxes and regulations. Environmental taxes and the general design of the tax and subsidization system generate important steering and financing effects in the ecological transition process. So far, revenues from environmental taxes have been very low in Austria compared to the rest of the EU. In terms of the share of revenues from environmental taxes in total revenues from taxes and social security contributions, Austria still ranked fifth to last in the EU-27 in 2021. Various agreed and planned measures can help to reduce the shortfall of investment in environmental technologies and infrastructure projected by the European Commission. However, due to the further tightening of emission reduction targets, the Productivity Board does not expect that existing and planned measures will suffice to address this shortfall. An extensive assessment of investment needs is still pending.

The ecological transition is both a considerable challenge to energy-intensive sectors and an economic opportunity. Regarding the development of green technologies, Austria is not among the leading countries, and its green investments are only mid-range in a European comparison. However, the environmental sector plays an increasingly important role in the Austrian economy, and there is further room for development.

Based on the indicator-guided diagnosis, environmental sustainability should be improved by taking action in the following priority areas:

- The evolution of greenhouse gas emissions so far suggests that Austria will not meet its reduction targets. Further impetus seems necessary to achieve climate targets but also to preserve and improve the competitiveness of energy-intensive sectors.
- The use of energy has hardly been reduced, which is an obstacle for sustainable development.
- Achieving the goals defined in the federal government's circular economy action plan on time requires efforts and measures in many areas.
- Austria is far from realizing the full potential of a circular economy, which should be further unlocked as part of an integrated industrial policy strategy.
- As regards soil erosion and surface sealing and their consequences, the federal, regional and local governments must quickly find solutions.

## 4. Long-term challenges to sustainable competitiveness

### 4.1 Digital transformation and green transition

The digital transformation and green transition are two developments that can reinforce each other. Digital technologies have a potential to contribute to the achievement of climate targets that is still insufficiently harnessed. They are often part of green technologies and facilitate behavioral adaptations, the implementation of sustainable business models and the sustainable organization of value chains.

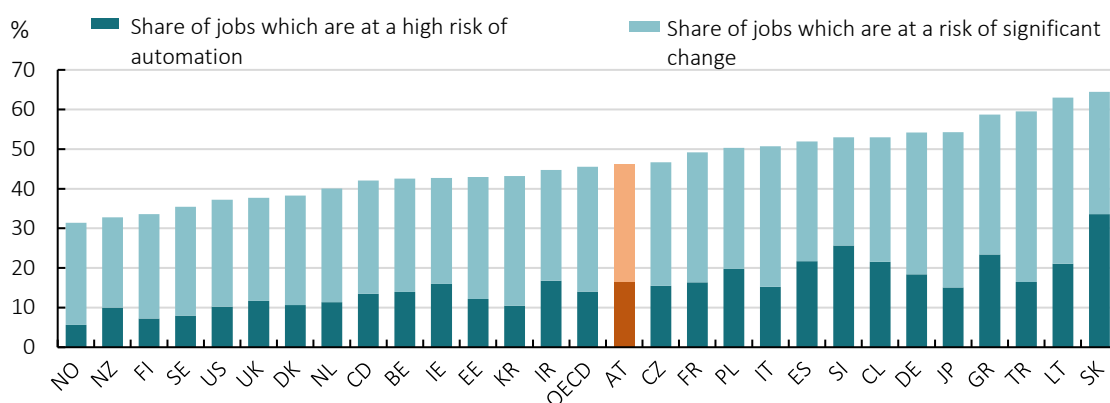
Achieving climate targets requires a consistent mix of measures that includes subsidies for innovations, the use and further development of climate-neutral technologies, environmental regulations and correct price signals for CO<sub>2</sub> emissions. Given the complementary nature of digital and green technologies, strengthening skills, research and innovation in both these areas is key to raising the Austrian economy's

competitiveness in the medium term. This will also require labor market, education and social policy measures, which should be devised and implemented in a way that takes into account regional differences in economic specializations.

Like the ecological transition, digitalization reduces job security in middle-skilled occupations. In 2018, the OECD estimated that around 17% of employees in Austria are at a high risk of losing their jobs through automation (chart 4). The process of automation has been accelerated by the current shortage of skilled workers, demographic change and rapid technological progress, especially in the field of artificial intelligence (AI). These trends are also increasingly affecting service professions.

Chart 4: **Jobs at risk of automation**

% of employees



Source: [OECD](#).

The education and training of workers plays a central role in the transformation process. Existing curricula need to be reviewed and adapted so that the skills taught also include digital competences, creativity, teamwork and “green” skills. This requires that all stakeholders cooperate, striving to shape the future of work by way of social dialogue. In order to ensure the social balance of these major structural changes, the Austrian government needs to develop and swiftly implement national measures for a just transition.

Other important goals in the ecological transition are improving the broadband infrastructure, achieving gigabit connectivity and promoting broadband use. The expansion of fiber networks must be accompanied by measures to increase the digital skills of both workers and businesses, as they need to keep up with the demand for and use of new digital technologies and services.

## 4.2 Challenges in the external sector

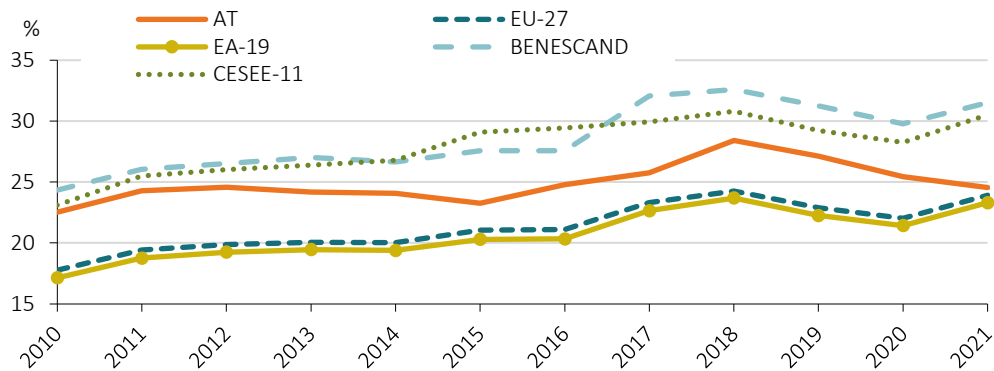
Increasing geopolitical tensions and conflicts have led to changes in the international trade order and the fragmentation of international trade. A closer look at global trade shows very heterogeneous patterns of development. While, in some countries, goods trade has been declining, other countries have become more and more open to goods trade. In Austria, the trade in goods has been muted, whereas trade in services and direct investment have been increasing.

Austria's share in global goods export has been falling steadily from its peak of 1.2% in 2007. At the same time, Austria's integration into global value chains has deepened slightly. Since 2018, the share of domestic production value that is integrated into more than one “cross-border supply relationship” has fallen from 28.4% to 24.6%, but it was still above the 2010 figure in 2021 (chart 5). Austria is therefore

less integrated into international supply chains than the BENESCAND countries. Overall, Austria’s competitiveness in the international goods trade is high. Globally, Austria ranks seventh in the complexity index, which captures the unique selling points and the knowledge intensity of exports.

Chart 5: Share of international supply chains in production

2010–2021



Source: World Bank (WITS).

New industrial and trade policies emphasize sovereignty and resilience in international trade and increasingly include an interventionist industrial policy. The EU has adopted a number of measures in this direction. Their implementation in Austria should respect regulatory principles, e.g. interventions should be justified by identified market or coordination failures and the promotion of green transition and digital transformation. Measures should also be coordinated at the European level to avoid subsidy races among the EU member states.

In the context of efforts to increase sovereignty and resilience through EU measures, Austria should focus selectively on promoting the establishment (or re-establishment) of production sites based on existing competitive advantages and diversification potential. At the same time, the benefits of the international division of labor and foreign trade should be exploited further. Increased participation in measures at EU level to create European value chains in strategic technologies and sectors can deepen and broaden existing strengths in the field of environmental technology and semiconductors. Coordination with European partners is also necessary to diversify sources of supply for critical raw materials. Strengthening the circular economy can reduce existing resource dependencies and increase supply security.

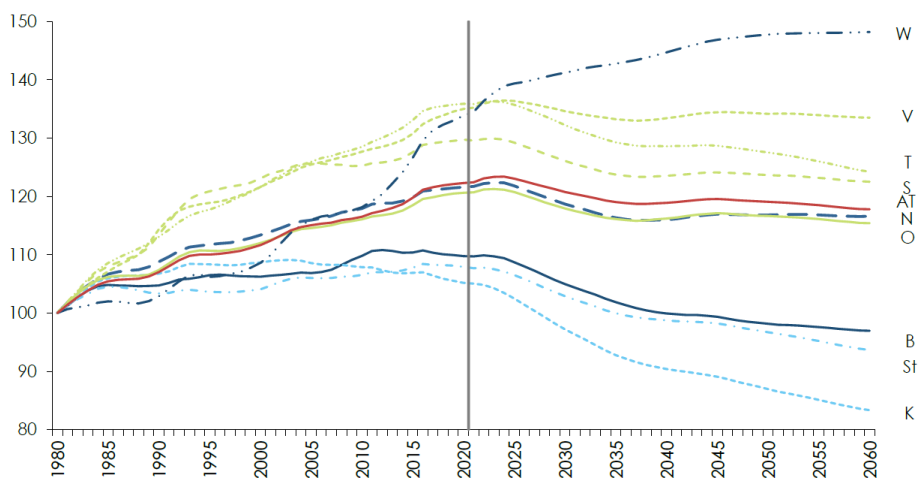
We also need measures to address situations in which Austrian companies are disadvantaged due to their structure or specialization. For example, Austrian SMEs face challenges in the context of the implementation of the Corporate Sustainability Due Diligence Directive due to their size, low market power in international supply chains or lack of digital skills. Targeted measures are needed to ensure these companies' competitiveness.

### 4.3 Demographic change

Population projections suggest that the working-age population will shrink until 2060, while the number of people aged 65 years or more will rise sharply. Both the overall population and the working-age population numbers are projected to evolve very differently across different Austrian regions (chart 6).

Chart 6: Working-age population in Austria and its provinces from 1980 to 2060

Population aged 15–64, index (1980 = 100)



Source: Statistics Austria (population statistics and forecast), WIFO representation and calculation.

Likewise, the effects will vary greatly from province to province. In order to counteract the projected decline in the working-age population in Austria, it is first necessary to make better use of the existing labor potential. Higher labor market participation can be achieved at different levels.

In the long term, demographic change will lead to higher government spending and an increase in pressure on public finances if no countermeasures are taken. The labor market participation of older people can be increased by improving health care, promoting age-appropriate jobs and training. Better health and more appropriate skills increase the productivity of older people and thus their opportunities in the labor market. Raising the effective retirement age should also be supported by well-designed incentives from the public sector.

Additional labor force potential can be unlocked by reducing youth unemployment through ensuring better educational outcomes for young people. However, the expected labor shortage also requires the increased use of labor-saving technologies. In many areas, capital goods should be increasingly used to increase labor productivity. However, this requires additional investment in the automation and digitalization of service and good creation, as well as adjustments in the qualifications and skills of the workforce.

## 5. Recommendations by the Austrian Productivity Board

Securing Austria's standing as a business location in the long term by ensuring that Austria's economy embraces green transition and digital transformation

*Achieving climate targets, mitigating the consequences of climate change*

- 1 Austria's federal government and parliament should quickly establish the legal basis for achieving the national and European climate targets by 2030. The targets defined in legislative acts such as the Austrian Environmental Support Act, Climate Protection Act, Renewable Energy Expansion Act, Renewable Heat Act, Renewable Gas Act, Renewable Expansion Acceleration Act or the new Federal Energy Efficiency Act 2023 point in this direction. Measures under these acts should be implemented consistently and expanded or finetuned as necessary for achieving the targets.

2 Austria's federal government should work toward accelerating the expansion of renewable energy sources and of infrastructure needed for electricity as well as for the storage and transmission of green energy. At the same time, Austria should coordinate efforts with European partners to further diversify energy imports of fossil fuels so as to achieve the highest possible level of energy independence in a timely manner.

3 The federal, regional and local governments should swiftly counter soil erosion and surface sealing through targeted regulatory measures and their own actions. This includes considering measures that increase CO<sub>2</sub> uptake by soils.

4 Austria's federal and regional governments should create structural and institutional conditions that enable and accelerate the development and implementation of adaptation strategies necessitated by climate change. This concerns infrastructure, the prevention of natural hazards, disaster management as well as business models and company and household behavior.

*Implementing systemically planned industrial policies to ensure sustainable competitiveness for Austria*

5 The federal government should assess the financing needs for public and private investments necessary to achieve the climate targets and, on this basis, establish a funding framework for support measures.

6 Austria's federal government should systematically review existing, planned or adopted fiscal and regulatory measures to ensure that incentives are suited to accelerate R&D and investment in climate-friendly technologies.

7 The federal government should keep an eye on international competitive disadvantages for Austrian companies arising from energy price developments. It should develop targeted and efficient sets of measures to accelerate green transition in energy-intensive sectors. Issues to be considered in this context are potential coordination failures that could result from the need to make infrastructure investments across companies (e.g. in hydrogen infrastructure, regenerative hydrocarbons or the transport of CO<sub>2</sub> emissions).

8 Austria's federal government should implement and pursue its "circular economy" strategy as part of a broader industrial policy strategy, enabling cross-sectoral production, distribution and recycling or disposal of essential materials and substances. In doing so, it should focus, first of all, on energy-intensive sectors. Against this background, the consistency and benefits of the indicator-driven targets defined in the circular economy strategy should be re-evaluated.

9 Cooperation between the competent federal government agencies as well as cooperation between federal, regional and local authorities should be improved and a central governance function for green transition measures should be established.

10 Austria's federal government should develop a comprehensive, systemic industrial strategy for green transition. The design of measures should put a stronger focus on enabling government authorities, interest groups and researchers to learn from each other and on making policies and instruments easily adaptable.

*Strengthening innovation, business dynamism and competition*

11 Public support for research and innovation should focus on strengthening those aspects of the innovation system that promote long-term productivity growth. Through ambitious research and innovation, Austria's strengths should be developed further and the potential for diversification should be exploited and expanded upon.

12 The federal government should promote green transition and digital transformation by applying a broad approach to innovation. In doing so, it should also ensure that the promoted technological change strengthens employment-enhancing technologies.

13 The Austrian government should systematically examine the causes of inert business dynamics and evaluate framework conditions and measures both individually and holistically to be able to evaluate their impact on the quality and dynamics of business start-ups.

14 The venture capital market should be strengthened by implementing measures under corporate law and regulatory measures. Existing support measures should be reviewed with regard to their effectiveness.

15 Austria's federal government should identify the need for specific early-stage funding for companies active in the field of transformative technologies and, where appropriate, adapt the portfolio of available instruments for early-stage funding to that specific target group.

#### *Exploiting the multiple advantages of green transition and digital transformation*

16 Existing measures to build digital skills for businesses and employees should be strengthened. The measures envisaged to promote digital investment in businesses and to support small and medium-sized enterprises (SMEs) in going digital should be fleshed out and implemented quickly.

17 The expansion of broadband internet connections should be sped up in line with the goal of providing comprehensive gigabit connectivity in Austria by 2030.

18 To ensure that the advantages of digitalization can be fully utilized, adequate framework conditions must be established to ensure that data are used for the benefit of society. This requires a national data strategy that follows a master plan considering (meta) data standards, interoperability and infrastructures. In addition, it must be clarified which government department is in charge of issues governed by the European Data Governance Act (DGA), which Austria must implement by September 24, 2023.

19 Excellent research and evidence-based policymaking require a reliable data basis. Public sector registry data should therefore be made available for research on a broad basis. This means that all federal ministries should comprehensively share their data for use via the Austrian Microdata Center (AMDC). In the future, the data of regional and local authorities should also be made available in the AMDC.

#### *Preparing the labor force for green transition and digital transformation and supporting structural change through active labor market policies and education and training initiatives*

20 The federal government should conduct (or commission) a scientific evaluation to find out how many and which jobs in Austria are affected by green transition and digital transformation.

21 Based on this evaluation, new priorities in active labor market policies should be developed and existing measures should be adapted in view of varying regional impacts (see also recommendation 32).

22 To ensure social balance and just transition, relevant policies (and climate policies in particular) should be subjected to an impact assessment. This assessment should determine what the alternatives to the proposed measures are and how potentially negative impacts should to be addressed.

23 Austrian government agencies, EU bodies and social partners must improve the interinstitutional coordination of initiatives under the just transition process. These efforts should help create a clear scenario and roadmap for how Austria plans to achieve its goal of becoming climate neutral by 2040 and on the employment and business location policy measures that will need to accompany this transformation process.

24 Experts need to review in how far the lack of labor supply in green professions and information and communication technologies (ICT) is linked to weaknesses in the education system by analyzing and evaluating the education opportunities offered by relevant training institutions (vocational or technical schools, technical colleges, universities).

- 25 Basic ecological and digital education should be strengthened and investment in more and better MINT study places at relevant educational institutions should be stepped up.
- 26 Nontechnical professions that are indispensable in addressing climate change and demographic change should be given proper recognition and made more attractive.

*Taking advantage of the EU's new industrial and foreign economic policy strategies and benefiting from the international division of labor; avoiding subsidy races*

- 27 Austria should use EU industrial policy measures to strengthen existing competitive advantages in specific industries and tap into diversification potential, e.g. in environmental technology or semiconductor technology, and to develop core competences in complementary technologies.
- 28 Measures to promote the involvement of Austrian companies in building and reinforcing strategic European value chains should be strengthened.
- 29 Measures to diversify the supply of critical raw materials and energy need to be planned and implemented in close coordination with European partners. The increased use of critical raw materials within Austria should also be taken into account. Measures to establish robust renewable energy import routes and investments in transportable green fuels should be given due consideration.
- 30 For Austria's exporters, and SMEs in particular, to be able to better meet corporate due diligence requirements with regard to international supply chains, Austria's federal government should implement measures to strengthen entrepreneurial competences in this field and advocate the harmonization of the respective reporting standards in international committees.

**Promoting participation in economic prosperity and economic performance through education and the mobilization of labor force potential**

*Ensuring that no one is left behind economically and that living standards are secured*

- 31 The current inflation crisis should prompt the federal government to organize support for particularly vulnerable groups of society in a way that ensures that all members of society can meet their basic needs. This could be done, for example, by adjusting all social benefits in line with price developments and by improving the social assistance system.

*Living healthy longer*

- 32 Austria's federal government should implement suitable health care and enhanced preventive measures to raise people's healthy life expectancy. Measures for disease prevention at the workplace should be considered as well.

*Promoting human capital, adapting skills and countering labor market bottlenecks*

- 33 The federal government should expand successful continuing education and (re)qualification models, including the programs provided by the Public Employment Service Austria (AMS) and workplace-centered training. The employment agency function of the AMS should be expanded with regard to structured use and a stronger focus on (re-)qualification.
- 34 The federal government should expand the range of qualification measures in shortage occupations and that of workplace-centered training measures. It should also implement measures to make shortage occupations in the long-term care and health care sectors more attractive.
- 35 The federal government should adapt the education system further to meet the new challenges and ensure that all schoolchildren acquire basic skills.



- 36 Austria's federal government should expand existing measures designed to make teaching and other professions in the education sector more attractive to target all levels of education in order to avoid bottlenecks and to ensure the quality of education and childcare.

*Increasing labor market participation and opportunities by eliminating socioeconomic inequalities*

- 37 The federal and regional governments should design the access to, and quality of, schooling in such a way that children's skills determine their educational path so that the latter becomes independent from children's socioeconomic backgrounds.

- 38 The federal, regional and local authorities should promote, in particular, early childhood education to eliminate risk factors limiting educational attainment. Particular attention should be paid to cases where several risk factors, such as low educational levels of the parents and a first language other than German, reinforce each other.

- 39 All local authorities should ensure, in a proactive manner, that the demand for childcare is met to improve children's educational opportunities, make labor potential accessible and promote gender equality. Special attention should be paid to all-day childcare and the care for children under the age of 3. It would be easier to achieve this objective if there was a legal right to all-day childcare.

- 40 The federal government must ensure that early childhood care and education is effective and meets specified quality standards. For this purpose, the federal government should evaluate children's skills and competences in comparative groups using scientific methods.

- 41 The federal government should develop a further education strategy for longer professional careers. In this context, more funding should be invested in upskilling and reskilling older persons in the workforce; existing measures should be examined with regard to their efficiency and effectiveness.

- 42 Austria's federal government should implement measures promoting age- and aging-appropriate work conditions and offer incentives for companies to follow this direction. Firms' access to advisory services and supportive information systems should be improved.

- 43 The federal government should examine Austria's tax and transfer system with regard to its impact on labor supply and labor demand among older people, and identify and eliminate any unfavorable employment incentives for employers.

*Reducing the tax burden on labor*

- 44 Austria's federal government should take further measures to reduce the tax burden on labor, which must be accompanied by appropriate revenue measures to compensate for the decrease in labor tax revenues.

- 45 The federal government should eliminate incentives in the system of taxes and duties that have a negative impact on labor intensity and favor marginal or part-time employment.

*Promoting labor mobility and closing skills gaps in the labor market by adequately managing the migration of skilled workers*

- 46 The federal government should increasingly promote jobseekers' regional mobility.

- 47 The federal government should step up measures to increase the immigration of skilled workers to Austria. The effectiveness of existing measures should be evaluated and adapted where appropriate.

## 6. Monitoring indicators

Table 1: Raw values: indicators of the “economy” pillar – dimensions: per capita income and productivity; production factors: capital and labor; production costs

Indicator	Per capita income and productivity			Production factors capital and labor					Production costs
	GDP per capita	Labor productivity	Change in multifactor productivity	Gross fixed capital formation	Labor volume (total hours worked) /population	Labor volume (total hours worked) /employee	Workforce	Employed persons	Tax ratio
Unit	PPP 1,000	GDP per hour, PPP	Index (2010 = 100)	% of GDP (PPP)	Hours per capita	Hours per employee	% of population	% of workforce	% of GDP
Source [label]	AMECO [HVGDP]	AMECO [UVGD_NLHT]	AMECO [ZVGDF]	AMECO [UIGT/UVGD]	AMECO [NLHT/NPTD]	AMECO [NLHA]	AMECO [NLTN/NPTD]	AMECO [NETN/NLNT]	AMECO [UTAT/UVGD]
Last available year	2022*	2022*	2022*	∅ 2018–2022*	2022*	2022*	2022*	2022*	2022*
BE	41,7	62,3	101,6	24,0	668,6	1.536	46,8	94,5	42,6
BG	20,4	24,3	115,9	17,5	836,3	1.647	53,3	95,4	33,6
CZ	30,8	36,2	108,9	26,7	852,8	1.743	49,8	97,4	34,7
DK	46,4	63,1	106,2	22,4	734,6	1.363	55,5	95,7	44,5
DE	41,1	56,4	105,7	21,7	729,1	1.344	55,6	97,2	41,1
EE	28,2	34,4	107,2	27,2	818,6	1.777	46,5	93,4	32,6
IE	80,0	100,3	167,4	34,2	797,0	1.652	50,5	95,6	20,3
GR	23,1	24,7	92,4	12,1	934,1	2.034	50,9	89,6	40,1
RS	29,6	41,5	100,8	19,9	712,1	1.654	49,5	87,5	38,0
FR	36,1	55,2	101,9	23,7	654,8	1.531	46,9	92,8	45,8
HR	25,7	31,0	112,4	21,3	827,5	1.844	47,7	93,6	35,6
IT	33,2	45,8	101,5	19,0	725,7	1.682	45,7	92,4	43,8
CY	31,6	34,2	104,5	19,9	923,2	1.873	53,0	93,0	36,4
LV	25,1	29,0	137,1	22,6	866,8	1.853	51,5	93,0	30,0
LT	30,7	32,7	112,6	21,1	939,3	1.848	53,5	94,0	31,4
LU	91,7	81,2	93,2	16,7	1.129,5	1.484	45,8	94,9	38,4
HU	27,0	31,7	107,1	27,0	851,4	1.726	50,1	96,4	36,4
MT	34,8	35,5	108,7	20,7	978,9	1.885	53,6	96,9	31,1
NL	46,2	56,5	103,2	21,4	818,2	1.436	57,9	96,4	39,4
<b>AT</b>	<b>42,6</b>	<b>52,3</b>	<b>100,4</b>	<b>25,3</b>	<b>814,0</b>	<b>1.581</b>	<b>52,6</b>	<b>95,2</b>	<b>42,5</b>
PL	26,5	29,8	114,9	17,9	890,1	2.067	44,3	97,3	34,3
PT	27,2	29,9	109,4	19,1	908,3	1.867	51,8	94,3	35,4
RO	26,4	31,9	124,8	23,6	826,5	1.808	48,5	95,2	25,5
SI	32,5	39,3	122,9	19,9	827,1	1.611	53,8	96,4	36,2
SK	23,6	33,6	103,2	20,1	702,6	1.589	49,7	93,5	35,4
FI	38,9	49,7	98,9	24,0	782,4	1.576	53,1	93,4	42,2
SE	43,1	54,4	104,0	25,3	791,2	1.589	53,6	92,8	43,3
EU-27	34,9	45,8	106,2	21,8	760,8	1.613	50,0	94,1	40,4
EA-19	36,6	49,8	104,8	21,7	734,3	1.550	50,5	93,6	41,0
BENESCAND	43,2	57,2	102,8	23,4	759,0	1.500	53,4	94,6	42,4
CESEE-11	27,0	32,2	115,2	22,3	839,9	1.774	49,9	95,1	33,3

\* Values correspond to the European Commission’s November 2022 forecast.

Table 2: Raw values: indicators of the “economy” pillar – dimensions: competition; innovation and technological change

Indicator	Competition			Innovation and technological change					
	Net operating surplus	Openness of the economy (exports, imports)	Young businesses	R&D ratio	R&D expenditure financed by abroad	Share of business-financed R&D	Share of innovating companies	Triadic patents	Super patents
	Unit	Regression residual	% of active companies	% of GDP	% of GDP	% of GDP	% of surveyed companies	Per 1 million inhabitants	In relation to EU-27
	Source [label]	AMECO [UOND/UVGD]	AMECO [UXGS, UMGS, UVGD]	EUROSTAT [BD_9BD]	EUROSTAT [GERDTOT]	EUROSTAT [GERDFUND]	EUROSTAT [GERDFUND]	EUROSTAT [CIS inn_cis07-cis12]	OECD, PATSTAT
Last available year	∅ 2020–2022	∅ 2019–2021	2020	2021	2020	2020	2020	2018	2018
BE	22,3	N/A	N/A	3,2	0,5	2,0	71,3	30,6	1,0
BG	32,2	N/A	5,1	0,8	0,3	0,3	36,2	1,2	0,1
CZ	25,2	N/A	4,0	2,0	0,6	0,7	56,9	2,5	0,3
DK	18,1	N/A	3,6	2,8	0,2	1,8	57,7	48,5	1,7
DE	18,1	N/A	2,9	3,1	0,2	2,0	68,8	38,3	2,5
EE	22,1	N/A	4,0	1,8	0,2	0,9	64,2	4,2	0,2
IE	43,0	N/A	4,3	1,1	0,2	0,8	57,6	15,0	0,9
GR	36,0	N/A	2,6	1,5	0,2	0,6	72,6	N/A	0,1
RS	24,5	N/A	4,0	1,4	0,1	0,7	33,4	4,3	0,3
FR	15,5	N/A	3,8	2,2	0,2	1,3	54,8	20,3	1,1
HR	19,8	N/A	3,3	1,2	0,3	0,5	54,9	0,8	0,1
IT	28,6	N/A	3,4	1,5	0,2	0,8	55,7	10,8	0,5
CY	31,5	N/A	4,0	0,9	0,2	0,3	65,8	0,4	0,1
LV	19,2	N/A	6,7	0,7	0,2	0,2	32,0	3,0	0,1
LT	31,6	N/A	6,7	1,1	0,4	0,4	53,0	2,4	0,1
LU	28,1	N/A	4,6	1,0	0,1	0,6	45,9	21,6	1,1
HU	25,4	N/A	3,9	1,7	0,3	0,8	32,7	3,1	0,2
MT	35,6	N/A	2,4	0,6	0,1	0,4	41,1	8,8	0,2
NL	24,4	N/A	5,1	2,3	0,2	1,3	55,8	54,7	1,6
<b>AT</b>	<b>21,3</b>	<b>0,1</b>	<b>3,8</b>	<b>3,2</b>	<b>0,5</b>	<b>1,6</b>	<b>60,0</b>	<b>32,0</b>	<b>1,6</b>
PL	38,0	N/A	N/A	1,4	0,1	0,7	34,9	1,3	0,1
PT	20,4	N/A	4,7	1,7	0,1	0,8	51,1	2,4	0,1
RO	37,1	N/A	5,1	0,5	0,1	0,3	10,7	0,4	0,0
SI	19,4	N/A	5,2	2,1	0,5	1,1	55,2	2,8	0,4
SK	28,2	N/A	4,9	0,9	0,1	0,4	36,6	1,5	0,1
FI	22,5	N/A	3,0	3,0	0,4	1,6	68,6	42,9	2,1
SE	16,6	N/A	N/A	3,4	0,3	2,1	65,2	62,3	2,3
EU-27	22,7	0,1	N/A	1,7	0,2	0,9	51,6	16,0	1,0
EA-19	22,0	0,1	N/A	1,7	0,2	0,9	54,9	16,4	1,2
BENESCAND	20,8	0,2	3,9	2,9	0,3	1,8	63,7	47,8	1,7
CESEE-11	27,1	-0,1	4,9	1,3	0,3	0,6	42,5	2,1	0,1

Table 3: Raw values: indicators of the “economy” pillar; dimension: qualification and human capital

Qualification and human capital								
Indicator	Public expenditure on education: primary education	Public expenditure on education: secondary education	Public expenditure on education: tertiary education	MINT graduates, ISCED 5–8	MINT graduates, ISCED 6–8	PISA score reading	PISA score mathematics	PISA score science
Unit	% of GDP	% of GDP	EUR per student	Per 1,000 20- to 29-year-olds	Per 1,000 20- to 29-year-olds	Score	Score	Score
Source [label]	EUROSTAT [educ_uae_fine0]	EUROSTAT [educ_uae_fine0]	EUROSTAT [educ_uae_fine0]	EUROSTAT [educ_uae_gr04]	EUROSTAT [educ_uae_gr04]	OECD, PISA	OECD, PISA	OECD, PISA
Last available year	2019	2019	2019	2020	2020	2018	2018	2018
BE	1,5	2,5	16.169	15,7	15,4	493	508	499
BG	0,8	1,6	3.766	13,1	13,1	420	436	424
CZ	0,9	2,1	8.589	16,0	16,0	490	499	497
DK	1,6	2,0	19.633	23,9	21,1	501	509	493
DE	0,7	2,2	14.728	22,3	22,1	498	500	503
EE	1,6	1,5	9.250	17,3	17,3	523	523	530
IE	1,1	1,1	N/A	39,9	34,5	518	500	496
GR	1,3	1,3	2.361	16,8	16,8	457	451	452
RS	1,1	1,6	8.931	20,9	14,1	496	481	483
FR	1,2	2,3	13.388	29,2	20,4	493	495	493
HR	1,7	0,8	4.717	20,6	20,6	479	464	472
IT	1,0	1,8	8.254	16,9	16,6	476	487	468
CY	1,9	2,2	7.596	9,8	8,0	424	451	439
LV	1,3	1,5	5.790	14,1	12,0	479	496	487
LT	0,8	1,6	4.638	18,7	18,8	476	481	482
LU	1,1	1,6	39.897	4,2	3,5	470	483	477
HU	0,8	1,7	5.288	23,5	23,3	476	481	481
MT	1,0	1,9	14.502	10,1	9,6	448	472	457
NL	1,2	2,1	16.421	13,8	13,6	485	519	503
<b>AT</b>	<b>0,9</b>	<b>1,9</b>	<b>13.656</b>	<b>24,4</b>	<b>14,6</b>	<b>484</b>	<b>499</b>	<b>490</b>
PL	1,3	1,6	5.276	17,7	17,7	512	516	511
PT	1,4	2,1	6.953	21,7	20,1	492	492	492
RO	0,5	1,5	3.470	17,5	17,5	428	430	426
SI	1,4	1,7	8.823	20,5	17,0	495	509	507
SK	0,9	1,8	N/A	13,0	12,9	458	486	464
FI	1,4	2,4	15.649	26,5	26,5	520	507	522
SE	1,9	2,2	22.301	17,2	13,9	506	502	499
EU-27	1,2	1,8	11.202	18,7	16,9	481	488	483
EA-19	1,2	1,8	12.177	18,7	16,5	483	492	486
BENESCAND	1,5	2,2	18.035	19,4	18,1	501	509	503
CESEE-11	1,1	1,6	5.961	17,5	16,9	476	484	480

Note: MINT = mathematics, informatics, natural sciences and technology. ISCED = International Standard Classification of Education, a statistical framework for organizing information on educational programs and related qualifications by levels and areas; PISA = Programme for International Student Assessment.

Table 4: Raw values: indicators of the “economy” pillar – dimension: financing of enterprises

Financing of enterprises						
Indicator	Market capitalization	Venture capital, market statistics	Venture capital, industrial statistics	Financing constraints on investments	Credit constraints	
Unit	% of GDP	% of GDP	% of GDP	% of surveyed companies	% of surveyed companies	
Source [label]	World Bank [cm_mkt_cap_gd]	Invest Europe	Invest Europe	EIBIS	EIBIS	
Last available year	2020	2021	2021	2022	2022	
BE	66,9	0,8	0,6	12,6	6,2	
BG	25,2	0,0	0,1	19,0	7,5	
CZ	10,8	0,3	0,1	10,3	5,2	
DK	161,8	1,2	0,9	6,3	8,1	
DE	58,7	0,5	0,3	12,7	5,3	
EE	10,5	N/A	N/A	9,5	8,5	
IE	37,2	0,7	0,1	8,1	2,4	
GR	27,0	0,3	0,2	26,6	16,0	
RS	59,5	0,6	0,3	36,6	7,3	
FR	107,2	1,0	1,1	17,0	5,6	
HR	38,7	N/A	N/A	16,1	10,3	
IT	36,7	0,4	0,3	23,2	6,4	
CY	18,8	N/A	N/A	32,3	9,4	
LV	2,9	N/A	N/A	39,7	15,6	
LT	9,0	N/A	N/A	16,7	16,5	
LU	69,7	0,1	2,8	16,5	2,4	
HU	17,8	0,1	0,1	10,7	12,9	
MT	34,0	N/A	N/A	17,2	8,5	
NL	144,1	1,0	0,6	7,7	4,3	
<b>AT</b>	<b>30,3</b>	<b>0,2</b>	<b>0,1</b>	<b>15,4</b>	<b>3,4</b>	
PL	29,6	0,2	0,2	27,8	8,4	
PT	36,6	0,3	0,0	18,2	4,9	
RO	14,6	0,0	0,0	21,9	15,2	
SI	15,7	N/A	N/A	7,1	4,6	
SK	2,9	N/A	N/A	9,1	7,0	
FI	121,6	0,5	0,3	10,9	9,9	
SE	175,7	1,2	1,5	4,9	8,1	
EU-27	50,5	0,5	0,5	16,8	8,1	
EA-19	46,8	0,5	0,6	17,7	7,6	
BENESCAND	134,0	0,9	0,8	8,5	7,3	
CESEE-11	16,2	0,2	0,1	17,1	10,2	

Table 5: Raw values: indicators of the “economy” pillar – dimensions: infrastructure; public institutions; international integration

Indicator	Infrastructure			Public institutions			International integration
	Road network quality	Quality of rail and long-distance traffic	Broadband coverage (>= 100 Mbit/s)	Stable framework	Judicial independence	Absence of corruption	Global supply chains
Unit	Scale 1–7	Scale 1–7	% of households	Scale 1–7	Scale 1–7	Scale 1–7	Share in production in %
Source [label]	WEF-EOS	WEF-EOS	DESI	WEF-EOS	WEF-EOS	WEF-EOS	WITS
Last available year	2022	2022	2021	2022	2022	2022	2021
BE	4,7	4,9	97,2	4,8	5,3	4,5	39,4
BG	3,5	4,2	91,9	3,5	4,3	3,4	29,2
CZ	4,5	4,2	89,2	3,8	5,4	3,5	32,9
DK	5,9	5,3	96,3	5,3	6,1	5,4	26,7
DE	5,2	4,6	89,6	5,3	5,3	4,5	21,9
EE	4,9	4,7	83,5	4,6	6,0	4,8	35,9
IE	4,9	4,8	87,7	5,4	5,7	5,5	46,9
GR	5,7	5,2	54,6	4,5	5,1	5,1	20,1
RS	5,5	5,3	93,8	3,5	5,9	3,5	16,9
FR	5,7	5,2	65,3	4,5	5,1	5,1	15,6
HR	5,3	3,9	62,1	2,9	4,5	2,5	23,3
IT	4,5	4,7	77,6	4,2	5,1	4,1	17,0
CY	4,8	3,4	82,9	4,3	4,5	4,2	35,8
LV	3,5	4,4	90,7	3,4	4,4	3,3	30,7
LT	5,0	4,8	78,1	4,4	5,8	4,1	34,3
LU	6,1	5,0	99,4	6,1	6,0	5,5	67,2
HU	4,5	4,1	88,7	3,7	4,8	2,8	37,7
MT	3,7	3,8	100,0	3,9	3,7	3,0	51,2
NL	6,4	6,0	98,5	5,4	6,0	5,5	36,9
<b>AT</b>	<b>6,0</b>	<b>4,7</b>	<b>82,8</b>	<b>5,6</b>	<b>6,1</b>	<b>4,4</b>	<b>24,6</b>
PL	4,5	4,5	69,2	2,6	4,0	3,5	28,9
PT	6,0	4,7	92,8	3,8	5,7	4,0	21,5
RO	3,3	3,8	88,6	3,2	4,3	3,4	21,7
SI	4,9	3,7	85,5	3,9	5,5	3,4	39,0
SK	4,1	3,7	75,4	3,0	4,3	2,6	38,9
FI	5,3	5,7	65,0	5,4	6,5	5,8	20,9
SE	5,6	5,2	86,7	4,8	5,1	4,8	22,0
EU-27	5,0	4,6	82,1	4,3	5,2	4,2	23,9
EA-19	5,1	4,7	84,2	4,5	5,4	4,4	23,3
BENESCAND	5,6	5,4	88,7	5,2	5,8	5,2	31,5
CESEE-11	4,4	4,2	82,1	3,5	4,9	3,4	30,5

Table 6: Raw values: indicators of the “social issues” pillar – dimensions: social spending relative to overall spending; health; education and qualification; balancing work and family life

Indicator	Social spending	Health				Education and qualification		Balancing work and family life	
	Expenditure on social protection	Healthy life years	(Very) good health	Chronic conditions	Work accidents	Highest qualification beyond compulsory education (25- to 64-year-olds)	Participation in continuing education (25- to 64-year-olds)	Childcare rate for under-3-year-olds	Childcare rate for 3-year-olds up to compulsory school age
Unit	% of GDP	Years	%	%	Per 100,000 employed persons	%	%	%	%
Source [label]	EUROSTAT [spr_exp_sum]	EUROSTAT [hlth_hlye]	EUROSTAT [hlth_silc_01]	EUROSTAT [hlth_silc_05]	EUROSTAT [HSW_mi01]	EUROSTAT [edat_lfs_9903]	EUROSTAT [trng_lfs_01]	EUROSTAT [caind_formal]	EUROSTAT [caind_formal]
Last available year	2020	2020	2021	2021	2020	2021	2021	2021	2021
BE	32,7	63,8	76,3	25,0	1.503	81,5	10,2	51,7	97,8
BG	18,7	65,6	67,5	24,0	77	83,4	1,8	18,7	92,0
CZ	22,0	61,6	67,7	32,9	720	94,4	5,8	4,9	62,6
DK	32,9	58,0	68,6	35,3	1.902	82,4	22,3	69,1	91,0
DE	33,0	65,7	63,0	43,2	1.782	83,7	7,7	19,9	64,2
EE	19,2	57,6	58,2	47,3	1.032	89,5	18,4	25,7	90,5
IE	15,5	66,2	81,1	28,7	534	87,5	13,6	16,6	84,0
GR	29,4	65,9	78,2	24,3	157	79,8	3,5	32,3	83,4
RS	30,0	66,3	71,1	38,1	2.384	63,9	14,4	55,3	97,9
FR	38,1	64,6	67,8	37,6	2.598	82,2	11,0	57,1	96,2
HR	24,1	58,5	62,6	33,4	564	87,2	5,1	33,3	63,7
IT	34,3	68,0	73,5	18,6	1.037	62,7	9,9	33,4	91,7
CY	24,1	62,9	77,1	38,8	585	84,6	9,7	28,8	83,2
LV	17,4	53,4	49,8	39,3	285	92,2	8,6	31,0	86,0
LT	19,5	56,8	47,8	37,2	369	94,9	8,5	21,4	84,6
LU	24,2	63,3	76,4	25,7	1.748	80,3	17,9	62,0	95,1
HU	18,3	62,5	64,7	38,4	639	86,3	5,9	13,9	90,4
MT	19,9	70,5	73,0	31,2	829	62,9	13,9	24,0	86,0
NL	32,8	61,1	73,1	33,1	1.140	80,6	26,6	74,2	96,7
<b>AT</b>	<b>34,0</b>	<b>58,7</b>	<b>72,2</b>	<b>35,2</b>	<b>1.532</b>	<b>85,9</b>	<b>14,6</b>	<b>28,0</b>	<b>89,4</b>
PL	23,7	62,3	64,4	35,0	424	93,2	5,4	18,3	66,1
PT	27,5	59,7	50,1	43,9	2.814	59,5	12,9	50,4	85,5
RO	17,7	59,9	72,8	19,9	81	81,0	4,9	9,5	51,8
SI	26,0	65,1	69,1	33,1	1.294	91,3	18,9	47,5	87,9
SK	19,6	56,7	65,1	34,8	433	93,3	4,8	4,8	86,8
FI	31,9	56,9	70,1	50,9	1.393	88,9	30,5	42,1	92,0
SE	29,3	72,7	72,3	41,8	842	87,5	34,7	55,8	98,4
EU-27	31,7	64,0	69,0	35,2	1.466	79,1	10,8	36,2	83,4
EA-19	32,8	62,3	69,4	35,8	1.234	76,6	13,5	40,7	86,8
BENESCAND	31,9	62,5	72,1	37,2	1.356	84,2	24,9	58,6	95,2
CESEE-11	20,6	60,0	62,7	34,1	538	89,7	8,0	20,8	78,4

Table 7: Raw values: indicators of the “social issues” pillar – dimensions: labor market; income, poverty and distribution

Indicator	Labor market						Income, poverty and distribution				
	Unemployment rate	NEET rate	Employment rate (FTE)	Participation rate of 55- to 64-year-olds	Gender gap in employment rate (FTE)	Low-income workers	Equalized disposable income	Absolute poverty (severe material and social deprivation)	Relative poverty (at-risk-of-poverty rate)	Income quintile ratio (S80/S20)	Net income distribution (P80/P20)
Unit	%	%	%	%	Percentage points	%	PPP 1,000	%	%	Factor	Factor
Source [label]	EUROSTAT [lfsa_argan]	EUROSTAT [edat_lfse_28]	EUROSTAT, special analysis	EUROSTAT [lfse_argan]	EUROSTAT, special analysis	EUROSTAT [earn_ses_pub1s]	EUROSTAT [ilc_di03]	EUROSTAT [ilc_mdspd11]	EUROSTAT [ilc_li02]	EUROSTAT [ilc_di11]	HFCS
Last available year	2021	2021	2021	2021	2021	2018	2021	2022	2022	2021	2017
BE	6,3	10,1	59,1	17,9	12,7	13,7	20,3	5,8	13,2	3,4	30,5
BG	5,3	17,6	67,5	18,6	9,1	21,4	8,6	18,7	22,9	7,5	N/A
CZ	2,9	10,9	72,6	21,9	24,5	15,1	11,9	2,1	10,2	3,4	N/A
DK	5,1	8,3	66,3	16,4	10,9	8,7	21,8	3,2	12,4	3,9	N/A
DE	3,7	9,5	65,7	11,5	19,0	20,7	21,4	6,1	14,7	5,0	113,0
EE	6,5	11,2	70,0	12,3	12,6	22,0	12,9	3,3	22,8	5,0	18,5
IE	6,3	9,8	62,7	11,3	15,4	19,8	19,4	5,8	14,0	3,8	44,4
GR	14,9	17,3	55,0	9,2	20,6	19,7	9,7	13,9	18,8	5,8	18,8
RS	14,9	14,1	58,8	13,7	12,5	14,3	15,2	7,7	20,4	6,2	18,1
FR	7,9	12,8	62,4	17,5	13,0	8,6	18,7	7,5	15,6	4,4	38,3
HR	7,6	14,9	62,0	8,9	10,4	18,4	10,8	4,0	18,0	4,8	8,6
IT	9,7	23,1	53,5	18,6	24,0	8,5	16,5	4,5	20,1	5,9	26,5
CY	7,7	15,4	66,9	7,8	9,3	18,7	18,0	2,7	13,9	4,2	45,9
LV	7,9	12,1	67,3	15,3	8,4	23,5	10,7	7,8	22,5	6,6	26,1
LT	7,4	12,7	70,6	17,6	4,0	22,3	11,9	6,0	20,9	6,1	5,0
LU	5,3	8,8	63,6	8,2	12,4	11,4	29,3	2,0	17,4	4,6	24,0
HU	4,1	11,7	71,6	28,2	9,4	11,6	8,4	9,1	12,1	4,2	9,1
MT	3,4	9,5	72,1	20,6	16,1	15,5	17,7	4,9	16,7	5,0	6,8
NL	4,2	3,9	64,4	18,5	20,6	18,2	22,3	2,5	14,5	3,9	53,3
<b>AT</b>	<b>6,3</b>	<b>9,4</b>	<b>62,6</b>	<b>16,2</b>	<b>20,4</b>	<b>14,8</b>	<b>21,9</b>	<b>2,3</b>	<b>14,8</b>	<b>4,1</b>	<b>38,6</b>
PL	3,4	13,4	68,6	19,3	13,5	21,9	12,1	2,8	13,7	4,0	7,7
PT	6,7	9,5	67,5	12,6	3,3	4,0	11,9	5,3	16,4	5,7	17,5
RO	5,6	20,3	61,1	3,5	20,5	20,0	7,5	24,3	21,2	7,1	N/A
SI	4,8	7,3	68,6	18,4	8,1	16,5	16,4	1,4	12,1	3,2	13,0
SK	6,9	14,2	68,4	19,0	10,1	16,0	8,5	6,3	13,7	3,2	5,5
FI	7,8	9,3	66,9	13,6	7,7	5,0	18,9	1,9	12,7	3,6	78,8
SE	9,0	6,0	69,9	7,7	10,5	3,6	18,7	2,3	16,0	4,0	N/A
EU-27	7,2	13,1	62,8	15,9	16,3	15,2	16,6	6,7	16,5	5,0	N/A
EA-19	7,8	13,0	64,5	15,5	13,2	15,0	18,1	6,1	16,8	5,0	42,2
BENESCAND	6,5	7,5	65,3	14,8	12,5	9,9	20,4	3,1	13,8	3,8	N/A
CESEE-11	5,7	13,3	68,0	16,6	11,9	19,0	10,9	7,8	17,3	5,0	N/A



Table 8: Raw values: indicators of the “environment” pillar – dimensions: climate and greenhouse gases; energy: intensity and usage

Indicator	Climate and greenhouse gases						Energy: intensity and usage			
	GHG emissions excluding LULUCF	GHG emissions including LULUCF	CO <sub>2</sub> intensity/GDP	CO <sub>2</sub> intensity/GDC	Freight transport: rail	Public transport	Energy intensity/GDP	Renewable energy sources	Energy imports	Energy import prices
Unit	Tons per capita	Tons per capita	1,000 tons of CO <sub>2</sub> per EUR billion	1,000 tons of CO <sub>2</sub> per PJ	% of tkm	% of passenger transport	PJ per EUR billion	% of energy consumption	% of energy consumption	EUR million per PJ
Source [label]	EUROSTAT [env_ait_gge]	EUROSTAT [env_ait_gge]	EUROSTAT [env_ait_gge]	EUROSTAT [env_ait_gge]	EUROSTAT [tran_hv_fmod]	EUROSTAT [tran_hv_psmo]	EUROSTAT [nrg_bal_s]	EUROSTAT [sdg_07_40]	EUROSTAT [sdg_07_50]	UN-Comtrade, IEA
Last available year	2020	2020	2020	2020	2021	2020	2021	2021	2021	2021
BE	9,2	9,2	214,9	42,0	11,8	13,5	3,4	13,0	70,8	10,4
BG	7,1	5,7	746,1	49,5	19,6	10,4	8,3	17,0	36,1	5,1
CZ	10,6	11,8	504,7	54,4	22,8	18,3	5,8	17,7	40,0	5,1
DK	7,2	7,7	96,5	44,8	8,7	12,7	1,9	34,7	32,6	5,1
DE	8,8	8,6	206,5	53,6	19,0	11,2	2,8	19,2	63,5	5,1
EE	8,7	9,7	394,5	49,6	40,1	11,6	4,6	38,0	1,4	5,1
IE	11,6	13,0	99,4	61,1	0,6	13,6	1,2	12,5	77,0	6,0
GR	7,0	6,6	332,8	65,0	2,9	12,9	3,5	21,9	73,8	9,4
RS	5,8	5,1	200,4	45,6	4,3	10,0	3,0	20,7	69,1	5,1
FR	5,8	5,6	133,3	31,5	10,6	13,0	2,6	19,3	44,2	9,8
HR	5,9	4,6	356,4	48,5	23,8	11,1	5,6	31,3	54,5	9,4
IT	6,4	5,9	192,2	51,0	12,6	14,1	2,8	19,0	73,5	9,0
CY	10,0	9,6	341,5	76,1	N/A	12,4	3,1	18,4	89,5	5,1
LV	5,5	5,8	263,1	38,3	53,4	12,3	6,1	42,1	38,3	7,4
LT	7,2	5,3	314,9	42,7	62,5	5,8	5,2	28,2	73,3	9,0
LU	14,4	13,8	135,9	48,7	6,5	13,4	2,7	11,7	92,5	7,4
HU	6,4	5,7	374,4	43,2	26,4	21,2	5,9	14,1	54,1	11,9
MT	4,1	4,1	135,4	50,2	N/A	13,8	1,9	12,2	97,1	5,3
NL	9,4	9,6	189,8	45,7	6,4	9,9	2,6	12,3	58,4	4,6
<b>AT</b>	<b>8,3</b>	<b>8,1</b>	<b>177,6</b>	<b>45,8</b>	<b>29,8</b>	<b>19,4</b>	<b>3,2</b>	<b>36,4</b>	<b>52,0</b>	<b>8,9</b>
PL	9,8	9,3	606,3	70,4	22,0	12,4	5,9	15,6	40,4	6,3
PT	5,6	4,9	228,5	46,7	10,7	6,8	3,4	34,0	66,9	9,9
RO	5,7	4,0	393,2	55,0	25,3	18,1	5,3	23,6	31,6	6,1
SI	7,5	5,3	296,5	48,5	33,6	8,7	4,2	25,0	48,6	12,7
SK	6,8	5,2	364,6	45,2	32,1	18,8	5,5	17,4	52,6	12,7
FI	8,6	5,5	167,9	28,0	26,9	13,0	4,5	43,1	38,0	9,1
SE	4,5	0,6	75,9	19,5	28,8	16,0	2,6	62,6	21,2	10,7
EU-27	7,4	6,8	210,3	47,0	21,6	13,1	3,1	21,8	55,5	7,8
EA-19	7,2	6,8	187,5	45,5	21,4	12,3	2,8	18,5	60,5	8,0
BENESCAND	8,0	7,0	154,1	36,7	16,5	13,0	2,8	29,9	49,6	8,0
CESEE-11	8,1	7,3	489,6	57,6	32,9	13,5	5,8	21,4	41,9	8,2

Table 9: Raw values: indicators of the “environment” pillar – dimensions: circular economy and material consumption; ecosystems and biodiversity; environmental instruments and innovation performance

Indicator	Circular economy and material consumption				Ecosystems and biodiversity				Environmental instruments and innovation performance	
	Raw material consumption (RMC)	Domestic material consumption (DMC)	Resource productivity	Usage of reusable materials	Organically farmed land	Soil erosion by water	Settlement area	Surface sealing	Environmental patents	Environmental taxes
Unit	Tons per capita	Tons per capita	EUR per kg	%	%	%	m <sup>2</sup> per capita	m <sup>2</sup> per capita	Number	% of all taxes and duties
Source [label]	EUROSTAT [sdg_12_21]	EUROSTAT [ten00137]	EUROSTAT [cei_pc030]	EUROSTAT [cei_srm030]	EUROSTAT [sdg_02_40]	EUROSTAT [sdg_15_50]	EUROSTAT [sdg_11_31]	EUROSTAT [sdg_15_41]	PATSTAT, OECD	EUROSTAT [env_ac_tax]
Last available year	2020	2021	2021	2021	2020	2016	2018	2018	2019	2021
BE	13,0	14,0	2,8	20,5	7,3	0,4	583,5	167,8	13,0	5,4
BG	20,7	22,4	0,3	4,9	2,3	3,4	623,4	144,1	9,8	9,1
CZ	15,6	15,5	1,1	11,4	15,3	1,3	634,4	182,7	10,9	5,1
DK	25,6	25,2	2,1	7,8	11,5	0,0	1.053,8	221,8	28,7	5,9
DE	15,0	14,2	2,7	12,7	9,6	1,3	586,7	191,1	12,9	4,2
EE	27,9	29,4	0,7	15,1	22,4	0,0	1.484,4	153,9	9,6	6,8
IE	10,8	22,4	3,6	2,0	1,7	0,7	972,7	143,6	8,2	5,3
GR	11,1	9,8	1,7	3,4	10,2	9,6	710,2	124,6	8,4	9,5
RS	9,9	9,1	2,6	8,0	10,0	9,0	577,5	137,0	14,7	4,5
FR	10,9	10,9	3,2	19,8	8,7	3,3	845,1	184,9	13,0	4,6
HR	13,1	11,3	1,1	5,7	7,2	5,1	722,5	175,8	7,5	N/A
IT	9,8	8,9	3,2	18,4	16,0	24,9	484,3	138,9	10,0	6,9
CY	22,0	19,0	1,3	2,8	4,4	6,5	939,0	235,6	7,2	6,5
LV	18,0	14,5	1,0	6,2	14,8	0,0	1.276,1	135,5	20,1	8,9
LT	22,7	21,2	0,8	4,0	8,0	0,0	1.090,5	181,0	12,9	5,7
LU	28,6	25,1	4,0	3,8	4,6	2,6	565,2	190,5	12,1	N/A
HU	14,7	15,3	0,9	6,8	6,0	2,5	811,5	147,3	11,3	5,9
MT	18,1	11,8	2,1	11,4	0,6	10,6	201,4	109,2	12,2	6,3
NL	7,7	7,4	5,9	33,8	4,0	0,0	456,9	165,9	9,8	7,7
<b>AT</b>	<b>21,3</b>	<b>19,1</b>	<b>2,1</b>	<b>12,3</b>	<b>25,7</b>	<b>15,5</b>	<b>740,1</b>	<b>172,3</b>	<b>12,8</b>	<b>4,9</b>
PL	17,6	18,0	0,8	9,1	3,5	1,1	633,7	123,0	9,1	7,7
PT	17,1	16,9	1,1	2,5	8,1	4,1	689,1	195,3	11,4	6,2
RO	29,6	29,0	0,4	1,4	3,5	7,3	528,4	109,4	13,8	7,2
SI	16,9	12,7	1,7	11,0	10,3	19,0	625,1	168,0	11,2	7,2
SK	13,3	11,9	1,4	8,3	11,7	4,6	631,8	140,8	10,3	6,7
FI	33,6	35,0	1,2	2,0	13,9	0,0	2.447,6	260,3	12,2	5,8
SE	24,9	25,1	2,0	6,6	20,3	0,7	2.223,0	183,2	12,5	4,4
EU-27	14,5	14,2	2,1	9,3	9,1	5,1	703,9	162,0	12,1	6,3
EA-19	12,6	9,3	2,7	10,4	10,4	6,4	671,1	167,8	11,7	6,3
BENESCAND	17,3	17,6	2,5	14,1	12,6	6,4	1.132,1	186,7	15,2	5,8
CESEE-11	19,4	19,3	0,7	7,6	6,0	3,3	668,6	136,5	11,5	7,0

## 7. Country codes and country peer groups

Country codes and country peer groups			
BE	Belgium	LT	Lithuania
BG	Bulgaria	LU	Luxembourg
CZ	Czechia	HU	Hungary
DK	Denmark	MT	Malta
DE	Germany	NL	Netherlands
EE	Estonia	AT	Austria
IE	Ireland	PL	Poland
GR	Greece	PT	Portugal
RS	Spain	RO	Romania
FR	France	SI	Slovenia
HR	Croatia	SK	Slovakia
IT	Italy	FI	Finland
CY	Cyprus	SE	Sweden
LV	Latvia		
EU-27	All 27 EU member states	CESEE-11	Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia
EA-19	19 euro area countries (excluding Croatia)	CESEE-5	Poland, Slovakia, Slovenia, Czechia and Hungary
BENESCAND	Belgium, Denmark, Finland, the Netherlands and Sweden		