EUROPEAN
COMMISSION

Brussels, 19.6.2024
SWD(2024) 611 final

COMMISSION STAFF WORKING DOCUMENT

2024 Country Report - Croatia

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

on the economic, social, employment, structural and budgetary policies of Croatia

{COM(2024) 611 final} - {SWD(2024) 600 final}

European Commission

Croatia

2024 Country Report

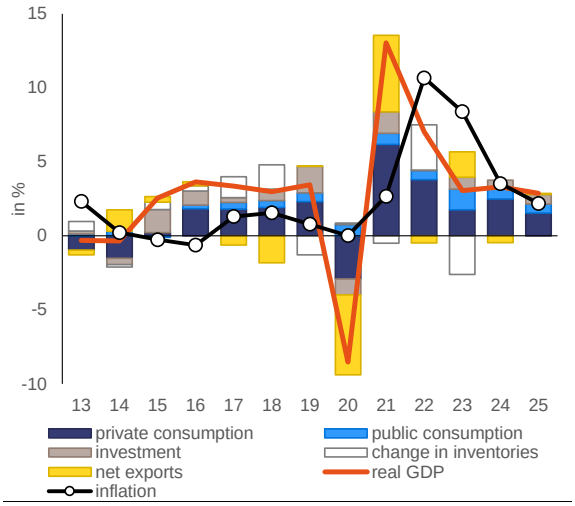
#EURO at 25



Economic growth remains robust

The Croatian economy continues to grow at a solid pace. ([1]) Croatia's real GDP grew by 3.1% in 2023, down from 7% in 2022 (Graph 1.1). Despite this drop, it was still the second highest growth rate in the EU. GDP growth was mainly driven by domestic demand, especially household consumption, which was supported by growing employment and real wages. Investment intensified despite tighter monetary policy and higher borrowing costs, underpinned by significant inflows of EU funds, including those provided under the recovery and resilience plan (RRP), and cohesion policy funding. The economy is expected to expand at similar rates this year and the next, continuing to catch up with the average EU income levels.

Graph 1.1: **GDP growth and inflation**



Inflation measured by the annual change in Harmonised Index of Consumer Prices (HICP).
Source: AMECO.

Exports of goods have weakened but exports of services remain strong. In 2023, exports of goods declined by nearly 10% in real terms amid weak external demand dynamics, but the drop was more than offset by lower imports. Conversely, services exports, mainly consisting of travel services, grew by 4% in real terms following Croatia's adoption of the euro and its accession to the Schengen area in 2023. The trade deficit narrowed substantially, largely due to declining energy prices, and lower real imports of goods. Net lending reached nearly 4% of GDP, strongly backed by capital transfers from EU funds. Goods exports are expected to resume growth as external demand gradually recovers, while exports of services should continue expanding, albeit at lower rates. International tourism continues to be a substantial contributor to economic activity, with tourism exports amounting to around 19% of GDP in 2023 ([2]) and is expected to continue expanding in real terms although at lower rates.

Inflation is declining but remains relatively high. In 2023, the harmonized index of consumer price (HICP) inflation decreased from 10.7% in 2022, to 8.4%, compared to 5.4% in the euro area. The drop was mainly driven by falling energy prices. The higher inflation with respect to the euro area was partly due to comparatively large weights of food and tourism-related services in Croatia's harmonised consumer price index, as these prices increased by more than the rest of the index. Inflation excluding energy and food amounted to 8.8% in 2023, compared to 5% in the euro area.

The labour market is tight with labour shortages reported across several sectors and regions. In 2023, in a context of solid economic growth, the employment rate

([1]) The cut-off date for the data used to prepare the 27 Country Reports was 15 May 2024.

([2]) Source: Eurostat, Balance of Payments data.

exceeded the 70% (20-64 age group) mark for the first time, continuing the strong increases over the last decade, but remaining below the EU rate of 75.3%. However, the employment rate for women (66.8% in 2023) remains low compared to that for men (74.6%) and the EU average (70.2%). The unemployment rate declined to 6.1% (15-74 age group), the lowest in decades. The tight labour market resulted in high real wage increases, which in turn boosted demand. In some sectors, mainly construction and tourism, large labour shortages are being increasingly addressed by inflows of workers from non-EU countries, including from Asia, facilitated by the liberalisation of labour market legislative framework. Allowing pensioners to work, including on a part-time basis, after retirement also helped supplement the labour force in some economic activities, particularly in the administrative, retail and processing sectors.

Croatia's output is estimated to be above its potential. Following a strong recovery from the pandemic slump, actual output rose above its potential in 2023, but the positive gap is forecast to decline. Potential growth, estimated at 4.1% in 2023, is expected to decrease to 3.2% in 2025.

Croatia's labour productivity is approaching the EU average, but at a slower pace than peers and with substantial regional disparities. Between 2015 and 2022, Croatia's labour productivity per worker grew faster than the EU aggregate but slower than its peers. As a result, Croatia's labour productivity amounted to 70% of the EU aggregate in 2023. Croatia's comparatively low performance in productivity drivers such as R&D personnel, patent activity, and human capital contributed to widening the gap with peers. Productivity in the manufacturing and construction sector is particularly low, which is problematic considering the large investments made in infrastructure building in the RRP. Innovation and skills shortages (Annex 11, 14 and 15), limited access to equity (Annex 12 and 18) and high energy costs (Annex 7) are identified as a major obstacle to firm investment (Box 1). Further increases in productivity and labour supply will be needed to improve competitiveness.

The government deficit and debt remain contained

The general government deficit is expected to remain below 3% of GDP in the coming years despite the fiscal stance becoming expansionary. On the revenue side, the tax reform introduced in January 2024 reduces the base for personal income tax and pension contribution. On the expenditure side, interest spending increased by 40% between 2022 and 2023 due to variable interest rate loans largely taken on by state-owned enterprises. The new law on public sector wages and the recent spike in inflation are set to increase wages and social expenditure significantly. The debt to GDP ratio is expected to fall to below 60%, mostly driven by strong GDP growth. Although long-term estimates suggest that public debt would remain close to the Treaty reference ratio, without mitigating measures the wage bill increase as a result of the new public sector wage law carries risks of more persistent effects which could affect the sustainability of government finances.

To address fiscal challenges, efforts could be made to strengthen the independent fiscal institution (IFI). The Fiscal Policy Council of Croatia is still in its inception phase and draws on technical and administrative support services from the parliament and the government. It has a narrow mandate, focused on monitoring compliance with fiscal rules and endorsing/assessing the government's macroeconomic forecast. It experiences difficulties attracting staff and has yet to develop significant outreach activities. Some interaction with the parliament has taken place, but the policy dialogue with the government could be further developed.

Croatia's tax mix is relatively favourable to growth and competitiveness ([3]). Labour taxes, which affect cost competitiveness, are far below the EU level, mostly due to relatively

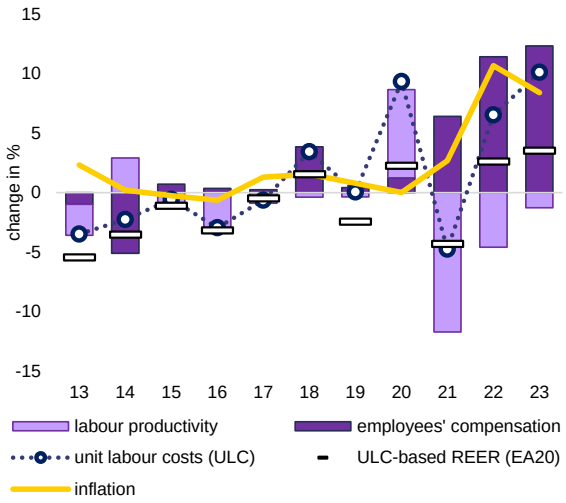
([3]) Additional info in Annex 19.

high tax deductions. Corporate taxes are also below the EU average, being more conducive to growth and investment. The bulk of the revenues come from consumption taxes, which are well above the EU average, with Croatia having one of the top three highest VAT standard rates. Croatia has reduced VAT rates for some essential products and services, although this may not be the most efficient redistributive tool ([4]). Capital taxation revenues are around half the EU average, and some limited increase in taxation was introduced at the beginning of 2024. Croatia continues to have low taxes on property and income from rent, which in turn affects the supply and prices for residential households ([5]). Overall, total tax revenues are slightly below the EU average.

Continued cost pressures could impair competitiveness

Continued cost pressures may hamper investment implementation and external competitiveness. Consumer prices and wages increased considerably in 2022 and 2023, amid strong demand and tight labour markets. This may significantly increase implementation costs of major investment projects, including those funded by the EU, on which Croatia's future competitiveness relies strongly. More broadly, as wage growth outpaced labour productivity gains, Croatia experienced large increases in unit labour costs (ULCs) in 2022 and 2023 (Graph 1.2). While so far the cumulative ULC growth difference with euro area trade partners has been limited over the medium term ([6]), further ULC increases could hurt external competitiveness if not absorbed by profits.

Graph 1.2: **External competitiveness**



Change in labour productivity is shown with a negative sign.
The values for compensation per employee, labour productivity and ULC for 2023 are based on quarterly data.
Source: Eurostat and ECB.

House prices continued growing strongly in 2023, although at slower pace. Nominal house prices grew by 11.9% in 2023 (3.7% in real terms), driven by the ample excess liquidity in the banking system after the euro accession, purchases by foreigners, and the government home subsidy programme (Annex 18). At the same time, the number of transactions, including by non-residents, declined in 2023 and price growth decelerated mildly, and the last call for the government subsidised loans was published in March, marking the end of the programme ([7]). The European Systemic Risk Board (ESRB) sees a potential risk to financial stability coming from the real estate market (Annex 18). Excess liquidity could be addressed by widening the scope of savings instruments available to households, including facilitating their direct

([4]) OECD (2015) 'The distributional effects of consumption taxes in OECD countries.' (OECD Tax Policy Studies No 22/2015), http://www.oecd.org/ctp/the-distributional-effects-of-consumption-taxes-in-oecd-countries-9789264224520-en.htm.

([5]) Additional info in the 2019 and 2023 country reports for Croatia.

([6]) Following a significant depreciation of 4.3% in 2021, the ULC-based real effective exchange rate (REER) has appreciated by 2.6% in 2022 and 3.5% in 2023, suggesting that the strong ULC increase may start eroding Croatia's cost competitiveness vis-à-vis its trade partners in the euro area. As for the HICP-based REER, it appreciated by 1.5% in 2022 and by 2.3% in 2023. Comparison with 2019 still suggests that the external competitiveness has so far been broadly preserved.

([7]) The loans were paid out mainly over the second quarter, and the programme expired at the end of 2023, as legislated.

Box 1: Croatia's competitiveness in brief

Croatia's competitiveness is gradually improving, facilitated by strong public investment and reform momentum from the RRP. Its tourism sector, representing 12% of GDP in 2019 ([10]), is particularly dynamic. Croatia has slightly increased its market share in world exports from 0.13% in 2018 to 0.14% in 2022. Over the last few years, trade integration into the single market has increased and is now around the EU average. The adoption of the euro in 2023 has further facilitated trade with euro area countries (see also Annex 12).

However, competitiveness challenges remain:

- **Further improvements need to be made to the business environment** by reducing the regulatory burden, removing barriers to competition in services and enhancing the public administration's efficiency.
- **Low levels of basic skills, research and innovation (R&I), and skills shortages** are holding back productivity and slowing down the green and digital transition.
- **Insufficient access to diverse sources of financing** is restraining investment and the growth of young and innovative firms.
- **Slow roll-out of renewables, especially solar, and the circular economy transition** is preventing strategic autonomy and increasing vulnerability to climate-related events, and may compromise future competitiveness.

participation in capital markets, including government bonds, which represent a low-risk investment. Meanwhile, banks could use the liquidity at their disposal to support the development of venture capital and equity markets.

Housing affordability remains among the lowest in the EU. Strong tourism activity has been contributing to persistently low housing affordability, by limiting or reducing the availability of residential housing ([8]). In addition, the home subsidy scheme introduced in 2017 to help people acquire their first house has been found to have contributed to the overall house price increases and to lower affordability, especially for buyers not using the subsidy ([9]). Overall, housing affordability in 2023 was slightly worse than in 2017 despite strong increases in income. Looking forward, carefully designed measures that aim to increase supply might be more appropriate to address the issue of low housing affordability.

The risk of poverty is higher for vulnerable groups and social exclusion holds back labour supply. As regards the implementation of the European Pillar of Social Rights, although the risk of poverty and social exclusion (AROPE) has been relatively stable since 2019 and below the EU average, older people, especially women, and people with a disability are particularly affected by higher poverty risks (Annex 14). Vulnerable groups also face persistent barriers to accessing the labour market and getting quality employment, constraining labour participation and productivity.

([8]) Mikulić, J., Vizek, M., Stojčić, N., Payne, J.E., Čeh Časni, A., and Barbić, T. (2021) "The effect of tourism activity on housing affordability", Annals of Tourism Research 90 103264.

([9]) Kunovac, D. and Žilić, I. (2022) "The effect of housing loan subsidies on affordability: Evidence from Croatia", Journal of Housing Economics 55 101808.

([10]) Eurostat, Tourism Satellite Accounts in Europe – 2023 edition.

Box 2:

UN Sustainable Development Goals (SDGs)

Croatia is making progress in all SDGs related to competitiveness and productivity (SDGs 4, 8, 9). However, it needs to step up efforts to close the gap with the EU average on all of them. SDG 9 related to innovation, industry and resilient infrastructure is farther behind the EU average, mostly due to a weak R&I performance, a low share of environmental goods and services, and quality of passenger transport infrastructure. Sustainable economic growth and employment indicators (SDG 8) are below the EU average despite catching up rapidly in recent years, with real GDP per capita around half of the EU average in 2022, while the employment rate is below EU average despite increased labour market tightness (Annex 1).

Out of the 17 indicators, 11 SDGs remain below the EU average. Besides those highlighted above, these relate to environmental stability (SDGs 2, 6, 11, 12, 13), fairness (SDGs 3 and 5) and macroeconomic stability (SDG 16).

IMPLEMENTATION OF KEY REFORMS AND INVESTMENTS USING EU INSTRUMENTS

Funding from the Recovery and Resilience Facility (RRF) and cohesion policy is mutually reinforcing Croatia's efforts to boost its competitiveness and stimulate sustainable growth. Combined support from RRF and cohesion policy funding (in the periods up to 2026 and 2027, respectively) represents around 24.52% of 2023 GDP, compared to the EU average of 5.38% of GDP (Annex 4). The RRF alone accounts for 13.13% of 2023 GDP – the second highest in the EU. This includes 5.56% of GDP through loan support and 7.57% of GDP through grants (Annex 3).

Under its recovery and resilience plan (RRP) Croatia has implemented important policy reforms that have improved its competitiveness. This is particularly the case in the areas of healthcare, science and higher education, research and innovation, labour market, pension system, as well as waste management and renewable energy sources. Croatia also made substantial investments in the energy renovation of buildings, the green and digital transition of tourism and reducing the administrative burden for businesses.

The implementation of Croatia's recovery and resilience plan is underway, however timely completion requires further efforts. Croatia has submitted 5 payment requests, corresponding to 120 milestones and targets in the plan and resulting in an overall disbursement of EUR 3.7 billion as of 15 April 2024 (see Annex 3). The size and complexity of the plan, and challenges linked to absorption capacity, call for accelerating investments and addressing risks of delays while strengthening administrative capacities to ensure that reforms and investments can be completed on time. Investments, in particular, are highly concentrated towards the end of the RRP implementation and merit special attention.

Cohesion policy funding helps Croatia tackling its growth and competitiveness challenges and reducing the country's territorial and social disparities. Under the 2014-2020 cohesion programming period, support focused on areas of: (i) research and innovation; (ii) small and medium enterprises (SMEs); (iii) energy efficiency; (iv) the circular economy and environment; (v) education; (vi) employment; and (vii) social inclusion. For the current 2021-2027 programming period, support is focused on: (i) innovative and smart economic transformation; (ii) employment; (iii) education/skills; (iv) social inclusion; (v) improving energy efficiency; (vi) increasing the share of renewables in energy production; (vii) strengthening the circular economy; and (vii) supporting climate resilience and biodiversity. The new programme aims to bring more cooperation and partnership with regional and local stakeholders.

Removing regulatory barriers to improve business environment

RRP implementation enabled major steps to be taken in reducing the regulatory burden and improving business environment. After identifying the most burdensome requirements together with the business community and analysing compliance costs, the government optimised and digitalised administrative processes through measures set out in three action plans. Since July 2021, it has reduced the administrative burden for the economy by approximately EUR 100 million.

Croatia carried out measures to improve the regulatory system for SMEs, by streamlining the framework for assessing the impact of regulation on SMEs. In 2023,

as part of the RRF reform agenda, the Croatian government adopted the 'Strategy for the Evaluation of the Economic Effects of Regulation on the SME sector', with an accompanying action plan.

RRF and cohesion policy funding supported measures aimed at boosting start-ups and competitiveness of innovative SMEs. A new equity investment programme was launched in 2023, providing EUR 52 million to support fast-growing SMEs, small mid-caps and mid-caps established and operating in Croatia. The programme, launched in cooperation with the European Investment Fund, is focused on green transformation and innovation. RRF-funded activities are complemented by the programme 'Competitiveness and Cohesion 2021-2027', funded by the European Regional Development Fund (ERDF). This includes, for example, a new Risk Capital Fund worth EUR 80 million that supports innovative Croatian SMEs with high growth potential through accelerators and venture capital funds.

The implementation of the RRP supported improvements in efficiency of the public administration, that currently weighs on the business climate. For instance, Croatia has carried out several measures to speed up judicial processes and is also digitalising public services to improve the speed of processing and efficiency for the public's benefit.

Croatia introduced reforms to increase the attractiveness, quality, and transparency of the civil service. For instance, under the RRP, Croatia introduced an overarching legislative framework, harmonising and simplifying the wage system in government administration and the public service. The new legislation also puts a stronger focus on skills and competencies when considering recruitment and promotion, aiming to attract and retain high quality employees.

Unlocking investments for the green and digital transitions

Croatia is improving strategic planning, infrastructure and the skills needed for the digital transition. Under the RRP, the adoption of Croatia's 2030 digital strategy identified priority investments in digital transition and set other strategic objectives, including measures for developing digital skills and digital jobs. The Technical Support Instrument ([11]) supported the Croatian authorities to improve planning and implementation of public ICT/digital projects in Croatia, including guidelines for the prioritisation of digital investments. Croatia has taken the first steps in constructing passive electronic communications infrastructure funded by the RRP, to improve the availability of 5G networks throughout the country. Building on these measures, further efforts are needed to boost digital skills, expand connectivity infrastructure, and accelerate the digitalisation of businesses and public services (Annex 10 and Digital Decade ([12])).

Croatia has also removed administrative barriers in the energy sector as part of the RRP. By targeted legislative changes, Croatia amended procedures that constrained investments in renewable energy resources. The new rules provide self-consumers with more legal certainty and should facilitate the installation of photovoltaics in multi-apartment buildings. Croatia also removed severe restrictions on establishing energy communities, and in 2024 the first community was registered.

Making effective use of various funding sources, Croatia has taken steps to improve efficiency and productivity in the

([11]) 'Development of the coordination mechanism to support e-governance policy coherence', TSI21HR28.

([12]) European Commission (2023): Report on the State of the Digital Decade 2023: https://digital-strategy.ec.europa.eu/en/library/2023-report-state-digital-decade.

Box 3: Combined action for more impactful EU funds

To boost economic growth and maximise the impact of EU funding, Croatia's RRP includes reforms that support investments under other EU instruments, creating significant synergies and complementarities between the various funds. For example, to improve educational outcomes of elementary school students and expand access to extracurricular education, especially among students from disadvantaged backgrounds, a comprehensive transformation of the primary education sector is underway. Croatia is delivering RRP reforms enabling the transition to single-shift schools and preparing for the introduction of the whole-day teaching. These reforms are supported by investments under the ERDF and RRF in school infrastructure and equipment as well as investments under the European Social Fund plus (ESF+) and RRP investments and reforms to improve teaching and learning.

utility sector, reducing regional disparities in service provision. Under the RRP, Croatia introduced legislative changes to improve the governance of the water sector, reducing fragmentation and the number of water companies by 80%, and supporting the rational use of water resources. Croatia also adopted a new 6-year strategy for waste management in the country ('Waste Management Plan 2023-2028'), with specific targets for waste recycling, sorting, using and repairing. In parallel with these policy efforts, infrastructure upgrades funded by cohesion policy will help provide: (i) access to drinking water services to 98% of population; and (ii) adequate wastewater services for 86% of the Croatian population. Furthermore, the construction of four waste management centres will help reduce landfilled waste by 40%. Thanks to complementary investments from the EU's Modernisation Fund, Croatia received EUR 80 million of support to public water and waste utility companies for photovoltaic panels and energy storage capacity.

Croatia has taken significant steps to improve the railway sector infrastructure, helping increase trade flows and the integration of its network into European transport networks. In particular, it prepared a National Plan for Development of Railway Infrastructure to increase the competitiveness and efficiency of the rail sector, identifying various projects and activities to improve, modernise and green passenger and cargo transport in Croatia.

Croatia continued improving the resilience, sustainability and competitiveness of its tourism sector. Under the RRP, Croatia prepared its Sustainable Tourism Strategy for 2030, which was followed by specific calls under the RRP for grant support to entrepreneurs in the tourism sector. For example, a green transition call of EUR 82 million was launched to support investments in installing renewable energy resources and other measures to reduce energy use, water use, or food waste, to improve the competitiveness of entrepreneurs in the tourism sector.

Investing in people for economic growth and resilience

Under the RRP, Croatia implemented reforms and investments addressing the skills gap, improving productivity and promoting inclusiveness. Croatia's innovative, nation-wide voucher scheme to provide training in skills in response to labour market needs, particularly skills related to the green and digital transition, was met with strong demand and has been further developed by complementary ESF+ investments. In addition, a national plan for developing green skills in the building sector was prepared, to provide skills in the context of energy efficiency renovation, post-earthquake reconstruction and application of green infrastructure solutions.

RRF reforms are supporting the shift of the public research and innovation system towards a performance-oriented approach. The new Act on Higher Education

and Scientific Activity adopted under the RRP introduced a performance-based funding system for higher education institutions and public research institutes. This encourages higher-quality research by introducing performance agreements based on ambitious strategic objectives, including those incentivising people to study and / or work abroad and increased cooperation between the academic and business sector.

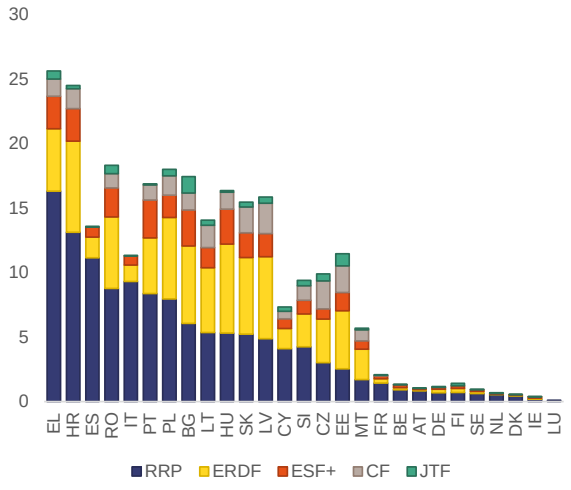
Complementary action of EU instruments is increasing participation in early education. This is done by ensuring the availability of early education and childcare (ECEC) facilities. Under the RRP, Croatia adopted a new model for financing of ECEC facilities, to ensure their availability and full use across the country, including in smaller municipalities on islands or in mountainous areas. This, in turn, is also expected to support higher labour force participation of parents, especially women.

Investments in modern medical infrastructure and equipment are improving the quality and accessibility of healthcare and reducing territorial differences. The RRP-supported digitalisation of cardiology services focuses on improving primary care diagnostics in 40 locations across the country, for patients in remote and rural areas. In addition, Croatia will be using around EUR 140 million from the ERDF to develop and renovate health infrastructure, as well as invest in medical equipment, health mobile assets, such as ambulance vehicles and boats, and digitalisation in healthcare.

FURTHER PRIORITIES AHEAD

Steady implementation of the RRP and cohesion policy programmes remains a priority as the financial envelope became larger. Croatia has the second highest share of EU funding to GDP (24.5% of 2023 GDP, Graph 3.1). Implementation of the RRP is proceeding according to schedule. The size of the RRP allocation has nearly doubled with the amendment adopted at the end of 2023 and all remaining and new investment under the plan need to be completed by 2026. While the absorption of the 2014-2020 cohesion funds is likely to reach 100%, marking a remarkable improvement with respect to the absorption rate of the previous programming period, implementation of cohesion policy investments for 2021-2027 has been rather limited so far. Reforms and investments under these programmes are key to addressing some of Croatia's most relevant competitiveness challenges, including those related to education, the business environment (regulatory burden, barriers to competition in services, public administration efficiency), and the green and digital transition.

Graph 3.1: **EU funding from the RRP and cohesion policy as % of GDP (2023)**



Source: ECFIN, Open Cohesion Data Portal, Eurostat.

Besides those addressed by the RRP, Croatia faces additional challenges related to innovation and skills, access to diverse sources of financing, the green transition and social inclusion. Tackling these challenges will help increase Croatia's long-term competitiveness and diversify the economy away from tourism, therefore reducing potential distortions (e.g. inflation pressures, low house affordability, see Chapter 1: Economic and Employment Snapshot), strengthening economic resilience. It will also help make further progress towards achieving the SDGs.

It is important that the identified challenges are addressed both at the national and regional level. This will help reduce regional disparities and improve the administrative and investment capacity in a balanced way across the country.

Strengthening research and innovation and addressing skills mismatches

Despite marked improvements in recent years, Croatia trails behind on innovation. Croatia is an emerging innovator with a performance of just under 70% of EU average ([13]). Significant disparities remain in the distribution of R&D expenditure among Croatian regions and the capital city of Zagreb. While the gap to the EU average is still significant, there has been continuous growth since 2018. This has been driven, among other things, by increased R&D expenditure levels,

([13]) 2023 European Innovation Scoreboard, Country profile: Croatia https://ec.europa.eu/assets/rtd/eis/2023/ec_rtd_eis-country-profile-hr.pdf

and an increased number of EU funded programmes providing support for academia-industry collaboration. While the authorities have set up a comprehensive plan to give continuous support to foster technology transfer, cooperation and to improve spin-off activities and patenting through RRF and cohesion policy, it is important to continue with financing such activities beyond EU funds.

There continues to be a high level of fragmentation in the R&I landscape. This is despite recent efforts to consolidate the public research system, the institutional landscape of public research organisations and higher education institutions. This fragmentation has resulted in coordination and financial inefficiencies, directly reducing the potential for collaboration, innovation capacity and the effectiveness of R&D investment. In turn, this continues to hinder better R&I outputs.

Further improvements in R&I performance will require close collaboration between government actors and strengthened administrative capacity. With its Smart Specialisation strategy Croatia has successfully streamlined R&I governance. However, further steps are needed to ensure consolidation and the seamless operation of the system in the long term. The legislative framework recently adopted as part of the RRF justifies a more active role for the Croatian Science Foundation in implementing policy measures and selecting projects along with the relevant Ministries. A timely implementation of the Smart Specialisation Strategy 2029 could enable a strong and balanced industrial transition of disadvantaged regions.

Skills mismatches continue to be a major determinant of labour shortages, low employment rate and sluggish productivity growth. Low levels of basic skills, population with tertiary education and doctorate graduates, particularly in science, technology, engineering and mathematics (STEM), and low levels of life-long learning exacerbate skills mismatches and point to weaknesses in the education system. The lack of available skilled staff is one of the main barriers to business investment and a faster transition to a circular economy, and the reason behind labour shortages in key sectors of the economy, such as tourism, construction and industry. Labour demand in these sectors is increasingly being met by bringing in workers from non-EU countries. Lack of skilled workers is also a major limiting factor in services including information and communication technology, health, social and long-term care. The shortage of specialists is in particular preventing local businesses from adopting digital and green technologies (Annex 10, 14) and productivity and sustainable growth from accelerating. Of particular concern are the shortages of teachers in early childhood and care and of STEM teachers in schools (Annex 15).

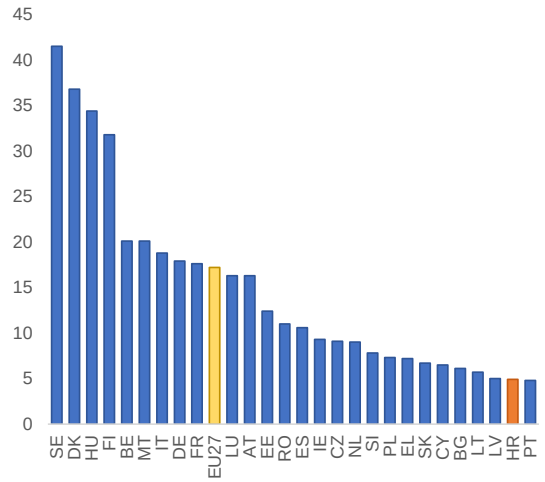
A stronger education system, adapted to labour market needs, and upskilling and reskilling policies are needed to address current and future shortages. The high rate of pupils underperforming in basic skills, especially mathematics, leads to bottlenecks in their upskilling, while the scope of adult learning in Croatia needs to be significantly improved. Looking ahead, the projected decline of the working-age population risks further exacerbating labour shortages. Building on the RRP and European Social Fund plus (ESF+) investments, further education and upskilling and reskilling policies are needed. Improving the capacity of the education system and labour market to train and retain more ICT specialists would also help tackle current and prospective labour shortages.

Focusing on active labour market policies remains a key priority. Targeting active labour market policies (ALMPs), as well as upskilling and reskilling measures towards vulnerable groups, and aligning them with social policies remains crucial. Reforms and investments in ALMPs, including under the RRP, have increased significantly during recent years, but Croatia is still facing challenges in reaching disadvantaged groups. ALMPs are insufficiently integrated into social policies, adult learning and vocational training (Annex 14).

Promoting access to diverse sources of financing

Croatia's businesses face limited access to non-bank finance due to a lack of diverse sources of financing. Access to equity is well below the EU average (Annex 12). In 2022, stock market capitalisation was only at 27.3% of GDP, less than half the EU average of 65.6%. The persistently low number of issuers on the Zagreb Stock Exchange further points to the lack of attractiveness of capital market financing. At the same time, the breadth of the bond market was much lower than the EU average ([14]). Direct participation of retail investors is also lower than the EU average (Graph 3.2). As a result, private savings tend to concentrate and add pressure on real estate markets. Croatia also has scope to develop more private equity and venture capital market activities.

Graph 3.2: **Direct investments by households (2021)**



Sum of volumes of bonds and listed shares held by households relative to the sum of volumes of both and cash holdings and deposits.
Source: Eurostat, DG FISMA.

Capital markets remain underdeveloped. There is scope to remove barriers to development and growth of capital markets, including private equity and venture capital. The readiness of small and medium-sized enterprises and other firms to access market financing could be encouraged by: (i) boosting collaboration and knowledge transfer through cluster policies; and (ii) leveraging the capacity-building measures in the RRP through accelerators to provide advisory support throughout all stages of investment decisions. The excess liquidity in the banking system, released by new regulatory requirements after Croatia adopted the euro, could represent a source of funding for developing private equity and venture capital in the country.

Further integration into the wider EU capital market would also be beneficial. While Croatia established a central counterparty clearing house in 2022, addressing barriers to its cross-border integration could improve attractiveness for investors and increase liquidity in the stock market, in line with the objectives of the Capital Market Union.

There is scope to raise the overall attractiveness of the stock market for issuers and investors. While the RRP includes reforms that aim to diversify capital markets and improve access to alternative financing, other areas remain unaddressed. These include raising the level of liquidity and participation in the stock market by establishing higher standards of corporate governance and disclosure, promoting new issuances, and reducing costs through digitalisation. Improving the accessibility and credibility of the key market infrastructures can further widen the capital market.

Overly complex tax rules may disincentivise equity investments and hamper the liquidity and development of capital markets. There is scope to tackle possible tax disincentives, including by simplifying capital income tax compliance procedures for cross-border investors, especially small investors, for example, via

([14])https://finance.ec.europa.eu/document/download/05a3142e-ab62-4528-ac86-2e1ce64ca6ee_en?filename=230816-capital-markets-union-indicators_en.pdf

investment accounts with tax incentives for individuals ([15]).

Fostering direct retail investor participation would help the domestic capital market grow. Encouraging financial literacy, coupled with measures mentioned above that improve market transparency and provide tax incentives, would facilitate small investors' direct participation in equity and bond markets (including retail participation in government bond of longer duration ([16])). Wider retail participation could: (i) mitigate price pressures and lessen housing affordability concerns; (ii) reduce the excess liquidity in the banking system; (iii) contribute to capital market development more generally; and (iv) improve monetary policy transmission. A well-designed and progressive property taxation would also lessen the pressures on the real estate market while creating incentives towards other forms of productive capital investment and additional revenues for local governments. Updating and integrating land and property values (or 'cadastral values') and household composition data will be an important step to achieve consistent information on housing affordability and prices and pave the way to deliver a socially fair property taxation.

Accelerating the green transition with strengthened policies

Croatia is not fully tapping into its potential to achieve a circular economy. The use of circular material stands at 5.8%, significantly below the EU average of 11.5% (Annex 9). Strengthening this area would increase resource efficiency, strategic autonomy, and the creation of quality jobs. Croatia could benefit from a comprehensive circular economy strategy, in addition to actions carried out for individual sectors (such as construction and demolition waste). Taxation could be a lever to accelerate the circular economy transition and tap into Croatia's full potential.

The management of climate risks and the quality and availability of environmental infrastructure need improving. Croatia is already facing droughts and low water supply during the summer, impacting tourism activities, food production and energy generation from hydropower plants. Water management and infrastructure need to be further improved and made more sustainable to optimise water use and address vulnerabilities from water-related climate risks. This also includes addressing the institutional deficiencies. Damages from floods could be alleviated by improving availability and affordability of insurance policies to cover climate hazards (Annex 6). Despite investments in improved waste management and water infrastructure supported by the cohesion policy and RRF funds, progress has been slow. Croatia is not on track to meeting EU waste management targets ([17]). There is room to strengthen policies in this area including by improving the local authorities' capacity to implement investments in separation, collection and treatment of waste.

Despite the progress made, the uptake of solar energy remains low. Recent legislative changes resulted in an increase in solar capacity between July 2023 and January 2024. However, broad energy support measures, not directly targeted to vulnerable companies and households, discourage greater interest in solar energy and reduce the price-signalling effect. The share of solar is still marginal at only 1% of generated electricity (Annex 7). The uptake of solar on multiapartment buildings is almost non-existent, due to obsolete maintenance and ownership legislation, and burdensome

([15]) CFA Society Croatia report. Basis for the Capital Markets Strategy in Croatia, https://www.cfacroatia.org/_files/ugd/449b16_0111b5f5cc274d33931dd6bca55200ac.pdf

([16]) In March 2023, for the first time, the Croatian government issued a 2-year bond directly to retail investors, which attracted great interest. Following this success, in November 2023, there was another primary issue of treasury bonds to small investors.

([17]) COM/2023/304 final.

connection rules by the HEP ODS (Distribution System Operator). Increased uptake of solar in the residential sector and in businesses would help decarbonise heating and cooling. While some regulatory barriers have been removed and relevant aspects have been clarified through legislative amendments in 2023, it would be important to review the relevant registration procedures concerning energy communities, since only one of them has been registered so far across the whole country. Lighter requirements – notably for simpler types of communities – could help in achieving the EU's aim of having by end-2025 at least one energy community established in each municipality with more than 10,000 inhabitants (of which there are around 80 in Croatia).

Improvements in the regulatory framework are not translating in a higher number of large renewable installations. Although Croatia finalised the legislative framework to reduce the administrative burden, there was no significant uptake of new wind and solar installations, and the planned premium-based auction for the support of renewables was not published in 2023. There is little visibility on the pipeline for projects as the long-term schedule for auctions has not been published. Furthermore, the national energy regulator (HERA) has not set connection fees, which is hampering the competitiveness of the energy sector and the economy. Despite removing several barriers to providing permits thanks to its involvement in the Single Market Enforcement Taskforce, Croatia does not have a plan to introduce a one-stop shop for renewable energy permits (Annex 12).

Support for energy efficiency measures in businesses and the residential sector was not sufficient in 2023. Limited measures for businesses, combined with the low uptake of renewables and bottlenecks in the permitting process, hold back the cost competitiveness of Croatian companies on the back of some of the highest electricity prices in the EU ([18]). The uptake of energy efficiency measures for the residential sector is expected to improve with a new public call for single family homes launched in 2024 ([19]). Since Croatia relies on grant-based funding schemes implemented via centralised calls for proposals on building renovation, increased transparency and timely information on future calls would help the potential beneficiaries and the construction sector (Annex 7).

In 2022, the share of renewables in transport in Croatia was the lowest in the EU (2.4% compared to the EU average of 9.6%, Graph 3.3 ([20]). GHG emissions from the Croatian transport sector have been generally increasing faster over the past 15 years compared to the general EU trend. The RRP includes reforms and investments that aim to promote renewables in transport. However, these are yet to gain ground. Electrification and the use of other renewable sources in transport modes that are difficult to electrify are also being pursued under the RRP, though there is scope for further action, especially in rail and maritime transport.

The uptake of electric vehicles in Croatia remains one of the lowest in the EU. Although it doubled between 2020 and 2021, the share of newly registered electric cars only slightly increased between 2021 and 2022, from 2.95% to 3.17% ([21]). The unpredictability of incentive schemes discourages interest among potential future owners of electric cars in Croatia. Stronger links throughout the whole life of vehicle between vehicle taxation (namely taxes on ownership) and CO_2 emissions could be used to accelerate the transition to cleaner cars and other vehicles.

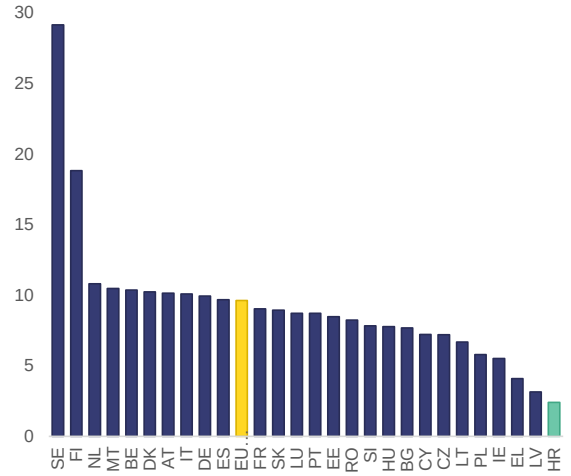
([18]) Statistics | Eurostat (europa.eu)

([19]) Allocation of EUR 120 million under the public call is expected to cover energy efficiency measures, but also installation of heat pumps or solar photovoltaics separate from the energy efficiency measures, for around 6 000 single family homes.

([20]) Statistics Eurostat (europa.eu)

([21]) EEA, 2023, https://www.eea.europa.eu/data-and-maps/figures/new-electric-vehicles-by-country-2

Graph 3.3: **Share of energy from renewable sources in transport (2022)**



Source: Eurostat

Better access to more efficient social and health services

There is scope to improve the coverage and adequacy of social assistance. The impact of social transfers (excluding pensions) on poverty reduction has been broadly decreasing since 2020 and was 20.9% in 2023, among the lowest in the EU (in 2022 the EU average was 35% compared to 20.4% in Croatia) due to low coverage and inadequate benefits. Expenditure on social protection continues to be relatively low in Croatia (22.2% of GDP vs 29.9% in the EU in 2021) (Annex 14).

More effective management of state-owned real estate could increase affordable housing. The transformation of these assets into affordable housing would also help tackle the challenges of energy poverty, negative demographic trends, labour mobility and social inclusion of vulnerable groups. A thematic expansion of the existing integrated territorial investments instrument could also help.

Strengthening preventive care and integrating health services across regions could improve health, well-being and economic outcomes. Health spending per inhabitant and life expectancy in Croatia remain below the EU average, the latter stemming partly from the high mortality rate from preventable and treatable causes (Annex 16). The uneven geographical distribution of health facilities and workers poses challenges in access to healthcare. In 2022, more people reported unmet medical needs due to distance in Croatia than in any other EU Member State. Strengthening anti-smoking policies, encouraging healthy eating habits and physical activity, and restructuring the hospital system, building on its recent ownership reform, could help reduce risk factors and improve access to health services.

Long-term care (LTC) is fragmented, highly institutionalised, understaffed and lacks coordination. It also remains severely underfunded, with government spending amongst the lowest in the EU (0.5% of GDP against 1.7% in the EU ([22])). This puts particular pressure on older people who face challenges related to low pension adequacy and high poverty rates. Successful implementation of structural changes supported by EU funds requires: (i) integrating social LTC with health LTC; (ii) a coordinated control mechanism with clear responsibilities assigned across various levels of governance; (iii) ensuring a qualified LTC workforce; and (iv) speeding up the deinstitutionalisation of these services. Quantifiable and targeted measures that preserve fiscal sustainability and cost-efficiency are also necessary (Annex 14).

Limited availability of non-residential community-based services contributes to social exclusion. Inadequate development and usage of community- and family-based services impedes the deinstitutionalisation process. Substantially decreasing occupancy in institutions needs to go hand-in-hand with additional social housing units and a strengthened infrastructure capacity of social service providers (Annex 14).

([22]) European Commission and Economic Policy Committee, 2024, 2024 Ageing Report – Economic and budgetary projections for the 27 EU Member States (2019-2070), Publications Office of the European Union, Luxembourg.

Box 4: **The mid-term review of cohesion policy funds for Croatia**

The mid-term review of cohesion policy funds is an opportunity to assess cohesion policy programmes and tackle emerging needs and challenges in EU Member States and their regions. Member States are reviewing each programme taking into account, among other things, the challenges identified in the European Semester, including in the 2024 country-specific recommendations. This review forms the basis for a proposal by the Member State for the definitive allocation of 15% of EU funding included in each programme.

Croatia has made progress in implementing cohesion policy programmes and the European Pillar of Social Rights, but challenges remain as outlined in this report, including in Annexes 14 and 17. In particular, Croatia continues to be characterised by significant regional disparities, with substantial gaps in labour productivity, investment and employment persisting between the capital region and other regions. Against this background, it remains important to continue implementing planned priorities, paying particular attention to: (i) research and development activities outside of the capital region, focusing on the capacity of businesses to innovate; (ii) administrative capacity, with a focus on strengthening the role of regional and local authorities, including through optimised use of existing territorial instruments and supporting new modes of territorial engagement, e.g. through pilot projects for regional and local administrations currently not implementing territorial instruments; (iii) territorial just transition plans and facilitating the transition to a climate-neutral economy, including through the phase-out of coal by 2033; (vi) energy poverty and the creation of energy communities; (v) collection and management of waste at national and local level; (vi) active labour market policies focusing on vulnerable and inactive groups; (vii) upskilling and reskilling through individual learning accounts; (viii) deinstitutionalisation and increasing the number of quality and affordable community-based social services, in particular long-term care, to boost social inclusion.

Croatia could also benefit from the opportunities provided by the Strategic Technologies for Europe Platform (STEP) ([23]) initiative to support the transformation of its competitiveness foundations through investments in the areas of: (i) digital technologies and deep innovation; (ii) clean and resource-efficient technologies; and (iii) biotechnologies and medicinal production.

The low pension adequacy is a concern due to adverse demographic trends. In 2022, the aggregate replacement ratio in Croatia was 37% against 58% in the EU. The recent Pension Insurance Act amendment under the RRP aims to improve the adequacy and sustainability of the pension system and provides a new model of survivor's pension. The capitalised savings system was improved by reducing administrative costs and liberalising pension fund investments in 2024, which should have a positive impact on adequacy of pensions. However, there is scope to further improve the system's adequacy through the extension and equalisation of working careers for men and women. Formerly enacted reforms that addressed earlier country-specific recommendations related to retirement age, early retirement age and the equalisation of the retirement age of men and women were revoked after 2019 and subsequent measures have only partial effects. In addition, special pension plans draw resources that could be used to underpin the adequacy and sustainability of the general pension system.

([23]) Regulation (EU) 2024/795

KEY FINDINGS

With its wide policy scope and substantial financial envelope, Croatia's recovery and resilience plan (RRP) includes measures to address a series of structural challenges, in synergy with other EU funds, including cohesion policy funds, by:

- **Accelerating the green transition and reducing dependence on fossil fuels by**: (i) promoting energy efficiency and use of renewable energy sources; (ii) boosting building renovation; (iii) investing in sustainable transport, efficient and sustainable water and waste management; and (iv) protecting biodiversity;

- **Supporting the digital transition** by: (i) investing in digitalisation of the public administration, educational facilities and businesses; (ii) reducing the digital disparities between urban and rural areas; and (iii) investing in digital skills;

- **Improving the business environment** by: (i) reducing considerable regulatory and administrative barriers; (ii) improving the efficiency of public administration, the judiciary and the management of state assets; and (iii) incentivising research, development and innovation activities;

- **Developing a skilled workforce** by: (i) improving infrastructure and educational outcomes of primary and secondary school students; (ii) investing in green and digital skills to match current and future labour market demand; and (iii) implementing active labour market policies;

- **Improving social protection and inclusiveness** by: (i) strengthening the quality, efficiency and accessibility of the health and long-term care systems; (ii) developing family and community-based services to reduce poverty and help integrate disadvantaged groups; and (iii) implementing targeted measures to tackle disparities between regions and social groups.

The implementation of Croatia's RRP is well underway. Going forward, it is facing risks and challenges. Further efforts are key for a successful implementation of all the measures of Croatia's RRP by August 2026.

Beyond the reforms and investments in the RRP and cohesion programmes, Croatia could bolster its long-term competitiveness and productivity by:

- **Strengthening education and R&I performance, and adapting education and adult learning to labour market needs** – these measures would: (i) alleviate skills shortages and boost labour supply; (ii) encourage business investment, including in innovation; and (iii) accelerate the green and digital transitions;

- **Promoting access to diverse sources of financing and developing capital markets** – these measures would: (i) support productive investment in and the growth of Croatian businesses, especially SMEs and innovative firms; (ii) reduce pressure on real estate prices; and (iii) improve the transmission of monetary policy for a more stable and resilient economy;

- **Removing bottlenecks and proportioning requirements in permitting procedures, thereby increasing the share of renewables, particularly from solar and in the transport sector**, **enhancing water/waste management and accelerating the transition to a**

circular economy – these measures would: (i) decrease reliance on fossil fuels and imports of essential raw materials; (ii) reduce vulnerabilities to climate risks; and (iii) boost long-term productivity;

- **Boosting the availability, quality and efficiency of social and healthcare services** with a focus on social transfers, long-term care/deinstitutionalisation and preventive care – these measures would: (i) widen the labour force and increase its productivity; and (ii) make the Croatian society more resilient and inclusive.

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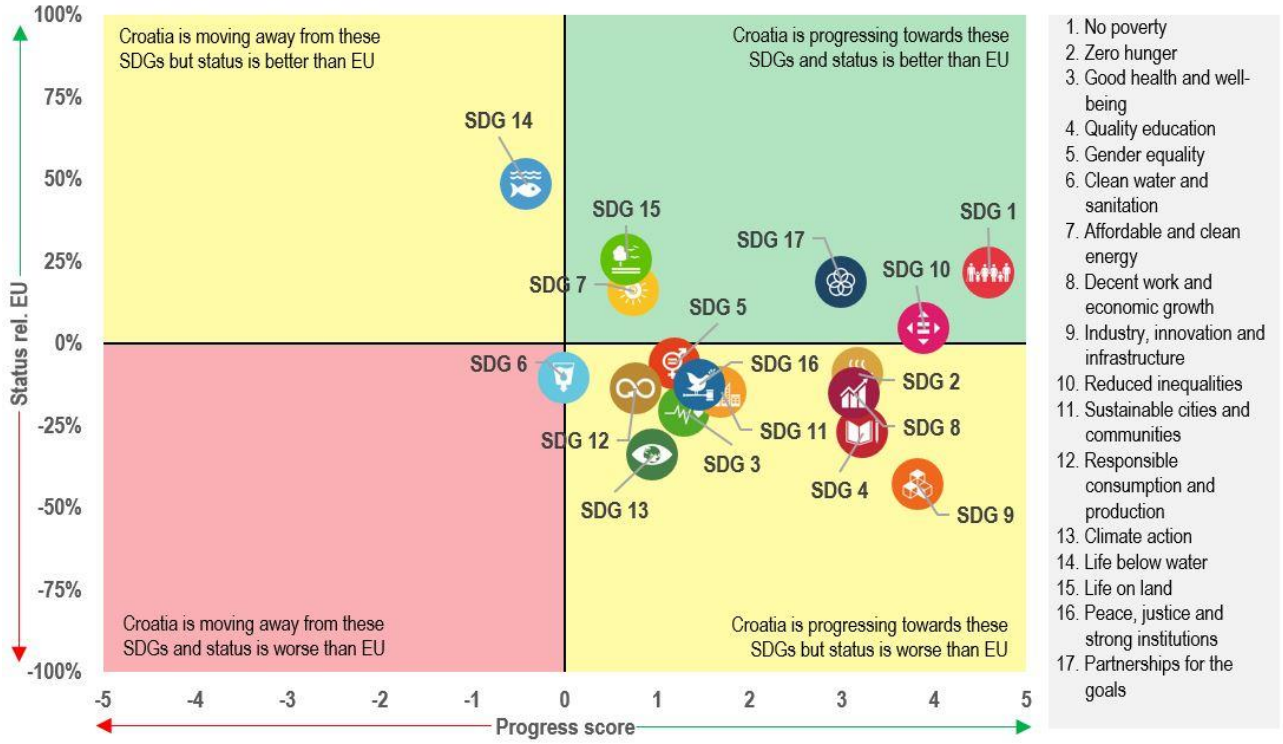
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ANNEX 1: SUSTAINABLE DEVELOPMENT GOALS

This Annex assesses Croatia'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 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 the EU context.

Croatia is improving on almost all the SDG indicators related to *environmental sustainability* (SDGs 2, 6, 7, 9, 11, 12 13, 15) and, while moving away from its target, is doing relatively well on SDG 14. However, it still needs to make additional efforts to catch up with the EU average in some of them, especially SDGs 2, 6, 9, 11, 12 and 13. Although moving away from the target Croatia performs better than the EU (70.3% vs 47.4%) on SDG 14 (Life below water) and on SDG 15 (Life on land) (70.7% vs 56.3%). This is partly because it is in the top 3 EU countries (after Slovenia and Estonia) for its share of forest area (58% vs an EU average of 43.5%). Croatia is improving on SDG 7 (Affordable and clean energy), especially on the share of renewable energy in gross final energy consumption (up from 27.3% in 2017 to 29.4% in 2022; above the EU average of 23%). Croatia's recovery and resilience plan (RRP) includes measures to further improve on energy-related challenges, namely the energy renovation of buildings, increasing overall energy efficiency and advancing the decarbonisation of the energy sector. The country is lagging significantly the EU average on SDG 9 (Energy, innovation and infrastructure) due to its low performance on R&D indicators like the number of patent applications and gross domestic expenditure on R&D. The RRP has a component dedicated to supporting R&D

Graph A1.1: **Progress towards the SDGs in Croatia**



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). 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 25 April 2024. Data refer mainly to the period 2017-2022 or 2018-2023. Data on SDGs may vary across the report and its annexes due to different cut-off dates.

development. Croatia needs to catch up on SDG 11 (Sustainable cities and communities), where it is struggling with waste recycling and wastewater indicators. Croatia is also lagging the EU average on SDG 2 (Zero hunger). This is mainly due to higher obesity rate and lower sustainable agricultural production indicators. The RRP envisages measures to improve these shortcomings, with a dedicated component to improve waste management and recycling, and investments to boost the green transition and the circular economy. Croatia needs to catch up on SDG 12 (Responsible consumption and production). This is in particular due to a decrease in gross value added in the environmental goods and services sector (1.5% in 2020; EU average for 2020: 2.5%) simultaneously with increases in passenger car CO_2 emissions and material footprint in tonnes per inhabitant.

Croatia is improving on all SDG indicators related to *fairness* (SDGs 1, 3, 4, 5, 7, 8, 10) but still needs to catch up with the EU average on SDGs 3, 8, 4 and 5. Significant improvements were made on poverty indicators (SDG 1) such as the severe material and social deprivation rate and the at-risk-of-poverty rate (See Annex 14). Croatia is performing well on the share of the population unable to keep their homes adequately warm (SDG 7; from 7.4% in 2017 to 7% in 2022, and above the EU average of 9.3%). Croatia is also improving on SDG 10 (Reduced inequalities), although the urban-rural gap for risk of poverty or social exclusion remains well above the EU average (HR 11% vs EU 0.4% in 2022), meaning that social transfers could be better targeted. Although Croatia has made improvements, it is still performing below the EU average on SDG 3 (Good health and well-being), SDG 8 (Decent work and economic growth), SDG 4 (Quality education) and SDG 5 (Gender equality). This is particularly the case for healthy life expectancy (SDG 3; 58.6 years in 2021; EU average: 63.6 years), participation in early childhood education (SDG 4; 77.8% of children aged 3 and over in 2021; EU average: 92.5%) and adult participation in learning (6.4% of the population aged 25-64 in 2023 vs EU average of 12.7%). The RRP envisages measures to tackle these issues through dedicated components on health and education. These include actions such as the 2021-2027 national health development plan adopted in 2021; the revised legal framework for adult learning adopted in 2021, amendments to the Act on early childhood education and care (ECEC) adopted in 2022; investments in the construction and reconstruction of ECEC facilities; and a model for state co-financing of ECEC facilities.

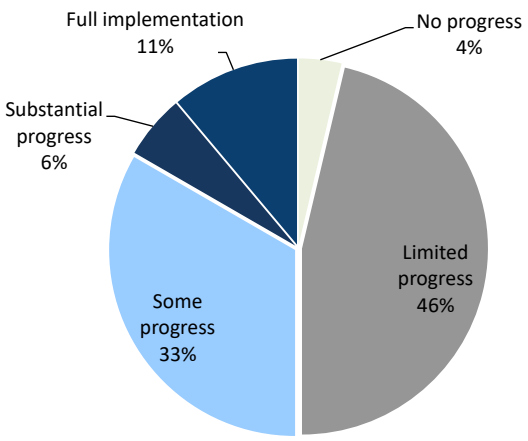
Croatia is improving on all the SDGs related to *productivity* but still needs to catch up with the EU average in all of them (SDGs 4, 8, 9). Although Croatia scores above the EU average on adults with at least basic digital skills (SDG 4; 59% of individuals aged 16-74 in 2023 vs an EU average of 55.5%), it is lagging behind on the share of households with a high-speed internet connection (SDG 9; 61.5% of households in 2022; EU average: 73.4%). This is a long-standing issue in Croatia due to its extensive coastal areas. Taking this into account, the RRP has measures dedicated to increasing broadband access for households. Employment indicators for SDG 8 (Decent work and economic growth), which improved in the recent years, are still below the EU average; 11.8 % of young people aged 15-29 were not in education, employment or training in 2022 (EU average: 11.2%); the employment rate for the population aged 20-64 was 70.7% in 2022 (EU average: 75.3%).

Croatia is improving on SDG indicators related to *macroeconomic stability* (SDGs 8, 16, 17) but still needs to catch up with the EU on SDGs 8 and 16. One of the indicators linked to sustainable economic growth for SDG 8 (Decent work and economic growth), real GDP per capita, showed improvement in recent years but is still below EU average. Croatia has made strong improvements on its long-term unemployment rate (SDG 8; from 3.4% of the active population in 2018 to 2.0% in 2023, similar to the EU average). Access to justice and the corruption perception indices (SDG 16) are below the EU average and point to structural issues linked to these areas. The Commission is monitoring this through different channels including the Rule of Law Report. In addition, the RRP has two components dedicated to modernising the justice system and preventing and combating corruption. General government gross debt (SDG 17) was 63.0% of GDP in 2023, below the EU average of 81.7%. The debt-to-GDP ratio is expected to drop further in the medium term, driven by a strong nominal growth that also supports government revenues.

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

The Commission has assessed the 2019-2023 country-specific recommendations (CSRs) ([24]) addressed to Croatia 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 Croatia to date ([25]) and the commitments in its RRP ([26]). At its stage of RRP implementation, 50% of the CSRs focusing on structural issues from 2019-2023 have recorded at least 'some progress', while 46% 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: **Croatia's progress on the 2019-2023 CSRs (2024 European Semester)**



Source: European Commission

([24]) 2023 CSRs : EUR-Lex - 32023H0901(11) - EN - EUR-Lex (europa.eu)
2022 CSRs: EUR-Lex - 32022H0901(11) - EN - EUR-Lex (europa.eu)
2021 CSRs: EUR-Lex - 32021H0729(11) - EN - EUR-Lex (europa.eu)
2020 CSRs: EUR-Lex - 32020H0826(11) - EN - EUR-Lex (europa.eu)
2019 CSRs: EUR-Lex - 32019H0905(11) - EN - EUR-Lex (europa.eu)

([25]) 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).

([26]) Member States were asked to effectively address in their RRPs all or a significant subset of the relevant country-specific recommendations issued by the Council. 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 2019-2023 CSRs**

Croatia	Assessment in May 2024*	RRP coverage of CSRs until 2026**	Relevant SDGs
2019 CSR 1	**Limited Progress**		
Reinforce the budgetary framework and monitoring of contingent liabilities at central and local level.	Some Progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and planned as of 2025	SDG 8, 16
Reduce the territorial fragmentation of the public administration and streamline the functional distribution of competencies.	Limited Progress	Relevant RRP measures being implemented as of 2022, 2023 and planned as of 2025	SDG 10, 11, 16
2019 CSR 2	**Some Progress**		
Deliver on the education reform and improve both access to education and training at all levels and their quality and labour market relevance.	Some Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2025 and 2026	SDG 4, 5
Consolidate social benefits and improve their capacity to reduce poverty.	Limited Progress	Relevant RRP measures being implemented as of 2021, 2023 and planned as of 2024 and 2025	SDG 1, 2, 10
Strengthen labour market measures and institutions and their coordination with social services.	Some Progress	Relevant RRP measures being implemented as of 2022, 2023 and planned as of 2024, 2025 and 2026	SDG 8
In consultation with the social partners, introduce harmonised wage-setting frameworks across the public administration and public services.	Full Implementation	Relevant RRP measures being implemented as of 2023 and planned as of 2024	SDG 8
2019 CSR 3	**Limited Progress**		
Focus investment-related economic policy on research and innovation,	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2024, 2025 and 2026	SDG 9, 10, 11
sustainable urban and railway transport,	Limited Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2024, 2025 and 2026	SDG 10, 11
energy efficiency, renewables and environmental infrastructure, taking into account regional disparities.	Limited Progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and planned as of 2024, 2025 and 2026	SDG 6, 7, 9, 10, 11, 12, 13
Increase the administration's capacity to design and implement public projects and policies.	Some Progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and planned as of 2025	SDG 16
2019 CSR 4	**Some Progress**		
Improve corporate governance in State-owned enterprises and intensify the sale of such enterprises and non-productive assets.	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2024 and 2026	SDG 9
Enhance the prevention and sanctioning of corruption, in particular at the local level.	Substantial Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2024, 2025 and 2026	SDG 16
Reduce the duration of court proceedings and improve electronic communication in courts.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023, 2024 and 2026	SDG 16
Reduce the most burdensome parafiscal charges	Substantial Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023 and 2024	SDG 8, 9
and excessive product and services market regulation.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023 and 2024	SDG 9
2020 CSR 1	**Limited Progress**		
In line with the general escape clause, take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery. When economic conditions allow, pursue fiscal policies aimed at achieving prudent medium-term fiscal positions and ensuring debt sustainability, while enhancing investment.	Not relevant anymore	Not applicable	SDG 8, 16
Enhance the resilience of the health system. Promote balanced geographical distribution of health workers and facilities, closer cooperation between all levels of administration and investments in e-health.	Limited Progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and planned as of 2024, 2025 and 2026	SDG 3
2020 CSR 2	**Some Progress**		
Strengthen labour market measures and institutions	Some Progress	Relevant RRP measures being implemented as of 2022, 2023 and planned as of 2024, 2025 and 2026	SDG 8
and improve the adequacy of unemployment benefits and minimum income schemes.	Limited Progress	Relevant RRP measures being implemented as of 2021, 2023 and planned as of 2024 and 2025	SDG 1, 2, 10
Increase access to digital infrastructure and services.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023, 2024, 2025 and 2026	SDG 9
Promote the acquisition of skills.	Some Progress	Relevant RRP measures being implemented as of 2021, 2022, 2023 and planned as of 2026	SDG 4
2020 CSR 3	**Some Progress**		
Maintain measures to provide liquidity to small and medium-sized enterprises and the self-employed.	Full Implementation	Relevant RRP measures being implemented as of 2022 and planned as of 2025 and 2026	SDG 8, 9
Further reduce parafiscal charges and	Substantial Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023 and 2024	SDG 8, 9
restrictions in goods and services market regulation.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023 and 2024	SDG 9
Front-load mature public investment projects	Some Progress	Relevant RRP measures being implemented as of 2021 and 2022	SDG 8, 16
and promote private investment to foster the economic recovery.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2024, 2025 and 2026	SDG 8, 9
Focus investment on the green and digital transition, in particular on environmental infrastructure,	Limited Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2023, 2024, 2025 and 2026	SDG 6, 12, 15
sustainable urban and rail transport,	Limited Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2024, 2025 and 2026	SDG 11
clean and efficient production and use of energy	Limited Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2023, 2024, 2025 and 2026	SDG 7, 9, 13
and highspeed broadband.	Some Progress	Relevant RRP measures planned as of 2023 and 2026	SDG 9

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Table (continued)

2020 CSR 4	**Limited Progress**		
Reinforce the capacity and efficiency of the public administration to design and implement public projects and policies at central and local levels.	Some Progress	Relevant RRP measures being implemented as of 2021, 2022 and planned as of 2023 and 2025	SDG 16
Improve the efficiency of the judicial system.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023, 2024 and 2026	SDG 16
2021 CSR 1	**Not relevant anymore**		
In 2022, maintain a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment. Keep the growth of nationally financed current expenditure under control.	Not relevant anymore	Not applicable	SDG 8, 16
When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.	Not relevant anymore	Not applicable	SDG 8, 16
At the same time, enhance investment to boost growth potential *Pay particular attention to the composition of public finances, both on the revenue and expenditure sides of the budget, and to the quality of budgetary measures, to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, notably supporting the green and digital transition.*	Not relevant anymore	Not applicable	SDG 8, 16
Give priority to fiscal structural reforms that will help provide financing for public policy priorities and contribute to the long-term sustainability of public finances, including by strengthening the coverage, adequacy, and sustainability of health and social protection systems for all.	Not relevant anymore	Not applicable	SDG 8, 16
2022 CSR 1	**Substantial Progress**		
In 2023, ensure that the growth of nationally financed primary current expenditure is in line with an overall neutral policy stance, taking into account continued temporary and targeted support to households and firms most vulnerable to energy price hikes and to people fleeing Ukraine. Stand ready to adjust current spending to the evolving situation.	No Progress	Not applicable	SDG 8, 16
Expand public investment for the green and digital transitions, and for energy security taking into account the REPowerEU initiative, including by making use of the Recovery and Resilience Facility and other Union funds.	Full Implementation	Not applicable	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	Not relevant anymore	Not applicable	SDG 8, 16
2022 CSR 2			
Proceed with the implementation of its recovery and resilience plan, in line with the milestones and targets included in the Council Implementing Decision of 20 July 2021.	RRP implementation is monitored by assessing RRP payment requests and analysing reports published twice a year on the achievement of the milestones and targets. These are to be reflected in the country reports.		
Swiftly finalise the negotiations with the Commission on 2021-2027 cohesion policy programming documents with a view to starting their implementation.	Progress on the cohesion policy programming documents is monitored under the EU cohesion policy.		
2022 CSR 3	**Limited Progress**		
Diversify fossil-fuel imports and reduce overall reliance on fossil fuels.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023, 2024, 2025, and 2026	SDG 7, 9, 13
Accelerate the deployment of renewables, focussing in particular on wind, solar and geothermal sources, including through small-scale renewable energy production and developing energy communities, mainly by streamlining procedures for administrative authorisation and permits.	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2024, 2025 and 2026	SDG 7, 8, 9, 13
Further upgrade electricity transmission and distribution grids and invest in electricity storage.	Limited Progress	Relevant RRP measures being planned as of 2024 and 2026	SDG 7, 9, 13
Step up efforts to reduce energy demand by increasing energy efficiency in industry and in private and public building stock.	Some Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2024, 2025 and 2026	SDG 7
and transport sectors.	Limited Progress	Relevant RRP measures being planned as of 2024, 2025 and 2026	SDG 11
2023 CSR 1	**Substantial Progress**		
Wind down the energy support measures in force by the end of 2023, using the related savings to reduce the government deficit. Should renewed energy price increases necessitate support measures, ensure that these are targeted at protecting vulnerable households and firms, fiscally affordable, and preserve incentives for energy savings.	Some Progress	Not applicable	SDG 8, 16
Ensure prudent fiscal policy, in particular by limiting the nominal increase in nationally financed net primary expenditure in 2024 to not more than 5.1%.	No Progress	Not applicable	SDG 8, 16
Preserve nationally financed public investment and ensure the effective absorption of RRF grants and other EU funds, in particular to foster the green and digital transitions.	Full Implementation	Not applicable	SDG 8, 16
For the period beyond 2024, continue to pursue a medium-term fiscal strategy of gradual and sustainable consolidation, combined with investments and reforms conducive to higher sustainable growth, to achieve a prudent medium-term fiscal position.	Full Implementation	Not applicable	SDG 8, 16

(Continued on the next page)

Table (continued)

2023 CSR 2			
Continue the steady implementation of its recovery and resilience plan and swiftly finalise the REPowerEU chapter with a view to rapidly starting its implementation. Proceed with the speedy implementation of cohesion policy programmes, in close complementarity and synergy with the recovery and resilience plan.	*RRP implementation is monitored through the assessment of RRP payment requests and analysis of the bi-annual reporting on the achievement of the milestones and targets, to be reflected in the country reports. Progress with the cohesion policy is monitored in the context of the Cohesion Policy of the European Union.*		
2023 CSR 3	**Limited Progress**		
Reduce overall reliance on fossil fuels	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2023, 2024, 2025, and 2026	SDG 7, 9, 13
by accelerating the deployment of renewables, in particular wind, solar, and geothermal sources, finalising the incomplete legislative framework, streamlining administrative procedures for permitting, simplifying the procedures for installing renewable energy sources (i.e. solar photovoltaic facilities) in multi-apartment buildings and providing more legal certainty.	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2024, 2025 and 2026	SDG 7, 8, 9, 13
Support small-scale renewable energy generation capacity.	Some Progress	Relevant RRP measures being planned as of 2024, 2025 and 2026	SDG 7, 9, 13
Further upgrade electricity transmission and distribution grids, in particular by improving the transmission links between the north and south of the country, and advancing the roll-out of smart meters.	Some Progress	Relevant RRP measures being planned as of 2024 and 2026	SDG 7, 9, 13
Accelerate the implementation of energy efficiency measures, including the installation of heat pumps.	Limited Progress	Relevant RRP measures being planned as of 2024, 2025 and 2026	SDG 7, 9, 13
Reduce dependence on fossil fuels in the transport sector by promoting sustainable solutions, in particular rail and the electrification of road transport.	Limited Progress	Relevant RRP measures being planned as of 2024, 2025 and 2026	SDG 7, 11
Step up policy efforts aimed at the provision and acquisition of the skills needed for the green transition.	Limited Progress	Relevant RRP measures being implemented as of 2022 and planned as of 2025, 2026	SDG 4

Note:

* See footnote ([26]).

** 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

This Annex provides a snapshot of Croatia's implementation of its recovery and resilience plan (RRP), past the mid-way point of the Recovery and Resilience Facility's (RRF) lifetime. The RRF has proven central to the EU's recovery from the COVID-19 pandemic, helping speed up the twin green and digital transition, while adapting to geopolitical and economic developments, and strengthening resilience against future shocks. The RRF is also helping implement the UN Sustainable Development Goals and address the country-specific recommendations (see Annex 2).

The RRP paves the way for disbursing up to EUR 5.8 billion in grants and EUR 4.25 billion in loans under the RRF over the 2021-2026 period, representing 13.1% of Croatia's GDP ([27]). As of 15 May 2024, EUR 3.7 billion have been disbursed to Croatia under the RRF, comprising EUR 3.1 billion in grants and EUR 0.5 billion in loans.

Croatia still has EUR 6.4 billion available in grants and loans from the RRF. This will be disbursed after the assessment of the future fulfilment of the remaining 316 milestones and targets ([28]) included in the Council Implementing Decision ([29]) (CID), ahead of the 2026 deadline established for the RRF.

Croatia's progress in implementing its plan is recorded in the Recovery and Resilience Scoreboard ([30]). The scoreboard gives an overview of the progress made in implementing the RRF as a whole. Graphs A3.1 and A3.2 show the current state of play as reflected in the scoreboard.

Croatia's RRP includes a REPowerEU chapter to phase out its dependency from Russian fossil fuels, diversify its energy supplies, and produce more clean energy in the coming years. To kick-start the REPowerEU chapter's implementation, EUR 585.1 million were disbursed as pre-financing on 25 January 2024, fostering the launch of the relevant reform which aims at increasing green skills and competences in the construction sector for non-EU workers.

The plan has a strong focus on the green transition, dedicating 39% of the available funds to measures that support climate objectives and 20% of its total allocation to support the digital transition. It also retains a strong social dimension with social protection measures, especially related to active labour market policies and early childhood education and care.

Table A3.1: **Key facts on the Croatian RRP**

Initial plan CID adoption date	28 July 2021
Scope	Revised plan with REPowerEU chapter
Last major revision	8 December 2023
Total allocation	EUR 5.8 billion in grants and EUR 4.3 billion in loans (13.1% of 2023 GDP)
Investments and reforms	157 investments and 78 reforms
Total number of milestones and targets	436
Fulfilled milestones and targets	120 (27.5% of total)

Source: RRF Scoreboard.

With four payment requests completed, Croatia's implementation of its RRP is underway. However, timely completion requires increased efforts. The Commission gave a positive assessment of Croatia's first, second, and third payment requests, taking into account the opinion of the Economic and Financial Committee, leading to EUR 700 million being disbursed in financial support on 28 June 2022 and EUR 700 million on 16 December 2022, and another EUR 700 million on 30 November 2023 ([31]). The related 104 milestones and targets covered reforms in areas such as public

([27]) GDP information is based on 2023 data. Source: https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/index.html?lang=en

([28]) A milestone or target is satisfactorily fulfilled once a Member State has provided evidence to the Commission that it has reached the milestone or target and the Commission has assessed it positively in an implementing decision.

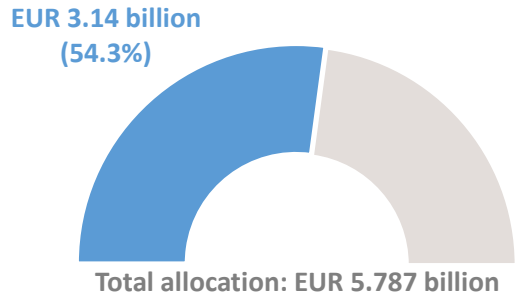
([29]) https://data.consilium.europa.eu/doc/document/ST-10687-2021-ADD-1/en/pdf

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

([31]) When requested payments are disbursed, the pre-financing is cleared proportionally. The net amounts are quoted here.

administration, anti-corruption, fiscal, anti-money-laundering, healthcare, science and higher education, research and innovation, labour market, waste management and renewable energy sources, as well as investments in energy renovation of buildings, green and digital transition of tourism and reducing the administrative burden for businesses.

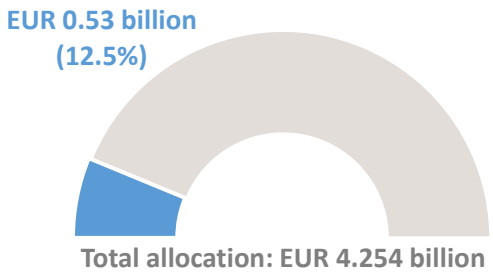
Graph A3.1: **Total grants disbursed under the RRF**



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

The fourth payment request, which the Commission assessed positively on 29 February 2024, led to the disbursement of EUR 162.5 million on 15 April 2024. The disbursement reflected the positive assessment of 9 milestones and 7 targets covering measure related to public administration, the judiciary, public procurement, early childhood education and care, as well as investments in the decarbonisation of the energy sector, electronic communications, research and innovation, and health.

Graph A3.2: **Total loans disbursed under the RRF**



Source: RRF Scoreboard.

Croatia's fifth payment request was submitted on 15 April 2024, and the adoption of a preliminary assessment by the Commission is expected within two months from the submission, as prescribed by the RRF regulation. Table A3.2 highlights some relevant measures achieved so far, and some that will be implemented before 2026 to keep making Croatia's economy greener, more digital, inclusive, and resilient.

Table A3.2: **Measures in Croatia's RRP**

Reforms and investments implemented
• Improving business environment and continuing administrative and fiscal burden relief • Reform of the wage system in public administration • Reform and strengthening of the research and development capacities of the public research sector
Upcoming reforms and investments
• New water supply projects • Construction, upgrading, reconstruction and equipping of primary schools for single shift full-day teaching • Fostering energy efficiency, heat and renewable energy to decarbonise the energy sector

Source: FENIX.

EU funding instruments provide considerable resources for recovery and growth to the EU Member States. In addition to the EUR 10.0 billion of Recovery and Resilience Facility (RRF) funding described in Annex 3, EU cohesion policy funds ([32]) provide EUR 8.7 billion to Croatia for the 2021-2027 period ([33]). Support from these two instruments combined represents around 24.52% of the country's 2023 GDP, well above the EU average of 5.38% of GDP ([34]). Cohesion policy supports regional development, economic, social and territorial convergence and competitiveness through long-term investment in line with EU priorities and in accordance with national and regional strategies.

During the 2014-2020 programming period, cohesion policy funds boosted Croatia's competitiveness, with tangible achievements notably in research and innovation, energy efficiency, circular economy, education, employment and social inclusion. Over the whole period, which financed investments until December 2023, cohesion policy funds ([35]) had made EUR 9.1 billion available to Croatia ([36]), of which EUR 6 billion has been disbursed since March 2020, when the COVID-19 pandemic began ([37]). The achievements of cohesion policy funds over the programming period included support to R&D infrastructure and research projects in SMEs. It is estimated that cohesion policy funding helped create over 11 000 new jobs. Cohesion policy programmes also helped make the Croatian economy more energy efficient (with an estimated 85 million kWh energy savings) and boost the circular economy (for example, closing or remediating 29 landfills, remediating 56.74 ha of land and providing an additional 263 000 people with improved water supply systems). Cohesion policy also has increased employment and reduced the number of people at risk of poverty or exclusion by 225 000 (meeting already by 2016 the national target to reduce the number of people at risk of poverty or exclusion by 150 000). Cohesion policy significantly improved educational facilities in Croatia, providing over 180 000 students and nearly 60 000 teachers with upgraded ICT equipment and infrastructure, and over 9 000 beds in new or renovated student dormitories, improving living conditions for students. Over the same period, over more than 900 000 people received support under employment, upskilling, education and social inclusion measures funded by the European Social Fund in Croatia. During the COVID-19 pandemic, the ESF helped maintain at least 353 000 jobs in the economy.

In the current programming period, cohesion policy will provide a further boost to Croatia's competitiveness, to the green transition and to social cohesion, improving the living and working conditions of Croatia's people. In 2021-2027, significant investments will be made to improve the energy performance of 300 dwellings, ensure access to drinking water to around 98% of the population and to provide proper wastewater treatment to around 86% of the population. It will help achieve a 40% reduction in the volume of landfilled waste by creating four new operational waste management centres. The European Social Fund Plus (ESF+) will provide crucial investment in people and reforms spread relatively evenly across employment, education/skills and social inclusion areas.

Croatia has allocated EUR 0.6 billion to support education and skills. This funding will, for example, boost green and digital skills by supporting action to adapt vocational education and training to labour market demand. It will also support self-employment and upskilling in the green and digital economy, with a focus on vulnerable groups. The ESF+ also supports social protection and social inclusion measures (EUR 0.6 billion), including action to deinstitutionalise social services and to develop quality long-term care. With this work, cohesion policy substantially contributes to achieving the UN Sustainable Development Goals (SDGs) in Croatia, in particular

([32]) In 2021-2027, cohesion policy funds include the Cohesion Fund, the European Regional Development Fund, the European Social Fund Plus and the Just Transition Fund.

([33]) European territorial cooperation (ETC) programmes are excluded from the figure. In 2021-2027, the total investment, including national financing, amounts to EUR 10.2 billion.

([34]) RRF funding includes both grants and loans, where applicable. The EU average is calculated for cohesion policy funds excluding ETC programmes. GDP figures are based on Eurostat data for 2022.

([35]) In 2014-2020, cohesion policy funds included the Cohesion Fund, the European Regional Development Fund, the European Social Fund and the Youth Employment Initiative. REACT-EU allocations are included but ETC programmes are excluded.

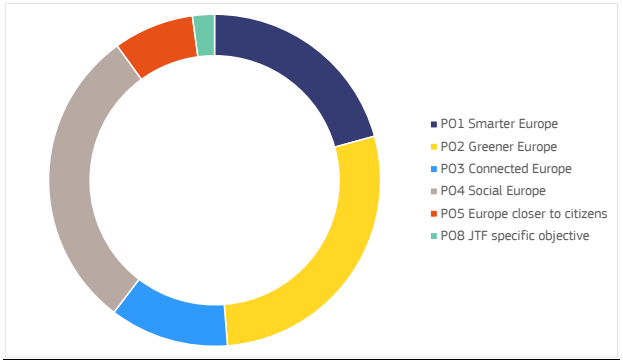
([36]) In 2014-2020, the total investment, including national financing, amounted to EUR 10.6 billion.

([37]) Cut-off date: 14 May 2024.

SDG 9 (Industry, innovation, infrastructure), SDG 8 (Decent work and economic growth) and SDG 4 (Quality education).

Through combined action, cohesion policy and the recovery and resilience plan (RRP) have a mutually reinforcing impact in Croatia. For instance, under the RRP, Croatia has brought in performance-based funding for universities, which should boost institutional funding for public research institutions and higher education institutions going forward. It is also a first step to tackling issues linked to the fragmentation of R&I institutions and potentially to improving the efficiency of funding. The RRP contains substantial investment programmes to support young researchers and science-business collaboration. Cohesion policy funding will focus partially on completing R&D infrastructure and on boosting cooperation between public research and SMEs, enhancing technology transfer and rendering research more market-relevant. Croatia's RRP also brings in a reform to set up single-shift schools with the future plan to lead to full-day teaching in primary schools. The first phase involves building the infrastructure needed to increase the share of students attending primary single-shift schools from 40% to 70% ([38]). The following phase should increase the share from 70% to 100%.

Graph A4.1: **Distribution of cohesion policy funding across policy objectives in Croatia**

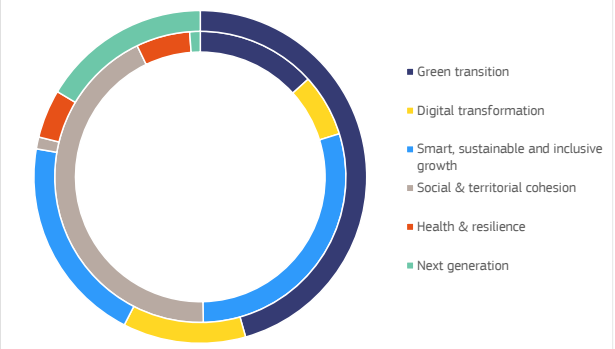


Source: European Commission

In parallel, cohesion policy funds finance projects to modernise institutions providing primary education. In particular, investments in infrastructure and equipment will enable schools that currently operate in one shift to move to a whole-day school model. This complementary approach between RRP and cohesion policy funding ensures an effective and comprehensive reform of the primary education sector in Croatia. The contribution of cohesion policy and RRP funding by different policy objectives is illustrated by Graphs A4.1 and A4.2.

The Technical Support Instrument (TSI) helps Croatia invest in its public administration and create a better enabling environment for EU and national investment. The TSI has funded projects Croatia to design and implement growth-enhancing reforms since 2017. The support provided to Croatia in 2023 included action to optimise state-owned property management, reform the civil status registries by using advanced technological solutions and advance the strategic framework to promote private investment. The TSI also helps Croatia to implement specific reforms and investments included in its RRP, for instance to implement the water management reform that aims to reduce the excessive losses from water supply systems.

Graph A4.2: **Distribution of RRF funding by pillar in Croatia**



(1) Each RRP measure helps achieve the aims of two of the six policy pillars of the RRF. The primary contribution is shown in the outer circle while the secondary contribution is shown in the inner circle. Each contribution represents 100% of the RRF funds. Therefore, the total contribution to all pillars displayed on this chart amounts to 200% of the RRF funds allocated to Croatia.

Source: European Commission

Croatia also receives funding from several other EU instruments, including those listed in Table A4.1.

([38]) It will be 100% once the addendum is adopted.

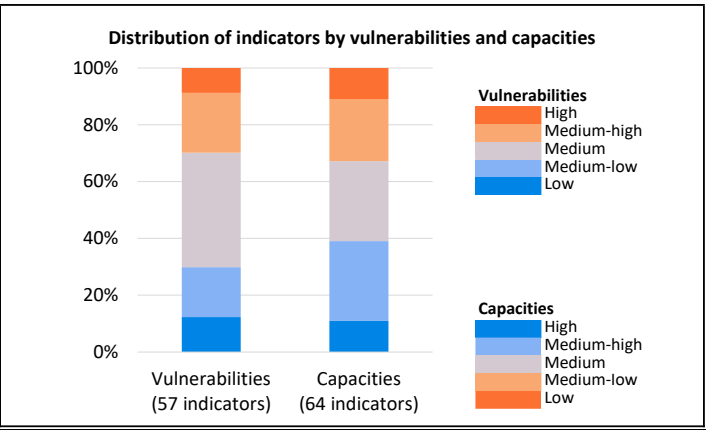
Table A4.1: **Support from EU instruments in Croatia**

EU grants			
	Amount 2014-2020 (EUR million)		Amount 2021-2027 (EUR million)
Cohesion policy	9 114.9		8 706.6
RRF grants (1)	-		5 786.5
Public sector loan facility (grant component) (2)	-		14.1
Common agricultural policy (3)	4 200.0		3 385.0
EMFF/EMFAF (4)	252.6		243.7
Connecting Europe Facility (5)	574.0		287.5
Horizon 2020 / Horizon Europe (6)	138.2		92.7
LIFE programme (7)	15.7		29.2
EU guarantees			
	EU Guarantee (EUR million)		Volume of operations (EUR million)
European Fund for Strategic Investment 2015-2020 (8)	101.8		405.8
InvestEU 2021-2027 (9)	38.5		125.4
EU loans			
	Period	Total amount available (EUR million)	Disbursed amount (EUR million)
SURE (10)	2020-2022	1 570.6	1 570.6
RRF	2021-2026	4 254	529.9

(1) RRF implementation period is 2021-2026.
(2) The public sector loan facility's programming period is 2021-2025 and the amount reflects the national share in its grant component reserved until the end of the period.
(3) Common agricultural policy programming periods are 2014-2022 and 2023-2027.
(4) EMFF – European Maritime and Fisheries Fund, EMFAF – European Maritime, Fisheries and Aquaculture Fund.
(5) Data on the Connecting Europe Facility covers transport and energy and has a cut-off date of 15 May 2024.
(6) Data on Horizon Europe (2021-2027) has a cut-off date of 13 May 2024.
(7) 2021-2027 data on the LIFE programme has a cut-off date of 15 May 2024.
(8) The amount of the EU guarantee signed under the EFSI Infrastructure and Innovation Window was derived based on the signed amount of the operations and the average internal multiplier, as reported by the EIB (cut-off date is 31 December 2023).
(9) The amount of the EU guarantee and of the volume of operations signed under InvestEU includes the EU compartment as well as the Member State compartments (cut-off date is 31 December 2023).
(10) SURE - European instrument for temporary support to mitigate unemployment risks in an emergency.
Source: European Commission

Table A5.1: **Resilience indices across dimensions for Croatia and the EU-27**

Dimension		HR 2023 RDB	HR 2024 RDB	EU-27 2024 RDB
Overall resilience	Vulnerabilities			
	Capacities			
Social and economic	Vulnerabilities			
	Capacities			
Green	Vulnerabilities			
	Capacities			
Digital	Vulnerabilities			
	Capacities			
Geopolitical	Vulnerabilities			
	Capacities			



(1) The synthetic indices aggregate the relative resilience situation of countries across all considered indicators. For an indicator, each country's relative situation in the latest available year is compared with the collection of values of that indicator for all Member States and all years in the reference period.
Source: Resilience Dashboards - version spring 2024, data up to 2022

This Annex uses the Commission's resilience dashboards (RDB) ([39]) to show Croatia's relative resilience capacities and vulnerabilities ([40]) that may be of relevance for societal, economic, digital, and green transformations, and for dealing with future shocks and geopolitical challenges ([41]).

According to the RDB's set of resilience indicators, Croatia has similar overall vulnerabilities and somewhat lower capacities than the EU average, with both medium vulnerabilities and capacities. This is reflected in the distribution of indicators across different resilience categories, with around 30% of the country's capacity indicators falling into the low or medium-low category. Around 30% of its vulnerability indicators are medium-high or high. The level of overall capacities has deteriorated compared to the 2023 RDB.

Compared to the 2023 RDB, Croatia's social and economic capacities and vulnerabilities, at medium, remained stable. Among the country's key challenges are the low impact of social transfers on poverty reduction, the relatively low participation of adults in learning and the medium-low Programme for International Student Assessment (PISA) performance of students. As that of other EU countries has, post-Covid, Croatia's household savings rate has fallen significantly.

In the green dimension, capacities (medium-high) remain the same as in the 2023 RDB while vulnerabilities increased (medium). Croatia performs above the EU average in terms of its vulnerability indicators, particularly with respect to its lower greenhouse gas emissions as well as its lower water exploitation index. Its green dimension capacities are medium-high, but some of its capacity indicators are among the worst compared to the EU average, such as urban wastewater treatment, environmental patents per capita (although their number has significantly increased), and gross value added in environmental goods and the services sector.

In the digital dimension, Croatia has medium-high vulnerabilities, higher than the EU average, and medium-high capacities, on a par with the EU average. Some of its most pressing challenges are inadequate information and communication (ICT) training for teachers and

([39]) Https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en. Resilience is defined as the ability not only to withstand and cope with challenges but also to undergo transitions, in a sustainable, fair, and democratic manner. 2020 Strategic Foresight Report: *Charting the course towards a more resilient Europe* (COM(2020) 493).

([40]) 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, while capacities refer to enablers or abilities to cope with crises and structural changes and to manage transitions.

([41]) 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.

the lack of online public services for businesses. It also has medium-high vulnerabilities with respect to access to public digital services and the urban versus rural broadband access gap. On the other hand, with medium-high capacities, Croatia is doing better than most of the EU, in terms of the research and development of businesses in the ICT sector and adults' and young people's advanced digital competences.

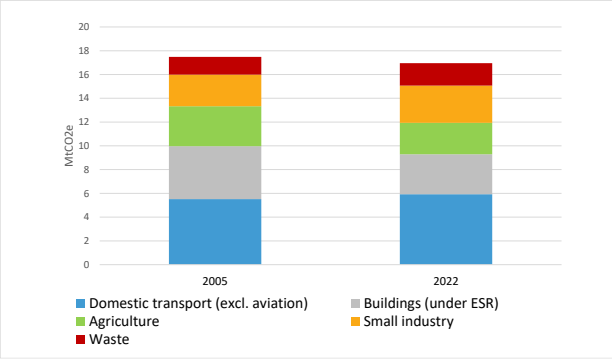
Croatia has medium-high geopolitical capacities and medium vulnerabilities that are on par with the EU average. It has the least concentrated value chain partners of all EU countries, but at the same time some persisting low capacities in terms of backward participation in global value chains, and low extra-EU trade openness.

Croatia has made progress in the green transition, with more action needed in several areas, including tackling potential losses from climate hazards, on sustainable water management, on the institutional framework on climate adaptation, and on the circular economy. This Annex provides a snapshot of climate, energy, and environmental aspects of the transition in Croatia ([42]).

Croatia's draft updated national energy and climate plan (NECP) has only partial information on the investment needs to achieve its 2030 climate and energy targets. It is therefore not possible to estimate the investment gap. The plan outlines the main funding sources for most measures except in the area of research, innovation, competitiveness and skills. The sources include EU funding programmes, national, regional, and municipal financing, funds from development banks (EIB, EBRD, World Bank), and private-sector funding. However, the plan does not explain their contributions and the descriptions given are mostly qualitative. It does not indicate the contribution from the Recovery and Resilience Facility either ([43]).

Croatia is projected to reach its 2030 effort sharing target, provided it adopts and implements the planned additional measures ([44]). In 2022, Croatia's greenhouse gas emissions from these sectors are expected to have been 6.1% below 2005 levels. Additional policies planned in Croatia's draft updated NECP are projected to reduce these emissions by 17.1% from 2005 levels. This results in a reduction of 0.4 percentage points beyond Croatia's effort sharing target to reduce by 17.1%. Current policies are projected to reduce its effort sharing emissions by 10.3% from 2005 levels by 2030 ([45]). Hence the target cannot be attained without the implementation of all the policies and measures in the draft updated NECP.

Graph A6.1: **Greenhouse gas emissions from the effort sharing sectors in Mt CO2eq, 2005-2022**



Source: European Environment Agency

There is scope for increasing Croatia's targets in its final updated NECP ([46]). Croatia's renewable energy contribution set in its draft updated NECP, 42.5% by 2030, is slightly below the required contribution of 44%. Its energy efficiency contribution of 8.14 Mtoe in primary energy consumption and 6.55 Mtoe in final energy consumption for 2030 set in the draft NECP are significantly less ambitious than the contribution required under the Energy Efficiency Directive. The plan does not provide a clear explanation or details explaining why Croatia has barely

([42]) This Annex is complemented by Annex 7 on energy transition and competitiveness, Annex 8 on the fair transition to climate neutrality, Annex 9 on resource efficiency, circularity, and productivity, and relevant topics in other annexes to this country report.

([43]) See the Commission's (2023) assessment of the draft national energy and climate plan of Croatia.

([44]) The national greenhouse gas emission reduction target is laid down in Regulation (EU) 2023/857 (the Effort Sharing Regulation). The aim is to align action in the sectors concerned with the objective to reach the EU-level economy-wide target of greenhouse gas reductions of at least 55% compared to 1990 levels. The target also applies to the sectors outside the current EU Emissions Trading System, notably buildings (heating and cooling), road transport, agriculture, waste, and small industry (known as the effort sharing sectors).

([45]) The effort sharing emissions for 2022 are based on approximated inventory data. The final data will be established in 2027 after a comprehensive review. Projections on the impact of current policies ('with existing measures', WEM) and additional policies ('with additional measures', WAM) as per Czechia's draft updated NECP.

([46]) The EU target set out in the revised Renewable Energy Directive is to have 42.5% of gross final energy consumption coming from renewable energy sources by 2030, with the aspiration to reach 45%. The formula in Annex I to Directive (EU) 2023/1791 sets the indicative national contribution for Croatia at 6.83 Mtoe for primary energy consumption. The Commission communicated a corrected national contribution of 5.88 Mtoe in final energy consumption for 2030 in accordance with Article 4(5) of the Energy Efficiency Directive to increase the contribution towards the Union's binding energy efficiency target. See the Commission Recommendation of 18.12.2023 to Croatia.

increased its national contribution to the EU's 2030 energy efficiency targets.

The transition to sustainable transport has yet to gain traction in Croatia ([47]). At 0.2% in 2022, battery electric cars so far only account for a marginal share of Croatia's passenger car fleet. With 1 280 publicly accessible charging points in 2023, there is one for every four e-vehicles. 88% of distances travelled are by passenger cars, with rail used for only a very low share, at 2%. 62% of freight is transported by road in Croatia. The country has a higher share of pipeline transport at 11% than the EU average of 4%. Only 38% of the rail network is electrified.

Fires and ageing forests are growing risks to the carbon removal capacity of Croatia's land use, land-use change and forestry (LULUCF) sector. Forests play the main role in Croatia in removing carbon through land use. To reach the 2030 LULUCF target, additional carbon removals of 593 kt CO_2eq are needed ([48]) to remove 5 527 kt CO_2eq in total. By the latest projections for 2030, Croatia is expected to undershoot the target ([49]).

Croatia's climate adaptation challenges include a high climate protection gap ([50]), risks to water management, and institutional deficiencies. Croatia is vulnerable to floods, drought, sea-level rise and heatwaves. Agriculture and water management are the sectors affected most but hydro and thermal power production also face risks. Floods are a risk both in terms of expected annual damage and in the population exposed. Over the past decades, only 5% of losses caused by climate-related events were insured. Given the increasing frequency of floods, action taken so far is insufficient to limit the damage and safeguard the free flow of rivers and aquatic ecosystems. Green infrastructure and nature-based solutions are key to mitigating these climate-related events. Croatia has a wide protection gap for floods and the gap for wildfires requires close monitoring. Putting in place the right institutional settings is crucial to climate adaptation. On this front, Croatia lacks a governance structure and systems to support systematic and regular planning, monitoring and evaluation of policies, including appropriate coordination between sectors of government ([51]).

Croatia has scope to improve water productivity, the ecological status of freshwater resources and to protect nature. In 2021, Croatia's economy generated EUR 204 per cubic meter of water abstracted, below the EU average. According to data in the 2nd river basin management plan, 42% of all surface water bodies achieved at least a good ecological status and 92% achieved a good chemical status. Croatia's marine waters are not yet all in a good environmental status as tracked by the descriptors used in the Marine Strategy Framework Directive and based on the latest data reported for its marine strategy. Croatia has not yet communicated its programme of measures under the Directive, due in May 2022. By the end of 2021, Croatia had protected almost 38% of its land, already meeting the EU target for 2030, and 9.5% of its marine areas. To date, nature and biodiversity protection objectives are insufficiently integrated into flood protection measures, hydropower development and inland navigation.

Air quality in Croatia still gives cause for concern. The latest available annual estimates (2021) indicate that 921 years of life are lost for every 100 000 inhabitants due to fine particulate matter exposure (PM2.5) and 91 years to nitrogen dioxide (NO_2), both above the EU average. The smog-precursor emission intensity fell by 47% between 2008 and 2021 and reached 1.41 tonnes/EUR 10 in 2021, above the EU average.

Intensive agriculture is one of main pressures in Croatia on nature and water pollution. The latest figures for the gross nitrogen balance on agricultural land in Croatia indicate an average surplus of 53.4 kg of nitrogen per hectare per year in 2019, lower than in the previous year. 1.5% of groundwater monitoring stations indicate levels above the maximum 50 mg nitrates/l. The

([47]) Unless otherwise indicated, data in this section refer to 2021. See European Commission, 2023, EU transport in figures, transport.ec.europa.eu.

([48]) National LULUCF targets of the Member States in line with Regulation (EU) 2023/839.

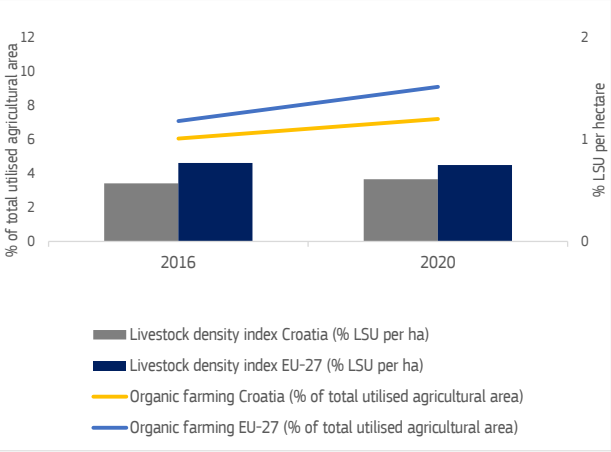
([49]) Projections submitted in Croatia's draft updated national energy and climate plan, 2023.

([50]) On the climate protection gap, see the annotations to Table A6.1.

([51]) See the Commission's 2023 assessment and recommendation on Croatia's progress on climate adaptation.

gross phosphorus balance was 1.6 kg/ha in 2019. The chemical status of waterbodies is less affected by pesticide pollution in Croatia than the EU average. In 2021, 4.7% of monitoring sites were reported to have pesticide levels exceeding the thresholds set by the Water Framework Directive. The livestock density decreased in most of the EU countries between 2010 and 2020. In Croatia, the livestock density index decreased from 0.75% to 0.61%, below the EU average.

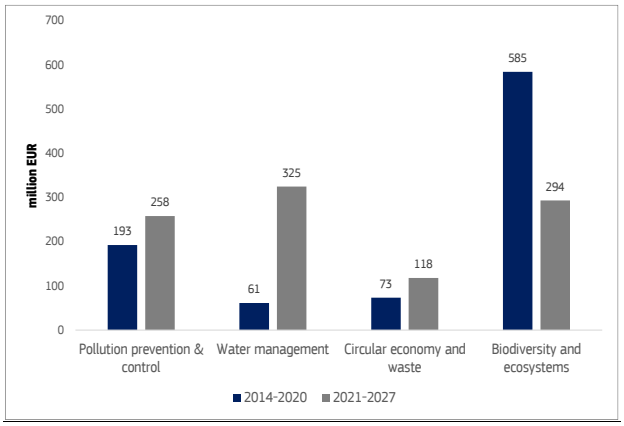
Graph A6.2: **Changes in livestock density and organic farming**



Livestock unit (LSU)/ha of UAA: it measures the stock of animals (cattle, sheep, goats, equidae, pigs, poultry and rabbits) converted in LSUs per hectare of UAA.
Source: Eurostat

Croatia would benefit from investing in sustainable water management, waste management, the circular economy and biodiversity. Between 2014 and 2020, the environmental investment gap was estimated at EUR 921 million per year, equivalent to 1.9% of GDP, above the EU average of 0.8%. The gap is estimated to increase slightly over the 2021-2027 period at EUR 1 billion per year (1.5% of GDP). There remains an opportunity to increase funding for sustainable water management (EUR 325 million), and for biodiversity and ecosystems (EUR 294 million). Croatia would also benefit from investing more in pollution prevention and control and in circular economy and waste.

Graph A6.3: **Environmental investment gap, annual average**



The numbers are computed by the European Commission based on the latest internal reports, Eurostat, EIB and national data sources.
Source: European Commission

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

							Target	Distance	
		2005	2019	2020	2021	2022	2030	WEM	WAM
Progress to climate and energy policy targets									
Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO_{2eq}, %, pp	18 056.3	-8%	-5%	-3%	-6%	-17%	-6	0
Net greenhouse gas removals from LULUCF [2]	Kt CO2eq	-8 003	-5 726	-5 659	-5 764	-4 867	-5 527	n/a	n/a
Share of energy from renewable sources (1) [3]	%	24%	28%	31%	31%	29%	44%	-	-
Energy efficiency: primary energy consumption [3]	Mtoe	9.1	8.2	7.8	8.3	8.3	6.8		
Energy efficiency: final energy consumption [3]	Mtoe	7.2	6.9	6.5	7.0	6.9	5.9		

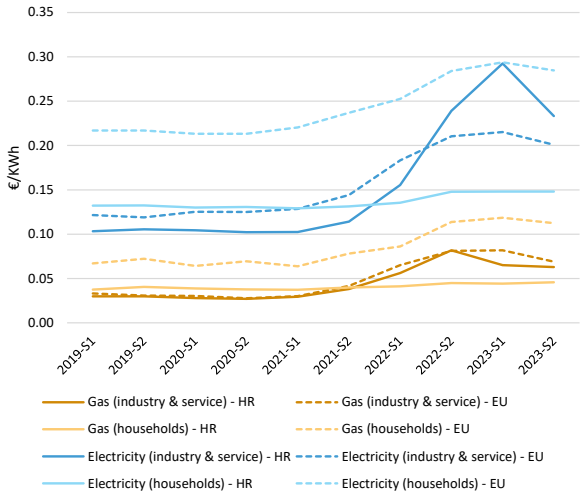
							EU-27		Projected
		2018	2019	2020	2021	2022	2021	2022	2030
Green transition: mobility									
Greenhouse gas emissions: road transport	Mt CO2e	-	-	-	6.2	5.9	769.0	786.6	5.8
Share of zero-emission vehicles in new registrations [4]	%	0.1	0.2	1.5	3	3	9	12.1	n/a
Number of publicly accessible AC/DC charging points		-	-	498	795	1116	299178	446956	n/a
Share of electrified railways	%	37.3%	37.1%	37.1%	38.0%	-	56.1%	-	n/a
Green transition: buildings									
Greenhouse gas emissions: buildings	Mt CO2e	-	-	-	3.4	3.4	537.0	486.7	3.0
Final energy consumption in buildings	2015=100	98.1%	96.3%	95.0%	103.0%	96.9%	104.0%	97.2%	
Climate adaptation									
Climate protection gap [5]	score 1-4	-	-	2.4	2.1	2.0	1.5	1.5	n/a

		2018	2019	2020	2021	2022	2020	2021	2022
State of the environment									
Water | Water exploitation index (WEI+) (1) [6]	% of renewable freshwater	0.2	0.2	-	-	-	3.6	-	-
Circular economy | Material footprint [7]	tonnes per person	13.9	14.2	13.2	13.6	15.0	14.2	14.8	14.9
Pollution | Years of life lost due to air pollution by PM2.5 [8]	per 100.000 inhabitants	1 183	893	996	921	-	545	584	-
Biodiversity | Habitats in good conservation status [9]	%	39.2					14.7		
Common farmland bird index [10]	2000=100	-	-	-	-	-	78	-	-
Green transition: agri-food sector									
Organic farming	% of total utilised agricultural area	6.94	7.19	7.21	8.26	-	9.1	-	-
Nitrates in groundwater	mg NO_3/litre	18.52	18.29	18.51	-	-	20.42	-	-
Food waste per capita	Kg per capita			71	71	-	130	131	-
Share of soil in poor health [11]	%					9			41
Soil organic matter in agricultural land [12]	Mt per ha	58	-	-	-	-	7 904	-	-

Sources: (1) Member States' emission data for 2019 and 2020 are in global warming potential (GWP) values from the 4th Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Member States' 2005 base year emissions under Regulation (EU) 2018/842, emissions data for 2021 and 2022, and 2030 projections are in GWP values from the 5th Assessment Report (AR5) of the IPCC. 2021 data are based on the final inventory reports, 2022 data are based on approximated inventory reports and European Environmental Agency's calculation of effort sharing emissions. The final data for 2021 and 2022 will be established after a comprehensive review in 2027. The 2030 target is in percentage change of the 2005 base year emissions. Distance to target is the gap between the 2030 target and projected effort sharing emissions with existing measures (WEM) and with additional measures (WAM), in percentage change from the 2005 base year emissions. The measures included for the 2030 emission projections reflect the state of play as reported in Member States' draft updated national energy and climate plans or, if unavailable, as reported by 15 March 2023 as per Regulation 2018/1999. (2) Net removals are expressed in negative figures, net emissions in positive figures. Reported data are from the 2024 greenhouse gas inventory submission. 2030 value of net greenhouse gas removals as in Regulation (EU) 2023/839 – Annex IIa. (3) The 2030 national objectives for renewable energy and energy efficiency are indicative national contributions, in line with Regulation (EU) 2018/1999 (the Governance Regulation), the EU-level 2030 renewable energy target set out in Directive EU/2018/2001 amended by Directive EU/2023/2413 (the revised Renewable Energy Directive) – 42.5% of gross final energy consumption with the aspiration to reach 45% –, and the formula in Annex I to Directive (EU) 2023/1791 (the Energy Efficiency Directive). (4) Passenger battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV). (5) The climate protection gap refers to the share of non-insured economic losses caused by climate-related disasters, based on modelling of the risk from floods, wildfires, windstorms, and the insurance penetration rate. Scale: 0 (no protection gap) –4 (very high gap) (European Insurance and Occupational Pensions Authority, 2022). (6) Total water consumption in renewable freshwater resources available for a territory and period. (7) Material extractions for consumption and investment. (8) Years of potential life lost through premature death due to exposure to particulate matter with a diameter of less than 2.5 micrometres. (9) Share of habitats in good conservation status according to the records submitted under Art. 17 of Council Directive 92/43/EEC (the Habitats Directive) for 2013-2018. (10) Multi-species index measuring changes in population abundances of farmland bird species. (11) Source: annex 12 of the Commission's proposal for a soil monitoring law, SWD (2023) 417 final. (12) Estimates of organic carbon content in arable land.

This Annex ([52]) sets out Croatia's progress and challenges in accelerating the net-zero energy transition while bolstering the EU's competitiveness in the clean energy sector ([53]). It considers measures and targets put forward in the draft updated National Energy and Climate Plans (NECP) for 2030 ([54]).

Graph A7.1: **Croatia's energy retail prices for households and industry & service**

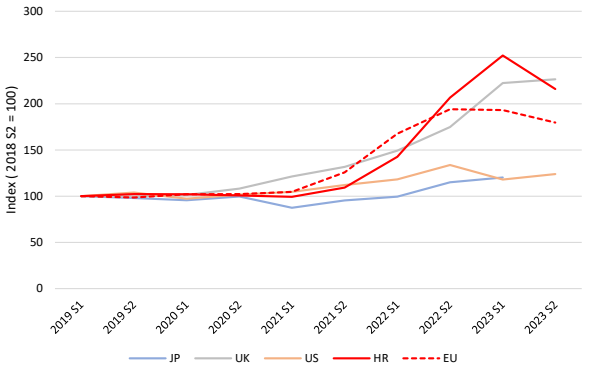


(1) For industry, consumption bands are I3 for gas and IC for electricity, which refer to medium-sized consumers and provide an insight into affordability
(2) For households, the consumption bands are D2 for gas and DC for electricity
(3) Industry prices are shown without VAT and other recoverable taxes/levies/fees as non-household consumers are usually able to recover VAT and some other taxes
Source: Eurostat

Unlike the prevailing trends witnessed across the EU, throughout 2023, electricity and gas household prices in Croatia were close to their 2018-2020 levels and among the lowest in the EU. For industry and services, average electricity prices maintained an upward trend in the first half of 2023, then declined by 20% in the second half, which, while narrowing the gap with the EU average, remained 16% higher.

On the other hand, average gas industry prices followed EU trends, decreasing by 21% and 3% respectively in the first and second halves of 2023. By the second semester, average gas industry prices were closing in on the EU average though remaining 9% lower. In relative terms, electricity prices for non-household consumers have increased significantly compared to the US and Japan until the first semester of 2023, thus potentially affecting the international competitiveness of energy-intensive industries in Croatia.

Graph A7.2: **Trends in electricity prices for non-household consumers (EU and foreign partners)**



(1) For Eurostat data (EU and HR), the band consumption is ID referring to large-sized consumers with an annual consumption of between 2 000 MWh and 20 000 MWh, such as in electricity intensive manufacturing sectors, and gives an insight into international competitiveness
(2) JP = Japan
Source: Eurostat, IEA

The increased energy prices in 2021-2023 negatively affected household budgets, but less than the estimated EU-level effects. The measures adopted to mitigate the economic and social impact of the increase in energy prices, although initially planned to be abolished at the end of March 2024, have been extended until 30 September 2024 at least.

Consumer empowerment in the electricity and gas markets still needs to be lifted. The setting up of energy communities is still facing some implementation challenges. Concerning consumer empowerment rules and tools, in 2022 Croatia had a very high percentage of almost 100% of fixed-price contracts held by household consumers in both electricity and gas, with a very

([52]) It is complemented by Annex 6, as the European Green Deal focuses on the clean energy transition, and by Annex 8 on the action taken to protect the most vulnerable groups, complementing ongoing efforts under the European Green Deal, REPowerEU and the European Green Deal Industrial Plan.

([53]) In line with the Green Deal Industrial Plan and the Net-Zero Industry Act

([54]) Croatia submitted its draft updated NECP in December 2023. The Commission issued an assessment and country-specific recommendations on 18 December 2023. Commission Recommendation, Assessment (SWD) and Factsheet of the draft updated National Energy and Climate Plan of Croatia - European Commission (europa.eu)

low number of offers. Switching rates in electricity were very low (below 2%) and consumers cannot choose the date on which to switch. 19% of final household consumers had smart meters in 2022 (EU average 80%).

Fossil fuels still play an important role in Croatian energy mix, as they accounted for 72% of gross available energy in 2022. This share is expected to marginally decrease to 65% by 2030 ([55]). Overall, Croatia has a high energy import dependency on non-EU countries, which increased from 47% in 2013 to 60% in 2022. As regards the electricity sector, Croatia aims to increase gas and electricity storage capacities, protect critical infrastructure, and mitigate risks related to cyber security.

Croatia has quickly reduced its dependency on imported Russian gas by increasing its own production, stepping up the use of an existing LNG terminal. In 2022, Croatia expanded the capacity of the Krk LNG terminal from 2.6 to 2.9 billion cubic meters per year. A final investment decision has been made to further increase the terminal's import capacity to 6.1 billion cubic meters by 2025. To enable efficient dispatch of natural gas from the expanded Krk terminal within the region, Croatia also plans (in its recovery and resilience plan, RRP) to upgrade its internal transmission infrastructure and interconnection points with Slovenia and Hungary by 2026.

Croatia is also a natural gas producer, with expectations of increasing production from less than 800 million cubic meters in 2023 to over 900 million cubic meters in 2030. Croatia managed to reduce its gas demand between August 2022 and December 2023 by 17% in comparison with the average of the previous five years. Croatia has one underground gas storage facility with a capacity of 0.44 bcm, representing almost 18% of its annual gas consumption in 2022. Croatia fulfilled its gas storage obligations last winter, reaching 97% by 1 November 2023, and ended the winter season with a storage filled at 35.79% by 1 April 2024.

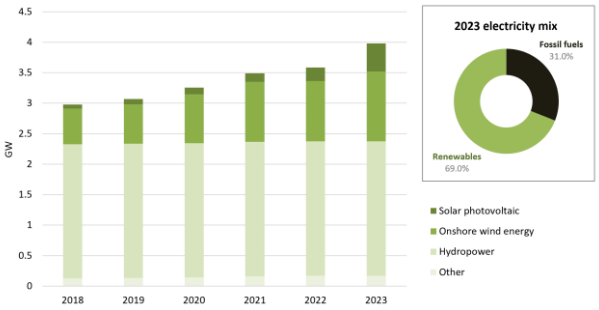
([55]) According to the Croatian draft updated NECP.

Croatia did not properly address the planned coal phase-out in its draft updated NECP ([56]), in contrast to the commitment made in its territorial just transition plan (TJTP). The draft updated NECP does not mention the political commitment made in 2021, in the context of the UN Climate Change Conference in Glasgow (COP26), to phase out coal by 2033 at the latest. The commitment relates to Plomin 2 coal power plant in Istria, the only coal-fired power plant in Croatia.

Croatia overachieved its renewable energy target mostly thanks to a large hydropower capacity ([57]), combined with a high use of wood biomass ([58]), while the capacity from other sources still plays a limited role. However, increasingly frequent droughts and forest fires can lower hydropower output and reduce wood biomass availability, affecting Croatia's competitiveness and security of supply.

Installed renewable capacity increased by 11% in 2023 ([59]). The total wind capacity in Croatia in 2023 increased by 15.8% ([60]) to reach a share of 15% in the electricity mix, although Croatia has no offshore wind installed.

Graph A7.3: **Croatia's installed renewable capacity (left) and electricity generation mix (right)**



(1) "Other" includes renewable municipal waste, solid biofuels, liquid biofuels, and biogas.
Source: IRENA, Ember

([56]) See the Commission's assessment of the draft updated NECP.

([57]) 46.5% of total electricity generation in 2023 – Annual electricity data, Ember.

([58]) 65% of all renewables in the heating sector in 2021.

([59]) The total renewable energy capacity in Croatia in 2022 stood at 3 980 MW - IRENA report 2024.

([60]) The total installed capacity of wind in 2023 was 1143 MW- IRENA report 2024.

Solar deployment in 2023 ([61]) represented a significant increase of 107% compared 2022, but still represents only a marginal share of 1% of the country's electricity generation capacity. Croatia has plentiful and largely untapped solar generation potential ([62]).

Croatia made some progress in implementing reforms to accelerate the deployment of renewables. Following the adoption of the legislative framework related to the implementation of renewable energy sources in 2021, in 2022 and 2023 Croatia adopted by-laws that reduce barriers and administrative procedures that restrain higher uptake of renewables, has created a legislative framework to launch renewable energy auctions and will establish a new system for self-consumption ([63]) (Annex 12). Although no auctions were launched in 2023, one was published in April 2024. Nevertheless, the visibility of the project pipeline for renewable energy projects in Croatia is not clear, as it has not published its long-term schedule for auctions for the next 5 or 3 years and the details are not clear about the timing, frequency of auction procedures, expected capacity and budget and eligible technologies.

Croatia's relatively high share of renewables in heating and cooling (37.2% in 2022) is mainly related to biomass use, with heat pumps covering a marginal share. The targets stated in the draft NECP appear rather unambitious, with a very limited growth in heat pumps, but also solar thermal deployment and a continued reliance on biomass as the first contributor to renewable heat. However, it is expected that the future use of geothermal energy will provide a significant additional boost of renewable energy in heating and cooling sector, based on the exploration measures supported by the Recover and Resilience Fund and projects supported from European Regional and Development Fund.

Croatia projects an acceleration from current levels of biogas production, amounting to 0.11 bcm (2021). Biogases make up 4.1% of Croatia's natural gas supply. 0.11 bcm of biogases are used to produce electricity (99%). In 2021 there were no records of biomethane production, injection into the natural gas grid or use in the transport sector but Croatia aims to progressively replace consumption of fossil fuels by biomethane. Croatia has specified measures for the development of biogas and bio-methane ([64]).

Croatia is well interconnected with the neighbouring countries which is reflected in an electricity interconnection level well above the 15% target for 2030. Croatia is carrying out investment under its RRP to strengthen the grid, though further investment in grid development projects would facilitate the integration of renewables, making the energy system more efficient and avoiding energy losses, namely by rewiring existing lines. The process of upgrading 550 km of the country's high voltage network (220/110 kV) and the underground cables that connect the six islands to the mainland network is progressing.

Two Projects of Common Interest (PCI) have recently been completed, namely the Slovenia-Croatia-Hungary electricity line and the smart electricity grid project Sincro. Improved grid connection between Croatia and Slovenia will increase interconnectivity in the region and allow for more efficient integration of renewable energy sources. The implementation of the priorities defined in the recently endorsed CESEC Electricity and Renewable Energy Action Plan ([65]) will be crucial for accelerated infrastructure development and market integration.

Energy efficiency gains slowed in Croatia, despite its untapped potential to deliver more in this field. In 2022, Croatia had an increase in primary energy consumption of 0.3% compared to 2021, and 1.4% compared to 2012.

([61]) The total installed capacity in 2023 of solar was 461 MW. In the IRENA report 'Renewable Energy Statistics 2024', the data might differ from the Eurostat data because a different methodology is used to calculate the capacity in AC and DC.

([62]) Solar energy can easily be deployed in roof-top installations. In addition, the deployment of solar can help alleviate the impacts of droughts, namely by further installing PVs in water reservoirs and canals to reduce water evaporation.

([63]) To ensure equal treatment on access to the distribution network and network fees and to redesign the way of calculating the remuneration for the electricity fed into the grid by self-consumers.

([64]) Draft updated National Energy and Climate Plan

([65]) CESEC Electricity and Renewable Energy Action Plan (2024)

It had a decrease in the final energy consumption of 1.1% compared to 2021, and a 3.6% increase compared to 2012. In 2022, the best results came from the residential sector, which reduced its final energy consumption by 3.6%, and the worst from the transport sector, which increased its final energy consumption by 7.8%.

Croatia has already implemented and committed investment in a series of energy efficiency measures, with the support of several EU funds ([66]). However, most of the schemes are targeted at buildings (primarily public buildings and to a lesser extent residential buildings), while schemes supporting energy efficiency in businesses are rather limited.

Most of the financing schemes on energy efficiency are still grant-based as the use of financial instruments for energy efficiency remains very limited. In terms of existing funding schemes addressing mobilisation of investment in energy efficiency, in particular for building renovations, Croatia mainly relies on grant-based funding schemes implemented via centralised calls for proposals. While to mobilise private investments in energy efficiency it is key to reduce regulatory barriers and scale-up financial instruments, financial support with low-aid intensity will help to address unfavourable market conditions (unaffordable investment costs for renovation prompted by 2020's earthquake), market failures and ensure access to finance from financial institutions. Croatia has planned the development of a financial instrument for energy efficiency in multiapartment buildings in the 2021-2027 Programme Competitiveness and Cohesion (PCC). The Croatian Bank for Reconstruction and Development (HBOR) has been tasked with developing the loan programme.

Croatia needs to step up its efforts in the residential sector to achieve its 2030 energy consumption target for buildings. Final energy consumption in the residential sector increased by around 5% between 2017 and 2022. Heating and cooling represent almost 80% of the country's residential final energy consumption and only 37% of this comes from renewables (mainly biomass).

Heat pumps represent only a minor share in total delivered energy in households and the large majority of heating systems are based on gas boilers. Electricity in Croatia is over three times more expensive than gas, resulting in energy savings for end users but increased costs for those who opt for a heat pump for heating. Croatia would benefit from addressing taxation and network charges and levies to support the decarbonisation of heating supply, in particular via electrification. This would encourage the use of heat pumps, including in conjunction with smart digital solutions to maximise self-consumption and participation in energy communities. The modernisation of district heating systems and networks in Croatia represents as well an existing national resource and an opportunity to cost-effectively decarbonise heating supply to buildings, including via the deployment of large-scale HPs solution in densely populated areas, leveraging the country's potential from large scale sources of renewable energy generation.

Croatia expects to have a capacity in electrolysers of at least 10 MW by 2026. In terms of hydrogen, Croatia plans to establish hydrogen corridors with Slovenia, Austria and Hungary, to enable exports of locally produced hydrogen to these neighbouring countries, with indicative completion dates after 2040. However, the first PCI/PMI list under the revised TEN-E Regulation does not contain any projects involving Croatia. The implementation of the priorities set in the CESEC Action Plan on Gases ([67]) will be crucial for accelerated infrastructure development and market integration.

Croatia is in the top 10 concerning jobs in clean energy value chains but more than 66% of the jobs in the renewable energy sector are in solid biomass ([68]). An evaluation of workforce requirements in clean technologies as well as of re-skilling and upskilling is needed, to ensure that citizens can benefit from the energy transition and support it.

([66]) Under 2014-2020 Cohesion Policy, over 10 % of the overall funding allocated to Croatia was dedicated to investment in energy efficiency renovation of buildings, mainly public buildings. For 2021-2027, more than EUR 500 million coming from Cohesion policy has been committed to measures in energy efficiency renovation of public and residential buildings.

([67]) CESEC Action Plan on Gases (2024)

([68]) https://www.irena.org/Renewable-Energy-Employment

Further to this, Croatia needs to secure a trained workforce in the construction and integrated renovation services, including installers of heating appliances. Croatia maintains low investment levels in research and innovation (R&I), both in terms of public and private funding, which is considered to be one of the main relative weaknesses affecting Croatia's overall performance (see Annex 11) ([69]).

Venture capital investment in climate tech start-ups totalled 690 M EUR in 2022, all of it in the area of low carbon mobility. The number of patent families filed in 2020 for clean technologies were two: one in sustainable transport and one in efficient systems. This represents less than 0.5 patent family per million inhabitants, or forty times less than the EU average.

Croatia has some footprint in the manufacturing of PV modules, as well as battery manufacturing, where an increase is expected in the coming years. Croatia has a module manufacturing capacity of approximately one million modules a year, which translates into roughly 330 MW, operated by a Croatian producer based in Varaždin. There is some battery manufacturing taking place domestically, such as in Križevci. Also, battery management systems are designed and produced by a local automotive manufacturer, which also has plans to launch a new division dedicated to stationary energy storage systems (ESS), with mass production set to start in 2025. Croatia remains fully dependent on imports for wind rotor components.

([69]) https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en#european-innovation-scoreboard-2023

Table A7.1: **Key Energy Indicators**

		Croatia				EU			
		2019	2020	2021	2022	2019	2020	2021	2022
ENERGY DEPENDNCE	**Import Dependency [%]**	**56.2%**	**53.6%**	**54.5%**	**60.3%**	**60.5%**	**57.5%**	**55.5%**	**62.5%**
	of Solid fossil fuels	107.3%	106.0%	100.7%	100.9%	43.3%	35.8%	37.3%	45.8%
	of Oil and petroleum products	76.3%	73.7%	78.4%	86.8%	96.7%	96.8%	91.7%	97.7%
	of Natural Gas	66.4%	68.8%	74.5%	77.5%	89.7%	83.6%	83.6%	97.6%
	Dependency from Russian Fossil Fuels [%]								
	of Natural Gas	0.0%	0.0%	0.0%	0.0%	39.7%	41.3%	41.1%	21.0%
	of Crude Oil	11.9%	14.7%	8.1%	17.5%	28.8%	26.7%	26.4%	19.5%
	of Hard Coal	89.8%	76.0%	78.7%	53.1%	43.5%	49.1%	47.4%	21.5%

		2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	**2.6**	**3.0**	**2.8**	**2.9**	**3.0**	**2.9**	**2.5**
	Gas Consumption year-on-year change [%]	3.7%	15.2%	-7.9%	5.0%	4.6%	-4.4%	-12.9%
	Gas Imports - by type (in bcm)	**1.3**	**1.8**	**1.6**	**2.0**	**2.1**	**2.3**	**3.0**
	Gas imports - pipeline	1.3	1.8	1.6	2.0	2.1	0.6	0.5
	Gas imports - LNG	0.0	0.0	0.0	0.0	0.0	1.7	2.5
	Gas Imports - by main source supplier (in bcm) (1)							
	United States	-	-	-	-	-	1.0	2.1
	Egypt	-	-	-	-	-	0.1	0.3
	Slovenia	0.1	0.2	0.3	0.5	0.6	0.2	0.4
	Qatar	-	-	-	-	-	0.2	0.1

		2019	2020	2021	2022	2023
	LNG Terminals - storage capacity m3 LNG					
	Number of LNG Terminals	0	0	1	1	1
	LNG Storage capacity (m3 LNG)	0	0	140 000	140 000	140 000
	Underground Storage					
	Number of storage facilities	1	1	1	1	1.0
	Technical Capacity (bcm)	0.5	0.5	0.5	0.5	0.4

		2016	2017	2018	2019	2020	2021	2022	2023
ELECTRICITY/ENERGY	**Gross Electricity Production (GWh) (2)**	**12 820**	**11 984**	**13 632**	**12 760**	**13 385**	**15 210**	**14 221**	-
	Combustible Fuels	4 682	5 193	4 435	5 185	5 665	5 681	6 284	-
	Nuclear	0	0	0	0	0	0	0	-
	Hydro	7 058	5 508	7 785	5 933	5 810	7 229	5 574	-
	Wind	1 014	1 204	1 335	1 467	1 721	2 062	2 138	-
	Solar	66	79	75	83	96	149	152	-
	Geothermal	0	0	2	92	94	90	73	-
	Other Sources	0	0	0	0	0	0	0	-
	Gross Electricity Production [%]								
	Combustible Fuels	36.5%	43.3%	32.5%	40.6%	42.3%	37.4%	44.2%	-
	Nuclear	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	Hydro	55.1%	46.0%	57.1%	46.5%	43.4%	47.5%	39.2%	-
	Wind	7.9%	10.0%	9.8%	11.5%	12.9%	13.6%	15.0%	-
	Solar	0.5%	0.7%	0.5%	0.7%	0.7%	1.0%	1.1%	-
	Geothermal	0.0%	0.0%	0.0%	0.7%	0.7%	0.6%	0.5%	-
	Other Sources	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
	Net Imports of Electricity (GWh)	**5 531**	**6 954**	**5 388**	**6 133**	**4 639**	**3 961**	**4 695**	-
	As a % of electricity available for final consumption	35.2%	42.3%	32.4%	37.0%	29.8%	23.5%	28.3%	-
	Electricity Interconnection [%]		**52.0%**	**53.2%**	**50.0%**	**52.0%**	**45.6%**	**60.0%**	**29.5%**
	Share of renewable energy consumption - by sector [%]								
	Electricity	46.7%	46.4%	48.1%	49.8%	53.8%	53.5%	55.5%	-
	Heating/cooling	37.6%	36.6%	36.7%	36.8%	36.9%	38.0%	37.2%	-
	Transport	1.2%	1.2%	2.6%	5.9%	6.6%	7.0%	2.4%	-
	Overall	28.3%	27.3%	28.0%	28.5%	31.0%	31.3%	29.4%	-

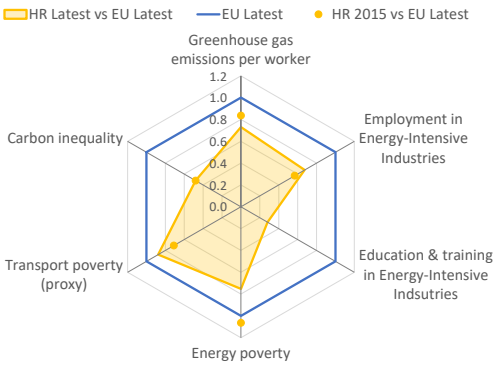
		2019	2020	2021	2022	2023
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln)**	**80.00**	**0.05**	**140.00**	**690.00**	**-**
	as a % of total VC investment (3) in Croatia start-ups and scale-ups	92.4%	0.1%	71.7%	94.3%	0.0%
	Research & Innovation spending in Energy Union R&i priorites					
	Public R&I (EUR mln)	-	-	-	-	-
	Public R&I (% GDP)	-	-	-	-	-
	Private R&I (EUR mln)	19.9	2.8	-	-	-
	Private R&I (% GDP)	0.04%	0.01%	-	-	-

(1) The ranking of the main suppliers is based on the latest available figures (for 2022)
(2) Venture Capital investment includes Venture Capital deals (all stages), Small M&A deals and Private Equity (PE) growth deals (for companies that have previously been part of the portfolio of a VC investment firm or have received Angel or Seed funding).
Source: Eurostat, Gas Infrastructure Europe, JRC elaboration based on PitchBook data (03/2024), JRC SETIS (2024)

This Annex monitors Croatia's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, particularly for workers and households in vulnerable situations. Croatia's green economy is slowly expanding. Between 2015 and 2020, total jobs in the environmental goods and services sector grew by 13.2% (to around 41700) (EU: 18.2%), reaching 2.5% of total employment (EU: 2.7%). Also, between 2015 and 2022, the greenhouse gas emission intensity of Croatia's workforce (see Graph A8.1 and Table A8.1) declined from 12 to 10.4 tonnes per worker, below the EU average (14.3 tonnes per worker in 2022) ([70]), indicating a positive trend in the green transition. While upskilling and reskilling actions in line with the Council Recommendation on ensuring a fair transition towards climate neutrality ([71]) support the implementation of the REPowerEU plan, green skills shortages remain a challenge.

Employment in energy-intensive industries increased in recent years. In 2023, employment in Croatia's energy-intensive industries represented 2.4% of total employment (3.5% in the EU), increasing from 2% in 2015. Employment in mining and quarrying has fallen by 16% since 2015. Two counties, Sisak–Moslavina and Istria, were identified, based on their greenhouse gas emission intensity, as priorities for support from the Just Transition Fund ([72]). Croatia has also joined the Alliance for Coal-Free Electricity Production. According to Croatia's territorial just transition plan, its one remaining coal power plant is set to cease production by 2033. However, this commitment is not yet set in the draft updated national energy and climate plan ([73]). The job vacancy rate in construction (see Graph A8.2), a key sector for the green transition, is lower than the EU average (1.9% vs 3.6% in EU in 2023). Nevertheless, 96% of small and medium-sized enterprises (SMEs) in the sector reported that skills shortages are holding them back in general business activities ([74]).

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



Source: Eurostat, EU Labour Force Survey, EMPL-JRC GD-AMEDI/AMEDI+ and DISCO(H) projects (see Table A8.1).

Upskilling and reskilling in energy-intensive industries needs to be strengthened. In energy-intensive industries, workers' participation in education and training stood at 3.1% in 2023, well below the EU average (10.9%). In Croatia, 50% of SMEs think that the skills required for greening business activities are becoming more important (EU: 42%) ([74]). If Croatia matches its projected contribution to the EU's 2030 renewable energy target, between 200 and 1200 additional skilled workers will be needed for the deployment of wind and solar energy ([75]). As part of the initiative on renovating buildings, the recovery and resilience plan (RRP) envisages the publication of a revised national skills development plan, which would encourage people to acquire green skills as part of Croatia's energy efficiency and renovation plans. To address these challenges, investments are planned under the RRP and the Just Transition Mechanism. The RRP aims to address upskilling and acquisition of skills related to the green and digital transitions by introducing new active labour market policies for the long-term unemployed and less employable people from disadvantaged groups, and by using the voucher system for adult education. In Croatia, 2.6% of European Social

([70]) Workforce-related calculations are based on the EU Labour Force Survey. Note, in the 2023 country report for Croatia, such indicators were calculated based on employment statistics in the national accounts. This may result in limited comparability across the two reports.

([71]) 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.

([72]) In these counties, some of the Emissions Trading System installations in the chemical and cement sectors might possibly undergo a process of transition towards less emissions in line with their existing plans. However, only those installations that are compliant with the JTF Regulation and fulfil the 'substantially below the benchmark' and other requirements are eligible for JTF funding.

([73]) https://commission.europa.eu/publications/croatia-draft-updated-necp-2021-2030_en

([74]) Eurobarometer on skills shortages, recruitment, and retention strategies in small and medium-sized enterprises.

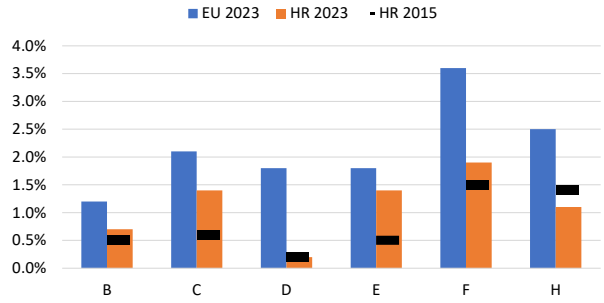
([75]) EMPL-JRC AMEDI+ project.

Fund Plus funding contributes to green skills and jobs, adding to RRP investment and aligning vocational education and training to the labour market needs of the green transition.

Overall energy poverty has decreased in recent years in Croatia, but the situation of vulnerable households needs to be monitored. The share of the population unable to keep their homes adequately warm decreased from 9.9% in 2015 to 5.7% in 2021 before increasing again to 7.0% in 2022, below the EU average (9.3%) ([76]), on the back of energy price increases due to supply constraints caused by the COVID-19 pandemic and Russia's war of aggression against Ukraine, despite the emergency measures implemented in Croatia. In particular, 21.9% of the population at risk of poverty (AROP) (EU: 20.1%) and 5.8% of lower middle-income households (in deciles 4-5) in 2022 (EU: 11.6%) were affected. In January 2023, 32.5% of the population at risk of poverty spent a considerable proportion of their budget (more than 6%) on private transport fuels (EU: 37.1%) ([77]).

Croatia started to implement policies for a fair transition towards climate neutrality, although the green transition is not yet viewed as a strategic issue. Croatia has a wide range of measures and services in place that could indirectly contribute to achieving a fair transition. Because of labour shortages resulting from the green transition, more targeted upskilling and reskilling measures should be promoted. Future measures in the field of social policies should also target people and households most affected by the green transition.

Graph A8.2: **Job vacancy rate in transforming sectors and mining and quarrying**



B - Mining and quarrying
C - Manufacturing
D - Electricity, gas, steam and air conditioning supply
E - Water supply; sewerage, waste management and remediation activities
F - Construction
H - Transportation and storage
Source: Eurostat jvs_a_rate_r2.

Air pollution remains a critical issue leading to environmental inequalities in Croatia. The average levels of air pollution in 2021 stood above the EU average (14.6 vs 11.4 µg/m3 PM2.5), with 88% of the population living in regions exposed to critical levels of air pollution ([78]). This has led to a significant impact on health and an estimate of at least 3800 premature deaths annually ([79]) ([80]). In 2021, the consumption footprint for 20% of the population with the highest income was 1.3 times higher than the footprint of the poorest 20% ([81]) (EU: 1.8). For both groups, the consumption footprint is highest for food and housing.

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

Indicator	Description	HR 2015	HR	EU
GHG per worker	Greenhouse gas emissions per worker – CO_2 equivalent tonnes	12.0	10.4 (2022)	14.3 (2022)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24) and automotive (C29)	2.0%	2.4% (2023)	3.5% (2023)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries	3.2% (2020)	3.1% (2023)	10.9% (2023)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm	9.9%	7.0% (2022)	9.3% (2022)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport	26.4%	32.5% (2023)	37.1% (2023)
Carbon inequality	Ratio between the consumption footprint of the top 20% vs bottom 20% of the income distribution	1.3	1.3 (2021)	2.7 (2021)

Source: Eurostat (env_ac_ainah_r2, lfsa_egan2d, ilc_mdes01), EU Labour Force Survey (break in time series in 2021), EMPL-JRC GD-AMEDI/AMEDI+ and DISCO(H) projects.

([76]) 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.

([77]) Affordability of private transport fuels is one key dimension of transport poverty. The indicator has been developed in the context of the EMPL-JRC GD-AMEDI/AMEDI+ projects. Methodology explained in Economic and distributional effects of higher energy prices on households in the EU.

([78]) Two times higher than the recommendations in the WHO Air Quality Guidelines (annual exposure of 5µg/m^3).

([79]) EEA - Air Quality Health Risk Assessment

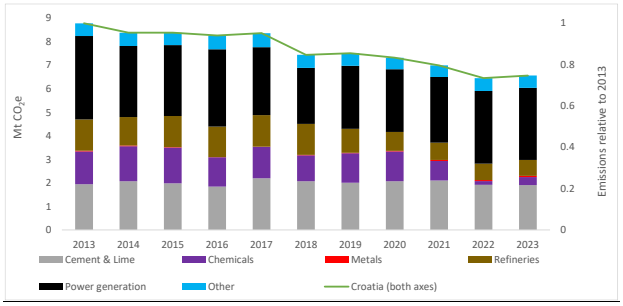
([80]) Croatia – air pollution country fact sheet – European Environment Agency (europa.eu)

([81]) Developed in the context of the EMPL-JRC DISCO(H) project (distributive impacts of consumption footprint in EU households).

The green transition of industry and the built environment, in particular decarbonisation, resource efficiency and circularity, is essential to boost Croatia's competitiveness ([82]). In this regard, priorities for Croatia are waste management and the use of circular materials in industry and construction.

Croatia is not on track to achieve the EU Circular Economy Action Plan goals, also due to unsustainable waste management. Croatia's material footprint is slightly above the EU average and increased to 15 tonnes per capita in 2022. Total waste generated has increased over the last decade and measured 1.5 tonnes per capita in 2020. This is, however, still well below the EU average of 4.8 tonnes.

Graph A9.1: **ETS emissions by sector since 2013**



Source: European Commission

In 2023, the sectors covered by the EU emissions trading system (ETS) in Croatia ([83]) emitted 13% less greenhouse gases than in 2019. In 2023, about 47% of the greenhouse gases emitted by Croatia's ETS installations came from power generation, less than the EU average (57%). Of the total emissions from all industry sectors, slightly more than half came from cement and lime production, about one fifth from refineries, 10% from the chemical industry, only 1% from the metals industry, and 16% from other industries. Between 2013 and 2019, the power sector achieved reductions of 24% ([84]), whereas emissions in the industry sectors only declined by 8%. Between 2019 and 2023, greenhouse gas emissions from the power sector have increased by 14%in the industry sectors, they have declined by 28% ([85]). From 2013 to 2023, greenhouse gas emissions declined by 14% in power generation and by 33% in the industry sectors. This resulted in a 25% greenhouse gas emissions reduction in the ETS sectors in this period.

There is still room to make better use of the potential of the circular economy transition to improve efficiency and drive the decarbonisation of the Croatian industry. Croatia's circularity rate is increasing more slowly than the EU average. In 2022, it measured only 5.8%, while resource productivity stood at 2.12 purchasing power standards per kg. Improving resource productivity can help minimise negative environmental impacts and reduce dependence on raw material imports. Croatia was dependent on imports for 36.3% of materials used in 2022, compared with an EU average of 22.4%, making the country comparatively more vulnerable to supply chain disruptions.

Industry's impacts on the environment could be further limited. Particulate matter emissions from industry are higher than the EU average. In 2021, the PM2.5 grams emitted per economic output (EUR'10) ([86]) decreased from 0.21 in 2017 to 0.17, versus an EU average of 0.06. PM10 emissions show a similar trend, with 0.28 grams/EUR'10 in 2017 and 0.23 in 2021, versus an EU average of 0.09 grams/EUR'10 in 2020. Between 2010 and 2021, the industrial sector decreased its emissions of CO_2, NO_x, PM10 and SO_x, but emissions of non-methane volatile organic compounds increased by 9%, and emissions of heavy metals (cadmium, lead and mercury) rose by 119%. Pollutant emissions into water decreased except for heavy metals.

Croatia is not on track to meet the EU waste management targets. Croatia recycled 34.2% of municipal waste in 2022. The country missed the

([82]) See also Annexes 6, 7 and 12.

([83]) This analysis excludes air travel. For more details and the data sources, see Weitzel, M; van der Vorst, C. (2024), Uneven progress in reducing emissions in the EU ETS, JRC Science for policy brief, JRC138215, Joint Research Centre.

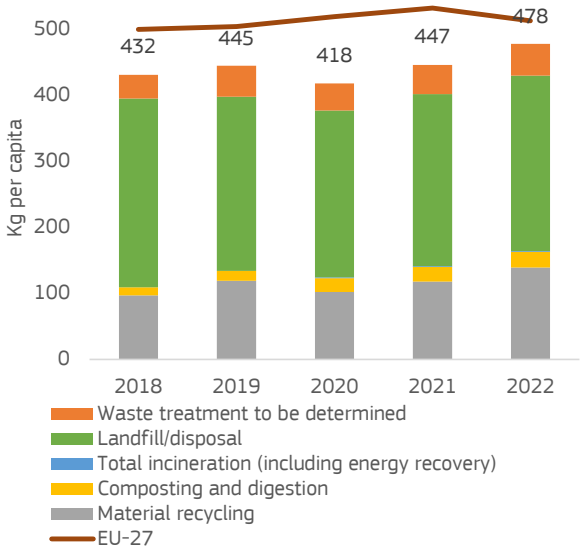
([84]) This includes a decrease of around 33% until 2018, and a gradual rebound from 2018.

([85]) Between 2018 and 2022, Croatia saw a 71% increase in greenhouse gas emissions in metal processing, but this had a negligible impact overall due to the small size of the sector.

([86]) In 2010 prices.

2020 municipal waste recycling target and risks missing the 2025 targets for municipal waste and packaging. The plastic packaging recycling rate stood at 34.2% in 2021, below the EU average of 40.7%. Croatia is still highly reliant on landfills and is not on track to achieve the target of a maximum of 10% of landfilling by 2035. Under its amended recovery and resilience plan, Croatia committed itself to adopting a regulation on landfilling tax by the end of 2024.

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



Source: Eurostat

Improving resource efficiency is key for the green transition of the built environment. The residential and non-residential floor areas per capita both stand below the EU average. In 2020, Croatia submitted a long-term strategy for energy renovation in the building sector to promote the decarbonisation of the building stock by 2050. Despite some positive trends, including investments in the green transition and the decarbonisation of buildings planned under both the recovery and resilience plan and cohesion policy, there is still room for improving waste management in Croatia's built environment.

Construction and demolition waste per capita increased during the last decade. With the support of the World Bank, Croatia developed a circular economy action plan for construction and demolition waste management, which is integrated into the country's new waste management plan (2023-2028). The proportion of backfilling has decreased since 2014 and stood at 12.4% in 2020. Croatia's recovery rate rapidly increased to 89% in 2020, achieving the Waste Framework Directive's target for 2020 (70%), but went down to 63.5% in 2021. There is scope to reduce pressure from human activities to meet the EU targets. In 2012-2018, net land take stood slightly below the EU average and decreased only by 12% compared with the previous reporting period. This trend puts Croatia at risk of not achieving the 8th Environment Action Programme objective of reaching no net land take by 2050.

Wastewater treatment shows scope for improvement. In 2021, only 31% of Croatia's population was connected to at least secondary wastewater treatment. Croatia would benefit from prioritising alignment with EU standards and meeting the obligations under the Urban Waste Water Treatment Directive (UWWTD). According to the 12th UWWTD implementation report (2020 data), Croatia's implementation status is 'poor', with compliance rates slightly above 70% for collection, and treatment rates of only 10-12%. Improvements are urgent as Croatia's derogation from complying with the UWWTD laid down in the Accession Treaty expired on 31 December 2023.

Table A9.1: **Circularity indicators**

	2018	2019	2020	2021	2022	2023	EU-27	Latest year
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.9	1.9	1.8	2.0	2.1	-	2.5	2022
Circular material use rate (%)	5.0	5.3	5.5	5.7	5.8	-	11.5	2022
Eco-innovation index (2013=100)	75.7	79.0	83.3	86.1	88.8	-	121.5	2022
Recycling of plastic packaging (%)	37.3	35.7	34.1	34.2	-	-	40.7	2021
Cost of air emissions from industry (EUR bn)	2.4	2.0	1.8	1.7	-	-	352.7	2021
Built environment								
Recovery rate from construction and demolition waste (%)	78.0	-	89.0	63.5	-	-	89.0	2020
Soil sealing index (base year = 2006)	103.1	-	-	-	-	-	103.4	2018
Non-residential floor area (m^2 per capita)	12.2	12.5	12.7	-	-	-	18.0	2020
Waste backfilled (%)	7.9	-	12.4	-	3.2	-	9.9	2020

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 its targets for digital transformation by 2030, this Annex describes Croatia's performance on digital skills, digital infrastructure/connectivity, and the digitalisation of businesses and public services. Where relevant, it refers to progress on implementing Croatia's recovery and resilience plan (RRP). Croatia allocates 20% of its total Recovery and Resilience Facility RRP budget to digital (EUR 1.48 billion) ([87]). Under cohesion policy, an additional EUR 0.8 billion (9% of the country's total cohesion policy funding) is allocated to the country's digital transformation ([88]).

The Digital Decade policy programme sets out a pathway for the EU's successful digital transformation by 2030. Croatia's national roadmap outlines the actions it intends to take to reach the objectives and targets at national level. The first report on the state of the Digital Decade highlighted the need to accelerate and deepen the collective efforts to reach the EU-wide targets and objectives ([89]). Through this, a digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains and new business models. It also leads to higher inclusion and participation in an environment increasingly shaped by the digital transformation ([90]). Digital technologies, infrastructure and tools all play a role in addressing the current structural challenges, including strategic dependence in various areas, cybersecurity and climate change.

Croatia faces significant challenges in retaining ICT specialists. Croatia made some progress in the field of digital skills with the Croatian Academic and Research Network (CARNET), the e-Universities and e-Schools projects, the adoption of the National Education Development Plan 2027 and the Croatian Qualifications Framework (CROQF) Act. In Croatia, ICT specialists continue to account for a lower percentage of the workforce in Croatia than in the EU (4.3% vs 4.8%). The percentage of female ICT specialists is below the EU average (17.4% vs 19.4%). Eurostat data from 2022 reveals that only 5.3% of Croatian SMEs have been searching for ICT specialists compared with the EU average of 7.8%. Also in 2023, about 7.8% of enterprises recruited or tried to recruit ICT specialists compared with an EU average of 9.5%. The ICT sector in Croatia faces challenges in competing with the salaries and conditions offered by foreign companies. This issue is compounded by the presence of foreign ICT experts who work in Croatia as 'digital nomads' and local ICT experts working for overseas companies, who often evade the visibility of national tax authorities, presenting additional challenges for the domestic industry. As part of its RRP, Croatia put in place a voucher system to support the acquisition of new skills, particularly green and digital skills. Further complementary measures could also be envisaged by both public and private stakeholders to increase and retain ICT professionals in Croatia. This could possibly be within a framework aimed at stemming the outflow of the young and most skilled part of the population, which in turn also creates difficulties in recruiting skilled personnel in schools and universities alike.

Croatia has a mixed performance on digital infrastructure/connectivity. Fixed very high-capacity network (VHCN) coverage has been steadily increasing, but it remains significantly below the EU average. Croatia has an overall penetration of 100 Mbps services at 38.6%, well below the EU average of 65.9%. Croatia is also below the EU average in the coverage of fixed VHCN, with 67.8% versus an EU average of 78.8%. In the coverage of fibre to the premises, with 62.1%, the country is marginally below the EU average of 64%. Croatia has assigned all 5G spectrum in the pioneer bands. However, the 5G coverage is at 83.4%, is about 6 percentage points

([87]) The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

([88]) This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

([89]) European Commission (2023): Report on the state of the Digital Decade 2023: https://digital-strategy.ec.europa.eu/en/library/2023-report-state-digital-decade

([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) and OECD (2019): Going Digital: Shaping Policies, Improving Lives – Summary, https://www.oecd.org/digital/going-digital-synthesis-summary.pdf.

below the EU average of 89.3%. To address these connectivity issues, Croatia improved its permit granting process, selected a universal service provider, and programmed, through the European Regional Development Fund, an additional EUR 50 million for connectivity. The scope of investments in very high-capacity networks should be closely monitored with a view to verifying to what extent either private or public investment falls short of expectations and to ensure that corrective actions are taken accordingly. Furthermore, the delay in the adoption of the Croatian Regulation on spatial planning of electronic communication infrastructure is making it very difficult to increase 5G coverage, also due to the reluctance of local authorities to grant permission to build or place 5G masts and rooftop antennas.

Croatian businesses perform satisfactorily in most of the Digital Economy and Society Index (DESI) indicators for the digitalisation of businesses. Despite many positive results, the share of SMEs with at least a basic level of digital intensity remains at 56%, close to the EU average of 57.7%, with the sharing of information (23.7% vs EU 42%) and the use of electronic media (21.9% vs EU 30.6%) also below the EU average. However, Croatian businesses are making good use of the opportunities that the digital technologies offer. For example, the use of data analytics (51.7% vs EU 33.2%) and cloud computing services (40.7% vs EU 38.9%) are above the EU average, while the use of artificial intelligence matches the EU average (7.9% vs EU 8%). The use of e-Invoices (46.2% vs EU 38.6%), %) and SME selling on-line (29.5% vs EU 19.1%) are above the EU average while e-Commerce turnover is marginally below the EU average (11.3% vs EU 11.9%). As part of its RRP, Croatia is putting in place vouchers and financial schemes that support the digitalisation of SMEs and large companies, including investment in the digitalisation of production and business processes. In 2022, 1.3% of enterprises in Croatia reported ICT service outage due to cyberattacks (e.g. ransomware attacks, denial of service attacks). Over the same year, 28.7% of enterprises developed or reviewed their ICT security policy within the previous 12 months.

Croatia continues to perform below the EU average in terms of digitalisation of public services. Croatia scores below the EU average in terms of the availability and usage of digital online services for citizens (67.2 vs EU 79.4) and, particularly, for businesses (66.2 vs EU 85.4). Other DESI indicators in this dimension are also below the EU average: pre-filled forms (49.4% vs EU 70.8%), and transparency of service delivery (59.1% vs EU 66.9%), but better in terms of e-Government users (88.5% vs EU 75.1%). However, Croatia scores high on access to electronic health records (86 vs EU 79). Progress in the e-health domain is evident with the development of the Central Health Information System of the Republic of Croatia (CEZIH), which has successfully digitalised business processes in the health system, as well as with the introduction of Artificial Intelligence for Smart Healthcare and Medicine (AI4Health.Cro). As regards electronic identification (eID), Croatia has one eID card notified under the eIDAS Regulation (see Annex 12).

Table A10.1:**Key Digital Decade targets monitored by the Digital Economy and Society Index indicators**

	Croatia			EU	Digital Decade target by 2030 (EU)
	2022	2023	2024	2024	
Digital skills					
At least basic digital skills	**63%**	**63%**	**59%**	**56%**	**80%**
% individuals	2021	2021	2023	2023	2030
ICT specialists ([1])	**3.6%**	**3.7%**	**4.3%**	**4.8%**	**20 million**
% individuals in employment aged 15-74	2021	2022	2023	2023	2030
Digital infrastructure/connectivity					
Fixed very high capacity network (VHCN) coverage	**52%**	**61%**	**68%**	**79%**	**100%**
% households	2021	2022	2023	2023	2030
Fibre to the premises (FTTP) coverage ([2])	**39%**	**54%**	**62%**	**64%**	**-**
% households	2021	2022	2023	2023	
Overall 5G coverage	**34%**	**82%**	**83%**	**89%**	**100%**
% populated areas	2021	2022	2023	2023	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**50%**	**NA**	**56%**	**58%**	**90%**
% SMEs	2021		2023	2023	2030
Data analytics	**NA**	**NA**	**52%**	**33%**	**-**
% enterprises			2023	2023	
Cloud	**35%**	**35%**	**41%**	**39%**	**-**
% enterprises	2021	2021	2023	2023	
Artificial intelligence	**9%**	**9%**	**8%**	**8%**	**-**
% enterprises	2021	2021	2023	2023	
AI or cloud or data analytics ([3])	**NA**	**NA**	**66%**	**55%**	**75%**
% enterprises			2023	2023	2030
Digitalisation of public services					
Digital public services for citizens	**69**	**71**	**67**	**79**	**100**
Score (0 to 100)	2021	2022	2023	2023	2030
Digital public services for businesses	**68**	**67**	**66**	**85**	**100**
Score (0 to 100)	2021	2022	2023	2023	2030
Access to e-health records	**NA**	**86**	**86**	**79**	**100**
Score (0 to 100)		2022	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.

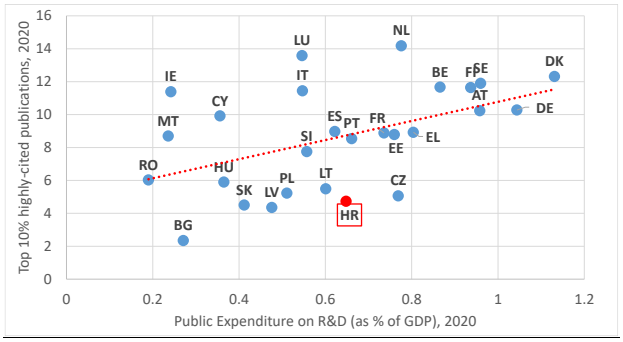
Source: Digital Economy and Society Index

This Annex provides a general overview of the performance of Croatia's research and innovation system, which is essential for delivering the twin transition and ensuring long-term competitiveness.

Croatia is an 'emerging innovator' with an improving performance. The 2023 edition of the European Innovation Scoreboard ([91]) notes that Croatia's innovation performance has grown faster than the EU average. This is particularly driven by increases in venture capital and a higher number of public-private co-publications since 2016.

Scientific outputs remain of modest quality, amid improvements in terms of R&D expenditure. Scientific excellence is low, as illustrated by the share of the country's scientific publications within the top 10% most-cited scientific publications worldwide as % of total scientific publications of the country, which has increased but sits substantially below the EU average (4.47% vs 9.6%). This is caused by historically low investment in R&I, combined with the long-standing fragmentation of public research and higher education institutions, which weighs on the efficiency and impact of public R&D expenditure ([92]) (see Graph A11.1).

Graph A11.1: **Top 10% most-cited publications in relation to Public R&D expenditure, 2020**



Source: Based on Eurostat / Science-Metrix.

Marked increases in public R&D expenditure over the last few years (0.40% of GDP in 2015 compared to 0.65% in 2022) are a positive signal. Further investment from the recovery and resilience plan (RRP) and cohesion policy can help to close the public funding gap to the EU average in the medium term. The recently introduced performance-based funding model has the objective of linking a share of funding for higher education institutions and public research organisations to achievements and structural improvements. While the model itself is commendable, its impact on scientific excellence depends on proper and ambitious implementation paired with rigorous evaluation of the instrument's effectiveness ([93]). Apart from this, it remains key to address the severe fragmentation of higher education institutions including the large number of faculties, which has so far not been tackled systematically and could significantly limit the impact of efforts currently being made to enhance public R&D spending.

Further improvements in R&I performance will require close collaboration between relevant government actors and strengthened administrative capacities. Croatia has successfully streamlined R&I governance, among other things clarifying the role of the National Innovation Council (NIC). Nevertheless, considering the large number of ongoing and forthcoming R&I support programmes, implementing a stronger system of collaboration between relevant actors (ministries, funding agencies and others) is of major significance, as recommended in a recently published report ([94]). Furthermore, to deal with the multitude of ongoing R&I initiatives, ministries and funding agencies require the necessary human capacities to implement reforms and investments in timely and proper fashion ([95]).

Business-science linkages have improved, while consistency in dedicated support measures is pivotal. Despite a decline between 2019 and 2022, the number of public-private co-publications as a share of total publications

([91]) 2023 European Innovation Scoreboard (EIS), country profile: Croatia https://ec.europa.eu/assets/rtd/eis/2023/ec_rtd_eis-country-profile-hr.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).

([92]) See also World Bank (2019): Analysis of the quality and coherence of the policy mix – Croatia Public Expenditure Review in STI.

([93]) JRC (2023): Strategic Evaluation of the Technology Transfer and IPR protection systems of Bulgaria, Croatia and Romania.

([94]) Ibid.

([95]) Programmes to support these capacities such as the World Bank's DIGIT project can be used in this regard.

remains above the EU average (8.3% vs 7.6%). Collaboration between businesses and academia benefits from a range of dedicated RRP and ERDF funding programmes ([96]) targeting collaborative research. New technology transfer guidelines and financial support to technology transfer programmes are noteworthy and very much needed, as patent applications filed under the Patent Cooperation Treaty per billion GDP (0.46 vs an EU average of 3.4 in 2019) are very low and decreasing further (see Annex 12). Going forward, it is important to ensure funding stability and consistent support to technology transfer offices to build their capacities, also beyond EU funds ([97]). Further soft support measures, e.g. networking events and trainings for collaborative research, might be beneficial – existing but strengthened initiatives could be used, e.g. Thematic Innovation Councils ([98]).

Business R&D expenditure is below the EU average but has increased markedly. Business enterprise expenditure on R&D as % of GDP has almost doubled since 2015 but remains well below the EU average (0.78% vs 1.48% in 2022). This is also visible in the low number of researchers employed by business per thousand active population (1.4 in Croatia vs 5.4 on EU average in 2021) ([99]). The R&D tax incentive system is characterised by low take-up ([100]); the envisaged analysis of the R&D tax incentive system will be important and the implementation of its findings key. The availability of venture capital (as % of GDP) is improving ([101]) but remains below the EU average (0.034% vs 0.085%).

([96]) E.g. targeted scientific research programme with the aim of supporting collaborative industrial research projects.

([97]) JRC (2023): Strategic Evaluation of the Technology Transfer and IPR protection systems of Bulgaria, Croatia and Romania.

([98]) European Commission (2023): PSF to support early stages of innovation and science-business linkages in Croatia.

([99]) Eurostat.

([100])OECD (2023): OECD Economic Surveys: Croatia 2023.

([101])Croatian start-ups are also supported through the EIF/ERDF 'Croatian Venture Capital Initiative 2': Link.

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

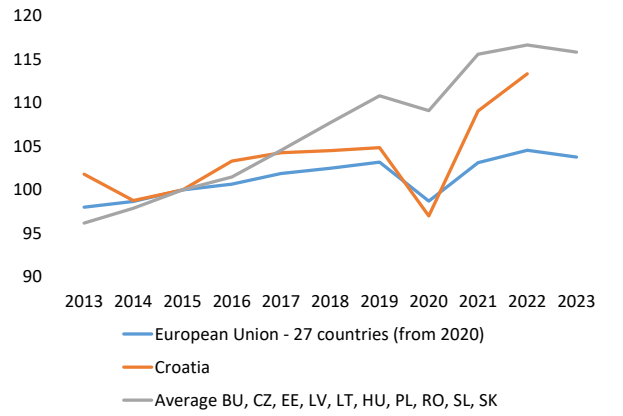
Croatia	2010	2015	2020	2021	2022	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	0.73	0.83	1.24	1.24	1.43	2.24
Public expenditure on R&D as % of GDP	0.41	0.4	0.65	0.66	0.65	0.73
Business enterprise expenditure on R&D (BERD) as % of GDP	0.32	0.42	0.6	0.58	0.78	1.48
Quality of the R&I system						
Scientific publications of the country within the top 10% most cited publications worldwide as % of total publications of the country	3	3.6	4.74	:	:	9.6
Patent Cooperation Treaty (PCT) patent applications per billion GDP (in PPS)	0.7	0.4	0.46	:	:	3.4
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	7.5	6.9	8.7	8.7	8.3	7.6
Public expenditure on R&D financed by business enterprise (national) as % of GDP	0.03	0.033	0.030	0.026	:	0.054
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	11.8	12.8	16.6	16.4	:	16.9
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	0.013	0.005	0.053	0.066	:	0.204
R&D tax incentives: foregone revenues as % of GDP	0.031	0	0.013	0.004	:	0.104
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	16.7	12.8	13.7	:	:	14.7
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.003	0.006	0.009	0.029	0.034	0.085
Employment share of high growth enterprises measured in employment (%)	:	14.55	12.3	:		12.51

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

Croatia's competitiveness has been progressively improving. In the 2023 IMD World Competitiveness Ranking ([102]), Croatia is ranked 50th, down 4 places compared to 2022 but up 10 places compared to 2019. Croatia's strengths include good performance in the tourism sector (in 2019, the direct contribution of tourism to GDP was estimated at 11.8% ([103])), long-term growth in employment and its GDP growth rate per capita. Croatia increased its market share in world exports (goods and commercial services) slightly from 0.13% in 2018 to 0.14% in 2022.

Croatia's labour productivity is catching up with the EU average, but more slowly than its peers. Its real labour productivity per person employed rose by 13.3% between 2015 and 2022, well above the EU average of 4.5% ([104]). However, labour productivity has grown less in Croatia than in peer countries ([105]).

Graph A12.1: **Labour productivity per person employed (index 100 in 2015)**



Source: Eurostat

Despite the progress, the gap with EU productivity remains significant. Croatia's labour productivity amounts to 70% of the 2023 EU aggregate ([106]). The gap is due to poor within-sector performance rather than the structure of the Croatian economy. For example, Croatia's productivity in the manufacturing sector is just a quarter of that in Germany, the regional frontier economy, according to the World Bank ([107]). Despite improvements in 2021 and 2022, productivity in this sector failed to grow between 2018 and 2022 (-0.1% on average per year against +1.63% for the EU-27). Productivity in the construction sector is also low (less than 40% of Germany). This is problematic given the large investments in the Croatian recovery and resilience plan (RRP) for renovating buildings and reconstructing buildings damaged in the 2020 earthquakes. Croatia's low productivity within sectors is due to its comparatively large share of poor performing firms and relatively few high performers ([108]). However, since 2016 the share of high-growth firms has been relatively higher in Croatia than in the EU ([109]).

The manufacturing sector is smaller than in peer countries but offers growth opportunities. Croatia relies heavily on the tourism sector and has a relatively low level of industrialisation (13% of GDP against 15% in the EU-27 and 17% in the EU's Central and Eastern European countries/EU-CEE). In addition, medium- and high-tech manufacturing represents a smaller share of the manufacturing added value in Croatia than in peer countries (31% against 41% in the EU-27 and 38% in the EU-CEE). However, Croatia has demonstrated high goods export competitiveness and has also shown a comparative advantage in low carbon technology products ([110]). It expects to have an electrolyser capacity of 10MW by 2026 (see Annex 7). Smart specialisation and a promotion policy of foreign direct investment tailored to drive the expansion of promising niche sectors could help develop Croatia's manufacturing potential ([111]).

Energy prices and material shortages are still an issue, but are less acute than last year. During winter 2022-2023, the energy crisis had a substantial impact on firms, in particular on energy-intensive industries such as aluminium, construction materials, shipbuilding and fertilisers. The situation is now improving due to the fall in energy prices. The situation regarding material

([102])IMD World Competitiveness Rankings, 2023.

([103])Eurostat, Tourism satellite data 2023

([104])Eurostat (NAMA_10_LP_ULC)

([105])World Bank, Croatia Country Economic Memorandum, 2022.

([106])GDP per hour worked in purchasing power standards, European Commission, Autumn 2023 forecast.

([107])World Bank, Croatia Country Economic Memorandum, 2022.

([108])OECD Economic Surveys: Croatia, 9/2023.

([109])Eurostat (bd_9pm_r2).

([110])IMF, Croatia- Article 4 report, 29/6/2023.

([111])Friedrich Ebert Stiftung, Industrial Policy for a new growth model, Country briefing Croatia, 2023.

shortages is also improving: the number of firms in industry reporting material shortages decreased significantly in 2023 compared to 2022 (12.2% vs 24.8%) (see Table A12.1). It is however still much higher than in 2019, when only 4% of firms in industry reported material constraints.

A workforce shortage harms innovation and growth. Businesses find that the availability of skilled staff is the main barrier to investment ([112]). Labour shortages are harming key sectors of the economy like construction, tourism and industry (see Annex 14). In industry, these shortages are affecting Croatia more severely than the rest of the EU, with 39% of firms surveyed facing constraints compared to the EU average of 23.3% (see Table A.12.1). The shortage of professional and skilled workers in the construction sector is a major concern ([113]). The shortage of specialists is affecting the integration of digital and green technologies into local firms ([114]). The share of small and medium-sized enterprises (SMEs) with at least a basic level of digital intensity stood at 56% against 58% in the EU in 2023 ([115]) (see Annex 10).

Croatia's innovation performance suffers from the low level of business investments in research and innovation. The share of business expenditure on R&D has almost doubled since 2015, but remains well below the EU average (0.78% against 1.48% in 2022) (see Annex 11). Compared to the EU, Croatia's performance in terms of firms' investments in research and innovation decreased by nearly 20 percentage points between 2016 and 2023 ([116]). The number of patents per inhabitant is one of the lowest in the EU ([117]), and Croatia is not participating in enhanced cooperation with respect to the unitary patent system. This weak performance is the result of several factors, including the relatively low number of large industrial companies, the dispersion of public support for innovation and the low take-up of the R&D tax incentive scheme ([118]). Croatia also scores badly on human resources indicators such as life-long learning and population with higher education and doctorate graduates, in particular in STEM. These low scores can be linked with the low level in basic skills as measured by the OECD's Programme for International Student Assessment (PISA), which points to weaknesses in the education system. One in three students do not reach a minimum proficiency level in mathematics, and the share of top performers is below the EU average for all three basic skills (see Annex 15).

Access to equity remains well below the EU average. The share of financially constrained firms is higher in Croatia than in the EU (around 12% against 6%) ([119]), while the increase in interest rates weighs on investment. Banking finance dominates, and access to loans is above the EU average ([120]). By contrast, access to equity, which is key to investment in and growth of young and innovative firms, is well below the EU average. In 2022, the EIF SME Access to Finance Index for equity was 0.09 in Croatia against 0.17 for the EU (see Table A12.1). This is partly due to the overly complex public equity market structures ([121]). Croatia's RRP contains a number of measures to improve access to finance and strengthen the capital markets, which are expected to produce results in the coming years.

Payment gaps in the public sector-to-business sector are increasing. Late payments may increase the risk of bankruptcy, especially for SMEs. Payment gaps have increased in the public sector-to-business sector since 2021 and are now slightly above the EU average ([122]) (see Table A12.1). In addition, the timeliness of payments, especially in sectors with a significant number of SMEs such as construction, transport and distribution, and retail trade, remains unsatisfactory ([123]).

([112])European Investment Bank, EIB survey - Croatia overview, 2023.

([113])European Construction Sector Observatory

([114])Friedrich Ebert Stiftung, Industrial Policy for a new growth model, Country briefing Croatia, 2023.

([115])European Commission, Digital Decade report – Croatia.

([116])European Commission, 2023 European Innovation Scoreboard

([117])European Patent Office

([118])OECD Economic Surveys Croatia, 9/2023.

([119])European Investment Bank, EIB investment survey 2023.

([120])European Investment fund, SME Access to Finance Index – Loans.

([121])OECD Economic Surveys: Croatia, 9/2023, p. 12 and 86.

([122])https://www.dnb.com/en-ch/knowledge/study/payment-study-2023-download3.html

([123])Dun & Bradstreet Payment study 2022

Regulations and administrative burden weigh on competition and dynamism. As stressed by the OECD ([124]), Croatia enjoys a dynamic economy with internationally competitive and young firms. However, overall performance in labour productivity growth has been limited. One of the reasons is that the share of low-productivity firms remains high, while productive firms often struggle to grow. This likely reflects a business environment that weakens competitive pressures between firms. Barriers to competition are a key issue in services ([125]), in particular restrictions in regulated professions. Even where the design of the regulation framework is sound, regulations are often burdensome in practice and the measures to reduce this burden are sometimes compromised by shortages of experts to implement the reforms. Croatia ranks below the EU-27 average on government effectiveness ([126]) (see Annex 13). Further reducing the burden of lengthy and unpredictable regulatory procedures and increasing administrative efficiency will be key to boosting productivity growth ([127]).

Despite recent reforms, several professions face higher regulatory restrictions than their EU counterparts ([128]). This is particularly acute for lawyers, architects, tax advisers, engineers and tourist guides. Among other factors, competitiveness across engineering professions is restricted by a combination of costly mandatory professional chamber membership (including an obligation to register separately for each specialisation), the sitting of an additional professional exam after graduation, the setting of recommended prices and significant fragmentation of exclusive rights. Lawyers are subject to legal form, incompatibility rules and multidisciplinary restrictions, all of which could affect the potential of this sector to innovate and roll out digital solutions and new business models. Croatia adopted amendments to the Lawyers Act in 2022 to remove some barriers, but barriers remain. In relation to tourist guides, diverging regional regulations seem to hinder access to the market and affect both national service providers and the cross-border provision of services. To lift regulatory barriers in services, the RRP puts forward ambitious reforms for the liberalisation of the service markets ([129]). Croatia has to complete the reforms by the end of 2024.

Croatia is making some progress in reducing the regulatory burden. Reforms under the RRP tackle challenges in digital government, public service delivery, policymaking, territorial fragmentation and the civil service. These efforts are already showing results. The share of firms that consider restrictive business regulations a major obstacle to long-term investments has decreased considerably since 2018 (see Table A12.1). However, it remains above the EU average (29.0% compared to EU average of 22.2%) ([130]).

Croatia is simplifying permitting procedures for the deployment of renewable energy. Investment in the deployment of renewable energy infrastructure has been hampered by long administrative authorisation procedures, in particular for onshore wind and ground-mounted solar photovoltaic systems ([131]). As part of the Single Market Enforcement Taskforce, Croatia confirmed several barriers to permitting and is working on removing them. They include a confusing and complex legal framework, lack of process overviews, unclear process steps and shortages of skilled staff in the relevant authorities. In 2022, as part of its RRP ([132]), Croatia removed several administrative barriers that were restricting renewable energy source uptake by self-consumers (see Annex 7). However, Croatia reported that it has no plans so far to introduce a one-stop shop for renewable energy permitting.

Indicators in the Single Market Scoreboard show a relatively good performance. Croatia's average delay in transposing directives was 16.8 months in 2023 ([133]). This delay is shorter than the EU average (18.3 months), but has increased since 2021, when it was only 10.1 months. On a more positive note, Croatia's transposition deficit and

([124])OECD Economic Surveys: Croatia, 9/2023.

([125])World Bank, Croatia Country Economic Memorandum, 2022.

([126])Worldwide Governance Indicators, 2022.

([127])OECD Economic Surveys: Croatia, 9/2023.

([128])Communication on updating the reform recommendations for regulation in professional services, COM(2021)385.

([129])Reform C1.1.1. R2 of Croatia's Recovery and Resilience Plan

([130])European Investment Bank, EIB survey - Croatia overview, 2023.

([131])European Commission, Report on technical support for RES policy, 4/2023.

([132])Milestone 37 of Croatia's Recovery and Resilience Plan

([133])European Commission, Single Market Scoreboard – Croatia

conformity deficit are in line with the EU average and are improving (see Table A12.1). On infringements, Croatia is performing well. The number of pending cases is below the average and the duration of infringement proceedings is the shortest in the EU. Croatia solved 93.3% of the 15 SOLVIT cases that it handled as lead centre, above the EU average of 88.3%. However, staffing remains an issue.

Croatia's firms benefit more and more from the opportunities offered by the single market. For the last few years, Croatia's trade integration into the single market has increased and is now around the EU average (see Table A12.1). The share of SMEs that have done electronic sales to the rest of the world is far above the EU average (8.1% vs 4.9%) ([134]). The adoption of the euro in 2023 has further facilitated trade with customers and suppliers from other euro countries.

Croatia is in the intermediate stage of implementing the components needed to connect to the 'Once-Only' Technical System (OOTS) ([135]). As part of the Single Digital Gateway Regulation ([136]), the system will enable the automated cross-border exchange of evidence between competent authorities, improving online access to information, administrative procedures and assistance within the EU. The onboarding of Croatian competent authorities is crucial for the system to function smoothly and to reduce administrative burden.

([134])European Commission, SME Performance review 2022/2023 – Croatia, 6/2023.

([135])Implementing Regulation (EU) 2022/1463

([136])Regulation (EU) 2018/1724

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

Croatia							
POLICY AREA	**INDICATOR NAME**	**2019**	**2020**	**2021**	**2022**	**2023**	**EU27 average***
HEADLINE INDICATORS							
Economic Structure	Net Private investment, level of private capital stock, net of depreciation, % GDP[1]	3,6	2	3,1	4,2	2,7	**3,8**
	Net Public investment, level of public capital stock, net of depreciation, % GDP[1]	0,9	1,8	1,2	0,6	2,2	**1,2**
	Real labour productivity per person in industry (% yoy)[2]	-2	-5,5	10,6	1,3	-	**-1,24**
Cost competitiveness	Nominal unit labour cost in industry (% yoy)[2]	0,4	3,6	-4,7	8,8	:	**9,83**
SINGLE MARKET							
Single Market integration	EU Trade integration, % (Average intra-EU imports + average intra EU exports)/GDP[2]	38,0	34,6	38,6	45,0	41,4	**42,9**
Compliance	Transposition deficit, % of all directives not transposed[3]	0,2	1,2	1,4	1,1	0,6	**0,7**
	Conformity deficit, % of all directives transposed incorrectly[3]	1,9	1,8	1,4	1,2	1,1	**1,1**
	SOLVIT, % resolution rate per country[3]	89,5	100,0	100,0	92,9	93,0	**88,3**
	Number of pending infringement proceedings[3]	18	26	26	22	22	**25,9**
Restrictions	EEA Services Trade Restrictiveness Index[4]	-	-	-	-	-	**0,05**
Public procurement	Single bids, % of total contractors[3]	17	25	21	23	22	**28,6**
	Direct Awards, %[3]	8	7	6	5	5	**8,1**
ECONOMIC STRUCTURE							
Shortages	Material Shortage (industry), firms facing constraints, %[5]	4,3	8,4	13,3	24,8	12,2	**17,2**
	Labour Shortage using survey data (industry), firms facing constraints, %[5]	29,8	13,5	17,9	34,0	39,0	**23,3**
	Vacancy rate, % of vacant posts to all available ones (vacant + occupied)[2]	1,425	1,0	1,5	1,6	1,5	**2,5**
Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials[6]	0,13	0,15	0,14	0,15	0,16	**0,22**
	Installed renewables electricity capacity, % of total electricity produced[2]	62,7	66,9	67,5	70,8	0,0	**50**
BUSINESS ENVIRONMENT - SMEs							
Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle[7]	45,4	38,8	38,7	27,0	29,0	**22,2**
Business demography	Bankruptcies, Index (2015=100)[2]	201,9	145,0	197,7	215,4	167,2	**105,6**
	Business registrations, Index (2015=100)[2]	153,2	114,3	140,0	153,9	170,5	**120,2**
Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment[8]	-	16	12	13	13	**15**
	Payment gap - public sector, difference in days between offered and actual payment[8]	-	24	10	15	17	**16**
	Share of SMEs experiencing late payments in past 6 months, %[9]	50,2	50,7	48,0	39,5	32,6	**48,7**
Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1[10]	0,57	0,50	0,43	0,68	-	**0,49**
	EIF Access to finance index - Equity, Composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1[10]	0,09	0,05	0,12	0,09	-	**0,17**

Source: (1) AMECO, (2) Eurostat, (3) Single Market scoreboard, (5) ECFIN BCS, (6) COMEXT and Commission calculations, (7) EIB Investment Survey, (8) Intrum Payment Report, (9) SAFE survey, (10) EIF SME Access to Finance Index

* Own Commission calculations for the EU27 average

Croatia's public administration is essential for the economy's competitiveness by, in particular, shaping the conditions for the twin transitions and creating a favourable business environment. Overall, Croatia's perception of government effectiveness ranks below the EU average ([137]). Reforms under the recovery and resilience plan (RRP) tackle challenges in digital government, public service delivery, policymaking, territorial fragmentation and the civil service.

Policymaking in Croatia faces certain challenges. There are no formal mechanisms to systematically incorporate evidence into policy decisions, leading to limited transparency and coordination between the government and knowledge generating organisations. The new legislative framework drafted under the RRP aims to unify and improve the better regulation policy instruments, in particular legislative activity planning, regulatory impact assessment, evaluations of regulations and public consultations ([138]). The adoption of laws through emergency procedures rose in 2022: 53.7% of legislation was fast-tracked, weakening the principles of transparency, accountability and public participation ([139]).

Croatia scores below the EU average on satisfaction with the provision of public services, with only 42% of people surveyed giving a positive rating ([140]). One of the possible reasons is the organisational and territorial fragmentation in central and local government. The ongoing RRP reform addressing local government fragmentation has had limited results. Certain municipalities have shown interest in jointly delivering selected services. However, inter-municipal cooperation is currently restricted to the joint provision of administrative services with no collaborative coordination of municipal policies. Additionally, out of the 428 municipalities, less than half have shown interest in such "functional merging" despite incentives and the legal possibility introduced in 2015. Moreover, the interest in actual mergers, i.e. not just mergers of functions but rather two municipalities merging into one, remains limited.

Croatia has been implementing a range of measures to tackle the civil services' long-standing challenges. New wage and work models have been brought in under the RRP. The new legislative framework sets out a reward system based on performance and introduces a hybrid working model. An amended legislative framework for a centralised system to select civil servants aims to increase the transparency of public sector employment and facilitate staff mobility. There is still a clear gap in the participation of civil servants in adult learning: 10.3% in 2022 in Croatia vs the EU average of 17.9% (Table A13.1 and Graph A13.1).

Significant efficiency issues persist in the justice system ([141]). The backlog and length of proceedings remain among the highest in the EU, despite the disposition time in civil and litigious cases at first instance falling to 559 days from 655 in 2021. The use of electronic communication tools has grown, and the level of remuneration increased for judges, state attorneys and court staff, while legislation to set objective remuneration criteria is expected. On judicial independence, no systemic deficiencies have been reported.

Wide-ranging reforms, accelerated through the RRP, have the potential to greatly improve the public investment management system ([142]). A new long-term strategy, the national development strategy to 2030, was launched in 2017 and accompanied by a clear monitoring process. In January 2024, a new standardised methodology for project assessments for all budgetary and extra-budgetary users entered into force and is monitored centrally by the Ministry of Finance. Implementation has also been strengthened by

([137])Worldwide Governance Indicators, 2022.

([138])European Commission, European Public Administration Country Knowledge: Evidence-informed policymaking, Publications Office of the EU, 2024 (forthcoming).

([139])European Commission, European Public Administration Country Knowledge: Country Brief 2023 Croatia, Publications Office of the EU, 2024 (forthcoming).

([140])European Commission, Standard Eurobarometer 99, 2023.

([141])For a more detailed analysis of the performance of the Croatian justice system, see the 2024 EU Justice Scoreboard (forthcoming) and the country chapter on Croatia in the Commission's 2024 Rule of Law Report (forthcoming).

([142])Belu Manescu, C. (2022), 'New evidence on the quality of public investment Management in the EU', European Economy Discussion Paper No 177, European Commission.

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

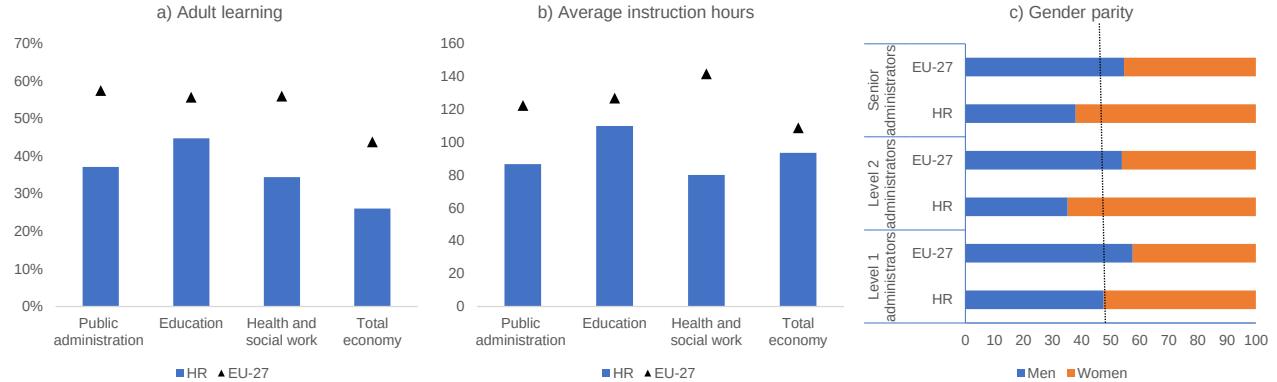
HR	Indicator ([1])	2019	2020	2021	2022	2023	EU-27([2])
E-government and open government data							
1	Share of internet users within the last year that used a public authority website or app	n/a	n/a	n/a	68.7	88.5	75.0
2	E-government benchmark overall score ([3])	n/a	60.6	60.6	63.2	66.9	75.8
3	Open data and portal maturity index	0.7	0.8	0.8	0.7	0.6	0.8
Educational attainment level, adult learning, gender parity and ageing							
4	Share of public administration employees with higher education (levels 5-8, %)	49.7	49.3	49.9 (b)	47.8	50.0 (b)	52.9
5	Participation rate of public administration employees in adult learning (%)	3.4 (u)	3.7 (u)	8.0 (bu)	5.5 (u)	10.3 (b)	17.9
6	Gender parity in senior civil service positions ([4])	9.4	14.2	15.2	18.4	24.0	9.2
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	1.7	1.8	1.6 (b)	1.5	1.6	1.5
Public financial management							
8	Medium-term budgetary framework index	0.5	0.5	0.6	0.7	n/a	0.7
9	Strength of fiscal rules index	1.2	1.2	1.2	1.2	n/a	1.4
Evidence-based policy making							
10	Regulatory governance	n/a	n/a	1.75	n/a	n/a	1.7

([1]) High values denote a good performance, except for indicator # 6. ([2]) 2023 value. If unavailable, the latest value available is shown. ([3]) Measures the user centricity (including for cross-border services) and transparency of digital public services as well as the existence of key enablers for the provision of those services. ([4]) Defined as the absolute value of the difference between the percentage of men and women in senior civil service positions.
Flags: (b) break in time series; (d) definition differs; (u) low reliability.
Source: E-government activities of individuals via websites, 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).

new reporting guidelines for line ministries and a digital monitoring system shared by all line ministries.

The overall maturity of e-government services is still below the EU average but is improving (Table A13.1**).** The Digital Croatia strategy sets the framework for investments in the digital transition until 2032. Coordination is still weak, and no criteria for prioritisation, selection, implementation and evaluation of IT/digital projects have been set.

Graph A13.1: **Adult education: a) participation rate in job-related employer-sponsored education and training (left side); b) mean instruction hours spent by participants in education and training by sector (centre); c) share of women and men in management positions in the public administration (right side)**



Source: Eurostat, 2022 Adult Education Survey (charts a and b); European Institute for Gender Equality (chart c).

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 Croatia's progress in implementing the Pillar's 20 principles and the EU's headline and national targets for 2030 on employment, skills and poverty reduction.

Table A14.1:**Social scoreboard for Croatia**

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Adult participation in learning (during the last 12 months, excl. guided on the job training, % of the population aged 25-64, 2022)	23.3
	Early leavers from education and training (% of the population aged 18-24, 2023)	2
	Share of individuals who have basic or above basic overall digital skills (% of the population aged 16-74, 2023)	59.0
	Young people not in employment, education or training (% of the population aged 15-29, 2023)	11.8
	Gender employment gap (percentage points, population aged 20-64, 2023)	7.8
	Income quintile ratio (S80/S20, 2022)	4.6
Dynamic labour markets and fair working conditions	Employment rate (% of the population aged 20-64, 2023)	70.7
	Unemployment rate (% of the active population aged 15-74, 2023)	6.1
	Long term unemployment (% of the active population aged 15-74, 2023)	2
	Gross disposable household income (GDHI) per capita growth (index, 2008=100, 2022)	126.9
Social protection and inclusion	At risk of poverty or social exclusion (AROPE) rate (% of the total population, 2022)	19.9
	At risk of poverty or social exclusion (AROPE) rate for children (% of the population aged 0-17, 2022)	18.1
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2022)	20.35
	Disability employment gap (percentage points, population aged 20-64, 2022)	36
	Housing cost overburden (% of the total population, 2022)	3.8
	Children aged less than 3 years in formal childcare (% of the under 3-years-old population, 2022)	27.5
	Self-reported unmet need for medical care (% of the population aged 16+, 2022)	1.3

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

(1) Update of 27 October 2023. Members States are categorised based on the Social Scoreboard according to a methodology agreed with the EMCO and SPC Committees. Please consult the Annex of the Joint Employment Report 2024 for details on the methodology.
Source: Eurostat.

Croatia's labour market continues improving, albeit with persistent skills mismatches, labour shortages and employment challenges for disadvantaged groups. The employment rate in Croatia reached 70.7% in 2023, but remains significantly below the EU average of 75.3%. In October 2023, reported labour shortages in Croatia were near double the EU average in construction (60% vs 28%) and industry (39% vs 22%) and also higher in services (37% vs 30%). To address the persistent labour shortages in some sectors Croatia is tapping the workforce from outside the EU, with the number of work permits issued doubling since 2020. With improved labour market legislation creating a better legal framework, and with new active labour market policies (ALMPs), Croatia aims to draw inactivate people into the labour market and encourage the transition from undeclared to declared work.

Significant challenges exist for women, older and low-skilled workers, persons with disabilities and young people not in employment, education or training (NEETs) to get access to good quality jobs. The disability employment gap in 2023 was 39.2 percentage points (pps), (increasing from 36 pps in 2022, which was already above the EU average of 21.4 pps) and has increased by 10.5 pps since 2021. Women's employment rate (at 66.8% in 2023) is considerably below the EU average (70.2%). The employment rate of low-skilled workers (39.2% in 2023) lags considerably behind that of medium-skilled and high-skilled workers (69% and 86.6% respectively). The employment rate of older workers stood at 51.7% in 2023, considerably lower than in the EU (63.9%). The rate of young NEETs (aged 15-29) remains slightly above the EU average (11.8% vs 11.2% in 2023) and includes a growing number of inactive young people. This highlights the importance of efforts to better target ALMPs to achieve the national employment rate target of 75% by 2030.

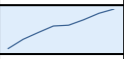
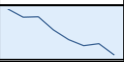
Investments and reforms in education and training at different levels aim to improve the supply of skilled workers and boost employment. Participation in formal childcare for children below the age of three decreased from 33.3% in 2021 to 29.6% in 2023, (with a slight increase from 27.5% in 2022 vs 35.9% EU average). Investments under the RRP and cohesion policy could increase the enrolment of children in formal childcare, although concerns remain about the shortage of early childhood education and care teachers. Croatia continues modernising vocational training and education, aligning programmes with labour market needs. Work-based learning is still limited, with efforts to increase it. The RRP, the ESF+ and the European Regional Development Fund (ERDF) provide substantial investments in these areas. The ESF+ focuses on connecting curricula to labour market needs, increasing the offer and quality of vocational education and training, and supporting vulnerable students by providing teaching assistants.

Skills mismatches present a pressing challenge in the labour market, which is currently characterised by labour shortages. Croatia is investing in upskilling and reskilling under the RRP and the ESF+, including with a view to creating Individual Learning Accounts (ILA). So far, the scope of adult learning is very limited, with only 23.3% of Croatian adults participating in learning in the previous 12 months, against 39.5% in the EU in 2022. Together with demographic and other challenges, this also undermines Croatia's potential to increase its economic competitiveness. Investments in ILA will need to be boosted to reach the national target of at least 55% of all adults participating in training every year by 2030 (from the baseline of 26.9% in 2016).

The impact of social transfers on poverty reduction remains low and continued to decrease. The impact stood at 20.9% in 2023 (showing a slight increase from 20.3% vs the EU average of 35.04% in 2022) and is also below the EU average in terms of reducing child poverty (33.2%). Despite recent reforms, the national minimum income scheme lacks the capacity to reduce poverty due to its limited coverage and the low cash value of the benefit. Likewise, unemployment benefits do not provide an adequate safety net for dismissed workers. The benefit receipt rate is very low for self-employed people and workers with temporary contracts. Pensions are low compared to work incomes; the aggregate replacement ratio was 36% against 58% in the EU in 2022.

There are still considerable gaps in the social protection system. The overall share of the population at risk of poverty or social exclusion (AROPE) in Croatia showed annual increases reaching 20.7% in 2023 (up from 19.9% in 2022 compared to the EU average of 21.6%). However, there is a substantially higher risk of old-age poverty (34.8% in 2023 and 32.4% in 2022 vs 17.3% EU 2022), especially in comparison to poverty in the working-age population in Croatia (14.5%). The AROPE rate for persons with disabilities increased in 2023 to 37.5% (from 35.3% in 2022) and it remains significantly higher than for persons without disabilities (a 22.6 pps gap in 2023, up from 21.5 pps in 2022).

Table A14.2:**Croatia's situation on 2030 employment, skills and poverty reduction targets**

Indicators	Latest data	Trend (2016-2023)	2030 target	EU target
Employment[1] (%)	70.7 (2023)		75	78
Adult learning[2] (%)	23.3 (2022)		55	60
Poverty reduction[3] (thousands)	-89 (2022)		-298	-15 000

(1) Adult Education Survey, special extraction: adults in learning in the past 12 months, special extraction excl. guided on-the-job training.
(2) Change in the number of persons at risk of poverty or social exclusion (AROPE), reference year 2019.
Source: Eurostat, DG EMPL

The availability and adequacy of social services, especially long-term care (LTC) is a concern given negative demographic trends. LTC is one of the least developed parts of Croatia's healthcare and social care system. It is of low quality, fragmented, highly institutionalised, understaffed and severely underfunded (only 0.5% of GDP against 1.7% EU average in 2022) ([143])). The number of formal LTC workers is very low, driven by non-competitive wages. This particularly affects Croatia's increasing population of older people who additionally have low-value pensions and high rates of poverty. Croatia is developing a national LTC strategic framework. The successful implementation of this future strategic framework will require significant stepping up of efforts to integrate social and health care, to ensure a qualified LTC workforce and speed up the deinstitutionalisation of these services.

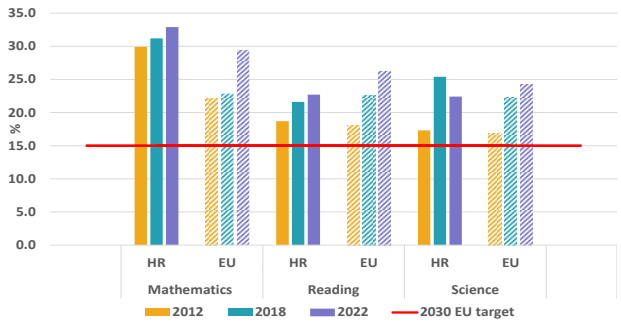
The deinstitutionalisation process faces challenges due to slow progress in developing non-residential services and social housing for organised living. The increasing demand for institutional care, especially for children, indicates shortcomings in the development of family- and community-based services and in ensuring the conditions for independent living, in line with the Social Welfare Act. ESF+ and ERDF investments contribute to reducing occupancy and to the eventual closure of long-stay residential institutions.

([143])European Commission and Economic Policy Committee, 2024, The 2024 Ageing Report – Economic and budgetary projections for the 27 EU Member States (2022-2070), Publications Office of the European Union, Luxembourg.

This Annex outlines the main challenges of Croatia's education and training system based on the 2023 Education and Training Monitor and the 2022 OECD Programme for International Student Assessment (PISA) results.

The high share of underperformers in mathematics and low share of top performers represent a risk for competitiveness. Results of the OECD's PISA 2022 show a relatively stable performance of students, despite the COVID pandemic disruptions. The rate of underperformance in mathematics is high (32.9% vs EU 29.5%) with one in three students underperforming, but is below the EU average in reading (22.7% vs EU 26.2%) and science (22.4% vs EU 24.2%). The share of top performers in all three skills is below the EU average (e.g. mathematics 5.9% vs EU 7.9%). Low results are probably related to the low instruction time and the shortage of qualified teachers in mathematics and physics. This may have a negative effect on competitiveness, innovation and upskilling. The results in science have improved: underachievement reduced by 2.9 pps and the share of top performers increased by 1.8 pps ([144]). At 2.8% in 2023, the rate of early leavers from education and training is the lowest in the EU.

Graph A15.1: **Underachievement rates by field, PISA 2012, 2018 and 2022**



Source: OECD (2023).

Reforms in education are continuing. Preparations for the transition to single-shift schools ([145]) and whole-day teaching are under way. Construction and reconstruction of necessary school infrastructure is financed by the national recovery and resilience plan (RRP) and the European Regional Development Fund, legislative changes needed for the reform have been made ([146]), and, in September 2023, 62 single-shift schools entered the pilot project that tests the new whole-day teaching model, planned to be extended to all schools from 2027-2028 ([147]). The pilot project includes professional development of teachers, professional associates and principals ([148]).

There are shortages of teachers in early childhood education and care (ECEC) and in physics and mathematics. According to the RRP, 5 658 additional ECEC teachers would be needed to achieve the EU-level target in participation by 2030 ([149]). Since May 2022, primary school teachers can be recruited with a requirement to complete a requalification programme at a higher education institution within 2 years ([150]). However, these programmes have not yet been established and the uptake of the measure is not monitored as ECEC is in the competence of local authorities. Lower salaries – only 80% of the salaries in primary education in 2021 ([151]) – and a high proportion of temporary contracts (19.7%) ([152]) reduce the attractiveness of the profession. Increasing its attractiveness and the number of ECEC teacher graduates would help reduce the shortages and maintain the quality of ECEC. About one sixth of mathematics and physics teachers are not qualified for the subjects they teach. This is currently being addressed by attractive

([144])OECD (2023), PISA 2022 Results (Volume I): The State of Learning and Equity in Education, PISA, OECD Publishing, Paris, https://www.oecd.org/publications/pisa-2022-results-volume-i-53f23881-en.htm.

([145])Schools in which teaching takes place in one shift.

([146])https://narodne-novine.nn.hr/clanci/sluzbeni/2023_12_156_2387.html

([147])https://mzo.gov.hr/javni-poziv-osnovnim-skolama-za-podnosenje-prijava-za-sudjelovanje-u-eksperimentalnom-programu-osnovna-skola-kao-cjelodnevna-skola-uravnotezen-pravedan-ucinkovit-i-odrziv-sustav-odgoja-i-obrazovanja/5407

([148])https://mzo.gov.hr/UserDocsImages//dokumenti/Obrazovanje/OsnovneSkole/Cjelodnevna-skola//Eksperimentalni-program-Osnovna-skola-kao-cjelodnevna-skola.pdf

([149])https://ec.europa.eu/info/sites/default/files/recovery_and_resilience_plan_for_croatia_hr.pdf

([150])https://narodne-novine.nn.hr/clanci/sluzbeni/2022_05_57_805.html

([151])https://podaci.dzs.hr/2022/en/29061.

([152])ed. Ivšić, I., Jaklin, K. (2020), Raditi u dječjim vrtićima: Rezultati istraživanja uvjeta rada u ranom i predškolskom odgoju i obrazovanju, Sindikat obrazovanja, medija i kulture Hrvatske (SOMK), Zagreb. http://idiprints.knjiznica.idi.hr/932/1/Raditi%20u%20dje%C4%8Djim%20vrti%C4%87ima.pdf

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

				2012		2018		2023	
Indicator			Target	Croatia	EU-27	Croatia	EU-27	Croatia	EU-27
[1]Participation in early childhood education (age 3+)			96%	67.6% [2013]	91.8% [2013]	76.3%	92.2%	77.8% [2021]	92.5% [2021,d]
[2]Low-achieving 15-year-olds in:		Reading	< 15%	18.7%	18.0%	21.6%	22.5%	22.7% [2022]	26.2% [2022]
		Mathematics	< 15%	29.9%	22.1%	31.2%	22.9%	32.9% [2022]	29.5% [2022]
		Science	< 15%	17.3%	16.8%	25.4%	22.3%	22.4% [2022]	24.2% [2022]
Early leavers from education and training (age 18-24)	[3]Total		< 9 %	5.1%	12.6%	3.3%	10.5%	2.0% [bu]	9.5%
	[3] By gender	Men		5.7%	14.5%	3.5% [u]	12.1%	2.8% [bu]	11.3%
		Women		4.4% [u]	10.6%	3.1% [u]	8.7%	1.2% [bu]	7.7%
	[4] By degree of urbanisation	Cities		4.4% [bu]	11.2%	1.5% [u]	9.4%	: [bu]	8.6%
		Rural areas		6.8% [b]	14.0%	4.7% [u]	11.0%	2.6% [bu]	9.9%
	[5] By country of birth	Native		5.1%	11.3%	3.3%	9.2%	1.9% [bu]	8.2%
		EU-born		: [u]	26.2%	: [u]	22.4%	: [bu]	21.0%
		Non EU-born		: [u]	30.1%	: [u]	23.0%	: [bu]	21.6%
[6]Socio-economic gap (percentage points)				29.6	:	26.9	29.5	32.0 [2022]	37.2 [2022]
[7]Exposure of VET graduates to work-based learning			≥ 60% (2025)	:	:	:	:	39.5%	64.5%
Tertiary educational attainment (age 25-34)	[8]Total		45%	23.6%	34.1%	35.4%	38.7%	38.7% [b]	43.1%
	[8] By gender	Men		18.0%	29.1%	28.3%	33.3%	28.8% [b]	37.6%
		Women		29.4%	39.2%	42.8%	44.2%	49.2% [b]	48.8%
	[9] By degree of urbanisation	Cities		32.8% [b]	43.5%	49.7%	49.0%	50.5% [b]	53.3%
		Rural areas		15.8% [b]	24.8%	26.0%	27.7%	29.8% [b]	31.7%
	[10] By country of birth	Native		23.7%	35.4%	36.2%	39.7%	38.5% [b]	44.2%
		EU-born		37.5% [u]	29.3%	50.1% [u]	36.7%	36.8% [bu]	40.2%
		Non EU-born		18.6% [u]	24.2%	22.8% [u]	31.0%	41.0% [b]	37.1%
[11]Participation in adult learning (age 25-64)			≥ 47% (2025)	:	:	26.9% [2016]	37.4% [2016]	23.3% [2022]	39.5% [2022]
[12]Share of school teachers (ISCED 1-3) who are 55 years or over				19.1% [2013]	22.7% [2013]	17.4%	23.8%	18.3% [2021]	24.5% [2021]

Notes: b = break in time series; d = definition differs; e = estimated; p = provisional; u = low reliability; : = data not available.
Source: 1,3,4,5,7,8,9,10,12=Eurostat; 11= Eurostat, Adult Education Survey; 2,6=OECD, PISA.

scholarships for science, technology, engineering and mathematics teachers' studies (see the 2023 Country Report).

Participation in ECEC is low and varies between regions. In 2021, it was 77.8% (vs EU 92.5%) for children older than 3 years. There are significant regional differences. In 2022, 55 municipalities had no ECEC facility, and the nearest one was 0.5-11.5 km away ([153]). According to the 2020 UNICEF study, 69% of children live in areas where tuition fees are not linked to household income, and 47% where even recipients of social assistance have to pay the full fees. UNICEF has developed a calculator for adjusting tuition fees to household income ([154]).

The state co-financing of ECEC should help reduce inequalities and improve participation. Since 1 October 2023, the government co-finances ECEC facilities' operating costs, based on the number of children in them and the development category of municipalities (rising to 50% for the least developed ones) ([155]). This funding can be used as an additional source of financing for availability, sustainability and affordability of ECEC.

Tertiary education attainment is low, with significant gender and regional gaps. In 2023, it stood at 38.7%, below the EU average of 43.1% ([156]). The gender gap in favour of women, at 20.4 pps, is one of the highest in the EU, and has nearly doubled since 2012 (from 11.4 pps). The rate in the City of Zagreb (54.6%) is more than twice that of the Pannonian region (26.1%) ([157]).

([153])https://app.powerbi.com/view?r=eyJrIjoiYTliOTk5MmYtMWE2Yi00N2NkLTg1YmUtNWIwMzA0ZjQzZDllIiwidCI6IjJjMTFjYmNjLWI3NjEtNDVkYi1hOWY1LTRhYzc3ZTk0ZTFkNCIsImMiOjh9

([154])https://www.unicef.org/croatia/kalkulator-za-izracun-ekonomske-cijene-vrtica

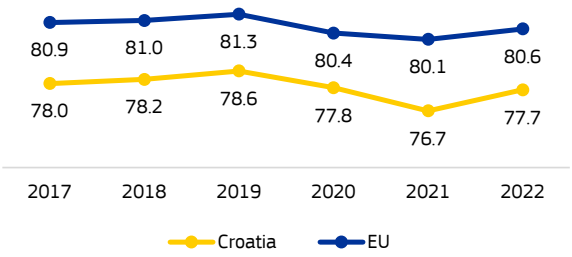
([155])https://narodne-novine.nn.hr/clanci/sluzbeni/full/2023_09_109_1562.html

([156])The national census data show a different trend with higher tertiary education attainment.

([157])Eurostat: edat_lfse_04.

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 Croatia.

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

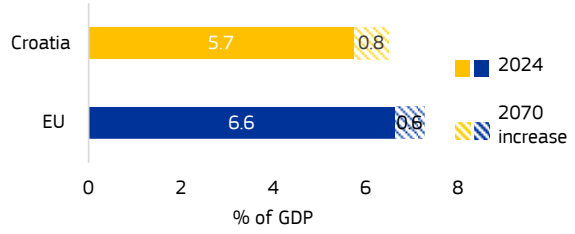


Source: Eurostat

Life expectancy in Croatia had been improving steadily before the COVID-19 pandemic but remains below the EU average. Life expectancy dropped by nearly 2 years in 2020 and 2021, mainly due to COVID-19. Despite an increase in mortality from COVID-19 from 2021 to 2022 ([158]), life expectancy partly rebounded, although not to pre-pandemic levels. Diseases of the circulatory system ('cardiovascular diseases') remained the leading cause of death in 2021, followed by cancer and COVID-19. Mortality rates from preventable and treatable causes in Croatia are far above the EU average. High smoking rates, poor nutrition, insufficient physical activity and the high and growing prevalence of obesity all contribute to preventable deaths from ischaemic heart disease, which, as the leading single cause of death, accounted for almost 1 in 7 deaths (13.0%) in 2021. The mortality rate from trachea, bronchus and lung cancer is the second highest in the EU. Historically weak anti-smoking policies in Croatia are partly responsible. Taxes on cigarettes are still too low, there is a lack of smoke-free places and not enough media campaigns against tobacco use. Comparatively high levels of unmet needs for medical care are reported in rural areas. This may be linked to the average travelling distance to healthcare facilities in these areas, exceeding the average distance reported for the EU. At the same time, there is a duplication of services, with some hospitals near to each other offering the same types of services.

Health spending relative to GDP in Croatia was below the EU average in 2021. In that year, Croatia's health spending per inhabitant was less than half the EU average. Outpatient care accounts for the largest share of total health expenditure, followed by inpatient care and spending on pharmaceuticals. In 2021, total healthcare spending increased to 8.1% of GDP from 7.7% of GDP in 2020. Public health spending as a proportion of total health spending is higher than the EU average (85.5% vs 81.1% in 2021). Based on the age profile of the Croatian population, public spending on health is projected to increase by 0.8 percentage points (pps) of GDP by 2070, compared to 0.6 pps for the EU overall (See Graph 16.2 and Annex 21).

Graph A16.2: **Projected increase in public expenditure healthcare over 2024-2070**



Baseline scenario
Source: European Commission / EPC (2024)

In 2021, spending on prevention in Croatia amounted to 4.4% of total spending on healthcare, compared to 6.0% for the EU overall. Between 2019 and 2021, spending on prevention increased by 49%, which is markedly lower than the increase for the EU overall (106%). Proportionally, budget shares for prevention across the EU increased most for emergency response, disease detection and immunisation programmes. In Croatia, the increase in spending on preventive care in 2021 is mainly due to the 342% increase in spending on immunisation programmes.

Croatia has had fewer doctors and nurses than many other EU countries. According to the definition that Eurostat previously used, in 2021 Croatia had 7.5 nurses per 1 000 population (EU average: 7.9) and 3.7 doctors per 1 000 population (EU average: 4.1). However, Eurostat changed the

([158])Based on data provided directly by Member States to the European Centre for Disease Prevention and Control, under the European Surveillance System.

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

	2018	2019	2020	2021	2022	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	133,1	128,3	130,8	139,7	NA	93.3 (2021)
Cancer mortality per 100 000 population	323,9	311,0	303,9	308,2	NA	235.4 (2021)
Current expenditure on health, % GDP	6,7	6,8	7,7	8,1	NA	10.9 (2021)
Public share of health expenditure, % of current health expenditure	82,0	81,9	84,2	85,5	NA	81.1 (2021)
Spending on prevention, % of current health expenditure	3,1	3,0	3,1	4,4	NA	6.0 (2021)
Available hospital beds per 100 000 population	561	566	566	568	NA	525 (2021)
Doctors per 1 000 population	3,4	3,5	3,5	3,7	NA	4.1 (2021)*
Nurses per 1 000 population	1,7	1,8	1,9	2,2	NA	7.9 (2021)
Total consumption of antibacterials for systemic use, daily defined dose per 1 000 inhabitants per day ***	18,8	18,8	15,7	18,2	20,2	19.4 (2022)

Note: The EU average is weighted for all indicators except for doctors and nurses per 1 000 population, for which the EU simple average is used. Doctors' density data refer to practising doctors in all countries except Greece, Portugal (licensed to practise) and Slovakia (professionally active). Nurses' density data refer to practising nurses in all countries except Ireland, France, Portugal, Slovakia (professionally active) and Greece (hospital only).

Source: Eurostat Database; except: * OECD, ** Joint Questionnaire on non-monetary healthcare statistics, *** ECDC, **** Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach.

definition of nurses in its data set, following the EU Directive 2005/36/EC on the recognition of professional qualifications i.e. "Nurses (EU recognised qualification)". As a result, the figure for Croatia fell to 2.2 nurses per 1 000 population. Furthermore, according to the Labour Force Survey, there was a 16% drop in the number of staff working in human health activities between the first quarter of 2020 and the second quarter of 2023. On a positive note, the number of nursing graduates per 100 000 population in Croatia is above the EU average, and the ratios of both doctors and nurses to population increased between 2013 and 2021, despite initial concerns about the effects of Croatia's EU accession in 2013.

Historical levels of investment in healthcare, measured as gross capital formation, are low in Croatia, but EU funds provide substantial support. Through its recovery and resilience plan (RRP), Croatia plans to invest EUR 353 million (3.5% of the RRP's total value) in healthcare. Croatia is proposing five reforms, related to: (i) efficiency, quality and accessibility of the health system; (ii) the care model for key health challenges; (iii) strategic management of human resources in health; (iv) the financial sustainability of the health system; and (v) e-health. A total of 26 investments are proposed (24 in the health component and 2 that are health-related but come from other components). Complementary investments worth more than EUR 226 million are also planned under the cohesion policy funds in 2021-2027. Investment will be directed towards development and renovation of health infrastructure, medical equipment, health mobile assets, digitalisation in healthcare, as well as measures to improve the accessibility, effectiveness and resilience of the health system ([159]).

In recent years, Croatia has undertaken reforms in a range of areas, but progress in implementation varies. The national development strategy for 2020-2030 may provide the required framework for these reforms. Announced reform measures include transferring hospital ownership from the regions to the central authorities, setting up excellence centres, making hospital accreditation and payments more efficient, and introducing modern management and procurement practices. These measures can change the way that hospitals operate and help them to avoid incurring debts which they can only pay off with financial support from the state budget. Quality monitoring systems are underdeveloped, but available indicators on quality of care suggest much scope for improvement by speeding up the pace of hospital and primary care reforms and improving quality of care.

([159])The EU cohesion policy data reflect the status as of 13 May 2024.

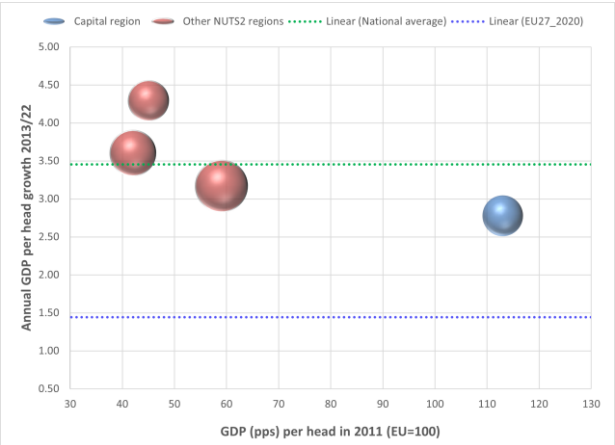
Annex 17 showcases the economic and social regional dynamics in Croatia. It provides an analysis of economic, social and territorial cohesion in the Croatian regions and assesses emerging investment and subnational reform needs to foster economic growth, social development and competitiveness in the country.

Overview of economic and social performance at regional level

Croatia is characterised by significant regional disparities. Important gaps in labour productivity, investment and employment persist between the capital region and other regions. In 2022, the capital region of Grad Zagreb had a GDP per capita (in PPS) of 134% of the EU-27 average, almost two times higher than Jadranska Hrvatska (70%), almost two and a half times higher than Sjeverna Hrvatska (59%), and almost three times higher than Panonska Hrvatska (46%).

Between 2013 and 2022, all Croatian regions demonstrated strong growth with a development rate well above the EU-27 average. Over the same period, the region of Sjeverna Hrvatska and the richest region, Grad Zagreb, have grown at a higher rate than the country average, while Panonska Hrvatska has grown at a lower rate. This translates into a process of internal convergence for the region of Sjeverna Hrvatska, accompanying catching-up with the EU-27. Nonetheless, the region of Panonska Hrvatska has been identified as falling in a development trap in 2003-2021.

Graph A17.1: **GDP per capita (2012) and GDP growth (2013-2022), Croatia**



Source: DG REGIO calculations based on JRC (ARDECO) and Eurostat data

The observed gap in GDP per capita levels between the capital region and the less developed regions is linked to disparities in labour productivity. In 2022, national labour productivity measured by gross value added (GVA) per worker in purchasing power standard (PPS) was 73% of the EU-27 average. The capital city region has the highest productivity at 87% of the EU-27 average while Jadranska Hrvatska is at 73%, Sjeverna Hrvatska at 68%, and Panonska Hrvatska at 58%.

Productivity disparities have fallen slightly since 2011, mainly due to the catching-up of Sjeverna Hrvatska. The context, however, is of a generally lower rate of productivity growth compared to the previous decade (Annex 12). Such slow productivity growth dynamics suggest that the process of convergence of GDP per capita at the national level with the EU-27 in recent years may not be supported by sufficient endogenous capacity to sustain competitiveness.

Human capital and specialisation in high-tech sectors are key productivity factors. At national level, in 2022, the share of the population aged 30-34 with a tertiary education was 8.6 percentage points lower than in the EU-27 (34.2% compared with 42.8%), again with significant territorial disparities: Grad Zagreb stood at 17 percentage points above the EU-27 average (60.1%) while Panonska Hrvatska was more than 20 percentage points below. In terms of the share of employment in high-tech sectors, Croatia was below the EU-27 average in 2022: 4.1% compared with 4.9%, in continuous reduction since 2019. The regional spread was again evident, ranging from 9.7% in Grad Zagreb, to just 1.8% in Jadranska Hrvatska, as a result of a structural specialisation in tourism, and 1.9% in Panonska Hrvatska.

Croatia is experiencing negative demographic dynamics, with marked differences between the capital region and the rest of the country. Between 2013 and 2021, the country as a whole experienced a significant decline in population, with an average annual decline rate of - 10.9 per 1 000 residents. In the short term, depopulation trends may lead to a shortage of human resources in certain sectors, especially in the least developed regions. In the longer term, protracted population decline may also affect the country's overall capacity to grow and even to cope with the inherent challenges of an ageing population.

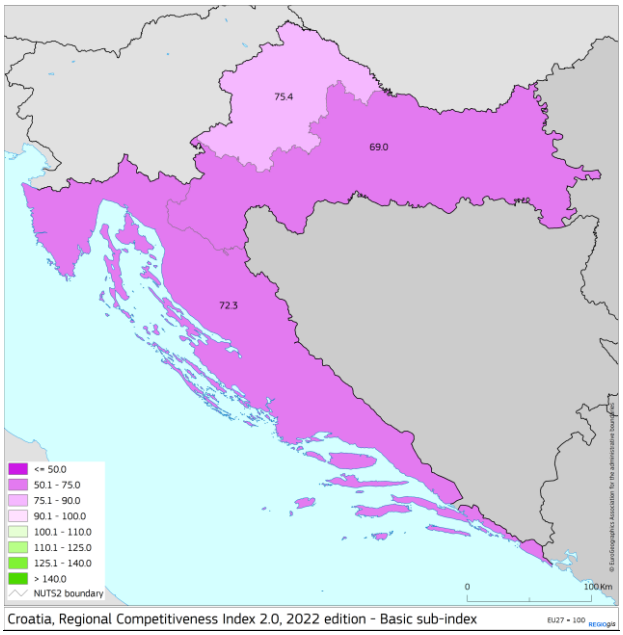
Table A17.1:**Selected indicators at regional level in Croatia**

NUTS region name	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	GDP per head growth	Population growth	At-risk-of-poverty or social exclusion	Employment rate, ages 20-64	R&D expenditure	Greenhouse Gas Emissions	EU Regional Competitiveness Index 2.0 - 2022 edition
	Index, EU27 = 100 (2022)	Index, EU27 = 100 (2022)	Average % change on the preceding year (2013-2022)	Average annual change per 1000 residents (2013/20-2021)	% of population (2022)	% of population aged 20-64 (2023)	% of GDP (2021)	Percent change per head (%) (1990-2022)	Index, EU27 = 100
European Union (27 MS)	100	100	1.44	1.9	21.6	75.3	2.3		100
Hrvatska	73	72.9	3.45	-10.9	19.9	70.7	1.2	-16.9	80.7
Panonska Hrvatska	46	58.3	3.6	-22.5	27.8	62.8	0.4	-12.2	71
Jadranska Hrvatska	70	73.2	3.17	-9.2	20.5	70.6	0.6	-17.9	77
Grad Zagreb	134	87.4	2.78	-27	11.2	78	2.2	-7	90
Sjeverna Hrvatska	59	67.9	4.29	-18.2	17.3	73.6	1.2	-8.5	90

Source: Eurostat, EDGAR database

Total R&D expenditure at national level in 2021 was below the EU-27 average (1.2% as against 2.3%) and again unevenly distributed across regions. It ranged from a mere 0.4% in Panonska Hrvatska and 0.6% in Jadranska Hrvatska, to 1.2% in Sjeverna Hrvatska and up to 2.2% in the capital city region. All these factors point consistently to a reduced ability of the country, and especially its less developed regions, to intercept growth trends in dynamic and advanced sectors. This is also well reflected in the Regional Competitiveness Index 2.0, which puts the country at 81% of the EU-27 average in 2022.

Map A17.1: **Regional Competitiveness Index 2.0, 2022 edition - Basic sub-index - Croatia**



Source: DG REGIO, JRC

Labour market conditions have generally improved after the COVID-19 pandemic. In 2023, Croatia had an unemployment rate of 6.1%, slightly above the EU-27 average. However, in Panonska Hrvatska the unemployment rate was close to 10%. The employment rate (20-64 age group) in 2023 ranged from levels close to the EU-27 average (of 75.3%) in Sjeverna Hrvatska (73.6%) and even above in Grad Zagreb (78%) to levels 5 to 15 percentage points below the EU-27 average in Jadranska Hrvatska (70.6%) and Panonska Hrvatska (62.8%). Two of the Croatian regions, Kontinentalna Hrvatska and Jadranska Hrvatska, can be identified as having recently fallen into a 'talent development trap'.

Investment and subnational reform needs ahead

Continuous effort in development of administrative capacity at national, regional and local levels is required. In particular, regional and local authorities should not only have adequate absorption capacity, but also play a key role in addressing key emerging investment needs and making full use of funding instruments. This is of utmost relevance, given that significant parts of the 2021-2027 cohesion policy programmes and the recovery and resilience plan will be delivered at regional and local level. Furthermore, efforts are needed at all levels to ensure that public authorities become a more attractive employer and are able to attract and retain qualified staff.

Access to affordable housing is a growing challenge in Croatia. Rising house prices, rentals and energy costs absorb an increasing share of household income, and entry into the housing market is increasingly difficult, especially for first time buyers. An ongoing subsidy scheme, started in 2017 and aimed at first time buyers, has contributed to price increases, rather than alleviating the situation. More effective

management of state-owned real estate could lead to transformation of these assets into affordable housing solutions, improving the overall prosperity of local communities. Lack of affordable housing also hinders urban development and balanced improvement of socioeconomic conditions across regions. To tackle this challenge effectively, a strategic and comprehensive approach is essential at national and local levels, also addressing energy poverty challenges.

Research and development activities are largely concentrated in the capital region of Zagreb. It would therefore be beneficial to further regionalise support with aim of increasing public-private collaboration, in turn strengthening technology transfer capacity and share of innovative SMEs in the market. Efforts to further enhance regional research and development ecosystems need to be continued and closely monitored.

There are continuing challenges in relation to clean energy and climate transitions and the establishment of (renewable) energy communities, despite the existing legal framework in place. In this respect, further promoting the creation of such energy communities and supporting people's participation at local level in the context of clean energy transition, would be crucial for achieving decentralisation of energy production.

Croatia could benefit from facilitating investments in net-zero technologies manufacturing. Croatia has shown a comparative advantage in low carbon technology products. It could benefit from the opportunities of the Strategic Technology for Europe Platform by further strengthening the development of the necessary skills, technologies, infrastructures and by stimulating the involvement in new strategic value chains, such as net-zero industry manufacturing and decarbonisation of energy-intensive industries.

Collection and management of waste at local level with affordable prices remains a key challenge for Croatia, combined with difficulties in achieving full alignment with the Waste Framework Directive and the Packaging Waste Directive at national level. Among other efforts, raising the population's awareness could lead to increasing the levels of recycling of solid waste. The policy response should not only focus on strengthening the sector's performance at strategic level, but also on increasing local authorities' capacity to implement investments in separation, collection, treatment of waste and on investing more into Croatia's transition to circular economy along the entire life cycle of products.

There is a need to address bottlenecks to investment at subnational level, in order to facilitate investments and reforms identified in the recovery and resilience plan. The key element of is to strengthen the role of regional and local administrations in the preparation and implementation of subnational strategies and investment programmes. This could be achieved by introducing or strengthening more innovative bottom-up mechanisms of participation. Some actions that could help achieve this objective.

Continued capacity building to ensure better implementation of existing territorial tools (e.g. Integrated Territorial Investments (ITIs), national tools for islands) in line with the principles of integrated territorial development and partnership. Introduction of new territorial tools (e.g. Community Led Local Development (CLLD) in cohesion policy programmes), or different models of using existing tools (e.g. ITI for different types of territories) in order to more precisely respond to challenges of specific territories.

Strengthening the role of county development agencies as regional coordinators that provide expert assistance in the preparation and implementation of cohesion policy investments to regional and local beneficiaries. This could be achieved through targeted recruitment and capacity building efforts, combined with assigning regional coordinators additional responsibilities in relation to gathering territorial inputs for cohesion policy programming and managing the implementation of territorial instruments. The important role that regional coordinators perform in the programming and implementation of the Just Transition Fund in Croatia demonstrates the relevance of active involvement of county-level administrations. In the longer term, these efforts should build on existing positive examples and lead to an even stronger territorial approach to programming of regional development investments.

The Croatian banking sector is highly concentrated and predominantly foreign-owned. Total banking-sector assets were equivalent to 106.1% of GDP in 2023. The five largest banks in Croatia account for 82.7% of total banking-sector assets. The foreign-owned banks account for around 89% of total banking-sector assets. Croatian capital markets remain less well developed than the EU average, but reforms are underway. Croatia's stock market capitalisation was equivalent to 27.3% of GDP in 2022 (EU average: 65.6%). The national recovery and resilience plan includes reforms to diversify capital markets and improve the availability of alternative finance. In 2019, the Croatian Financial Services Supervisory Agency (HANFA) set up a regulatory innovation hub to encourage financial innovation.

The Croatian banking sector remains profitable and resilient. Banking-sector profitability remained high in Q3-2023, with return on equity of 17.9% (EU average: 9.9%), mainly spurred by both growing interest margins and the release of provisions for credit losses built up in recent years during the uncertainty over the economic effect of the pandemic. Croatian banks remain well capitalised. The capital adequacy ratio was 21.7% in Q3-2023 (EU average: 19.6%), underlining the robustness of the banking sector, with a common equity tier 1 ratio of 21.0% in Q3-2023, well above the EU average (16.1%). There is a significant amount of liquidity in the banking system, as the liquidity coverage ratio was 235.4% in Q3-2023. To further strengthen the resilience of credit institutions, the Croatian Central Bank (HNB) increased the countercyclical capital buffer rate applicable to the risk exposure of local banks from 0.5% to 1% as of 31 December 2023, and announced a further increase to 1.5% as of 30 June 2024. The accession to the euro area on 1 January 2023 greatly reduced currency risk and mitigated the possible effects of increases in interest rates due to growing inflation.

Croatian banks have continued to reduce their non-performing loans (NPLs). The NPL ratio decreased further to 2.5% in Q3-2023, the lowest level since 2015 (EU average: 1.8%). Asset quality has improved for both corporates and households. Similarly, the NPL coverage ratio was 68.6% in Q3-2023 (EU average: 43.7%), which reflects banks' ability to absorb any future losses. However, defaults may increase in the future, as the rise in interest rates and the inflation-driven erosion of disposable income are likely to negatively affect the debt-servicing capacity of borrowers.

Household lending has continued to rise, while corporate lending has remained subdued. Lending to non-financial corporations slowed down to an annual rate of growth of 6.7% in December 2023, a major drop from the same month the year before (20.9%), when growth was likely boosted by market optimism related to the adoption of the euro in 2023. Lending to households was up 9.5% year-on-year in December 2023, with the bulk of growth coming from mortgage loans, reflecting a new round of government subsidies ([160]).

In December 2021, the European Systemic Risk Board (ESRB) ([161]) issued a warning to Croatia on medium-term vulnerabilities in its residential real-estate market as being a potential risk to the country's financial stability. The ESRB considered the main vulnerabilities to be: (i) signs of house-price overvaluation; (ii) elevated house-price growth; (iii) high rates of growth in mortgage credit; and (iv) signs of a loosening in mortgage lending standards. In its February 2024 follow-up report, the ESRB assessed that the current policy measures were partially appropriate and partially sufficient. The ESRB recommended that Croatia monitor the vulnerabilities and activation or tightening of borrower-based measures, and also recommended structural changes to mortgage loans and the residential real-estate sector (by addressing the lack of adequate housing supply, and government subsidies for mortgage loans) ([162]).

Croatian real estate poses a risk to financial stability due to continuous price increases

([160])Hrvatska Narodna Banka, November 2023, *Bulletin 287*, HNB.hr

([161])European Systemic Risk Board, February 2022, ESRB.europa.eu

([162])European Systemic Risk Board, February 2024, ESRB.europa.eu

Table A18.1:**Financial Soundness Indicators**

	2017	2018	2019	2020	2021	2022	2023	EU	Median
Total assets of the banking sector (% of GDP)	115,1	112,0	107,4	127,2	118,3	115,4	106,1	257,0	184,6
Share (total assets) of the five largest banks (%)	72,8	79,4	79,8	80,5	81,2	82,7	-	-	69,6
Share (total assets) of domestic credit institutions (%)[1]	9,2	9,4	8,9	8,9	8,9	10,3	10,6	-	62,9
NFC credit growth (year-on-year % change)	3,7	2,0	4,6	6,6	1,8	20,8	6,3	-	2,4
HH credit growth (year-on-year % change)	3,7	5,6	7,7	2,6	4,6	5,7	9,5	-	1,4
Financial soundness indicators:[1]									
- non-performing loans (% of total loans)	8,8	7,3	5,2	5,3	4,2	3,0	2,5	1,8	1,8
- capital adequacy ratio (%)	21,4	21,1	22,5	23,2	24,4	22,8	21,7	19,6	20,1
- return on equity (%)[2]	5,9	8,8	9,1	4,7	7,7	9,4	17,9	9,9	13,2
Cost-to-income ratio (%)[1]	52,1	50,7	50,3	51,5	51,2	52,8	39,5	52,8	44,9
Loan-to-deposit ratio (%)[1]	82,1	82,1	82,3	78,8	75,4	69,1	73,5	93,3	80,2
Central bank liquidity as % of liabilities	0,4	0,6	0,5	1,2	0,7	0,6	0,6	-	0,7
Private sector debt (% of GDP)	96,1	92,3	88,4	97,2	86,8	79,3	-	133,0	118,4
Long-term interest rate spread versus Bund (basis points)	245,0	177,6	154,0	134,4	82,1	155,3	136,2	107,7	104,2
Market funding ratio (%)	53,7	53,9	54,9	53,6	54,1	48,7	-	50,8	39,8
Green bonds outstanding to all bonds (%)[3]	-	-	-	-	-	-	-	4,0	2,7

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

(1) Last data: Q3 2023.
(2) Data is annualized.
(3) Data available for EA countries only, EU average refers to EA area.
Source: ECB, Eurostat.

and growth in mortgage lending. House-price growth was 10.9% in Q3-2023 (year-on-year) ([163]), spurred by excess liquidity in the banking system, real-estate purchases by foreigners, and government home-subsidy programmes. House prices still increased more quickly than income year-on-year, further reducing the already low affordability of housing. The number of purchase and sale transactions of residential real estate declined in 2023 compared to the previous year.

Household indebtedness has slightly dropped. According to Eurostat, household debt dropped from 34% of GDP in 2021 to 30.7% of GDP in 2022 ([164]). This debt is mainly composed of mortgage loans, and is currently on a downward path, mitigating risks. There is a relatively high share of loans on fixed interest rates, while there is a binding legal limit to variable interest rates on housing loans. Government subsidy programmes for new housing loans reduce between 30-50% of eligible borrowers' debt service costs.

Croatia has also made progress in anti-money laundering (AML) as part of the commitments it made when accessing the Exchange Rate Mechanism II and adopting the euro. Croatia underwent an assessment of the effectiveness of its AML/CFT framework against international standards by the Financial Action Task Force in June 2023, which resulted in recommended action-plan items that it is currently addressing.

Croatia's insurance sector is relatively small and non-life oriented. The total assets of all insurers are equivalent to 8.7% of GDP, which is relatively low (EU average: 56.1%). The sectoral solvency ratio was 229% in September 2023 ([165]). In recent years, the insurance sector has been characterised by a trend in which there has been a decrease in the share of premium revenues accounted for by life insurance and an increase in the share accounted for by non-life insurance. This is due to the negative market trend for life insurance in the recent period and a high share of mandatory insurance for motor-vehicle liability that covers almost a third of the total insurance premiums. Furthermore, the EIOPA's dashboard on the insurance protection gap for natural catastrophes assessed that Croatia is the European country that has the third-highest aggregated insurance protection gap score for natural catastrophes (in particular for floods, earthquakes, and wildfires).

([163])Eurostat

([164])Eurostat

([165])HANFA, November 2023, Hanfa.hr

This annex provides an indicator-based overview of Croatia's tax system. It includes information on the tax structure (the types of tax that Croatia 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.

Croatia's tax mix is relatively favourable for growth and jobs. Total tax revenues were 37% of GDP in 2022, almost unchanged from 36.7% in 2021, and slightly below the EU aggregate of 40.2%. Labour taxes, which can weigh on employment, made up 12.6% of GDP in 2022, far below the EU aggregate of 20.3%. Capital taxes accounted for only 5.8% of GDP in 2022, significantly less than the share at the EU aggregate level (8.9%). The forward-looking effective average tax rate on corporate income was 16.5% in 2022, which was slightly more conducive to growth and investment than the EU aggregate of 19.0%. By contrast, Croatia relied strongly on consumption taxes, which were 18.5% in 2022, (the EU aggregate was 11.0%) and which are generally considered less detrimental to growth. However, recurrent property taxation, which is also considered to be one of the sources of tax revenue least detrimental to growth and easier to collect, made up only 0.6% of GDP in 2022 (the EU aggregate was 1.0%).

The scope of environmental taxation could be expanded. Croatia has introduced some pollution and resources taxes (i.e. taxes on NOx emissions and wastewater pollution) and records above EU-average revenues, but there may be scope to strengthen the application of the 'polluter pays' principle (for example, regarding waste disposal taxes, including landfilling). The recycling and landfill rates were only 34% and 55% in 2022. Croatia's amended RRP includes measures to invest in wastewater infrastructure and to reduce landfilling, including by improving waste sorting and recycling and by adopting a Regulation on a Landfilling Tax by December 2024. Moreover, vehicle circulation taxes decrease according to vehicle age and owners of vehicles older than 10 years do not pay this tax. Taking vehicle emissions into account when determining taxation and applying the latter along the whole lifecycle of vehicles could better align incentives and circulation taxes with environmental considerations.

The labour tax wedge is similar to the EU average at various levels of earnings, but the redistributive effect of the tax-benefit system is limited. In 2023, the labour tax wedge was similar to the EU average for both single people at various income levels and for second earners at 67% of the average wage, whose spouses earn the average wage (see Graph A19.2). At the same time, the tax wedge for second

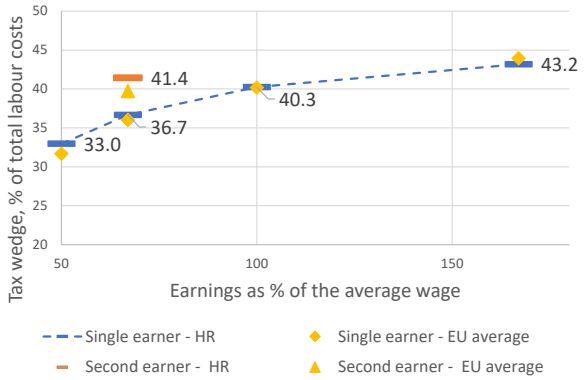
Table A19.1:**Taxation indicators**

		Croatia					EU-27				
		2010	2020	2021	2022	2023	2010	2020	2021	2022	2023
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	36.4	37.7	36.7	37.0		37.9	40.0	40.4	40.2	
	Labour taxes (as % of GDP)	15.0	13.8	12.8	12.6		20.0	21.3	20.7	20.3	
	Consumption taxes (as % of GDP)	17.3	18.7	19.1	18.5		10.8	10.7	11.2	11.0	
	Capital taxes (as % of GDP)	4.1	5.2	4.8	5.8		7.1	8.0	8.6	8.9	
	Of which, on income of corporations (as % of GDP)	1.9	2.3	2.2	3.2		2.4	2.5	3.0	3.4	
	Total property taxes (as % of GDP)	1.0	1.1	1.0	0.9		1.9	2.3	2.2	2.1	
	Recurrent taxes on immovable property (as % of GDP)	0.6	0.7	0.6	0.6		1.1	1.2	1.1	1.0	
	Environmental taxes as % of GDP	3.8	4.1	3.9	3.3		2.4	2.2	2.3	2.0	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	na	31.3	31.3	31.3	33.0	33.9	31.7	32.1	31.8	31.7
	Tax wedge at 100% of average wage (Single person) (*)	na	39.7	38.7	39.4	40.3	41.0	40.1	39.9	40.0	40.2
	Corporate income tax - effective average tax rates (1) (*)		16.5	16.5	16.5			19.5	19.0	19.0	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	9.2	6.5	6.8	6.2		8.6	8.1	8.2	7.9	
Tax administration & compliance	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		15.4	11.8				40.9	35.5		
	VAT Gap (% of VAT total tax liability, VTTL)(**)		5.8	5.7	5.5			9.7	5.4		

(1) Forward-looking effective tax rate (OECD).
(2) A higher value indicates a stronger redistributive impact of taxation.
(*) EU-27 simple average.
(**) Forecast value for 2022, if available. For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, 2023, *VAT gap in the EU*, https://data.europa.eu/doi/10.2778/911698.
For more data on tax revenues as well as the methodology applied, see the Data on Taxation webpage, https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en.
Source: European Commission and OECD.

earners was clearly higher than the tax wedge for single persons at the same wage level, thereby indicating inferior work incentives for second earners. However, while the progressivity of labour taxes was similar to the EU average, the tax-benefit system seemed to reduce income inequality less significantly than the EU average. The reduction in income inequality as measured by the Gini coefficient was 6.2 pps in 2022, which was below the EU average of 7.9 pps (see Table A19.1).

Graph A19.1: **Tax wedge for single and second earners, % of total labour costs, 2023**



The second earner tax wedge assumes a first earner at 100% of the average wage and no children. For the methodology of the tax wedge for second earners see OECD, 2016, *Taxing Wages 2014-2015*.
Source: European Commission

Several changes to the tax system aim to streamline the tax system and enhance economic competitiveness. Effective since October 2023, withholding taxes on interest, dividends and royalties paid to non-cooperative jurisdictions were increased from 20% to 25%, while the exemption for tax residents in the EU was extended to the European Economic Area. In addition, withholding taxes no longer apply to market research, tax and business consultancy services, and audit fees. Several changes concern income taxes: Cities and municipalities can set individual income tax rates within specified ranges around the default tax rates of 20% for the lower bracket and 30% for the upper bracket. This is intended to help cities mitigate the budgetary impact stemming from the abolition of the city tax. The brackets and the non-taxable personal allowance have been increased, which should help offset bracket creep caused by inflation. The pension contribution base was lowered, aiming to increase net income of low-wage earners. Tax rates on capital income, property income and income from self-employment, among others, were increased slightly. Moreover, the maximum rate of the tax on holiday homes municipalities can choose to impose was more than doubled. Other provisions include changes in the tax treatment of optional share issuance in limited liability companies.

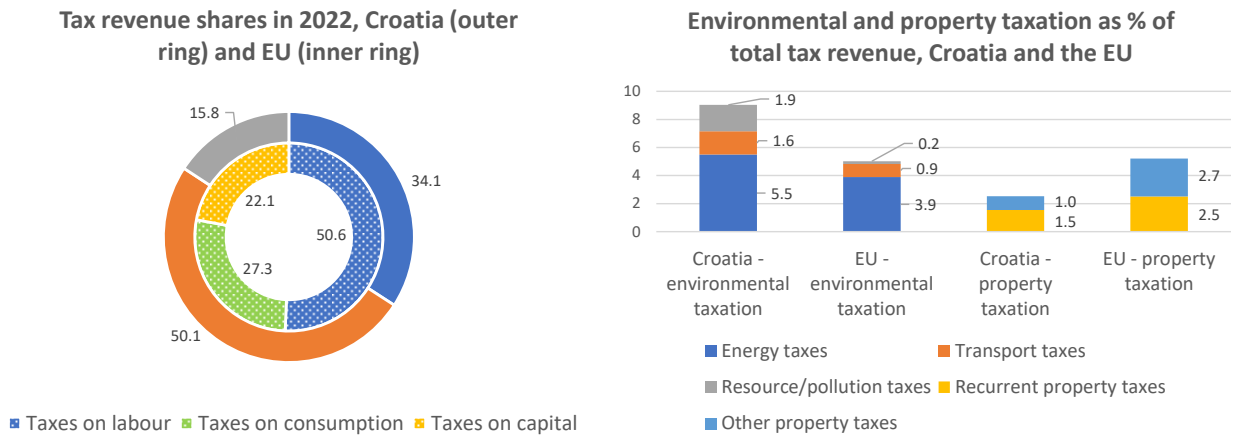
The reform of tax and social insurance contributions (SIC) had a negligible impact on income inequality. EUROMOD simulations indicate that personal income taxes and SIC decreased for all deciles of the income distribution, but more than proportionally so for the middle deciles. The result is that, while at-risk-of-poverty rates for alternative poverty lines are estimated to have decreased, the effect on income inequality has been negligible.

While Croatia performs relatively well on tax compliance and tax administration, there may be further scope to streamline compliance procedures. In 2021, tax arrears decreased to 11.8% of total tax revenue, which was significantly below the EU average. Croatia's VAT gap was below the EU-wide gap in 2020 (5.8% vs. 9.7%), whereas it had been slightly above it in 2021 (5.7% vs. 5.4%)]. It should be added that most EU Member States saw a reduction of the VAT compliance gap in 2021, which was, however, at least partly due to the COVID-19-induced economic crisis. However, complex tax rules and compliance procedures may disincentivise equity investment and hamper capital market development. ([166])

Croatia's Recovery and Resilience Plan includes measures that aim to improve tax compliance, prevent VAT fraud and simplify tax administration. First, Croatia has committed itself to accelerating the digitalisation of the tax administration by introducing a new information system and ensuring a significant rate of digitalisation of collection tax procedures. Second, the RRP includes a measure to encourage non-cash payment systems through e-invoices. Against this background, Croatia is planning to introduce by the end of 2024 a new system of electronic invoicing and continuous transaction control as part of its Fiscalisation 2.0 project.

([166])CFA Society Croatia report. Basis for the Capital Markets Strategy in Croatia, https://www.cfacroatia.org/_files/ugd/449b16_0111b5f5cc274d33931dd6bca55200ac.pdf

Graph A19.2: **Tax revenues from different tax types, % of total revenue**



Source: European Commission

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

	2004-07	2008-12	2013-20	2021	2022	2023	forecast 2024	forecast 2025
Real GDP (y-o-y)	4.7	-1.8	0.9	13.0	7.0	3.1	3.3	2.9
Potential growth (y-o-y)	.	0.3	1.6	2.6	3.7	4.1	3.6	3.2
Private consumption (y-o-y)	3.9	-1.8	0.9	10.6	6.7	3.0	4.3	2.7
Public consumption (y-o-y)	4.8	0.6	1.8	3.1	2.7	6.6	3.1	2.6
Gross fixed capital formation (y-o-y)	4.8	-5.8	2.8	6.6	0.1	4.2	3.1	3.4
Exports of goods and services (y-o-y)	6.2	-1.7	2.0	32.7	27.0	-2.9	2.6	3.1
Imports of goods and services (y-o-y)	6.2	-4.3	4.0	17.3	26.5	-5.3	3.4	2.9
Contribution to GDP growth:								
Domestic demand (y-o-y)	4.6	-2.4	1.4	8.4	4.4	4.0	3.8	2.8
Inventories (y-o-y)	0.6	-0.7	0.4	-0.5	3.1	-2.6	0.0	0.0
Net exports (y-o-y)	-0.6	1.1	-0.8	5.2	-0.5	1.7	-0.5	0.1
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	.	-0.4	0.1	0.1	1.1	1.6	1.2	0.9
Capital accumulation (y-o-y)	.	0.9	0.5	0.7	0.8	0.9	0.9	0.9
Total factor productivity (y-o-y)	.	-0.2	1.0	1.8	1.8	1.7	1.6	1.4
Output gap	3.6	-0.6	-2.2	0.4	3.6	2.5	2.2	1.8
Unemployment rate	11.9	11.8	11.5	7.6	7.0	6.1	5.8	5.6
GDP deflator (y-o-y)	3.7	2.5	0.9	2.1	8.6	8.5	5.5	2.2
Harmonised index of consumer prices (HICP, y-o-y)	2.8	2.9	0.4	2.7	10.7	8.4	3.5	2.2
HICP excluding energy and unprocessed food (y-o-y)	2.7	2.3	0.9	1.8	9.1	9.5	3.8	2.9
Nominal compensation per employee (y-o-y)	4.8	2.0	0.2	6.4	11.4	11.3	9.4	4.7
Labour productivity (real, hours worked, y-o-y)	2.6	0.3	-0.1	11.6	4.5	0.3	1.2	1.5
Unit labour costs (ULC, whole economy, y-o-y)	2.1	1.8	0.8	-4.8	6.5	10.9	8.0	3.1
Real unit labour costs (y-o-y)	-1.6	-0.7	-0.1	-6.7	-1.9	2.2	2.4	1.0
Real effective exchange rate (ULC, y-o-y)	1.4	-0.9	-0.8	-4.9	2.5	3.2	3.0	0.6
Real effective exchange rate (HICP, y-o-y)	1.5	-0.2	-0.2	0.5	0.9	2.3	.	.
Net savings rate of households (net saving as percentage of net disposable income)	-1.6	-2.2	1.6	1.6	1.0	.	.	.
Private credit flow, consolidated (% of GDP)	14.6	3.8	0.4	2.9	5.6	3.9	.	.
Private sector debt, consolidated (% of GDP)	85.8	117.0	99.5	85.3	77.8	73.3	.	.
of which household debt, consolidated (% of GDP)	32.2	40.1	35.6	33.8	30.6	29.9	.	.
of which non-financial corporate debt, consolidated (% of GDP)	53.6	76.9	63.9	51.6	47.3	43.5	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	.	.	8.6	3.7	2.7	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-4.7	1.2	2.2	4.1	-0.9	.	.	.
Corporations, gross operating surplus (% of GDP)	18.3	20.3	20.5	22.1	22.6	.	.	.
Households, net lending (+) or net borrowing (-) (% of GDP)	1.0	0.3	2.9	1.6	0.4	.	.	.
Deflated house price index (y-o-y)	9.8	-4.9	2.9	4.9	3.2	3.7	.	.
Residential investment (% of GDP)	3.7	3.5	2.7	3.6	3.4	3.5	.	.
Current account balance (% of GDP), balance of payments	-7.4	-3.6	1.9	1.0	-2.8	1.1	0.9	0.9
Trade balance (% of GDP), balance of payments	-8.6	-4.2	-0.9	-2.7	-6.1	-2.0	.	.
Terms of trade of goods and services (y-o-y)	1.4	0.6	0.3	-2.1	-4.8	4.2	0.8	-0.3
Capital account balance (% of GDP)	0.0	0.1	1.2	2.4	2.4	2.9	.	.
Net international investment position (% of GDP)	-70.0	-77.6	-59.0	-32.3	-25.3	-21.6	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	-32.5	-38.6	-19.5	10.7	13.4	16.5	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	75.1	74.4	77.0	65.1	59.7	72.9	.	.
Export performance vs. advanced countries (% change over 5 years)	.	.	6.6	8.3	15.9	19.5	.	.
Export market share, goods and services (y-o-y)	-0.1	-5.8	1.2	15.0	10.3	-4.0	-0.9	-0.5
Net FDI flows (% of GDP)	-4.8	-2.9	-2.3	-5.1	-5.3	-1.9	.	.
General government balance (% of GDP)	-3.2	-5.8	-2.3	-2.5	0.1	-0.7	-2.6	-2.6
Structural budget balance (% of GDP)	.	.	-1.4	-2.7	-1.2	-1.8	-3.6	-3.4
General government gross debt (% of GDP)	39.1	55.2	78.6	77.5	67.8	63.0	59.5	59.1

(1) domestic banking groups and stand-alone banks, EU and non-EU foreign-controlled subsidiaries and EU and non-EU foreign-controlled branches.
(2) NIIP excluding direct investment and portfolio equity shares.
Source: Eurostat and ECB as of 2024-5-17, where available; European Commission for forecast figures (Spring forecast 2024).

This annex assesses fiscal sustainability risks for Croatia over the short, medium and long term. It follows the multi-dimensional approach of the European Commission's 2023 Debt Sustainability Monitor, updated based on the Commission 2024 spring forecast.

1 – Short-term risks to fiscal sustainability are low. The Commission's early-detection indicator (S0) does not point to any major short-term fiscal risks (Table A21.2) ([167]). Government gross financing needs are expected to amount to around 9% of GDP in 2024-2025 (Table A21.1, Table 1). Financial markets' perceptions of sovereign risk continued to improve in recent years, as confirmed by the spread vis-à-vis the bund, which has declined to similar levels compared to euro area peer countries from Central and Eastern Europe. Croatia's credit rating is deemed as investment grade, with the outlook revised from stable to positive by all three major rating agencies in 2023.

2 – Medium-term fiscal sustainability risks appear medium.

The DSA baseline shows that the government debt ratio is expected to increase in the medium term to around 71% of GDP in 2034 (Graph 1, Table 1) ([168]). The debt increase relies on the assumption of a structural primary deficit of 2.0% of GDP as of 2024. Compared to historical data, this appears plausible. Indeed, 59% of past fiscal positions were more stringent than the one assumed in the baseline (Table A21.2) ([169]). The debt increases notwithstanding a still favourable but, in absolute terms, declining snowball effect of around -0.6% of GDP annually on average over 2025-2034.

The baseline projections are stress-tested against four alternative deterministic scenarios to assess the impact of changes in key assumptions relative to the baseline (Graph 1). Under the *historical structural primary balance (SPB) scenario* (i.e. the SPB returns to its historical 15-year average of -0.4% of GDP) the debt ratio would be lower than under the baseline by about 13 pps. in 2034. However, under the *adverse interest-growth rate differential scenario* (i.e. the *interest-growth rate differential* deteriorates by 1 pp. compared with the baseline), the debt ratio would be higher than under the baseline by around 5 pps. in 2034. Under the *financial stress scenario* (i.e. interest rates temporarily increase by 1 pp. compared with the baseline) the government debt ratio would be higher by 0.5 pp. in 2034. Finally, under the *lower structural primary balance scenario* (i.e. the projected deterioration in the SPB from 2023 to 2024 is increased by 50%) the debt ratio would be higher than under the baseline by around 9 pps. in 2034.

The stochastic projections indicate medium risk, pointing to moderate sensitivity of these projections to plausible unforeseen events ([170]). These stochastic simulations indicate a 47% probability that the debt ratio will be higher in 2028 than in 2023, implying medium risks. In addition, the uncertainty surrounding the baseline debt projections (as measured by the difference between the 10th and 90th debt distribution percentiles, reaching around 29% of GDP in five years' time) also indicates medium risks (Graph 2).

([167]) The S0 is a composite indicator of short-term risk of fiscal stress. It is based on a wide range of fiscal and financial-competitiveness indicators that have proven to be a good predictor of emerging fiscal stress in the past.

([168]) The assumptions underlying the Commission's 'no-fiscal policy change' baseline include in particular: (i) a structural primary deficit, before ageing costs, of 2.0% of GDP from 2024 onwards; (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 ahead); (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; (iv) real GDP growth rates from the Commission 2024 spring forecast, followed by the EPC/OGWG 'T+10 methodology projections between T+3 and T+10 (average of 2.0%); (v) ageing costs in line with the 2024 Ageing Report (European Commission, Institutional Paper 279, April 2024). For information on the methodology, see the 2023 Debt Sustainability Monitor (European Commission, Institutional Paper 271, March 2024).

([169]) This assessment is based on the fiscal consolidation space indicator, which measures the frequency with which a tighter fiscal position than assumed in a given scenario has been observed in the past. Technically, this consists in looking at the percentile rank of the projected SPB within the distribution of SPBs observed in the past in the country, taking into account all available data from 1980 to 2023.

([170]) The stochastic projections show the joint impact on debt of 10 000 different shocks affecting the government's budgetary position, economic growth, interest rates and exchange rates. This covers 80% of all the simulated debt paths and therefore excludes tail events.

3 – Long-term fiscal sustainability risks appear overall low. This assessment is based on the combination of two fiscal gap indicators, capturing the required fiscal effort to stabilise debt (S2 indicator) and bring to 60% of GDP (S1 indicator) over the long term ([171]). This assessment is driven by a relatively unfavourable initial budgetary position partly offset by a projected decrease in ageing costs.

The S2 indicator points to low fiscal sustainability risks. The indicator shows that, relative to the baseline, the SPB would need to improve by 1.5 pps. of GDP to ensure debt stabilisation over the long term. This result is underpinned by a relatively unfavourable initial budgetary position (contribution of 2.5 pps.) partly offset by a projected decrease in ageing-related costs (contribution of -1 pp.). Ageing costs' developments are driven by a projected decrease in public pension (-1.3 pps.) and education expenditure (-0.4 pp.), partially mitigated by a projected increase in healthcare (0.6 pp.) and long-term care spending (0.1 pp.) (Table 21.1, Table 2).

The S1 indicator points to low fiscal sustainability risks. The indicator shows that the country needs to improve its fiscal position, with an upfront adjustment of the SPB of 1.3 pps. of GDP, to reduce its debt to 60% of GDP by 2070. This result is mainly driven by the relatively unfavourable initial budgetary position (contribution of 2.1 pps.) partly offset by a projected decrease in age-related public spending (-0.7 pp.). (Table 21.1, Table 2).

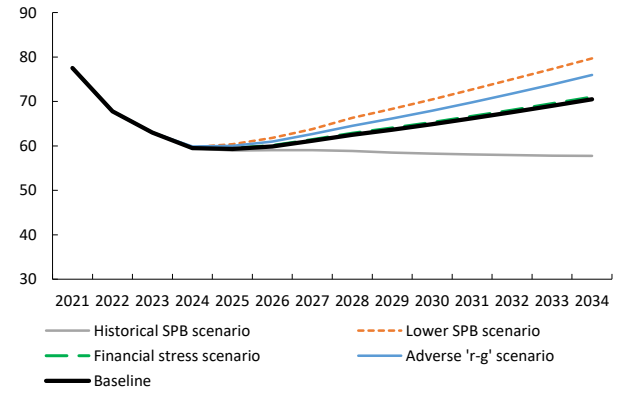
4 – Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to the recent increase in interest rates, relatively high levels of short-term loans at variable interest rate, Croatia's relatively low pension adequacy and the country's negative net international investment position (NIIP). The share of non-performing loans has gone down substantially in recent years, though it remains significant in comparative terms with other EU Member States. Overall, contingent liability risks linked to the banking sector appear limited in view of the high capitalization and provisioning. On the other-hand, risk-mitigating factors include most notably the country's accession to the euro area and financial backstops, which effectively removed the bulk of the exchange rate risk and pushed borrowing costs down. In addition, the NIIP excluding non-defaultable instruments continued to improve and reached +16.5% of GDP in 2023. Moreover, financing sources have been relatively stable and were further diversified with the introduction of a retail bond. Further government bond issuances directly to retail investors, including for bonds with longer maturity, would be beneficial (see Chapter 1).

([171])The S2 fiscal sustainability indicator measures the permanent SPB adjustment in 2025 that would be required to stabilise public debt in the long term over an infinite horizon. It is complemented by the S1 indicator, which measures the permanent SPB adjustment in 2025 needed to bring the debt ratio to 60% by 2070. The impact of the drivers of S1 and S2 may differ due to the infinite horizon component considered in the S2 indicator. 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 % of GDP, 'medium risk' if it is between 2% and 6% of GDP, and 'low risk' if the effort is negative or below 2% of GDP. The overall long-term risk classification combines the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 if it signals a higher risk than S2. See the 2023 Debt Sustainability Monitor for further details.

Table A21.1:**Debt sustainability analysis - Croatia**

Table 1. Baseline debt projections	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Gross debt ratio (% of GDP)	**77.5**	**67.8**	**63.0**	**59.5**	**59.3**	**59.9**	**61.2**	**62.5**	**63.7**	**64.9**	**66.2**	**67.6**	**69.0**	**70.5**
Changes in the ratio	-8.6	-9.7	-4.8	-3.5	-0.2	0.6	1.3	1.3	1.2	1.2	1.3	1.4	1.4	1.5
of which														
Primary deficit	1.0	-1.5	-1.0	1.0	1.1	1.3	1.7	1.9	1.9	1.9	1.8	1.8	1.7	1.7
Snowball effect	-10.0	-9.3	-5.5	-3.6	-1.3	-0.8	-0.4	-0.5	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2
Stock-flow adjustments	0.5	1.1	1.8	-0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	14.7	6.1	11.5	8.7	9.8	10.4	11.0	11.5	11.9	12.2	12.6	12.9	13.3	13.6

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2024-2028

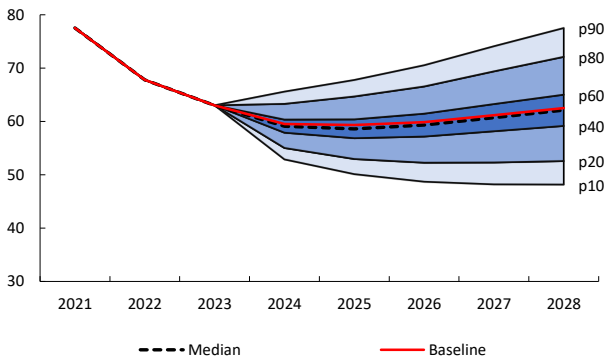


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

	S1	**S2**
Overall index (pps. of GDP)	**1.3**	**1.5**
of which		
Initial budgetary position	2.1	2.5
Debt requirement	0.0	
Ageing costs	-0.7	-1.0
of which Pensions	-0.9	-1.3
Health care	0.5	0.6
Long-term care	0.1	0.1
Others Education	-0.4	-0.4

Source: Commission services.

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

Short term	**Medium term - Debt sustainability analysis (DSA)**								**Long term**		
			Deterministic scenarios								
Overall (S0)	**Overall**		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	**Stochastic projections**	**S2**	**S1**	**Overall (S1 + S2)**
LOW	**MEDIUM**	Overall	**MEDIUM**	**LOW**	**MEDIUM**	**MEDIUM**	**MEDIUM**	**MEDIUM**	**LOW**	**LOW**	**LOW**
		Debt level (2034), % GDP	70.5	57.8	79.7	75.9	71.0				
		Debt peak year	2034	2024	2034	2034	2034				
		Fiscal consolidation space	59%	48%	78%	59%	59%				
		Probability of debt ratio exceeding in 2028 its 2023 level						47%			
		Difference between 90th and 10th percentiles (pps. GDP)						29.4			

(1) Debt level in 2034. 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 2028 its 2023 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 10000 different shocks. Green, yellow and red cells indicate increasing uncertainty. (For further details on the Commission's multidimensional approach, see the 2023 Debt Sustainability Monitor)

Source: Commission services