Council of the European Union

Brussels, 25 May 2023
(OR. en)

9776/23
ADD 1

ECOFIN 481
UEM 116
SOC 355
EMPL 233
COMPET 491
ENV 538
EDUC 182
RECH 206
ENER 261
JAI 680
GENDER 69
ANTIDISCRIM 67
JEUN 102
SAN 276

COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
date of receipt:	24 May 2023
To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2023) 611 final
Subject:	COMMISSION STAFF WORKING DOCUMENT 2023 Country Report – Croatia Accompanying the document Recommendation for a COUNCIL RECOMMENDATION on the 2023 National Reform Programme of Croatia and delivering a Council opinion on the 2023 Stability Programme of Croatia

Delegations will find attached document SWD(2023) 611 final.

Encl.: SWD(2023) 611 final

EUROPEAN
COMMISSION

Brussels, 24.5.2023
SWD(2023) 611 final

COMMISSION STAFF WORKING DOCUMENT

2023 Country Report – Croatia

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

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

{COM(2023) 611 final}

European Commission

Croatia

2023 Country Report

ECONOMIC AND EMPLOYMENT SNAPSHOT

Growth, employment and public finances show resilience

After fully recovering from the pandemic-induced economic downturn, the Croatian economy continued to grow strongly in a complex geopolitical context. Croatia's GDP grew very strongly in the first half of 2022, before headwinds started to materialise. In particular the Russian invasion of Ukraine disrupted financial, energy and commodity markets, pushing HICP inflation rates to their highest level in recent decades (10.7% in 2022). This put pressure on household consumption, while rising input prices dragged down industrial production. As a result, GDP contracted in the third quarter of 2022 (-0.5% quarter-on-quarter), but rebounded again in the last quarter, resulting in Croatia's real GDP growing by 6.2% in 2022 (4th highest in the EU), in line with the Commission's Winter interim Forecast. In the last quarter of 2022, Croatia's real GDP was 10.3% higher than pre-pandemic, showing increasing resilience to economic shocks thanks also to the reforms and investment deployed under the recovery and resilience plan (RRP).

The strong performance of Croatia's external sector continues. Exports of goods were quick to recover from the pandemic and continue to grow above global demand, having increased by 49% in real terms in 2022, compared to 2019.

Labour market trends remain resilient overall. The employment rate (20-64) reached an all-time high of 69.7% in 2022, an increase of 11.6 percentage points in comparison with 2012.

Public finances have improved substantially as economic activity increased. In 2022, the general government balance improved to +0.4% of GDP, from -2.5% of GDP in 2021. The adjustment was driven by better revenues supported by still strong nominal growth, while the phasing out of the COVID support measures helped tame spending. In the coming years, the general government

Box 1:

Energy policy response in Croatia

Croatia adopted various support measures to cushion the impact of energy price inflation on households and businesses. For 2023, the gross budget cost of these measures is projected, in the Commission 2023 spring forecast, to amount to 1.5% of GDP. Most measures do not preserve the price signal as an incentive for consumers to use less energy and they are not targeted to the most disadvantaged groups. The measures will be phased-out by April 2024.

In March 2023, the authorities extended the energy measures package including a reduced VAT rate on gas and various other energy products, reduced excise duties on fuel and social transfers to disadvantaged groups (increased social benefits for the unemployed and disadvantaged energy buyers and a lump-sum energy supplement for pensioners). The authorities also prolonged the price caps on electricity, gas and fuels and froze the price for heating from thermal power stations, as well as limiting the charges incorporated into electricity prices and subsidies for farmers and fishermen.

The difference between the market price and the capped prices for electricity and gas is financed by HEP (the state-owned energy company), for which the government approved a capital transfer of up to EUR 0.9 billion to finance the price caps. The two-tiered pricing system for electricity is subsidised at different levels of consumption for households and companies for the period 1 April - 30 September 2023, while the gas price is subsidised until end of March 2024.

Croatia should still report information to the Commission on the application of Council Regulation (EU) 2022/1854.

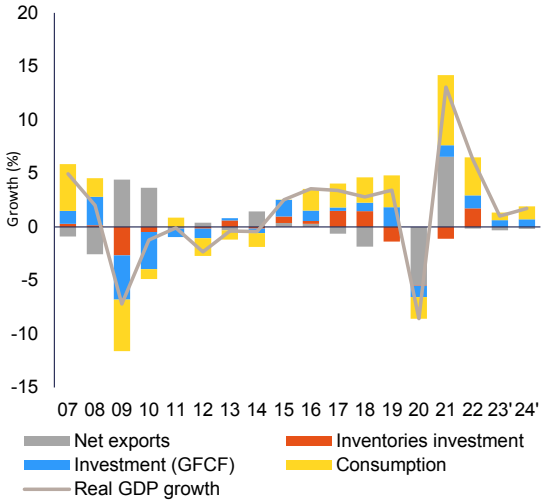
deficit is forecasted to remain contained.

Further European integration offers new opportunities

The recent accession of Croatia to the euro and Schengen areas is a positive development for trade and investment. In January 2023, Croatia became the 20th member of the euro area and the 27th member of the Schengen area. Lower currency-related risk, reduced costs and removal of travel, trade and investment frictions will contribute positively to the country's economic performance.

As a tight labour market supports incomes and investment picks up, growth should be broad-based across domestic demand components in 2023. The Commission's Spring forecast expects real GDP growth of 1.6% in 2023, with household consumption recovering as the year advances and inflation moderates. At the same time, investment is expected to remain dynamic thanks to increased confidence and absorption of EU funds, with the latter also boosting public consumption. The external sector is expected to have a small negative contribution, although the reversal of the terms of trade shock is set to lead to a trade balance improvement. The substantial decrease in energy prices will start to reduce inflation throughout 2023, allowing a progressive deceleration towards the 2% target despite services inflation being more persistent than anticipated.

Graph 1.1: **External and domestic demand, contributions to GDP growth**



Source: AMECO.

Croatian exporters continued to gain market share in very competitive international markets. This demonstrates increased resilience and growing integration in Europe's value chains. These positive trends are conducive to establishing and maintaining a solid export base, which is important to ensure the country's smooth functioning in the monetary union. To this end, policies and investment aimed at maintaining cost and non-cost competitiveness of firms will be of particular importance.

Potential growth is affected by population decline and low productivity growth, although key reforms will have a positive impact. Croatia's 2021 population census revealed a greater-than-expected population drop, as the number of inhabitants fell below four million for the first time since at least 1960. The loss of population has been particularly concentrated in the east of the country. Net migration has been a key factor behind the population decline in the last decade, but this trend appears to be subsiding, thanks to both increasing immigration and slowing emigration.

Croatia's sluggish productivity growth is linked to the country's below-EU average capacities in the area of health, education and work according to the Commission's resilience dashboards

(see Annex 5). Meanwhile, the interplay of key reforms and investment under the RRP should raise productivity and investment in human, physical and knowledge capital, adding to potential growth.

Challenges in integrating disadvantaged groups in the labour market remain

Although labour market indicators improved, more effort is needed to integrate disadvantaged groups (see Annex 14). As a result of the improvement over the last ten years, the gap vis-à-vis the EU average employment rate halved to (a still high) 5 percentage points. However, the unemployment rates for low and medium-skilled persons have not yet reversed to pre-pandemic levels, and neither has youth employment.

At 28.7 percentage points in 2021, the disability employment gap was still among the highest in the EU. There has been a slight improvement in the gender employment gap, which decreased to 9.5 percentage points in 2022. Meanwhile, the number of workers who were able to switch from temporary to permanent contracts increased, and involuntary temporary employment fell.

The importance of focusing on disadvantaged groups is intensified by decreasing real incomes. Nominal wages grew by 7.9% in 2022. However, on the back of high inflation, real wages decreased by 2.7% in the year, with lower-income households being more affected by inflation, as they spend a higher share of their budget on energy and food. However, the impact of high inflation was almost fully contained by the increase, in January 2022, of the statutory minimum wage by 10.8%. Going forward, the growth in real wages should resume as inflation rates drop.

Strengthening employment creation remains the top priority to increase potential growth and tackle poverty. As regards the implementation of the European Pillar of Social Rights (see Annex 14), skills mismatches, in particular among disadvantaged groups, and the low level of adult learning, constitute considerable challenges.

The trends concerning the employment of disadvantaged groups highlight the importance of prioritising upskilling and focusing on including these groups in the labour market. Good examples of this include the new active labour market policies and the voucher system developed under the recovery and resilience plan (see Section 3).

Croatian labour market policies have so far lacked effectiveness in responding to labour market needs and labour shortages. They have been insufficiently coordinated with social and skills policies and suffered from a limited outreach to disadvantaged groups. A range of measures under the RRP and the European Social Fund Plus aim to tackle some of these issues.

The rise in house prices is a growing concern

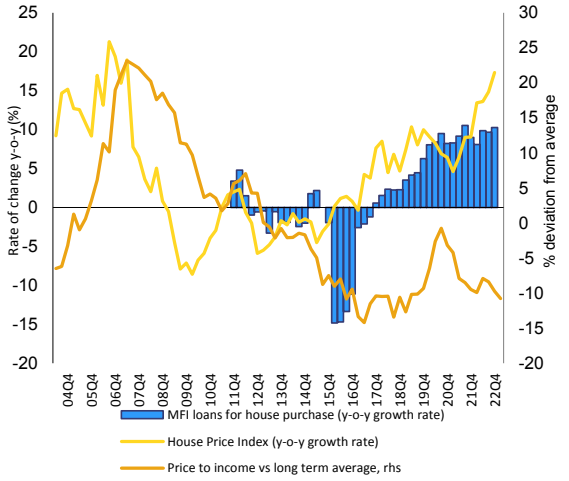
Croatia faces challenges linked to an increase in household debt and house prices, unmatched by commensurate policy measures. Household debt increased from 34% of GDP in 2021 to 42% of GDP in 2022. The growth in house prices picked up in 2022, reaching 36.2% compared to pre-pandemic levels (see additional info in Annex 18). At the same time, real incomes decreased, further eroding affordability.

The policy response has yet to catch up with the gravity of the issue, as the current subsidy scheme aimed at first-time buyers has been found to contribute to the price increases. Similarly, the lack of a recurrent property tax ([1]) and the low tax rates on income from

([1]) More info in Annex 19: Taxation

short-term rent ([2]) increase the returns on dwellings as an investment class, thus contributing to the growing prices and reducing the supply of residential properties available to households. The issue is particularly pronounced in the coastal areas, and disproportionately affects lower-income households and young families. A comprehensive policy response could help alleviate the pressure on housing prices.

Graph 1.2: **Evolution of house price index and loans for house purchases from monetary financial institutions (MFI)**



Source: Eurostat, ECB, European Commission

Croatia is improving in the SDG indicators

Croatia is making timely progress on improving almost all of the UN Sustainable Development Goals (SDGs). Improvements were made on all the SDG indicators linked to fairness, productivity and macroeconomic stability and almost all indicators linked to environmental sustainability, apart from responsible consumption and production (SDG 12). Although improving, there are 9 SDGs still below the EU average, where further effort and ambition is needed, most notably industry, innovation and infrastructure (SDG 9) and good health and well-being (SDG 3). Annex 1 contains more detailed information.

([2]) Box 4.1.1 Country Report Croatia 2019.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

Croatia's resilience and recovery plan (RRP) aims to address the key challenges related to the accelerating the digital and green transitions, strengthened economic and social resilience, and a more efficient public administration. It consists of 76 reforms and 146 investment strands that are supported by EUR 5.51 billion in grants, representing 9.5% of 2021 GDP. All planned measures were implemented, following which the Commission paid EUR 1.4 billion, representing 22% of the RRP amount due.

The implementation of Croatia's recovery and resilience plan is well underway. Croatia submitted two payment requests, corresponding to 59 milestones and targets in the plan and resulting in an overall disbursement of EUR 1.4 billion. At this stage of implementation of the plan, the measures consist to a large extent of adopting national strategic framework documents (revised or new legislation, strategies, programmes). A significant share of the RRP funds is already available under calls for projects and targeted funding programmes. Croatia intends to submit an amendment of its plan by August 2023, which would comprise new investment under REPowerEU and a request for an RRF loan.

Accelerating the green and digital transitions

The first measures were completed in managing water, public sewage and waste. A multi-annual water and wastewater construction programme was adopted, listing and prioritising the investments necessary to meet the EU quality standards. Its implementation started with the (re)construction of a part of the public sewerage and water supply network. The new Waste Management Act identified measures that should increase the re-use and recycling of municipal waste and accelerate the circular economy.

Measures were developed to improve energy efficiency in different sectors. The new Energy Efficiency Programme sets out investment priorities for energy efficiency and district heating systems by 2030, but also up to 2050. Grant support was awarded to 75 energy-intensive small, medium and large firms that had committed to improve their efficiency and use of renewable energy sources in the industrial production process. New programmes were adopted for the energy renovation of multi-dwelling buildings, cultural heritage, public sector buildings and energy poverty reduction in areas of special state concern. A "one-stop" office provides advice and services on energy renovation and post-earthquake reconstruction. New programmes were adopted for urban green infrastructure and circular management of space and buildings.

An in-depth analysis was performed on the barriers restraining the higher uptake of renewable energy sources. The analysis also included recommendations on how to alleviate the respective bottlenecks. The first national Hydrogen Strategy was adopted to incentivise the production and use of renewable and green hydrogen in producing electricity, in industry in general and as an alternative fuel. The amendments to the Act on Biofuels for Transport created a legislative framework for deploying alternative fuels, as well as producing and using advanced biofuels and hydrogen in transport.

The first steps have been taken in the road, railway, maritime and inland waterways sectors. A strategic government document identifies the key priorities for reforming and modernising the railway sector and establishes implementation plans for the government and railway companies. The new Regular and Seasonal Coastal Transport Act simplifies administrative procedures and creates better conditions for a more efficient operation of public coastal maritime transport. The new Inland Navigation and Ports Act will help identify specific safety risks in inland waterways.

The development of 5G and broadband access is under way. Particularly in non-urban areas, accelerated simplification and adaptation is expected of the legal and administrative conditions for planning, licensing and completing the necessary investment.

Strengthening economic competitiveness and resilience

The first steps have been completed to digitalise public services for businesses and reducing the administrative and fiscal burden on them. A new digital platform is used by companies to pay the most frequent and cost-intensive compulsory business fees online. Fifty concrete steps were implemented to reduce non-tax and para-fiscal (non-tax) business charges and reduce fees for professional examinations.

Access to finance for businesses has been improved by setting up new RRP funds providing loans, loan guarantees and interest rate subsidies. Selected projects are aimed at supporting recovery and resilience as well as digital and green transitions for businesses of all sizes.

Efforts in the agriculture and food sectors have contributed to environmental preservation and improving life in rural areas. Specifically, the new Act on Agricultural Land Consolidation sets out measures to ensure more efficient use of agricultural land and increase the productivity and sustainability of agricultural production. A new operational programme increases the role and management capacity of producer organisations in the fruit and vegetable production and marketing chain. An online platform on the circular economy in the agri-food sector raises awareness and educates people about the prevention and reduction of food waste and food donation.

The reform to make the tourism sector more resilient and sustainable was initiated with the completion of an in-depth analysis of the sector. This analysis helped defining the key priorities for the Sustainable Tourism Development Strategy for 2030.

Finally, the legislative texts on copyright and electronic media were amended. This will facilitate the online licensing of creative, cultural and media content, with the objective of fostering the digital transition and resilience of enterprises in the active and cultural sector.

Reinforcing education and social resilience

On the side of labour and adult education, new active labour market policies were adopted for (self) employment in sectors and activities linked to the green and digital transitions. A new voucher system offers education, training and upskilling to promote green and digital skills. The revised Minimum Wage Act raises the minimum increase in wages for overtime, night work and work on Sundays and public holidays, and reinforces controls and penalties for non-compliant employers. The new Adult Education Act improves the quality and relevance of adult education and facilitates the recognition of acquired knowledge and skills.

The reform of the education system kicked off with a comprehensive

analysis of secondary education needs. The goal of the analysis was to guide the future implementation of measures that are designed to: increase the share of students enrolled in general secondary education, reduce the share of students in surplus programmes and align vocational programmes with labour market needs.

The social protection reform progressed with the adoption of the Social Welfare Act. The Act increases the adequacy of the main social benefits, merges multiple social benefits into one single benefit, introduces a new social mentoring service and improves the transparency and efficiency of the system. The training of 253 new social mentoring professionals was completed. The 2021-27 National Plan against Poverty and Social Exclusion identifies priorities and needs for tackling poverty and social exclusion, with the objective of reducing the at-risk-of-poverty rate to less than 15%. The 2021-27 National Plan for the Development of Social Services identifies needs and sets out priorities for developing home-based, community and other social services.

The first steps were taken in the reforms aimed at improving the efficiency, quality and accessibility of the health system. The 2021-27 National Health Development Plan was adopted. It maps long-term needs in the health and social sectors as well as the distribution of health professionals, and contains measures aimed at improving the quality, monitoring and efficiency of the system.

Improving the efficiency and transparency of public administration

Steps were taken to strengthen oversight of fiscal processes. To strengthen fiscal planning and reporting, a new Budget Act sets out the processes and key documents for: preparing, adopting and executing the budget of the state and the local government units, the borrowing framework for local and regional government units and as the forecast and control process for future spending, including multi-annual commitments.

Measures which contribute to the prevention of corruption, money laundering, and the financing of terrorism have been implemented. The 2021-2030 new Anti-corruption Strategy sets out targeted measures to increase the transparency of work done by public authorities, strengthen the integrity and management of conflicts of interest and improve the capacity to detect, prevent and reduce corruption in the public procurement system. Under the new Act on Prevention of Conflict of Interest, asset declarations and remedies for potential conflicts of interest are made mandatory in local and regional government units and companies owned by them. Steps are being taken to strengthen the capacities of the anti-money laundering (AML) supervisory authorities and increase cooperation among them; continuous professional training is provided to management and AML officers in public and credit institutions.

The first steps have been taken to improve the efficiency of the justice system and increase citizens' trust in it. New electronic tools and administrative capacities have been developed in the State Judicial Council and the State Attorney's Council to improve the quality of the work of both Councils. Amendments to the Bankruptcy Act and the Consumer Insolvency Act are expected to ensure greater efficiency of insolvency proceedings, improve the system for organising and appointing insolvency practitioners and improve supervision of the performance of this service. Amendments to the Criminal Procedure Act allow the use of information and communications technology in criminal proceedings – including remote hearings, online testimonies by victims of crime and the preparation of hearings.

The legislative framework was amended to encourage the voluntary merger of local government units via incentives. The functional and physical mergers of the smallest local government units should

improve administrative capacity, to the benefit of public service provision in those communities.

The government revised and reduced the list of state-owned enterprises. The companies for which the existence of a public interest is not demonstrated will be transferred to the Restructuring and Sales Centre, with a view of monetising their assets in the following years.

Finally, the first steps were taken to strengthen the capacity of public institutions and Croatian beneficiaries to prepare and implement EU projects. Going forward, these measures prepare the ground for a better absorption of funding and higher quality projects.

Box 2:

Key deliverables expected under the Recovery and Resilience Plan in 2023-24

- Simplifying and removing regulatory requirements for the provision of services by regulated professions
- Adopting the legislation to improve the uptake of renewable energy sources, including the introduction of a premium-based system to support renewable energy sources
- Connecting an additional 1500 MW of renewables capacity to the grid
- Amending the State Assets Act to separate completely the management of the gas transmission system operator from state-owned production and supply activities.
- Consolidating and reducing the number of public water service providers, to improve their efficiency and governance
- Reducing the share of municipal waste sent for disposal
- Establishing a functional system for the exercise of the rights of persons with disabilities in the field of transport
- Establishing a traceability information system in the food supply chain
- Adopting a Tourism Act, establishing a framework for monitoring and developing the tourism sector
- Adopting acts on salaries in the state administration and public services and regulations for professional mobility
- Recruiting all newly recruited, permanent civil servants in government bodies exclusively through a new centralised, digitised and standardised selection and recruitment system
- Adopting a new legal framework on state-owned enterprises, incorporating the recommendations of the OECD
- Adopting amendments to the legislative framework in the area of justice, with the new Non-contentious Procedure Act
- Establishing a new public procurement platform and mobile application
- Adopting new framework benchmarks for the work of judges and introducing an active judicial case management tool
- Adopting the Model for the Financing of Early Childhood Education and Care
- Amending the law regulating primary and secondary education to introduce the conditions for a full-day teaching
- Adopting amendments to the Pension Insurance Act
- Implementing IT system calculation of prices for social services and service providers in the network
- Enforcing a joint procurement procedure for health institutions
- Completing the functional integration of hospitals
- Adopting green urban renewal strategies.

FURTHER PRIORITIES AHEAD

Beyond those tackled in its recovery and resilience plan (RRP), Croatia faces additional challenges related to the decarbonisation of energy and transport, the green transition, economic productivity and the risk of poverty and social exclusion. Addressing these challenges will also help Croatia make further progress in meeting those SDGs where it currently shows room for improvement. Namely those related to 'Quality education' (SDG 4), 'Affordable and clean energy' (SDG 7), 'Industry, innovation and infrastructure' (SDG 9) and 'Climate action' (SDG 13).

Decarbonising energy and transport & stepping-up the green transition

Croatia is continuing its efforts to decarbonise the economy. The country is on a good trajectory to reach its current and new 2030 climate policy target for the effort-sharing sectors ([3]). Data for 2021 on greenhouse gas emissions in these sectors is expected to show that the country generated less than its annual emission allocations ([4]). In its long-term strategy for decarbonisation, Croatia has set itself the goal of reducing greenhouse gas emissions to between 57% and 73% by 2050 (excluding land use and forestry). The five-year action plan for the implementation of this strategy is currently being revised to consider the more ambitious 2030 targets. Reducing Croatia's reliance on fossil fuels is an essential part of ensuring security of supply. The latest figures regarding Croatia's net carbon removals through the land use sector are slightly above the 2030 targets; however, due to the important risks identified (see Annex 6), the actual implementation of the Forest and the Soil Strategies and the adoption of the Action Plan for planting 1 million trees annually by 2030 remain important.

Increasing the circularity of Croatia's economy remains a priority. The use of circular material is far below the EU average (see Annex 9). The strengthening of the policy framework and reduction of the investment gap would help in the uptake of the circular economy by all economic sectors, in line with the Circular Economy Action Plan. This can be facilitated by developing and providing access to innovative financial instruments and funding for eco-innovation, and by putting further emphasis on the circular economy within the upcoming 2023-2028 Waste Management Plan.

Croatia has improved waste management practices, but significant challenges remain. Efforts are needed to meet the EU recycling targets, as well as to accelerate the circular economy transition. The share of municipal waste being landfilled remains almost double the EU average, as Croatia underperforms in the sorting, collection, and recycling of waste (see Annex 6). In addition to developing waste infrastructure, better cost internalisation of landfilling residual and bio-waste could reduce the risk of failing to meet the Waste Framework Directive's 2025 recycling target of 55%. Overall environmental governance could be improved by increasing transparency and reinforcing citizen engagement, compliance and enforcement, as well as administrative capacity and coordination.

(3) Sectors outside the current EU Emissions Trading System: mainly buildings (heating and cooling), road transport, agriculture, waste and small industrial firms

(4) Croatia's annual emission allocations for 2021 were around 17.5 Mt CO2eq, and its approximated 2021 emissions were at 16.2 Mt

Significant recent and planned investment will help improve the poor state of water infrastructure, but sustained efforts are needed. The vast majority of wastewater in Croatia is not properly treated (see Annex 6). Increasing the availability of adequate sanitation services and reducing risks to the environment and public health will depend on a substantial increase in annual expenditures for sanitation.

Croatia is among the Member States with higher vulnerability to climate risks. According to the Commission's resilience dashboards, Croatia shows medium/low capacities in the area of "climate change mitigation and adaptation (Annex 5). More frequent heatwaves, droughts, floods, and forest fires affect several sectors, including energy, with rising risks of lower hydropower production and increased energy demand for cooling, while nearly six in ten companies in Croatia report that climate change negatively affected their business ([5]). The cumulative share of the damage from extreme weather and climate events in relation to GDP is one of the highest in the EU (see Annex 6). Croatia appears to be particularly vulnerable to floods. Between 1980 and 2020, only around 3% of disaster losses were insured; the insurance coverage remains low compared to projected risk; this could result in losses to be covered by the public sector, thereby potentially posing a risk to public finances. The implementation of climate adaptation policies and measures, (including the ones set out in the RRP) as well as the development of necessary capacities at all levels, are vital for tackling these risks and improving long-term resilience.

Renewable energy sources make up a big share of Croatia's energy consumption, but there is still room for growth. While the share of wind energy has increased steadily over the last ten years, solar power is still lagging behind ([6]). The bulk of the country's renewable energy comes from hydropower plants ([7]); however, the lower availability of hydropower output in the wake of droughts, expected to become more frequent, is a trend that could affect the security of Croatia's power supply. In 2022, VAT on the purchase and delivery of solar panels was abolished and taxes were cut for producers-consumers ([8]). Still, household investment in photovoltaics is hampered by legal uncertainty, in particular as regards the implications of the producer-consumer feeding more electricity back into the grid than they use. Croatia plans to phase out coal by 2033; it is important in that context that the country's potential for wind, solar and geothermal are explored, in the context of the expected lowering of the outputs in hydropower and wood biomass. The electricity taxation regime still imposes a heavier burden in comparison to gas taxation and does not incentivise consumers to switch to electrified heating with the use of heat pumps rather than gas boilers.

Permitting procedures for renewable energy in Croatia are cumbersome and longer than the EU average. An inadequate and in some cases incomplete legislative framework on permitting procedures for deploying renewable energy sources (in particular as regards solar and wind power) and the lack of staff and technical capacities are contributing to the slow uptake of large new renewable energy installations (over 500 kw) (see Annexes 7 and 12). As a result, a number of projects are currently stalled. Improvements to the grid, on top of already envisaged measures under the RRP are also key; this notably concerns the rollout of smart metering and smart grids as well as the increase in the storage capacity.

([5]) European Investment Bank (2023), EIB Annual Investment Survey 2022.

([6]) The share of wind energy reached 14% and the share of solar energy was 1%.

([7]) Almost two-thirds of Croatia's electricity has come from renewables, predominantly hydropower (between 40% and 60% depending on whether it is a dry or wet year).

([8]) A tax exemption of up to EUR 1,320 personal income per year generated by the sale of excess electricity from solar panels fed to the grid

With the construction of the LNG terminal on the island of Krk and its technical upgrade in 2022, Croatia has managed to secure all its gas supplies. The country plans to further expand the capacity of the Krk terminal to 6.1 bcm/year in order to fully utilise its capacity, increase the security of supply of neighbouring countries and further develop the internal gas transmission pipelines towards Slovenia, Hungary and Bosnia-Herzegovina. This reflects Croatia's ambition to become a regional gas energy hub contributing to the security of supply of South-Eastern Europe region, and contributes to the objectives of the REPowerEU. In parallel to this, continuous efforts are needed to structurally reduce gas demand in the country; while energy prices have decreased, uncertainty remains regarding next winter.

Croatia's national indicative contribution to the EU's 2030 energy efficiency targets is still low. Energy renovation rate in Croatia was low but Croatia has recently stepped-up its investment in energy renovation of private and public buildings, aiming to renovate its entire building stock by 2050 (See Annex 6). National measures, including the ones envisaged by the RRP are expected to increase the renovation rate in the upcoming years, and contribute to achieving an annual renovation rate of 3% by 2030. However, low uptake of installation of rooftop photovoltaics, especially in multi apartment buildings, remains a challenge due to complex legislative framework and administrative procedures, which represents a significant obstacle in achieving energy savings. In addition, the uptake of installation of heat pumps also remains low. Furthermore, current investments to improve the energy efficiency in the building sector still rely heavily on grants and subsidies, thus limiting the possibility to crowd-in private investments towards the achievement of the 2030 energy efficiency targets.

Transport accounts for a growing share of greenhouse gas emissions and air pollution. The share of renewable energy sources in the transport sector (7% in 2021) is one of the lowest in the EU, and well below the 2030 target of 14% ([9]). Sustainable and alternative solutions are developing slowly. For example, rail has a share of 2.5% in passenger land transport, well below the 8% in the EU. The successful completion of the core Trans-European Transport Network (TEN-T) sections in Croatia, in particular the rail network, remains a priority. The implementation of the Railway Development Strategy adopted by the Croatian government in 2022 will be crucial for modernising the infrastructure and rolling stock, thus increasing the attractiveness of rail as an alternative transport mode. The low rate of electrified rail tracks could be mitigated with alternative solutions, such as hydrogen or battery-powered locomotives.

Despite increasing in 2021, the uptake of electric vehicles remains one of the lowest in the EU. The share of newly registered electric cars doubled in 2021 compared to 2020, but it is still one of the lowest in the EU ([10]). Besides financial incentives for the purchase of electric vehicles, such as the one implemented by the Environmental Protection and Energy Efficiency Fund in 2022, additional measures to promote zero-emission vehicles re necessary, including the adaptations of the regulatory framework to accelerate the retrofitting of internal combustion cars into battery electric vehicles and scaling-up the e-charging infrastructure.

(9) Statistics | Eurostat (europa.eu)

(10) Battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV), respectively from 1.47 % to 2.95% in 2021 and from 0.62% to 1.35% in 2021. EEA, 2021, https://www.eea.europa.eu/data-and-maps/figures/new-electric-vehicles-by-country-1

Strengthening productivity by reinforcing innovation, adult learning and skills

Despite progress over the last two decades, labour productivity in Croatia remains relatively low. Croatia's labour productivity has been slowly catching up to EU levels but managed to reach an all-time high of 78% of the EU average in 2022. The productivity gap is particularly acute in micro companies, where productivity levels are about half the EU's (see Annex 12). This highlights the need to increase the dynamism of the Croatian business environment, reduce market inefficiencies, improve human capital, and promote investment in Research Development (R&D) and Innovation. Underperformance in education and innovation areas, persistent low efficiency of public institutions and the low quality of the business environment hamper labour productivity in Croatia. In addition, payment gap increases both in business-to-business payments and in public sector-to-business payments are hampering resilience and growth for small and medium-sized companies (see Annex 12).

The intensity of R&D investment is low, while high fragmentation in the research sector persists. R&D intensity in Croatia is substantially lower than the EU average and linkages between academia and business are underdeveloped (see Annex 11). R&D expenditure, which is crucial to stimulating productivity gains and boosting the economic potential of less-developed Croatian regions, is unequally distributed across the country. Streamlining the fragmented R&D system (currently numbering 445 different organisations) would be conducive towards improving its performance and spending efficiency and facilitating collaboration between universities and with business.

Longstanding skills mismatches pose obstacles to employment, competitiveness and potential growth. Labour activation measures are insufficiently integrated with related policy areas such as social policy, adult learning, and vocational training. There is a lack of alignment between active labour market policies and persistent shortages in the Croatian labour market. High levels of skills mismatches reflect low employment chances for medium-skilled and especially low-skilled workers. Skills mismatches are especially prominent among young workers. The levels of labour shortages in the last quarter of 2022 are higher than pre-pandemic levels in all sectors and higher than the EU averages, especially in information and communication technologies (ICT), construction, healthcare and social welfare. Labour shortages are the result of skills gaps and a shrinking population (9.64% decrease in population in 2021 compared to 2011 according to census data), and have a strong regional dimension. The up- and reskilling measures implemented under the RRP and European Social Fund Plus (ESF+) (such as the new round of active labour market policies, a voucher system, and a plan to establish individual learning accounts) need to be substantially boosted to meet the ambitious national target for adult learning and to address skills needs in the labour market.

The lack of relevant green skills creates bottlenecks in the transition to a net-zero economy. In 2022, labour shortages were reported in Croatia for 31 occupations that required specific skills or knowledge for the green transition ([11]). The job vacancy rate increased across most key sectors, such as construction and manufacturing, with both sectors standing below the EU average for construction ([12]). In 2022, labour shortages were reported as a factor constraining production in industry (for 34.0% of firms) and construction (for 47.3% of firms) ([13]). Upskilling and reskilling for the green transition, including for the people

([11]) See figures of the European Labour Authority (2023) and the EURES Report on labour shortages and surpluses.

([12]) From 1.5% in 2015 to 2.2% in 2021 for the construction sector, against an EU average of 6%, from 0.6% in 2015 to 1.4% for manufacturing in 2021 against an EU average of 1.9%, Eurostat (JVS_A_RATE_R2).

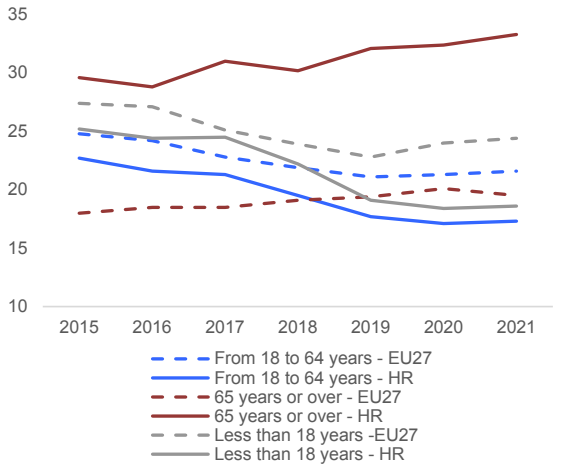
([13]) European Business and Consumer Survey

most affected, and promoting inclusive labour markets, are essential policy levers to accelerate the transition to net-zero and ensure the outcome is fair (see Annex 8).

Addressing the risk of poverty and social exclusion

The social protection system insufficiently protects the most disadvantaged persons. While the rate of the population at risk of poverty and social exclusion is lower than the EU average, groups at higher risk include older people, especially women, and people with disabilities. Single parents experience a particularly high in-work at-risk-of-poverty rate in comparison to the total population (21% vs 4.9% in 2021). Poorer people are also disproportionately affected by energy poverty (see Annex 8). Furthermore, the at-risk-of-poverty rate gap indicator value ([14]) is still among the worst in Europe. Total expenditure on social protection continues to be relatively low (24% of GDP vs. 31.7% in the EU in 2020).

Graph 3.1: **People at risk of poverty or social exclusion by age (%)**



Source: Eurostat

The impact of social transfers (excluding pensions) on poverty reduction has been continually decreasing and reached 20.66% in 2021, among the lowest in the EU. The already low capacity of the minimum income scheme to mitigate poverty would have been further eroded by inflation and the energy crisis, if it had not been offset by the recent increases introduced under the RRP. Effective access to social protection is low for the unemployed, the self-employed and temporary workers.

Availability and quality of affordable social services, and especially long-term care (LTC) is a key challenge exacerbated by ageing. The LTC system is fragmented and severely underfunded in Croatia, with public spending amongst the lowest in the EU (0.23% of GDP against 1.81% in 2020). This particularly affects older people (65+), who already suffer from low pension adequacy and high poverty levels. The new Social Welfare Act adopted in line with the RRP introduces structural changes to long-term care and facilitates the transition to home and community-based services. Substantial support to LTC and deinstitutionalisation has been programmed under RRF, ESF+ and the European Regional Development Fund (ERDF), but these developments need to be stepped up, including by the adoption of a LTC strategic framework which is planned for 2023, to ensure substantially

([14]) At-risk-of-poverty rate gap indicator: the relative median at-risk-of-poverty gap is calculated as the difference between the median equivalised total net income of persons below the at-risk-of-poverty threshold and the at-risk-of-poverty threshold, expressed as a percentage of the at-risk-of-poverty threshold (cut-off point: 60% of median equivalised income).

better access to higher quality social services.

KEY FINDINGS

Croatia's Recovery and Resilience Plan includes measures to address a series of structural challenges by:

- Reducing overall dependence on fossil fuels, thereby increasing security of supply and ensuring affordability while accelerating decarbonisation.

- Supporting the green transition by promoting energy efficiency, renewable energy and related storage, as well as necessary electricity grid development, sustainable transport, the circular economy, the protection of biodiversity and ecosystems, efficient water management, investment in building renovation and the decarbonisation of businesses. Reducing the discrepancy between electricity and gas prices for households, to promote the switch from gas heating to heat pumps.

- Accelerating the digital transition by developing digital processes in public administration, education and business, and reducing the digital divide between urban and remote rural areas.

- Boosting the economic recovery by leveraging private investment, lifting regulatory and administrative constraints, accelerating the development of the green and digital economies and incentivising research, development and innovation (R&D&I).

- Implementing labour market policies and developing appropriate skills to match current and labour market demand, prioritising the development of skills necessary for the green and digital transitions.

- Further improving the efficiency and resilience of public administration, the judiciary and the management of state assets.

- Strengthening the quality, efficiency, accessibility and financial sustainability of the healthcare and long-term care systems.

- Developing family and community-based services to reduce poverty and help integrate disadvantaged groups

- Increasing the share of children in early childhood education and care and of pupils going to one-shift schools in primary and general secondary school. Improving the quality of education and increasing its labour market relevance.

- Tackling regional fragmentation to reduce disparities between different regions and different social groups.

Beyond the reforms and investment in the RRP, Croatia would benefit from:

- Decarbonising its energy and transport sectors, in particular by streamlining permitting procedures for the development of renewable energy sources, stepping-up performance in the energy efficiency of buildings, reinforcing investment in the railway sector and incentivising the use of clean vehicles.

- Reinforcing the diversification, productivity and resilience of the Croatian economy, including by stepping up efforts to meet the 2030 spending targets on R&D&I and adult learning, implementing up- and reskilling measures to tackle labour skills mismatches and addressing the fragmentation of the research sector.

ANNEXES

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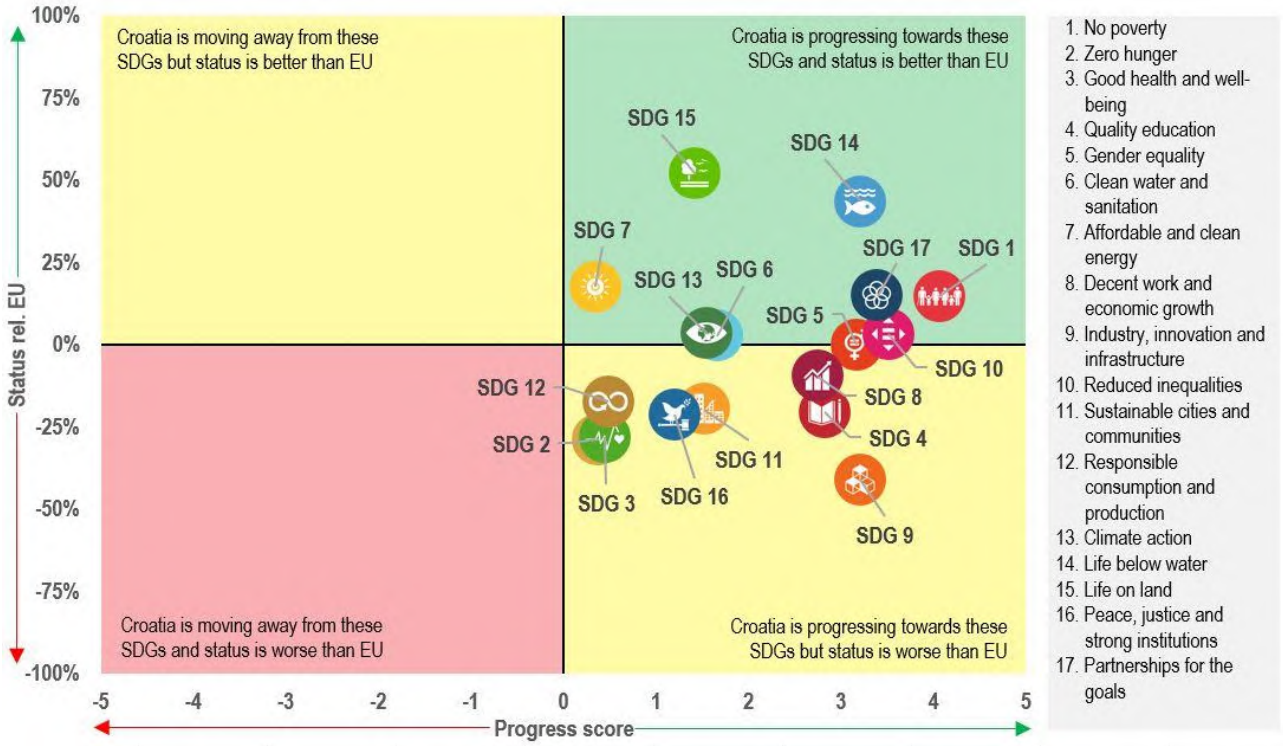
This Annex assesses Croatia's progress on the Sustainable Development Goals (SDGs) along the four dimensions of competitive sustainability. The 17 SDGs and their related indicators provide a policy framework under the UN's 2030 Agenda for Sustainable Development. The aim is to end all forms of poverty, 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 historic global framework agreement and to playing an active role in maximising progress on the SDGs. The graph below is based on the EU SDG indicator set developed to monitor progress on the SDGs in an EU context.

Croatia is improving on all of the SDG indicators related to *environmental sustainability* (SDGs 2, 6, 7, 9, 11, 12 13, 14, 15). However, it still needs to make additional efforts to catch up with the EU average in some of them, especially SDGs 9, 2, 11 and 12. Croatia performs better than the EU (52.1% vs 47.6%) on SDG 15 (Life on land). This is 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, especially on the share of renewable energy in gross final energy consumption (from 28.3% in 2016 to 31.3% in 2021; above the EU average of 21.8%). Croatia's recovery and resilience plan (RRP) includes measures to further improve on energy-related challenges, namely on the energy renovation of buildings, increasing overall energy efficiency and advancing the decarbonisation of the energy sector. The country is lagging significantly behind the EU average on SDG 9 due to 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 development. Croatia needs to catch up on

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



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

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

SDG 12 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 was 2.5%) and an increase in the material footprint (13.1 tonnes in 2020, while the EU average is 13.7 tonnes in 2020). Croatia also performed worse than the EU average in SDG 11 due to waste recycling 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 is also lagging compared to EU average on SDG 2, due mainly to the higher obesity rate and lower sustainable agricultural production indicators.

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, 4, and 8. It is performing well on the share of the population unable to keep their homes adequately warm (SDG 7; from 9.3% in 2016 to 5.7% in 2021, and above the EU average of 6.9%). Significant improvements were made to scored better than the EU average on poverty indicators (SDG 1) such as the severe material and social deprivation rate and for the at-risk-of-poverty rate indicator (See annex 14). Croatia made improvements in the gender gap indicator of people outside the labour force due to caring responsibilities (SDG 8; from 2% of persons aged 20-64 in 2017 to 0.7% in 2022, better then the EU average of 1.2%). The RRP plans to further improve on these issues through a dedicated component for the welfare system that includes the National Plan against Poverty and Social Exclusion 2021-2027 adopted in 2021, and the new Social Welfare Act that increases minimum benefits. Although improvements have been made, Croatia is still performing below the EU average on SDG 3 (Good health and well-being) and on SDG 4 (Quality education). This goes in particular for healthy life years at birth (SDG 3; 58.5 years in 2020 compared to the EU average of 64 years), the participation in early childhood education (SDG 4; 78.8% of children aged 3 and over in 2020 compared to the EU average of 93%) and adult participation in learning (4.4% of the population aged 25-64 in 2020 vs an EU average of 11.9%). The RRP envisages measures to tackle these issues through dedicated components for health and education. These include actions such as the National Health Development Plan 2021-2027 adopted in 2021; revised legal framework for adult learning adopted in 2021; and a model for financing early childhood education and care.

Croatia is improving on all of the SDGs related to *productivity*, but still needs to catch up with the EU average in all of them (SDGs 4, 8, 9). Although it scores above the EU average on adults with at least basic digital skills (SDG 4; 63.4% of individuals aged 16-74 in 2021 vs an EU average of 53.9%), it is lagging behind on the share of households with a high-speed internet connection (SDG 9). This is a long-standing issue in Croatia due to it's coastal area (51.7% of households in 2021 vs an EU average of 70.2%). Taking this into account, the RRP has measures dedicated to increasing broadband access for households. Employment indicators from SDG 8, which have improved in the last 5 years, are still below the EU average; 13.3% of young people aged 15-29 were not in education, employment or training (NEET) in 2022 (vs an EU average of 11.7%); the employment rate for the population aged 20-64 was 69.7% in 2022 (vs an EU average of 74.6%).

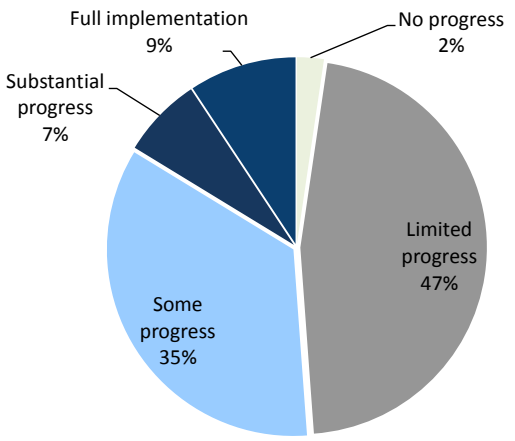
Croatia is improving on SDG indicators related to *macroeconomic stability* (SDGs 8, 16, 17), but still needs to catch up with the EU on SDGs 8 and 16. While two of the indicators linked to sustainable economic growth from SDG 8 showed improvement (real GDP per capita and the investment share of GDP) they are still below EU average, while the material footprint indicator deteriorated from 12.5 tonnes per capita in 2015 to 13.1 tonnes in 2020, better than the EU average of 13.7 tonnes. Croatia has made strong improvements in the long-term unemployment rate (SDG 8; from 4.6% of the active population in 2017 to 2.4% in 2022, similar to the EU average). Access to justice and the corruption perception Indexes are below the EU average and point to structural issues linked to these areas. The Commission is monitoring this through different channels like the Rule of Law Report and it issued a country-specific recommendation in 2019 linked to fighting corruption. 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 68.4% of GDP in 2022, below the EU average of 84.%. The debt level is expected to drop further in the medium term

driven by strong nominal growth that 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 2019-2022 country-specific recommendations (CSRs) ([15]) 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 ([16]) and the commitments in its RRP ([17]). At its stage of RRP implementation, 51% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 47% 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 2019-2022 CSRs (2023 European Semester)**



Source: European Commission

([15]) 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)

([16]) 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).

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

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

Croatia	Assessment in May 2023*	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 and planned as of 2022, 2023 and 2025	SDG 8, 16
Reduce the territorial fragmentation of the public administration and streamline the functional distribution of competencies.	Limited Progress	Relevant RRP measures planned as of 2022, 2023 and 2025	SDG 10, 11, 16
2019 CSR 2	**Limited 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 and planned as of 2022, 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 and planned as of 2023, 2024 and 2025	SDG 1, 2, 10
Strengthen labour market measures and institutions and their coordination with social services.	Some Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026	SDG 8
In consultation with the social partners, introduce harmonised wage-setting frameworks across the public administration and public services.	Limited Progress	Relevant RRP measures planned as of 2023 and 2024	SDG 8
2019 CSR 3	**Limited Progress**		
Focus investment-related economic policy on research and innovation,	Some Progress	Relevant RRP measures planned as of 2022, 2024, 2025 and 2026	SDG 9, 10, 11
sustainable urban and railway transport,	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2022, 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 and planned as of 2022, 2023, 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 and planned as of 2022, 2023 and 2025	SDG 16
2019 CSR 4	**Limited 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.	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2022, 2024, 2025 and 2026	SDG 16
Reduce the duration of court proceedings and improve electronic communication in courts.	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024 and 2026	SDG 16
Reduce the most burdensome parafiscal charges	Substantial Progress	Relevant RRP measures planned as of 2022, 2023 and 2024	SDG 8, 9
and excessive product and services market regulation.	Some Progress	Relevant RRP measures planned as of 2022, 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 and planned as of 2022, 2023, 2024, 2025 and 2026	SDG 3
2020 CSR 2	**Some Progress**		
Strengthen labour market measures and institutions	Some Progress	Relevant RRP measures planned as of 2022, 2023, 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 and planned as of 2023, 2024 and 2025	SDG 1, 2, 10
Increase access to digital infrastructure and services.	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024, 2025 and 2026	SDG 9
Promote the acquisition of skills.	Some Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2022, 2023 and 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 planned as of 2022, 2025 and 2026	SDG 8, 9
Further reduce parafiscal charges and	Substantial Progress	Relevant RRP measures planned as of 2022, 2023 and 2024	SDG 8, 9
restrictions in goods and services market regulation.	Some Progress	Relevant RRP measures planned as of 2022, 2023 and 2024	SDG 9
Front-load mature public investment projects	Some Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2022	SDG 8, 16
and promote private investment to foster the economic recovery.	Limited Progress	Relevant RRP measures planned as of 2022, 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 and planned as of 2022, 2023, 2024, 2025 and 2026	SDG 6, 12, 15

(Continued on the next page)

Table (continued)

sustainable urban and rail transport,	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2022, 2024, 2025 and 2026	SDG 11
clean and efficient production and use of energy	Limited Progress	Relevant RRP measures being implemented as of 2021 and planned as of 2022, 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
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 and planned as of 2022, 2023 and 2025	SDG 16
Improve the efficiency of the judicial system.	Limited Progress	Relevant RRP measures planned as of 2022, 2023, 2024 and 2026	SDG 16
2021 CSR 1	Substantial Progress		
In 2022, maintain a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment. Keep the growth of nationally financed current expenditure under control.	Substantial Progress	Not applicable	SDG 8, 16
When economic conditions allow, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions and ensuring fiscal sustainability in the medium term.	Full Implementation	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.	Some Progress	Not applicable	SDG 8, 16
Give priority to fiscal structural reforms that will help provide financing for public policy priorities and contribute to the long-term sustainability of public finances, including by strengthening the coverage, adequacy, and sustainability of health and social protection systems for all.	Limited Progress	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.	Full Implementation	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 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 planned as of 2022, 2024, 2025 and 2026	SDG 7
and transport sectors.	Some Progress	Relevant RRP measures being planned as of 2024, 2025, and 2026	SDG 11

Note:

* See footnote ([17]).

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

Source: European Commission

ANNEX 3: RECOVERY AND RESILIENCE PLAN - OVERVIEW

The Recovery and Resilience Facility (RRF) is the centrepiece of the EU's efforts to help it recover from the COVID-19 pandemic, speed up the twin transition and strengthen resilience against future shocks. The RRF also contributes to implementation of the SDGs and helps to address the Country Specific Recommendations (see Annex 2). Croatia submitted its current recovery and resilience plan (RRP) on 14 May 2021. The Commission's positive assessment on 8 July 2021 and Council's approval on 28 July 2021 paved the way for disbursing EUR 6.3 billion in grants under the RRF over the 2021-2026 period.

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

	Current RRP
Scope	Initial plan
CID adoption date	28 June 2021
Total allocation	EUR 6.3 billion in grants (11.0% of 2021 GDP)
Investments and reforms	146 investments and 76 reforms
Total number of milestones and targets	372

Source: RRF Scoreboard

Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contribution for Croatia was moreover updated on 30 June 2022 to an amount of EUR 5.5 billion in grants. No revision was submitted at the time of publication of this country report.

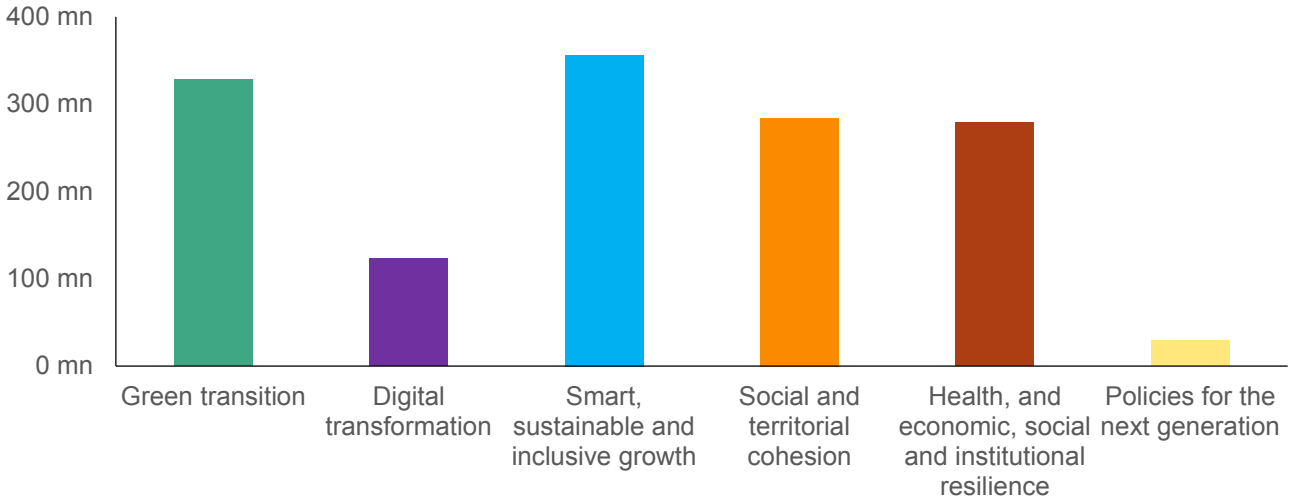
Croatia's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ([18]). The Scoreboard also gives an overview of the progress made in implementing the RRF as a whole, in a transparent manner. The graphs in this Annex show the current state of play of the milestones and targets to be reached by Croatia and subsequently assessed as satisfactorily fulfilled by the Commission.

EUR 2.2 billion has so far been disbursed to Croatia under the RRF. The Commission disbursed EUR 818.4 million to Croatia in pre-financing on 28 September 2021, equivalent to 13% of the financial allocation. Croatia's first payment request was positively assessed by the Commission, taking into account the opinion of the Economic and Financial Committee, leading to EUR 1,4 billion being disbursed in financial support (net of pre-financing) on 16 December 2022. The related 25 milestones cover several reforms and investments in the areas of public administration, the judiciary, social policy, employment, education, skills, energy and energy efficiency, water management and connectivity.

In September 2022, Croatia submitted its second payment request for EUR 700 million. On 10 November 2022 the Commission published its positive preliminary assessment which after the positive discussion in the committee's led to the disbursement of the money on 16 December 2022. The related 25 milestones and targets cover several reforms and investments in the areas of energy and energy efficiency, water management, transport and digital connectivity, employment, education, skills, health, and social welfare, public administration and the judiciary (See Section 2).

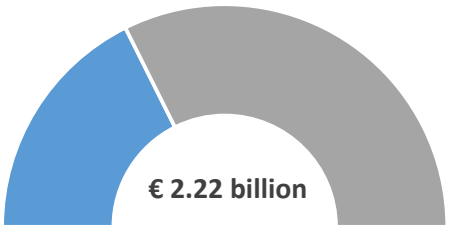
([18]) https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/country_overview.html

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



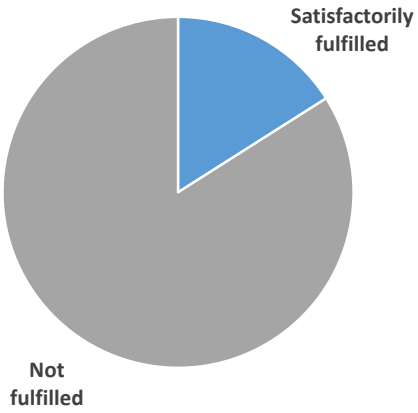
Note: Each disbursement reflects progress in the implementation of the RRF, across the six policy pillars. This graph displays how disbursements under the RRF (excluding pre-financing) relate to the pillars. The amounts were calculated by linking the milestones and targets covered by a given disbursement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

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



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

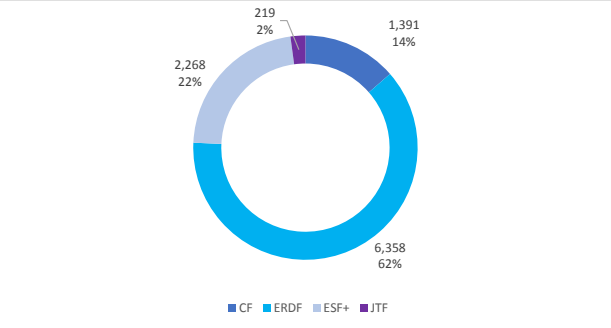
Graph A3.3: **Fulfilment status of milestones and targets**



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

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

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

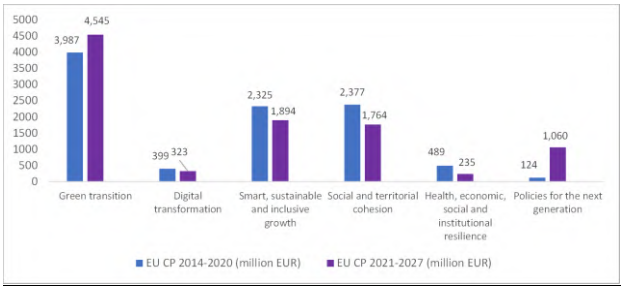


(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)
Source: European Commission, Cohesion Open Data

In 2021-2027, in Croatia, cohesion policy funds ([19]) will invest EUR 4.5 billion in the green transition and EUR 0.3 billion in the digital transformation as part of the country's total allocation of EUR 10.2 billion. In particular, the European Regional Development Fund (ERDF) will boost R&D, innovation and digitalisation by supporting more than 13 500 companies. More than EUR 500 million of ERDF investments will be allocated to projects that will lead to 20% primary energy savings and increase the share of renewables to 60% of electricity production in 2030. Particular attention should be paid to implementing the ambitious new integrated territorial programme (ITP), which combines ERDF support for the industrial transition of regions and sustainable development of cities and islands, with mitigation of the negative effects of energy transition in the two most affected counties through the Just Transition Fund (JTF). The JTF will support new technologies, the creation of new jobs for technical professions, improving the links between businesses and educational institutions, increasing the supply of non-formal education and reskilling and upskilling workers. This will help Croatia fulfil its commitment to phase out the use of coal by 2033. The European Social Fund Plus (ESF+) is key to supporting investment in people and reforms in the areas of employment, education and training, and social inclusion. Croatia allocated EUR 855 million to support education and skills. This funding will include strengthening green and digital skills by aligning vocational education and training (VET) with labour market demand.

Of the investments mentioned above, EUR 639 million will be invested in line with REPowerEU objectives. This is on top of the EUR 533 million dedicated to REPowerEU under the 2014-2020 budget**.** EUR 499 million (2021-2027) and EUR [195] million (2014-2020) is for improving energy efficiency; EUR 112 million (2021-2027) and EUR 339 million (2014-2020) is for renewable energy and low-carbon R&I; and EUR 28 million (2021-2027) is for smart energy systems.

Graph A4.2: **Synergies between cohesion policy funds and the RRF with its six pillars in Croatia**



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

In 2014-2020, cohesion policy funds made EUR 9.1 billion available to Croatia ([20]) with an absorption of 65% ([21]). Including national financing, the total investment amounts to EUR 10.5 billion - around 3% of GDP for 2014-2020.

Croatia continues to benefit from cohesion policy flexibility to support economic

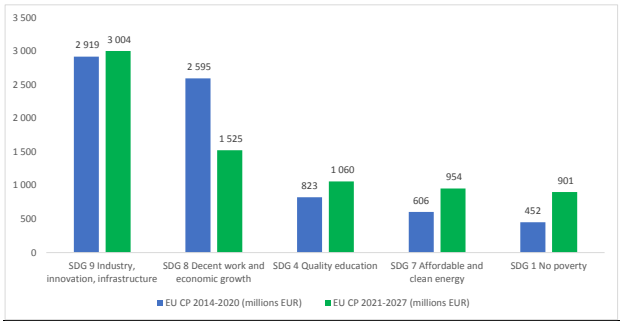
([19]) European Regional Development Fund (ERDF), Cohesion Fund (CF), European Social Fund+ (ESF+), Just Transition Fund (JTF) and Interreg. The total amount including national and EU contributions. Data source: Cohesion Open Data.

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

([21]) 2014-2020 Cohesion policy EU payments by MS is updated daily on Cohesion Open Data.

recovery, step up convergence and provide vital support to regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument (REACT-EU) ([22]) under NextGenerationEU provides EUR 673 million on top of the 2014-2020 cohesion policy allocation for Croatia. REACT-EU supported 274 SMEs in the area of green and/or digital technologies, with a view to increase their competitiveness and the ability to respond to market challenges caused by COVID-19. Funding also helped save the jobs of around 280 000 people working in sectors affected by the crises, i.e. accommodation and food production. With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by Croatia to support vulnerable households, jobs and companies particularly affected by high energy prices.

Graph A4.2: **Cohesion policy funds contribution to the SDGs in 2014-2020 and 2021-2027 in Croatia**



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

In both 2014-2020 and 2021-2027, cohesion policy funds have contributed substantially to the Sustainable Development Goals (SDGs). These funds support 11 of the 17 SDGs, notably SDG 9 'industry, innovation and infrastructure' and SDG 8 'decent work and economic growth' ([23]).

Other EU funds make significant resources available for Croatia. The common agricultural policy (CAP) made available EUR 4.2 billion in 2014-2022. It will keep supporting Croatia with EUR 3.4 billion in 2023-2027. The two CAP Funds (European Agricultural Guarantee Fund and European Agricultural Fund for Rural Development), contribute to the European Green Deal while ensuring long-term food security. They promote social, environmental and economic sustainability and innovation in agriculture and rural areas, in coordination with other EU funds. The European Maritime and Fisheries Fund made EUR 253 million available to Croatia in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund will make available EUR 244 million in 2021-2027.

Croatia also benefits from other EU programmes, notably the Connecting Europe Facility, which under CEF 2 (2021-2027) has so far allocated EU funding of EUR 2.7 million to three specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated more than EUR 24 million for Croatian R&I actors, while in the previous programming period, Horizon 2020 earmarked EUR 138 billion. The Public Sector Loan Facility established under the Just Transition Mechanism makes EUR 14.1 million of grant support from the Commission available in 2021-2027, which will be combined with loans from the EIB to support investments by public sector entities in just transition regions.

Croatia received support under the European instrument for temporary support to mitigate unemployment risks in an emergency (SURE) to finance short-time work schemes and similar measures to mitigate the impact of COVID-19. The Council granted financial assistance to Croatia of EUR 1.6 billion in loans, which supported around 40% of workers and 30% of firms in 2020, and around 13% of workers and 15% of firms in 2021.

The Technical Support Instrument (TSI) supports Croatia in designing and implementing growth-enhancing reforms, including the implementation of specific reforms in its recovery and resilience plan (RRP). Croatia has received significant support since 2016, including for (i) identifying the most suitable reforms and investments in line with the REPowerEU plan; (ii) the establishment of helicopter emergency medical services and (iii) the implementation of a regulatory impact assessment. The TSI is also helping Croatia implement specific reforms and investments included in its RRP, e.g. improving

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

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

digitalisation and transparency in the judiciary and support the tourism sector in becoming more sustainable, resilient and digitalised ([24]).

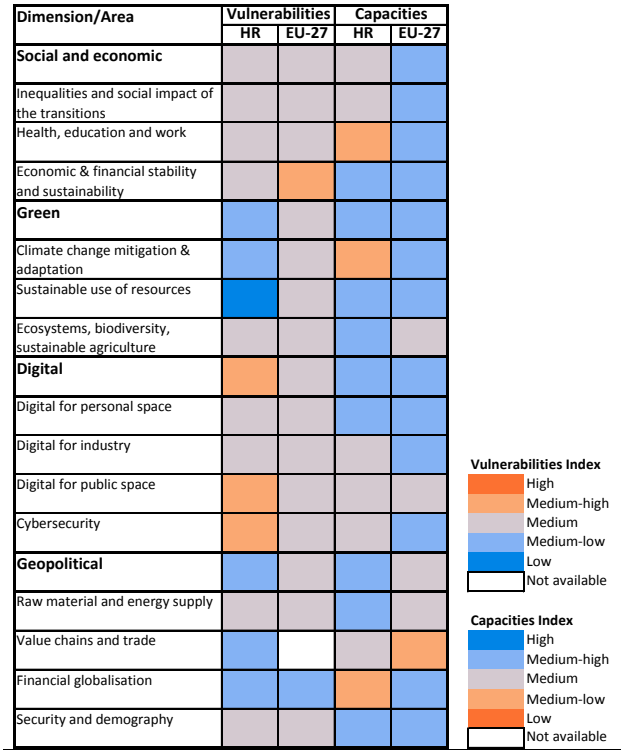
([24]) Country factsheets on reform support are available here.

This Annex illustrates Croatia's relative resilience capacities and vulnerabilities using the Commission's resilience dashboards (RDB) ([25]). Comprising a set of 124 quantitative indicators, the RDB provide broad indications of Member States' ability to make progress across four interrelated dimensions: social and economic, green, digital, and geopolitical. The indicators show vulnerabilities ([26]) and capacities ([27]) that can become increasingly relevant, both to navigate ongoing transitions and to cope with potential future shocks. To this end, the RDB help to identify areas that need further efforts to build stronger and more resilient economies and societies. They are summarised in Table A5.1 as synthetic resilience indices, which illustrate the overall relative situation for each of the four dimensions and their underlying areas for Croatia and the EU-27 ([28]).

According to the set of resilience indicators under the RDB, Croatia generally displays a similar level of vulnerabilities compared to the EU average. Croatia shows medium-high vulnerabilities in the digital dimension of the RDB, medium vulnerabilities in the social and economic dimension, and medium-low vulnerabilities in the green and geopolitical dimension. It has higher vulnerabilities than the EU average in the areas 'digitalisation for the public space' and 'cybersecurity'. Croatia has relatively low vulnerabilities in relation to 'economic and financial stability and sustainability', 'climate change mitigation and adaptation', and 'sustainable use of resources' ([29]).

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

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



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

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

([26]) 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.

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

([28]) 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.

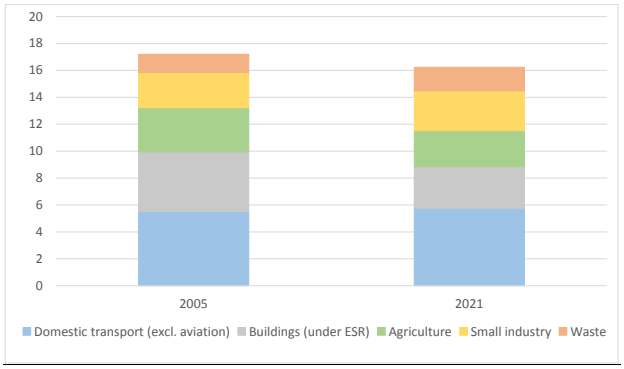
([29]) Although Croatia has higher vulnerability challenges with respect to climate extremes, the overall lower vulnerabilities in this area are driven by its lower GHG emissions per capita and CO_2 emissions from road transport.

Implementation of the European Green Deal is underway in Croatia, requiring continued action on renewables, sustainable mobility, and climate adaptation. This Annex provides a snapshot of the key areas involved ([30]).

Croatia is projected to reach its new 2030 climate policy target for the effort sharing sectors if it implements additional measures tabled ([31]). Data for 2021 on greenhouse gas emissions in these sectors are expected to show that the country generated less than its annual emission allocations ([32]). Current policies in Croatia are projected to reduce these emissions by 14% relative to 2005 levels in 2030, more than sufficient to reach the effort sharing target before the target was raised in line with the EU's 55% objective. The additional measures tabled would bring a sharper reduction in emissions of 19%, surpassing the new target of 16.7% ([33]). Croatia allocates 40.3% of its Recovery and Resilience Facility grants to key reforms and investments to attain the climate objectives ([34]).

In its long-term decarbonisation strategy, Croatia has set the goal of reducing greenhouse gas emissions to between 57% and 73% by 2050 (excluding land use and forestry). The five-year action plan to implement the strategy is currently being revised to align it with the more ambitious 2030 target.

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



Source: European Environmental Agency

Croatia's net carbon removals through the land use sector are slightly above its 2030 target. Croatia's forests achieve a major share of net carbon removals through land use. Croatia's 2030 land use, land-use change and forestry (LULUCF) net removals target implies to remove 5 527 kt CO_2eq, slightly below reported net removals for 2020 (see Table A6.1) ([35]). However, Croatia's carbon sink capacity is facing risks from increasingly frequent forest fires and the unfavourable age structure of its forests. Croatia's action plan for planting 1 million trees per year by 2030 awaits adoption.

Fossil fuels still play a substantial role in Croatia's energy mix, but in 2021, the share of renewable energy increased. In total, the share of fossil fuels in Croatia's energy mix was 69%. Although the share of gas dropped slightly from 32% in 2020 to 29% in 2021, the

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

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

([32]) Croatia's annual emission allocations for 2021 amount were some 17.5 Mt CO_2eq, and its approximated 2021 emissions were at 16.2 Mt (see European Commission, *Accelerating the transition to climate neutrality for Europe's security and prosperity: EU Climate Action Progress Report 2022*, SWD(2022)343).

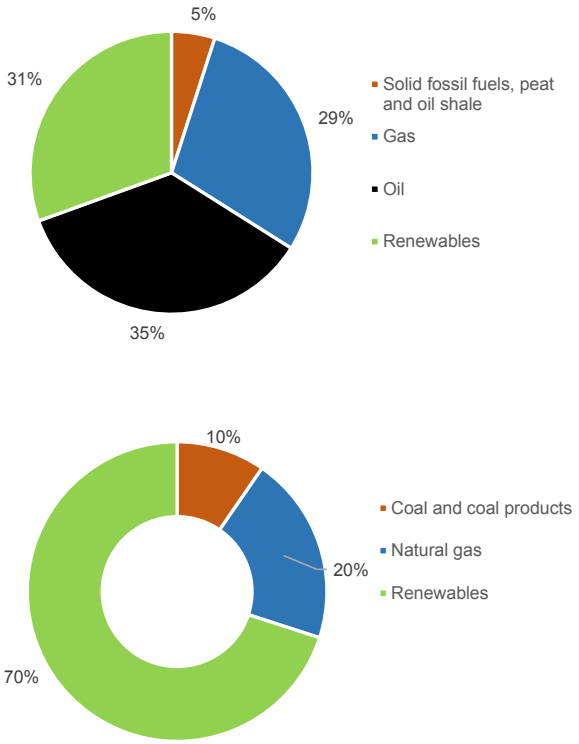
([33]) See the information on the distance to the 2030 climate policy target in Table A6.1. Existing and additional measures as of 15 March 2021.

([34]) For example, investments in energy efficiency of buildings, modernisation of energy infrastructure to connect 1 500 MW of renewable energy, production of advanced biofuels and renewable hydrogen, innovative carbon capture and storage projects, zero-emission vehicles and vessels and charging stations for electric vehicles.

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

share of oil decreased 1pp when compared with 2020, while the one of coal and coal products remain stable at 5% in 2021. In 2021, renewable sources increased by 3pp from 2020, accounting for a share of 31% in the energy mix (see Graph A6.2). Croatia's electricity mix is already highly decarbonised, with a 70% share from renewable sources in 2021 and 30% from fossil fuels. However, in 2020, Croatia relied on natural gas for 71% of its heat and on primary solid biofuels for up to 24%. Croatia envisages phasing out coal by 2033.

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



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

Renewable energy plays a central role in decarbonising Croatia's energy system. Lately, roughly over two thirds of Croatia's electricity have come from renewables, predominantly hydropower (with shares varying depending on whether it is a dry or moist year); hydropower reached a 48% share in 2021(4 pp above 2020). The share of wind energy reached 14% in the 2021 electricity mix, while the share of solar energy was 1%, slightly over geothermal with 0.6%. Croatia's target of 36.6% of share of energy from renewable sources in gross final energy consumption by 2030 included in the National Energy and Climate Plan (NECP) was considered sufficiently ambitious. Croatia will need to increase its renewable energy target in the updated NECP to make a stronger contribution to the more ambitious EU climate and energy targets in the Fit for 55 Package and in the REPowerEU Plan. Croatia's RRP comprises: i) a legislative reform to improve the uptake of renewables; ii) investment in upgrading 550 km of the electricity grid; iii) exploration of geothermal potential in district heating; and iv) reforms and investments in hydrogen production capacity.

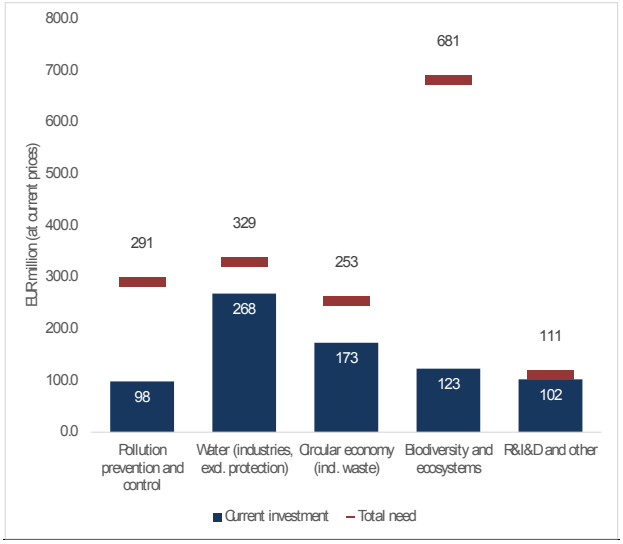
Actions on energy efficiency are still to be scaled-up to reach their full potential in Croatia. Croatia's NECP targets for primary and final energy consumption (PEC and FEC) were considered of low ambition in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, Croatia is expected to be on track to meet its 2030 target for PEC and for FEC as notified in its NECP ([36]). Its building renovation rate is currently low; however, the investment plans for energy renovation in private and public buildings have been stepped up, aiming to reach an annual renovation rate of 3% by 2030, 3.5% by 2040 and 4% by 2050. Croatia aims to renovate its entire building stock by 2050. Its RRP is helping the country attain energy efficiency targets, through reforms and investments concerning the energy renovation of buildings, and investments in SMEs and large companies. Notwithstanding, the crowding-in of private investments further to grants and subsidies is necessary to improve the energy efficiency in the building sector and achieve achievement of the 2030 energy efficiency targets.

There is ample room for more greening transport in Croatia. In contrast to the trend at EU level, greenhouse gas emissions from domestic transport in Croatia increased since 2005 and are projected to do so until 2030. In view of the increasing number of cars on

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

roads, there is scope to promote zero-emission vehicles and related infrastructure, public transport, and active modes of transport. Rail has a share of 2.5% in passenger land transport (EU average: 8%), while it reaches 21% in freight land transport (vs an EU average of 19%). Unless efforts are stepped up, the construction of the Croatian part of the core Trans-European Transport Network (TEN-T) risks not being completed by 2030. In particular, the rail network is lagging behind in terms of modern connections and TEN-T compliance. Under the recently adopted railway development strategy, Croatia plans to modernise its fleet, provide a new public service obligation contract with passenger transport operators, and restructure HZ Cargo, the freight services company. Air pollution remains a concern, with traffic congestion being among the main causes, especially in bigger cities.

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



Source: European Commission.

Croatia would benefit from investing more in environmental protection and in measures protecting biodiversity and addressing pollution ([37]). Between 2014 and 2020, environmental investment needs were estimated at about EUR 1.7 billion, while investments stood at only EUR 764 million, leaving a gap of about 901 million per year (see Graph A6.3) ([38]). The gap is especially high for biodiversity and pollution prevention and control. Over a third of Croatia's land area is covered by the Natura 2000 network ([39]), but most of its species and habitats are in bad or poor conservation status ([40]), calling for action on conservation and management, as well as investments. Croatia has not yet completed designating its marine Natura 2000 sites. Furthermore, investment is needed in wastewater collection and treatment: 93% of urban wastewater was either not collected or failed to meet the requirements for biological treatment in 2018 ([41]).

Croatia is among the EU Member States with higher vulnerability to climate risks. Longer and more frequent droughts and floods are affecting, among other things, agriculture, and the energy sector. This implies higher water demand, lower hydropower production and increased energy demand for cooling. Key sectors such as tourism, fisheries and forestry are also highly affected. While Croatia has a national adaptation strategy and a multi-level governance framework in place, national, regional local, and sectoral implementation plans are lagging behind, and implementation is not being monitored. Various actions are planned, also with the support of EU funds, to improve administrative capacities to deal with climate adaptation and raise awareness in general. Within the EU, Croatia has had one of the highest cumulative shares of damage from extreme weather and climate events in relation to GDP ([42]). There is already a pronounced

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

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

([39]) In 2021, Croatia had 38.1% terrestrial protected areas (Natura 2000 and nationally designated areas), against the EU average of 26.4% (European Environment Agency, 2023, Natura 2000 Barometer).

([40]) European Commission and European Environment Agency (EEA), 2023, Biodiversity information system for Europe, Croatia

([41]) European Commission, country profile on urban waste water treatment: Croatia.

([42]) Climate change, impacts and vulnerability in Europe 2016, EEA Report No 1/2017. It is estimated that these losses, between 1980 and 2013, amounted to around EUR 2.25 billion or EUR 68 million per year. These losses increased significantly during 2014 and 2015 (up to EUR 2.83 billion in 2015).

insurance protection gap for floods, while the gap for wildfires could pose a risk to public finances if the insurance penetration remains low.

Croatia provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring food and energy security and mitigating social effects. Environmentally harmful subsidies have been identified, via an initial assessment, in the agriculture, forestry and fishing, electricity, gas, steam and air conditioning, transportation and storage, mining and quarrying sectors. Examples of such subsidies include the reduced VAT rate for fertilisers and pesticides, the energy tax relief for companies in agriculture and forestry for gas oil, the excise duty exemptions on diesel used for agricultural, fishing, aquaculture and navigation purposes, the reimbursement of excise duty on diesel used in freight and other categories of passenger transport or the excise tax exemption and tax relief for natural gas for industrial consumers ([43]). A mapping of all environmentally harmful subsidies by Croatia would help prioritise candidates for reform.

Croatia could use tax instruments to promote waste reduction. Unlike in the EU on average, greenhouse gas emissions from waste in Croatia have been increasing since 2005. Only 31.5% of municipal waste were recycled in 2021. Taxes for landfilling residual and biowaste could reduce the risk of not meeting the legal 2025 recycling target of 55%. Also, recycling of packaging waste could be improved with differentiated fees in the extended producer responsibility scheme. Croatia also has the potential to rely more on environmental taxes to reduce air pollution ([44]) (see Annex 19).

([43]) Fossil fuel figures in EUR of 2021 from the 2022 State of the Energy Union report. Initial assessment of environmentally harmful subsidies done by the Commission in the 2022 toolbox for reforming environmentally harmful subsidies in Europe, using OECD definitions, and based on the following datasets: OECD Agriculture Policy Monitoring and Evaluations; OECD Policy Instruments for the Environment (PINE) Database; OECD Statistical Database for Fossil Fuels Support; IMF country-level energy subsidy estimates. Annex 4 of the toolbox contains detailed examples of subsidies on the candidates for reform. – Croatia introduced the VAT reduction and energy tax relief for gas oil as temporary measures to mitigate the impact of energy price inflation.

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

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

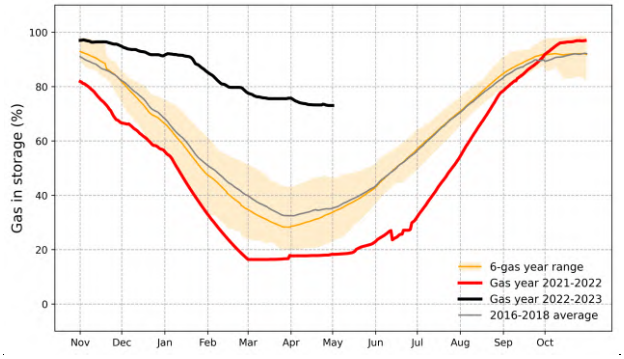
									'Fit for 55' 2030 target/value	Distance WEM	Distance WAM
			2005	2017	2018	2019	2020	2021			
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO_2eq; % pp	17.4	-4%	-7%	-8%	-5%	-	-16.7%	-2.7	2.3
	Net carbon removals from LULUCF [2]	kt CO_2eq	-7 969	-4 896	-5 504	-5 736	-5 667	-5 802	-5527	n/a	n/a
			2005	2017	2018	2019	2020	2021	National contribution to 2030 EU target		
	Share of energy from renewable sources in gross final consumption of energy [3]	%	24%	27%	28%	28%	31%	31%	36%		
	Energy efficiency: primary energy consumption [3]	Mtoe	9.1	8.3	8.2	8.2	7.8	8.3	8.2		
	Energy efficiency: final energy consumption [3]	Mtoe	7.2	6.9	6.9	6.9	6.5	7.0	6.9		
			Croatia						EU		
			2016	2017	2018	2019	2020	2021	2019	2020	2021
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	3.4	3.5	3.5	3.4	3.3	3.1	2.4	2.2	2.2
	Environmental taxes (% of total taxation) [4]	% of taxation	9.3	9.4	9.4	9.2	8.9	8.8	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	2.4	2.0	2.1	2.3	2.4	3.1	1.7	1.6	1.6
	Investment in environmental protection [5]	% of GDP	0.5	0.5	0.5	0.4	-	-	0.4	0.4	0.4
	Fossil fuel subsidies [6]	EUR2021bn	0.1	0.1	0.1	0.1	0.1	0.1	53.0	50.0	-
	Climate protection gap [7]	score 1-4					2.4	2.1			1.5
Climate	Net greenhouse gas emissions	1990 = 100	76.0	79.0	76.0	76.0	75.0	73.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR10	0.52	0.51	0.48	0.46	0.49	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR10	0.18	0.18	0.17	0.17	0.17	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	100.8	105.1	104.0	104.9	98.2	105.8	102.9	94.6	-
	FEC in residential building sector	2015=100	99.1	98.5	94.6	92.1	93.7	100.5	101.3	101.3	106.8
	FEC in services building sector	2015=100	102.3	107.1	109.1	109.5	99.2	111.1	100.1	94.4	100.7
Pollution	Smog-precursor emission intensity (to GDP) [8]	tonne/EUR10	1.6	1.6	1.5	1.2	1.7		0.9	0.9	-
	Years of life lost due to air pollution by PM2.5	per 100.000 inh.	1349.1	1456.9	1419.6	1011.2	1056.1	-	581.6	544.5	-
	Years of life lost due to air pollution by NO_2	per 100.000 inh.	192.5	224.0	206.7	194.2	154.7	-	309.6	218.8	-
	Nitrates in ground water	mg NO_3/litre	-	-	-	-	-	-	21.0	20.8	-
Biodiversity	Land protected areas	% of total	37.5	37.8	-	38.0	38.0	38.1	26.2	26.4	26.4
	Marine protected areas	% of total	9.1	-	-	9.5	-	9.5	10.7	-	12.1
	Organic farming	% of total utilised agricultural area	6.1	6.5	6.9	7.2	7.2	8.3	8.5	9.1	-
			2017	2018	2019	2020	2021	2022	2020	2021	2022
Mobility	Share of zero-emission vehicles [9]	% in new registrations	0.0	0.2	0.4	1.5	3.3	2.8	5.4	8.9	10.7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	500	936	1317	188626	330028	432518
	Share of electrified railways	%	37.2	37.2	37.1	37.1	37.1	37.1	56.6	n/a	56.6
	Congestion (average number of hours spent in road congestion per year by a representative commuting driver)		23.7	24.0	23.1	23.6	n/a	n/a	28.7	n/a	n/a

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

Before Russia invaded Ukraine, Croatia was indirectly dependent on Russian imports through intra-EU trade. Croatia has an overall high dependence on imported fossil fuels which requires it to step up efforts in the energy transition. Croatia is heavily dependent on gas for its heating (71%), which is much higher than the EU average (37%). This makes its economy particularly sensitive to global price developments, with implications for energy security and affordability. Croatia has an enormous potential on the clean transition to explore. This Annex ([45]) sets out actions carried out by Croatia to achieve the REPowerEU objectives, including through the implementation of its recovery and resilience plan (RRP), in order to improve energy security and affordability while accelerating the clean energy transition and contributing to enhancing the EU's competitiveness in the clean energy sector ([46]).

Croatia has achieved a high level of gas supply security following the entry into service of the liquefied natural gas (LNG) terminal in Krk in January 2021. More recently, in 2022, the capacity of the Krk terminal was expanded with a technical upgrade from 2.6 to 2.9 billion cubic metres (bcm)/year, thereby enabling the supply of all of Croatia's gas needs, which are complemented by national gas production. It fulfilled its gas storage obligations, reaching 97.03% by 1 November 2022, and ended the heating season with a filling level of gas storage at 73.38% by 15 April 2023 ([47]). Croatia has one underground gas storage facility with a capacity of 0.49 bcm. With the construction of the LNG terminal in Krk and its technical upgrade in 2022, Croatia has managed to secure all its gas supplies. The country plans to further expand the capacity of the Krk terminal to 6.1 bcm/year and to further develop the internal gas transmission pipelines towards Slovenia, Hungary and Bosnia and Herzegovina, thereby becoming a regional gas energy hub in South-East Europe region. The Krško nuclear power plant located in Slovenia equally owned by the Slovenian GEN Energija and Croatia's Hrvatska Elektroprivreda (HEP) has been given permission to operate until the end of 2043 ([48]); its nuclear production corresponded to 14.4% of electricity demand in Croatia in 2022.

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



Source: JRC calculation based on AGSI+ Transparency Platform, 2022 (Last update 2 May 2023)

To address security of supply, Croatia's response comprised demand reduction measures alongside energy efficiency improvements. The Croatian government adopted energy saving guidelines from 1 August 2022 to 31 March 2023. Over the period August 2022 – March 2023, 22% of gas consumption has been saved in Croatia compared to the previous 5-years average. While energy efficiency measures would have the potential to significantly contribute to energy security and affordability, Croatia did not develop specific awareness campaigns on saving energy. It also did not introduce mandatory obligations to temporarily reduce energy consumption, and did not take actions to step up its energy efficiency ambition to structurally reduce energy consumption.

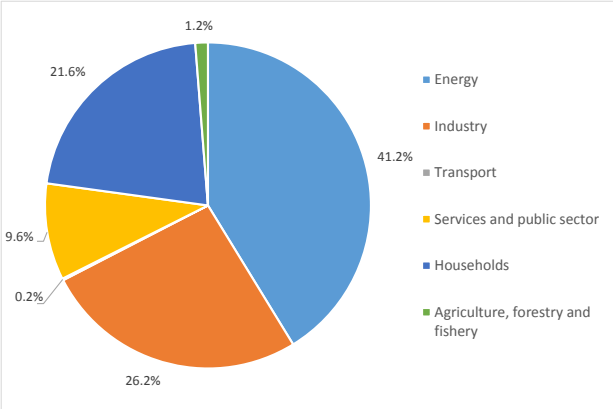
([45]) It is complemented by Annex 6, as the European Green Deal focuses on the clean energy transition, by Annex 8 on the actions taken to mitigate energy poverty and protect the most vulnerable ones, by Annex 9, as the transition to a circular economy will unlock significant energy and resource savings,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

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

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

([48]) Apart from the environmental licence, the condition for the extension of operation followed the adoption of the programme to upgrade nuclear safety, an investment of €370 million, equally secured by HEP and GEN Energija.

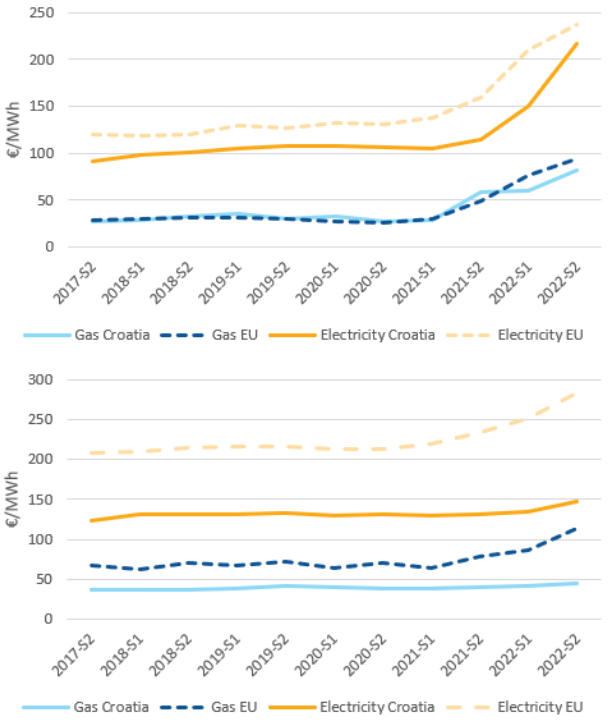
Graph A7.2: **Share of gas consumption per sector, 2021**



Source: Eurostat

Croatia is relatively well interconnected with its neighbours in terms of electricity. However, to increase integration of renewable energy resources located mainly in the south, the country needs to significantly upgrade its transmission network. Croatia will carry out investments under its RRP to strengthen the grid (e.g, upgrade of 550 km of the high voltage network - 220/110 - to integrate the south of Croatia); however, further investments in grid development projects would facilitate the integration of renewables making the energy system more efficient and avoiding energy losses. It is estimated that between EUR 600 and 800 million is required in terms of grid expansion costs to enable the integration of another 4 GW of wind (bringing the total to 5 GW). Other investments are also planned to make the electricity infrastructure more efficient and strengthen the distribution network. The process of upgrading the underground cables that connect the six islands to the mainland network is progressing. Two out the six sections of submarine cables were completed during 2022 and are currently in operation (Crikvenica - Krk) or trial operation (Dugi Rat - Postira); activities on other sections will be carried out and finalized during 2023. Furthermore, Croatia has one Project of Common Interest ('Green Switch') for the development of an electricity smart grid with Slovenia and Austria, expected to be completed in 2027.

Graph A7.3: **Croatia´s retail energy prices for industry (top) and households (bottom)**



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

Croatia has taken important measures to protect households and businesses in the face of increasing energy prices, but has also adopted measures that restrict exports in the internal market. In addition to VAT cuts introduced in spring 2022, Croatia presented its 'Autumn package' on 8 September 2022 to protect households and businesses from rising energy and food prices. Most measures are being implemented from 1 October 2022 to 31 March 2023, and are estimated to amount to EUR 2.8 billion in total (6.3% of GDP). In addition, Croatia has imposed an export ban for October 2022-March 2024, whereby all natural gas produced in Croatia will be used for public service obligations.

Croatia imports about 53% of the total energy consumed annually. The country has great potential to decrease energy imports by increasing the use of renewable resources. Renewable energy is taking off, but solar is lagging behind. The bulk of the country's renewable energy comes from hydropower plants, the second-highest hydropower share in the electricity mix in the EU (49% of Croatia's total electricity generation). Wood

biomass plays a significant role, with a share of respectively 18 % and 24% share in the energy mix and in the heating sector. The lower hydropower output in the wake of more frequent droughts, together with an increased risk of forest fires, is a trend that can affect Croatia's security of energy supply. The share of wind energy has increased steadily over the last 10 years; it has become the third source of Croatian electricity (13% share), ahead of declining coal-based generation. Despite an high potential with 2,700 hours of sun estimated on its coast annually, solar energy provided less than 1% of electricity in 2021. In that context, financial support for renewables self-consumers is proposed in order to accelerate the installation of solar panels on rooftops; while renewables power plants and heating stations is also stimulated, including by abolishing the VAT on the installation and delivery of solar panels. Nevertheless, people seem hesitant due to doubts over the implementation of the existing framework, and in particular the effects of feeding back into the grid more electricity than what they take from the grid. Furthermore, renewable energy auctions launched by the government have been undersubscribed. Croatia adopted a new legislative framework related to the implementation of renewable energy sources in 2021, and in 2022 worked on the adoption of by-laws that reduce obstacles to renewables and facilitate administrative procedures for the greater use of renewables. However, barriers to the acceleration of self-consumption and renewable energy communities have been identified, and still need to be addressed.

Croatia has still to exploit its energy efficiency potential across key sectors, in order to contribute to energy security and affordability, as well as to EU competitiveness and decarbonisation. Energy consumption in the residential sector in Croatia account to 35% of total energy consumption, while energy consumption in industry and commercial and public services account respectively to 17% and 12%. Existing programmes in place for the energy renovation of the existing building stock need to be stepped-up, addressing deep renovations, the deployment of renewable energy and the decarbonisation of heating, and addressing energy poverty. The development of financial instruments (public guarantees, soft loans) at scale to mobilise further investments in energy renovations in buildings seem also relevant. Further to this, Croatia needs to secure a trained workforce in the construction and integrated renovation services, including installers of heating appliances.; an evaluation of the needed workforce as well as the one of re-skilling and upskilling is relevant in that context. Croatia is carrying out a relatively low number of checks on products covered by ecodesign and energy labelling. This generates concerns with respect to the level playing field among economic operators and uncertainty as to the compliance levels of the concerned products, and therefore possible missed energy and CO2 savings ([49]).

Croatia is in the top 10 concerning jobs in the clean energy value chains with over 40% of renewable energy jobs in the manufacturing in this sector. In 2021 Croatia had a total of 14,600 ([50]) people working in the renewable energy sector, which represents 0,85% of all jobs ([51]). More than 85% of these jobs are in solid biomass, wind and liquid biofuels ([52]). Venture capital investments in climate tech start-ups and scale-ups went up drastically from 2020 with only 0.1 to EUR 140.0 million in 2021 and represents 72.6% of total VC investment in Croatia in 2021. Croatia has a relatively high number of highly cited scientific articles on geothermal energy, yet not many people working in that field.

([49]) The internet-supported information and communication system for the pan-European market surveillance

([50]) https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country

([51]) There are 3,5 Million people living in Croatia (as of 2021), and 1,7 Million people were employed: https://eures.ec.europa.eu/living-and-working/labour-market-information/labour-market-information-croatia_en

([52]) https://www.irena.org/Publications/2022/Sep/Renewable-Energy-and-Jobs-Annual-Review-2022

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

		CROATIA				EU			
		2018	**2019**	**2020**	**2021**	**2018**	**2019**	**2020**	**2021**
ENERGY DEPENDENCE	**Import Dependency [%]**	53%	56%	54%	55%	58%	61%	57%	56%
	of Solid fossil fuels	91%	107%	106%	101%	44%	44%	36%	37%
	of Oil and petroleum products	82%	76%	74%	78%	95%	97%	97%	92%
	of Natural Gas	53%	66%	69%	74%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	44%	90%	76%	79%	40%	44%	49%	47%
	of Crude Oil	18%	8%	0%	0%	30%	27%	26%	25%
	of Natural Gas	0%	0%	0%	0%	40%	40%	38%	41%

		2015	***2016***	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
ELECTRICITY	**Gross Electricity Production (GWh)**	11,403	12,820	11,984	13,632	12,760	13,385	15,210	-
	Combustible Fuels	3,994	4,682	5,193	4,435	5,185	5,665	5,681	-
	Nuclear	0	0	0	0	0	0	0	-
	Hydro	6,556	7,058	5,508	7,785	5,933	5,810	7,229	-
	Wind	796	1,014	1,204	1,335	1,467	1,721	2,062	-
	Solar	57	66	79	75	83	96	149	-
	Geothermal	0	0	0	2	92	94	90	-
	Other Sources	0	0	0	0	0	0	0	-
	Net Imports of Electricity (GWh)	6,789	5,531	6,954	5,388	6,133	4,639	3,961	-
	As a % of electricity available for final consumption	43%	35%	42%	32%	37%	30%	24%	-
	Electricity Interconnection (%)	-	-	52.00%	53.21%	50.0%	52.0%	45.6%	60.0%

		2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	2.6	2.7	3.1	2.8	3.0	3.1	2.9	2.5
	Gas Imports - by type (in bcm)	1.1	1.3	1.8	1.6	2.0	2.1	3.9	-
	Gas imports - pipeline	1.1	1.3	1.8	1.6	2.0	2.1	2.3	-
	Gas imports - LNG	0.0	0.0	0.0	0.0	0.0	0.0	1.7	-
	Gas Imports - by main source supplier (in bcm)* (1)								
	United States	0.0	0.0	0.0	0.0	0.0	0.0	1.9	-
	Nigeria	0.0	0.0	0.0	0.0	0.0	0.0	0.4	-
	Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-
	Hungary	0.4	0.5	1.0	1.3	1.5	1.5	0.3	-
	Others	0.7	0.7	0.9	0.3	0.5	0.7	1.0	-

		2019	**2020**	**2021**	**2022**
	LNG Terminals				
	Number of LNG Terminals (2)	0	0	1	1
	LNG Storage capacity (m3 LNG)	0	0	140,000	140,000
	Underground Storage				
	Number of storage facilities	1	1	1	1
	Operational Storage Capacity (bcm)	0.6	0.5	0.5	0.5

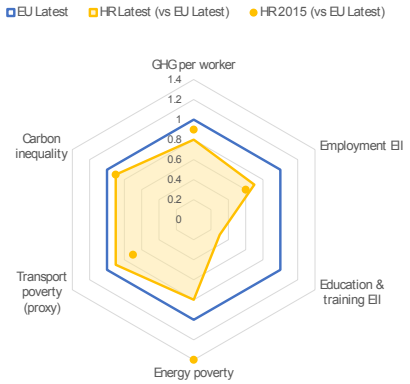
		2019	**2020**	**2021**	**2022**
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)**	0.0	0.1	140.0	n.a.
	as a % of total VC investments in Croatia	0.0%	0.2%	72.6%	n.a.
	Research & Innovation spending in Energy Union R&i priorites (2)				
	Public R&I (EUR mln)	n.a.	n.a.	n.a.	n.a.
	Public R&I (% GDP)		n.a.	n.a.	n.a.
	Private R&I (EUR mln)	3.3	n.a.	n.a.	n.a.
	Private R&I (% GDP)	0.01%	n.a.	n.a.	n.a.

(1) The ranking of the main suppliers is based on the latest available figures (for 2021)
(2) FSRU included
(3) Venture Capital investments include Venture Capital deals (all stages) and Private Equity Growth/Expansion deals (for companies that have previously been part of the portfolio of a VC investment firm).
Source: Eurostat, Gas Infrastructure Europe (Storage and LNG Transparency Platform), JRC SETIS (2022), JRC elaboration based on PitchBook data (06/2022

This Annex monitors Croatia's progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. The number of jobs in Croatia's green economy has risen quickly. Skills for the green transition, in line with the Council Recommendation ([53]), support the fair transition and the implementation of REPowerEU. Croatia's recovery and resilience plan (RRP) outlines crucial reforms, such as acquisition of green skills, and investments for a fair green transition ([54]), complementing the territorial just transition plans and action supported by the European Social Fund Plus (ESF+).

Jobs grew in Croatia's industries most affected by the green transition, in line with total employment, and the green economy is also expanding. The greenhouse gas (GHG) emissions intensity of Croatia's workforce declined from 12.0 to 10.4 tonnes per worker between 2015 and 2021, below the EU average of 13.7 tonnes in 2021 (see Graph A8.1 and Table A8.1). Employment in Croatia's energy-intensive industries (EII) represented 2% of total employment in 2020 vs 3.0% in the EU. Employment in mining and quarrying increased by 5.4% since 2015 (to around 6 000 workers), and jobs in other EII sectors rose by over 15% each. Two counties, Sisak–Moslavina and Istria county, were identified, on the basis of their greenhouse gas emissions intensity, as priorities for support from the Just Transition Fund ([55]). Croatia has also joined the Alliance for Coal-Free Electricity Production. One remaining coal power plant in Croatia is set to cease production by 2033. Jobs in the environmental goods and services sector grew by 4.6% (to 38 500) during 2015-2020 (EU: +8.3%), reaching 2.3% of total employment, close to the EU average of 2.2% (see Annex 9 for circular jobs specifically). The job vacancy rate in construction, a key sector for the green transition, was 1.7% vs 4.0% in EU as per 2022 ([56]).

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



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

Upskilling and reskilling in declining and transforming sectors remains low compared to the EU average. Skills are key for smooth labour market transitions and preserving jobs in transforming sectors. In energy-intensive industries, workers' participation in education and training slightly declined from 3.4% in 2020 to 3.3% in 2022 and remains below the EU average (10.4%). In Croatia, 33% of citizens believe they do not have the necessary skills to contribute to the green transition (EU: 38%) ([57]). To address this challenge, specific investment is planned under the RRP and the Just Transition Mechanism. The Croatian RRP aims to address up-skilling 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 also by introducing a voucher system for adult education. In Croatia, 2.6% of ESF+ funding contributes to green skills and jobs, adding to RRP investment and aligning vocational education and training (VET) to the labour market needs of the green transition.

The situation regarding energy poverty has improved significantly in recent years, but households, in particular vulnerable ones, were burdened by energy costs already

([53]) 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.

([54]) See 2022 Country Report (Annex 6).

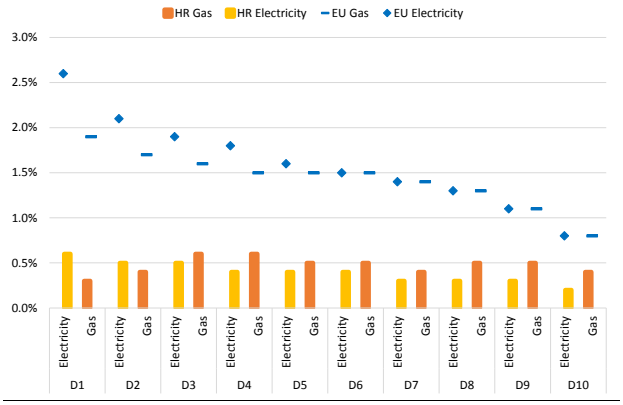
([55]) In these counties, some of the ETS installations in the chemical and cement sectors might possibly undergo a process of transition towards less emissions in line with their existing plans; however only those installations that are compliant with the JTF regulation and fulfil the "substantially below the benchmark" and other requirements are eligible for JTF funding.

([56]) Eurostat (JVS_A_RATE_R2)

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

before the price spike since 2021. The share of the total population unable to keep their homes adequately warm declined from 9.9% in 2015 to 5.7% in 2021 (vs and EU average of 6.9% in 2021) ([58]). In particular, 18.2% of the population at risk of poverty (AROP) (vs 16.4% in the EU in 2021), but only 4.6% of lower middle-income households (in deciles 4-5) were affected in 2021 (vs 8.2% in the EU in 2021). Before the energy price hikes, an estimated 48.4% of the total population and 84.8% of the (expenditure-based) AROP population had residential expenditure on electricity, gas, and other fuels ([59]) above 10% of their household budget (significantly above the estimated EU average of 26.9% and 48.2%, respectively). As part of the initiative related to the renovation of buildings, the RRP envisages the publication of a National Skills Development Plan, which will promote the acquisition of green skills in the context of Croatia's energy and post-earthquake renovation.

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



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

The increased energy prices in 2021-2023 negatively affected household budgets, but less than the estimated EU-level effects. As a result of energy price changes during the August 2021 to January 2023 period relative to the 18 months prior (cf. Annex 7), in the absence of policy support and behavioural responses, the share of individuals living in households which spend more than 10% of their budget on energy would have increased by 7.1 pps for the whole population and by 3.4 pps among the (expenditure-based) AROP population, less than the EU-wide effects (16.4 pps and 19.1 pps, respectively) ([60]). Expenditure shares of low and lower-middle income groups would have increased the most for electricity (in line with EU-wide patterns), in contrast to gas, for which expenditure would have increased the most in mid and high-income groups, as shown in Graph A8.2. Among the (expenditure-based) AROP population, the share of individuals living in households with budget shares for private transport fuels ([61]) above 6% would have increased more than the EU average (6.1 pps vs 5.3 pps in the EU), reaching 32.5% in January 2021 due to the increase in transport fuel prices (EU: 37.1%).

Access to public transport displays an urban-rural divide. Citizens' perception of public transport is below the EU average in terms of availability (51% vs 55% in the EU), affordability (50% vs 54%) and quality (52% vs 60%). As regards these perceptions, rural areas in Croatia perform worse than urban areas and when compared to rural areas in the EU overall ([62]). The average carbon footprint of the top 10% of emitters among the population in Croatia is about 4.7 times higher than that of the bottom 50% (see Graph A8.1), i.e. slightly less pronounced than the EU average (5.0 times). In Croatia, the average levels of air pollution in 2020 stood above the EU average (15.4 vs 11.2 µg/m PM2.5), with 88% of the population living in regions exposed to critical levels of air pollution ([63]), leading to significant health impacts, in particular on vulnerable

([58]) 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.

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

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

([61]) ECOICOP: CP0722.

([62]) EU (rural): 46%, 48% and 56% respectively. Special Eurobarometer 527.

([63]) Two times higher than the recommendations in the WHO Air Quality Guidelines (annual exposure of 5µg/m3)

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

Indicator	Description	HR 2015	HR Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	12	10.4 (2021)	13.7 (2021)
Employment EII	Employment share in energy-intensive industries, including mining and quarrying (NACE B), chemicals (C20), minerals (C23), metals (C24), automotive (C29) - %	1.9	2 (2020)	3 (2020)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %		3.3 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	9.9	5.7 (2021)	6.9 (2021)
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	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	4.6	4.7 (2020)	5 (2020)

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

groups, and 4 128 premature deaths annually ([64]).

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

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

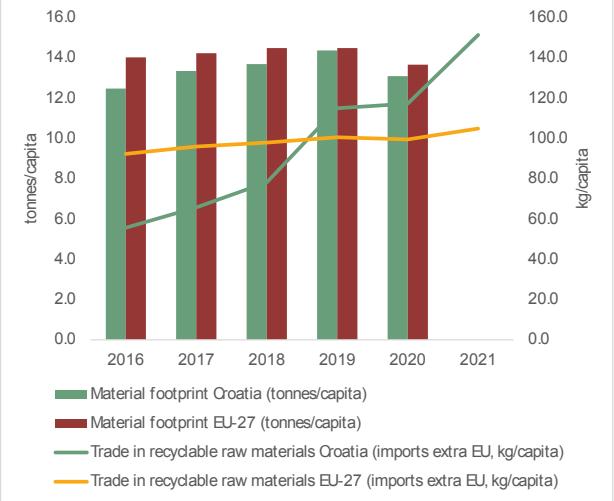
Croatia's circular economy transition is still insufficient and needs accelerating to meet the EU's circular economy goals, but there has been improvement in certain areas. The 2020 circular economy action plan (CEAP) aims at doubling circular material use by 2030 vs 2020. Croatia's use of circular material increased from 4.6% in 2016 to 5.7% in 2021, far below the EU average of 11.7%. There is a clear need to significantly increase efforts and rely less on raw materials. The CEAP also aims to substantially reduce the EU's material footprint. Croatia's material footprint was below the EU average in 2020 with 13.1%. The labour market benefits of the circular economy remain limited but with a positive trend. Croatia experienced major growth in direct circular jobs in 2019 (+12.4%). As regards health and safety in circular jobs, fatal accidents in waste management and materials recovery are above the average of all economic sectors in Croatia and above the EU average ([65]).

Croatia recently adopted new reforms to address circular economy challenges, but more measures are needed. Currently, Croatia has neither a comprehensive circular economy strategy nor sectoral strategies. However, ways to introduce circular economy approaches into its national waste management plans are considered, starting from construction and demolition waste. In this sector, a circular economy action plan is under development with the support of the World Bank. The upcoming plan could be a forerunner for a comprehensive strategy including food, plastics and textiles, and could help Croatia achieve its circular economy targets.

([65]) Eurostat [HSW_N2_02] for NACE Rev. 2 sector E38; 11.04 fatal accidents p. 100 000 employed in 2018-2020 vs 2.96 for all sectors in HR; 6.33 in the EU-27 for sector E38

The treatment of municipal waste in Croatia is still problematic. With a municipal waste recycling rate of 31.4% in 2021, Croatia has missed the EU target of 50% recycling by 2020. Croatia is at risk of missing the EU's recycling targets for municipal and packaging waste for 2025 and the landfill reduction target for 2035. 58% of Croatia's municipal waste was still landfilled in 2021, almost three times more than the EU average (23% in 2019). Illegal or sub-standard landfilling is still problematic. It diverts materials and resources that could be reused, remanufactured or recycled. This challenge is particularly relevant given that Croatia imported a higher share of recyclable materials than the EU-27 average.

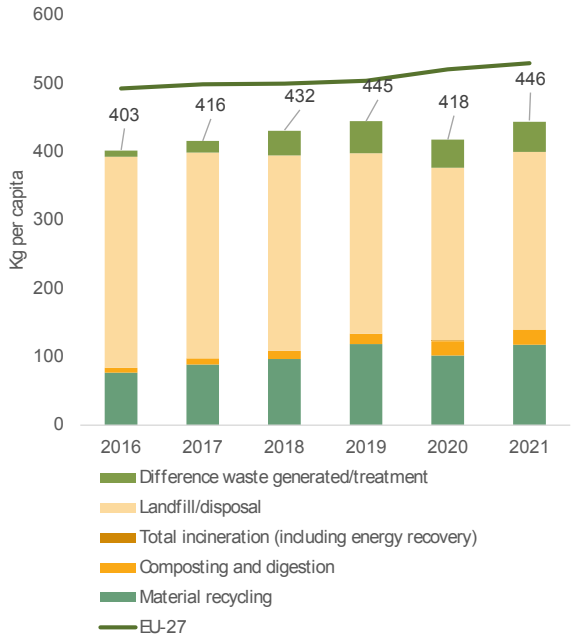
Graph A9.1: **Trend in material use**



Source: Eurostat

The industrial system still struggles to adopt circular approaches. Even though the trend is positive, the economy does not yet use materials efficiently compared to the EU-27 average, with a resource productivity of 2.0 purchasing power standard per kilogramme vs 2.3 for the EU in 2021. This rate has remained stable since 2017, indicating that there is significant potential to boost repair, reuse and the use of secondary raw materials. Croatia should engage more with the private sector and stakeholders in the transition to circular economy and could do so by investing in areas such as eco-design, repair, reuse and remanufacturing as well as in new business models to improve the very low uptake of Ecolabel and EMAS take-up. All this would help tremendously to reach the CEAP objectives.

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



Source: Eurostat

The built environment system continues to exacerbate the depletion of resources despite recent improvements. The recovery rate of construction and demolition waste has increased steadily since 2016 and reached the EU average (89%) in 2021. Soil sealing progressed between 2015 and 2018 and is slightly below the EU average. Croatia has established a legislative framework in line with the EU directives in the construction and demolition waste sector, but improvements are still needed in terms of implementation, training of public bodies and the private sector, data gathering, and preventing illegal dumping of waste.

The agri-food system must reduce and better manage food waste. Although increased, composting and anaerobic digestion remains far below the EU average in 2021 at 22 kg per head vs 100 kg. More investments in this sector could enhance Croatia's strategic autonomy by generating bio-methane and/or producing organic fertilisers.

There remains a financing gap in the circular economy, including waste management. Additional investments are required to address growing needs. The financing gap was estimated at EUR 80 million per year between 2014 and 2020. Over this period, investment needs were estimated to be at least EUR 253 million per year while investment baselines were EUR 173 million per year (see Annex 6). To meet the recycling targets for municipal waste and packaging waste, Croatia needs to invest EUR 14 million per year on recycling processors, biowaste treatment, waste sorting facilities and digitalisation until 2027. This does not include plastic, textiles and furniture waste streams, which would require additional investments.

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

AREA	2016	2017	2018	2019	2020	2021	EU-27	Latest year EU-27
Overall state of the circular economy								
Material footprint (tonnes/capita)	12.5	13.3	13.7	14.4	13.1	-	13.7	2020
YoY growth in persons employed in the circular economy (%)[1]	-0.9	0.9	-	12.4	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	0.2	0.2	0.2	0.2	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	1.7	1.9	1.9	1.9	1.8	2.0	2.3	2021
Circular material use rate (%)[2]	4.6	5.2	5.0	5.2	5.7	5.7	11.7	2021
Recycling rate (% of municipal waste)	21.0	23.6	25.3	30.2	29.5	31.4	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%)[3]	76.0	-	78.0	-	89.0	-	89.0	2020
Soil sealing index (base year = 2006)[4]	103.7	-	107.3	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita)[5]	-	-	-	-	71.0	-	131.0	2020
Composting and digestion (kg per capita)	7.0	9.0	12.0	15.0	21.0	22.0	100.0	2021

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

Digital transformation is key to ensuring a resilient and competitive economy. In line with the Digital Decade Policy Programme, and in particular with the targets in that Programme for digital transformation by 2030, this Annex describes Croatia's performance on digital skills, digital infrastructure/connectivity and the digitalisation of businesses and public services. Where relevant, it makes reference to progress on implementing the Recovery and Resilience Plan (RRP). Croatia allocates 20% of its total RRP budget to digital (EUR 1.3 billion) ([66]).

The Digital Decade Policy Programme sets out a pathway for Europe's successful digital transformation by 2030. The Programme provides a framework for assessing the EU's and Member States' digital transformation, notably via the Digital Economy and Society Index (DESI). It also provides a way for the EU and its Member States to work together, including via multi-country projects, to accelerate progress towards the Digital Decade digital targets and general objectives ([67]). More generally, several aspects of digital transformation are particularly relevant in the current context. In 2023, the European Year of Skills, building the appropriate skillset to make full use of the opportunities that digital transformation offers is a priority. A digitally skilled population increases the development and adoption of digital technologies and leads to productivity gains ([68]). Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ([69]).

The lack and retaining of ICT specialists are key challenges for Croatia. Croatia makes some progress in the field of digital skills with the Croatian Academic and Research Network (CARNET), the eUniversities, the eSchools projects, the adoption of the National Education Development Plan 2027 and the Act on Croatian Qualification Framework (CQF). However, ICT specialists continue to account for a lower percentage of the workforce in Croatia than the EU average. The percentage of female ICT specialists is slightly above the EU average (19% vs 21%). The lack of specialists is also felt on the labour market, with 68.3% ([70]) of enterprises (vs an EU average of 62.8%) who are recruiting or trying to recruit ICT professionals reporting problems in finding suitable candidates. 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.

Croatia has a mixed performance on digital infrastructure/connectivity. Fixed very high-capacity networks (VHCN) coverage steadily increases, however it remains significantly below the EU average. Croatia has an overall penetration of 100Mbps services at 28%, well below the EU average of 55%. Croatia's coverage of fixed very high capacity network (VHCN) at 61% is also below the EU average at 73%. Croatia's overall fibre to the premises (FTTP) coverage at 54% is marginally below the EU average of 56%. Croatia has assigned all 5G spectrum in the pioneer bands and scores around the EU average for overall 5G coverage. However, the 5G coverage on the 3.4-3.8 GHz spectrum band is only at 37%, four percentage points below the EU average. To address these connectivity issues, Croatia improved its permit granting process, selected a Universal Service provider, and programmed an additional €50M (ERDF) to connectivity. These RRP and ERDF connectivity measures aim to expand VHCN and 5G coverage while reducing administrative burden and regulatory barriers hampering the construction by streamlining the licensing/authorisation process.

Croatian businesses perform satisfactorily in most of the DESI indicators for the

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

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

([68]) 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).

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

([70]) Source: Eurostat – European Union Survey on ICT Usage and eCommerce in Enterprises

digitalisation of businesses. Despite the mostly positive results, the share of SMEs with at least a basic level of digital intensity remains at 58% below the EU average of 69%. But Croatian businesses are making good use of the opportunities digital technologies offer. For example, use of artificial intelligence and cloud computing services are marginally above the EU average, while use of big data matches the EU average. As part of its RRP, Croatia put in place vouchers and financial schemes that support the digitalisation of SMEs as well as large companies, including investment in the digitalisation of production and business processes.

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 (score of 71 compared to 77) and, particularly, for businesses (score of 67 compared to 84). Other DESI indicators in this dimension (pre-filled forms; and e-Government users) are mostly below the EU average. However, Croatia scores high on access to electronic health records (score of 85 out of 100 compared to EU average at 71). 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 including 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.

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

	Croatia			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	**NA**	**63%**	**63%**	**54%**	**80%**
% individuals		2021	2021	2021	2030
ICT specialists ([1])	**3.7%**	**3.6%**	**3.6%**	**4.5%**	**20 million**
% individuals in employment aged 15-74	2020	2021	2021	2021	2030
Digital infrastructure/connectivity					
Fixed Very High Capacity Network (VHCN) coverage	**47%**	**52%**	**61%**	**73%**	**100%**
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ([2])	**36%**	**39%**	**54%**	**56%**	**-**
% households	2020	2021	2022	2022	2030
Overall 5G coverage	**0%**	**34%**	**82%**	**81%**	**100%**
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	**NA**	**NA**	**37%**	**41%**	**-**
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**58%**	**69%**	**90%**
% SMEs			2022	2022	2030
Big data ([3])	**14%**	**14%**	**14%**	**14%**	**75%**
% enterprises	2020	2020	2020	2020	2030
Cloud ([3])	**NA**	**35%**	**35%**	**34%**	**75%**
% enterprises		2021	2021	2021	2030
Artificial Intelligence ([3])	**NA**	**9%**	**9%**	**8%**	**75%**
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	**NA**	**69**	**71**	**77**	**100**
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	**NA**	**68**	**67**	**84**	**100**
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	**NA**	**NA**	**85**	**71**	**100**
Score (0 to 100)			2023	2023	2030

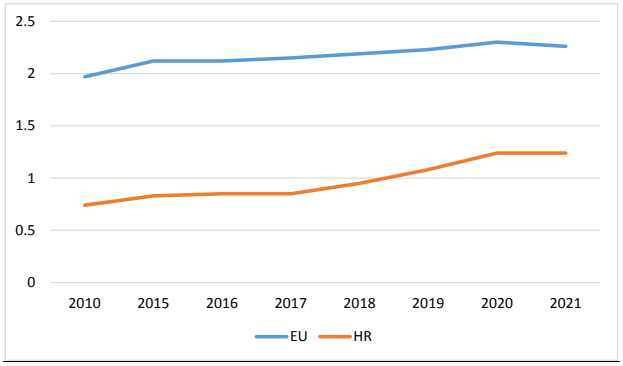
(1) The 20 million target represents about 10% of total employment.
(2) The Fibre to the Premises coverage indicator is included separately as its evaluation will also be monitored separately and taken into consideration when interpreting VHCN coverage date in the Digital Decade.
(3) At least 75% of 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 green and digital transition.

Croatia is an 'emerging innovator' and the gap between its performance and the EU average is shrinking. According to the 2022 edition of the European Innovation Scoreboard ([71]), since 2015 Croatia's innovation performance has grown faster than the EU average, driven in particular by increases in venture capital expenditure and an increased number of public-private co-publications.

R&D intensity ([72]) stood at 1.24% in 2021, still significantly below the European average of 2.26%. While both public expenditure on R&D and business enterprise expenditure on R&D have increased over the last years (0.67% and 0.58% of GDP in 2021), they remain well below the EU average (0.76% and 1.49% respectively).

Graph A11.1: **R&D intensity (GERD as % of GDP) 2010 - 2021**



Source: Eurostat, 2022

The recovery and resilience plan (RRP) will help address this underinvestment; the savings which are expected to result from the reform of the institutional research funding system ([73]) are to be used to support investment in the post-RRP period. Reaching the R&D expenditure target of 3% intensity by 2030 requires further measures and a budgetary plan to ensure it can be met.

Croatia continues to produce scientific outputs of modest quality and struggles to tackle the high level of institutional fragmentation in its public research system. The share of the country's scientific publications among the top 10% most cited scientific publications worldwide has slightly increased in recent years (4.2% in 2019 vs 3.6% in 2015) but remains substantially below the EU average, in the bottom tier of EU Member States (9.8% in 2019). Similarly, the number of international co-publications as a percentage of total publications remains low (45.1% in 2021 vs an EU average of 55.4%), reflecting the low degree of internationalisation of the public science base. The reforms in the Croatian RRP are aimed at fostering excellence, through performance-based funding for public research organisations and attempts to consolidate them. However, considering the severity of the fragmentation, with more than a hundred faculties, academies and universities, all with a significant degree of autonomy ([74]), continued efforts are required to better achieve critical mass and promote interdisciplinary research, as described in a recent World Bank report ([75]).

Business-science linkages show signs of improvement but research commercialisation is still limited. The number of public-private co-publications as a share of total publications was at 8.4% in 2021, above the EU average of 7.1%; it is on an upward trend (6.4% in 2016). The RRP contains targeted investments to further support science-business collaboration through joint projects between academia and

([71]) 2022 European Innovation Scoreboard, Country profile: Croatia https://ec.europa.eu/assets/rtd/eis/2022/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).

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

([73]) Investment C3.2 R1-I1 – Development of a system of programme agreements for funding universities and research institutes focused on innovation, research and development.

([74]) European Commission (2022): PSF to support early stages of innovation and science-business linkages in Croatia – Background Report. https://op.europa.eu/en/publication-detail/-/publication/82617640-1dd8-11ed-8fa0-01aa75ed71a1/language-en/format-PDF/source-search

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

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

Croatia	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	0.74	0.83	1.08	1.24	1.24	2.26
Public expenditure on R&D as % of GDP	0.41	0.40	0.55	0.65	0.67	0.76
Business enterprise expenditure on R&D (BERD) as % of GDP	0.32	0.42	0.53	0.59	0.58	1.49
Quality of the R&I system						
Scientific publications of the country within the top 10% most cited publications worldwide as % of total publications of the country	2.8	3.6	4.2	:	:	9.8
Patent Cooperation Treaty (PCT) patent applications per billion GDP (in PPS)	0.7	0.4	0.6	:	:	3.3
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	6.7	6.4	8.9	8.4	8.4	7.1
Public expenditure on R&D financed by business enterprise (national) as % of GDP	0.030	0.033	0.008	0.030	:	0.054
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	11.8	12.8	15.9	16.6	:	16.0
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	0.013	0.005	0.037	:	:	0.194
R&D tax incentives: foregone revenues as % of GDP	0	0	0.0005	:	:	0.100
Green innovation						
Share of environment-related patents in total patent applications filed under PCT (%)	16.7	12.8	4.1	:	:	13.3
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.003	0.006	0.004	0.009	0.0027	0.074
Employment in fast-growing enterprises in 50% most innovative sectors	2.6	3.3	4.2	:	:	5.5

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

businesses. However, the business sector remains poorly involved in financing public R&D (0.030% in 2020 vs an EU average of 0.054%). Findings from a Policy Support Facility report highlight that further efforts are needed to make knowledge valorisation of research results a key component in all relevant research and innovation (R&I) support programmes in the policy mix. This need is demonstrated by the low number of patent applications filed under the Patent Cooperation Treaty per billion GDP (0.6 vs an EU average of 3.3 in 2019). The efforts would be facilitated through the launch of joint calls between the main R&I funders (such as the Croatian Science Foundation and HAMAG-BICRO ([76])) and a more institutionalised dialogue during implementation of the smart specialisation strategy (e.g. in the Thematic Innovation Councils) ([77]). This would support follow-up of projects as they mature through the technology readiness scale, to avoid failure (the 'valley of death') and tackle historical gaps in financing.

The framework conditions for businesses to innovate and invest in R&D require further improvement. Public sector support for business R&D has been low (0.037% in 2019 vs an EU average of 0.194%). However, signs of significant relative increases have been observed since 2018. The reforms under the RRP to promote business innovation are aimed at analysing the existing R&D tax incentive scheme and complementing the legal framework for R&D tax incentives to encourage the private sector to increase its R&D investment. These reforms are complemented by calls aimed at fostering innovation in SMEs. The availability of venture capital helping to improve access to finance for innovative young firms has increased since 2019 and reached 0.027% of GDP in 2021, but it remains below the EU average of 0.074% of GDP.

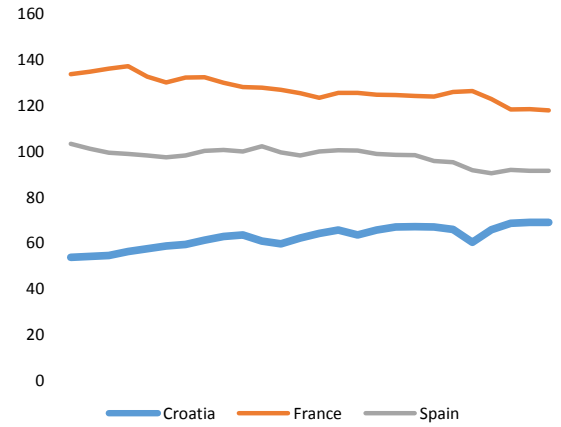
([76]) HAMAG-BICRO is the Croatian Agency for SMEs, Innovations and Investments (HAMAG-BICRO).

([77]) Ibid.

Croatia's productivity is relatively low, but the trends are positive. Croatia's real labour productivity per person has risen by 12.6% since 2015 – well above the EU average of 4.1%. However, labour productivity is still relatively low overall (78% of the 2022 EU average in purchasing power standards) ([78]) and as such remains an obstacle for faster convergence towards average EU income levels. Labour productivity in industry grew slightly below the EU's average in 2022 (1.1% year-on-year growth compared with the EU average of 1.4%). Low productivity in the construction sector is problematic in light of the very significant investments in the Croatian recovery and resilience plan for renovating buildings and reconstructing buildings damaged in the 2020 earthquakes. Furthermore, shortage of professional and skilled workers in the construction sector continues to be a major concern ([79]).

The productivity gap is also particularly acute in micro companies, where productivity levels are about half the EU's ([80]). This highlights the need to increase the dynamism of the Croatian business environment, reduce market inefficiencies, improve human capital, and promote investment. While both public expenditure on R&D (at 0.67% of GDP in 2021) as well as business enterprise expenditure on R&D (0.58% of GDP in 2021) are on an upward trend, they remain well below the EU average (0.76% and 1.49% respectively – see Annex 11). Underperformance in education and innovation areas, persistent low efficiency of public institutions and the low quality of the business environment result in low labour productivity in Croatia. In addition, Croatia suffers from a high level of skills mismatch, which significantly affects its economic growth and productivity. ([81])

Graph A12.1: **Hourly productivity in PPS (% of EU)**



Source: European Commission calculations based on AMECO

Croatia's competitiveness has been improving, but challenges remain. While the competitiveness of the Croatian economy has been improving in recent years, it is important for the Croatian economy to diversify to other competitive sectors, in addition to making its tourism sector smarter, more innovative and more sustainable. In the 2022 IMD World Competitiveness Ranking, Croatia is ranked 46th overall, up 13 places from last year thanks to its economic performance linked to the strong economic rebound of its tourism sector. Many survey-based indicators assessing business practices and confidence in Croatia displayed progress too, highlighting a general increase in business confidence in the country ([82]).

Additional challenges are related to the impact of the war in Ukraine, particularly rising energy costs and containing production costs. The energy crisis has a substantial impact on the operations of businesses, especially for energy-intensive industries such as aluminium, construction materials, shipbuilding and fertilisers, resulting in layoffs and the reduction or closure of production processes. Despite the number of firms in industry reporting materials shortages being below the EU average (25% vs 47%), the share of firms suffering from supply chain disruptions has increased rapidly since 2019 when only 4% of firms in industry reported materials constraints. Labour shortages are affecting industry even more severely, with

([78]) Eurostat (NAMA_10_LP_ULC)

([79]) European Construction Sector Observatory

([80]) Eurostat (SBS_SC_SCA_R2)

([81]) Education and training monitor 2022

([82]) IMD World Competitiveness Rankings

34% of surveyed firms facing constraints compared to the EU average of 28%.

Croatia is performing well in terms of installed renewables for electricity capacity; however significant administrative barriers remain when it comes to permitting procedures for renewable energy. Investment in the deployment of renewable energy infrastructure is hampered by long permitting procedures. According to the barriers identified under the Single Market Enforcement Taskforce, delays are often due to the confusing and complex legal framework, the lack of process overviews, the unclear process steps and shortages of skilled staff in the competent authorities. Addressing such barriers would speed up the uptake of wind and solar power, which remains slow in Croatia (see Annex 7), and help decrease dependency on imported energy.

Croatia could further benefit from the advantages of the Single Market. While Croatia has been among the fastest countries when it comes to trade integration into the Single Market, it is still slightly below the EU average (45.1% of GDP vs 45.8% of GDP). Despite recent reforms, several professions remain highly regulated and face higher regulatory restrictions than their EU counterparts ([83]). This is particularly acute for lawyers, architects, tax advisors, 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 in Croatia 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. The diverging regional regulations governing tourist guides seem to hinder access to the market and affect both national service providers and the cross-border provision of services. The recovery and resilience plan puts forward an ambitious package of action plans on the liberalisation of the services markets, but several significant restrictions remain, undermining the productivity and competitiveness of the professional services' sector.

The Single Market Scoreboard indicates that Croatia performs relatively well but could monitor the timely transposition of EU directives better. While Croatia's transposition deficit is slightly below the EU average, it is on a worsening trend (1.4% this year vs 1.2% last year). Croatia is also on the path of reducing its average delay in transposing directives (10.1 months vs the EU average of 8.6 months) and converging with the EU average on conformity deficit (1.4% vs the EU average of 1.3%). On infringements, Croatia is substantially below the EU average on pending cases and average case duration. And while Croatia's average case duration has increased by 34% in the last 3 years, it is in a group of 6 Member States whose duration of cases is below the 36-month indicative target. Despite a good performance in handling times for SOLVIT cases, low levels of staffing and a large caseload could disrupt the operations of businesses.

The business environment is improving, but challenges remain. Through its recovery and resilience plan, Croatia is committed to the full implementation of existing action plans to improve the business environment and reduce the excessive regulatory burden on businesses. On the other hand, in Croatia there is still a higher share of firms than in the rest of the EU who consider restrictive business regulations to be a major obstacle to their capacity to make long-term investment (42.2% compared to the EU average of 29.6%). Furthermore, Croatia is also notably largely underperforming in connectivity and digitalisation of public services, according to the Digital Economy and Society Index 2022 ([84]) (see also Annex 10). In addition, payment gaps are increasing both in business-to-business payments and in public sector-to-business sectors, the situation is worsening compared with 2021. The timeliness of payments, especially in sectors with a significant presence of SMEs, such as

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

([84]) Digital Economy and Society Index 2022

Table A12.1: **Industry and the single market**

	POLICY AREA	INDICATOR NAME	2018	2019	2020	2021	2022	EU27 average (*)
HEADLINE INDICATORS	Economic Structure	Net private investment, level of private capital stock, net of depreciation, % GDP [1]	4	3.7	2	2.7	4	**3.7**
		Net public investment, level of public capital stock, net of depreciation, % GDP [1]	0	1	1.7	1.2	0.6	**0.4**
		Real labour productivity per person in industry (% yoy)[2]	-4.9	-2	-5.5	7.1	1.1	**1.4**
	Cost competitive-ness	Nominal unit labour cost in industry (% yoy)[2]	5	0.4	3.6	1.1	7.7	**2.9**
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % [3]	7	4	8	13	25	**47**
		Labour shortage using survey data (industry), firms facing constraints, % [3]	28	30	14	18	34	**28**
		Vacancy rate (business economy)[4]	1.7	1.4	1	1.5	1.5	**3.1**
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials [5]	0.13	0.13	0.15	0.14	0.15	**0.18**
		Installed renewables electricity capacity, % of total electricity produced [6]	59.1	64.6	69.3	70.4	n.a.	**50.9**
SINGLE MARKET	Single Market integration	EU trade integration, % [7]	35.0	36.0	32.6	36.8	45.1	**45.8**
	Restrictions	EEA Services Trade Restrictiveness Index [8]	n.a.	n.a.	n.a.	n.a.	n.a.	**0.05**
	Public procurement	Single bids, % of total contractors [9]	22	17	25	21	23	**29**
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle [10]	46	45.4	38.8	38.7	42.2	**29.6**
	Business demography	Bankruptcies, Index (2015=100)[11]	250.8	197.5	146.5	191.6	211.7	**86.8**
		Business registrations, Index (2015=100) [11]	141.3	154.3	112.9	138.9	152.5	**121.2**
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment [12]	11	10	16	12	14	**13**
		Payment gap - public sector, difference in days between offered and actual payment [12]	6	7	20	10	15	**15**
		Share of SMEs experiencing late payments in past 6 months, % [13]	n.a.	50.2	50.7	48	40.6	**43**
	Access to finance	EIF Access to finance index - Loan, Composite: SME external financing over last 6 months, index values between 0 and 1 [14]	0.54	0.57	0.5	0.43	n.a.	**0.46**
		EIF Access to finance index - Equity, Composite: VC/GDP, IPO/GDP, SMEs using equity, index values between 0 and 1 [14]	0.08	0.09	0.05	0.12	n.a.	**0.23**

(*) last available year

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

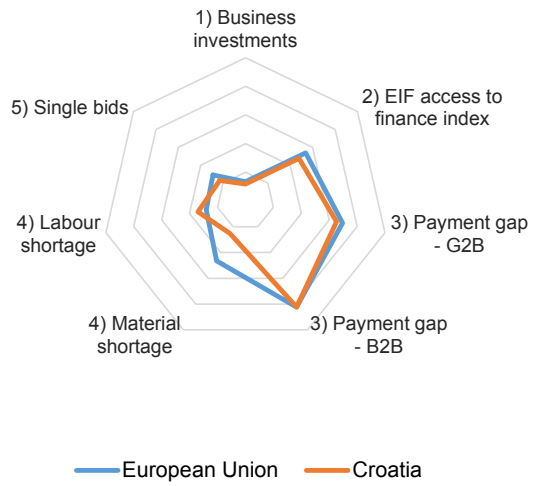
construction, transport and distribution and retail trade, is not satisfactory. ([85])

Improving access to finance also remains integral to boosting investment. Access to finance continues to be underdeveloped in indicators for both loans and equity, which hampers investment potential in Croatia.

The EIF loan index in 2021 was still below the EU average and decreased compared to previous years. The equity index, despite a substantial improvement from 2020, remains well below the EU average, showing that access to equity remains constrained, especially for SMEs (0.12 in 2021 compared to the EU average of 0.23). Financial instruments, as well as equity and quasi-equity instruments to support businesses, are included in Croatia's recovery and resilience plan, but more needs to be done to further promote availability of finance to entrepreneurs, notably small and medium companies and innovative firms.

([85]) Dun&Bradstreet Payment Study 2022

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



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

This Annex outlines the performance of Croatia's public administration, which is essential for providing services and carrying out reforms. Croatia continues to rank significantly below the EU-27 average in the effectiveness of its public administration ([86]). Several reforms have been launched under the recovery and resilience plan (RRP) to resolve some long-standing challenges in policymaking, territorial fragmentation, the civil service, public service delivery and digital government.

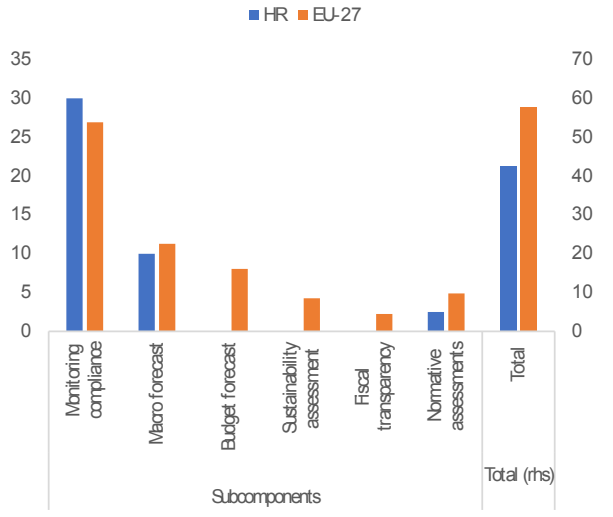
The reform under Croatia's RRP addressing local government fragmentation is facing headwinds. Some municipalities have expressed a certain degree of interest in providing selected local services jointly. However, interest in merging local entities remains lacklustre, thus jeopardising the intention of merging 20% of municipalities by 2026. Insufficient financial and administrative capacities in local government result in wide disparities in the provision of public services.

The overall maturity of e-government continues to be below the EU average (Table A13.1 and Annex 10). However, the number of e-services available on the E-Citizens platform for the integrated provision of the government's digital services and the number of users, increased sharply during the COVID-19 pandemic. Nevertheless, the digital transformation of Croatia's public administration is jeopardised by the weak leadership role of the Central State Office for the Development of Digital Society. The RRP contains targets (a few of which are to be met by the end of 2023) to improve digitalisation of the public administration, interoperability, and the supply of digital public services. The lack of targeted measures to develop digital skills in the public administration remains a drawback ([87]).

While stakeholder engagement was strengthened somewhat, challenges in regulatory governance remain. Amendments to the Act on the System of Strategic Planning and Management of Development were introduced, to improve the effectiveness of strategic planning. However, significant challenges like coordination remain. Frequent changes in legislation and concerns about the quality of the law-making processes negatively affect investors' perceptions of the effectiveness of investment protection in Croatia. The Parliament has reduced the use of emergency procedures, but the share of unplanned legislation submitted to Parliament remains high (31% in 2021), which contributes to a lack of predictability ([88]). Reforms under Croatia's RRP seek to improve the evaluation of public policies through amendments to the Regulatory Impact Assessment Act and the upgrade of the e-consultation website to integrate local government regulations.

Challenges remain in the management of the civil service in Croatia. The indicators show a relatively low share (5.5% in 2022) of civil servants who participate in adult learning (Table A13.1). Croatia's RRP aim to create a new competence framework for public sector employees; introduce a new method for setting wages and improve the recruitment process.

Graph A13.1: **Croatia. Scope index of independent fiscal institutions**



Source: European Commission

The mandate of Croatia's independent fiscal institution (IFI) is narrower than that of the average EU country (Graph A13.1). Currently, Croatia's IFI is building capacity to fully carry out the traditional IFI tasks set out in EU legislation, such as endorsing/producing macroeconomic forecasts. Performance is also

([86]) Worldwide Governance Indicators, 2021

([87]) European Commission, Public administration and governance: Croatia, Publications Office of the EU, 2023 (forthcoming).

([88]) 2022 Rule of Law Report, country chapter on the rule of law situation in Croatia.

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

	HR Indicator ([1])	2017	2018	2019	2020	2021	2022	EU-27([2])
E-government and open government data								
1	Share of individuals who used the internet within the last year to interact with public authorities (%)	46.9	48.1	41.3	51.9	55.0	n/a	64.8
2	E-government benchmark overall score ([3])	n/a	n/a	n/a	60.6	60.6	63.2	72.9
3	Open data and portal maturity index	n/a	0.6	0.7	0.8	0.8	0.7	0.8
Educational attainment level, adult learning, gender parity and ageing								
4	Share of public administration employees with tertiary education (levels 5-8, %)	46.7	45.8	49.7	49.3	49.9 (b)	47.8	52.0
5	Participation rate of public administration employees in adult learning (%)	2.2 (u)	2.7 (u)	3.4 (u)	3.7 (u)	8.0 (bu)	5.5 (u)	16.9
6	Gender parity in senior civil service positions ([4])	12.8	8.0	9.4	14.2	15.2	18.4	11.0
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	2.1	1.9	1.7	1.8	1.6 (b)	1.5	1.5
Public financial management								
8	Medium term budgetary framework index	0.6	0.6	0.6	0.6	0.6	n/a	0.7
9	Strength of fiscal rules index	-0.2	-0.2	1.3	1.3	1.3	n/a	1.5
Evidence-based policy making								
10	Regulatory governance	1.54	n/a	n/a	n/a	1.75	n/a	1.7

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

below the EU average in the design of the national medium-term budgetary framework.

There is scope to improve the efficiency and quality of justice. The use of electronic communication tools was increased and backlogs were reduced in higher courts, but the level of backlogs and the length of proceedings remain among the highest in the EU. In 2021, the backlog of court cases older than 7 years decreased by about 12% compared to 2020, and around 15% compared to 2019 ([89]). The RRP aims to reduce the duration of litigation, the number of pending cases and the share of cases that are more than 3 years old. On the quality of the justice system, there is room for a better use of information and communication technologies for case management and for electronic communication between courts and parties to cases. The resources of the State Judicial Council and the State Attorney's Council are being increased. No systematic deficiencies in judicial independence have been reported. ([90])

Despite plans to privatise it, the state-owned enterprise (SOE) sector in Croatia is one of the largest in the EU in relative terms. The 2021 overview of the governance of Croatia's SOEs ([91]) revealed various weaknesses relative to best practices: the ownership framework is mostly decentralised across line ministries and there is no SOE policy in Croatia. Furthermore, disclosure requirements for non-listed large SOEs are weaker than those for listed companies and there is room to strengthen the autonomy and independence of boards.

([89]) Supreme Court of the Republic of Croatia 2021 Report, 2022.

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

([91]) OECD (2021), OECD Review of the Corporate Governance of State-Owned Enterprises: Croatia.

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 EU 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	Early leavers from education and training (% of population aged 18-24, 2022)	2.3
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	63.37
	Youth NEET rate (% of population aged 15-29, 2022)	13.3
	Gender employment gap (percentage points, 2022)	9.5
	Income quintile ratio (S80/S20, 2021)	4.78
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	69.7
	Unemployment rate (% of active population aged 15-74, 2022)	7
	Long term unemployment (% of active population aged 15-74, 2022)	2.4
	GDHI per capita growth (2008=100, 2021)	122.23
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	20.9
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	18.6
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	20.66
	Disability employment gap (percentage points, 2021)	28.7
	Housing cost overburden (% of total population, 2021)	4.5
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	33.3
	Self-reported unmet need for medical care (% of population 16+, 2021)	1.7

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

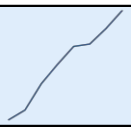
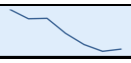
(1) Update of 27 April 2023. Members States are classified on the Social Scoreboard according to a statistical methodology agreed with the EMCO and SPC Committees. It looks jointly at levels and changes of the indicators in comparison with the respective EU averages and classifies Member States in seven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

On the back of the economic recovery from the COVID-19 crisis, Croatia's labour market continued its upward trend, albeit with increasing labour shortages and persisting employment challenges for disadvantaged groups. The employment rate in Croatia further increased to 69.7% in 2022, but it is still significantly below the EU average of 74.6%. The unemployment rate decreased in 2022, reaching 7% in 2022, closing in on the average EU unemployment rate which dropped to 6.2% in 2022. Under Croatia's recovery and resilience plan (RRP), the Labour Act and the new Law on Undeclared work were adopted in December 2022. This creates a better legal framework that regulates work and encourages the transition from undeclared work to declared work. Active labour market policy measures are being revamped under the RRP and the European Social Fund Plus (ESF+) to make them more efficient.

Women, low-skilled workers, persons with disabilities and young people not in employment, education or training (NEET) continue to face particular challenges in getting access to quality employment. One of the main reasons is that they lack adequate skills, with qualifications not matching market needs. The disability employment gap is still high, even though it has slightly decreased (28.7 pps in 2021 against 23.1 pps in the EU). The gender employment gap dipped to 9.5 pps in 2022 (EU: 10.7 pps). The share of informal carers, especially women, is higher than the EU average and keeps many people outside the labour market (28.4% of women and 22.9% of men vs 19.1% of women and 14.8% of men in the EU). The employment rate of low-skilled workers (42.1% in 2021) lags considerably behind those of medium-skilled and high-skilled workers (67.1% and 84.1% respectively). This highlights the importance of efforts to reach the 2030 target on adult learning. The rate of young people NEET (aged 15-29) worsened slightly during the pandemic and remains above the EU average. Moreover, there are disparities in employment across different regions, along with a noticeable decrease in the population. The ESF+ programme puts an emphasis on investing in quality employment for women and disadvantaged groups and prioritises youth employment. Boosting measures to address these challenges would support progress towards the national employment rate target for 2030.

Education and training reforms are happening at different levels and could positively affect employment (see also Annex 15). Participation in formal childcare for children below the age of 3 increased considerably to 33.3% in 2021, coming closer to the EU average of 36.2%. Croatia is reforming vocational training and education to make it more attractive and relevant to the labour market. New programmes are being aligned with the Croatian system of occupational and qualification standards. The Recovery and Resilience Facility, the ESF+ and the European Regional Development Fund (ERDF) provide substantial investments in these areas (see Annex 15).

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

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	69.7 (2022)		75	78
Adult learning[1] (%)	26.9 (2016)		55	60
Poverty reduction[2] (thousands)	-24 (2021)		-298	-15 000

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

Croatia is boosting up- and reskilling faced with persisting labour shortages and skills mismatches and weak adult learning. Only 5.1% of Croatian adults participated in learning over the past 4 weeks in 2021, against 10.8% in the EU, and the take-up is even lower among disadvantaged groups and low-qualified workers. The new Act on Adult Education under the RRP adopted in December 2021, requires adult learning to comply with the Croatian Qualification Framework and introduces quality assurance. The RRP also provides for a voucher system for re- and upskilling that was launched in April 2022. The ESF+ programme will expand these measures and develop building blocks to provide individual learning accounts. Investment in skills will need to be further boosted to reach the national target of at least 55% of all adults participating in training every year by 2030 (against the baseline of 26.9% in 2016).

Despite Croatia's robust economic growth, some groups are being left behind due to continuing weaknesses in the social protection system. The overall share of the population at risk of poverty or social exclusion (AROPE) in Croatia increased during the COVID-19 crisis but remained slightly below the EU average (20.9% against 21.7% in the EU in 2021). However, the AROPE rate is substantially higher than the EU average (33.8% against 19.4% in the EU in 2020) for older people, especially women (37.3% against 21.8% in the EU), and persons with disabilities (36.9% against 28.8% in the EU). Energy poverty is a serious problem, with arrears on utility bills for households at risk of poverty (27.4% in 2021) much higher than the EU average (15.9%). Considerable effort is needed to reach the national target for poverty reduction by 2030.

The impact of social transfers on reducing poverty remains critically low. The indicator stood at 20.7% in 2021 (EU: 37%), down from 24.7% in 2019 and it is expected to deteriorate further due to the current inflationary pressures. The national minimum income scheme still lacks the capacity to reduce poverty due to its low adequacy (41% of the poverty threshold vs EU 59%; 34% of the income of a low wage earner vs EU 47%) and limited coverage. Likewise, unemployment benefits do not provide an adequate safety net for dismissed workers, who have very low social protection, together with self-employed and temporary workers. Pensions are low compared to work incomes; the aggregate replacement ratio is 38% against 58% in the EU. Following the repeal of pension reforms in 2019, special pension plans continue to put a strain on the sustainability of the pension system and the support it provides to all pensioners.

The provision of affordable, quality social services, especially long-term care (LTC), falls far from meeting the country's needs. Availability, access and quality of social services and LTC is poor, which raises particular concerns given Croatia's rapidly ageing population and continued workforce emigration. LTC is severely underfunded, with public spending among the lowest in the EU (0.23% of GDP against 1.81% in the EU

average in 2020). As formal LTC workers are scarce,; the number of informal carers (predominantly women) is significantly higher than the EU average, which negatively affects women's employment. Under the RRP, the newly adopted Social Welfare Act launches a reform on how community-based services are developed, as well as investments in social services and LTC. Both ESF+ and ERDF programmes substantially support LTC and deinstitutionalisation. Tackling these challenges will help Croatia achieve the national target for reducing the number of people at risk of poverty or social exclusion by 298,000 by 2030 (compared to 2019).

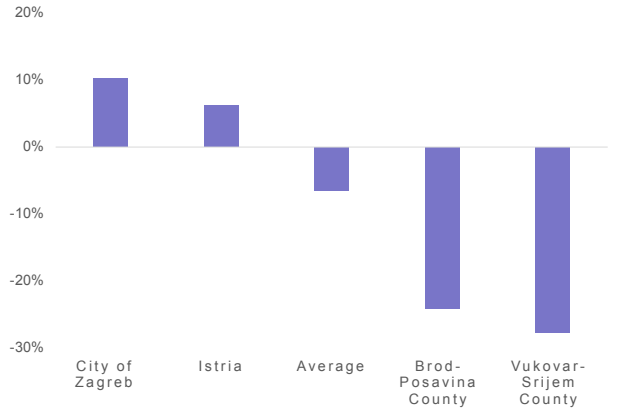
This Annex outlines the main challenges for Croatia's education and training system in light of the EU-level targets and other contextual indicators under the European Education Area strategic framework, based on the 2022 Education and Training Monitor.

A limited education offer in less-developed areas aggravates the population decrease. According to the 2021 population census, Croatia lost 9.6% of its population in the last 10 years (19.1% in 30 years) due to emigration and a declining birth rate ([92]). The decrease is up to twice as high in less-developed areas, where also access to education is weaker at all levels of education. Regional variations are even stronger with regard to the pupil population (see Graph A15.1) ([93]). These variations further increase already existing differences in school infrastructure and quality of teaching and have a negative impact on educational outcomes. The Recovery and Resilience Plan (RRP) envisages to tackle these issues by improving access to early childhood education and care (ECEC) and school education. This aims to revitalise less-developed and remote regions, while also taking into account demographical projections.

Croatia aims to increase participation in ECEC. Participation of children in ECEC stands at 78.8% for children older than 3 years (EU: 93%); it is even lower for disadvantaged groups. At 35.7 pps, the gap in participation between children who are at risk of poverty or social exclusion (AROPE) and their more affluent peers is the highest in the EU ([94]). Existing ECEC facilities were mapped to guide RRP investments, linking award criteria to needs. In May 2022, the ECEC Act was amended ([95]). Amendments include establishing a national network of ECEC facilities and introducing a legal entitlement for a place in ECEC a year before school entry, and an attendance certificate, which is obligatory for enrolment in school. Primary schoolteachers can be employed as ECEC teachers, with a required requalification within 2 years.

National exams are being introduced in primary schools to improve monitoring and education outcomes. Despite the share of early leavers from education and training in 2022 being the lowest in the EU (2.3% vs EU 9.6%), Croatia struggles with low education outcomes, especially in maths, where underachievement in Programme for International Student Assessment 2018 (31.2%) is one of the highest in the EU. Students were tested in a pilot project in 81 primary schools in eighth grade in May 2022, and in the fifth and fourth grades in 2022/2023. Exams in the eighth grade in all schools, which started in March 2023, will improve the monitoring of learning outcomes. Until now, the only national exam has been the State Matura at the end of secondary education.

Graph A15.1: **Changes in primary school pupils' population in Croatia between 2013/2014 and 2022/2023 (by region)**



Source: Školski e-rudnik, Vol. I, page 4.

EU funding supports significant improvements in digital maturity of education. The e-Schools project, which is at its final phase of implementation, has significantly helped the transition to online education brought about by COVID-19. Local computer networks have been put in place at 1,328 of the 1,511 school locations, and e-services put in place to enhance teaching and school governance. Evaluation is planned before the end of the project, and schools are being enabled for self-evaluation afterwards. In higher education (HE), a similar improvement is planned in the RRP. Currently ongoing analysis of digital readiness and digital maturity of HE institutions, supported through the European Commission's Technical Support

([92]) https://dzs.gov.hr/vijesti/objavljeni-konacni-rezultati-popisa-2021/1270

([93]) Školski e-rudnik, vol. I, p. 4.

([94]) Eurostat (EU-SILC), special extraction.

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

Instrument, will provide the basis for this reform and investment.

The share of graduates in science, technology, engineering and maths (STEM) is high and growing, but there is a shortage of maths and physics teachers. About one sixth of maths and physics teachers are not qualified for the subjects they teach. To address this shortage, scholarships for STEM teachers' students have been introduced, linked to a work obligation of a duration equivalent to the number of years that beneficiaries received the scholarship. The amount awarded is EUR 600 per month (nine times a year), twice as high as that for non-teaching STEM scholarships ([96]), and nearly four times higher than earlier STEM scholarships ([97]).

Several new laws were adopted to enable reforms in higher education supported by the RRP and to strengthen dual education. In 2022, tertiary educational attainment was below the EU average (35.5% vs EU 42%) and showed significant gaps between genders (20.1 pps in favour of women, compared to the 11.1 pps EU average) and foreign- and native-born (8.8 pps compared to the -6.4 pps EU average). There are also big differences between cities (47.9%) and rural areas (27.1%). The new Science and Higher Education Act ([98]) introduces performance agreements and initial accreditation of studies that includes criteria on labour market relevance. This should improve quality and reduce the number of unfilled study places. The new laws on quality assurance in HE ([99]) and recognition of foreign qualifications ([100]) aim to improve internationalisation of studies. In vocational education, low incidence of work-based learning with regional inequalities in access will be regulated by amendments to the act on vocational education and training.

([96]) https://mzo.gov.hr/istaknute-teme/odgoj-i-obrazovanje/visoko-obrazovanje/drzavne-stipendije/drzavne-stipendije-za-studente-u-stem-podrucjima-znanosti/1562

([97]) https://stem.mzo.hr/

([98]) https://narodne-novine.nn.hr/clanci/sluzbeni/2022_10_119_1834.html

([99]) https://narodne-novine.nn.hr/clanci/sluzbeni/2022_12_151_2330.html.

([100]) https://narodne-novine.nn.hr/clanci/sluzbeni/2022_06_69_1023.html

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

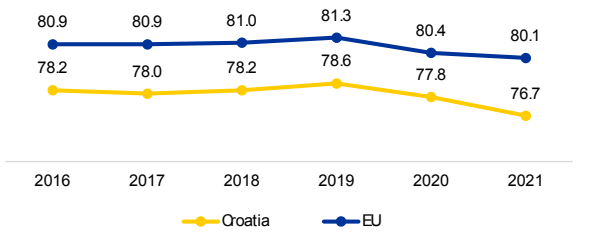
				2015		2022	
Indicator			Target	Croatia	EU27	Croatia	EU27
[1]Participation in early childhood education (age 3+)			96%	69.5%	91.9%	78.8% 2020	93.0% 2020
[2]Low achieving 15-year-olds in:		Reading	< 15%	19.9%	20.0%	21.6% 2018	22.5% 2018
		Mathematics	< 15%	32.0%	22.3%	31.2% 2018	22.9% 2018
		Science	< 15%	24.6%	21.1%	25.4% 2018	22.3% 2018
Early leavers from education and training (age 18-24)	[3]Total		< 9 %	2.8% u	11.0%	2.3% u	9.6%
	[3] By gender	Men		3.5% u	12.5%	2.9% u	11.1%
		Women		2.0% u	9.4%	1.6% u	8.0%
	[4] By degree of urbanisation	Cities		1.6% u	9.6%	: u	8.6%
		Rural areas		3.3% u	12.2%	3.2% u	10.0%
	[5] By country of birth	Native		2.7% u	10.0%	2.3% u	8.3%
		EU-born		: u	20.7%	: u	20.3%
		Non EU-born		: u	23.4%	: u	22.1%
[6]Equity indicator (percentage points)				:	:	13.3 2018	19.3 2018
[7]Exposure of VET graduates to work based learning	Total		≥ 60% (2025)	:	:	40.0%	60.1%
Tertiary educational attainment (age 25-34)	[8]Total		45%	30.8%	36.5%	35.5%	42.0%
	[8] By gender	Men		23.5%	31.2%	25.5%	36.5%
		Women		38.3%	41.8%	45.6%	47.6%
	[9] By degree of urbanisation	Cities		43.1%	46.2%	47.9%	52.2%
		Rural areas		22.9%	26.9%	27.1%	30.2%
	[10] By country of birth	Native		31.2%	37.7%	34.9%	43.0%
		EU-born		57.5% u	32.7%	48.3% u	39.5%
		Non EU-born		22.2% u	27.0%	41.7% u	35.7%
[11]Share of school teachers (ISCED 1-3) who are 50 years or over				29.5%	38.3%	30.2% 2020	39.2% 2020

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

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.

Life expectancy in Croatia has been improving steadily, but it is still below the EU average. However, it has deteriorated in recent years mainly due to COVID-19. In 2019, it was 78.6 years (EU average: 81.3) and in 2021, it was 76.7 (EU average: 80.1), dropping back to the 2010 level. Mortality rates from preventable and treatable causes in Croatia are far above the EU average. This is due in part to smoking and poor nutrition, and to shortcomings in providing timely and effective care.

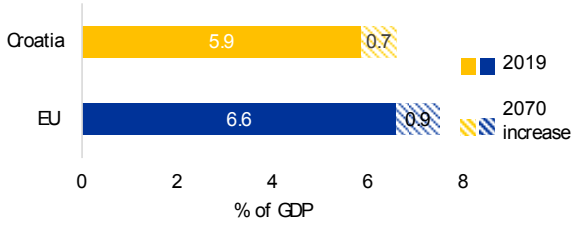
Graph A16.1: **Life expectancy at birth, years**



Source: Eurostat

Health spending relative to GDP in Croatia was below the EU average in 2020. In this year, Croatia spent EUR 963 per inhabitant, whilst the EU average was more than three times as high. In 2020, total healthcare spending increased to 7.8% of GDP. This is in line with the upward trend in all Member States in 2020. In Croatia, this increase is largely due to the severe GDP contraction (by 8.5%, compared to 5.7% in the EU overall). This is also corroborated by the fact that the share of health spending in total public spending decreased from 13.9% to 13.5%. The public share of health spending is higher than the EU average (84.2% vs 81.2% in 2020). Public spending on health is projected to increase by 0.7 percentage points (pps) of GDP by 2070 (compared to 0.9 pps for the EU overall).

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



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

Outpatient curative and rehabilitative care holds the biggest share of total current health expenditure. This makes up one fourth of health expenditure, followed by pharmaceuticals (just over 20%) and inpatient curative and rehabilitative care (19.6%). As in other EU countries, between 2019 and 2020, spending on prevention increased, although at 6%, the increase is markedly lower than for the EU overall (26%). Across the EU, this increase was primarily driven by spending on disease detection, surveillance, control and response programmes as part of the public health response to COVID-19. Another action to safeguard public health is the ongoing rationalisation of the use of antimicrobials, as part of broader efforts to foster the rational use of medicines. With 16.2 daily defined doses (EU average: 14.4) Croatia ranks 9th for consumption of antimicrobials.

Historically, Croatia has had fewer doctors and nurses than many other EU countries. In 2021, it had only 7 nurses (EU average: 8.3) and 3.6 doctors (EU average: 3.9) per 1,000 population. However, 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 and potential emigration of health professionals.

Historical levels of investment in healthcare, measured as gross fixed capital formation, are low. Through its recovery and resilience plan (RRP), Croatia plans to invest EUR 353 million (5.6% 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)

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

	2017	2018	2019	2020	2021	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	139.1	133.1	128.3	130.8	NA	91.7 (2020)
Cancer mortality per 100 000 population	321.8	323.9	311.0	303.9	NA	242.2 (2020)
Current expenditure on health, % GDP	6.7	6.8	6.8	7.8	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	82.5	82.0	81.9	84.2	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	3.1	3.1	3.0	3.1	NA	3.4 (2020)
Acute care beds per 100 000 population	351	350	354	360	NA	387.4 (2019)
Doctors per 1 000 population *	3.4	3.4	3.5	3.5	3.6	3.9 (2020)
Nurses per 1 000 population *	6.6	6.7	6.9	6.9	7.0	8.3 (2020)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day (total consumption in CY and CZ) **	16.8	17.0	16.9	14.0	16.2	14.5 (2021)

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

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). If implemented successfully, these investments could be very beneficial to the health system.

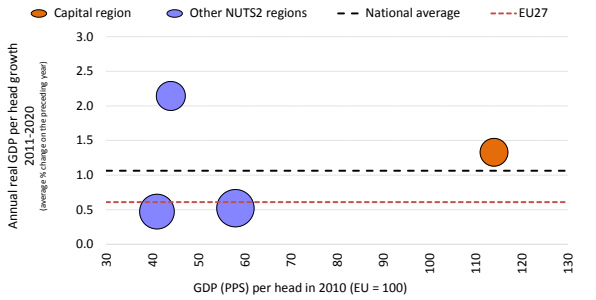
In recent years, Croatia has undertaken reforms in a range of areas, but progress in implementation varies. The national development strategy for 2020–2030 may provide the required framework for these reforms. Announced reform measures include setting up excellence centres, making hospital accreditation and payments more efficient, and introducing modern management and procurement practices. These measures can change the operation of hospitals, which receive financial support from the state budget to settle their debts every year. Quality monitoring systems are underdeveloped, but available indicators on quality of care suggest much scope for improvement by accelerating reforms of hospital and primary care and improving quality of care.

ANNEX 17: ECONOMIC AND SOCIAL PERFORMANCE AT REGIONAL LEVEL

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

Regional disparities in Croatia remained high between 2011 and 2020. Croatia's GDP per capita in purchasing power standard (PPS) increased from 60% to 70% of the EU-27 average between 2014 and 2021. This indicates a robust, ongoing process of convergence of the country as a whole on the EU average in spite of the drop in GDP per capita in 2020 (-7.4% in PPS terms).

Graph A17.1: **GDP per capita (2010) and GDP growth (2011-2020)**

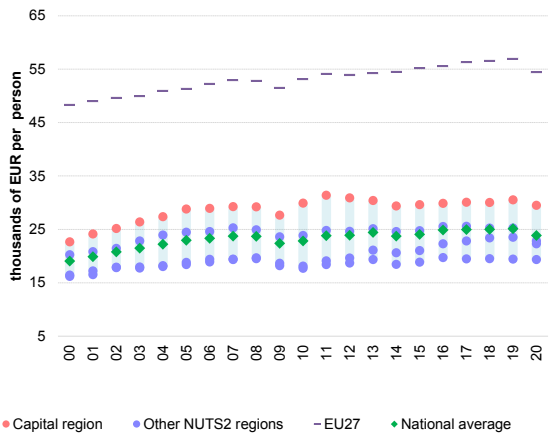


(1) bubble size: population, 2019
Source: DG REGIO calculations based on JRC (ARDECO) and Eurostat data

Regional disparities are persistently high in Croatia. The four NUTS 2 regions established in 2021 have quite diverse levels and patterns of development. In 2021, the capital region of Grad Zagreb had a GDP per capita (in PPS) that was 131% of the EU average, twice as high as Jadranska Hrvatska (65%), 2.5 times higher than Sjeverna Hrvatska (56%) and three times higher than Panonska Hrvatska (44%). Furthermore, in the period 2011-2020, regional growth rates of real GDP per capita varied widely from the national rate (1.1%). Namely, at 2.1% average growth, the northern, second-least developed region (Sjeverna Hrvatska), has been converging on both the EU and the national averages, while the coastal region (Jadranska Hrvatska) and the poorest region in the east (Panonska Hrvatska) have been lagging behind (at 0.5%).

Regional disparities in GDP per capita reflect territorial disparities in labour productivity. National labour productivity measured by gross value added (GVA) per worker (in PPS) was 70% of the EU average in 2021. The four NUTS 2 regions showed notable differences in 2021: the capital city region had the highest productivity with 86% of the EU average, while Jadranska Hrvatska and Sjeverna Hrvatska were at 68% and 66%, and Panonska Hrvatska came last with 56%. Several factors explain the differences, including human capital and specialisation in high technology sectors.

Graph A17.2: **Labour productivity (2000-2020)**



(1) Real GVA in millions of euro EUR (2015 prices) by employment in thousands of persons
Source: Eurostat, DG REGIO elaboration

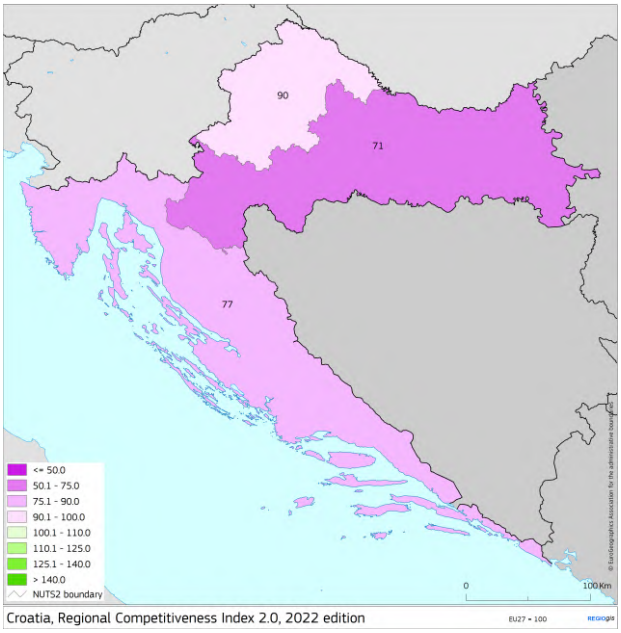
Low R&D expenditure at national level goes hand in hand with considerable differences in regional innovation performance. Total R&D expenditure at national level was just a little more than half the EU average in 2021 (1.24% as against 2.26%; both lower than pre-pandemic levels). It ranged from just 0.3% in Panonska Hrvatska and 0.6% in Jadranska Hrvatska to 1% in Sjeverna Hrvatska and up to 2.4% in the capital city region. All these factors reflect the reduced capacity of the country as a whole and particularly of its less developed regions to generate growth in dynamic and advanced sectors. This is also well reflected in the regional competitiveness index, which stood at 80% of the EU average in 2022.

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

NUTS region name	GDP per head (PPS) (2021)	Productivity (GVA (PPS) per person employed) (2021)	GDP per head growth (2011-2020)	Population growth (2011-2020)	Unemployment rate (2021)	R&D expenditure (2020)	Regional Competitiveness Index (RCI) (2022)
	Index, EU27 = 100	Index, EU27 = 100	Average % change on the preceding year	Average annual change per 1000 residents	% of active population	% of GDP	Index - values range between 0 and 100
European Union	100.0	100.0	0.6	1.7	7.0	2.3	100.0
Hrvatska (Croatia)	70.0	70.0	1.1	-6.1	7.6	1.2	80.6
Panonska Hrvatska	44.0	56.0	0.5	-13.2	9.7	0.3	71.0
Jadranska Hrvatska	65.0	68.3	0.5	-3.2	9.4	0.6	77.0
Grad Zagreb	131.0	85.7	1.3	-0.6	5.4	2.4	90.0
Sjeverna Hrvatska	56.0	66.1	2.1	-3.5	4.6	1.0	90.0

Source: EUROSTAT, European Commission

Map A17.1:**Regional Competitiveness in Croatia (2022)**



Demographic dynamics negatively affect the country, with marked differences between the capital region and the others. Croatia's overall population declined markedly between 2011 and 2020, with an average annual decline rate of 6.1 per thousand residents (as compared to an EU annual growth rate of 1.7). The population of Panonska Hrvatska declined the most, while the population of the capital region of Grad Zagreb remained almost constant. At the national level, net migration also declined at an annual average rate of 2.7 per thousand residents in 2011-2021. The capital city region of Grad Zagreb and the surrounding region Sjeverna Hrvatska had a positive net migration rate in 2020, while Panonska Hrvatska declined the most. In the short term, depopulation trends can produce a shortage of resources in some economic activities especially in the least developed regions. In the longer term, protracted population decline can also affect the capacity of the whole country to grow and even to cope with the challenges posed by an ageing population.

Labour market conditions differed markedly between Croatia's more developed and less developed regions. In 2021 Croatia had a 7.6% unemployment rate, close to the EU average (7%). However, the unemployment rate in Jadranska Hrvatska and Panonska Hrvatska was twice as high as in Sjeverna Hrvatska and Grad Zagreb (close to 10% in the first two as opposed to 4-5% in the last two). The employment rate (for the cohort aged 20-64) mirrored the territorial and development gaps, ranging from values relatively close or above the EU average in Grad Zagreb (76%) and Sjeverna Hrvatska (71%), to values 8 to 10 percentage points below the EU average in Jadranska Hrvatska (66%) and Panonska Hrvatska (63%).

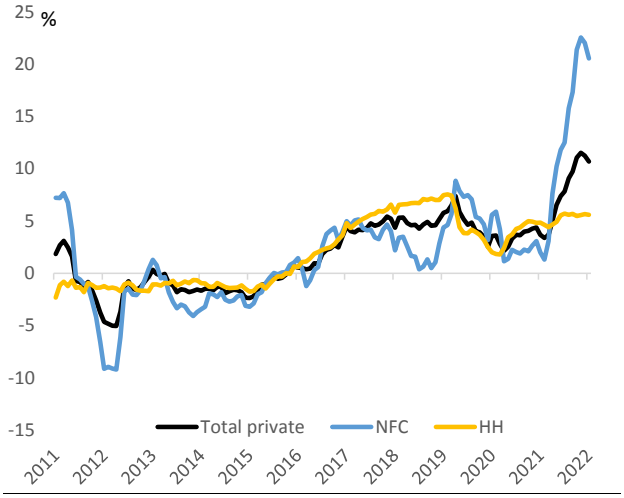
Croatia has a predominately bank-based financial sector, with banks being the main financial intermediaries. Total banking-sector assets accounted for 120.6% of GDP in Q3-2022. The banking sector is highly concentrated and predominantly foreign-owned (around 90% of total banking assets are in foreign-owned banks). The five largest banks in Croatia account for 81.2% of total banking-sector assets.

The Croatian banking sector remains profitable and resilient. Banking sector profitability remained high in Q3-2022, with return on equity of 12.5% (EU average: 6.1%). The banking solvency ratio was 21.9% in Q3-2022 (EU average: 18.6%), signalling the robustness of the banking sector. Croatian banks remain well capitalised, with a common equity tier 1 ratio (CET1) of 21.2% in Q3-2022, well above the EU average (15.3%). There is a significant amount of liquidity in the banking system, as the liquidity coverage ratio was 198.8% in Q3-2022. To further strengthen the resilience of credit institutions, the Croatian central bank (HNB) announced an increase in the countercyclical capital buffer rate applicable to the risk exposure of local banks from 0.5% to 1% as of 31 December 2023. The accession to the euro area on 1 January 2023 will greatly reduce currency risk and is expected to mitigate the possible effects of increases in interest rates due to growing inflation.

Croatian banks continued to reduce their non-performing loans (NPLs). The NPL ratio decreased further to 3.2% in Q3-2022, the lowest level since 2015 (EU average: 1.8%). This was due to a reduction in NPLs, stronger credit growth, and the sale of NPL claims. Asset quality has improved for both corporates and households. Similarly, the NPL coverage ratio remained at 66.8% in Q3-2022, which reflects banks' ability to absorb future losses. However, defaults may increase, 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.

There was a rise in lending activity in Q3-2022. In the 12 months to Q3-2022, lending to non-financial corporations outpaced lending to households. In Q3-2022, lending to non-financial corporations had increased by 20.7% year-on-year. This growth was likely boosted by market optimism related to the coming adoption of the euro in 2023, as well as by borrowing for the production and distribution of energy. Lending to households was up 5.8% year-on-year in Q3-2022, with the bulk of growth coming from mortgage loans.

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



Source: ECB.

Household debt continued to rise moderately. According to the HNB, household debt increased by 4.6% in 2021, ending the year at 36.1% of GDP. The increase in debt was moderate in historical terms, and mainly composed of mortgage loans, which have been growing strongly for several years now, due to the implementation of the government's programme to subsidise mortgage loans.

The Croatian real estate poses a risk to financial stability due to recent sharp price increases and growing volumes of mortgage lending. Although house-price growth slowed from 7.7% in 2020 to 7.3% in 2021, house prices still increased more quickly than income, further reducing the already low affordability of housing. House-price overvaluation can partially be explained by: (i) an increase in foreign buyers; (ii) a reduction in sales transactions as many homes for sale are less desirable since they are not earthquake-proof; and (iii) favourable financing conditions. According to the HNB, the number of transactions in the residential real-estate market recovered in 2021, with total sales

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

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	116.8	114.1	109.0	127.2	119.0	120.6	276.8	207.9
Share (total assets) of the five largest banks (%)	72.8	79.4	79.8	80.5	81.2	-	-	68.7
Share (total assets) of domestic credit institutions (%)[1]	9.2	9.4	8.9	8.9	8.9	10.5	-	60.2
NFC credit growth (year-on-year % change)	5.0	2.2	4.4	5.6	2.0	20.5	-	9.1
HH credit growth (year-on-year % change)	4.8	5.8	7.5	2.0	4.9	5.6	-	5.4
Financial soundness indicators:[1]								
- non-performing loans (% of total loans)	8.8	7.3	5.2	5.3	4.2	3.2	1.8	1.8
- capital adequacy ratio (%)	21.4	21.1	22.5	23.2	24.4	21.9	18.6	19.8
- return on equity (%)[2]	5.9	8.8	9.1	4.7	7.7	12.5	6.1	6.6
Cost-to-income ratio (%)[1]	52.1	50.7	50.3	51.5	51.2	50.9	60.6	51.8
Loan-to-deposit ratio (%)[1]	82.1	82.1	82.3	78.8	75.4	75.4	88.6	78.0
Central bank liquidity as % of liabilities	0.4	0.6	0.5	1.2	0.7	0.6	-	2.9
Private sector debt (% of GDP)	96.1	92.0	88.2	97.6	86.9	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	245.0	177.6	154.0	134.3	82.1	155.4	-	93.3
Market funding ratio (%)	53.4	53.6	54.8	53.8	54.2	-	50.8	40.0
Green bonds issued to all bonds (%)	-	-	-	-	-	-	3.9	2.3

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

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

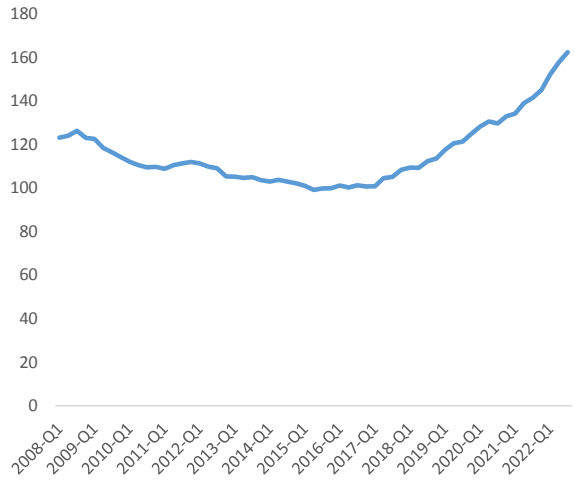
volumes increasing by 9% compared with 2019 ([101]).

In December 2021, the European Systemic Risk Board ([102]) 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 European Systemic Risk Board 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 lending standards.

The insurance sector is relatively small and highly concentrated. In March 2022, there were 15 insurance companies operating in the Croatian market. The total assets of all insurers account for 9.0% of GDP, which is relatively low (EU average: 59.5%). The sectoral solvency ratio was 220.8% in Q2-2022 (EU average: 268.5%). The insurance sector has been characterised by a sharp decrease in the share of premium revenues accounted for by life insurance and an increase in the share accounted for by non-life insurance due to the introduction of mandatory insurance for motor-vehicle liability and property.

Croatian capital markets remain less well developed than the EU average, but reforms are underway. Levels of financing on capital markets remained stable in 2021 as the market-funding ratio remained at 54.2% (EU average: 50.8%). Stock market capitalisation remained at 32.1% of GDP (EU average: 85.5%). The national recovery and resilience plan includes reforms to diversify capital markets and improve the availability of alternative finance.

Graph A18.2: **Housing prices**



(1) 2015=100.
Source: Eurostat.

([101]) https://www.hnb.hr/documents/20182/4185341/e-fs-23.pdf/e0281d12-1e83-5a4a-082a-7c8ea7408e3c

([102]) https://www.esrb.europa.eu/news/pr/date/2022/html/esrb.pr220211~9393d5e991.en.html

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 conducive to growth, employment and environmental sustainability but there is further potential to strengthen recurrent property taxation and resource and pollution taxes. Table A19.1 shows that Croatia's tax revenues as a percentage of GDP were below the EU aggregate in 2021. Revenues from labour taxes as a share of GDP were significantly below the EU aggregate, while revenues from consumption taxes are among the highest in the EU, both as a share of GDP and as a share of total taxation (see also Graph A19.1). Environmental taxes are also higher than the EU aggregate due to the contribution of energy and transport taxes. However, the share of resource and pollution taxes as a percentage of total taxation is below the EU average, which indicates that the 'polluter pays' principle can be better applied in some instances. Moreover, property tax revenues, including recurrent taxes on immovable property, which are among the sources of tax revenue least detrimental to growth, are also below the EU aggregate (expressed both as a share of GDP and of total taxation). As from 1 October 2022, the VAT rate for the supply of district heating and firewood, pellets, briquettes and wood chips was temporarily reduced from 13% to 5% until 31 March 2023. The application of the above measures was subsequently extended until 31 March 2024.

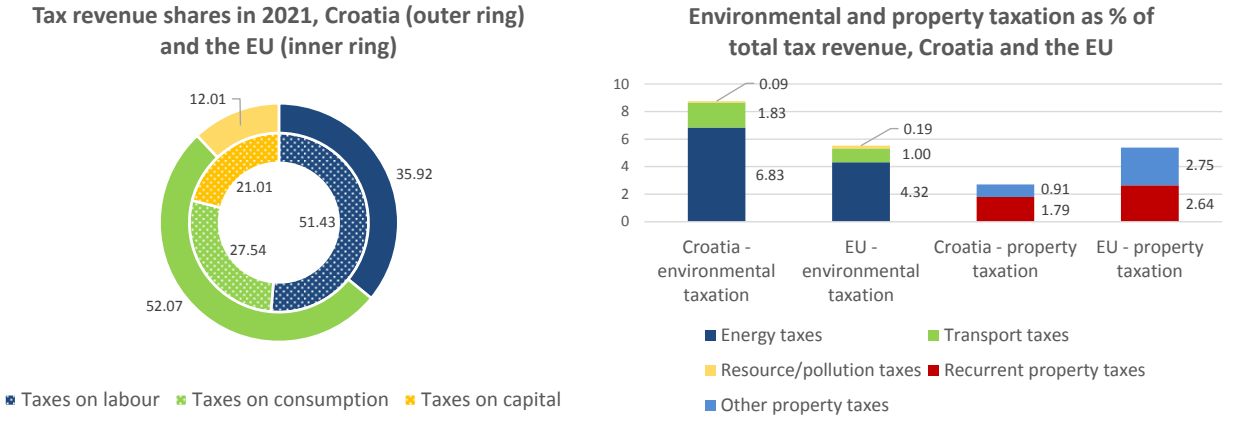
The labour tax wedge is similar to the EU average at various levels of earnings, but the redistributive effect of the tax-benefit system is limited. In 2022, the labour tax wedge was similar to the EU average for single people at various income levels and for second earners at 67% of the average wage, whose spouses earn the average wage (see Graph A19.2). However, while the progressivity of labour taxes was therefore similar to the EU average, the tax-benefit system's ability to reduce income inequality (as measured by the GINI coefficient) was below the EU average in 2021.

Table A19.1: **Taxation indicators**

		Croatia					EU-27				
		2010	2019	2020	2021	2022	2010	2019	2020	2021	2022
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	35.6	37.3	36.6	35.6		37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	15.1	13.4	13.8	12.8		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	16.8	19.1	18.1	18.6		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	3.7	4.8	4.7	4.3		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	1.0	1.1	1.1	1.0		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	0.6	0.7	0.7	0.6		1.1	1.2	1.2	1.1	
	Environmental taxes as % of GDP	3.0	3.4	3.3	3.1		2.4	2.4	2.2	2.2	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)		31.3	31.3	31.3	31.3	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)		39.8	39.7	38.7	39.1	41.0	40.1	39.9	39.6	39.7
	Corporate income tax - effective average tax rates (1) (*)		16.5	16.5	16.5			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	9.2	7.3	6.5	6.8		8.6	7.7	8.1	7.8	
Tax administration & compliance	Outstanding tax arrears: total year-end tax debt (including debt considered not collectable) / total revenue (in %) (*)		15.5	15.4				31.6	40.7		
	VAT Gap (% of VAT total tax liability, VTTL)		0.9	6.9				11.0	9.1		

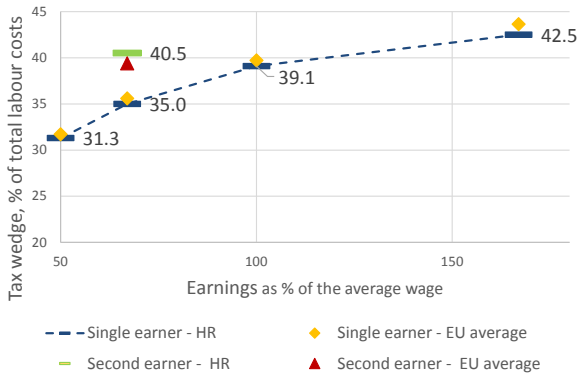
(1) Forward-looking effective tax rate (OECD).
(2) A higher value indicates a stronger redistributive impact of taxation.
(*) EU-27 simple average
For more data on tax revenues as well as the methodology applied, see European Commission, Directorate-General for Taxation and Customs Union, *Taxation trends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

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



Source: European Commission

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



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

Croatia performs relatively well on tax compliance and tax administration. ([103]) Despite the COVID-19 pandemic, tax arrears remained stable at 15.4% of total tax revenue in 2020. This is significantly below the EU average, which increased by 9.1 percentage points (pps) to 40.7% due to tax deferrals, although this average is distorted by large values in a few Member States. The VAT gap (the gap between revenues actually collected and the theoretical tax liability) has remained relatively stable since 2016 ([104]) at 6.9% in 2020, which is below the EU-wide gap of 9.1%. Croatia's RRP includes measures to further strengthen tax compliance and administration (e.g. by digitalising tax administration and expanding e-invoicing to prevent and fight tax fraud).

([103]) Croatia ranked 49th out of 190 jurisdictions in the indicator 'paying taxes' in 2020 (World Bank, *Doing business report*, https://www.worldbank.org/en/programs/business-enabling-environment/doing-business-legacy).

([104]) The VAT gap for 2019 was estimated at 0.9%, which might be related to some inaccuracy in the underlying data for 2019. European Commission, Directorate-General for Taxation and Customs Union, *VAT gap in the EU: report 2022*, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2778/109823.

ANNEX 20: TABLE WITH ECONOMIC AND FINANCIAL INDICATORS

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

	2004-07	2008-12	2013-19	2020	2021	2022	forecast 2023	forecast 2024
Real GDP (y-o-y)	4.6	-1.8	2.1	-8.5	13.1	6.2	1.6	2.3
Potential growth (y-o-y)	3.1	0.2	1.2	2.5	2.4	3.2	3.4	3.0
Private consumption (y-o-y)	3.8	-1.8	1.4	-5.1	9.9	5.1	1.2	1.8
Public consumption (y-o-y)	4.6	0.4	1.3	4.3	3.0	3.2	3.1	2.5
Gross fixed capital formation (y-o-y)	4.8	-5.8	3.7	-5.0	4.7	5.8	2.9	3.7
Exports of goods and services (y-o-y)	6.2	-1.7	6.3	-23.3	36.4	25.4	3.0	3.7
Imports of goods and services (y-o-y)	6.2	-4.3	6.4	-12.4	17.6	25.0	2.9	3.4
Contribution to GDP growth:								
Domestic demand (y-o-y)	4.5	-2.4	1.8	-3.1	7.6	4.8	1.9	2.3
Inventories (y-o-y)	0.6	-0.6	0.4	0.0	-1.1	1.6	-0.3	-0.1
Net exports (y-o-y)	-0.6	1.1	-0.1	-5.4	6.6	-0.2	-0.1	0.0
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.6	-0.5	-0.1	1.2	0.2	0.9	1.3	0.9
Capital accumulation (y-o-y)	1.7	0.9	0.5	0.5	0.6	0.7	0.8	0.8
Total factor productivity (y-o-y)	0.9	-0.3	0.9	0.8	1.6	1.5	1.4	1.3
Output gap	3.5	-0.4	-1.1	-8.6	0.9	3.8	1.9	1.2
Unemployment rate	11.9	11.8	12.9	7.5	7.6	7.0	6.6	6.1
GDP deflator (y-o-y)	3.7	2.5	0.9	0.7	2.0	8.2	7.5	3.2
Harmonised index of consumer prices (HICP, y-o-y)	2.8	2.9	0.8	0.0	2.7	10.7	6.9	2.2
HICP excluding energy and unprocessed food (y-o-y)	2.7	2.3	1.0	0.8	1.8	9.1	8.0	3.0
Nominal compensation per employee (y-o-y)	4.8	2.0	-0.1	1.2	10.4	7.9	7.5	3.3
Labour productivity (real, hours worked, y-o-y)	2.5	0.3	1.4	-7.2	11.7	3.7	0.4	0.6
Unit labour costs (ULC, whole economy, y-o-y)	2.1	1.8	-0.9	9.4	-1.2	4.0	6.9	2.2
Real unit labour costs (y-o-y)	-1.6	-0.7	-1.7	8.6	-3.2	-3.9	-0.5	-1.0
Real effective exchange rate (ULC, y-o-y)	1.4	-0.9	-1.9	3.3	-1.4	0.4	0.9	-1.5
Real effective exchange rate (HICP, y-o-y)	1.5	-0.2	0.3	-1.3	0.5	1.0	.	.
Net savings rate of households (net saving as percentage of net disposable income)	-0.5	-0.9	1.6	6.8	6.0	.	.	.
Private credit flow, consolidated (% of GDP)	14.7	3.6	0.4	1.3	3.0	.	.	.
Private sector debt, consolidated (% of GDP)	85.9	117.0	102.8	97.5	86.8	.	.	.
of which household debt, consolidated (% of GDP)	32.2	40.2	36.1	37.8	34.1	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	53.7	76.8	66.7	59.7	52.7	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	.	.	9.6	4.7	3.7	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	-5.4	0.6	2.0	2.8	3.7	2.3	5.4	6.0
Corporations, gross operating surplus (% of GDP)	18.6	20.6	21.0	20.1	21.9	25.1	26.3	26.6
Households, net lending (+) or net borrowing (-) (% of GDP)	1.6	1.0	2.9	6.3	4.5	-2.0	-3.1	-2.2
Deflated house price index (y-o-y)	9.8	-4.9	1.0	7.1	4.8	3.6	.	.
Residential investment (% of GDP)	3.7	3.5	2.7	3.1	3.0	3.1	.	.
Current account balance (% of GDP), balance of payments	-7.4	-4.8	1.9	-0.5	1.8	-1.6	-2.2	-1.7
Trade balance (% of GDP), balance of payments	-8.6	-4.2	-0.2	-7.0	-2.7	-5.7	.	.
Terms of trade of goods and services (y-o-y)	1.4	0.6	0.5	-1.6	-2.0	-4.7	1.5	0.5
Capital account balance (% of GDP)	0.0	0.1	0.9	2.1	2.4	2.6	.	.
Net international investment position (% of GDP)	-70.1	-89.5	-70.2	-47.1	-33.8	-26.1	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	-32.6	-49.3	-26.1	3.7	12.6	15.1	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	75.2	94.0	81.8	65.4	65.3	60.0	.	.
Export performance vs. advanced countries (% change over 5 years)	29.2	-3.6	4.5	-0.7	12.8	.	.	.
Export market share, goods and services (y-o-y)	-0.1	-5.8	3.8	-16.1	19.1	20.7	0.3	-0.1
Net FDI flows (% of GDP)	-4.8	-2.9	-2.6	-1.4	-4.8	-5.6	.	.
General government balance (% of GDP)	-3.2	-5.8	-2.1	-7.3	-2.5	0.4	-0.5	-1.3
Structural budget balance (% of GDP)	.	.	-1.4	-3.5	-2.9	-1.0	-1.3	-1.9
General government gross debt (% of GDP)	39.1	55.4	78.2	87.0	78.4	68.4	63.0	61.8

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

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

1 - Short-term risks to fiscal sustainability are low overall. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A21.2). ([105]) Gross financing needs are expected to remain moderate at around 11% of GDP in the short term (i.e. over 2023-2024) and declining compared with the peak in 2020 (Table 1 of Table A21.1). Financial markets' perceptions of sovereign risk have improved in recent years, as confirmed by the spread vis-à-vis the bund, which has stabilized at relatively low levels compared to Central and Eastern European Countries peer countries. Croatia's credit rating is deemed as investment grade, with a stable outlook by all three major rating agencies

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

The DSA for Croatia shows that, under the baseline, the government debt-to-GDP ratio is expected to broadly stabilise at a level slightly above 60% of GDP over the medium term (about 63% of GDP in 2033) (Graph 1). ([106]), ([107]) The assumed structural primary balance (a deficit of 0.7% of GDP) seems relatively ambitious compared to past fiscal performance. At the same time, the baseline projections up to 2033 benefit from a favourable (although diminishing) snowball effect, notably thanks to the favourable impact of NextGenerationEU, with real GDP growth at around 1.5% of GDP over 2025-2033. Government gross financing needs are expected to slightly increase over the projection period, reaching 13% of GDP in 2033, above the level forecast for 2024 (by 1 pp. of GDP).

The baseline projection is stress-tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). For Croatia, all the stress test scenarios would lead to worse results compared to the baseline, with particularly adverse developments under the two following scenarios: A permanent worsening of the macro-financial conditions (i.e. 1 pp. higher than the baseline), as reflected in 'adverse interest- growth rate differential' scenario would lead to higher government debt-to-GDP ratio (about 5 pps.) by 2033, as compared with the baseline. Reducing the SPB level permanently by half of the cumulative forecast change, as reflected in the 'lower structural primary balance' scenario would increase the government debt-to-GDP ratio by around 5 pps. of GDP by 2033 as compared with the baseline. Slightly higher debt ratios (less than 1 pp.), as compared to the baseline, are obtained by either reverting to historical trajectories under the 'historical structural primary balance (SPB)' scenario (i.e. the SPB gradually converged to its historical 15-year average) or by factoring in a temporary worsening of financial conditions under the 'financial stress 'scenario (i.e. interest rates higher by 1 pp.).

Additionally, stochastic projections show a medium sensitivity of these projections against plausible unforeseen events (Graph 2). ([108]) These stochastic simulations point to a 28% probability of the debt ratio in 2027 being greater than in 2022, entailing low risk given

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

([106]) The assumptions underlying the Commission's 'no-fiscal policy change' baseline notably comprise: (i) a structural primary deficit, before ageing costs, of 0.7% of GDP as of 2024; (ii) inflation converging linearly towards the 10-year forward inflation-linked swap rate 10 years ahead (which refers to the 10-year inflation expectations 10 years from now); (iii) the nominal short- and long-term interest rates on new and rolled over debt converging linearly from current values to market-based forward nominal rates by T+10; (iv) real GDP growth rates from the Commission 2023 spring forecast until 2024, followed by EPC/OGWG 'T+10 methodology projections between T+3 and T+10, i.e. for 2025-2033 (on average 1.5%); (v) ageing costs in line with the 2021 Ageing Report (European Commission, Institutional Paper 142, November 2020). For information on the methodology, see the 2022 Debt Sustainability Monitor.

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

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

the initial moderate level of debt. However, such shocks point to significant uncertainty (i.e. the difference between the 10th and 90th debt distribution percentiles) surrounding the government debt baseline projections.

3 - Long-term risks to fiscal sustainability are low overall. ([109])

The S2 indicator (at 0.6 pp. of GDP) points to low fiscal sustainability risks. The indicator shows that, relative to the baseline, the SPB would not need to improve much to ensure debt stabilisation over the long term. This result is underpinned by the unfavourable initial budgetary position (contribution of 1.2 pps. of GDP), which is partly offset by the projected decrease in ageing-related costs (contribution of -0.6 pp. of GDP). Ageing costs' developments are primarily driven by the projected decline in public pension spending (contribution of -1.1 pps. of GDP) and the projected increase in health and long-term care spending over the projection period (joint contribution of 0.6 pp. of GDP) (Table 2).

Combined with low debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as low. Indeed, the S1 sustainability gap indicator signals that a small consolidation effort of 0.6 pp. of GDP would be needed to reduce debt to 60% of GDP by 2070. This result is mainly driven by the unfavourable initial budgetary position (0.9 pp. of GDP), which is partially offset by the projected decrease of the ageing-related public expenditure (contribution of -0.3 pp. of GDP) (Table 2).

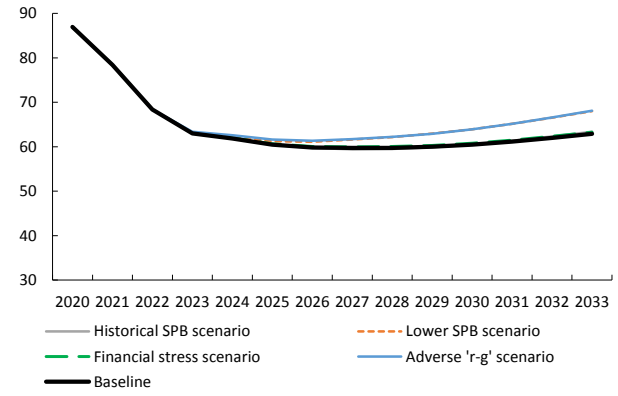
Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors relate to the recent increase in interest rates and factor such as Croatia's relatively low pension adequacy. The share of non-performing loans has gone down substantially in recent years, but remains relatively high in comparative terms with other EU Member States. Nevertheless, 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. Moreover, the debt maturities have been lengthening in recent years, while financing sources have been relatively stable and were further diversified with the introduction of a retail bond this year. In addition, the structural reforms under the NGEU/RRF, if fully implemented, could have a further positive impact on GDP growth in the coming years, and therefore help to mitigate debt sustainability risks.

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

Table A21.1: Debt sustainability analysis - Croatia

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	**87.0**	**78.4**	**68.4**	**63.0**	**61.8**	**60.5**	**59.8**	**59.7**	**59.8**	**60.0**	**60.5**	**61.2**	**62.0**	**62.9**
Changes in the ratio	15.9	-8.6	-10.0	-5.4	-1.1	-1.4	-0.7	-0.1	0.0	0.2	0.5	0.7	0.8	0.9
of which														
Primary deficit	5.3	0.9	-1.8	-0.7	0.2	0.4	0.7	0.9	0.9	1.0	0.9	0.9	0.9	0.9
Snowball effect	8.1	-10.1	-8.8	-4.6	-2.1	-1.8	-1.4	-1.0	-0.9	-0.7	-0.5	-0.2	-0.1	0.0
Stock-flow adjustments	2.5	0.5	0.6	-0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	21.4	13.1	10.9	10.3	11.7	11.2	11.5	11.8	12.0	12.2	12.4	12.7	13.0	13.2

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2023-2027

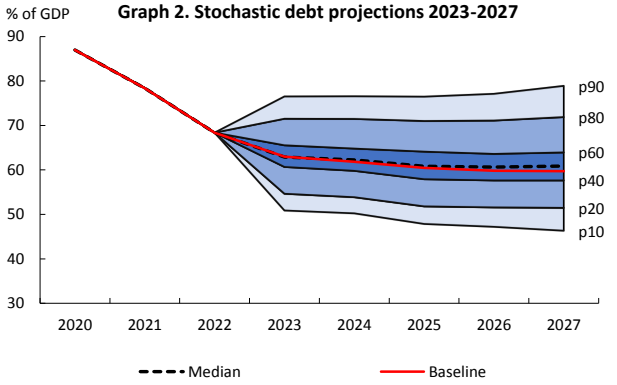


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

	S1	S2
Overall index (pps. of GDP)	**0.6**	**0.6**
of which		
Initial budgetary position	0.9	1.2
Debt requirement	0.0	
Ageing costs	-0.3	-0.6
of which Pensions	-0.6	-1.1
Health care	0.4	0.5
Long-term care	0.1	0.1
Others	-0.2	-0.1

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	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	LOW	LOW
		Debt level (2033), % GDP	62.9	63.4	68.0	68.1	63.3				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	41%	42%	46%	41%	41%				
		Probability of debt ratio exceeding in 2027 its 2022 level						28%			
		Difference between 90th and 10th percentiles (pps. GDP)						32.6			

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

Source: Commission services (for further details on the Commission's multidimensional approach, see the 2022 Debt Sustainability Monitor).