EUROPEAN
COMMISSION

Brussels, 24.5.2023
SWD(2023) 619 final

COMMISSION STAFF WORKING DOCUMENT

2023 Country Report - the Netherlands

Accompanying the document

Recommendation for a COUNCIL RECOMMENDATION

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

{COM(2023) 619 final}

European Commission

Netherlands

2023 Country Report

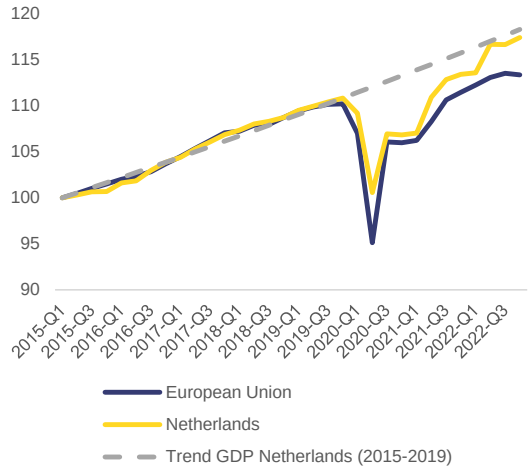
ECONOMIC AND EMPLOYMENT SNAPSHOT

A resilient economy facing new headwinds

The Dutch economy has proven to be resilient in recent years. Despite the increased uncertainty and high inflation caused by Russia's war of aggression against Ukraine, the Dutch economy continued to perform well in the first half of 2022. Businesses have invested more, and consumer spending has continued to grow on the back of a strong labour market and solid growth in exports. Having already surpassed pre-pandemic levels in 2021, Dutch GDP regained its pre-pandemic growth-trendline in Q2-2022 (see Graph 1.1). The post-pandemic recovery in the Netherlands has therefore been faster and more complete than in most other EU countries.

New headwinds and challenges are expected to lead to a modest slowdown in economic growth. Russia's invasion of Ukraine has caused inflation to surge, driven especially by higher prices for energy and commodities. With central banks raising interest rates in response to the high inflation, borrowing is becoming more expensive. The Dutch economy is also increasingly affected by a shortage of workers. Although consumer spending still held up well during the second half of 2022, investment activity slowed down as businesses adjusted to higher input prices, shortages of workers, and the increasing cost of borrowing. Looking ahead at 2023, growth in consumer spending is projected to slow down, with employment growth expected to slow down and households continuing to adjust their spending to the increased prices. Business investment is also forecast to remain subdued as the cost of borrowing is expected to increase further while labour shortages are set to persist. Growth is projected to pick up in 2024 on the back of easing inflation.

Graph 1.1: **Gross domestic product in constant prices (100 in Q1-2015)**



Source: Eurostat

The Netherlands had one of the EU's highest rates of inflation in 2022. Inflation as measured by the Harmonised Indices of Consumer Prices peaked at 17.1% year-on-year in September 2022, with surging energy prices being the main driver. Increases in the price of gas and oil have a particularly large impact on the Dutch economy given the significance of these energy sources in the country's energy mix [1]. In addition to high energy prices, Dutch core inflation also stands out as being higher than the EU and euro-area average. Since the inflation peak in September, energy prices have started to come down, and this trend is expected to continue in 2023, also bringing down headline inflation. In addition, the Dutch authorities put in place a price cap for gas and electricity as of January 2023 to

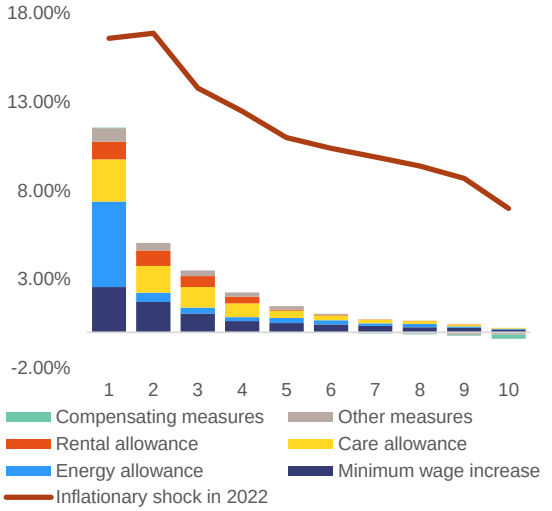
[1] In addition, the Dutch inflation statistics only take into account energy prices in new contracts, which means that the official inflation statistic overstates the average price inflation experienced by consumers because it ignores the fact that some households have a fixed energy contract.

protect consumers from further energy-price spikes (see Box 1.1). The price cap is expected to offset the regressive effect of the price shock to some degree ([2]). The government has also implemented other measures that aim to cushion the effects of the increase in energy prices (see Graph 1.2). However, only some of these measures (for example the increase in the energy allowance) are targeted at the most vulnerable households.

The 2023 budget involves a substantial increase in government spending, in particular due to the measures taken to cushion the impact of high energy prices. The most notable of these measures is the aforementioned price cap on energy that came into effect on 1 January 2023 (see Box 1.1). Given the cost of the energy package, in combination with the government's additional spending plans related to societal challenges, such as the green transition, limiting excessive nitrogen depositions, education and housing supply, the deficit is expected to rise to 2.1% of GDP in 2023 after it was balanced in 2022 (as high gas prices led to a revenue windfall while spending came out lower than expected). The deficit is projected to drop slightly to 1.7% in 2024.

The Netherlands is experiencing very low unemployment, but a two-tier labour market and shortages of workers remain a challenge. There is a shortage of workers in the Dutch labour market as the number of vacancies exceeds the number of unemployed people. The unemployment rate reached its lowest level in April 2022 at 3.2% and stands only slightly higher at 3.4% in April 2023 due to a stronger increase in the supply of workers. Although unemployment is expected to increase in 2023 due to weaker job creation, it is expected that there will continue to be a shortage of workers. Furthermore, the high level of more precarious 'flexible' employment (i.e., workers not on permanent contracts) requires further attention in terms of the European Pillar of Social Rights, in particular for equal opportunities in the labour market, fair working conditions, and adequate social protection for all (see also Annex 14).

Graph 1.2: **Estimated effects of measures aiming to restore purchasing power on disposable income by income decile**



Minimum-wage policies are simulated on the assumption that no worker earns less than the hourly minimum wage per hour worked. Simulation of the inflationary shock in 2022 based on EU-SILC 2010 data, combined with EU-HBS 2015 data, adjusted to be representative of the 2022 population. Deciles are determined using 2021 household income, equivalised using the modified OECD equivalence scale. The effects of other policy changes are simulated using EU-SILC 2020 data.
Source: European Commission's Joint Research Centre, calculations based on the EUROMOD model, version I5.0+ and its Indirect Tax Tool extension (ITTv4).

The Netherlands has been selected for an in-depth review to assess macroeconomic vulnerabilities related to its high current account surplus and its high levels of private debt. ([3]) The current account surplus of the Netherlands has narrowed under the impact of high energy prices and a widening primary incomes balance. With lower energy prices over 2023, the surplus is expected to rebound. Private debt has been gradually falling over the last decade while remaining above both prudential levels and the EU average. Higher interest rates and the

([2]) Simulations show that the welfare loss for households in the lowest 10% of incomes is more than double that of households in the highest 10% of incomes. Assuming 2022 prices, the price cap would significantly reduce the differences in welfare effects because higher-income households on average still pay the market price on some of their energy consumption, while the energy used by lower-income households falls completely under the price cap. Source: JRC, EUROMOD.

([3]) European Commission (2023), In-Depth Review for the Netherlands, Commission staff working document (COM(2023) 640 final).

Box 1.1: **Energy policy response in the Netherlands**

The Netherlands has adopted several support measures to cushion the impact of energy price inflation on households and businesses. The Commission's 2023 Spring Economic Forecast projects the country's gross budgetary costs to amount to 1.1% of GDP ([4]). Most measures do not fully preserve the price signal and only some of these measures target the most vulnerable. Almost all energy support measures are expected to be phased out at the end of 2023.

Notable support measures include: (i) the support given to low-income households through municipalities; (ii) a 21% decrease in excise duties on petrol fuel and diesel; (iii) the transfer of an energy allowance of EUR 1 300 to households earning up to 120% of the statutory minimum wage; and (iv) a scheme to help pay for some of the energy costs faced by energy-intensive SMEs. In addition, the Netherlands has introduced a price cap on electricity and gas that will apply from January to December 2023. These price caps apply to the first consumed 2 900 kWh of electricity and 1 200 m^3 gas, which is around the level of average, annual household consumption for gas and slightly above the level of average, annual household consumption for electricity. In addition, households making use of district heating will pay a capped price of EUR 47.38/GJ for the first 37 GJ they consume. The market price applies to energy consumption above these respective volume limits.

The Netherlands applies retroactively for 2022 the EU solidarity contribution in application of Council Regulation (EU) 2022/1854 ([5]) at a rate of 33%.

The filling of gas-storage facilities in 2022 was implemented through a tender scheme. In September 2022, the government approved subsidies for vulnerable households with poorly insulated homes to improve insulation in their homes. The government also launched an energy-saving campaign in March 2022 which was extended in autumn 2022.

increased cost of borrowing are expected to contribute to a continuation of this trend.

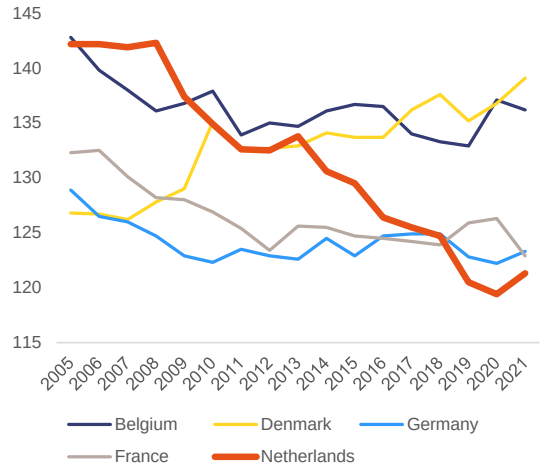
Unlocking and expanding the potential of the Dutch economy

In the medium and longer term, the Netherlands continues to have considerable potential to further improve prosperity and resilience, but bottlenecks are holding up progress. The country is an EU innovation leader (see Annex 11), a top performer in the digitalisation of its economy (see Annex 10), and home to many firms providing cutting-edge technologies to global markets. These structural characteristics have supported the economy's swift recovery from the pandemic. At the same time, several challenges may prevent the economy from achieving its potential in the future. For example, businesses face restrictions stemming from both a shortage of workers in key sectors (see Section 3 of this report) and environmental legislation to curb excessive nitrogen emissions, limiting their activities and investments. Both issues are also limiting the government's ability to deliver on key policy goals, among others on housing and the fight against climate change.

([4]) For 2022, the gross budgetary costs of the measures amounted to 0.6% of GDP. Some of the measures outlined in this box were already in place in 2022.

([5]) I.e., the application of a mandatory temporary tax at a rate of at least 33% to the extraordinary and unexpected profits of businesses active in: (i) the extraction of crude petroleum, natural gas, and coal; and (ii) the refinery sector. It is calculated on taxable profits, as determined under national tax rules in the fiscal year starting in 2022 and/or in 2023, which are more than 20% greater than the average yearly taxable profits in 2018-2021.

Graph 1.3: **Labour productivity per hour worked**



(1) EU27 = 100
Source: Eurostat

The Netherlands has experienced a drop in labour productivity over the past two decades. Although the employment rate is at a record-high, many of the jobs added in recent years have been concentrated in activities with low levels of labour productivity ([6]). Structural characteristics of the Dutch labour market can explain this development to some degree. The strong increase in the share of workers working in flexible types of employment has accompanied the decrease in labour productivity compared with the EU average shown in Graph 1.3. This increase in flexible work may be one of the factors contributing to poor productivity growth. Flexible contracts limit incentives for businesses to invest in the skills of their employees and in the automation of tasks. Additionally, business dynamism has fallen in recent years, with productivity growth mainly coming from incumbent firms ([7]), while investment in research and innovation remains below national targets. Low 'exit rates' of incumbent firms (i.e. few incumbent firms going out of business) and long-lasting pandemic-support measures provided by the government may constitute obstacles to resource re-allocation, an important driver of productivity.

Given current demographic and migration trends, the ageing of Dutch society is putting pressure on the social-welfare system. The sustainability of the long-term care system is coming under particular pressure. Ageing is likely to add to demand for workers in the health and care sectors, exacerbating existing shortages of workers. This could weigh on the sustainability of government finances unless there are cost-effective investments in health and long-term care. This underscores the need to continue to strengthen innovation capacity and productivity outcomes in the Dutch economy.

In the medium term, persistent fragilities in global value chains could be a source of concern for the Dutch economy. Smoothly functioning value chains have long benefited the Dutch economy. The Netherlands has strong cross-country connections: in 2022, almost half of Dutch imports were used for further processing by domestic firms and around 30% of imports are used to produce exports ([8]). Global supply chains and export markets have become more fragile in recent years. The experience of pandemic-related supply-chain disruptions shows that Dutch sectors with more diversified supply chains have absorbed these disruptions better than those with more concentrated supply chains ([9]). This pattern could point to a possible adjustment strategy of supply-chain diversification for the Dutch economy if the vulnerability of cross-border value chains establishes itself as a long-term trend.

Uncertainty about future energy-price developments and the need to achieve climate targets put further pressure on decarbonising the country's energy mix. The share of energy produced from renewable sources stood at 13% in 2021. This is still

([6]) Ando, S. (2020), Productivity in the Netherlands, IMF Working Paper No. 2020/155.

([7]) Freeman, D., L. Bettendorf, G.H. van Heuvelen and G. Meijerink (2021), 'The contribution of business dynamics to productivity growth in the Netherlands'. CPB discussion paper (link).

([8]) Dutch Trade in Facts and Figures, 2022, Statistics Netherlands.

([9]) Böschemeier, J., Mau, K. (2022), Gediversifieerd netwerk van handelspartners helpt schokken op te vangen. Economisch Statistische Berichten, 107(4816), 542-544.

below both the EU average and national targets. The expansion of renewable energy production through large, new offshore wind-parks and integrating these wind-parks into the grid will be key to ensuring the resilience of the Dutch economy against future energy-market shocks.

The Netherlands scores very well on the United Nations Sustainable Development Goals (SDGs), although significant challenges remain in a few areas, such as the environmental impacts of agricultural production (SDG 2) and climate action (SDG 13). The Netherlands has a strong healthcare system and has made progress towards achieving SDG 3 (good health and well-being). However, the pandemic has also highlighted the need for more targeted investment in healthcare. The country performs very well on SDG 8 (economic growth and employment), but there are still concerns about the prevalence of temporary contracts. On SDG 4 (quality education), the Netherlands has one of the highest shares of adult participation in learning, but there are still challenges in ensuring inclusive education. The Netherlands' performance on SDG 10 (migration and social inclusion) could improve by ensuring that more people with a migrant background are in paid employment and in education.

THE RECOVERY AND RESILIENCE PLAN IS UNDERWAY

The Netherlands' recovery and resilience plan (RRP) aims to address key challenges related to: the green and digital transition, the housing market, the labour jobs market, pensions, education, healthcare, the tackling of aggressive tax planning, and the fight against money laundering. It consists of 21 reforms and 28 investments that are supported by EUR 4.7 billion in grants representing 0.58% of GDP. The relatively small size of the financial allocation means that the plan can only account for part of the investment needs identified in the Netherlands.

While the Netherlands' recovery and resilience plan was only adopted in 2022, its implementation is now underway. Proceeding swiftly with the negotiation of the operational arrangements will help the implementation of the plan and is necessary for the submission of the first payment request which is expected by the end of 2023. Implementation is ongoing and at this stage, risks of non-absorption appear limited given the relatively small financial allocation. Preparations of a REPowerEU chapter are ongoing. The Netherlands still needs to submit its first payment request. This request would cover 33 milestones and targets that track progress across all components of the recovery and resilience plan, potentially leading to a disbursement of up to EUR 1.4 billion.

The plan is expected to be revised in 2023 with the addition of a REPowerEU chapter. The Netherlands requested the transfer of additional resources available under the Brexit Adjustment Reserve, leading to a total financial allocation of EUR 735 million under REPowerEU. The following, more detailed review of measures being implemented under the RRP in no way implies formal Commission approval or rejection of any payment requests.

Promoting the green transition

Promoting the green transition is a key priority of the Dutch RRP, with 47.8% of the financial contribution allocated to measures combating and mitigating climate change. The plan includes significant investments dedicated to: (i) deploying renewable energy sources; (ii) developing a functional hydrogen infrastructure; (iii) adapting residential neighbourhoods to the consequences of climate change; (iv) improving energy efficiency in the built environment; and (v) rolling out climate-friendly mobility solutions. The plan seeks to help restore biodiversity in natural habitats and shift towards sustainable agriculture by reducing the nitrogen surplus through significant investments in nature restoration (the nature programme) and closing pig farms. The plan also includes a package of fiscal reforms aiming to: (i) make sustainable energy sources financially more attractive relative to fossil fuels; and (ii) incentivise individuals and businesses to limit their energy consumption. Combined, these measures are expected to contribute to the Netherlands' decarbonisation and energy objectives as identified in the national energy and climate plan 2021-2030. These measures are also significant steps towards achieving climate neutrality by 2050. Two other reforms are also part of the country's 2023 tax plan: a reform introducing and increasing the CO_2 levy for industry; and a reform to increase the rate of the air-travel tax. In addition, the government has published its *Human Capital Agenda*, a plan to increase the number of workers with skills in the green hydrogen sector.

Accelerating the digital transformation

The Dutch RRP contains a number of measures to further boost the digitalisation of the Dutch economy. The measures included in the plan allocate 25.6% of the Netherlands' financial allocation to digital objectives. In addition to measures in other parts of the RRP contributing to the digital transformation, the dedicated digital component of the RRP contains measures to: (i) promote the development of innovative technologies and digital skills; (ii) make mobility future-proof; and (iii) accelerate the digitalisation of the Dutch government. These measures include the digitalisation of the criminal-justice process, and the Open Government Act (which entered into force in 2022 and seeks to make the public administration more transparent). Several of the investments included in the digital component of the Dutch RRP have already been launched. Support has been granted under the plan to: (i) promote the Quantum Delta NL innovation hub; (ii) stimulate quantum computing; and (iii) promote the European Rail Traffic Management System, which has started planning studies for two new rail tracks in the Netherlands.

Improving the functioning of the housing market

The Dutch RRP aims to improve the housing market and make buildings more energy efficient. The third component of the plan includes a package of reforms and investments that are expected to address the shortage of housing. These reforms and investments will seek to: (i) accelerate planning and permitting procedures; (ii) set binding construction targets for local authorities; and (iii) give financial support to municipalities to unlock stalled construction projects. A separate set of reforms in this component is expected to improve fairness in the housing market by: (i) removing tax rules that favour some types of home ownership over others; and (ii) making access to social rent more income dependent. Lastly, the component includes two sizeable investments to improve energy efficiency in both public and private buildings. Reforms of the vacant possession ratio, the phase-out of the exemption of the gift tax on home purchases and the increased income-dependence of social rents have already been undertaken. The government and provinces have agreed on construction targets and drawn up an action plan on to accelerate planning and permitting procedures.

Strengthening the labour market, pensions, and education

The RRP includes reforms and investments to prepare the labour market and pension system for current and future challenges and to help students catch up on gaps in their schooling due to the pandemic. Measures included in the plan aim to reduce the differences in tax treatment between employees and the self-employed, notably by: (i) introducing mandatory insurance for the self-employed; and (ii) tackling bogus self-employment by passing a law to amend the definition of what constitutes an employment relationship. The plan also includes investments in the sustainable employability of Dutch workers via upskilling and reskilling. Furthermore, a reform aims to adapt the second pillar of the pension system to the changing labour market while also improving intergenerational fairness, transparency, and resilience to shocks. Investments are already being made via the 'NL continues to learn' and 'Regional Mobility Teams' initiatives to support upskilling and reskilling. Actions to reduce bogus self-employment have been published and the difference in tax treatment between employed and self-employed has been reduced. Several investments have been made and are also underway that aim to support vulnerable student groups (such as newcomers to schools, and students in their last year of secondary school) by addressing gaps in

Box 2.1: **Key deliverables expected under the recovery and resilience plan in 2023/2024:**

- Entry into force of a law adjusting energy-tax tariffs
- Finalisation of the aid scheme for the rehabilitation of pig farms
- Launch of a digital portal for communication on criminal proceedings between the public and official parties in the justice process
- Beginning of construction on 16 000 dwellings under the measure 'Unlocking new construction projects'
- Finalisation of agreements between the government, provinces, and municipalities on the building of 900 000 new dwellings by 2030
- Entry into force of a law setting up the new pension system and reforming the second pillar of the Dutch pension system
- Activation of the data portal for locating and accessing research health data
- Entry into force of a law on withholding tax on dividends paid to low-tax jurisdictions and in situations that constitute tax abuse under the Dutch anti-abuse regulations

students' education caused by school closures during the COVID-19 pandemic.

Increasing the resilience of the healthcare sector

The Dutch RRP has a separate component on increasing the resilience of the healthcare sector. The plan helps former healthcare professionals and others to assist healthcare organisations in need of staff. A national healthcare reserve is being set up with around 2 500 former healthcare professionals who can be deployed in times of crisis, pandemic or other emergencies. Hospitals will also be able to benefit from a grant scheme under the RRP to cover the costs of scaling up their intensive-care capacity. The scheme will cover both the costs of training staff and of adding new beds and equipment. The plan also supports e-health applications that make remote care possible. Examples of these remote types of care include display care, diagnosis via an app, and the provision of medication via medication dispensers. The RRP promotes innovation in the life sciences and the healthcare sector by connecting data from: (i) Dutch hospitals and healthcare organisations; (ii) knowledge institutions and public health organisations; (iv) patient organisations; (v) health funds; and (vi) businesses. Measures have also been taken to increase the numbers of additional temporary staff and scale up intensive-care capacity.

Combating aggressive tax planning and money laundering

The Dutch RRP includes several reforms to tackle aggressive tax planning and money laundering more effectively. The RRP helps to tackle tax avoidance by a variety of measures, including by imposing a conditional withholding tax on interest, royalties, and dividends paid to low-tax jurisdictions and in situations that constitute tax abuse under the Dutch anti-abuse regulations. The challenge of how best to fight money laundering is addressed by a strategy that: (i) aims to increase the staff capacity of the country's Financial Intelligence Unit; and (ii) introduces a limit on cash payments. In this way, this part of the RRP aims to: (i) make it more difficult for criminals to launder money; and (ii) strengthen the country's investigation and prosecution capacity. Several legislative changes related to aggressive tax planning have already been adopted.

FURTHER PRIORITIES AHEAD

Beyond the challenges addressed by the RRP, the Netherlands faces additional challenges not sufficiently covered in the plan. The Dutch housing market continues to be characterised by distortions that contribute to both high levels of private debt and an underdeveloped rental market. The labour market is characterised by segmentation and there are labour shortages in key sectors. Nitrogen emissions are harming the environment and blocking the construction of housing and renewable-energy projects. To help further decarbonise the economy, investments are needed in the Dutch electricity grid. Addressing these challenges will also enable further progress in achieving the Sustainable Development Goals (SDGs), where the Netherlands currently shows room for further improvement, namely on SDG 7 (affordable and clean energy) and SDG 13 (climate action).

Ensuring the affordability and availability of housing

House prices increased substantially in the past decade but appear to have reached a turning point. Average house prices nearly doubled between 2013 and 2022, with yearly growth reaching 15.1% in 2021. The rapid increase in housing valuations was caused by a range of factors, notably low rates of mortgage interest, insufficient and inelastic supply, and tax benefits that stimulate demand. With tightening financial conditions in 2022, house price growth has come to a halt. Mortgage rates have also picked up substantially, limiting the borrowing capacity of households and leading to a decrease in house prices of 5.1% between July 2022 and March 2023.

The surge in house prices in recent years has made housing considerably less affordable. The house-price-to-income ratio in 2022 was 33% higher than the long-term average, and substantially above the previous overvaluation peak in 2007. In 2022, the maximum mortgage that the median single-income household qualified for was sufficient to finance only 5% of total houses for sale, down from 20% in 2017 ([10]). Looking ahead, the positive affordability impact of the recent decrease in house prices is expected to be more than offset by the large increase in mortgage rates.

In an attempt to improve the affordability and availability of housing, the Dutch authorities are taking measures to increase housing supply. However, high inflation, shortages of workers, and environmental requirements related to nitrogen (see below) are driving up the cost of new construction projects and could lead to delays in delivering new dwellings.

Significant incentives for debt-financed home ownership remain, contributing to housing overvaluation and the large debt burden carried by Dutch households. Dutch homeowners can deduct their mortgage-interest payment from their taxable income, which stimulates housing demand, contributes to higher housing prices, and incentivises debt-financing. The partial reduction in interest deductibility introduced in recent years was coupled with a reduction in the 'imputed rent' tax that is levied on owner-occupied houses, partly offsetting the effect of the deductibility reduction. In combination with generous limits on the maximum amount that homebuyers can borrow from banks, this unequal treatment of different types of wealth is an important factor explaining the large levels of

([10]) Hans L., Plegt M. (2022). Waar kunnen koopstarters nog slagen?, Rooilijn 55/6.

household debt in the Netherlands, the relatively high levels of illiquid assets held by households, and households' low levels of liquid assets ([11]).

The Dutch rental market is characterised by a large, subsidised, social-rent sector, while the private rental sector is relatively small. In 2022, the private rental sector made up only around 14% of the total Dutch housing market, about half the size of the social-rent sector. Subsidisation of both the owner-occupied and social-rent sectors make the private rental sector relatively unattractive for households.

It appears that the government's recent policy measures will make the private rental sector less attractive for investors. The authorities have increased the transaction tax for buy-to-let investors and have announced the expansion of rent controls in the private sector starting in 2024. The government expects about 90% of all rental housing to be covered by rent controls in the medium-term ([12]). These policies risk adversely affecting housing supply in the rental sector and may further increase the bias towards owner-occupied housing and social housing (which is already characterised by long waiting lists). The lack of a well-developed private rental market could also reduce labour mobility because available and affordable rental housing is an important factor in households' decision to relocate. This could in turn contribute to shortages of workers, especially in large cities.

Reducing inequalities in a two-tier labour market

The Dutch labour market performs well but is characterised by a high share of flexible employment. Some signs of segmentation in the labour market include: (i) the high level – and strong growth over the past decade – of flexible and temporary contracts (28% of Dutch employees are on these contracts against an EU average of 12.9% ([13])); and (ii) the high numbers of self-employed people who have no other employees over the last decade ([14]). In 2022, the share of self-employed people increased further, while the share of people working under flexible and temporary contracts remains well above EU averages. People in flexible employment often have a more vulnerable position in the labour market ([15]).

A two-tier labour market can amplify inequality and weigh on productivity. A certain degree of flexibility in the labour market contributes to the adaptability of the economy and may also better accommodate individual preferences. However, the excessive use of flexible types of employment can have negative effects for workers and the wider economy. For example, participation in learning is a challenge for those with a flexible contract because of their uncertain employment arrangements, and this in turn results in less investment in skills by employers. It may be partly for this reason that the high share of flexible work appears correlated with weaker productivity developments and weaker wage growth ([16]).

The use of flexible types of employment is not necessarily driven by job-specific needs or by the preferences of job holders. For example, preliminary evidence suggests that after an increase in the maximum permitted duration of temporary contracts, transitions from flexible to permanent contracts have become less frequent while transitions between different

([11]) Ciurila, N., Van Heuvelen, H., Luginbuhl, R., & Smid, B. (2020). Are the savings of Dutch households optimal? CPB Notitie.

([12]) Ministry of Interior Affairs and Kingdom Relations (2022), Kamerbrief over regulering middenhuur.

([13]) Statistics Netherlands (2023), Meer flexcontracten met zekerheid, maar ook meer zzp'ers.

([14]) In total, around 41% of the labour force is in flexible employment in Q4 2022. This figure includes both self-employed workers without employees (12.8% of the labour force) and workers on flexible and temporary contracts (28.0% of the labour force).

([15]) Commisie Regulering van Werk (2020), In wat voor land willen wij werken?

([16]) Ando, S. (2020), Productivity in the Netherlands, IMF Working Paper No. 2020/155.

flexible contracts have become more frequent ([17]). It also appears that temporary agency workers stay longer than strictly needed under temporary contracts with more limited rights, a sign that flexibility in the system is possibly being abused in some cases ([18]). Ideally however, the institutional framework should ensure that the choice of a certain type of employment contract is driven by job-specific needs or by the preferences of job holders.

Changes in the institutional set-up could improve the position of people in flexible employment while also reducing duality. These changes could include reducing the incentives for employers to use flexible and temporary contracts in a comprehensive and timely manner. For example, harmonisation and better enforcement of rules for the different types of flexible contracts could increase worker's knowledge of their rights and support income security. Steps to improve social protection among the self-employed and to tackle bogus self-employment have been included in the Dutch RRP (see also Section 2 of this report).

In close cooperation with the social partners, the Dutch government intends to address differences between permanent and flexible work arrangements ([19]). Implementation of the different plans has been progressing slowly. Plans include the introduction of a certification system for agencies that hire people under flexible contracts. The government also intends to: (i) abolish zero-hours contracts (ii) replace 'on-call' contracts in their present form with a new type of contract providing more income security for workers; and (iii) improve the job security of temporary agency workers ([20]).

([17]) Heyma, A., Luiten, W. (2022). Effecten ketenbepaling WAB.

([18]) Tweede Kamer der Staten-Generaal (2022), Arbeidsmarktbeleid.

([19]) Tweede Kamer der Staten-Generaal (2022), Arbeidsmarktbeleid.

([20]) Tweede kamer der Staten-Generaal (2023), voortgang uitwerking arbeidsmarktpakket.

Tackling labour and skills shortages

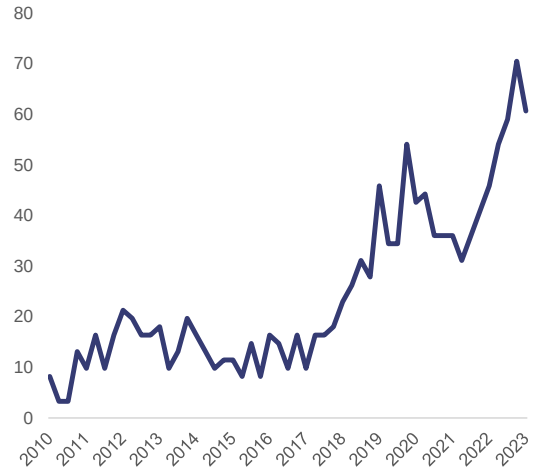
The shortage of workers – and the lack of technically skilled workers in particular – risks hampering the green, energy, and digital transitions ([21]). The lack of skilled workers is not only a problem for people seeking to employ professionals with higher levels of education. It is increasingly also a problem for those seeking to employ workers with a secondary-level vocational education (MBO). In 2022, labour shortages were reported in the Netherlands for 108 occupations that required specific skills or knowledge for the green transition, including environmental-protection professionals, insulation workers, and civil-engineering technicians ([22]). These shortages will hold back investments in green projects. Shortages were already a feature of the Dutch labour market before the COVID-19 pandemic, but they have become more widespread across different sectors since then. The number of job vacancies has exceeded the number of unemployed people since Q4-2021 ([23]). Firms reporting labour shortages as their main barrier to production are spread across a variety of sectors in industry and services, and worker shortages are substantially above EU averages (see Graph 3.1).

([21]) SEO, ROA (2022), Arbeidsmarkt krapte technici; Planbureau voor de Leefomgeving (2022), Inzicht in arbeidsmarktknelpunten voor de uitvoering van het klimaatbeleid; ABN AMRO (2022), Personeelstekort energietransitie rond recordniveau

([22]) Based on European Labour Authority (2023), EURES Report on labour shortages and surpluses 2022, i.e. data submitted by the EURES National Coordination Offices. Skills and knowledge requirements are based on the ESCO (European Skills Competences and Occupations) taxonomy on skills for the green transition. Examples are analysed on the basis of the share of ESCO green skills in relevant sectors. Data are not comparable across countries and cover a wide variety of sectors.

([23]) Statistics Netherlands (2023), Arbeidsmarkt in vierde kwartaal iets krapper.

Graph 3.1: **Percentage of Dutch sectors with shortages of workers in the top 25% of labour shortages in the EU (in %)**



(1) Calculations based on number of firms reporting staff shortages as greatest barrier to production
Source: European Commission Business and Consumer Surveys

Shortages are driven by cyclical and structural factors. More and more sectors have recently reported that they have unfilled vacancies. This growing shortage of workers appears related to cyclical factors such as the reopening of contact-intensive sectors of the economy and temporary shifts in demand for workers, leading to many unfilled vacancies for low-skilled jobs ([24]). Other sectors of the economy (such as information and communications technology; health; education; and technical fields) already reported severe shortages before the pandemic, indicating that more structural factors may be at work. Labour market forecasts suggest that tightness in these sectors will persist, partly due to demographic developments ([25]).

Despite a high overall participation rate, the Netherlands still has a pool of untapped and underutilised potential workers. The employment rate of women is high and still increasing. However, most women work in part-time employment (60.6% in 2022). Once in a part-time job, few employees choose to increase the hours that they work. This can be partially explained by high marginal tax rates, or obligations (or the anticipation of future obligations) related to the informal care of children or other family members, the quality of work and the work-life balance ([26]). The employment rate of other groups in the population could also be increased. In 2022, the gap between the employment rates of non-EU nationals and people born in the Netherlands was 18.5 pps ([27]). Incentivising an increase in hours worked and activating those at the margins of the labour market and inactive people could help to reduce labour and skills shortages.

To tackle shortages of workers and skills, it will be necessary to take into account sector-specific needs and barriers. A combination of policies could be considered to tackle labour and skills shortages. These policies include: (i) further reducing the marginal tax rate and/or simplifying eligibility criteria in the benefit system to increase transparency about the marginal tax rate that an individual faces ([28]); (ii) increasing wages in sectors with structural shortages, in particular those with a concentration of public and semi-public employers; (iii) promoting quality of work and work-life balance; (iv) improving career guidance; and (v) improving access to high-quality and affordable childcare. The Dutch labour market could also benefit from productivity-enhancing investments (e.g., further investments in e-health). In 2022, the government presented a general approach to labour shortages and a strategy to tackle teacher shortages specifically ([29]). In February 2023, the government updated this general action plan, and presented an action plan on green and digital jobs ([30]). The government

([24]) Bakens, J., & Fouarge, D. (2022). Huidige vacatures zijn slechte raadgever voor studiekeuze. Economisch Statistische Berichten, 107(4809), 211-213.

([25]) Bakens, J., Bijlsma, I., Dijksman, S., Fouarge, D., & Goedhart, R. (2021). De arbeidsmarkt naar opleiding en beroep tot 2026 (No. 005). Maastricht University, Research Centre for Education and the Labour Market (ROA).

([26]) Portegrijs, W. (2022). Once part-time, always part-time, Sociaal Cultureel Planbureau.

([27]) This value is higher than the EU average of 9.7pps.

([28]) Van Dijk, J., Van de Ven, Y. (2023). Het einde van de toeslagen, Instituut voor publieke economie.

([29]) Ministry of Education, Culture and Science (2022), Kamerbrief over Leraarenstrategie

([30]) Ministry of Social Affairs and Employment (2023), Kamerbrief met actieplan groene en digitale banen

also aims to reform the childcare system and further increase the independent-childcare allowance.

Targeted support and continued investments in basic, technical, and digital skills could make it easier for vulnerable groups to access work. Overall, adult participation in lifelong learning and participation in vocational education and training remains significantly higher than the EU average. Nevertheless, there is scope to strengthen upskilling and reskilling opportunities to reach people at the margins of the labour market, including by increasing cross-sector mobility (i.e., workers with a background in one sector moving to work in another sector). This would also help the Netherlands to reach its national target of ensuring that at least 62% of adults participate in training every year by 2030.

Making agriculture more sustainable to promote the green transition

Pollution by large deposits of nitrogen in nature areas is constraining construction activity and the deployment of renewable-energy infrastructure. The Netherlands' nitrogen surplus remains at a level that is four times the EU average, affecting the quality of biodiversity and water, including through high nitrate levels. In 2018, about 78% of the hectares of nitrogen-sensitive nature within Dutch Natura 2000 sites exceeded critical nitrogen-deposition values ([31]). A ruling by the Dutch Council of State in 2022 ([32]) concluded that the 'nitrogen exemption' that was introduced by the government following the Council of State's 2019 ruling ([33]) was insufficient, and that many construction projects would need to reapply for an individual environmental permit. The ruling may delay the deployment of critical renewable-energy infrastructure and housing construction ([34]).

The intensive agricultural sector is the main source of both nitrogen deposits in nature and diffuse pollution of water. The Dutch agricultural sector can be characterised as a productive, innovative, and export-oriented sector with intensive agricultural production mostly based on cost-price reduction and increasing economies of scale. At the same time, 50% of nitrogen depositions and 86% of ammonia emissions in the Netherlands originate from agriculture. Although the total number of farms has been decreasing in recent years, both livestock density and the number of very large farms has increased considerably ([35]). The area under organic farming in the Netherlands is substantially below EU averages ([36]). Livestock is responsible for 70.5% of GHG emissions from agriculture in the Netherlands (EU average: 57.9%). Diffuse pollution from agriculture is the most significant pressure on surface water.

The Dutch government is taking action to reduce nitrogen deposits (in particular from agriculture) through the RRP and integrated area programmes at the provincial level, but further efforts will be needed. Following the judgment of the Council of State, the government is responding along two tracks: (i) restoration and enhancement of nature; and (ii) reduction of nitrogen emissions. The government aims to bring 74% of the surface area of nitrogen-sensitive Natura 2000 sites below the critical

([31]) The value above which there is a risk that the quality of habitats is significantly affected.

([32]) The Council of State has ruled that construction activities should not be exempted from the analysis of nitrogen emissions in environmental impact assessments, concluding that the government's programme nitrogen approach (PAS) did not provide sufficient guarantees for nature conservation. The PAS had been adopted afterto the first ruling of the Council of State in 2019, blocking building permits.

([33]) see SWD(2022) 621 final.

([34]) Reply by Minister Jetten to Parliamentary questions on the court case concerning the application of the partial exemption for nitrogen (construction exemption) in the case of the Porthos CO2 storage project.

([35]) Livestock density, calculated as the total number of livestock units/total utilised agricultural area, increased from 3.32 in 2005 to 3.8 in 2016.

([36]) 3.2% in the Netherlands compared with the EU average of 8% in 2018.

deposition value by 2030. To this end, the Netherlands has earmarked EUR 24.3 billion to finance a package of nitrogen-reducing source measures. This includes different schemes that promote the voluntary closure of livestock production capacity. One of these schemes – specifically targeting pig farms – is part of the Dutch RRP (see Section 2 of this report). Integrated area programmes under the control of the provinces are now being drawn up and are expected to be an important step towards meeting the government's nitrogen targets. However, a recent report by the Dutch Environmental Assessment Agency (PBL) ([37]) concluded that the nitrogen targets cannot be reached without additional efforts.

There is room to make agriculture more sustainable, reduce nitrogen deposition, and protect biodiversity, while at the same time further improving competitiveness. Possible solutions to reduce nitrogen emissions include: (i) reducing livestock numbers; (ii) accelerating the transition to circular and organic agriculture; and (iii) cutting the use of chemical pesticides and inorganic fertilisers. Furthermore, the position of farmers in the value chain could be improved, for example through: (i) the further development of EU quality signs; (ii) greater recognition of producer organisations; (iii) further digitalisation and innovation in agriculture; and (iv) the increased presence of organic products in shops.

Helping to decarbonise the energy mix

Despite successful efforts to reduce dependency on Russian gas and oil, the Netherlands remains highly dependent on imported fossil fuels ([38]). In 2021, natural gas and oil accounted for 41% and 38% of the energy mix respectively, making the Dutch economy sensitive to global price developments. While energy prices have decreased, uncertainty remains regarding next winter, which requires continued efforts to structurally reduce gas demand. The Netherlands has plans in place to phase out natural gas, resulting in an expected decrease in natural-gas consumption of 6-16 billion cubic metres (bcm) by 2030, while natural-gas production is expected to decrease by 14 bcm by 2030 due to the expected closure of the Groningen gas field in 2023. Reducing the reliance on fossil fuels is also an essential part of ensuring security of supply. Despite increased ambitions to install additional renewable-energy capacity, the share of renewables in final energy consumption was only 13% in 2021, below both the politically agreed target at the EU level and the EU average of 21.8% (see Annex 7 and 12).

Capacity constraints in the electricity grid remain a significant bottleneck for the rollout of renewable-energy installations. The Dutch electricity grid can no longer accommodate the rapidly growing demand for transmission capacity. This can be seen in the regular refusal by network operators to allow new producers of electricity to connect to the grid. Congestion of the grid is especially prevalent in rural, sparsely populated areas, where energy demand has traditionally been low. At the same time, these areas provide favourable conditions for the deployment of large-scale renewable-energy installations. These installations rely heavily on the transmission capacity of the electricity grid during peaks of wind and solar power generation, but the rural areas they are in are least able to accommodate such peaks. Capacity constraints are especially acute in the provinces of Groningen, Flevoland, Gelderland and parts of North Holland and Zeeland. Additional investments in the expansion of electricity infrastructure, both at transmission and distribution levels, are therefore necessary to speed up the implementation of both onshore and offshore renewable-energy projects (see Annex 6).

Energy-efficiency improvements remain a cost-effective way to reduce dependency on fossil fuels. The Netherlands has a long-

([37]) Planbureau voor de Leefomgeving (2023). Geraamde ontwikkelingen in nationale emissies von luchtverontreinigende stoffen 2022.

([38]) These dependencies also drive the vulnerabilities in the 'Raw material and energy supply' area of the resilience dashboards (see Annex 5).

term strategy to renovate 1.5 million dwellings with energy-efficiency improvements by 2030. In addition, the Netherlands has obliged businesses to implement energy-efficiency improvements following energy audits, and is now preparing legislation to make it mandatory for owners of buildings to switch to more efficient heat pumps hen replacing a stand-alone fossil-fuel boiler. These efforts will help to improve the energy efficiency of the built environment (see Annex 6).

KEY FINDINGS

The Netherlands' recovery and resilience plan includes measures to address a series of structural challenges through:

- significant investments into, among other things: (i) the deployment of renewable energy sources; (ii) a functional hydrogen infrastructure; (iii) the shift to sustainable agriculture; and (iv) the energy efficiency of public and private buildings;
- fiscal reforms aiming to: (i) make renewable energy sources more financially attractive; and (ii) incentivise reduction of energy consumption;
- supporting the further digitalisation of the Dutch economy through investments in innovative technologies, digital skills, and sustainable mobility;
- removing features of the Dutch tax system that incentivise debt-financed home ownership and making access to social housing more income-dependent;
- reforming planning and permitting procedures in the construction process and setting regional construction targets to boost housing supply;
- funding necessary investments to unlock private construction projects;
- ensuring a level playing field between employees and the self-employed by introducing mandatory disability insurance for the self-employed and by taking measures to tackle bogus self-employment;
- Reforming of the second pillar of the pension system to improve its fairness, transparency, and shock resilience;
- helping students (in particular vulnerable students) to catch up on gaps in their education caused by the pandemic;
- ensuring the resilience of the healthcare sector in times of crises;
- tackling tax avoidance and money laundering.

The Netherlands should proceed with the steady implementation of its recovery and resilience plan and swiftly finalise the REPowerEU chapter with a view to rapidly starting its implementation.

Beyond the reforms and investments in the RRP, the Netherlands would benefit from:

- Further reducing the incentives that favour debt-financed home ownership and lead to high household debt and supporting the affordability and availability of housing on the private rental market;
- removing obstacles to investment, including in residential construction;
- further improving social outcomes and inclusive growth by addressing labour market segmentation;
- tackling structural labour and skills shortages, including by: (i) activating untapped labour potential; and (ii) improving up- and reskilling opportunities, including for those at the margins of the labour market and the inactive;
- making agriculture more sustainable by reducing nitrogen emissions;
- improving energy efficiency and removing capacity constraints in the electricity grid through further investments to accommodate the increasing deployment of renewable energy.

ANNEXES

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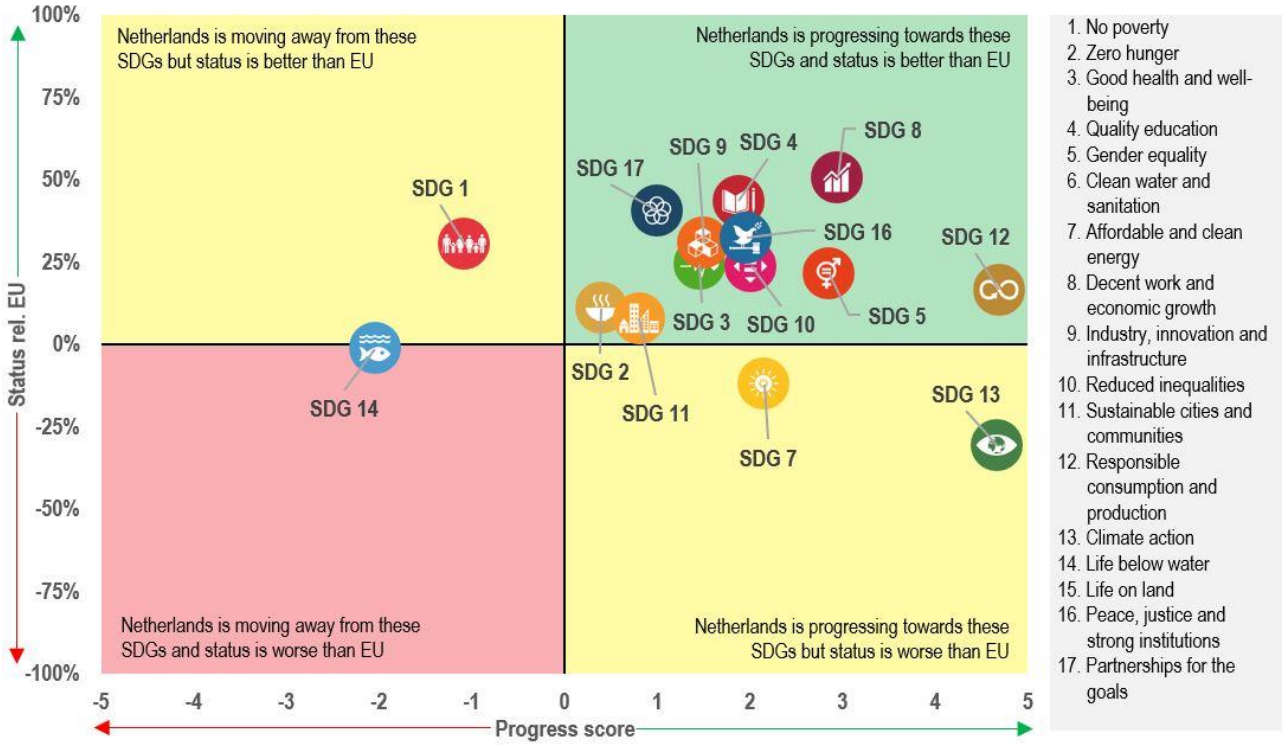
ANNEX 1: SUSTAINABLE DEVELOPMENT GOALS

This Annex assesses the progress on the Sustainable Development Goals (SDGs) along the four dimensions of competitive sustainability of the Netherlands. 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.

The Netherlands performs very well on several SDG indicators related to *environmental sustainability* (SDGs 2, 6, 9, 11, 12, 15), but still needs to catch up with the EU average on SDGs 7 and 13. On addressing SDG 7 (Affordable and clean energy), the country has made considerable progress on the share of renewable energy in total energy consumption, which increased from 5.8% in 2016 to 12.3% in 2021, but this is still far below the EU average (21.8% in 2021). The country also improved on indicators like primary energy consumption (3.5 tonnes of oil equivalent per capita in 2021) and final energy consumption (2.7 tonnes in 2021), but consumption still remains above the EU average (2.9 and 2.2 tonnes, respectively in 2021). It also improved on energy productivity (from 7.5 in 2016 to 8.4 in 2021), getting closer to the EU average (8.6 in 2021). However, energy import dependency is still above the EU average (57.7% in 2020) and is increasing (from 49.1% in 2016 to 68.1% in 2020). However, there are still challenges in achieving a sustainable and affordable energy system. Regarding the environmental impacts of agricultural production (SDG 2), ammonia emissions from agriculture (57.4 kg in 2021) are still very high compared to

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



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

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

the EU average (19.3 kg in 2019). Regarding SDG 13 (Climate action) net greenhouse gas emissions have decreased over time (from 12.3 tonnes per capita in 2016 to 10.1 tonnes per capita in 2021), but they are still above the EU average (7.4 tonnes per capita in 2021). Large investments in the Dutch RRP aim to boost the deployment of renewable energy and support the transition to sustainable agriculture.

The Netherlands performs very well on most SDG indicators related to fairness (SDGs 2, 3, 4, 5, 8, 10) but is moving away from SDG 1. The country outperforms the EU average in most indicators related to poverty, health, education and gender equality (SDGs 1, 3, 4, 5). However, the indicators related to housing in SDG 1 are worsening in the recent years. Housing cost overburden rate impacts 12.5% of the population (in contrast to 10.7% in 2016) and the 'Severe housing deprivation' rate also rose from 1% in 2015 to 1.5% in 2020. The Netherlands historically performs very well on economic growth and employment (SDG 8). The employment rate increased from 77.9% in 2016 to 81.7% in 2021, which makes the Netherlands one of the best performers in the EU (EU average: 73.1% in 2021). In addition, the long-term unemployment rate decreased from 2.3% in 2016 to 0.8% in 2021 and is well below the EU average (2.8% in 2021). On migration and social inclusion (SDG 10), the gap between non-EU citizens and EU nationals in terms of employment rates widened slightly between 2016 and 2021 (from 25.3% to 26.0% in 2021) and remains higher than the EU average (14.9%). However, the gap between those two categories for early leavers from education and training is narrowing (4.4% in 2021) and is far below the EU average (17.6% in 2021). The Netherlands has a high-quality education system, but there are still challenges in ensuring that everyone has access to education and that it is inclusive. The COVID-19 pandemic has also had an impact, with an increase in the number of people relying on social welfare. The Dutch RRP includes reforms and investments aimed at fair education and a resilient health system.

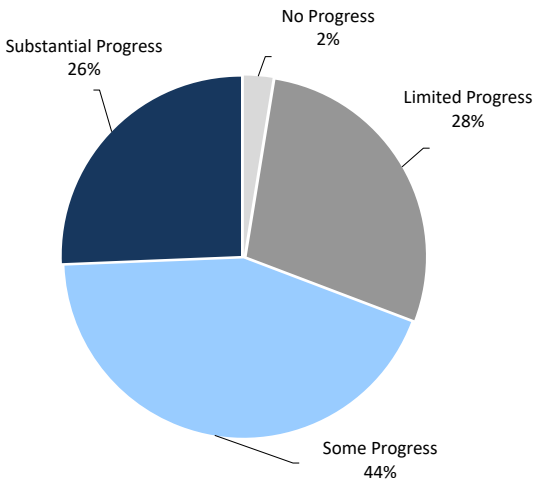
The Netherlands performs very well on SDG indicators related to productivity (SDGs 4, 8, 9). The country has the highest share of people with at least basic digital skills (79% in 2021, compared to the EU average of 54%), and one of the highest shares of adult participation in learning, which has increased since 2015 (18.8% in 2016 and 26.6% in 2021) (SDG 4). The share of households with high-speed internet in 2021 (90.6%) was well above the EU average (70.2%), representing significant progress on this indicator since 2016 (31.2% in 2016). The percentages of young people neither in employment, nor in education and training (5.5% in 2021) is far below the EU average (13.1% in 2021). However, there are still concerns over some aspects of work, including the prevalence of temporary employment contracts. The Netherlands has increased R&D investments as a share of GDP from 2.1% in 2016 to 2.2% in 2021 and meets the EU average (2.2% in 2021). The share of R&D personnel among the active population rose from 1.6% in 2015 to 1.8% in 2021 (EU average: 1.5% in 2021) (SDG 9). The Dutch RRP includes several measures related to the further improvement of digital skills as well as up- and reskilling opportunities of the workforce.

The Netherlands performs very well on SDG indicators related to macroeconomic stability (SDGs 8, 16, 17). In particular, the indicators on SDG 16 (Peace, justice and strong institutions) have further improved and the country scores highly on indicators related to access to justice. The Corruption Perceptions Index is far above the EU average (82 as compared to 64 of the EU in 2021). The Netherlands also performs better than the EU average on indicators related to employment and decent work (SDG 8). Although the percentage of the population reporting crime, violence or vandalism decreased from 17.4% in 2014 to 15.7% in 2020, it is still above the EU average (SDG 16; 11% in 2020. The Dutch RRP includes a reform to improve transparency of the public administration and several measures to tackle money laundering and aggressive tax planning.

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) ([39]) addressed to the Netherlands as part of the European Semester. These recommendations concern a wide range of policy areas that are related to 14 of the 17 Sustainable Development Goals (see Annexes 1 and 3). The assessment considers the policy action taken by the Netherlands to date ([40]) and the commitments in its recovery and resilience plan (RRP) ([41]). At this stage of RRP implementation, 44% of the CSRs focusing on structural issues from 2019-2022 have recorded at least 'some progress', while 28% 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: **The Netherland's progress on the 2019-2022 CSRs (2023 European Semester)**



Source: European Commission.

([39]) 2022 CSRs: EUR-Lex - 32022H0901(19) - EN - EUR-Lex (europa.eu)

2021 CSRs: EUR-Lex - 32021H0729(19) - EN - EUR-Lex (europa.eu)
2020 CSRs: EUR-Lex - 32020H0826(19) - EN - EUR-Lex (europa.eu)
2019 CSRs: EUR-Lex - 32019H0905(19) - EN - EUR-Lex (europa.eu)

([40]) 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).

([41]) 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**

Netherlands	Assessment in May 2023*	RRP coverage of CSRs until 2026**	Relevant SDGs
2019 CSR 1	**Some progress**		
Reduce the debt bias for households and the distortions in the housing market, including by supporting the development of the private rental sector.	Limited progress	Relevant RRP measures planned as of 2022, 2023 and 2024	SDG 8
Ensure that the second pillar of the pension system is more transparent, inter-generationally fairer and more resilient to shocks.	Some progress	Relevant RRP measures planned as of 2023	SDG 8
Implement policies to increase household disposable income, including by strengthening the conditions that support wage growth, while respecting the role of social partners.	Substantial progress		SDG 8
Address features of the tax system that may facilitate aggressive tax planning, in particular by means of outbound payments, notably by implementing the announced measures.	Substantial progress	Relevant RRP measures planned as of 2021, 2022 and 2024	SDG 8, 16
2019 CSR 2	**Limited progress**		
Reduce the incentives for the self-employed without employees, while promoting adequate social protection for the self-employed,	Limited progress	Relevant RRP measures planned as of 2023 and 2025	SDG 1, 2, 8, 10
and tackle bogus self-employment.	Limited progress	Relevant RRP measures planned as of 2022	SDG 8
Strengthen comprehensive life-long learning and upgrade skills notably of those at the margins of the labour market and the inactive.	Some progress	Relevant RRP measures planned as of 2020 and 2021	SDG 4
2019 CSR 3	**Some progress**		
While respecting the medium-term budgetary objective, use fiscal and structural policies to support an upward trend in investment.	Not relevant anymore		SDG 8, 16
Focus investment-related economic policy on research and development in particular in the private sector,	Some progress	Relevant RRP measures planned as of 2021, 2023, 2024 and 2025	SDG 9
on renewable energy, energy efficiency and greenhouse gas emissions reduction strategies	Some progress	Relevant RRP measures planned as of 2021, 2022, 2023, 2024, 2025 and 2026	SDG 7, 9, 13
and on addressing transport bottlenecks.	Some progress	Relevant measures planned as of 2022, 2023, 2024 and 2025	SDG 11
2020 CSR 1	**Some 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		SDG 8, 16
Strengthen the resilience of the health system, including by tackling the existing shortages of health workers and stepping up the deployment of relevant e-Health tools.	Some progress	Relevant RRP measures planned as of 2021,2022 and 2023	SDG 3
2020 CSR 2	**Some progress**		
Mitigate the employment and social impact of the crisis and	Substantial progress	Relevant RRP measures planned as of 2020,2021 and 2023	SDG 1, 2, 8, 10
promote adequate social protection for the self-employed.	Limited progress	Relevant RRP measures planned as of 2025	SDG 1,2,10
2020 CSR 3	**Some progress**		
Front-load mature public investment projects (to foster the economic recovery)	Some progress	Relevant RRP measures planned as of 2023 and 2024	SDG 8, 16
and promote private investment to foster the economic recovery.	Limited progress	Relevant RRP measures planned as of 2021,2023,2024 and 2026	SDG 8, 9
Focus investment on the green and digital transition, in particular on digital skills development,	Some progress	Relevant RRP measures planned as of 2021,2024 and 2025	SDG 4
sustainable infrastructure and clean and efficient production and use of energy	Some progress	Relevant RRP measures planned as of 2021,2022, 2023, 2024, 2025 and 2026	SDG 7, 9, 13
as well as mission-oriented research and innovation.	Substantial progress	Relevant RRP measures planned as of 2021,2023,2024 and 2025	SDG 9
2020 CSR 4	**Substantial progress**		
Take steps to fully address features of the tax system that facilitate aggressive tax planning in particular on outbound payments, notably by implementing the adopted measures and ensuring its effectiveness.	Substantial progress	Relevant RRP measures planned as of 2021,2022 and 2024	SDG 8, 16
Ensure effective supervision and enforcement of the anti-money laundering framework.	Substantial progress	Relevant RRP measures planned as of 2024	SDG 8, 16
2021 CSR 1	**Substantial progress**		
In 2022, pursue a supportive fiscal stance, including the impulse provided by the Recovery and Resilience Facility, and preserve nationally financed investment.	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.	Substantial progress	Not applicable	SDG 8, 16
At the same time, enhance investment to boost growth potential. Pay particular attention to the composition of public finances, on both the revenue and expenditure sides of the budget, and to the quality of budgetary measures in order to ensure a sustainable and inclusive recovery. Prioritise sustainable and growth-enhancing investment, in particular investment supporting the green and digital transition.	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, where relevant, by strengthening the coverage, adequacy and sustainability of health and social protection systems for all.	Substantial progress	Not applicable	SDG 8, 16
2022 CSR 1	**Some 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.	Some progress	Not applicable	SDG 8, 16
For the period beyond 2023, pursue a fiscal policy aimed at achieving prudent medium-term fiscal positions.	Substantial progress	Not applicable	SDG 8, 16
Reduce the debt bias for households and the distortions in the housing market, including by supporting the development of the private rental sector and taking measures to increase housing supply.	Some progress	Relevant RRP measures planned as of 2022,2023 and 2024	SDG 8
Enact and implement the reform of the pension system agreed in 2019 and 2020.	Some progress	Relevant RRP measures planned as of 2023	SDG 8
2022 CSR 2			
Swiftly finalise the negotiations with the Commission of the 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**		
Promote adequate social protection for the self-employed without employees,	Limited progress	Relevant RRP measures planned as of 2025	SDG 1, 2, 10
tackle bogus self-employment	Limited progress	Relevant RRP measures planned as of 2022	SDG 8
and reduce the incentives to use flexible or temporary contracts.	Limited progress		SDG 8
Address labour and skills shortages, in particular in healthcare, education, digital and technical jobs and construction, including by tapping underutilised labour potential originating from the high share of part-time employment and the lower employment rate of people with a migrant background.	Some progress	Relevant RRP measures planned as of 2021,2023,2024 and 2025	SDG 8
Strengthen up- and reskilling opportunities, in particular for those at the margins of the labour market and the inactive.	Some progress	Relevant RRP measures planned as of 2020 and 2021	SDG 4

(Continued on the next page)

Table (continued)

2022 CSR 4	**Some progress**		
Reduce overall reliance on fossil fuels	Limited progress	Relevant RRP measures planned as of 2021,2022, 2023, 2024, 2025 and 2026	SDG 7, 9, 13
by accelerating the deployment of renewables, in particular by boosting complementary investments in network infrastructure and further streamlining permitting procedures,	Limited progress	Relevant measures planned as of 2021,2023, 2024 and 2025	SDG 7, 8, 9, 13
improving energy efficiency, in particular in buildings,	Some progress	Relevant measures planned as of 2022 and 2026	SDG 7
and accelerating investments in sustainable transport	Some progress	Rellevant measures planned as of 2022, 2023, 2024 and 2025	SDG 11
and sustainable agriculture.	Limited progress	Relevant measures planned as of 2023 and 2026	SDG 6, 12, 15

Note:.

* See footnote ([40]).

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

Source: European Commission.

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 4). The Netherlands submitted its current recovery and resilience plan (RRP) on 8 July 2022. The Commission's positive assessment on 8 September 2022 and Council's approval on 4 October 2022 paved the way for disbursing EUR 4.7 billion in grants under the RRF over the 2021-2026 period.

Since the entry into force of the RRF Regulation and the assessment of the national recovery and resilience plans, geopolitical and economic developments have caused major disruptions across the EU. In order to effectively address these disruptions, the (adjusted) RRF Regulation allows Member States to amend their recovery and resilience plan for a variety of reasons. In line with article 11(2) of the RRF, the maximum financial contributions for all Member States were updated on 30 June 2022. Given that the Netherlands submitted their RRP after this revision, the updated amount of EUR 4.7 billion in grants was already taken into account by the authorities. No revision was submitted at the time of publication of this country report yet.

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

	Current RRP
Scope	Initial RRP
CID adoption date (date of submission)	4 October 2022
Total allocation	EUR 4.7 billion in grants (0.55% of 2021 GDP)
Investments and reforms	28 investments and 21 reforms
Total number of milestones and targets	127

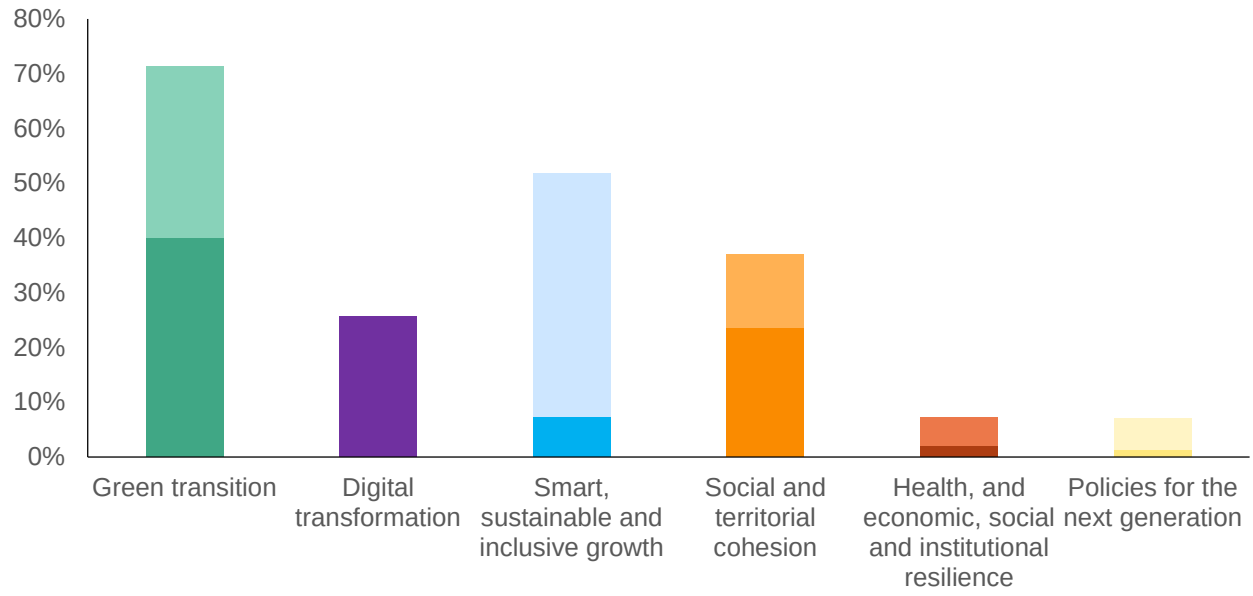
Source: RRF Scoreboard

The Netherland's progress in implementing its plan is published in the Recovery and Resilience Scoreboard ([42]). 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.

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

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

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

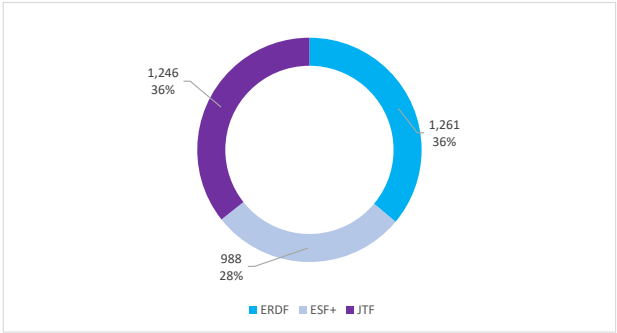


Note: Each measure contributes towards two policy areas of the six pillars, therefore the total contribution to all pillars displayed on this chart amounts to 200% of the estimated cost of the RRP. The bottom part represents the amount of the primary pillar, the top part the amount of the secondary pillar.

Source: RRF Scoreboard

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

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

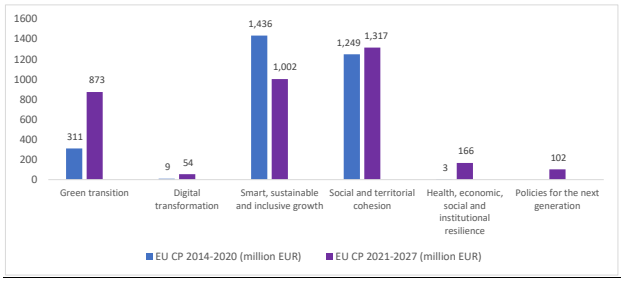


(1) million EUR in current prices, % of total; (total amount including EU and national co-financing)
Source: European Commission, Cohesion Open Data

In 2021-2027, in the Netherlands, cohesion policy funds ([43]) **will invest EUR 873 million in the green transition and EUR 54 million in the digital transformation as part of the country's total allocation of EUR 3.5 billion.** In particular, the European Regional Development Fund (ERDF) ([44]) will support innovation in SMEs and cooperation between SMEs and research organisations in line with regional smart specialisation strategies. Over 6 000 firms will be supported, of which 900 cooperate with research institutions, raising an estimated EUR 390 million in private investment. 30% of ERDF resources will be invested in the energy and circular economy transition, including through demonstration and pilot projects. In 2021-2027, particular attention should be paid to the country's main societal transitions. The Just Transition Fund supports six regions with emission intensive industries in coping with the consequences of the climate and energy transition. Carbon-intensive industries, such as the chemical and steel industry, need to change to production methods based on renewable energy and bio-based raw materials. The fund will support innovation and economic diversification and invest in the up- and reskilling of workers for the climate transition. The European Social Fund Plus (ESF+) allocates EUR 414 million to support people in finding or maintaining quality employment, to promote social inclusion and innovation, and to provide material and food aid to the most deprived. EUR 103 million is allocated to promoting lifelong learning, up- and reskilling the workforce, and facilitating career transitions and professional mobility.

Of the investments mentioned above, EUR 304 million will be invested in line with REPowerEU objectives. This is on top of the EUR 214 million dedicated to REPowerEU under the 2014-2020 budget**.** EUR 42 million (2021-2027) and EUR 182 million (2014-2020) is for improving energy efficiency; EUR 133 million (2021-2027) and EUR 33 million (2014-2020) is for renewable energy and low-carbon R&I; and EUR 129 million (2021-2027) is for smart energy systems.

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



(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 1.6 billion available to the Netherlands ([45]) with absorption of 61% ([46]). Including national financing, the total investment amounts to EUR 3.2 billion - around 0.1% of GDP for 2014-2020.

([43]) European Regional Development Fund (ERDF), European Social Fund+ (ESF+), Just Transition Fund (JTF), Interreg programmes are excluded. Total amount includes national and EU contributions. Data source: Cohesion Open Data.

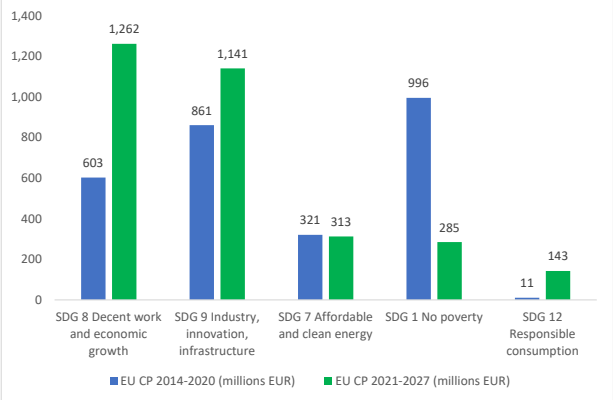
([44]) ERDF's expected achievements from the 2021-2027 programmes.

([45]) Cohesion policy funds include the ERDF, ESF. 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.

([46]) 2014-2020 Cohesion policy EU payments by MS is updated daily on Cohesion Open Data.

The Netherlands continues to benefit from cohesion policy flexibility to support economic recovery, step up convergence and provide vital support to regions following the COVID-19 pandemic. The Recovery Assistance for Cohesion and the Territories of Europe instrument (REACT-EU) ([47]) under NextGenerationEU provides EUR 562 million on top of the 2014-2020 cohesion policy allocation for the Netherlands. REACT-EU focuses on SMEs' innovation efforts for the green and digital transition. Around 1 800 firms received support, leveraging almost EUR 126 million in private investment. In addition, EUR 886 million was provisionally allocated to the Netherlands through the Brexit Adjustment Reserve (BAR). With SAFE (Supporting Affordable Energy), the 2014-2020 cohesion policy funds may also be mobilised by the Netherlands to support vulnerable households, jobs and companies particularly affected by high energy prices.

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



(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 8 'decent work and economic growth' and SDG 9 'industry, innovation and infrastructure' ([48]).

Other EU funds make significant resources available for the Netherlands. The common agricultural policy (CAP) made EUR 7.5 billion available in 2014-2022 and will continue to support the Netherlands with EUR 4.5 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 102 million available in 2014-2020 and the European Maritime, Fisheries and Aquaculture Fund will make available EUR 98 million in 2021-2027.

The Netherlands 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 78.42 million to 18 specific projects on strategic transport networks. Similarly, Horizon Europe has so far allocated more than EUR 1 billion to Dutch R&I actors, while in the previous programming period, Horizon 2020 earmarked EUR 5.4 billion. The Public Sector Loan Facility established under the Just Transition Mechanism makes EUR 47 million of grant support from the Commission available for projects located in the Netherlands for 2021-2027, which will be combined with loans from the EIB to support investments by public sector entities in just transition regions.

The Technical Support Instrument (TSI) supports the Netherlands in designing and implementing growth-enhancing reforms, including the implementation of its recovery and resilience plan (RRP). The Netherlands has received support since 2019. Examples include: preparing policy strategies for hydrogen and sustainable mobility, which includes the extension of car sharing initiatives, in particular of electric cars. With the Dutch RRP approved in 2022, the TSI will support the plan's cross-cutting implementation, as well as the communication of its impact to the general public ([49]).

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

([48]) 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).

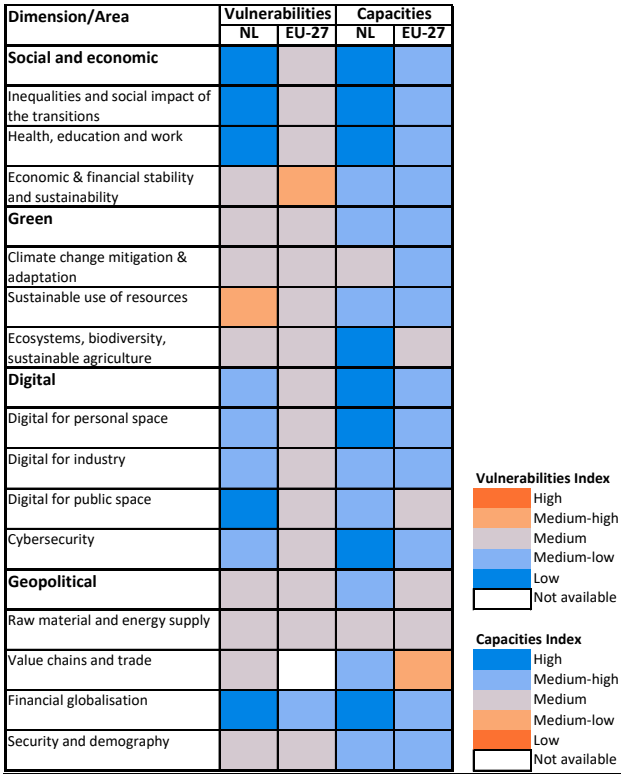
([49]) Country factsheets on reform support are available here.

This Annex illustrates the relative resilience capacities and vulnerabilities of the Netherlands, using the Commission's resilience dashboards (RDB) ([50]). 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 ([51]) and capacities ([52]) 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 Belgium and the EU-27 ([53]).

According to the set of resilience indicators under the RDB, the Netherlands generally displays lower vulnerabilities than the EU average. The Netherlands shows medium vulnerabilities in the green and geopolitical dimensions of the RDB and medium-low to low vulnerabilities in the digital and the social and economic dimensions. It faces higher vulnerabilities than the EU average in the area 'sustainable use of resources'. The Netherlands shows relatively low vulnerabilities in all areas of the digital dimension, in 'inequalities and social impact of transitions' and 'health, education and work'.

Compared to the EU average, the Netherlands shows an overall higher level of capacities across all RDB indicators. The Netherlands has overall medium-high and high capacities in all dimensions. The Netherlands shows stronger capacities than the EU average in most areas, but has room for improving capacities compared to the EU in the area 'climate change mitigation and adaptation'.

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



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

([50]) 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).

([51]) 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.

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

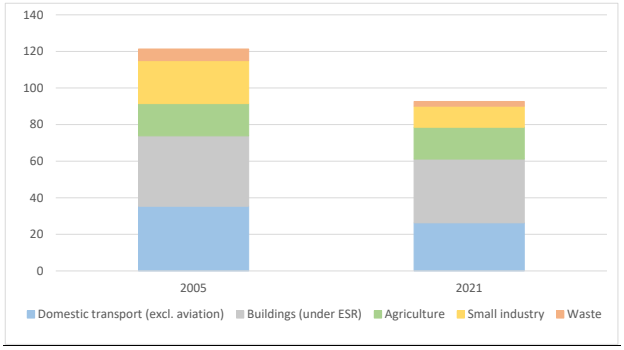
([53]) This Annex is linked to Annex 1 on SDGs, Annex 6 on the green deal, Annex 8 on the fair transition to climate neutrality, Annex 9 on resource productivity, efficiency and circularity, Annex 10 on the digital transition and Annex 14 on the European pillar of social rights.

The green transition in the Netherlands requires actions on several aspects including renewable energy, energy efficiency, and climate adaptation. Implementation of the European Green Deal is underway in the Netherlands; this Annex provides a snapshot of the key areas involved ([54]).

The Netherlands has not yet defined all the climate policy measures it needs to reach its 2030 climate target for the effort sharing sectors ([55]). Data for 2021 on greenhouse gas emissions generated by the Netherlands' effort sharing sectors are expected to show the country generated less than its annual emission allocations ([56]). Current policies in the Netherlands are projected to reduce these emissions by 31% by 2030 compared to 2005 levels, not sufficient to meet the effort sharing target even before the target was raised to meet the EU's 55% objective, let alone the Netherlands' new target, 48% ([57]) ([58]).

In its recovery and resilience plan, the Netherlands will allocate 47,8 % of its Recovery and Resilience Facility grants to key reforms and investments to attain climate objectives ([59]). The Netherlands aims to reduce economy-wide greenhouse gas emissions to at least 55 % by 2030, striving for -60%, compared to 1990 ([60]).

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



Source: European Environmental Agency.

The Netherlands is not yet on track towards meeting its 2030 net carbon removals target for its land use sector. Net emissions in 2021 have increased in recent years instead of decreasing. Its land use, land use change and forestry (LULUCF) sector is a net source of greenhouse gas emissions; agricultural land is the main source of these emissions, with forests achieving minor carbon removals. (see Table A6.1) ([61]).

In 2021, fossil fuels still played a significant role in the Netherlands' energy mix. Gas provided the highest share of the energy mix at 41%, followed by oil at 38%. Renewables came third at 12%. Netherlands's target of 27% of share of energy from renewable sources in gross final energy consumption by 2030 included in the

([54]) 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.

([55]) 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.

([56]) The annual emission allocations of the Netherlands for 2021 were some 98.2 Mt CO_2eq, and its approximated 2021 emissions were 92.7 Mt (see European Commission, *Accelerating the transition to climate neutrality for Europe's security and prosperity: EU Climate Action Progress Report 2022*, SWD(2022)343).

([57]) 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.

([58]) More recent estimates by the Netherlands Environmental Assessment Agency indicate that, based on policies put in place by 1 May 2022, the country will meet its current but not its new effort sharing target. See the 2022 Climate and Energy Outlook, Klimaat- en Energieverkenning 2022 (pbl.nl).

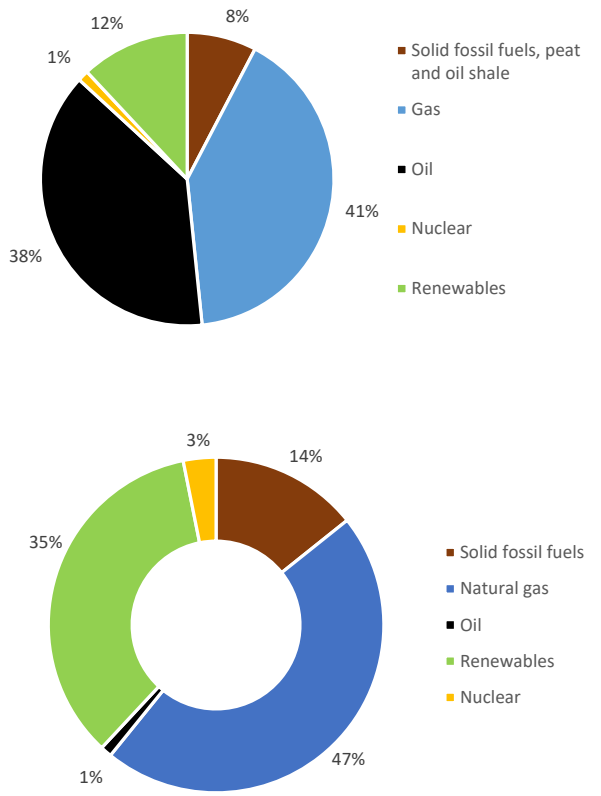
([59]) For example, measures supporting the deployment of renewable energy, the development of hydrogen infrastructure, the adaptation of residential neighbourhoods to climate change, improvements of energy efficiency in buildings, the rollout of climate-friendly mobility solutions, the restoration of biodiversity in natural habitats, and a shift to sustainable agriculture.

([60]) See: https://www.rijksoverheid.nl/onderwerpen/klimaatverandering/klimaatbeleid

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

NECP was considered sufficiently ambitious. Netherlands will need to increase its renewable energy target in the updated NECP to reflect the more ambitious EU climate and energy targets in the Fit for 55 Package and in the REPowerEU Plan.

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



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

The Netherlands continued to roll out renewable energy in 2021, with the share of renewable electricity consumed in the Netherlands expected to increase from 26.4% in 2020 to 30.4% in 2021. However, the total share of renewable energy remains low (13.0% in 2021 and 14% in 2020). Biomass remains the largest source of renewable energy in the Netherlands. In 2021, the Dutch government committed over EUR 4 billion under the Stimulation of Sustainable Energy Production and Climate Transition (SDE++) subsidy scheme, of which it allocates around 75% to renewable electricity generation, renewable gases and renewable heating and cooling. In 2022, the government continued the SDE++ support scheme, increasing the budget to EUR 13 billion.

Energy efficiency improvements are a cost-effective way to cut dependency on fossil fuels. The Netherlands' NECP targets for primary and final energy consumption (FEC and PEC) were considered of modest and sufficient ambition respectively in the 2020 Commission assessment. Based on the energy consumption trajectory for 2018-2021, the Netherlands is expected to be on track to meet its 2030 target for PEC and FEC, as these were notified in its NECP ([62]). Its recovery and resilience plan supports the attainment of this target through the subsidy scheme for sustainable public-sector buildings (EUR 225 million), which promotes renovations and focuses on improving the energy efficiency of public-sector buildings. There is also the investment subsidy for sustainable energy and energy savings (ISDE) (EUR 624 million), which awards grants for investments in small-scale heat pumps, solar boilers, insulation and heat connections to improve energy efficiency. The Netherlands has a long-term renovation strategy for energy rehabilitation in buildings, which aims to renovate 1.5 million dwellings by 2030. It is also preparing legislation that will make it mandatory for all building owners to switch to a more efficient heat generator when replacing a stand-alone fossil fuel boiler.

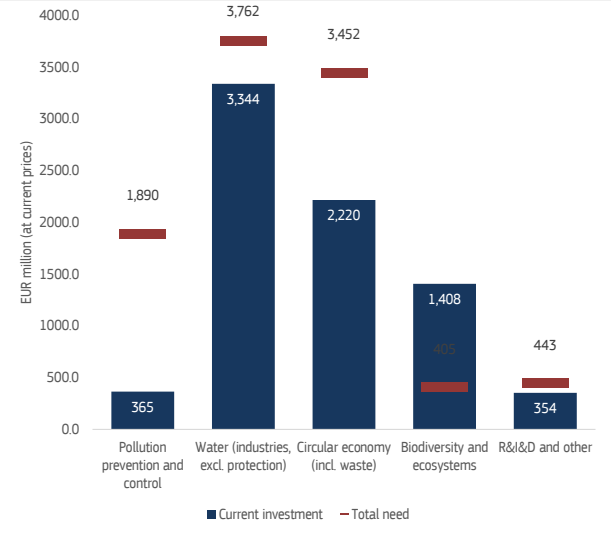
Despite progress with sustainable mobility, air pollution remains a concern. The Netherlands has seen a dynamic take-up of zero-emission vehicles, prompting the need for infrastructure investment. It also has a highly electrified railway network. In recent years, the Netherlands has not reported any exceedance of the current EU air quality limit values (Directive 2008/50/EC) at their monitoring sites. According to the latest projections prepared by PBL ([63]), the Netherlands will also meet the national emission reduction targets of the National Reduction Commitments Directive (2016/2284), both for the period up to 2029 and from 2030 onwards. These projections still need however to be reviewed by

([62]) 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.

([63]) PBL (Netherlands Environmental Assessment Agency) in samenwerking met RIVM en TNO en WUR: Geraamde ontwikkelingen in nationale emissies van luchtverontreinigende stoffen 2023, Rapportage bij de Klimaat- en Energieverkenning 2022, 28-02-2023

the Commission before confirming this assessment. Nevertheless, air pollution remains of concern ([64]), because of the uncertainty whether and when the Netherlands can meet the updated and stricter air quality guidelines of the WHO ([65]). According to projections, the Netherlands will miss its 2020 to 2029 emission reduction targets for pollutants and exceed the specific WHO guideline levels.

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



Source: European Commission.

The Netherlands would benefit from investing more in environmental protection, in particular on the circular economy, waste management, and pollution prevention and control. Between 2014 and 2020, the environmental investment needs ([66]) were estimated to be at least EUR 10 billion while investment was about EUR 7.7 billion, leaving a gap of at least EUR 2.3 billion per year (see Graph A6.3) ([67]). Including both Natura 2000 and other nationally designated protected areas, the Netherlands legally protects 26.6% of its land and 25.6% of its marine areas ([68]). Sufficient resources are yet to be allocated to the protection and management of these areas and some marine designations are still needed. Ammonia emissions from agriculture remain a challenge, also given the high level of pollution from nitrogen emissions and the need to improve nature protection.

The Netherlands is vulnerable to the impacts of climate change, in particular sea level rise and a higher intensity and frequency of rainfall, heatwaves, and droughts. Economic damage caused by weather and climate-related extreme events was almost EUR 9.3 billion between 1980 and 2020 ([69]). The Netherlands' vulnerabilities to climate change are set to grow ([70]). In response, the country has put in place a climate change adaptation framework ([71]). While it provides a good basis for adaptation to climate change, there is still scope to further mainstream adaptation measures across governmental policies and long-term plans. Specifically, the Netherlands could prioritise sustainable water management measures to achieve good water quality in current and future climatic conditions and increase its resilience to deal with changing water levels by restoring land, marine, and freshwater ecosystems (including wetlands). Despite recent progress, challenges also remain in soil and wetland (especially peatland) management (see Annex 9).

The Netherlands provides fossil fuel and other environmentally harmful subsidies that could be considered for reform, while ensuring food and energy security and mitigating social effects. Fossil fuel subsidies in the Netherlands amounted to EUR 1 billion in 2021, a 61% increase since 2015, adding to a

([64]) See the data on the years of life lost per 100 000 inhabitants due to air pollution from PM2.5 and NO_2.

([65]) WHO global air quality guidelines: particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide, 22 September 2011.

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

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

([68]) In 2021, Netherlands had 26.5% terrestrial protected areas (Natura 2000 and nationally designated areas), against the EU average of 26.4% (European Environment Agency, 2023, Natura 2000 Barometer).

([69]) See European Environmental Agency, Economic losses from climate-related extremes in Europe, published on 03/02/2022.

([70]) For estimates of the effects of climate change on the Netherlands, see Klimaatschadeschatter.

([71]) The framework includes a national adaptation strategy (2016) and a national programme (2010) called 'Delta'. It aims to provide protection from coastal, fluvial, and pluvial flooding, ensure the supply of fresh water, and contribute to making the country resilient to climate change impacts by 2050. The Netherlands could strengthen the framework by programmes for other climate threats, such as changes in wind regimes, lightning, wildfires and tropical diseases.

number of fiscal measures that support the fossil fuel energy sector, which put low carbon alternatives at a disadvantage. Environmentally harmful subsidies have been identified, via an initial assessment, in the agriculture, forestry and fishing, electricity, gas, steam and air conditioning, transportation and storage, manufacturing, mining and quarrying and services sectors. Examples of such subsidies include the flat rate taxation of privately used company cars, the reimbursement of excise duty on diesel used in freight and other categories of passenger transport, the excise tax exemption and tax relief for natural gas for industrial consumers or the refund scheme for energy-intensive industry under conditions ([72]). A mapping of all environmentally harmful subsidies by the Netherlands would help prioritise candidates for reform.

The Netherlands has scope to apply tax instruments to reduce environmental pollution. It already applies environmental taxes such as a carbon tax and a deposit refund system on small plastic bottles. But it could further leverage environmental taxation in line with the polluter pays principle, specifically to target the adverse effects of intensive agriculture, and to reduce the taxation of labour (see also Annex 19). Examples of potential measures include a tax on NOx in energy production, that would have potential for improving air quality and reducing emissions ([73]), or additional tax incentives to encourage the transition towards sustainable agricultural practices ([74]).

([72]) 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.

([73]) Centraal Planbureau (2019): Belasting op luchtvervuiling in de industrie.

([74]) Examples include taxes on intensive agriculture practices. The Netherlands has the highest greenhouse gas emissions (CH_4 and N_2O) per hectare of agricultural land, more than four times the EU average due to high intensity agriculture. Agriculture has a negative impact on the status of waters in the Netherlands, including through high nitrate levels. The nitrogen surplus in the Netherlands is four times above the EU average, at 200 kg N per hectare per year. On the tax, see Centraal Planbureau (2019), European Commission, 2021, Green taxation and other economic instruments – Internalising environmental costs to make the polluter pay, and European Commission, 2022, Toolbox for reforming environmentally harmful subsidies in Europe.

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

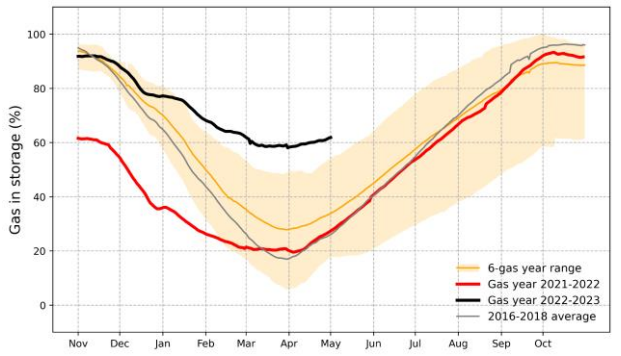
									'Fit for 55' 2030 target/value	Distance WEM	Distance WAM
			2005	2017	2018	2019	2020	2021			
Progress to policy targets	Greenhouse gas emission reductions in effort sharing sectors [1]	Mt CO2eq; %; pp	127.8	-20%	-22%	-24%	-29%	-	-48.0%	-17	-17
	Net carbon removals from LULUCF [2]	kt CO2eq	5,760	4,093	4,182	4,176	4,142	4,313	4523.0	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]	%	2%	7%	7%	9%	14%	13%	27%		
	Energy efficiency: primary energy consumption [3]	Mtoe	70.1	65.0	64.4	63.6	58.5	60.7	46.6		
	Energy efficiency: final energy consumption [3]	Mtoe	54.1	50.0	50.4	49.4	45.0	46.9	43.9		
			Netherlands						EU		
			2016	2017	2018	2019	2020	2021	2019	2020	2021
Fiscal and financial indicators	Environmental taxes (% of GDP)	% of GDP	3.4	3.3	3.3	3.4	3.2	3.1	2.4	2.2	2.2
	Environmental taxes (% of total taxation) [4]	% of taxation	8.7	8.6	8.6	8.6	8.0	7.8	5.9	5.6	5.5
	Government expenditure on environmental protection	% of total exp.	3.2	3.2	3.3	3.3	3.1	3.0	1.7	1.6	1.6
	Investment in environmental protection [5]	% of GDP	0.4	0.4	0.4	0.4	-	-	0.4	0.4	0.4
	Fossil fuel subsidies [6]	EUR2021bn	0.6	0.9	0.9	0.9	0.9	1.0	53.0	50.0	-
	Climate protection gap [7]	score 1-4					1.9	2.0			1.5
Climate	Net greenhouse gas emissions	1990 = 100	88.0	90.0	87.0	86.0	76.0	77.0	76.0	69.0	72.0
	Greenhouse gas emission intensity of the economy	kg/EUR'10	0.32	0.30	0.29	0.27	0.26	-	0.31	0.30	0.26
	Energy intensity of the economy	kgoe/EUR'10	0.11	0.11	0.11	0.10	0.10	-	0.11	0.11	-
Energy	Final energy consumption (FEC)	2015=100	102.2	102.9	103.8	101.8	92.7	96.5	102.9	94.6	-
	FEC in residential building sector	2015=100	102.9	100.5	100.2	97.8	95.6	106.4	101.3	101.3	106.8
	FEC in services building sector	2015=100	101.0	103.1	102.6	99.5	93.9	97.8	100.1	94.4	100.7
Pollution	Smog-precursor emission intensity (to GDP) [8]	tonne/EUR'10	0.7	0.7	0.7	0.6	0.6	-	0.9	0.9	-
	Years of life lost due to air pollution by PM2.5	per 100.000 inh.	545.0	578.0	638.0	551.0	-	-	581.6	544.5	-
	Years of life lost due to air pollution by NO_2	per 100.000 inh.	87.0	95.0	101.0	62.0	-	-	309.6	218.8	-
	Nitrate in ground water	mg NO3/litre	-	-	-	-	-	-	21.0	20.8	-
Biodiversity	Land protected areas	% of total	15.2	15.4	-	26.2	26.1	26.5	26.2	26.4	26.4
	Marine protected areas	% of total	25.6	-	-	25.6	-	26.1	10.7	-	12.1
	Organic farming	% of total utilised agricultural area	3.0	3.3	3.5	3.8	4.0	4.2	8.5	9.1	-
			2017	2018	2019	2020	2021	2022	2020	2021	2022
Mobility	Share of zero-emission vehicles [9]	% in new registrations	1.9	5.4	13.9	20.5	19.9	20.7	5.4	8.9	10.7
	Number of AC/DC recharging points (AFIR categorisation)		-	-	-	65181	85168	101585	188626	330028	432518
	Share of electrified railways	%	75.6	70.7	75.6	75.6	75.6	75.6	56.6	n/a	56.6
	Hours of congestion per commuting driver per year		31.9	32.4	32.8	32.9	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).

The Netherlands is highly dependent on imported fossil fuels. Before Russia invaded Ukraine, the Netherlands had exposure to Russian gas (30%) and oil (26%), close to the EU average ([75]). The Netherlands still imports LNG from Russia (2 bcm in 2022). This Annex ([76]) sets out actions carried out by the Netherlands to achieve the REPowerEU objectives, including through the implementation of its recovery and resilience plan, 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 ([77]).

The Netherlands has achieved a high level of gas supply security in the face of challenging circumstances. It has the third largest storage capacity ([78]) in the EU in absolute numbers after Germany and Italy, with 13.1 billion cubic metres (bcm), which can cover 30% of annual demand. It fulfilled its gas storage obligations last winter, reaching 88.05 % by 1 November 2022 (above the EU legal obligation of 80%), and ended the heating season with a filling gas storage of 59.07% by 15 April 2023 ([79]). The Dutch government expects to spend up to EUR 520.5 million to fill the gas storage unit at Bergermeer to a sufficient level (where Gazprom has some usage rights on the basis of the Dutch authorities' 'use it or lose it' principle), one of Europe's largest, in the winter of 2023/2024.

Graph A7.1: **Underground storage levels in Netherlands**



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

Gas production is expected to continue to decline until Groningen's expected closure in 2023. The Netherlands has far-reaching plans to phase out natural gas. Part of its gas infrastructure will be used to transport hydrogen. It plans to become a European pivot in gas exchanges by developing its liquefied natural gas import infrastructure, gas pipelines and gas storage facilities. Between 2020 and 2030, total natural gas consumption is expected to decrease by 6-16 bcm. Production is expected to decrease by 14 bcm.

To fulfil its legal obligations set out in the Council Regulation gas demand reduction ([80]), the Netherlands has adopted a number of measures at national level. These include an information campaign on energy saving for households and businesses, as well as measures to reduce heating temperatures in public buildings. The 'Flip the Switch' campaign to incentivise energy savings is aimed at households, consumers, businesses and the public sector. Initially the campaign focused on short-term actions, but it has been extended to actions aimed at preparing society for the winter and more structural actions. The obligation for businesses to implement energy efficiency measures, which is the result of an energy audit with a payback time under 5 years, has also been extended to include a wider range of measures and a broader range of businesses. Implementation of such measures led

([75]) As of 28.09.2022, the Netherlands and 12 other Member States (LT, BG, PL, DE, FI, DK, IT, FR, AT, CZ, SI and LV) are partially or fully cut off from Russian gas.

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

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

([78]) The Netherlands operates 6 underground storage facilities managed by 5 operators: UGS EnergyStock (managed by UGS EnergyStock), UGS Nüttermoor H-1 (managed by UGS Nüttermoor H-1), CUGS Grijpskerk and UGS Norg (Langelo) (managed by NAM), UGS Alkmaar (managed by TAQA Pek Gas), UGS Bergermeer (managed by TAQA Gas Storage).

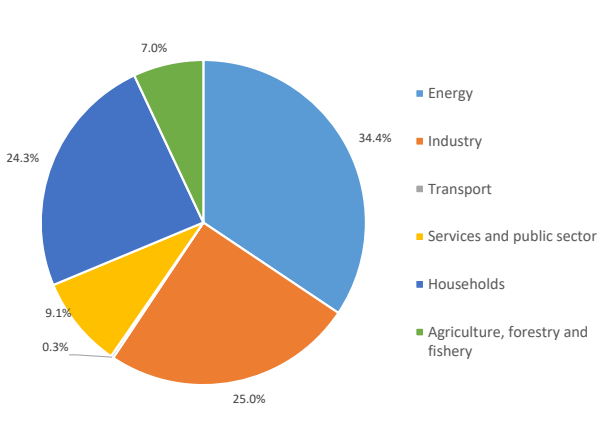
([79]) Regulation of the European Parliament and of the Council amending Regulations (EU) 2017/1938 and (EC) No 715/2009 with regard to gas storage and Implementing Regulation (EU) 2022/2301 of 23 November 2022 setting the filling trajectory with intermediary targets for 2023 for each Member State with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

([80]) Council Regulation on coordinated demand-reduction measures for gas.

to a gas demand reduction of 29% over the period August 2022- March 2023 when compared to the previous 5-years average ([81]).

Current congestion and the need to expand the electricity grid is a cause for concern. The Netherlands could benefit from large investments in its electricity infrastructure, both at transmission and distribution levels. The transmission system operator Tennet regularly refuses requests for access to the network due to capacity shortages. The Netherlands has a sufficient level of interconnection with neighbouring countries and Norway, although this is decreasing somewhat.

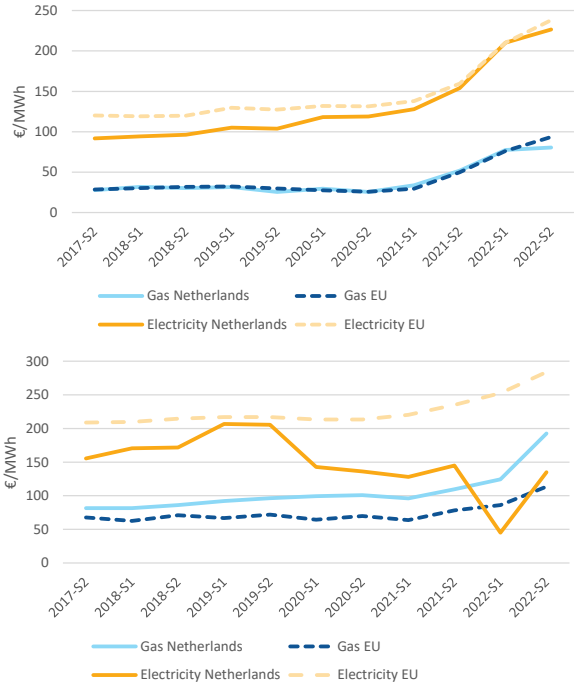
Graph A7.2: **Share of gas consumption per sector, 2021**



Source: Eurostat

Despite the mechanisms introduced by the Netherlands to mitigate soaring energy prices, households, in particular low-income ones ([82]), and industries are being severely hit. Electricity prices have also soared, so households that use electricity to heat their homes are facing similar challenges, unless they have solar panels installed. There are long waiting lists for the installation of solar panels and heat pumps, due to the lack of supplies and of a skilled workforce. The surge in energy prices has also had a considerable impact on Dutch industry, which accounts for over 30% of gas consumption. Industries such as the metallurgical, chemical, wood and paper industries, highly exposed to energy shocks, are experiencing growing pressure to raise their prices in order to safeguard margins or reduce production in order to reduce the industries' energy consumption. Smaller energy-intensive businesses such as bakeries, wellness centres, etc. are also suffering from the high prices, with many of them closing down or reducing their operations.

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



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

The current share of renewable energy in the final energy consumption stood at 13 % in 2021. It is below the agreed targets (as set in the Renewable Energy Directive and the Energy Governance Regulation) and represents a decrease from 2020, likely due to the economic recovery from the pandemic in 2021, as well as inadequate production of renewables. The deployment of renewable energy continued in 2022 reaching 32 839 MW of total capacity ([83]). In 2021, the renewable energy share in electricity was 30.3%, up from 26.4% in 2020. Biomass remains the predominant source of renewable energy.

([81]) EU countries agreed to reduce their gas demand by 15% compared to their average consumption in the past 5 years, between 1 August 2022 and 31 March 2023, with measures of their own choice.

([82]) Annex 8 looks at the impact soaring energy prices have on the most vulnerable households.

([83]) IRENA, Renewable capacity statistics 2023.

However, the Netherlands has difficulties reaching the current targets for renewable energy sources. In 2021, the government committed over EUR 4 billion under the Stimulation of Sustainable Energy Production and Climate Transition (SDE++) scheme, of which around 75% went to the production of renewable electricity, renewable gases and renewable heating and cooling. In 2022, the government continued with its SDE++ support scheme, with a total budget of EUR 13 billion. It also increased its ambitions for the deployment of offshore wind energy from 11.5 GW in 2022 to 21 GW in 2030. A new offshore wind roadmap was published in December 2022, showing 2.3 GW under construction, 1.5 GW under development, and 15 GW planned. However, no new offshore wind installations came online in 2021. The government also approved seven projects to produce renewable hydrogen in December 2022 for a total of EUR 783.5 million. These projects were part of the two rounds of Important Projects of Common European Interest on hydrogen, approved in 2022 by the European Commission.

On buildings, the Netherlands is preparing legislation to make it mandatory for all building owners to switch to a more efficient heat generator when replacing a stand-alone fossil fuel boiler. Exceptions will be made for buildings where replacement with a more efficient heat generator is technically, economically or functionally not feasible or when a building is situated in an area that will switch to a collective alternative for natural gas (such as district heating) in the near future. In order to ensure the transformation of the building stock, a trained workforce in the construction and integrated renovation services is key, including installers of heating appliances in sufficient numbers and with the relevant skill sets. The Netherlands' recovery and resilience plan includes energy efficiency measures through the subsidy scheme for the sustainability of public sector real estate, which promotes renovations and focuses on improving the energy efficiency of public sector buildings, and the investment subsidy for sustainable energy and energy savings, which awards grants for investments in small-scale heat pumps, solar boilers, insulation and heat connections to improve energy efficiency. Regarding market surveillance activities, the Netherlands are carrying out a relatively low number of checks on products covered by ecodesign and energy labelling. This may imply concerns as to the compliance levels of the concerned products, and therefore missed energy and CO2 savings ([84]).

The Netherlands has been performing well in developing clean technologies. It provided about 0.032% of public spending (expressed as a percentage of GDP) on research and innovation in 2020 and 0.11% (expressed as a percentage of GDP) of private spending in 2019. It is among the Innovation Leaders according to the European Innovation Scoreboard ([85]) in the EU. Entrepreneurial training and government procurement are above the EU average as drivers of research and innovation. The Netherlands' performance is below average on the climate change-related indicators of the circular material use rate and environmental innovation. In venture capital, it attracted about EUR 555 million in climate technology start-ups in 2021.

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

([85]) htthttps://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_entps://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en

Table A7.1:**Key energy indicators**

		NETHERLANDS				EU			
		2018	2019	2020	2021	2018	2019	2020	2021
ENERGY DEPENDENCE	**Import Dependency [%]**	59%	64%	68%	58%	58%	61%	57%	56%
	of Solid fossil fuels	100%	102%	92%	100%	44%	44%	36%	37%
	of Oil and petroleum products	94%	101%	100%	86%	95%	97%	97%	92%
	of Natural Gas	15%	26%	45%	34%	83%	90%	84%	83%
	Dependency from Russian Fossil Fuels [%]								
	of Hard Coal	39%	41%	54%	38%	40%	44%	49%	47%
	of Crude Oil	40%	24%	27%	32%	30%	27%	26%	25%
	of Natural Gas	47%	44%	30%	35%	40%	40%	38%	41%

		2015	2016	2017	2018	2019	2020	2021	2022
ELECTRICITY	**Gross Electricity Production (GWh)**	110,211	115,158	117,192	114,264	121,355	123,287	122,132	-
	Combustible Fuels	95,975	99,996	99,411	95,830	99,917	94,795	88,194	-
	Nuclear	4,078	3,960	3,402	3,515	3,910	4,087	3,828	-
	Hydro	93	100	61	72	74	46	88	-
	Wind	7,550	8,170	10,569	10,549	11,508	15,278	18,005	-
	Solar	1,109	1,602	2,204	3,708	5,399	8,568	11,495	-
	Geothermal	0	0	0	0	0	0	0	-
	Other Sources	1,407	1,329	1,544	591	547	512	522	-
	Net Imports of Electricity (GWh)	8,748	4,914	3,506	7,970	855	-2,660	253	-
	As a % of electricity available for final consumption	8%	4%	3%	7%	1%	-2%	0%	-
	Electricity Interconnection (%)	-	-	18.10%	18.61%	22.9%	25.9%	16.3%	13.7%

		2015	2016	2017	2018	2019	2020	2021	2022
DIVERSIFICATION OF GAS SUPPLIES	**Gas Consumption (in bcm)**	40.1	39.5	43.3	43.0	44.9	44.1	42.3	36.6
	Gas Imports - by type (in bcm)	43.1	47.6	25.2	34.5	45.3	45.1	40.0	-
	Gas imports - pipeline	40.7	45.9	24.2	31.3	35.9	36.5	31.1	-
	Gas imports - LNG	2.4	1.7	1.0	3.3	9.4	8.6	8.9	-
	Gas Imports - by main source supplier (in bcm) (1)								
	Russia	8.0	12.6	8.5	16.2	18.7	18.7	14.3	-
	Norway	23.0	21.1	9.9	13.3	13.4	11.5	10.5	-
	United States	0.0	0.0	0.1	0.6	4.2	5.2	7.5	-
	Belgium	0.0	0.0	0.1	0.8	2.0	1.8	1.6	-
	Others	12.0	13.8	6.7	3.6	6.9	8.0	6.1	-

		2019	2020	2021	2022
	LNG Terminals				
	Number of LNG Terminals (2)	1	1	1	2
	LNG Storage capacity (m3 LNG)	540000	540000	540000	720000
	Underground Storage				
	Number of storage facilities	6	6	6	6
	Operational Storage Capacity (bcm)	14.5	14.9	14.9	14.2

		2019	2020	2021	2022
CLEAN ENERGY	**VC investments in climate tech start-ups and scale-ups (EUR Mln) (3)**	61.2	129.9	555.8	n.a.
	as a % of total VC investments in Netherlands	3.6%	7.8%	8.0%	n.a.
	Research & Innovation spending in Energy Union R&i priorites				
	Public R&I (EUR mln)	289.0	265.4	360.9	n.a.
	Public R&I (% GDP)	0.036%	0.033%	0.042%	n.a.
	Private R&I (EUR mln)	903.3	n.a.	n.a.	n.a.
	Private R&I (% GDP)	0.11%	n.a.	n.a.	n.a.

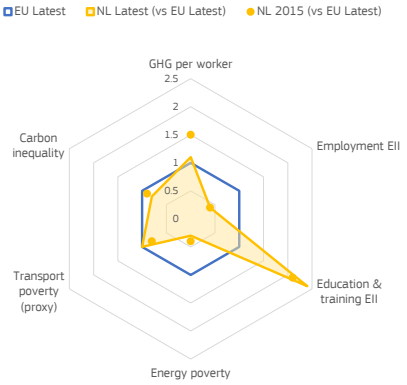
(1) The ranking of the main supliers is based on the latest available figures (for 2021)
(2) FSRU included
(3) Venture Capital investments include Venture Capital deals (all stages) and Private Equity Growth/Expansion deals (for companies that have previously been part of the portfolio of a VC investment 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 the Netherlands' progress in ensuring a fair transition towards climate neutrality and environmental sustainability, notably for workers and households in vulnerable situations. The number of jobs and vacancies (reflecting a very tight labour market) in the Dutch green economy has risen quickly. In line with objectives included in the Council Recommendation ([86]), the Netherlands invests in the skills needed for a fair and green transition and the implementation of REPowerEU, most notably through the Just Transition Fund (JTF) as well as with actions supported by the European Social Fund Plus (ESF+).

While the green economy is expanding in the Netherlands, employment in the sectors most affected by the green transition continues to decline, and workers in declining activities need additional active support. The greenhouse gas (GHG) emissions intensity of the Dutch workforce fell from 20.6 to 15.6 tonnes per worker between 2015 and 2021, above the EU average of 13.7 tonnes (see Graph A8.1 and Table A8.1). Employment in the Netherlands' energy-intensive industries (EII) represented a stable share of 1.3% of total employment in 2021 (in 2020: 1.3% vs 3.0% in the EU). However, a large part of the jobs with a high share of CO2 emissions will be phased out in the coming years. These jobs are mainly related to the fossil and raw materials industries, and their phase-out results from the cessation of gas extraction, the closure of coal-fired power stations and petroleum processing, and the phasing-out of fossil industrial production processes in the industrial clusters (steel and chemicals). Employment in mining and quarrying has fallen significantly by 36.4% since 2015. Total jobs in the environmental goods and services sector grew by 18.4% in 2015-2020 (EU: +8.3%), reaching 1.5% of total employment (EU average: 2.2%) (see Annex 9 for circular jobs specifically). The job vacancy rate in construction, which is a key sector for the green transition, was 7% in 2022, vs 4% in the EU ([87]).

Graph A8.1: **Fair transition challenges in the Netherlands**



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

Investments in upskilling and reskilling in declining and transforming sectors are ongoing, but labour and skills shortages remain a challenge. Skills are key for smooth labour market transitions and preserving jobs in transforming sectors. In energy-intensive industries, workers' participation in education and training increased from 22.3% in 2015 to 25.3% in 2022, well above the EU average (10.4%). In the Netherlands, 37% of citizens believe they do not have the necessary skills to contribute to the green transition (EU: 38%) ([88]). The Dutch recovery and resilience plan envisages inter alia a human capital agenda with actions to increase the supply of skills in green hydrogen and to facilitate exchanges between businesses and education or research institutions. Specific investments under the JTF provide training to help reskill workers in regions affected by the transition. Additionally, actions supported by ESF+ aim to provide broader training for vulnerable workers and jobseekers to help them keep or find sustainable employment, including in sectors relevant for the green and digital transitions such as engineering and construction.

([86]) 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.

([87]) Eurostat (JVS_A_RATE_R2)

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

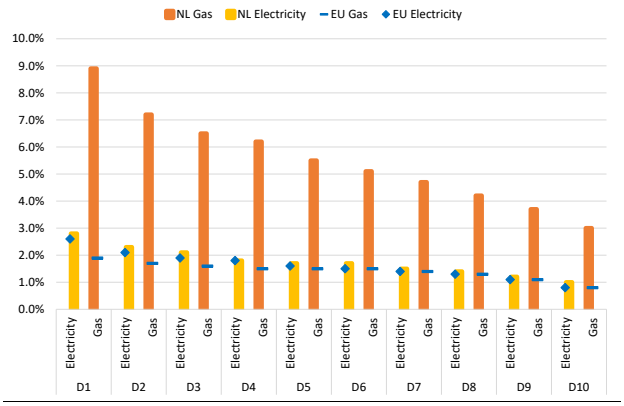
Table A8.1:**Key indicators for a fair transition in the Netherlands**

Indicator	Description	NL 2015	NL Latest	EU Latest
GHG per worker	Greenhouse gas emissions per worker - CO2 equivalent tonnes	20.6	15.6 (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) - %	1.3	1.3 (2020)	3 (2020)
Education & training EII	Adult participation in education and training (last 4 weeks) in energy-intensive industries - %	22.3	25.3 (2022)	10.4 (2022)
Energy poverty	Share of the total population living in a household unable to keep its home adequately warm - %	2.9	2.4 (2021)	6.9 (2021)
Transport poverty (proxy)	Estimated share of the AROP population that spends over 6% of expenditure on fuels for personal transport - %	30.2	38.9 (2023)	37.1 (2023)
Carbon inequality	Average emissions per capita of top 10% of emitters vs bottom 50% of emitters	4.3	4 (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).

While energy poverty indicators had improved in recent years, the spike in energy prices aggravated the situation. However, the increase in energy poverty is expected to be mitigated to a considerable extent by national measures, including a temporary price cap for electricity and gas introduced as of 1 January 2023 ([89]). The share of the total population unable to keep their homes adequately warm decreased from 2.9% in 2015 to 2.4% in 2021 (EU average: 6.9% in 2021) ([90]). In particular, 7.6% of the population at risk of poverty (AROP) were affected in 2021 (EU: 16.4% in 2021), as were 1.8% of lower middle-income households (in deciles 4-5) in 2021 (EU: 8.2% in 2021). Before the energy price hikes, an estimated 8.2% of the total population and 30.9% of the (expenditure-based) at-risk-of-poverty AROP population had residential expenditure budget shares on electricity, gas, and other fuels ([91]) above 10% of their household budget (still below the estimated EU average of 26.9% and 48.2%, respectively) ([92]).

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 households' budgets, in particular for low-income groups. As a result of energy price changes from 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 fraction of individuals living in households spending more than 10% of their budget on energy would have increased by 48.2 percentage points (pps) for the whole population and by 61.2 pps among the (expenditure-based) AROP population, significantly more than the EU-level increase (16.4 pps and 19.1 pps, respectively) ([93]). The expenditure shares of low and lower-middle income groups would have increased the most pronounced for gas, 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 ([94]) above 6% would have

([89]) https://www.cpb.nl/en/projections-august-2022; see also Rapport TNO Energiearmoede in Nederland 2022.

([90]) 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. The Netherlands uses a different definition for energy poverty. For their research and the policy advice that flows from it, the Netherlands Organisation for applied scientific research TNO defines households as energy poor when facing a low household income combined with either a high expenditure on energy, or housing with poor quality insulation.

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

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

([93]) Estimates based on EMPL-JRC GD-AMEDI and AMEDI+ projects.

([94]) ECOICOP: CP0722.

increased by 8.7 pps, more than the EU average (5.3 pps), reaching 38.9% in January 2023 due to the increase in transport fuel prices. Research suggests that concerns about the energy transition relate mostly to the distribution of the costs of the proposed climate policy measures ([95]).

Access to public transport displays an urban-rural divide. In 2022, citizens perceived public transport to be relatively available (66% vs 55% in the EU), fairly affordable (47% vs 54% in the EU) and of good quality (75% vs 60% in the EU). Rural areas in the Netherlands perceive transport to be worse than urban areas but perceptions are better compared to rural areas in the EU overall ([96]). The average carbon footprint of the top 10% of emitters among the population in the Netherlands is about 4.0 times higher than that of the bottom 50% (EU average: 5.0 times higher). In the Netherlands, the average levels of air pollution in 2020 stood below the EU average (9.2 vs 11.2 µg/m PM2.5), with 7% of the population living in regions exposed to critical levels of air pollution ([97]). This has led to significant health impacts, in particular on vulnerable groups, and 4 970 premature deaths annually ([98]).

([95]) Report "De sociale aspecten van de energietransitie - Een onderzoek naar zorgen en oplossinge" by TNO (a NL Organisation for Applied Scientific Research), 2022.

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

([97]) Double the recommendations in the WHO Air Quality Guidelines. (annual exposure of 5µg/m3)

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

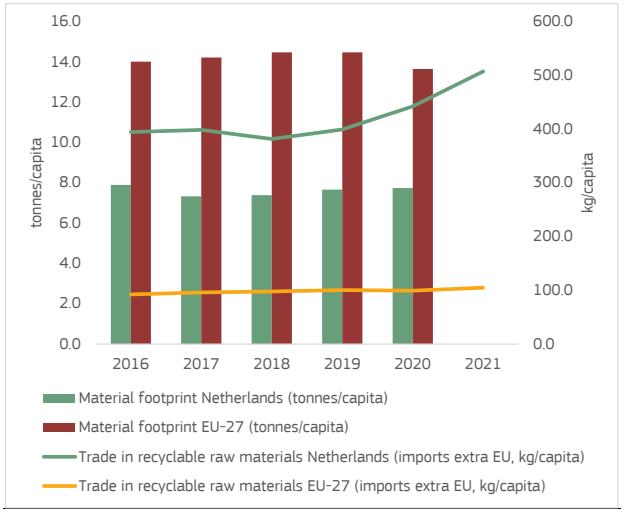
ANNEX 9: RESOURCE PRODUCTIVITY, EFFICIENCY AND CIRCULARITY

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 (Annex 6), as they rank among the most resource-intensive systems.

The Netherlands' circular economy transition is on track to meet the EU's circular economy goals. The EU's 2020 circular economy action plan (CEAP) aims at doubling circular material use by 2030 vs 2020. The Netherlands' use of circular materials increased from 28.5% in 2016 to 33.8% in 2021. This performance makes the Netherlands the first country in the EU for circular materials used, well above the EU 2020 average of 11.7%. The CEAP also aims to significantly decrease the EU's material footprint. The Netherlands' material footprint in 2020 was far below the EU average and the country has achieved a 25% reduction since 2010. The goal is for the Dutch economy to be completely circular by 2050 ([99]). The labour market benefits of the circular transition remain limited, with minor growth in direct circular jobs since 2016.

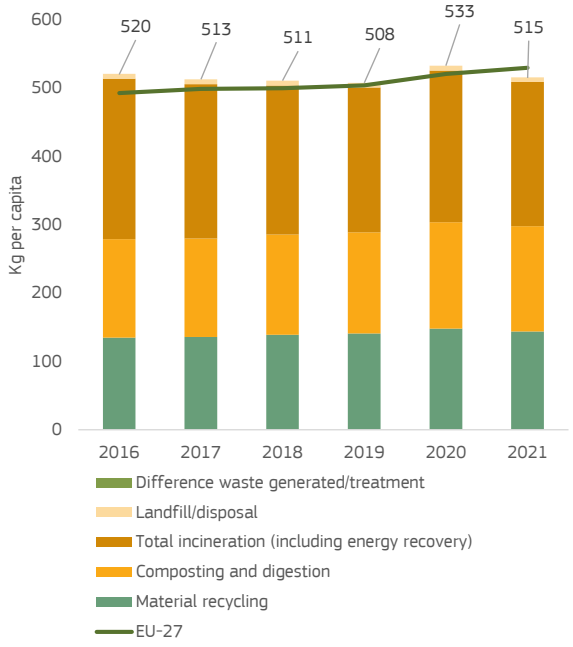
The Netherlands adopted a circular economy strategy in 2016 and commitment and priorities to support the achievement of five transition agendas in 2018 ([100]). The programme's ambition is to achieve an interim objective of a 50% reduction in the use of primary raw materials (minerals, fossil-based materials and metals) by 2030. In 2019, the government adopted a circular economy iImplementation programme 2019-2023. The country committed to updating the programme every 5 years. A new programme for 2023 and beyond is in preparation. The Netherlands puts extra effort into policies regarding biomass and food, plastics, the manufacturing industry, construction and consumer goods as priority sectors or value chains.

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



Source: Eurostat

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



Source: Eurostat

The Netherlands is one of the EU's top performers in waste management, with a municipal waste recycling rate of 57.8 % in 2021, well above the EU average of 48.5%. It is assessed to be on track to meet the EU's recycling targets for 2025 for municipal and packaging waste. However, there is scope to shift further reusable and recyclable waste away from incineration to maximise the transition to a circular economy. The second amendment to the 2017-2029 national waste management plan was

([99]) The 2050 aim has so far been endorsed in the Raw Materials Agreement by more than 400 companies, NGOs, financial institutions, public authorities and other organisations.

([100]) On biomass and food, plastics, the manufacturing industry, construction, and consumer goods as priority sections.

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)	7.9	7.3	7.4	7.7	7.7	-	13.7	2020
YoY growth in persons employed in the circular economy (%)[1]	0.9	0.8	-0.8	0.0	-	-	2.9	2019
Water exploitation index plus (WEI+) (%)	3.8	4.5	4.8	4.8	-	-	3.6	2019
Industry								
Resource productivity (purchasing power standard (PPS) per kilogram)	3.7	4.1	4.2	4.5	4.6	5.7	2.3	2021
Circular material use rate (%)[2]	28.5	29.7	28.9	30.0	30.0	33.8	11.7	2021
Recycling rate (% of municipal waste)	53.5	54.6	55.9	56.9	56.9	57.8	49.6	2021
Built environment								
Recovery rate from construction and demolition waste (%)[3]	100.0	-	100.0	-	100.0	-	89.0	2020
Soil sealing index (base year = 2006)[4]	103.7	-	107.8	-	-	-	108.3	2018
Agri-food								
Food waste (kg per capita)[5]	-	-	-	-	161.0	-	131.0	2020
Composting and digestion (kg per capita)	144.0	144.0	147.0	148.0	156.0	154.0	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; (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

adopted in 2021. It covers household, hazardous, industrial and bulky waste.

The industrial system is increasingly circular. The economy, particularly industry, is more efficient at using materials to produce wealth than the EU average, with a resource productivity of 5.7 purchasing power standard per kilogramme vs 2.3 for the EU, further increasing the Netherlands' resilience (see Annex 5). Resource productivity has increased since 2016, indicating significant potential to boost repair, reuse and the use of secondary raw materials. Manufacturers are facing supply risks because of their dependence on cobalt, indium, rare-earth metals, tantalum, tin and tungsten. These critical metals are crucial for the energy transition ([101]).

The built environment system continues to exacerbate the depletion of resources despite recent improvements. The recovery rate of construction and demolition waste has been complete since 2016 and remains above the EU average (100% vs 89%). Soil sealing progressed between 2015 and 2018 at a lower rate than the EU average. There is scope for renovating existing buildings and improving their use instead of building new ones, and for increasing the share of secondary raw materials used in construction. The Dutch Soil Quality Decree imposes conditions on the use of soil, dredging spoil and building materials on or in the ground or in surface water. The Netherlands Enterprise Agency (RVO) supports the building sector in providing information on building materials, soil and dredging spoil for entrepreneurs.

The agri-food system has yet to become circular and to efficiently manage water resources. Nitrate pollution in groundwater due to agriculture remains a major issue in the Netherlands (see Annex 6). Circular agriculture provided for in the Dutch action plan since 2019 entails a paradigm shift from growth in production volumes and cost-price reductions towards optimisation of resource use and food production in harmony with nature. In a more closed nutrient cycle, residual products of the food production chain are a resource for feed. Synthetic fertiliser use can be reduced through more efficiency in the food chain and precision fertilising with processed manure. The Netherlands' composting and anaerobic digestion per head remained well above the EU average in 2021, in line with best practice.

There remains a financing gap in the circular economy, including waste management. Additional investments will be required to address growing needs. The financing gap was estimated

([101]) NETHERLANDS INTEGRAL CIRCULAR ECONOMY REPORT 2021 (pbl.nl)

at EUR 1.2 billion per year between 2014 and 2020 (Annex 6).

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 the Netherland'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). The Netherlands allocates 26% of its total RRP budget to digital (EUR 1.2 billion) ([102]).

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 ([103]). 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 ([104]). Digital technologies, infrastructure and tools all play a role in the fundamental transformation needed to adapt the energy system to the current structural challenges ([105]).

While the Netherlands generally performs well as a digitally advanced country, the low share of ICT graduates is a concern as this may impair the Netherlands' ability to manage its digital transition. The Netherlands has the highest share of individuals with at least basic digital skills in the European Union. Moreover, the share of ICT graduates is well above the EU average (6.7% compared to 4.5% according to the latest available data). Yet the share of enterprises with hard-to-fill ICT vacancies remains high (71.3% compared an EU average of 55.4% in 2020). This lack of ICT personnel is reported as a major factor limiting the progress in the Dutch digital transition. The share of female ICT specialists is on the other hand below the EU average (18% vs. 19%), even though the Netherlands scores well above the EU average on other metrics related to gender equality. The Dutch RRP includes measures to further promote digital skills, but they are expected to have only a limited impact on the structural shortages in the ICT sector.

The Netherlands performs well on digital infrastructure/connectivity with a high level of 5G and very high capacity network (VHCN) coverage. The country continues to score well above the EU average on these connectivity indicators Nevertheless, uptake of speeds of at least 100 Mbps remains below its potential, despite the available coverage, as households stick to lower speeds and broadband prices remain higher than the EU average. Mobile broadband uptake, however, appears not to be affected and reached 94% in 2021. Despite the high 5G coverage, there is significant room for improvement in the quality, reliability, and capacity of the Dutch 5G network. The expansion of spectrum options beyond the current system of dynamic spectrum sharing – in particular, the launch of the 3.6 GHz band auction, expected later this year – is crucial in this regard.

Dutch businesses are successfully integrating new digital technologies, scoring above average in all key metrics. However, more work is needed to reach the highest levels of performance in the EU for all advanced technologies. The share of enterprises using cloud computing is well above the EU average. The share of SMEs with at least a basic level of digital intensity, and the use of artificial intelligence (AI) and big data by businesses are also above the EU average. However, the use of AI by businesses lags behind the use of cloud and big data. In order to address the risk of falling behind in the use of AI, the Dutch RRP includes investment such as AI Learning Communities, where

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

([103]) 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.

([104]) 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).

([105]) 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.

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

	Netherlands			EU	Digital Decade target by 2030 (EU)
	DESI 2021	DESI 2022	DESI 2023	DESI 2023	
Digital skills					
At least basic digital skills	**NA**	**79%**	**79%**	**54%**	**80%**
% individuals		2021	2021	2021	2030
ICT specialists ([1])	**5.9%**	**6.7%**	**6.7%**	**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	**90%**	**91%**	**98%**	**73%**	**100%**
% households	2020	2021	2022	2022	2030
Fibre to the Premises (FTTP) coverage ([2])	**36%**	**52%**	**63%**	**56%**	**-**
% households	2020	2021	2022	2022	2030
Overall 5G coverage	**80%**	**97%**	**100%**	**81%**	**100%**
% populated areas	2020	2021	2022	2022	2030
5G coverage on the 3.4-3.8 GHz spectrum band	**NA**	**NA**	**0%**	**41%**	**-**
% populated areas			2022	2022	2030
Digitalisation of businesses					
SMEs with at least a basic level of digital intensity	**NA**	**NA**	**80%**	**69%**	**90%**
% SMEs			2022	2022	2030
Big data ([3])	**27%**	**27%**	**27%**	**14%**	**75%**
% enterprises	2020	2020	2020	2020	2030
Cloud ([3])	**NA**	**60%**	**60%**	**34%**	**75%**
% enterprises		2021	2021	2021	2030
Artificial Intelligence ([3])	**NA**	**13%**	**13%**	**8%**	**75%**
% enterprises		2021	2021	2021	2030
Digitalisation of public services					
Digital public services for citizens	**NA**	**85**	**85**	**77**	**100**
Score (0 to 100)		2021	2022	2022	2030
Digital public services for businesses	**NA**	**88**	**89**	**84**	**100**
Score (0 to 100)		2021	2022	2022	2030
Access to e-health records	**NA**	**NA**	**69**	**71**	**100**
Score (0 to 100)			2023	2023	2030

(1) The 20 million target represents about 10% of total employment.
(2) The Fibre to the Premises coverage indicator is included separately as its evaluation will also be monitored separately and taken into consideration when interpreting VHCN coverage data in the Digital Decade.
(3) At least 75 % of Union enterprises have taken up one or more of the following, in line with their business operations: (i) cloud computing services; (ii) big data; (iii) artificial intelligence.

Source: Digital Economy and Society Index

cooperation between business and academia is envisaged to help SMEs in applying AI in their businesses, as well as AI research laboratories.

The Netherlands performs well in providing digital public services. The country scores above the EU average for delivering digital public services to both citizens and businesses. People and companies have access to electronic identification (eID) solutions – *DigiD* for individuals and *eHerkenning* for companies – that have been notified under the eIDAS scheme. At the end of 2021, the Netherlands had 16.5 million active *DigiD's*. On access to e-health records, the Netherlands scores 69, which is slightly below the EU average. Most health care providers make e-health records available through their own portals. However, the spectrum of accessible and updated health data remains limited and fragmented.

This Annex provides a general overview of the performance of the Dutch research and innovation (R&I) system, which is essential for delivering the twin green and digital transition.

According to the European Innovation Scoreboard ([106]), the Netherlands re-joined the group of 'innovation leaders' in 2022. Thanks to continuous improvements since 2015, the country's performance lead over the EU has remained stable, with exception of a small decrease in 2021, when the Netherlands was in the group of 'strong innovators'.

While R&D intensity ([107]) slightly increased from 2019, it is still below the national target of 2.5%. It reached 2.25% in 2021 (compared with 2.14% in 2018), nearly on par with the EU average. However, this is still below the spending of other Member States with similar levels of economic development. The increase has been achieved mainly thanks to the growth in the business R&D intensity, which reached in 2021 1.52%, slightly above the EU average, while public R&D intensity, at 0.73%, remains slightly below the EU average.

Multiannual investment plans ensure sustained public support for R&I in the coming years. The Dutch authorities recognise the importance of further investment in R&I, to ensure sustainable growth: R&I is one of the pillars of the EUR 20 billion National Growth Fund (NGF) ([108]) (2021-2025). Starting from 2022, additional public investment in the higher education and research system will be financed from the Research and Science Fund (EUR 5 billion up to 2031) and from the structural budget (EUR 700 million a year on a structural basis) ([109]).

There is potential for strengthening the societal impact of the Dutch R&I system, in relation to environmental sustainability. The Netherlands has an excellent public science base, notably in green research: it ranks among the top performers in the EU for the share of scientific publications that are highly cited, both on average across all scientific fields and specifically in green research. However, the share of environment-related patents in total Dutch patent applications is lower than the EU average. Stepping up R&I-related public and private commitments for sustainability is important for strengthening the societal impact of the Dutch R&I system. The Mission-driven Top Sector and Innovation Policy and Invest-NL provide relevant frameworks for this. Moreover, mobilising R&I for the green and digital transitions is a key priority for the funds allocated to R&I in the Dutch recovery and resilience plan (RRP) ([110]). Together the two transitions account for almost 100% of the overall R&I investment in the plan: digital-related R&I areas account for 69% of total R&I expenditure in the RRP, and green-related for 31%.

Shortages of skilled human resources are hindering the green and digital transitions in the Dutch economy. The number of new graduates in science and engineering aged 25-34 has increased slightly over the last decade in the Netherlands, to reach 11.2 per thousand inhabitants in 2020 but this is still well below the EU average of 16. Similarly, the number of graduates in information and communications technology (ICT) is also below the EU average and is not catching up with the pressing demand for ICT professionals. Moreover, only 18% of all ICT specialists in the Netherlands are women, slightly below the EU average of 19%. This gender imbalance highlights the missed opportunities in relation to female talent. Shortages of qualified ICT staff pose a significant challenge to the Netherlands' ambition of speeding up the digital and green transitions.

([106]) 2022 European Innovation Scoreboard, Country profile: the Netherlands https://ec.europa.eu/assets/rtd/eis/2022/ec_rtd_eis-country-profile-nl.pdfThe 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).

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

([108]) National Growth Fund: https://www.nationaalgroeifonds.nl/english.

([109]) Letter to Parliament about higher education and science policy: https://www.government.nl/ministries/ministry-of-education-culture-and-science/documents/parliamentary-documents/2022/06/17/letter-to-parliament-about-higher-education-and-science-policy.

([110]) Estimated amount of Recovery and Resilience Facility allocation to R&I: EUR 472 **million** (i.e. about 10% of the RRP).

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

The Netherlands	2010	2015	2019	2020	2021	EU average (1)
Key indicators						
R&D intensity (GERD as % of GDP)	:	2.15	2.18	2.31	2.25	*2.26*
Public expenditure on R&D as % of GDP	:	0.77	0.72	0.77	0.73	*0.76*
Business enterprise expenditure on R&D (BERD) as % of GDP	:	1.35	1.46	1.54	1.52	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	16.1	15.4	14.9	:	:	*9.8*
Patent Cooperation Treaty patent applications per billion GDP (in PPS)	5.2	6.1	4.9	:	:	*3.3*
Academia-business cooperation						
Public-private scientific co-publications as % of total publications	10	10.7	11.4	10.9	11	*7.1*
Public expenditure on R&D financed by business enterprise (national) as % of GDP	:	0.06	0.061	:	:	*0.054*
Human capital and skills availability						
New graduates in science & engineering per thousand pop. aged 25-34	9.2	:	11.3	11.2	:	*16*
Graduates in the field of computing per thousand population aged 25-34	2.4	:	2.3	2.5	:	*3*
Public support for business enterprise expenditure on R&D (BERD)						
Total public sector support for BERD as % of GDP	:	0.244	0.254	:	:	*0.194*
R&D tax incentives: foregone revenues as % of GDP	0.135	0.135	0.145	:	:	*0.1*
Green innovation						
Share of environment-related patents in total patent applications filed under Patent Cooperation Treaty (%)	11.9	10	10.1	:	:	*13.3*
Finance for innovation and economic renewal						
Venture capital (market statistics) as % of GDP	0.04	0.03	0.06	0.077	0.132	*0.074*
Employment in fast-growing enterprises in 50% most innovative sectors	5.2	4.8	6.6	6.9		*5.5*

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

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

The productivity growth of the Dutch economy is one of the lowest in the EU. The productivity level is very high in the Netherlands ([111]). Between 1980 and 2007, the Netherlands was as productive as the US and one of the most productive EU countries. However, after the financial crisis productivity growth weakened compared to both the euro area and peer economies ([112]). Real GDP per person employed has been consistently below the euro area average, starting with 2009. 2023 should be the first year with a Dutch productivity growth above the euro area average. GDP per hour worked was stagnant in 2021 compared to 2015, making the country the third weakest performer in the EU ([113])https://data.oecd.org/lprdty/gdp-per-hour-worked.htm - indicator-chart. Real labour productivity in industry (see table A12.1) tells a similar story, being below the EU average.

Low investment in the Netherlands is a contributing factor to its poor productivity growth performance. The capital intensity of the Dutch economy (net capital stock per person employed) increased between 2010 and 2021 but is below that of the euro area ([114]). Capital intensity in the EU outgrew Dutch capital intensity by 5 percentage points. The level of net public investment is below the EU average, including for 2021 and 2022, as shown in table A12.1.

Greening the economy fast enough is a key factor going forward for preserving the quality of the business environment. The business environment has traditionally been a key strength of the Dutch economy. But delivering on greening commitments may be a key issue for economic performance in the coming years, as courts have started ruling on environmental cases, making the achievement of climate targets mandatory for the public sector and some private companies. The nitrogen-reduction measures taken by the government have provoked violent demonstrations from farmers. The new nitrogen ruling by the Council of State (November 2022) is expected to negatively affect construction projects (housing; renewable energy, e.g. the Porthos hydrogen project in Rotterdam). All these developments may play a part in companies' decisions to stay in or relocate out of the Netherlands, as will other important developments at EU and international level (e.g., the OECD agreement on profit taxation, anti-money laundering measures, US technology sanctions against China). Several big firms have relocated their main headquarters out of the Netherlands in the last two years (Unilever, Shell, DSM).

Decarbonising industry remains a challenge. Netherlands is one the heaviest polluters in the EU (6th place in 2020 in terms of greenhouse emissions per capita according to Eurostat). The government has allocated substantial resources for greening (a €35bn climate fund to be built up over 10 years; a €25bn fund to help reduce the country's nitrogen emissions). The money will support the construction of heat, hydrogen, and electricity networks. Nuclear is part of the solution, as two new nuclear power plants will be built. However, progress in implementation is slow. The Dutch Environment Agency (PBL) warned that the 2030 climate target of 55 % would be missed ([115]). On current plans, the reduction achieved will be between 39 % and 50 %. The installed renewable electricity capacity share in electricity production is clearly below the EU average (35 % vs 51 %).

Industry is a factor of resilience for the Dutch economy. It represents 12 % of Dutch GDP (18 % if construction is included) and directly employs 800,000 people. The government targets an industry share of 10-15 % of GDP ([116]), reflecting its desire to keep a strong industrial base in the Netherlands as a foundation of its prosperity and resilience, via the diversification of the economic structure. Industry contributes 50 % of R & D expenditure by Dutch businesses (2019). Manufacturing was one of the two sectors showing increased productivity in 2020 (Statistics Netherlands) and has remained a top performer over the years in terms of productivity, as shown in graph A12.1.

([111])Eurostat, December 2022

([112])Commission Spring Forecast 2023, Table 28.https://data.oecd.org/lprdty/gdp-per-hour-worked.htm - indicator-chart

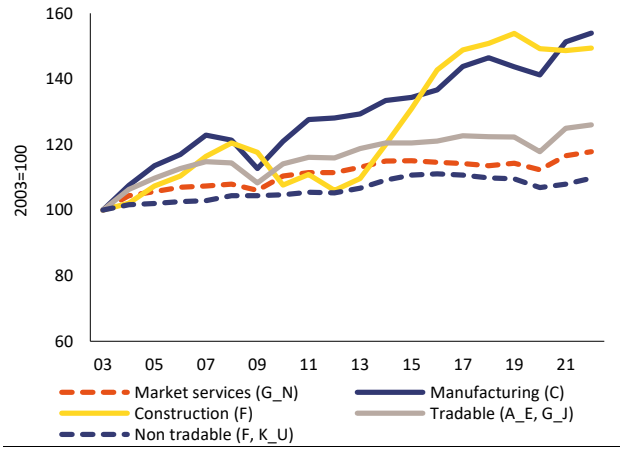
([113])OECD, https://data.oecd.org/lprdty/gdp-per-hour-worked.htm#indicator-chart

([114])National Productivity Board (CPB), 2021 Annual Report.

([115])Netherlands Environmental Assessment Agency (PBL), Climate and Energy Outlook of the Netherlands, 15 December 2022

([116])Ministry of Economy and Climate, 'New Strategic and Green Industrial policy', July 2022.

Graph A12.1: **Productivity per sector**



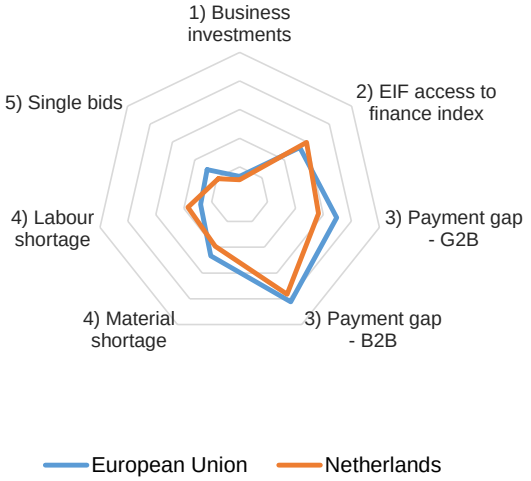
Source: AMECO.

Rising energy prices have hit parts of Dutch industry. Gas consumption was 25 % lower in the Netherlands in 2022 compared to 2021. Energy intensive industries have reacted particularly strongly, with a reduction in demand close to 30 % ([117]). Government support measures have focused on households and some energy-intensive SMEs. Several energy-intensive companies have closed down (ALDEL, Nyrstar).

Companies are affected by labour and materials shortages. Labour and materials shortages are acute in the Netherlands: in the 2022 EIB Investment Survey, 37 % of companies reported problems in hiring the right staff compared to an EU average of 23 %; 39 % are experiencing difficulties finding the material factors of production, which is below the EU average (48 %) but is a significant step up compared to previous years (8 % 2020, 24 % 2021). Finding labour and materials are reported by businesses as the top two concerns for 2023 (36.4 % of companies polled and 16 % respectively) in the Dutch business confidence survey (COEN, Q4 2022). Availability of skilled staff came out as the main barrier for long-term investment reported by Dutch companies in the EIB Investment Survey 2022. It is also the only one for which Dutch firms are more concerned than their counterparts in the EU (87 % vs 85 %).

Netherlands is well integrated into the Single Market, but it could improve its performance in the Single Market Scoreboard (SMS). The country's trade integration in the single market for goods and services (44 % of GDP) is above the EU average (42 %). The OECD restrictiveness index shows that the Netherlands has the lowest barriers for trading in services among all EU countries. The 2022 SMS indicates that performance has deteriorated, especially as regards infringements (average case duration – 51.7 months vs 42.8 EU – and the time needed for complying with a Court of Justice ruling – 61.5 months vs 46.8 EU).

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.

SMEs face multiple challenges; better access to finance and public procurement can help. The top concerns for SMEs are related to staff shortages and energy prices. SMEs could take better advantage, especially during these challenging times, of the huge public procurement market in the Netherlands, including if competition is opened in sectors such as social housing. Splitting calls may help SMEs (16 % split calls in the Netherlands vs 30 % in EU in 2022). The EIF composite index on access to finance signals that SMEs in the Netherlands face more difficulties in accessing loans than EU companies. This is confirmed by the 2022 EIBIS, where the number of Dutch companies reporting using bank loans (around 60 %, the second lowest share in the EU) is well below the EU average (82 %). The same

([117])Statistics Netherlands (CBS), 'Natural gas consumption in 2022 at lowest level in 50 years', 13 February 2023.

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]	3.6	4.5	3.7	4.1	4.2	**3.7**
		Net public investment, level of public capital stock, net of depreciation, % GDP [1]	0.4	0.4	0.5	0.3	0.3	**0.4**
		Real labour productivity per person in industry (% yoy)[2]	0.3	-2.5	-2.3	5.8	0.6	**1.4**
	Cost competitive-ness	Nominal unit labour cost in industry (% yoy)[2]	1.3	5.2	5.8	-3.4	4.4	**2.9**
RESILIENCE	Shortages	Material shortage (industry), firms facing constraints, % [3]	10	10	8	24	39	**47**
		Labour shortage using survey data (industry), firms facing constraints, % [3]	21	23	15	23	37	**28**
		Vacancy rate (business economy)[4]	3.3	3.6	2.6	4.2	5.4	**3.1**
	Strategic dependencies	Concentration in selected raw materials, Import concentration index based on a basket of critical raw materials [5]	0.18	0.18	0.19	0.19	0.18	**0.18**
		Installed renewables electricity capacity, % of total electricity produced [6]	17.5	19.5	29.6	35.1	n.a.	**50.9**
SINGLE MARKET	Single Market integration	EU trade integration, % [7]	42.7	41.9	40.4	44.1	50.0	**45.8**
	Restrictions	EEA Services Trade Restrictiveness Index [8]	0.03	0.03	0.03	0.03	0.03	**0.05**
	Public procurement	Single bids, % of total contractors [9]	14	15	13	13	19	**29**
BUSINESS ENVIRONMENT - SMEs	Investment obstacles	Impact of regulation on long-term investment, % of firms reporting business regulation as major obstacle [10]	12.2	11.0	9.8	9.0	10.5	**29.6**
	Business demography	Bankruptcies, Index (2015=100)[11]	60.6	63.4	53.2	30.2	35.6	**86.8**
		Business registrations, Index (2015=100) [11]	111.8	126.1	121.2	137.9	142.2	**121.2**
	Late payments	Payment gap - corporates B2B, difference in days between offered and actual payment [12]	1	19	-2	11	13	**13**
		Payment gap - public sector, difference in days between offered and actual payment [12]	9	12	-3	11	13	**15**
		Share of SMEs experiencing late payments in past 6 months, % [13]	n.a.	33.1	25	22.7	24.6	**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]	0.21	0.23	0.21	0.26	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]	0.38	0.17	0.33	0.28	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.

study shows that Dutch companies have the lowest share of external finance in total financing (11 %) and the highest share of internal financing, which suggests that their dependence on bank loans is limited.

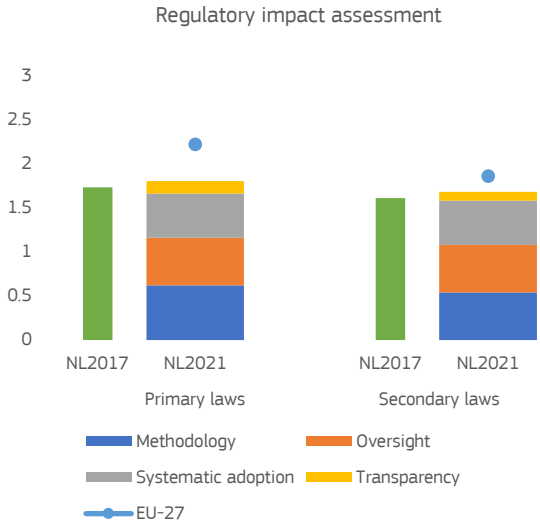
This Annex outlines the performance of the Netherlands' public administration, which is essential for providing services and carrying out reforms. While the Netherlands' administrative effectiveness score still places it among the most effective Member States, it has reached its lowest level since 2009 ([118]). This could be a result of the length of time it took to form a government after the March 2021 parliamentary elections. This delayed several initiatives such as the Open Government Act (Woo) and the submission of the recovery and resilience plan. The Netherlands systematically scores well above the EU average on most public administration indicators, but could improve in several areas, such as greater use of regulatory impact assessments.

The Netherlands is one of the countries where the ageing of public administration employees represents a risk. The ratio of staff who are between 25 and 49 years of age to those aged 50 or above is lower than the EU average (Table A13.1). While the public administration is a popular employer among young people, the low retention rate could threaten the delivery of services. The share of public administration employees with higher education is slightly above the EU average, and their participation in adult learning is among the highest in the EU. The share of women in senior positions has increased slowly but remains below the EU average. Parity has still not been achieved at the senior level, despite being achieved at the general level ([119]).

The Netherlands is one of the EU's best performers on digital public administration. The level of e-government maturity is high (the Netherlands: 85%, EU: 73%) with a wide range of services offered digitally (the Netherlands: 85%, EU: 68%). The share of e-government users continues to rise, reaching 92% of the population (EU: 65%). The Netherlands outperforms the EU average in the provision of digital services for all life-events apart from 'starting a small claims procedure' (in the justice domain) for which it scores below average on two policy priorities ([120]).

The quality of policymaking in the Netherlands is high. Stakeholder engagement in new regulations and on *ex post* evaluation has increased and the Netherlands remains among the best-performing Member States. This ensures that legislation is inclusive and remains up-to-date and fit for purpose. However, performance on regulatory impact assessment remains below the EU average, which is mostly due to a consistently low score on the transparency dimension (Graph A13.1) ([121]). There are three ongoing parliamentary inquiries, the results of which could have a big impact on future public administration reforms related to policymaking and legislation ([122]).

Graph A13.1: **The Netherlands. Indicators of Regulatory Policy and Governance: regulatory impact assessment**



Source: European Commission based on Indicators of Regulatory Policy and Governance Surveys 2017 and 2021, http://oe.cd/ireg

The justice system is highly efficient in particular in civil and commercial litigious cases at first instance (which took an average of 127 days in 2020). Efficiency has improved for first-instance administrative cases (taking an average of 265 days in 2021 compared to 304 days in 2020). The overall quality of the justice system is good. Additional funds are being allocated to the legal aid system, and the government has announced that court fees will be reduced for individuals and SMEs. The level of digitalisation is advanced, in particular, regarding the availability of electronic communication tools in courts. Efforts continue to publish more judgments online and improve digital

([118])Worldwide Governance Indicators, 2022. In 2021, the Netherlands scored 1.767 on a scale between -2.5 and +2.5.

([119])European Institute for Gender Equality, 2022.

([120])E-government benchmark report, 2022.

([121])OECD, iREG indicators, 2022.

([122])These inquiries are related to (i) gas extraction in Groningen, (ii) the childcare allowance affair and (iii) the government's handling of the COVID-19 pandemic.

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

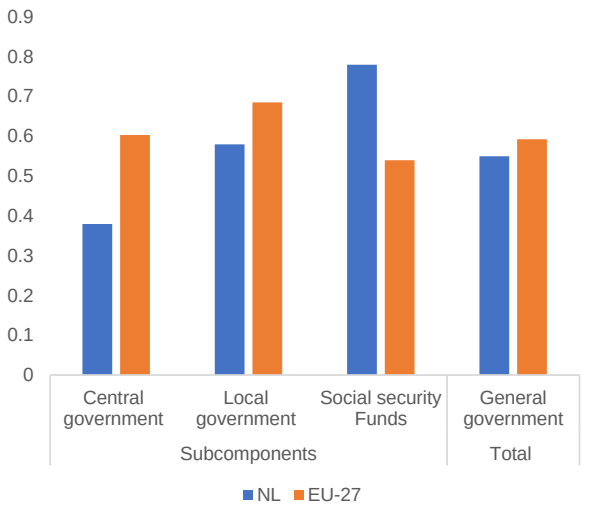
NL	Indicator ([1])	2017	2018	2019	2020	2021	2022	EU-27([2])
E-government and open government data								
1	Share of individuals who used the internet within the last year to interact with public authorities (%)	82.3	85.6	84.2	90.7	91.7	n/a	64.8
2	E-government benchmark overall score ([3])	n/a	n/a	n/a	82.0	85.1	85.3	72.9
3	Open data and portal maturity index	n/a	0.7	0.8	0.9	0.9	0.8	0.8
Educational attainment level, adult learning, gender parity and ageing								
4	Share of public administration employees with tertiary education (levels 5-8, %)	53.2	53.9	56.1 (b)	58.6	57.6 (b)	59.3	52.0
5	Participation rate of public administration employees in adult learning (%)	25.3	25.3	24.6	23.6	36.0 (b)	33.7	16.9
6	Gender parity in senior civil service positions ([4])	32.8	31.2	25.4	23.4	20.2	17.2	11.0
7	Ratio of 25-49 to 50-64 year olds in NACE sector O	1.4	1.4	1.4	1.5	1.4 (b)	1.5	1.5
Public financial management								
8	Medium term budgetary framework index	0.9	0.9	0.9	0.9	0.9	n/a	0.7
9	Strength of fiscal rules index	2.4	2.4	2.4	2.4	2.4	n/a	1.5
Evidence-based policy making								
10	Regulatory governance	1.89	n/a	n/a	n/a	2.07	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 (including for cross-border services) and transparency of digital public services as well as the existence of key enablers for the provision of those services. ([4]) Defined as the absolute value of the difference between the percentage of men and women in senior civil service positions.
Flags: (b) break in time series; (d) definition differs; (u) low reliability.
Source: ICT use survey, Eurostat (# 1); E-government benchmark report (# 2); Open data maturity report (# 3); Labour Force Survey, Eurostat (# 4, 5, 7), European Institute for Gender Equality (# 6); Fiscal Governance Database (# 8, 9); OECD Indicators of Regulatory Policy and Governance (# 10).

tools that enable people and businesses to initiate and follow proceedings online. As regards judicial independence, no systemic deficiencies have been reported ([123]).

The Netherlands is less advanced in implementing accrual accounting for government relative to the EU average, in particular within the central government (Graph A13.2). Accrual accounting as a public accounting standard provides a comprehensive and transparent overview of a public body's financial position and performance and can support sustainability and intergenerational equity.

Graph A13.2: **Accounting maturity by government sector. 2018 scores**



Source: Table 3 at Updated accounting maturities of EU governments and EPSAS implementation cost

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

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 the progress of the Netherlands in implementing the Pillars' 20 principles and EU headline and national targets for 2030 on employment, skills and poverty reduction.

Despite rising economic uncertainty, the Dutch labour market is performing well overall, but significant challenges remain in terms of labour market segmentation and the unfavourable employment and social situation of certain groups. The employment rate in the Netherlands was 82.9% in 2022, well above the EU average (74.7%). However, both the high level and strong growth of flexible and temporary contracts (28% of employees in Q4-2022 vs. 12.9% in the EU) and the number of self-employed without employees over the last decade (about 1.2 million in Q4-2022) require further attention to ensure equal opportunities and fair working conditions for all, as well as adequate social protection, in particular for self-employed without employees. The COVID-19 pandemic exacerbated the inherent risks in an already highly segmented labour market. People with flexible contracts (in particular young people, lower-skilled adults, people with a migrant background and persons with disabilities) were among the groups hit the hardest, together with the self-employed without employees. The total labour participation of women and their number of hours worked have increased, and the gender employment gap is below the EU average (7.9 percentage points (pps) compared to the EU average of 10.6 pps in 2022). Yet, further progress is needed on the gender pay gap, which was still slightly above the EU average in 2021 (13.5% vs 12.7%). Furthermore, part-time employment remains widespread. As a share of total employment, it is the highest in the EU (38.4% compared to 17.0% in the EU in 2022), in particular among women (60.6% compared to 27.9% in the EU in 2022). As a result, the gender gap in part-time employment (42.3 pps against the EU average of 20.4 pps in 2022) is one of the highest in the EU, as well as the gender pension gap (41.5% vs 25.9% in the EU in 2021).

Table A14.1: **Social Scoreboard for the Netherlands**

Policy area	Headline indicator	
Equal opportunities and access to the labour market	Early leavers from education and training (% of population aged 18-24, 2022)	5.6
	Share of individuals who have basic or above basic overall digital skills (% of population aged 16-74, 2021)	78.9
	Youth NEET rate (% of population aged 15-29, 2022)	4.2
	Gender employment gap (percentage points, 2022)	7.9
	Income quintile ratio (S80/S20, 2021)	3.88
Dynamic labour markets and fair working conditions	Employment rate (% of population aged 20-64, 2022)	82.9
	Unemployment rate (% of active population aged 15-74, 2022)	3.5
	Long term unemployment (% of active population aged 15-74, 2022)	0.7
	GDHI per capita growth (2008=100, 2021)	110.1
Social protection and inclusion	At risk of poverty or social exclusion rate (% of total population, 2021)	16.6
	At risk of poverty or social exclusion rate for children (% of population aged 0-17, 2021)	14.9
	Impact of social transfers (other than pensions) on poverty reduction (% reduction of AROP, 2021)	36.56
	Disability employment gap (percentage points, 2021)	25.8
	Housing cost overburden (% of total population, 2021)	12.5
	Children aged less than 3 years in formal childcare (% of population under 3-years-old, 2021)	74.2
	Self-reported unmet need for medical care (% of population 16+, 2021)	0.2

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

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

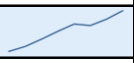
Increasing labour and skills shortages and inequalities in access to adult learning and up- and reskilling opportunities pose challenges, which may affect the green and digital transitions. The number of job vacancies has exceeded the number of unemployed people continuously since Q4-2021. In Q4-2022, the highest number of vacancies were in the trade, business services (*zakelijke dienstverlening*) and health sectors, while the vacancy rate was among the highest in construction and the ICT sector ([124]). Improving the labour market outcomes of groups in an unfavourable employment and/or vulnerable social situation would help tackle labour shortages and activate the untapped labour and skills

([124])https://www.cbs.nl/nl-nl/nieuws/2023/07/arbeidsmarkt-in-vierde-kwartaal-iets-krapper

potential. Participation in vocational education and training and adult learning remains significantly higher in the Netherlands than the EU average. Reflecting the impact of the COVID-19 crisis, adult participation in learning over the past 4 weeks decreased from 2019 to 2020, after several years of weak growth, by 0.7 pps to 18.8%; this was still more than double the EU average (9.2%). Following a break in time series, adult participation in learning stood at 26.6% in 2021 (EU: 10.8%). However, effective outreach to those in an unfavourable labour market situation (and whose labour potential is highly needed) remains a challenge. In particular, the decentralised implementation may not always guarantee that all vulnerable groups are equally or adequately supported. Continued investment in improving basic, technical and digital skills, increasing cross-sector mobility and sustainable employability, as well as strengthening the quality and inclusiveness of education and training for all is key for the Netherlands to reach its national target of at least 62% of adults participating in training every year by 2030. Under the European Social Fund Plus (ESF+), the Netherlands will continue to invest in the active inclusion of vulnerable groups. ESF+ resources will predominantly be used to provide up- and reskilling opportunities to workers at the margins of the labour market and prevent job losses.

Although the share of people at risk of poverty or social exclusion in the Netherlands is stable and well below the EU average, there are still challenges for specific groups, such as people with a migrant background and persons with disabilities. In 2022, 35.1% of non-EU-born people living in the Netherlands were at risk of poverty or social exclusion, 20.6 pps higher than the share of the native-born (in 2021, the difference was 21.6 pps). For people with a non-EU migrant background, the gap is driven by a more prevalent risk of poverty (32.0% vs 12.4% for the native-born in 2022), including in-work poverty (12.6% versus 4.0% in 2022). This is linked partly to a more unfavourable employment situation and a higher rate of severe material deprivation (8.9% vs 1.1% in 2020). Moreover, the risks of in-work poverty and material and social deprivation are higher for people on flexible and temporary contracts as well as for the self-employed without employees. Three out of 10 children with foreign-born parents were at risk of poverty in 2022, which was over four times higher than for children with native-born parents (6.9%). In addition, 25.9% of persons with disabilities were at risk of poverty or social exclusion in 2022 (0.6 pps below the 2021 value but still 1.4 pps more than in 2020). Significant challenges in terms of access to adequate social protection remain for the self-employed without employees. There is therefore scope for greater social policy action, so the Netherlands can contribute to reaching its national target to decrease the number of people at risk of poverty or social exclusion by 163 000 by 2030.

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

Indicators	Latest data	Trend (2015-2022)	National target by 2030	EU target by 2030
Employment (%)	82.9 (2022)		83	78
Adult learning[1] (%)	57.1 (2016)		62	60
Poverty reduction[2] (thousands)	+54 (2022)		-163	-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

To tackle the impact of high inflation and rising energy costs on households, the Dutch government has taken a number of measures to cushion the negative impact on the purchasing power of households. These measures are mostly temporary, of a generic nature and are expected to soften the impact of the energy crisis in 2023 (see Chapter 1). Nevertheless, inflation and energy prices are expected to negatively affect disposable household incomes, in particular of those in the most vulnerable and lower income groups. This risks further aggravating the risks of poverty, including energy poverty, and material and social deprivation.

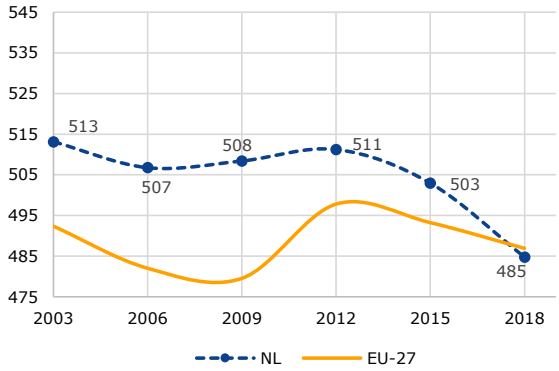
This Annex outlines the main challenges for the Netherlands' education and training system in light of the EU-level targets and other contextual indicators under the European Education Area strategic framework, based on the 2022 Education and Training Monitor.

The Netherlands faces growing teacher shortages in all sectors. In 2021/22, 9.5% of teaching and 13.6% of director positions were not filled in primary education (OCW, 2022a). Shortages are highest in the big urban areas, in particular in special education, in schools with a disadvantaged student population and in schools that were assessed as very weak by the Inspectorate of Education. Although the financing system should allow schools with more at-risk populations to hire more staff, it is unclear to what degree this possibility has been used and to what effect. The Education Agreement of April 2022, between the Ministry of Education, Culture and Sciences and trade unions and sectoral organisations, involves closing the salary gap between primary and secondary schoolteachers; for this, the government is setting aside EUR 919 million each year (OCW, 2022b). The agreement also contains commitments for additional funding to reduce the workload in secondary education (EUR 300 million) and more funding for continuous professional development (EUR 128 million). A specific strategy to tackle teacher shortages was launched in July 2022.

Participation in early childhood education and care (ECEC) from age 3 is below the EU average. From age 3, 91.7% of children in the Netherlands participate in ECEC, below the EU average (93.0%) and the EU-level target (96%) set for 2030. According to the 2020 sectoral report for ECEC (Kinderopvang, 2021), staff shortages are currently the biggest concern, both in terms of teaching staff and other positions.

Basic skills and key competencies have deteriorated since the outbreak of the pandemic. At the end of 2020/21, pupils in primary education performed less well in reading comprehension, mathematics and spelling than before the pandemic (Inspectorate, 2022). There was also a decline in all forms of secondary education. A decline in basic skills, as measured in the OECD Programme for International Student Assessment (PISA), already started in 2006. According to the latest survey in 2018, the proportion of low achievers is especially high (56%) among pupils born abroad. Native-born pupils with a migrant background only partially catch up. Differences between schools have the greatest impact on pupils' performance of all EU countries, reflecting ability-based tracking from an early age. In the 2022 Coalition Agreement, the cabinet committed itself to investing EUR 1 billion each year in education quality (Government, 2022a). In May 2022, it launched a 'basic skills master plan' for early childhood education, and primary, secondary and vocational education.

Graph A15.1: **Trend in reading performance in PISA mean score, 2003-2018**



Source: OECD (2019), PISA 2018 Database

Substantial investments are being made to mitigate learning loss and to promote digital education. In February 2021, the Netherlands launched an exceptional investment of EUR 8.5 billion at all education levels to address educational losses caused by the closures of education institutions during the COVID-19 pandemic. Funding is offered to support secondary school pupils in their final year, the integration of newly arrived migrants in education, and the provision of IT equipment to disadvantaged learners. In addition, EUR 180 million will be invested from the Recovery and Resilience Facility in several projects. One of these projects is the establishment of a National Education Laboratory for artificial intelligence.

The share of early school leavers is well below the EU-level target but increased in 2022. With a 5.6% rate in 2022, the Netherlands had already reached the EU-level target (less than 9%) but showed a 0.5 percentage point increase from the previous year ([125]). National data point in

([125])The EU indicator is based on data available on population aged 18-24 whose highest level of education or training attained is at most lower secondary education and who

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

.				2015		2022	
Indicator			**Target**	**Netherlands**	**EU27**	**Netherlands**	**EU27**
[1]Participation in early childhood education (age 3+)			**96%**	**92.8%**	**91.9%**	**91.7%** [2020]	**93.0%** [2020]
[2]Low achieving 15-year-olds in:		**Reading**	**< 15%**	**18.1%**	**20.0%**	**24.1%** [2018]	**22.5%** [2018]
		Mathematics	**< 15%**	**16.7%**	**22.3%**	**15.8%** [2018]	**22.9%** [2018]
		Science	**< 15%**	**18.5%**	**21.1%**	**20.0%** [2018]	**22.3%** [2018]
Early leavers from education and training (age 18-24)	**[3]Total**		**< 9 %**	**8.2%**	**11.0%**	**5.6%**	**9.6%**
	[3] By gender	*Men*		9.9%	12.5%	6.8%	11.1%
		Women		6.4%	9.4%	4.3%	8.0%
	[4] By degree of urbanisation	*Cities*		7.6%	9.6%	5.2%	8.6%
		Rural areas		9.2%	12.2%	7.4%	10.0%
	[5] By country of birth	*Native*		8.0%	10.0%	5.4%	8.3%
		EU-born		: [u]	20.7%	10.7%	20.3%
		Non EU-born		11.2%	23.4%	6.3%	22.1%
[6]Equity indicator (percentage points)				**:**	**:**	**14.5** [2018]	**19.3** [2018]
[7]Exposure of VET graduates to work based learning	**Total**		**≥ 60% (2025)**	**:**	**:**	**95.1%**	**60.1%**
Tertiary educational attainment (age 25-34)	**[8]Total**		**45%**	**45.1%**	**36.5%**	**56.4%**	**42.0%**
	[8] By gender	*Men*		40.6%	31.2%	52.3%	36.5%
		Women		49.6%	41.8%	60.6%	47.6%
	[9] By degree of urbanisation	*Cities*		51.9%	46.2%	62.3%	52.2%
		Rural areas		35.0%	26.9%	41.3%	30.2%
	[10] By country of birth	*Native*		46.6%	37.7%	57.4%	43.0%
		EU-born		44.7%	32.7%	58.8%	39.5%
		Non EU-born		32.4%	27.0%	48.2%	35.7%
[11]Share of school teachers (ISCED 1-3) who are 50 years or over				41.2%	38.3%	36.7% [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.

the same direction: in 2020/21, the absolute number of dropouts - young people up to age 23 who left education without obtaining an upper secondary qualification of ISCED 3 level - increased by more than 1 600 from the previous year to 24 385.

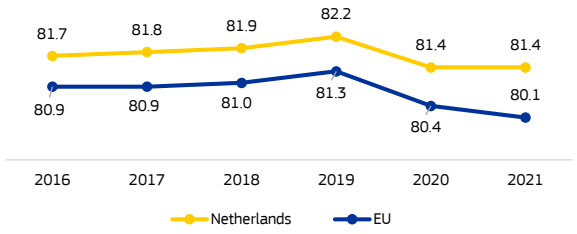
Tertiary educational attainment and graduate employment rates are well above the EU average. 56.4% of the population aged 25-34 holds a tertiary degree (EU: 42.0%). Overall participation in vocational education and training and in lifelong learning activities is high (see Annex 14).

received no education or training in the four weeks preceding the survey.

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 the Netherlands.

Life expectancy is above the EU average, but declined due to the COVID-19 pandemic. Although COVID-19 mortality decreased in 2021 ([126]), life expectancy did not rebound. In general, the Netherlands fares comparatively well in avoiding deaths from treatable causes. However, cancer mortality is above the EU average, with one of the main mortality causes being lung cancer. This corresponds with the fact that tobacco consumption is the leading behavioural risk factor for mortality in the Netherlands. In 2020, cancer mortality was followed by cardiovascular diseases and COVID-19 as main causes of deaths.

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



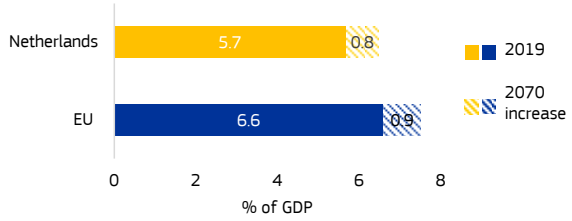
Source: Eurostat

Health spending relative to GDP in the Netherlands was slightly above the EU average in 2020. It increased by 1 percentage point compared to 2019 (as well as in nominal terms). This is in line with the upward trend in all Member States in 2020. Public sources cover a high share of health expenditure, resulting in a low share of out-of-pocket payments. There is also a large voluntary health insurance sector, covering services outside the benefit package. The projected increase in public expenditure on health as a share of GDP by 2070 is slightly below the EU average.

Spending on preventive care in nominal terms increased by 49% from 2019 to 2020. A similar increase was observed in other EU countries (of 26% on EU average). 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. In 2020, spending on preventive care in the Netherlands amounted to 4.6% of total spending on healthcare (compared to 3.4% for the EU overall). This is comparatively high, with four other Member States also reporting a level above 4%.

The country has a strong primary care system. This is combined with a comparably low number of hospital beds per population, in tandem with low hospital admission rates compared to other EU countries. This corresponds with a relatively high spending on outpatient care on the one hand, and low spending on inpatient care on the other hand (as shares of total health spending).

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



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

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

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

	2017	2018	2019	2020	2021	EU average (latest year)
Treatable mortality per 100 000 population (mortality avoidable through optimal quality healthcare)	65.0	64.6	61.3	59.0	NA	91.7 (2020)
Cancer mortality per 100 000 population	276.7	269.7	266.6	261.3	NA	242.2 (2020)
Current expenditure on health, % GDP	10.1	10.0	10.1	11.1	NA	10.9 (2020)
Public share of health expenditure, % of current health expenditure	81.7	82.1	82.7	84.9	NA	81.2 (2020)
Spending on prevention, % of current health expenditure	3.3	3.2	3.3	4.6	NA	3.4 (2020)
Acute care beds per 100 000 population	278	274	262	247	NA	387.4 (2019)
Doctors per 1 000 population *	3.6	3.7	3.8	3.8	NA	3.9 (2020)
Nurses per 1 000 population *	10.9	11.2	10.8	11.1	NA	8.3 (2020)
Consumption of antibacterials for systemic use in the community, daily defined dose per 1 000 inhabitants per day (total consumption in CY and CZ) **	8.9	8.9	8.7	7.8	7.6	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

Structural shortages of certain health workers are an ongoing challenge. The number of doctors per population is slightly below the EU average, while the number of nurses per population is above the EU average. Nurses in the Netherlands participate in task-shifting and advanced practices, creating a comparatively attractive job profile. In addition, the number of nursing graduates has been on the rise in the last few years. However, nursing staff is overburdened in certain settings, for instance in hospitals, and not all trained nurses work (full-time) in the profession. There is also an increasing trend of health workers being self-employed instead of being salaried. Public campaigns aim to increase the number of staff. 'Ik Zorg', for instance, brings together people who want to work in healthcare and organisations looking for employees. In 2022, there was an estimated shortage of 125 000 healthcare workers ([127]).

Recently announced plans to improve the Dutch health system underline that the demand for care increases faster than the capacity for the (health) workforce to expand. In the Netherlands, one out of every six employees is working in care (including long-term care). This share is projected to increase to one in three by 2060 if there is no policy change. Consequently, staff use (*personeelsinzet)* is presented as one of the guiding assessment criteria to inform decisions on the basket of benefits offered by the healthcare system (next to criteria such as effectiveness, cost-effectiveness and necessity) ([128]). In autumn 2022, the Dutch Ministry of Health published a programme to future-proof the healthcare labour market, that will look at new ways of organising care processes, retention of staff and space for learning and development ([129]).

Through its recovery and resilience plan (RRP), the Netherlands plans to invest EUR 172 million (3.6% of the RRP's total value) in healthcare. Health-related investments are planned in surge capacity of additional human resources for crisis times (including by setting up a national healthcare reserve), architectural adjustments and staff training in intensive care, e-health, and health research infrastructure. The plan includes specific measures to temporarily alleviate the shortage of healthcare workers in times of an acute crisis, but does not sufficiently address structural labour shortages in the health sector.

([127])Source: https://www.zorgaanzet.org/campagne-ik-zorg.

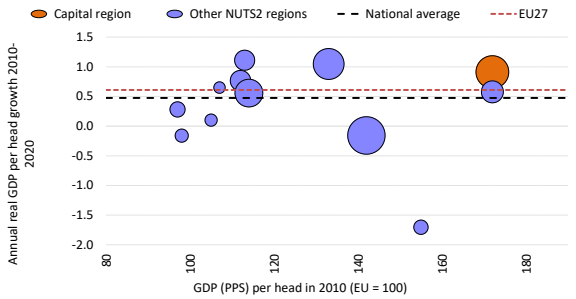
([128])Source: https://www.rijksoverheid.nl/documenten/kamerstukken/2022/12/02/kamerbrief-over-verbeteren-en-verbreden-van-de-toets-op-het-basispakket.

([129])Source: https://www.rijksoverheid.nl/documenten/publicaties/2022/09/30/programmatoekomstbestendigearbeidsmarktzorgwelzijn.

This Annex showcases the economic and social regional dynamics in the Netherlands, providing an update on economic, social and territorial cohesion in and among the Dutch regions compared with the rest of the EU and the main regional economic recovery challenges.

Regional disparities have been stable over the last decade. The Noord-Holland region, which includes the capital Amsterdam, had the highest GDP per capita (PPS) (168% of the EU average, 2021) and one of the highest annual GDP per capita growth rates among the Dutch regions (0.9%) in 2011-2020 (Graph A17.1). Noord-Brabant and Limburg had a similar growth rate. The three regions with the lowest GDP per capita (Drenthe, Friesland and Flevoland) had a GDP per capita just below the EU average and fairly low growth rates (-0.2%, 0.3% and 0.1% respectively). Groningen's GDP per capita shrank by -1.7% – primarily due to the reduction in gas extraction that is set to end in 2024 at the latest.

Graph A17.1: **GDP per capita (2010) and GDP growth (2011-2020), Netherlands (NUTS 2 regions)**



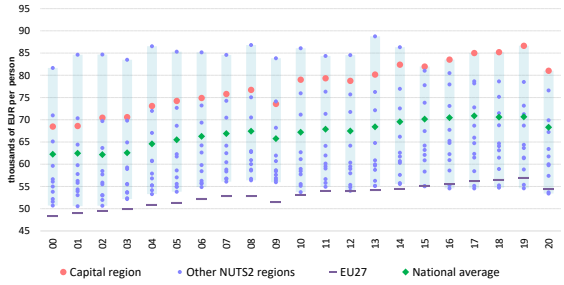
Source: Eurostat

Labour productivity showed regional variation in line with differences in GDP per capita (see Graph A17.2). Noord-Holland and Utrecht were the most productive (129% and 123% of the EU average respectively), while Friesland and Drenthe were the least productive (both 88% of the EU average) in 2020. Average real productivity growth in 2011-2020 ranged from –2.3% in Groningen to 0.7% in Noord-Brabant.

The regional differences in productivity were linked to several phenomena. The Netherlands spends 2.2% of its GDP on research and development, which is slightly above the EU average of 2.0%. However, at the regional level, the spending rate ranges from 1.6% in Noord-Nederland (NUTS1) to 3.1% in Zuid-Nederland.

Dutch regions tend to have relatively highly educated population. The share of the Dutch population with a high level of education aged 30-34 was high at 53% (2021) and reached 66% in Utrecht and 60% in Noord-Holland. Only Drenthe (35%), Zeeland (39%), Flevoland (39%) and Friesland (39%) had a rate just below the EU average of 42%. In all regions except Flevoland (10.0%) the percentage of early school leavers was below the EU average of 9.7% in 2021.

Graph A17.2: **Labour productivity (real GVA per worker), EU-27, Netherlands (NUTS 2 regions), 2000-2020**



Source: Eurostat

Innovation performance is high with some regional variation. The Netherlands was one of the five innovation leaders in the EU in 2022 according to the European innovation scoreboard. Most regions are strong innovators or innovation leaders, but Drenthe, Friesland and Zeeland are classified as moderate innovators. These last three provinces scored slightly below the EU average in the regional innovation index (2021). The innovation leaders Noord-Holland, Utrecht and Noord-Brabant had a regional innovation index between 4.1% and 5.7% above the national average – which indicates that there are some moderate regional differences.

All regions did well in terms of competitiveness, but differences exist. Four regions were in the EU top 5 of the regional competitiveness index (2022). Utrecht scored 151 compared to the EU average of 100 followed by Zuid-Holland (142), Noord-Brabant (141) and Amsterdam with its commuting zone (141). The least performing regions were Friesland (117), Zeeland (119) and Drenthe (119), which is in line with their innovation performance. The average for the Netherlands stood at 137.

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

NUTS 2 region	GDP per head (PPS)	Productivity (GVA (PPS) per person employed)	Real productivity growth	GDP per head growth	Employment rate, ages 20-64	Unemployment rate	At-risk-of-poverty or social exclusion	Population with high educational attainment	Innovation performance
	Index, EU27 = 100, 2021	Index, EU27 = 100, 2020	Average % change on the preceding year, 2011-2020	Average % change on the preceding year, 2011-2020	% of population aged 20-64, 2021	% of active population, 2021	% of population, 2021	% of population aged 30-34, 2021	RIS regional performance group
European Union	100.0	100.0	0.2	0.6	73.1	7.0	21.7	41.6	
Nederland	130.0	110.8	0.1	0.5	81.7	4.2	16.6	53.4	
Groningen	116.0	102.8	-2.3	-1.7	78.3	5.3	20.4	46.1	Strong innovator
Friesland (NL)	92.0	87.7	0.0	0.3	81.4	4.5	18.3	39.1	Moderate innovator +
Drenthe	88.0	87.5	-0.3	-0.2	80.6	3.5	17.4	34.8	Moderate innovator +
Overijssel	109.0	94.9	0.3	0.8	82.0	3.8	15.3	51.3	Strong innovator
Gelderland	109.0	98.9	0.4	0.6	81.7	3.9	15	50.3	Strong innovator +
Flevoland	95.0	104.4	0.4	0.1	80.8	4.6	19.1	38.8	Strong innovator
Utrecht	162.0	123.1	0.1	0.6	84.0	4.0	14.2	66.0	Innovation leader -
Noord-Holland	168.0	129.2	0.3	0.9	81.6	4.5	18.3	59.6	Innovation leader -
Zuid-Holland	127.0	114.2	-0.2	-0.2	80.5	5.1	17.6	55.1	Strong innovator +
Zeeland	109.0	98.0	0.3	0.6	83.4	3.6	15.8	38.7	Moderate innovator +
Noord-Brabant	133.0	109.4	0.7	1.0	84.1	3.2	14.7	51.9	Innovation leader -
Limburg (NL)	117.0	100.7	0.5	1.1	79.2	3.8	16.7	56.5	Strong innovator +

Source: EUROSTAT

All regions had a high level of employment and a low unemployment rate. Employment rates ranged from 78% in Groningen to 84% in Noord-Brabant and Utrecht in 2021, while the EU average stood at 73%. The unemployment rate in Groningen was the highest at 5.3%, but this was still below the EU average (7%). Noord-Brabant had the lowest rate (3.2%).

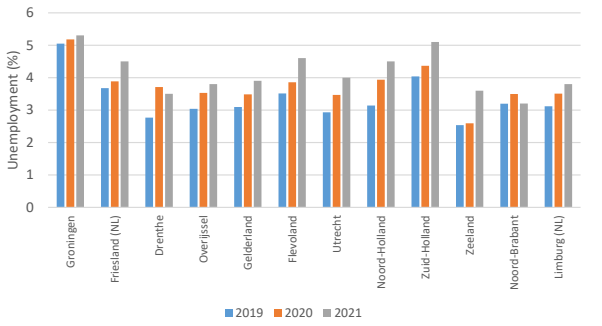
Labour market shortages increased further in 2022 ([130]). All provinces had a record high number of vacancies. Labour market tightness was highest in Utrecht and Noord-Brabant, followed at some distance by Zeeland and Noord-Holland. Labour market shortages increased most in Groningen.

The share of population at risk of poverty or social exclusion (the AROPE rate) showed regional differences. The Netherlands had a low AROPE rate at 16.6% in 2021 compared to the EU average of 21.7%. However, Groningen had a rate of 20.4%. The lowest rates could be noted in Utrecht (14.2%) and Noord-Brabant (14.7%).

The transition to a carbon-neutral economy affects regions differently. Regions with clusters of emission-intensive industries face particular challenges in reducing greenhouse gas emissions, sustainably transforming their industries, developing alternative sustainable economic activities, and re-skilling and upskilling workers.

All regions were affected by the COVID-19 pandemic. Average excess mortality in 2020 and 2021 was between 9.5% and 27% higher than in 2015-2019. Zuid-Holland (27%), Zeeland (24.5%), Noord-Brabant (26.8%) and Limburg (24.4%) were most affected.

Graph A17.3: **Unemployment in Dutch regions, 2019-2021**



Source: Eurostat

The social-economic consequences of COVID-19 seem to have been more severe in some regions. The employment rate fell in 2020 in most regions but then recovered in line with the pre-COVID-19 upward trend. The unemployment rate, which was already up in 2020, increased further in 2021 in almost all regions (ranging from -0.3 pps in Noord-Brabant to 1.0 pps in Zeeland (see Graph A17.3).

([130])CBS (Statistics Netherlands), 2022

The Netherlands has a well-developed, adequately capitalised and moderately profitable banking sector. Banks' assets increased both in nominal terms and as a percentage of GDP in Q3-2022 compared to 2021. In Q3-2022, they were 309.7% of GDP compared to 308.8% in 2021. The Dutch banking sector is larger than the EU average and mostly domestically owned (share of 93% of all banking-sector assets), with the five largest banks holding 84% of assets. Bank profitability has recovered from the COVID-19 pandemic, with return on equity reaching 7.7% in Q3-2022, in line with the levels recorded before the COVID-19 crisis. In the future, higher interest rates could support banks' earnings provided that funding costs do not increase faster than interest income and lending activity remains steady. The capital adequacy ratio was 21.1% in Q2-2022, lower than the year before, but above the EU average of 18.8%. Credit quality is strong, with a historically low non-performing loans (NPLs) ratio of 1.3% in September 2022. However, depressed economic growth, higher interest rates and high inflation may result in increased credit losses and NPL provisioning. Furthermore, non-financial corporations' indebtedness is still elevated, and more than 43% of corporate debt is due to be refinanced or has an interest-rate reset ([131]) in the next 12 months. In addition, the number of bankruptcies is picking up slightly, although from very low levels ([132]). These factors render small and medium-sized enterprises increasingly vulnerable due to their reliance on bank lending.

Both commercial real estate and the housing market are showing increased risks. With almost 52% ([133]) of commercial real-estate loans to be refinanced in the next 3 years, the refinancing risk is increasing, while higher costs and interest rates make projects more expensive and reduce the borrowing capacity of real-estate investors. On the housing market, several key vulnerabilities were already identified by the European Systemic Risk Board, which issued recommendations in 2019 ([134]). The Netherlands was subsequently assessed as partially compliant ([135]). Since 2015, prices of existing houses have continuously increased, almost doubling by July 2022 (89.2% increase compared with 2015) ([136]). However, by December 2022, house prices had decreased by 4.5% since their peak in July, and they have continued to fall since. This poses a risk of negative equity for some homeowners. Although nominal mortgage debt outstanding has increased by 20% since 2012, reaching EUR 784 bn in 2022, relative to GDP it decreased from 100% to 87% over the same period. Three quarters of mortgages have an interest rate fixed for more than 5 years, but borrowers increasingly prefer shorter fixed periods ([137]). High debt-to-income ratios, high rates of inflation, and rising interest rates are increasing pressure on households, and this could affect the quality of mortgage portfolios. Because of the risk of a housing-market correction, the DNB, the Dutch central bank, introduced a floor for the risk-weighting of mortgage loans (Article 458 of the Capital Requirements Regulation) as of January 2022, and raised the countercyclical buffer to 1% as of May 2023. These two measures should improve banks' resilience to shocks, although they are insufficient on their own, as other contributing factors, beyond the DNB's power to control, may have a greater impact on the likelihood of a house-price correction.

The insurance sector appears robust and solvent as a whole, but higher inflation and rising interest rates pose certain risks for insurers. The total assets of insurance companies decreased in both nominal and relative terms over the last year, reaching 49.4% of GDP in Q2-2022, with 85% of these assets owned by life insurers. At 200% in Q2-2022, the solvency ratio of Dutch insurance groups remains robust. The high inflation rate poses a risk, as it could lead to significant losses and a decrease in insurers' own funds, with non-life insurers being more sensitive to inflation than life insurers. Losses could be caused by several factors, including: (i) a significant increase in underestimated technical provisions on past claims, especially for long-tail business; (ii) a significant increase in the loss ratio

([131])DNB, Financial Stability Report 2022.

([132])Statistics Netherlands (CBS).

([133])DNB, Financial Stability Report 2022.

([134])ESRB Recommendations 2019 (ESRB/2019/7)

([135])ESRB Compliance report 2022

([136])See also Housing Market Developments - Thematic Note to Support In-Depth Reviews, April 2023 (ISSN 2443-8014)

([137])DNB Statistics - Bank mortgage lending rates

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

	2017	2018	2019	2020	2021	2022	EU	Median
Total assets of the banking sector (% of GDP)	322.0	299.9	297.0	319.0	308.8	309.7	276.8	207.9
Share (total assets) of the five largest banks (%)	83.8	84.7	84.7	84.3	84.1	-	-	68.7
Share (total assets) of domestic credit institutions (%)[1]	92.6	93.3	93.7	94.2	93.6	92.9	-	60.2
NFC credit growth (year-on-year % change)	-0.7	-0.3	-1.0	1.6	7.3	2.4	-	9.1
HH credit growth (year-on-year % change)	0.0	0.2	0.2	-1.0	1.2	1.6	-	5.4
Financial soundness indicators:[1]								
- non-performing loans (% of total loans)	2.1	1.9	1.8	1.9	1.4	1.2	1.8	1.8
- capital adequacy ratio (%)	22.1	22.4	22.9	23.2	22.7	21.1	18.6	19.8
- return on equity (%)[2]	8.8	8.1	7.7	3.1	8.3	7.7	6.1	6.6
Cost-to-income ratio (%)[1]	57.3	59.8	58.1	58.0	56.9	54.1	60.6	51.8
Loan-to-deposit ratio (%)[1]	117.7	117.5	119.4	104.3	101.6	96.2	88.6	78.0
Central bank liquidity as % of liabilities	1.5	1.4	1.4	6.8	7.8	2.8	-	2.9
Private sector debt (% of GDP)	247.6	241.3	229.9	233.1	229.3	-	-	120.7
Long-term interest rate spread versus Bund (basis points)	20.4	17.9	18.3	13.3	4.4	23.5	-	93.3
Market funding ratio (%)	52.1	50.3	50.0	44.9	50.1	-	50.8	40.0
Green bonds issued to all bonds (%)	0.8	1.3	2.6	3.4	4.7	5.9	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.

of future claims if insurers find it difficult to correctly price future inflation in their premiums in a timely manner; and (iii) lower underwriting as inflation might reduce saving capacity and purchasing power among policyholders. Higher interest rates can reduce the value of both liabilities and certain investments, such as bonds, which represent a significant share of Dutch insurers' assets (36%), while the share of loans and mortgages they hold (29%) could constitute an additional risk.

Dutch pension funds' funding ratios have improved, but a financial-market correction can generate losses on investment portfolios. With the discounted value of liabilities showing a steeper decline in the past year than the value of assets, the average funding ratio increased to 124.6% in Q3-2022. High inflation is eroding the real value of the accrued assets, despite the positive effect of rising interest rates. While a gradual increase in interest rates does not pose risks to liquidity, a rapid rise in interest rates may trigger liquidity risk through an increase in margin calls from interest-rate hedging, as happened in the first half of 2022. A lack of liquidity in the market can further exacerbate the risk. Still, Dutch pension-fund investments are diversified, and not exposed to exchange-rate risk in the euro area. These investments also have the advantage of the deep euro-area government bond market. Therefore, the probability of selling of securities at a price that is well below market value. is relatively low and, if it occurs, the risk that it would create a downward spiral of bond prices is contained. At the same time, the DNB is closely supervising pension funds, all of which must file quarterly reports to show they meet the required liquidity criteria.

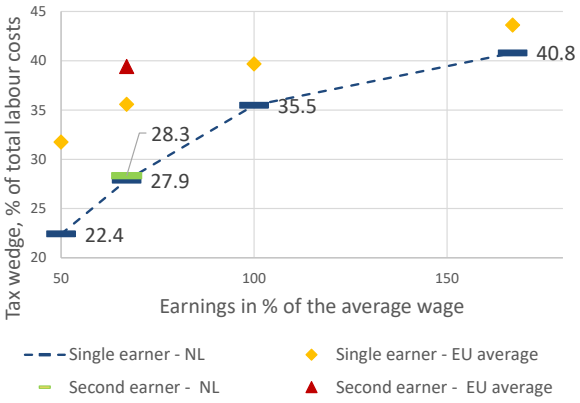
The Netherlands has relatively deep, competitive and diversified financial markets. The asset value of Dutch investment funds peaked in Q2-2021, but decreased subsequently, driven by falls in the value of equities and bonds. It is noteworthy that the value of investments held by households increased by more than 200% between 2018 and end-2021. Although banks are still the preferred source of financing, NFCs are increasingly seeking funding via capital markets, including by issuing green bonds. The total value of green bonds issued in Q3-2022 was EUR 91.5 bn, a quarter of which were issued by NFCs, particularly utility companies. The Netherlands is also a fast-growing hub for finance innovation, putting digital finance at the top of supervisors' agendas. At the same time, as the financial system is becoming more digitalised and interconnected, cyber risk has become a significant source of risk, driving both the DNB and the AFM (the Dutch financial market regulator) to issue various warnings and recommendations. The number of cyber-related incidents reported by Dutch banks has surged in recent years, while pension funds and insurers have also seen an increase in cyber-attacks. For this reason, the most critical insurers and pension providers were included in the EU's Threat Intelligence-Based Ethical Red Teaming programme.

This Annex provides an indicator-based overview of the Dutch tax system. It includes information on the tax structure (i.e. the types of tax that the Netherlands derives most of its revenue from, the tax burden for workers, and the progressivity and redistributive effect of the tax system). It also provides information on tax collection and compliance, and on the risks of aggressive tax planning activity.

In the Netherlands tax revenues as a percentage of GDP are similar to the EU aggregate. In 2021 total Dutch tax revenues were 39.7%. of its GDP, which was slightly below the EU aggregate of 40.6% (Table A19.1). The main sources of tax revenues in the Netherlands in 2021 were labour taxes (19.4% of GDP) and consumption taxes (11.9% of GDP), for which the values were close to the EU aggregate. Revenues from environmental taxes as a percentage of GDP were among the highest in the EU; and the Dutch RRP furthermore includes a reform of car taxation. Revenues from property taxes (expressed as % of GDP) were slightly below the EU aggregate, as were revenues from recurrent property taxes, which are particularly conducive to growth. Increased use of recurrent property taxes could also be beneficial given the housing market imbalances in the Netherlands and given that the existing mortgage interest tax relief encourages the accumulation of household debt.

The tax-benefit system helps reduce income equality, but non-tax compulsory payments, such as pension contributions, drive up the compulsory payment wedge on labour. In 2022, the tax wedge in the Netherlands was considerably lower than the EU average at various wage levels (Graph A19.1). However, the tax wedge does not include compulsory contributions under collective labour agreements that are paid by employees and employers to privately-managed pension funds. In case non-tax compulsory payments are included the compulsory payment wedge for a single earner amounts in 2022 to 42.6%, 49.7% and 54.2% with a wage of 67%, 100% and 167% of the average wage, respectively ([138]). These levels are well-above the EU average. The Netherlands is taking measures to reduce the difference in tax treatment between employed and self-employed. Labour taxation is more progressive in the Netherlands than on average in the EU. This contributes to the higher ability of tax-benefit system to reduce income inequality, as measured by the GINI coefficient, than the EU average in 2021.

Graph A19.1: **Tax wedge for single and second earners as a % of total labour costs, 2022**



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

Data suggest that the Dutch tax system has been historically used for aggressive tax planning purposes, but reforms in the context of the RRP have recently been introduced. To counter the use of special purpose entities for aggressive tax planning purposes, the Netherlands has introduced a new withholding tax on royalties and interest payments that either go to low tax jurisdictions or constitute tax abuse under the Dutch anti-abuse regulations. The new withholding tax entered into force in January 2021 together with other anti-abuse rules correcting undue exemptions and limiting the deduction of losses from company liquidations.

The flows of interest and royalty payments made from the Netherlands decreased significantly, albeit from very high levels. As Graph A19.2 shows, royalty payments to non-EU countries decreased from EUR 46.8 billion in 2017 (and an estimated EUR 56 bn in 2019) to around EUR 14.2 billion in 2021, while interest payments decreased from EUR 21 bn in 2019 to EUR 10.8 bn in 2021. Recently implemented reforms are likely to have contributed to this decrease. In 2022, the Netherlands continued to reform its corporate tax system to make it more resilient to aggressive tax planning practices by introducing measures such

([138])OECD (2023), Non-tax compulsory payments as an additional burden on labour income in 2022, OECD publishing, Paris. https://www.oecd.org/tax/tax-policy/tax-database/non-tax-compulsory-payments.pdf.

Table A19.1:**Taxation indicators**

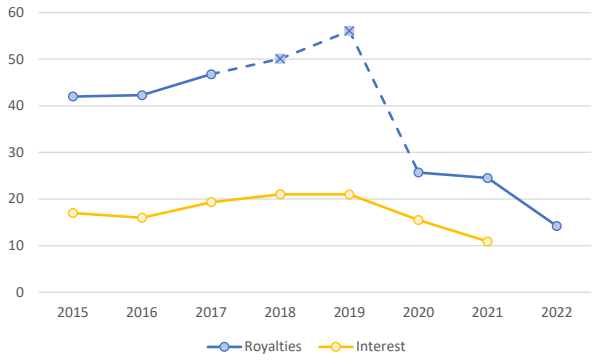
		Netherlands					EU-27				
		2010	2019	2020	2021	2022	2010	2019	2020	2021	2022
Tax structure	Total taxes (including compulsory actual social contributions) (% of GDP)	35.5	39.3	39.9	39.7		37.9	39.9	40.0	40.6	
	Labour taxes (as % of GDP)	19.5	19.5	20.5	19.4		20.0	20.7	21.3	20.9	
	Consumption taxes (as % of GDP)	11.0	11.8	11.9	11.9		10.8	11.1	10.7	11.2	
	Capital taxes (as % of GDP)	5.0	7.9	7.5	8.3		7.1	8.1	8.0	8.5	
	Total property taxes (as % of GDP)	1.3	1.6	1.9	1.9		1.9	2.2	2.2	2.2	
	Recurrent taxes on immovable property (as % of GDP)	0.6	0.8	0.9	0.9		1.1	1.2	1.2	1.1	
	Environmental taxes as % of GDP	3.5	3.4	3.2	3.1		2.4	2.4	2.2	2.2	
Progressivity & fairness	Tax wedge at 50% of average wage (Single person) (*)	28.3	23.9	23.3	21.5	22.4	33.9	32.3	31.9	32.1	31.7
	Tax wedge at 100% of average wage (Single person) (*)	38.1	36.9	36.1	34.9	35.5	41.0	40.1	39.9	39.7	39.7
	Corporate income tax - effective average tax rates (1) (*)		23.7	23.7	23.7			19.5	19.4	19.1	
	Difference in Gini coefficient before and after taxes and cash social transfers (pensions excluded from social transfers) (2) (*)	10.0	10.1	9.3	9.7		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 %) (*)		6.0	11.7				31.6	40.7		
	VAT Gap (% of VAT total tax liability, VTTL)		6.9	2.8				11.0	9.1		

(1) Forward-looking effective tax rate (OECD)
(2) A higher value indicates 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, 2021, https://data.europa.eu/doi/10.2778/843047 and the 'Data on Taxation' webpage (data https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/data-taxation_en). For more details on the VAT gap, see European Commission, Directorate-General for Taxation and Customs Union, 'VAT gap in the EU: report 2022', Publications Office, 2022, https://data.europa.eu/doi/10.2778/109823
Source: European Commission, OECD

as further limits to loss relief and an anti-abuse provision concerning the arm's length principle.

The Netherlands is doing well on digitalisation of the tax administration, which can help reduce compliance costs. The Annual report on taxation 2021 shows that the Netherlands scores highly on filing tax with 96% of tax returns being submitted electronically. The VAT gap (the gap between revenues actually collected and the theoretical tax liability) in the Netherlands decreased substantially from 6.9% in 2019 to 2.8% in 2020, which is well below the EU-wide gap of 9.1%. These positive changes in compliance during the recession might have been partially caused by the 8.9% increase in the value of electronic payments despite the drop in the overall value of transactions, and the frequency of bankruptcies (reduced by 11.8%). For these reasons the VAT gap is expected to have further decreased in 2021 ([139]).

Graph A19.2: **Flows of Dutch interest and royalty payments to non-EU countries, in EUR billion**



(1) Data on extra EU-27 flows for royalties are confidential for 2018 and 2019. The figures shown for these dates have been estimated using linear regression.
Source: European Commission

([139])VAT gap in the EU, Report 2022, https://data.europa.eu/doi/10.2778/109823

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)	2.8	0.0	1.8	-3.9	4.9	4.5	1.8	1.2
Potential growth (y-o-y)	1.8	0.9	1.2	1.5	1.7	2.2	1.9	1.9
Private consumption (y-o-y)	0.8	-0.4	1.1	-6.4	3.6	6.5	2.1	1.2
Public consumption (y-o-y)	3.0	1.4	1.0	1.6	5.2	1.5	2.3	1.4
Gross fixed capital formation (y-o-y)	6.2	-4.1	4.0	-2.6	3.2	2.5	1.7	1.1
Exports of goods and services (y-o-y)	6.6	2.0	4.1	-4.3	5.2	4.7	3.8	1.8
Imports of goods and services (y-o-y)	6.8	1.1	4.5	-4.8	4.0	4.1	4.1	2.0
Contribution to GDP growth:								
Domestic demand (y-o-y)	2.4	-0.7	1.5	-2.9	3.6	3.7	1.8	1.1
Inventories (y-o-y)	0.0	0.0	0.1	-0.8	-0.1	0.0	-0.1	0.0
Net exports (y-o-y)	0.4	0.8	0.1	-0.1	1.4	0.9	0.0	0.0
Contribution to potential GDP growth:								
Total Labour (hours) (y-o-y)	0.4	0.2	0.7	0.9	1.0	1.3	1.1	1.0
Capital accumulation (y-o-y)	0.7	0.5	0.4	0.5	0.6	0.6	0.6	0.6
Total factor productivity (y-o-y)	0.7	0.3	0.0	0.1	0.2	0.2	0.2	0.3
Output gap	-0.5	-1.2	-0.7	-4.0	-1.0	1.2	1.1	0.4
Unemployment rate	6.0	5.8	6.7	4.9	4.2	3.5	3.8	3.9
GDP deflator (y-o-y)	2.0	1.0	1.4	1.9	2.4	5.3	6.1	2.6
Harmonised index of consumer prices (HICP, y-o-y)	1.5	1.9	1.2	1.1	2.8	11.6	4.9	3.3
HICP excluding energy and unprocessed food (y-o-y)	1.0	1.7	1.3	2.1	1.6	5.5	7.4	3.4
Nominal compensation per employee (y-o-y)	2.1	2.2	1.5	4.8	2.2	3.9	5.5	4.8
Labour productivity (real, hours worked, y-o-y)	1.6	0.2	0.3	-1.1	1.5	0.4	0.4	0.1
Unit labour costs (ULC, whole economy, y-o-y)	0.4	2.3	0.9	8.5	-0.6	3.3	4.7	4.3
Real unit labour costs (y-o-y)	-1.5	1.3	-0.4	6.4	-3.0	-1.9	-1.3	1.6
Real effective exchange rate (ULC, y-o-y)	-0.5	0.3	-0.2	4.5	-1.1	-0.3	-1.0	0.7
Real effective exchange rate (HICP, y-o-y)	-0.2	-0.5	0.5	1.4	0.2	1.9	.	.
Net savings rate of households (net saving as percentage of net disposable income)	3.0	6.9	10.3	18.8	17.5	.	.	.
Private credit flow, consolidated (% of GDP)	11.9	7.6	3.7	-0.7	11.7	.	.	.
Private sector debt, consolidated (% of GDP)	228.8	243.3	251.5	233.1	229.5	.	.	.
of which household debt, consolidated (% of GDP)	107.9	116.6	108.4	103.8	100.5	.	.	.
of which non-financial corporate debt, consolidated (% of GDP)	120.9	126.7	143.1	129.3	129.1	.	.	.
Gross non-performing debt (% of total debt instruments and total loans and advances) (1)	.	2.4	2.2	1.7	1.3	.	.	.
Corporations, net lending (+) or net borrowing (-) (% of GDP)	8.0	6.9	4.6	2.0	4.0	3.8	6.2	5.9
Corporations, gross operating surplus (% of GDP)	27.3	27.7	27.0	25.3	26.0	27.0	28.6	27.2
Households, net lending (+) or net borrowing (-) (% of GDP)	-2.4	1.4	3.3	6.8	5.7	0.7	1.9	2.0
Deflated house price index (y-o-y)	2.4	-3.7	2.4	6.2	11.2	5.6	.	.
Residential investment (% of GDP)	6.0	4.8	4.0	5.4	5.5	5.4	.	.
Current account balance (% of GDP), balance of payments	7.7	7.2	8.0	5.1	7.3	4.4	5.9	6.1
Trade balance (% of GDP), balance of payments	8.5	8.4	10.0	10.1	10.3	9.4	.	.
Terms of trade of goods and services (y-o-y)	-0.1	-0.5	0.3	0.7	-1.7	-2.9	1.5	0.0
Capital account balance (% of GDP)	-0.4	-0.3	-0.1	0.0	0.1	10.6	.	.
Net international investment position (% of GDP)	-5.5	10.3	59.3	113.0	93.2	75.1	.	.
NENDI - NIIP excluding non-defaultable instruments (% of GDP) (2)	-64.3	-73.2	-33.7	12.9	26.1	22.9	.	.
IIP liabilities excluding non-defaultable instruments (% of GDP) (2)	326.3	387.0	392.8	365.1	336.9	346.9	.	.
Export performance vs. advanced countries (% change over 5 years)	6.9	0.4	-3.2	7.4	5.7	.	.	.
Export market share, goods and services (y-o-y)	-1.5	-2.7	0.2	5.0	-5.0	0.7	1.1	-2.0
Net FDI flows (% of GDP)	4.6	5.8	5.0	-10.1	9.9	8.5	.	.
General government balance (% of GDP)	-0.6	-3.8	-0.3	-3.7	-2.4	0.0	-2.1	-1.7
Structural budget balance (% of GDP)	.	.	-0.1	-1.3	-1.6	-0.7	-2.7	-1.9
General government gross debt (% of GDP)	47.1	59.7	60.0	54.7	52.5	51.0	49.3	48.8

(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 the Netherlands over the short, medium and long term. It follows the same multi-dimensional approach as the European Commission's 2022 Debt Sustainability Monitor, updated based on the Commission 2023 spring forecast.

1 - Short-term risks to fiscal sustainability are low overall. The Commission's early-detection indicator (S0) does not signal major short-term fiscal risks (Table A21.2). ([140]) Gross financing needs are expected to stabilize at around 10% of GDP in the short term (i.e. over 2023-2024), although declining compared with the recent peak in 2020 (Table A21.1, Table 1). Financial markets' perceptions of sovereign risk are investment grade, as confirmed by the main rating agencies.

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

The DSA for the Netherlands shows that, under the baseline, government debt ratio, is projected to increase above 60% over the medium term (at 61.6% of the GDP in 2033). (Graph 1) ([141]), ([142]) The assumed structural primary balance (a deficit of 1.2% of GDP) contributes to these developments. It appears low compared with past fiscal performance, indicating that the country has ample room for corrective action. At the same time, the baseline projections up to 2033 benefit from a still favourable (although diminishing) snowball effect, notably thanks to the impact of Next Generation EU, with real GDP growth at around 0.9% over 2025-2033. Government gross financing needs are expected to slowly increase over the projection period, reaching around 15% of GDP in 2033, above the level forecast for 2024.

The baseline projections are stress tested against four alternative scenarios to assess the impact of changes in key assumptions (Graph 1). For the Netherlands, reverting to historical fiscal trajectories under the 'historical structural primary balance (SPB)' scenario would lead to an improved government debt ratio. If the SPB gradually converged to a balanced budget (its historical 15-year average), the projected debt-to-GDP ratio in 2033 would be close to 8 pps. of GDP below its level in the baseline scenario. A permanent worsening of the macro-financial conditions, as reflected under the 'adverse interest-growth rate differential' scenario (i.e. 1 pp. higher than the baseline) would result in a persistently higher government debt-to-GDP ratio, by 4.5 pps. of GDP by 2033, as compared with the baseline. A temporary worsening of financial conditions, as reflected in the 'financial stress 'scenario (i.e. temporarily increase of interest rates by 1 pp.), would lead to a similar public debt-to-GDP ratio by 2033 compared with the baseline. The 'lower structural primary balance (SPB)' scenario (i.e. SPB level permanently reduced by half of the cumulative forecast change), would also lead to a higher government debt-to-GDP ratio by 2033 (around +3 pps. of GDP) compared with the baseline.

Additionally, stochastic debt projections indicate low risk (Graph 2). ([143]) These stochastic simulations point to 47% probability of the debt ratio in 2027 being greater than in 2022, entailing low risk given the initial low debt level. In addition, such shocks point to low uncertainty (i.e. the difference between the 10th and 90th debt distribution percentiles) surrounding the government debt baseline projections.

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

([141]) The assumptions underlying the Commission's 'no-fiscal policy change' baseline notably comprise: (i) a structural primary deficit, before ageing costs, of 1.2% of GDP as of 2024; (ii) inflation converging linearly towards the 10-year forward inflation-linked swap rate 10 years ahead (which refers to the 10-year inflation expectations 10 years from now); (iii) the nominal short- and long-term interest rates on new and rolled over debt converging linearly from current values to market-based forward nominal rates by T+10 (as for all Member States); (iv) real GDP growth rates from the Commission 2023 spring forecast until 2024, followed by EPC/OGWG 'T+10 methodology projections between T+3 and T+10, i.e. for 2025-2033 (on average 0.9%); (v) ageing costs in line with the 2021 Ageing Report (European Commission, Institutional Paper 148, May 2021). For information on the methodology, see the 2022 Debt Sustainability Monitor (European Commission, Institutional Paper 199, April 2023).

([142]) 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.

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

3 - Long-term risks to fiscal sustainability are medium overall. ([144])

The S2 sustainability gap indicator (at 5.4 pps. of GDP) points to medium risk, suggesting that the Netherlands would need to significantly improve its structural primary balance to ensure debt stabilisation over the long term. This result is underpinned by the projected increase of ageing costs (3.7 pps. of GDP) over the long-term and the initial unfavourable budgetary position (1.7 pps. of GDP). In particular, health care and long-term care expenditure (joint contribution of 2.7 pps. of GDP) are projected to significantly increase, together with pensions spending (+1.1 pp. of GDP) (Table 2). Hence, while a number of investments and reforms in the RRP contributes to supporting the efficiency of the Dutch health system, additional measures may be required to further improve its efficiency and its fiscal sustainability.

Combined with debt vulnerabilities, as highlighted by the S1 indicator, overall long-term risks are assessed as medium. Indeed, the S1 sustainability gap indicator signals that a significant consolidation effort of 3.8 pps. of GDP would be needed to bring debt to 60% of GDP by 2070. This result is mainly driven by the projected increase in ageing costs (contribution of 2.9 pps. of GDP), and, to a lower extent, by the unfavourable initial budgetary position (contribution by 1.2 pps. of GDP) (Table 2).

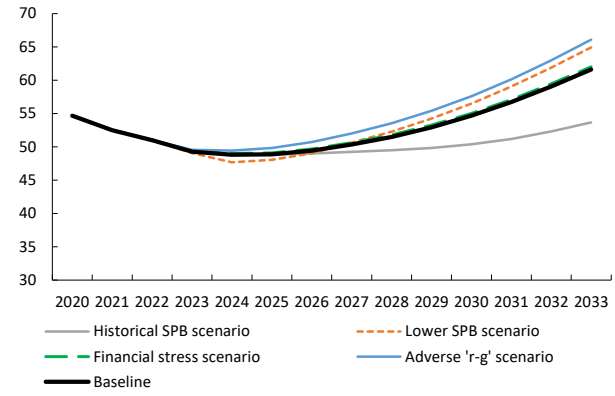
Finally, several additional risk factors need to be considered in the assessment. On the one hand, risk-increasing factors are related to the recent increase in interest rates, the relatively high share of short-term government debt (in total debt), and contingent liabilities stemming from the private sector. On the other-hand, risk-mitigating factors include the lengthening of debt maturity in recent years, relatively stable financing sources (with a diversified and large investor base), and the currency denomination of debt.

([144]) The S2 fiscal sustainability indicator measures the permanent SPB adjustment in 2024 that would be required to stabilise public debt over the long term. It is complemented by a revised S1 indicator, which measures the fiscal gap in 2024 to bring the debt-to-GDP ratio to 60% in the long-term. For both 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 - the Netherlands**

Table 1. Baseline debt projections	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio (% of GDP)	**54.7**	**52.5**	**51.0**	**49.3**	**48.8**	**48.9**	**49.4**	**50.3**	**51.5**	**52.9**	**54.7**	**56.7**	**59.1**	**61.6**
Changes in the ratio	6.1	-2.2	-1.5	-1.7	-0.4	0.1	0.5	0.9	1.1	1.4	1.7	2.1	2.3	2.5
of which														
Primary deficit	3.0	1.8	-0.6	1.4	1.0	1.2	1.4	1.7	1.9	2.1	2.3	2.6	2.8	3.0
Snowball effect	1.7	-3.2	-4.2	-3.1	-1.1	-1.1	-0.9	-0.8	-0.7	-0.7	-0.6	-0.5	-0.5	-0.5
Stock-flow adjustments	1.4	-0.8	3.3	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross financing needs (% of GDP)	14.1	11.4	12.0	10.7	10.1	10.6	11.0	11.5	12.0	12.5	13.1	13.8	14.6	15.3

Graph 1. Deterministic debt projections



Graph 2. Stochastic debt projections 2023-2027

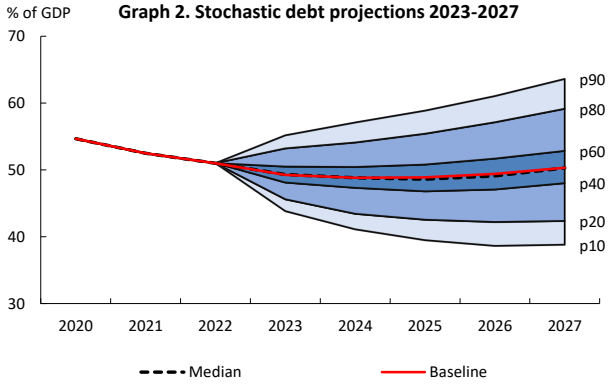


Table 2. Breakdown of the S1 and S2 sustainability gap indicators

		S1	**S2**
Overall index (pps. of GDP)		**3.8**	**5.4**
of which			
Initial budgetary position		1.2	1.7
Debt requirement		-0.2	
Ageing costs		2.9	3.7
of which	*Pensions*	0.9	1.1
	Health care	0.5	0.6
	Long-term care	1.6	2.1
	Others	-0.1	-0.1

Source: Commission services.

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

Short term	**Medium term - Debt sustainability analysis (DSA)**								**Long term**		
Overall (S0)	**Overall**		**Deterministic scenarios**					**Stochastic projections**	**S2**	**S1**	**Overall** (S1 + S2)
			Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress				
LOW	**MEDIUM**	Overall	**MEDIUM**	**LOW**	**MEDIUM**	**MEDIUM**	**MEDIUM**	**LOW**	**MEDIUM**	**MEDIUM**	**MEDIUM**
		Debt level (2033), % GDP	61.6	53.7	64.9	66.1	62.0				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	94%	85%	96%	94%	94%				
		Probability of debt ratio exceeding in 2027 its 2022 level						47%			
		Difference between 90th and 10th percentiles (pps. GDP)						24.8			

(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

The Macroeconomic Imbalance Procedure matrix presents the main elements of the in-depth review undertaken for the Netherlands ([145]). The Netherlands was selected for an in-depth review in the 2023 Alert Mechanism Report. This in-depth review on the prevention and correction of macroeconomic imbalances presents the main findings on the gravity and evolution of the challenges identified, as well as policy responses and potential policy needs. Findings cover all areas of vulnerability assessed in the in-depth review.

The Netherlands is still facing vulnerabilities relating to a high current account surplus and high private debt. The persistent current account surplus is one of the highest in the euro area and well above levels justified by fundamentals. Data revisions have shifted the recent years' surplus downwards by between 1.2 and 2 percentage points without significantly affecting its dynamics. After peaking at 7.3% of GDP in 2021, the surplus decreased to 4.4% in 2022 mainly due to worsening terms of trade resulting from high energy prices, and to a deteriorating primary income balance. However, a substantial surplus in trade of goods and services remains the main driver of the surplus. Private debt levels remain high despite continuing their downward trend, standing at 215% of GDP in 2022, due to both high NFC debt and high household debt. The latter is especially problematic as it makes households vulnerable to economic shocks, given that house prices seem to be overvalued and strong house price increases over the past years have been associated with rising nominal mortgage debt.

The current account surplus and private debt levels are expected to remain high. Largely dependent on the evolution of terms of trade, the Dutch current account surplus is expected to rebound to around 6.1% of GDP by 2024. Structural drivers underpinning high households and corporate savings are expected to continue to contribute to the current account surplus. Regarding private debt, the moderate downward trend is expected to continue with levels remaining well above benchmarks and EU averages. The housing market continues to exhibit substantial distortions in favour of debt-financed home ownership, the main structural driver of high household debt. With households' borrowing capacity shrinking as a result of the higher mortgage rates, house prices have decreased by around 5.1% between the peak in prices in July 2022 and March 2023. Due to high growth in recent years, house prices continue to be considerably overvalued despite the recent decrease.

Policy progress has been limited. The impact of recent policy steps on the structural drivers of the savings surplus is likely to remain small. Tighter capital-based macroprudential measures introduced in 2021 have been extended in 2022. These measures set a floor for risk-weights on mortgages for banks and are expected to continue to discourage mortgage lending by banks to some degree but their effect on household debt levels is also expected to remain limited. Other policy measures on the housing market are also unlikely to structurally address high household debt. The authorities have focused their policy efforts on the supply side of the housing market, while steps to reduce the debt-bias remain insufficient. New policies announced by the authorities furthermore risk undermining the development of the private rental market further. Notably, the expansion of rent controls in the private sector could decrease the attractiveness of the sector for investors and lead to lower supply in this segment of the housing market. This risks increasing the bias toward debt-financed homeownership further. Good progress has been made on reducing the incentives for firms to accumulate debt and to limit the possibilities for firms to use the Netherlands as a conduit country for tax purposes, contributing to moderately decreasing corporate debt levels.

Based on this assessment, the Commission considered in its communication European Semester – 2023 Spring Package (COM(2023) 600 final) that the Netherlands continues to experience imbalances.

([145]) European Commission (2023), In-Depth Review for the Netherlands, Commission staff working document (COM(2023) 640 final), in accordance with Article 5 of Regulation (EU) No 1176/2011 on the prevention and correction of macroeconomic imbalances.

Table A22.1:**Assessment of macroeconomic imbalances matrix**

	Gravity of the challenge	Evolution and prospects	Policy response
	Unsustainable trends, vulnerabilities and associated risks		
Current account balance	The Netherlands is running persistent current account surpluses, that are among the highest in the euro area and well above levels justified by fundamentals. A high surplus in trade in goods and services is the main contributor. The slight downward trend in the goods surplus over the past years has been compensated by upward trending surpluses in services trade. From a sectoral perspective, non-financial corporations and household savings are the main drivers. This pattern is linked to the strong presence of multinationals in the Netherlands and high levels of intra-group debt as well as high mandatory pension savings for households accompanied by deleveraging pressures after the global financial crisis.	The current account surplus, after a rebound to 7.3% of GDP in 2021, decreased to 4.4% in 2022. Worsening terms of trade as a result of high energy prices and lower primary income balance have led to the decrease in the Dutch current account surplus in 2022. Data revisions due to a corrected recording of R&D expenses and a more accurate recording of foreign enterprise ownership have shifted the surplus for the recent years down by between 1.2 and 2 percentage points. The current account surplus is forecast to rebound to 5.9% in 2023 and 6.1% in 2024. Structural drivers underpinning high household and corporate savings are expected to continue to contribute to the current account surplus.	The impact of recent policy steps on the structural drivers of the savings surplus is likely to remain limited. High mandatory savings imposed by the second-pillar pension system remain unaffected by the pension reform to be fully implemented by 2027. With regard to the corporate sector, a tax reform by which debt owned by controlling shareholders to their companies is partially taxed has been in force since January 2023. However, in practice the reform may only lead to a statistical effect, shifting part of small companies' savings surplus to the household sector. Policy needs remain regarding the stimulation of domestic investments.
Private debt	Private debt in the Netherlands stood at 215% of GDP in 2022. Both corporate and household debt have been exceeding prudential and fundamental benchmarks by wide margins and are exceptionally high compared to the rest of the EU. Household debt is largely composed of mortgage debt, to a substantial degree driven by distortions on the housing market that favour debt-financed home ownership. NFC indebtedness is largely driven by intra-group cross-border debt of multinationals and hence represents a lower risk than the headline number would suggest.	After an uptick in 2020, private debt in the Netherlands is continuing on its downward path. Total private debt decreased from an average of 252% of GDP over 2013-2019 to 215% in 2022. Household debt is decreasing due to deleveraging pressures after the financial crisis. Decreasing NFC debt is driven by tax measures taken by the government that limit incentives for corporations to accumulate debt as well as the attractiveness of the country as a seat for their headquarters. Despite positive growth of credit flows to the private sector in 2021 and 2022, the private debt-to-GDP ratio has decreased on the back of real GDP growth and high inflation. Private debt as a percentage of GDP is expected to continue decreasing moderately while remaining exceptionally high compared to the rest of the EU. Mortgage growth is expected to moderate due to falling property transactions and prices.	Some policy progress has been made in response to the identified private debt vulnerabilities. Macroprudential measures and slight reductions of incentives for debt-financed home ownership implemented after the financial crisis have contributed to the downward trend in private debt, but substantial distortions remain and would need to be addressed to significantly lower household debt.Tighter capital-based macroprudential measures introduced in 2021 have been extended in 2022. These measures set a floor for risk-weights on mortgages for banks and are expected to continue to discourage mortgage lending by banks to some degree. A tightening of borrower-based macroprudential measures is not expected. Good progress has been made on reducing the incentives for firms to accumulate debt and to limit the possibilities for firms to use the Netherlands as a conduit country for tax purposes.
Housing Market	House prices nearly doubled in the past ten years and the housing market in 2022 was overvalued by 24%. The housing market is characterisd by significant incentives for debt-financed homeownership, in particular this concerns the deductability of mortgage interest payments from taxeable income. The private rental market, squeezed between a subsidized owner-occupied market and a large and not sufficiently means-tested social rent sector, is relatively small and underdeveloped. The favourable tax treatment of owner-occupied houses drives up house prices and contributes to the large mortgage debt position of Dutch households.	House price growth was substantial in 2021 and 2022, reaching 15% and 13.4% respectively. Factors underpinning this strong growth include notably the low mortgage interest rates, the favourable tax treatment of homeownership, and insufficient and inelastic housing supply. With financial conditions tightening and mortgage intrest rates increasing singificantly, the housing market appears to have reached a turning point. House prices have decreased by around 5.1% between the peak in July 2022 and March 2023 and further moderate decreases are expected in 2023 and 2024. Housing affordabilty is however not expected to improve as the effect of the increase in mortgage rates more than offsets the decrease in house prices.	The authorities have focussed their policy efforts on the supply side of the housing market, while steps to reduce the debt-bias in the housing market remain insufficient. On the supply side, the authorities are taking measures to build 900 000 new dwellings by 2030. While these plans are ambitious, high inflation, labour shortages and environmental requirements related to nitrogen could in practice lead to delays in delivering new dwellings. On the demand side, mortgage interest deductibility has gradually been reduced but remains generous. The intention of the authorities to regulate rent in the private rental market and thereby improve affordability risks decreasing the attractiveness of the sector for investors and could undermine supply.

Source: European Commission