POLICY BRIEF

Eurofound

Promoting social cohesion and convergence

The EU and G20: A two-decade journey of socioeconomic, digital and green transformation

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Introduction

The European Union, with its substantial economic clout and international influence, occupies a critical position on the world stage. Representing nearly 15% of global gross domestic product (GDP) and 14% of international trade, the EU's actions reverberate throughout the global economy. Its role within the G20, a forum encompassing the world's largest economies, further amplifies its impact in shaping international economic policy and addressing global challenges.

However, the geopolitical landscape has undergone a profound transformation in this century. The rise of emerging economies, particularly those of China and India, has led to a relative decline in the dominance of traditional Western powers. This shift underscores the importance of multilateralism and cooperation in navigating an increasingly multipolar world. The G20, as a platform for dialogue and collaboration among diverse economies, assumes greater significance in this context.

The G20, or Group of Twenty, is an intergovernmental forum comprising 19 countries,[1] the African Union and the EU, accounting for 80–85% of global GDP and at least 75% of global trade.

Understanding the EU's comparative position within the dynamic environment of the G20 by analysing convergence among its members across key socioeconomic dimensions provides insights into the EU's progress and challenges. Convergence, or the narrowing of gaps between countries, serves as a critical indicator of progress towards a more equitable and sustainable world. It signals inclusive growth, reduced inequalities and, perhaps, stronger global cooperation.

This policy brief adopts a multidimensional approach to assess the EU's standing within the G20. It looks in detail at developments in the Human Development Index (HDI) to gauge progress in health, education and national income, as well as examining labour market, digital and environmental dimensions.

By analysing trends in a range of indicators and examining convergence patterns, this policy brief aims to shed light on the EU's trajectory in the global context since 2000. The analysis provides valuable insights into the EU's strengths and weaknesses, enabling policymakers to identify areas for improvement and to capitalise on opportunities for further progress.

1 Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Türkiye, the United Kingdom (UK) and the United States (US).

Policy context

Megatrends are reconstituting the geopolitical order. Globalisation since the 1990s has facilitated the rise of emerging economies, particularly those of China and India. Digitalisation and action to combat climate change are shaping economic dynamics by driving innovation, economic growth and sustainable development, while also creating new challenges in terms of labour market participation, digital divides, technological competition and equitable climate action.

Understanding the EU's standing in relation to other G20 members and the evolution of its position over time is crucial for shedding light on the EU's challenges in the context of a multipolar world.

In an increasingly interconnected world subject to global forces, the concept of upward convergence – improvement in countries' performance in respect of key socioeconomic indicators and reduction in disparities between them – has emerged as a central concern in Europe and globally.

Upward convergence is at the core of the EU project. The World Bank in 2012 described the EU as a 'convergence machine' because of its capacity to propel the economic growth of low-income Member States, putting them on a path to catch up with their wealthier counterparts and narrowing economic disparities between them.

Moreover, the launch of the European Pillar of Social Rights in 2017, comprising 20 principles to strengthen citizens' social rights, contributed to broadening the focus of EU policymakers to encompass upward social convergence as much as economic convergence. The Pillar's Action Plan sets targets for employment, training and poverty reduction to be achieved by 2030.

Beyond the social agenda, tackling environmental harm and propelling digitalisation have become core policy objectives of the EU: 'A Europe fit for the digital age' was one of six political priorities of the first von der Leyen Commission, and the European Green Deal aims to transform the EU into a 'modern, resource-efficient and competitive economy'. Other, longer-standing, initiatives aim to increase employment and create more and better jobs (the European employment strategy) and to promote quality education for all (the European Education Area). The EU Global Health Strategy has set goals for the better health and well-being of people across the life course, the strengthening

of health systems and the advancement of universal health coverage. The strategy's One Health approach seeks to 'better prevent, predict, prepare for, detect, and respond to global health threats at both global and EU level'.

These strategies aim to promote not only economic growth but also social inclusion, digital transformation and environmental sustainability, recognising the interconnectedness of these dimensions and reflecting the need for a holistic approach to upward convergence.

At global level, the pursuit of upward convergence is not merely an abstract ideal and is no longer viewed solely through an economic lens. In narrowing socioeconomic gaps between countries, convergence strengthens the global economy, fosters social cohesion and facilitates effective multilateral action on shared challenges such as climate change.

The United Nations Sustainable Development Goals (SDGs) underscore the shift to a holistic approach by outlining a comprehensive agenda encompassing economic, social, environmental and institutional aspects of development. The SDGs were established in 2015 by the international community as part of the UN 2030 Agenda for Sustainable Development, through which countries of the world collectively pledged to eradicate poverty, find sustainable and inclusive development solutions, safeguard everyone's human rights, and generally ensure that no one is left behind by 2030.

While monitoring disparities among Member States is essential to keeping the European upward convergence machine on track, comparing the EU's performance with that of other G20 members and examining convergence among them offer insights into how the EU is faring in comparison with other global actors, the main changes at global level in recent decades and which countries have fared better, or worse, than others.

Key findings

- The G20 members converged towards better performance in key aspects of human development between 2000 and 2021, with increased scores on the HDI. This was driven primarily by China's rapid improvement. The EU, however, experienced a relative decline in its ranking among the members in this period. This was mainly due to slower growth in national income and life expectancy compared with some peers, although the EU maintained a strong position in education.
- Convergence towards higher life expectancy among the G20 was evident until the COVID-19 pandemic disrupted the trend. The EU performed relatively well during the pandemic but experienced a slight decline in its overall ranking. Notably, disparities increased after 2019, reflecting the varying impacts of the pandemic across countries.
- In terms of human capital, clear convergence in both expected and mean years of schooling was observed, with less-developed countries making progress in catching up with the top performers. The EU improved continuously and was among the top performers.
- In the economic dimension, the performance of the G20 members overall improved. The negative effects of the economic crisis and the COVID-19 pandemic are clearly visible in the data, mainly hitting Western economies. Convergence in gross national income (GNI) per capita occurred as poor-performing countries – especially China – caught up with the best performers. The EU experienced moderate growth, but this was outpaced by the growth of some emerging economies, leading to a relative decline in the EU's position within the G20.
- Results were mixed in respect of convergence in labour market participation. While disparities between G20 members decreased, poor-performing countries were not found to be catching up with better-performing members in terms of the percentage of the working-age population in employment. The EU showed moderate improvement but remained among the poorer performers. In contrast, convergence was evident in female labour force participation, where the EU27 was among the top performers. Gains were made by some emerging economies, especially Saudi Arabia, Türkiye and Mexico.
- In terms of digital adoption, strong convergence was observed in both fixed broadband subscriptions and internet use, with less-developed countries catching up rapidly. The EU made substantial progress but was surpassed by some countries with faster growth rates.
- Total greenhouse gas (GHG) emissions among the G20 increased, mainly driven by China, and the members did not converge over 2000–2020. On the other hand, per capita GHG emissions decreased slightly, mainly driven by reductions in developed economies such as the EU. These reductions, combined with increases in emerging economies, lessened differences between members, leading to convergence but not upward convergence. This finding highlights the challenge of balancing economic growth with environmental sustainability.

Exploring the evidence

Scope of the study

This policy brief investigates the EU's global standing in key dimensions of social and economic progress through an examination of convergence among the G20 members. Several indicators are analysed in this exercise, including the HDI and its components, as well as indicators of labour market participation, digitalisation and emissions reduction.

The HDI was developed by the United Nations Development Programme (UNDP) in 1990 as an alternative to GDP. While for decades GDP has been taken as a point of reference for measuring countries' development and progress, it fails to capture the multifaceted nature of human well-being, overlooking crucial aspects such as health, education and quality of life. The introduction of the HDI revolutionised the way we conceptualise and measure development.

The HDI is a composite index that assesses a country's achievements in three fundamental dimensions of human development:

- **long and healthy life**, measured by life expectancy at birth and reflecting the overall health and longevity of a population
- **knowledge and education**, encompassing both mean years of schooling for adults and expected years of schooling for children, gauging the educational attainment and opportunities available to a society
- **decent standard of living**, represented by GNI per capita, reflecting the economic resources available to individuals for a fulfilling life

The scores for the three HDI dimensions are aggregated into a composite index using the geometric mean.[2]

In addition to the HDI, to provide a more comprehensive understanding of societal dynamics within the G20, the analysis

2 The geometric mean is an average obtained by multiplying a set of numbers and then taking the square root if there are two numbers, the cube root if there are three numbers, and so on.

investigates the labour market, digital and environmental dimensions.

Labour market participation not only contributes to individual income and economic security but also fosters social inclusion, skills development and gender equality. Incorporating digital and green indicators is essential because they represent crucial facets of contemporary development and societal well-being. The digital revolution has transformed how we live, work and interact, making access to and effective use of digital technologies a key determinant of economic opportunities, social inclusion and overall quality of life. Similarly, the urgency of addressing climate change and promoting environmental sustainability necessitates incorporating green indicators into any comprehensive assessment of progress.

Measuring convergence

Measuring convergence is the process of calculating change in disparities in countries' performance in respect of a given indicator. Three statistical measures are typically used to capture convergence, each estimating different aspects of it: beta-, sigma- and delta-convergence.

- **Beta-convergence** measures whether countries whose performance is poor initially improve faster than better-performing countries. This process is referred to as catching up.
- **Sigma-convergence** refers to the overall reduction in disparities among countries over time, measured by the evolution of statistical measures of dispersion, such as the standard deviation or the coefficient of variation. A decrease in the standard deviation or coefficient of variation over time indicates convergence.
- **Delta-convergence** measures countries' distance from the best-performing country. Delta-convergence is usually measured using the sum of the distances between countries and the top performer.

The analysis investigates convergence among the members of the G20, one of which is the EU27. The three EU Member States that are members of the G20 – France, Germany and Italy – are included in the EU27 and are not analysed separately. It should be noted, however, that that an average value can mask underlying differences among the EU Member States. The African Union was excluded from the analysis due to lack of available data.

While measuring convergence at G20 level is methodologically straightforward, challenges arise in terms of data availability and comparability. G20 countries differ significantly in data collection methodologies, definitions and reporting standards. Straightforward concepts such as employment or poverty can have varying definitions across countries. To overcome the hurdles posed by data heterogeneity and to provide unbiased estimates, data produced by international organisations such as the World Bank and the International Labour Organization (ILO) were used for the analysis. While this allowed the use of harmonised data, it restricted data availability to a small number of indicators, which might not be usual in the European context. The set of indicators analysed and their sources are shown in Table 1.

Table 1: Indicators used in the analysis

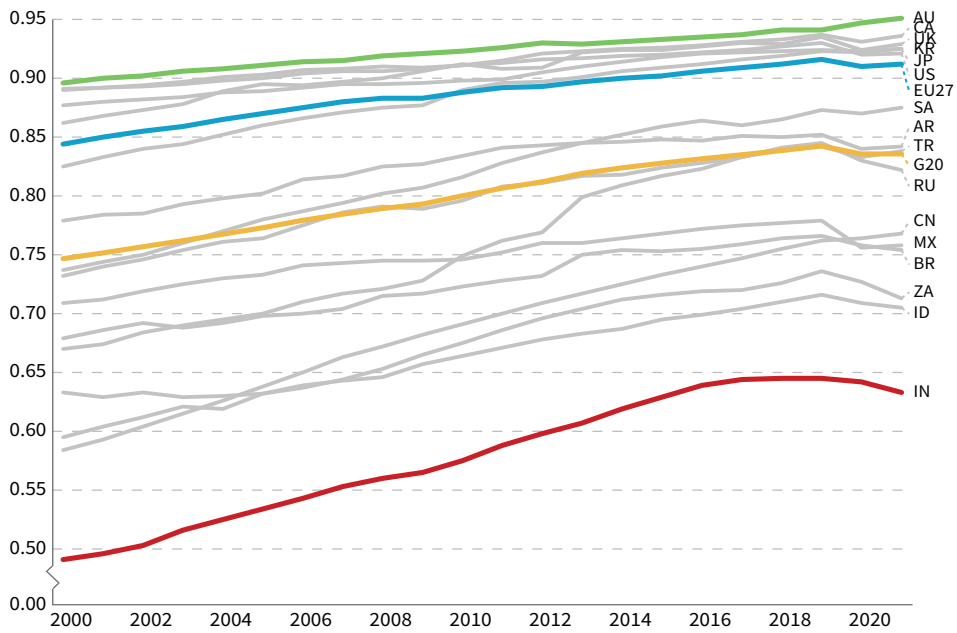
Indicator name	Time period	Source	Associated SDG
HDI	2000–2021	UNDP	3 and 4
Life expectancy at birth	2000–2021		3
Expected years of schooling	2000–2021		4
Mean years of schooling	2000–2021		4
GNI per capita	2000–2021		8
Employment-to-population ratio	2000–2023	ILO Modelled Estimates and Projections database, Ilostat	8
Female labour force participation rate	2000–2022	World Development Indicators database, World Bank. Estimates are based on data obtained from the ILO and UNDP.	8
Fixed broadband subscriptions	2000–2022	World Telecommunication/ICT Indicators Database, International Telecommunication Union	17.8
Internet use	2000–2022		17.8
Total GHG emissions	2000–2020	Climate Watch Historical GHG Emissions (1990–2022), World Resources Institute	13.2.2
GHG emissions per capita	2000–2022		13.2.2

Human Development Index

HDI scores range from 0 to 1, where a high value signals better country performance.

In 2021, among the G20 countries, Australia had the highest HDI score (0.951), followed by Canada (0.936) and the UK (0.929). Performance was poorest in India (0.633), Indonesia (0.705) and South Africa (0.713). The EU27 score (0.912) was close to the best performer, well above the average of 0.835, and the EU ranked seventh in the group (Figure 1).

Figure 1: HDI scores, G20 members, 2000–2021

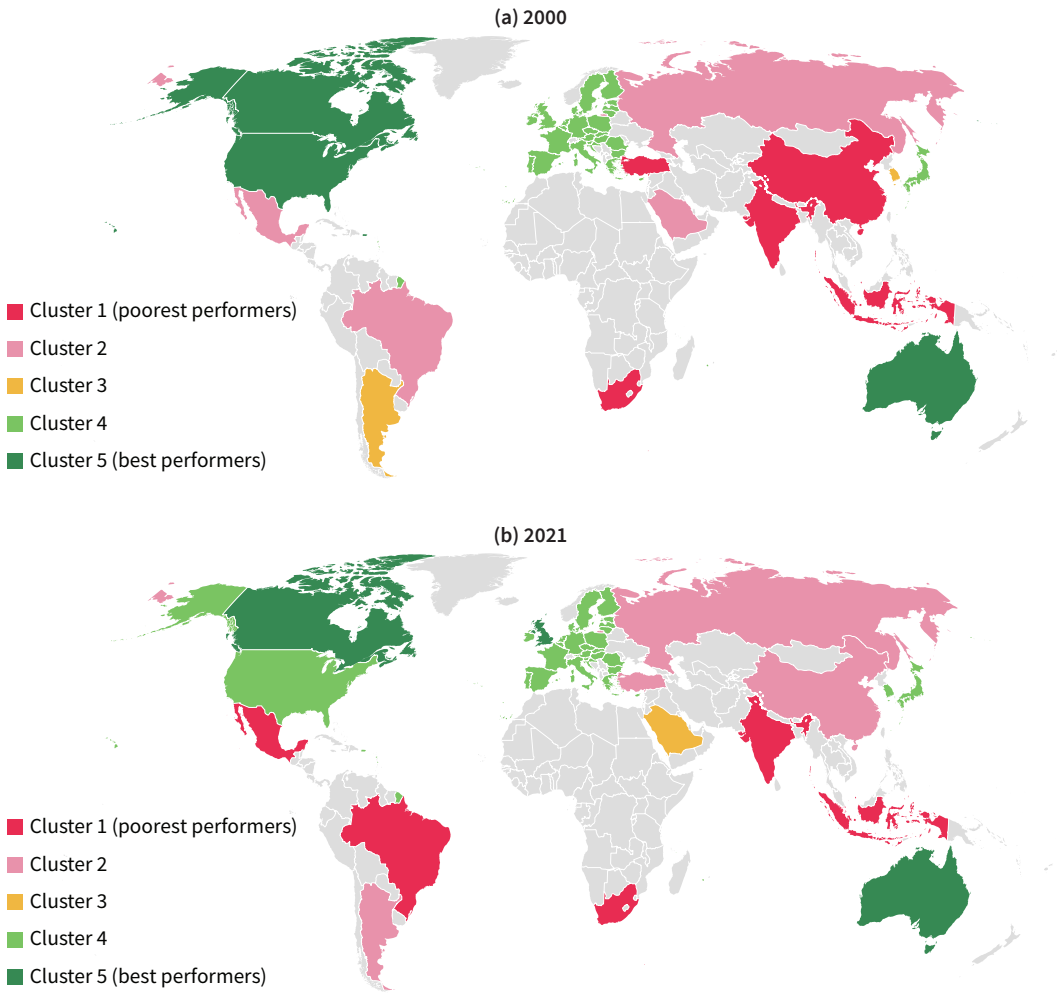


Note: *A guide to the country codes is provided on p. 24.*
Source: *UNDP*

The EU27 grew faster than the average, together with Australia, the UK, South Korea, Türkiye and Saudi Arabia. The performance of the Latin American countries – Argentina, Brazil and Mexico – as well as South Africa and Indonesia grew at a slower rate than the average.

Over 2000–2021, there was an overall improvement in the HDI for all the G20 members. However, clustering members into five performance groups, based on quintiles, and analysing changes from 2000 to 2021 uncovers varying growth trajectories within the group. As Figure 2 illustrates, some G20 members ascended the clusters, while others slipped back. Notably, the UK joined the top performers in Cluster 5; South Korea moved up from Cluster 3, the middle group, to Cluster 4; and China improved its position, moving from the lowest cluster to the second cluster. The EU27 remained in Cluster 4, while the US experienced a decline, dropping back one cluster. Brazil dropped from Cluster 2 to Cluster 1, the poorest performers.

Figure 2: HDI performance of G20 members, by cluster, 2000 and 2021



Source: *UNDP, authors' calculations*

The movement of countries across clusters did not hinder convergence, and poor performers overall are catching up with better performers. This process has been driven mainly by China's economic growth, which is analysed in more depth in the section on GNI per capita below.

Disparities between the G20 members decreased during the period, with a small halt in 2020–2021, presumably due to the COVID-19 pandemic, which is apparent in the data on all countries, excluding Australia and China. The distance of countries from the best performer decreased as well.

Despite the EU27's better-than-average improvement, it is not among the top performers in the HDI indicator and was overtaken by South Korea during the period. To better understand the country-specific dynamics and how they influence convergence, the following sections present a breakdown of the HDI components: health, education and income.

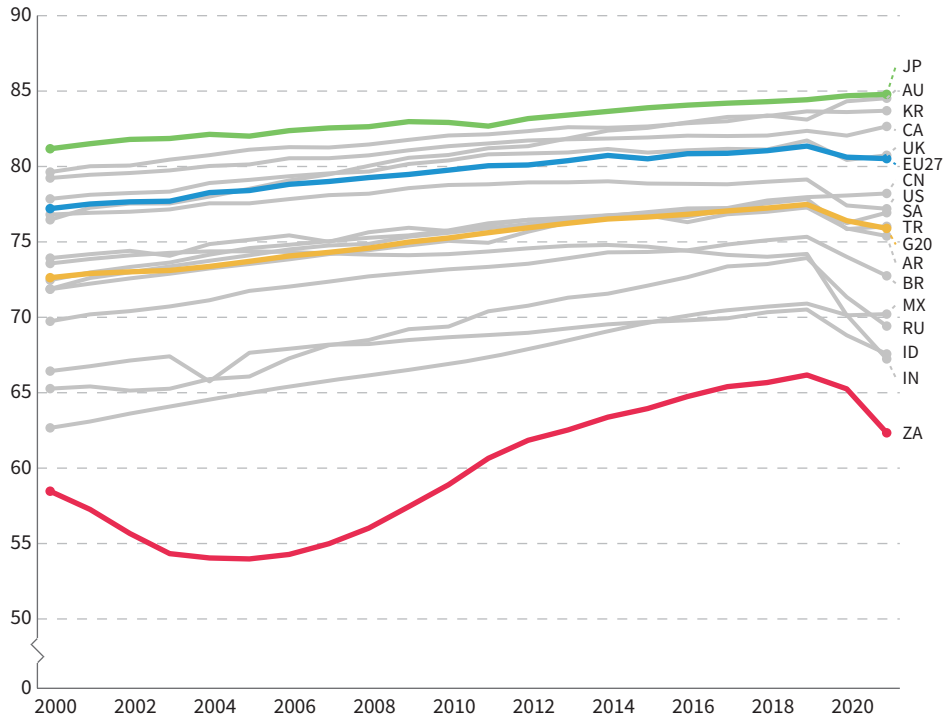
Long and healthy life

Life expectancy at birth

In 2000, life expectancy at birth in the EU27 was 77.2 years, and it grew continuously over the subsequent period, peaking in 2019 at 81.4 years (Figure 3). Between 2019 and 2021, before and after the outbreak of COVID-19, the EU experienced a decrease of 0.83 years. The EU's position in the G20 in respect of this indicator fell from fifth place in 2000 to sixth in 2021.

The top performers in 2000 were Japan (81.2 years), Australia (79.3 years) and Canada (79.2 years). In 2021, the top performers were Japan (84.8 years) and Australia (84.5 years) again, while South Korea (83.7 years) moved into third place. The shortest life expectancies

Figure 3: Life expectancy at birth, G20 members, 2000–2021



Note: *A guide to the country codes is provided on p. 24.*
Source: *UNDP*

in 2000 were in South Africa (58.5 years), India (62.7 years) and Russia (65.3 years); at the end of the period, South Africa (62.3 years) and India (67.2 years) once again had the lowest figures, followed by Indonesia (67.6 years).

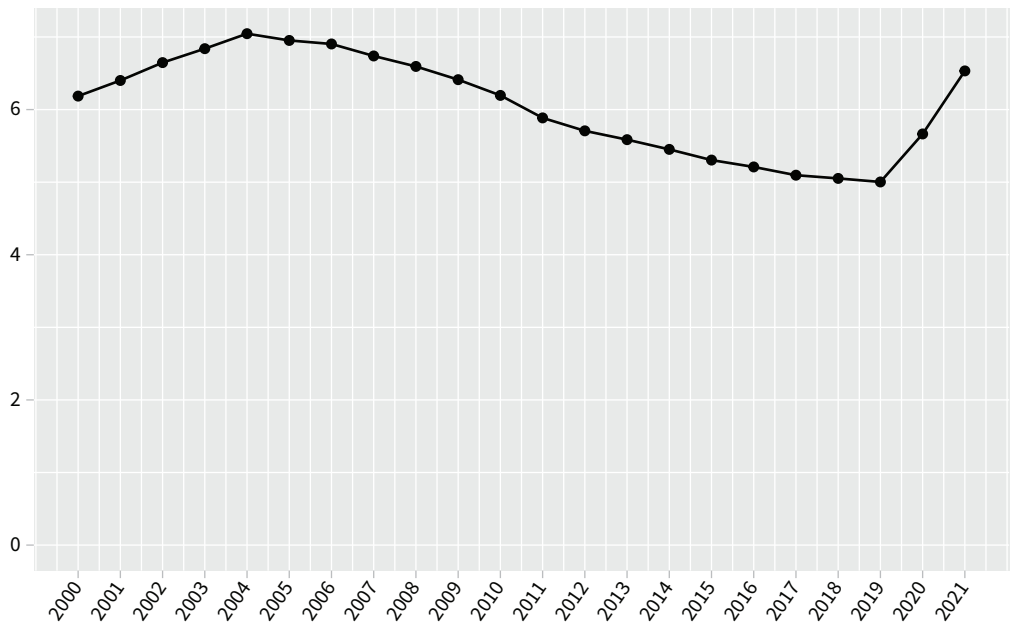
South Africa is the only country in the G20 that had a significant drop in life expectancy in this period. Life expectancy began to fall in the 1990s, and this continued into the early and mid-2000s, caused primarily by a rise in mortality due to the HIV/AIDS pandemic and the lack of available treatment. With the introduction of suitable treatment, life expectancy at birth started to recover (Kabudula et al, 2021).

The largest absolute improvements between 2000 and 2021 were reported by South Korea (+7.2 years), which moved to the top cluster; China (+6.3 years), which moved one cluster up; and Australia (+4.9 years). Mexico is the only country that reported a decline in life expectancy.

Due to the COVID-19 pandemic, during 2020–2021, a marked decrease in life expectancy was recorded. The greatest decreases were observed in Mexico (-4.1 years), which moved to the second lowest cluster in that period, Russia (-2.6 years) and Türkiye (-2 years). India and Indonesia also reported significant decreases in life expectancy associated with the pandemic. The EU performed comparatively well, with a small decrease of 0.7 years. No negative impact is visible in the data for Australia, China or Japan.

While a significant catching up of countries with low life expectancy to those that have high life expectancy can be observed during 2000–2019, this convergence disappears in 2021. That reflects the different degrees of severity of the pandemic among different countries and the different capabilities of countries in dealing with such a severe public health crisis. In terms of absolute disparities (sigma-convergence), a similar trend is evident: disparities decreased overall between 2000 and 2021 among the G20, but a substantial increase is evident after 2019 (Figure 4).

Figure 4: Trend in overall disparities in life expectancy (sigma-convergence), G20, 2000–2021



Source: *UNDP, authors' calculations*

Knowledge and education

The dimension of knowledge and education is captured by two indicators in the HDI: mean years of schooling for adults and expected years of schooling for children. Here we examine developments in the first of those indicators.

Mean years of schooling

This indicator measures the average number of completed years of education of a country's population aged 25 and older (years spent repeating grades are excluded). It reflects the education level of the current population as opposed to the future level of education, which is captured by the number of expected years of schooling. It is a measure of a country's success in educating its population.

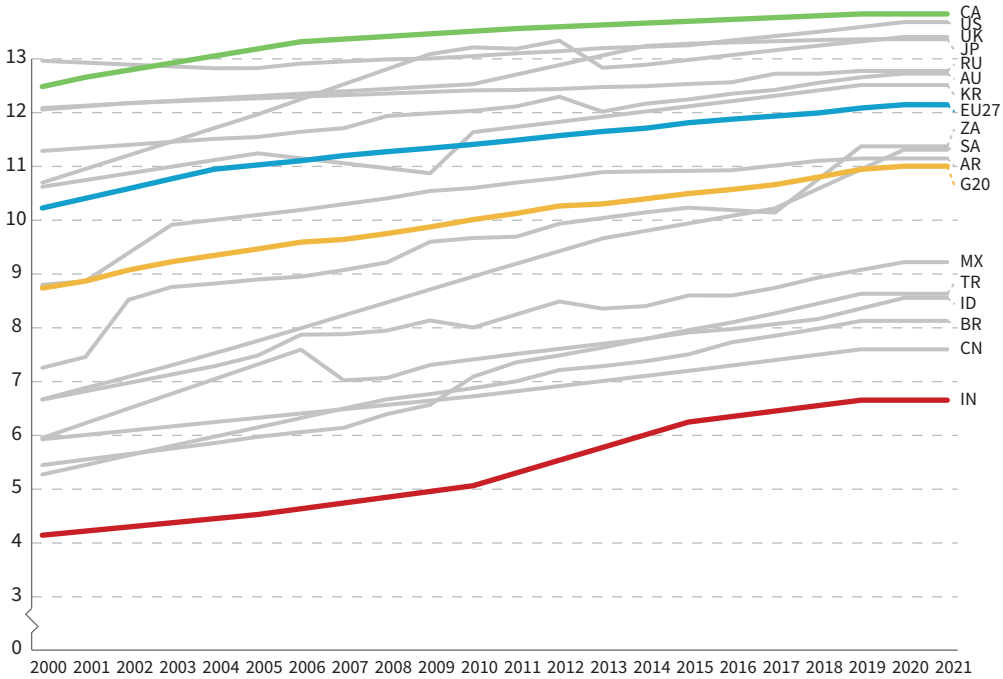
In both 2000 and 2021, the EU27 was ranked eighth in terms of mean years of schooling among the G20. Its performance improved continuously throughout the years, starting at 10.2 years in 2000 and standing at 12.1 years in 2021 (Figure 5).

In 2021, the unweighted G20 average of the indicator was 11 years, an increase of 2.3 years in comparison with the value recorded in 2000.

The top performers in 2000 were the US (13 years), followed by Canada (12.5 years) and Japan (12 years). However, in 2003 Canada replaced the US at the top and remained there up to 2021, with an average of 13.8 years of schooling.

India reported the poorest performance at both the start and end of the period examined but improved nevertheless from 4.1 years in 2000 to 6.7 years in 2021. Other countries that ranked low but also reported increases include China, where mean years of schooling rose

Figure 5: Mean years of schooling, G20 members, 2000–2021



Note: *A guide to the country codes is provided on p. 24.*
Source: *UNDP*

from 5.9 years in 2000 to 7.6 years in 2021; Brazil, which saw an increase from 5.3 to 8.1 years; and Indonesia, where the indicator rose from 6 to 8.6 years. The countries with the greatest improvements over the period were Saudi Arabia (+4.6 years, to 11.3 years in 2021), South Africa (+4.1 years, to 11.4 years in 2021) and Türkiye (+3.1 years, to 8.6 years in 2021).

In terms of convergence, poorer-performing countries have been catching up with the best-performing ones, while overall disparities and the average distance from the top-performing country have decreased over time.

A similar convergence pattern is observed for the other HDI education component, expected years of schooling.

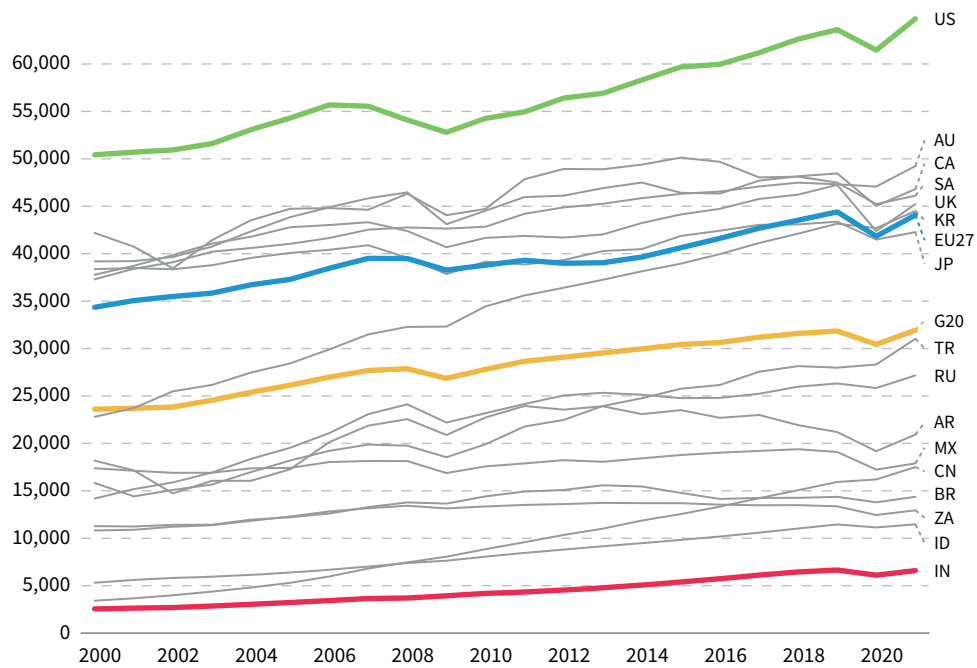
Decent standard of living

GNI per capita

GNI is calculated by taking the figure for GDP and adding net income received from abroad. The latter includes compensation for employees, property income and net taxes minus production subsidies.[3] GNI per capita is measured in 2017 purchasing power parity in the UNDP HDI database.

Figure 6 illustrates the trends in GNI per capita among the G20 members over 2000–2021. It grew continuously in the EU, with an average growth rate of 1.2%. In 2000, with a GNI per capita of $34,349 (€30,883 as of 23 September 2024), the EU ranked seventh in the G20. The figure reached $44,081 (€39,633) in 2021, and the EU retained its initial position relative to the other G20 members.

Figure 6: GNI per capita, G20 members, 2000–2021 ($)



Note: *A guide to the country codes is provided on p. 24.*
Source: *UNDP, authors' calculations*

3 Compensation of employees from abroad refers to earnings by residents who live in their home country but work abroad or who work abroad temporarily, such as seasonal workers, while their main economic interest remains in their home country. Property income from or to other countries encompasses interest, dividends and retained earnings of foreign businesses partially or wholly owned by domestic enterprises, and vice versa.

The US was the top performer throughout the whole timespan and had a GNI per capita of $64,765 (€58,230) in 2021. Next in the ranking are Australia with $49,238 (€44,269) and Canada with $46,808 (€45,084). In 2000, the top performers were the US ($50,421; €45,333), Saudi Arabia ($42,138; €37,886) and Canada ($39,187; €35,233). The US economy grew at a similar rate to that of the EU, with an average growth rate of 1.2%.

In 2000, the poorest-performing countries were India, China and Indonesia, with a GNI per capita of less than $10,000 (€9,076). Due to high growth rates in China, peaking in 2008 at 14.1%, the country rose in the ranking and was fifth from the bottom in 2021. In that year, the lowest GNI per capita was reported by India ($6,590; €5,925), followed by Indonesia and South Africa, where the figure surpassed the $10,000 (€8,991) mark.

The G20 unweighted average of GNI per capita grew from $23.609 (€21,227) in 2000 to $31.935 (€28,713) in 2021, but the growth trend clearly shows the negative effects of the financial crisis in 2008 and of the COVID-19 pandemic.

Due to the crash of financial markets in 2008 and its economic consequences, negative growth rates were reported in the EU in 2008 (-0.04%) and 2009 (-3.0%). GNI per capita started to recover in 2010 and 2011 but decreased slightly (by -0.7%) in 2012, which is probably associated with the sovereign debt crisis. The greatest negative short-term effects of the financial crisis, measured by the absolute decline in GNI over 2008–2010, were reported in Canada, Saudi Arabia, Russia, the UK and the EU27.

The COVID-19 pandemic in 2020, which caused economic downturns around the globe, severely affected the EU's economy, reflected in a negative growth rate of -5.8%, interrupting the previous upward trend. The largest absolute declines in GNI per capita associated with the pandemic were witnessed in the UK, Canada and the EU27.

Convergence analysis yields different results depending on the measure used. Significant beta-convergence is observed, indicating that the poorest-performing countries on average have been catching up with the best performers. A closer examination of individual growth rates over time suggests that convergence was mainly driven by the exceptional growth rate of China as well as high growth rates in India, Indonesia, Russia, South Korea and Türkiye. The growth rates of these countries are much higher than those recorded by high-income G20 members such as the US and the EU27. Growth rates in Argentina, Brazil, Mexico and South Africa were below the G20 average relative to their initial level of GNI per capita.

Overall disparities between G20 countries and the distance from the best performer increased over time, indicating sigma- and delta-divergence. Although GNI per capita rose in all countries in the period, the ranking of countries by economic performance changed. Relative to other countries, Argentina, Brazil, Japan and Saudi Arabia declined in performance, whereas China, South Korea and Türkiye improved.

Labour market participation

Convergence in labour market participation, particularly female labour market participation, is essential for promoting inclusive and sustainable economic growth in a country. Higher labour force participation leads to increased productivity and output, boosting economic development. Greater female participation reduces gender inequalities, enhances social cohesion, and fosters a more dynamic and innovative workforce.

Employment-to-population ratio

The employment-to-population ratio (hereafter 'employment ratio') measures the proportion of a country's working-age population that is employed. The indicator

used in this analysis defines working-age population as adults aged 15 years or over.[4] A high ratio indicates high employment, whereas a low ratio signals that a large proportion of the adult population is not actively participating in the labour market, as they are either unemployed or not in the labour force.

Although the employment ratio is different from the employment rate, which is not available at G20 level, it is a useful indicator of a country's ability to create employment and its pace in doing so. However, while a high ratio is usually regarded as positive, it sometimes masks situations where educational opportunities for young people are restricted and they need to take up paid work soon after leaving secondary education, or where older people are not covered by pensions and need to keep working.

The EU27 employment ratio rose by 4 percentage points, from 50.4% in 2000 to 54.4% in 2023. This places it in the fourth-lowest position among the G20 throughout the period. The top performers in 2000 were China (74.3%), Indonesia (63.6%) and the US (63.3%); in 2023, they were Indonesia, (65.3%), Australia (64.9%) and China (63.0%).

Apart from China, the US and South Africa, all countries within the G20 reported an increase in their employment ratio between 2000 and 2023. Whereas the unweighted average among the G20 remained relatively stable over time, there was a remarkable downward trend in the ratio in China, falling from 74.3% in 2000 to 63.1% in 2023. As the country went through major structural changes and transformed its economy from a predominately agrarian to a more industrialised and service-oriented economy and simultaneously underwent demographic changes, the size and composition of the labour force changed. As pointed out by the ILO (2015), unemployment has been significantly associated with GDP growth in China. Furthermore, the profile of unemployed people has changed, as the unemployed, especially in urban areas, have become increasingly more educated.

The greatest increases in the employment ratio were reported by Saudi Arabia, Australia, Russia and the EU27.

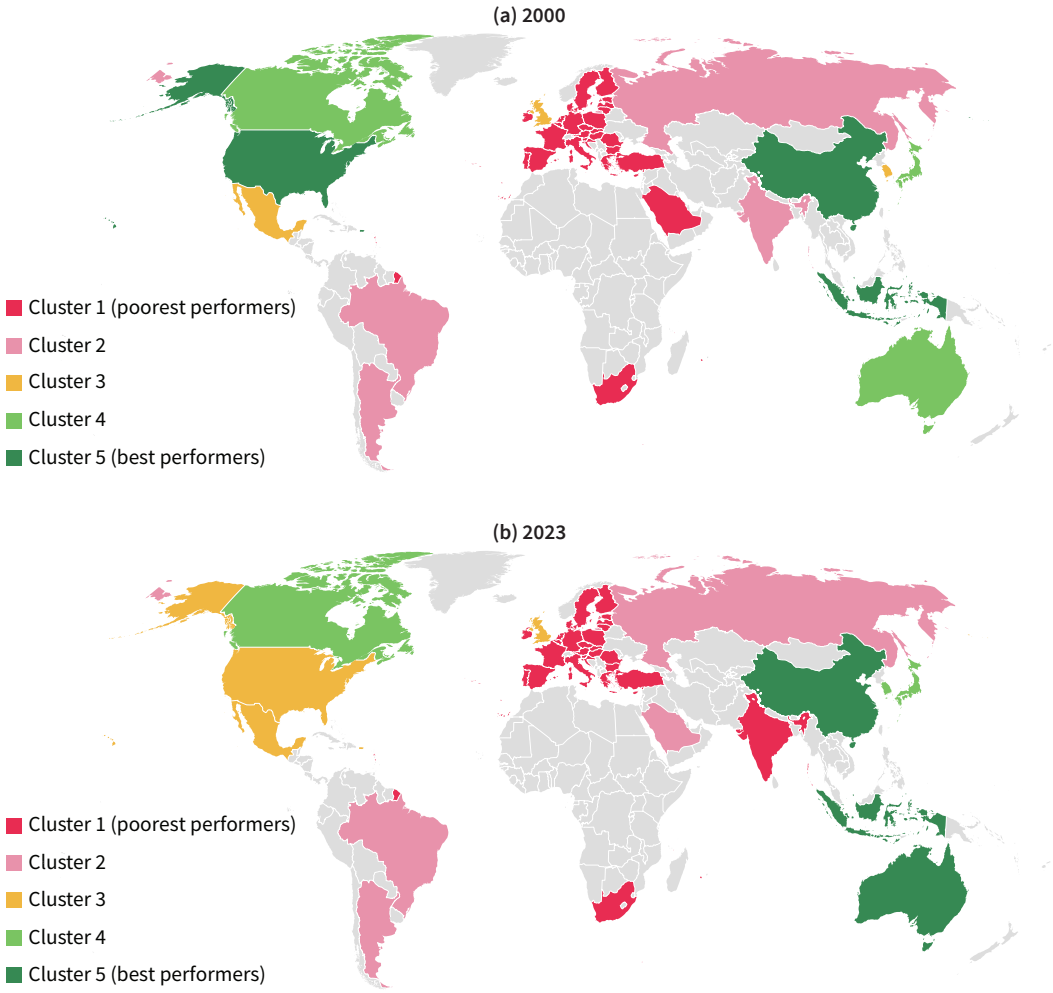
Most countries experienced a fall in the ratio during the years of the economic crisis and the COVID-19 pandemic. Between 2008 and 2010, it decreased most in South Africa, the US and Canada. In 2020, the most dramatic decreases were in the Latin American countries (Argentina, Brazil and Mexico), with drops of around 5 percentage points, but Canada and the US also reported sizeable downturns. In contrast, the EU managed to prevent substantial decreases in the employment ratio due to the numerous support measures targeted at workers and businesses implemented by the Member States.

Looking at the country clusters, the EU27 was in the poorest-performing cluster in 2000 and 2023 (Figure 7). China and Indonesia led the way as best performers in Cluster 5 in both years. Australia joined that cluster in 2023. Canada and Japan maintained their position in Cluster 4, while the UK remained stable in Cluster 3. Argentina, Brazil and Russia were stable in the second-lowest cluster, Cluster 2; they were joined by Saudi Arabia in 2023, which moved up from Cluster 1. India's performance worsened, dropping to Cluster 1, as did that of the US, which moved from Cluster 5 to Cluster 3.

Poor-performing countries have not been catching up with better-performing countries, so beta-convergence did not take place in respect of this indicator. However, there was a decrease in overall disparities over the years, driven by the sizeable decrease in China's employment ratio (sigma-convergence).

4 In many EU statistics, the workforce comprises 15- to 64-year-olds or 15- to 74-year-olds, which means EU figures are not directly comparable with the data used here.

Figure 7: Employment-to-population ratio of G20 members, by cluster, 2000 and 2023



Source: *ILO Modelled Estimates and Projections database*

Female labour force participation rate

The female labour force participation rate is defined as the share of the female population that is active in the labour force – thus, women who are either employed or unemployed.

Besides a balanced participation of men and women in the labour force being an important social and development goal anchored in the EU Gender Equality Strategy (2020–2025), there are macroeconomic benefits associated with this goal. One is the expanded labour supply when more women are integrated into the labour market.

The EU has been among the better performers in respect of female participation throughout the whole timespan, starting with a rate of 43.7% in 2000 and ranking sixth among the G20. This rate climbed to 46.4 % in 2022, with the EU retaining its position of sixth.

The top performer over the period is Russia, with a fairly constant rate of over 48%. Historically, the gender gap in terms of labour participation rate in the former socialist countries of central and eastern Europe and the former Soviet Union has been low compared with other Organisation for Economic Co-operation and Development member countries (Denisova, 2020).

In addition to Russia, Canada (46%) and the US (45.8%) ranked high in 2000. By far the lowest rate was reported in Saudi Arabia (12.3%), followed by India (25.9%) and Türkiye (26.6%). In 2022, the top three were Russia (48.8%), the UK (47.6%) and Canada (47.4%).

Although all G20 countries, except for China, improved in terms of the female labour force participation rate between 2000 and 2022, in most it increased very little. The greatest increases were among the poorest performers, namely Saudi Arabia (+10.1 percentage points), Türkiye (+6.6 percentage points) and Mexico (+5.0 percentage points). An exception was India, which reported a negligible increase.

Convergence was found across all three measures: there is evidence of a catch-up effect, decreases in disparities across the G20 members and a fall in distance from the top performer.

Digital adoption

In today's interconnected world, the digital transformation is reshaping economies and societies at an unprecedented pace. Examining the digital dimension within the G20 is paramount to understand the varying levels of digital readiness and the implications for future growth and development. Access to fixed broadband and internet use are key indicators of digital inclusion, enabling participation in the digital economy and access to information and services, and fostering innovation. Due to rapid digitalisation over recent decades, this dimension is the one with the biggest changes in magnitude.

Fixed broadband subscriptions

In relation to fixed broadband subscriptions, South Korea is the frontrunner among the G20, with around 45 subscriptions per 100 people in 2022; Canada, the UK, China and the EU follow. In the middle, with 20–25 subscriptions per 100 people, are the G20 countries in Latin America as well as Türkiye and Russia. At the lower end of the ranking are India, South Africa and Indonesia, with fewer than 5 subscriptions per 100 people.

In 2000, the EU27 had 2.7 subscriptions per 100 people, which rose to 38.9 subscriptions in 2022. The highest growth, of 30–40 subscriptions per 100 people each year, was recorded in 2002–2005. Since 2010, subscriptions in the EU27 have steadily increased by 2–4 points each year, confirming the Union's commitment to expanding the broadband infrastructure. Growth slowed most in 2022, with an increase of less than 1 point compared with 2021. This should not be interpreted negatively, however, since the growth rate is similar to that of South Korea and Canada, which are also top performers.

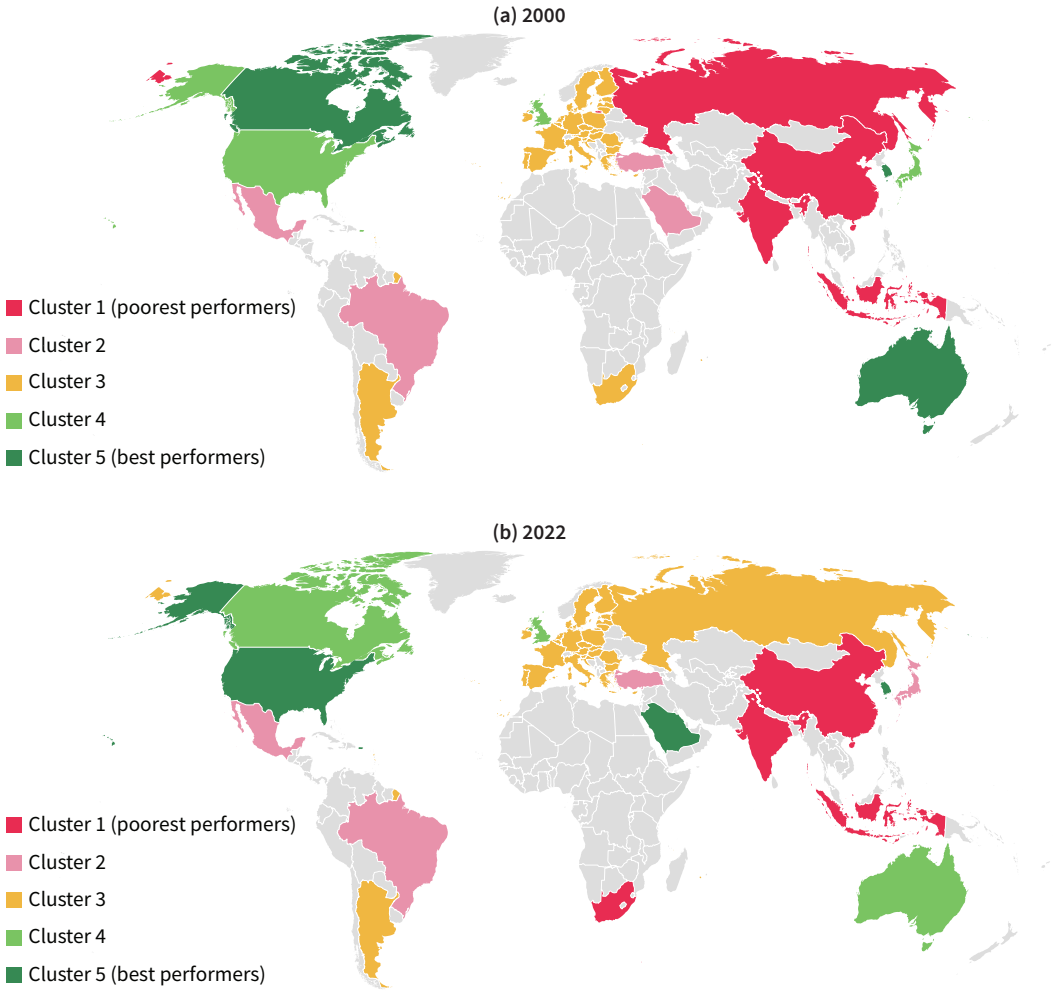
The G20 unweighted average of fixed broadband subscriptions per 100 people increased from 3.3 in 2002 to 28.1 in 2022. Countries with an initially lower number of broadband subscriptions experienced a higher growth rate on average and were catching up with the best performers. However, overall disparities between the G20 members increased, while the distance from the best performer decreased.

Internet use

As regards internet use, in 2022, the EU was ranked eighth from the top within the G20, with 69.3% of the population using the internet, compared with 19.7% in 2000, when it ranked seventh.

The top performers in 2000 were Canada (51.3%), Australia (46.8%) and South Korea (44.8%), while the poorest performers were India (0.53%), Indonesia (0.93%) and China (1.8%). All countrieshave improved considerably since then, but Saudi Arabia stands out; having been one of the countries with the lowest rates of internet use in 2000, it became the top performer, with 100% of its population online in 2022. It is followed by South Korea (97.2%) and the US (97.1%). The greatest increases over the period took place in Saudi Arabia (+97.8%), Russia (+88.4%), Argentina (+81.3%) and Türkiye (+79.7%). In 2022, the countries with the poorest performance were India (48.1%), Indonesia (66.5%) and South Africa (74.8%).

Figure 8: Internet use among G20 members, by cluster, 2000 and 2022



Source: *International Telecommunication Union, authors' calculations*

Looking at movements in the clusters (Figure 8), Australia and Canada moved one cluster down from the top cluster between 2000 and 2022, Japan moved two clusters down to the second-lowest cluster, and South Africa dropped to the bottom cluster. China, India and Indonesia remained in the bottom cluster.

The unweighted average among the G20 countries more than quadrupled, reaching 84.6% in 2022. Convergence analysis shows a reduction in overall disparities among the G20 countries, and the poorest performers catching up with the best-performing countries.

Action mitigating climate change

Addressing climate change is an urgent global imperative, and the G20, as a major contributor to global GHG emissions, has a critical role to play in mitigating its impact. Analysing the levels of both per capita and total GHG emissions within the G20 provides insights into the environmental footprint of member countries and their progress towards sustainable development.

The EU has positioned itself at the forefront of the global fight against climate change, adopting the ambitious Green Deal strategy, aimed at achieving climate neutrality by 2050. This comprehensive plan encompasses various initiatives to reduce emissions, invest in renewable energy, promote energy efficiency and foster a circular economy. Examining the green dimension within the G20 allows for a deeper understanding of the different international approaches.

Total GHG emissions

Most G20 countries reported an increase in total GHG emissions between 2000 and 2020; only Australia, the EU27, the UK, Japan and the US reported a decrease (Figure 9). Whereas the US was the top GHG emitter in the first five years of the period, China overtook it in 2006 and remained far ahead of the other G20 countries up to 2020. Türkiye had the lowest total GHG emissions among the G20 members until 2007, after which it was replaced by Argentina in 2008. In 2014, the EU27 became the G20 member with the lowest emissions.

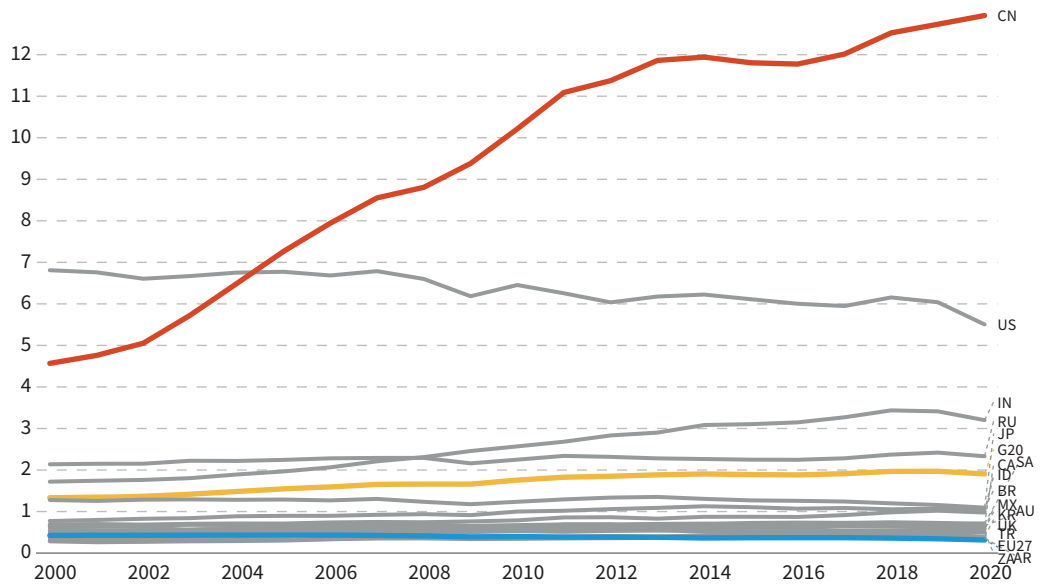
Unsurprisingly, the unweighted average of GHG emissions increased over the period. The convergence analysis found an increase in disparities between G20 members and in the distance from the lowest emitter. No catch-up of big GHG producers with the lowest emitter was found.

GHG emissions per capita

Developments in the GHG emissions per capita indicator provide a different perspective on climate change mitigation (Figure 10). In the EU, GHG emissions were 10.5 tonnes of CO_2 equivalent per capita (t CO_2eq/cap) in 2000, which made it the G20 member with the ninth highest per capita emissions (the highest emitter being number one in the ranking). In 2022, this figure had fallen to 8.1 t CO_2eq/cap, causing the EU to fall to 12th place from the top. Thus, the EU improved its per capita emissions both in absolute and relative terms.

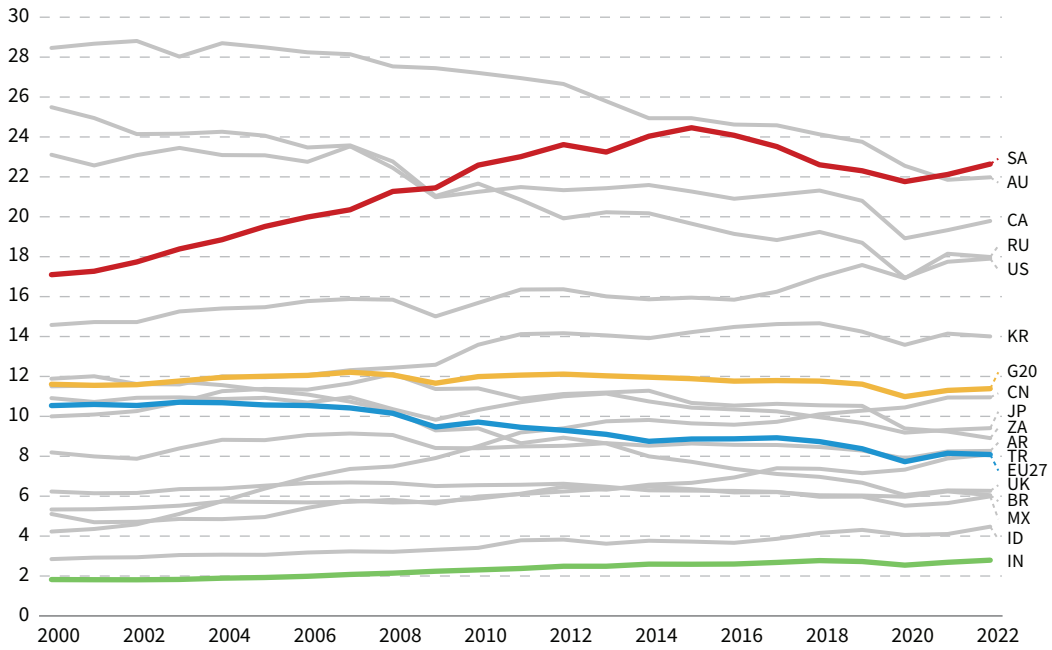
In 2022, the lowest levels of per capita emissions were reported in India (2.3 t CO_2eq/cap), Indonesia (4.5 t CO_2eq/cap), Brazil (6 t CO2eq/cap) and Mexico (6 t CO_2eq/cap).

Figure 9: Total GHG emissions, G20 members, 2000–2020 (million t CO_2eq)



Note: *A guide to the country codes is provided on p. 24.*
Source: *Climate Watch Historical GHG Emissions (1990–2020), World Resources Institute*

Figure 10: GHG emissions per capita, G20 members, 2000–2022 (t CO_2eq/cap)



Note: *A guide to the country codes is provided on p. 24.*
Source: *Climate Watch Historical GHG Emissions (1990–2022), World Resources Institute*

The countries with the highest emissions were Saudi Arabia (22.6 t CO_2eq/cap), Australia (22 t CO_2eq/cap) and Canada (19.8 t CO_2eq/cap).

The unweighted average for the whole G20 decreased minimally between 2000 and 2022. Overall, highly developed G20 members such as Australia, Canada, the EU27, the UK, Japan and the US decreased their per capita emissions from 2000. Mexico and South Africa reported moderate declines. In contrast, countries that went through periods of major economic transformation, including Argentina, Brazil, China, India, Indonesia, Russia, Saudi Arabia, South Korea and Türkiye, reported an increase. These dynamics drove beta-convergence, indicating catch-up by the poor performers. Very small decreases in disparities and in the distance from the best performer were also found. While there was convergence, it was not upward since the countries' performance did not move in the same direction.

Summary

Since 2000, the G20 members have become more similar, with convergence being found in several indicators. All measures of education and digital access analysed signal upward convergence, but in economic and environmental indicators disparities persist.

The analysis of how the EU fared over more than 20 years in comparison with other G20 members reveals a mixed picture. The EU maintained a high level of human development, as measured by the HDI, with a slight drop in its ranking due to slower growth in income and life expectancy. Another positive is that the EU has been at the forefront in reducing GHG emissions per capita. The EU also demonstrated strong performance in education, which positions it among the top performers. There has been a constant but slow improvement in employment participation, both for the general population and for women.

Examining other G20 members, the notable growth and catch-up of some Asian countries is striking. China's rapid improvement was propelled by growth in its GNI per capita and life expectancy, which moved it higher in the HDI ranking relative to other members. However, this progress happened at the expense of a considerable rise in GHG emissions per capita. Similarly, South Korea's advances in GNI per capita, education and life expectancy have elevated it in the HDI ranking. It consolidated its position as a frontrunner in the digital dimension, but this came alongside a rise in GHG emissions per capita.

Not all Asian countries recorded the same level of improvement. In India and Indonesia, where economic growth started later than in China, improvements were more limited, and a relative decrease was recorded in their performance with regard to education and labour market participation.

Türkiye experienced notable improvements, recording relative growth in education achievements and an increase in its female labour market participation rate. However, GHG emissions per capita have risen since 2000.

The position of the Latin American countries within the G20 deteriorated markedly over more than two decades. Argentina and Brazil fell in the HDI ranking, mainly due to lower relative growth in GNI per capita, life expectancy and education. Mexico's ranking fell in terms of life expectancy and economic growth; however, its environmental performance improved, with a greater relative reduction in GHG emissions per capita.

Argentina and Brazil were relatively stable on GHG emissions. South Africa's indicator patterns reveal a general catch-up in HDI, with a lowering of life expectancy in 2021 and a slight decrease in GHG emissions.

Saudi Arabia experienced slower growth in GNI per capita than other G20 members, although it started second from the top position in 2000 and had slipped only two places by 2022. In respect of social indicators, on which it performed poorly in the 2000s, it made notable progress in education (reflected in increased mean years of schooling), female employment and digital access (indicated by a remarkable jump in internet use). However, the country recorded an increase in GHG emissions per capita.

High-income countries show their strengths in the HDI and other indicators analysed, although their progress may have been uneven in recent years. While consistently ranking high, Japan faced challenges in further improving its HDI position as its growth in economic, education and digital indicators slowed relative to other G20 members. The US is a leader in the HDI, but its employment participation decreased over time, as did the life expectancy of its population. Australia consolidated its leadership position in the HDI, mainly driven by improving economic and labour market indicators, but continued to be one of the worst performers in terms of GHG emissions per capita, despite the reductions achieved since the 2000s. Similarly, Canada experienced slower growth in life expectancy than other G20 countries, but its relative performance did not decline, as it was fourth from the top in 2022.

Policy pointers

- Economic and social convergence among the EU Member States is crucial for maintaining and strengthening EU cohesion. However, the internal dynamics of the EU are deeply intertwined with global developments. The EU's ability to promote internal convergence is increasingly influenced by external factors such as trade patterns, technological advancements and global environmental challenges in a changing geopolitical situation. Therefore, a comprehensive understanding of the global interplay between economic, social, institutional, environmental and digital developments is essential to strengthen the EU's resilience and competitiveness on the world stage.
- Amid global instability, as highlighted by the Commission's *2023 strategic foresight report*, a strong and unified Europe is vital for maintaining high living standards. The single market and policies attracting businesses foster economic security. The twin transition to a net-zero and digital Europe is addressed through regulations promoting sustainable production and consumption, and by focusing on future-ready skills.
- The EU's relatively lower economic growth compared with other G20 economies underscores the need for a strategic shift to boost competitiveness. The green and digital transition presents significant opportunities for the EU to achieve this goal while simultaneously addressing the pressing challenge of environmental sustainability. By embracing those opportunities and adopting a balanced approach to economic growth and environmental sustainability, the EU can enhance its competitiveness and create a more resilient economy.
- The rapid convergence in digital adoption highlights the importance of the digital transition for the EU. Policies should focus on expanding digital infrastructure, promoting digital skills and supporting the development of a vibrant digital ecosystem to ensure the EU remains at the forefront of the digital transition. The G20 and the EU have demonstrated clear progress in education, with increased years of schooling and reduced disparities between countries. This success in human capital development lays a strong foundation for navigating the digital and green transition. However, the EU must

sustain this momentum; ensuring that all its Member States benefit from human capital accumulation is crucial for the EU to seize the opportunities presented by these transformations and compete effectively on the global stage.

- While the EU has made strides in human development, addressing income inequality and social exclusion remains crucial. Policies should focus on creating quality jobs, investing in skills development and strengthening social safety nets to ensure that the benefits of growth are shared by all.
- The complex and interconnected nature of global challenges requires enhanced international cooperation. The EU should actively engage in multilateral forums such as the G20 to promote coordinated action on climate change, sustainable development and digital governance.
- While the EU has made progress in reducing GHG emissions per capita, the overall increase in global emissions underscores the need for continued leadership on climate action. The EU should advocate for ambitious global climate targets, invest in green technologies and promote sustainable consumption and production patterns.
- A major challenge in assessing convergence at G20 level lies in the lack of comparable data across various dimensions. Differences in data collection methodologies, definitions and reporting standards hinder comprehensive analysis and limit the availability of indicators to accurately track progress towards convergence. To fully harness the benefits of convergence and inform evidence-based policymaking, it is essential to work towards greater harmonisation of data at global level.

Resources

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G20 country codes

AR	Argentina	**KR**	South Korea
AU	Australia	**MX**	Mexico
BR	Brazil	**RU**	Russia
CA	Canada	**SA**	Saudi Arabia
CN	China	**TR**	Türkiye
ID	Indonesia	**UK**	United Kingdom
IN	India	**US**	United States
JP	Japan	**ZA**	South Africa

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The EU's position within the G20 across various dimensions of socioeconomic development has changed since the turn of the 21st century. This policy brief analyses trends in human development, labour market participation, digital adoption and environmental sustainability among the G20 members to assess the EU's standing within the group. It also investigates whether G20 members are converging in respect of these dimensions to determine whether the differences between them are narrowing or widening.

The findings reveal a mixed picture, with the EU maintaining a high level of human development but experiencing a relative decline in some dimensions vis-à-vis other G20 members. The analysis underscores the importance of addressing these trends and leveraging the opportunities presented by the green and digital transition.

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