

ESPAS Global Trends Mid-Term Report

The Global Future - An Update

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'The future, like everything else, is not what it used to be.'

Paul Valéry, 1937

Introduction

In the spring of 2019, the European Strategy and Policy Analysis System (ESPAS) issued its most recent, five-yearly Global Trends Report. Entitled 'Global Trends to 2030: Challenges and Choices for Europe', it sought to identify the major medium- and long-term trends worldwide and trace some of their potential implications for policy-makers in Europe. Now, to coincide with the latest ESPAS annual conference in November 2021, the ESPAS Steering Group is issuing a mid-term update that looks at what has changed over the last two and a half years, a period that has brought unexpected developments on several fronts.

In foresight terms, twenty-two months is not a very long time. When it comes to time-horizons, the foresight discipline tends to deal in decades, rather than years, and prefers longer over shorter intervals, in order to monitor trends with greater accuracy. This cadence can and should be shorter, however, when the composition of the future changes in an important fashion. This can happen when trends change direction or pace more radically, new trends emerge, or new information invites us to review how we assess them. Such a moment has arrived now: since the last ESPAS Global Trends Report was published, trends making the future have been influenced by events such as COVID-19 and its knock-on effects, the election of Joseph Biden to the American presidency, or China's testing of a hypersonic missile. In addition, possible new trends have emerged, and, perhaps crucially, our values and priorities have changed as well. In sum, not just the future has changed, how we feel about it has too.

This paper is an assessment of exactly this: how has the future changed since the last report came out? How have the trends we identified then evolved since and are there new ones to watch? In what ways have our perceptions and interpretations changed? And what are altogether new elements? In contrast to traditional foresight reports, we do not look solely at the future, but deliberately retrace the future of 2019 to today. This has the effect of fine-tuning our foresight capacities, as it improves our own understanding of not what the future is per se, but how we interpret, and have interpreted, what we know about it. This practice has been shown to improve foresight accuracy if conducted regularly². In this spirit, we look at the same time horizon as the 2019 report, which was 2030. Like the 2019 report, this paper is one concerned with the future of

¹ The author is Deputy Director of the EU Institute for Security Studies (EUISS) and a member of the Steering Group of the ESPAS process. She has been tasked by the Steering Group with updating the 2019 ESPAS Global Trends Report, which she also wrote, through this mid-term report. The author would like to thank Clémentine Lienard for her valuable help in the preparation of this paper.

² J. Peter Scoblic and Philip E. Tetlock, "A Better Crystal Ball: The Right Way to Think About the Future", *Foreign Affairs*, November/December 2020

the world (hence its title) rather than only or primarily Europe. Taken together this means that it does not replace the 2024 Global Trends Report, nor does it cover the same area of work as the European Commission's new annual strategic foresight reports. As we review the 2019 content, we end each analysis with an interpretation of what this means for our renewed understanding of the future.

'Finger on the trend' pulse: Where are global trends heading?

The future is not just made up of trends, it is also single events. But because trends create the context for events, identifying and monitoring them is useful to create a better understanding of the future. Also, trends have the advantage of being visible and running over an extended period of time – neither of which apply to single events. Precisely because we can see and measure trends, we can extrapolate from them what they will look like in the future. Of course, trend analysis is not without flaws: when done in too linear a way, or when it assumes an even pace, it can give us a distorted image of where we are heading. Trends can accelerate or slow down, reverse, or even come to an end. Rarely do they develop *exactly* as anticipated. Monitoring trends is therefore as important as spotting them in the first place. Below we review those trends that have changed course somewhat since the 2019 report.

- The most important trend update is on **climate change**, which is accelerating alarmingly according to the IPCC's 2021 report. Instead of by 0.87°C as previously thought, the global surface today has warmed by 1.09°C compared to the 19th century³. We are not just warmer than we thought, temperatures are also increasing faster: instead of 2050, we will reach an increase of +1.5°C a decade earlier, in 2040. Sea-level rise is now *irreversible* – the best case scenario, i.e. an increase of temperatures by +1.5°C, still means an increase by 0.28-0.55m by the end of the century, possibly submerging parts of Amsterdam, The Hague, Rotterdam, Bruges, Calais, Venice – amongst others⁴. Moreover, irreversible tipping points may be reached soon, such as the collapse of the Gulf Stream.⁵ Finally, the fact that the IPCC has again revised its previous assessments in a negative direction could itself be seen as a trend, suggesting that its next report, due in 2024, could be more pessimistic still.

The COVID-19 pandemic has only slightly dented this trend: during the lockdowns of 2020, CO₂ emissions decreased by a modest 5.6%. This is primarily because restrictions reduced transport, which makes up 15% of emissions, but did not affect other sources, such as electricity generation, agriculture or manufacturing. As regular activity resumed, 2021 is expected to see the second-largest annual increase in CO₂ emissions in history, and to return to the levels of 2019⁶. Unfortunately, recent promises to achieve carbon neutrality

³ Masson-Delmotte, et al. (eds.), *Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, IPCC, Cambridge University Press, 2021

https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

⁴ Climate Central, "Coastal risk screening tool: Land below 0.4 meters of water",

https://coastal.climatecentral.org/map/8/0.9503/46.4806/?theme=water_level&map_type=water_level_above_m_hhw&basemap=roadmap&contiguous=true&elevation_model=best_available&refresh=true&water_level=0.4&water_unit=m

⁵ Niklas Boers, « Observation-based early-warning signals for a collapse of the Atlantic Meridional Overturning Circulation », *Nature Climate Change*, Volume 11, pages 680–688 (2021)

⁶ UNEP, "COVID-19 caused only a temporary reduction in carbon emissions – UN report", September 16, 2021 (<https://www.unep.org/news-and-stories/press-release/covid-19-caused-only-temporary-reduction-carbon-emissions-un-report>)

by the EU (by 2050), the United States (2050) or China (2060) are not enough to keep temperatures at +1.5°C. This means that even if we implement all pledges and targets according to the Paris agreement temperatures will increase by 2.4°C by the end of this century⁷. Even before the IPCC report came out, a sense of urgency with regards to climate change was growing amongst publics in Europe and elsewhere. In late 2019, the Oxford Dictionary chose ‘climate emergency’ as the word of the year as its usage had increased by 10,000% in the previous year⁸. Concern over the environment has also expanded to adjacent areas, such as the protection of biodiversity. In 2021, the United Nations issued 21 targets for 2030 to preserve and protect nature.

At the same time, the energy market underwent a tumultuous period. From oversupply in 2020 – with a historic crash of the oil price by 20% - to undersupply in 2021, it experienced a spike in costs. This was due to the cumulative effects of economic recovery, extreme weather events, and structural shortcomings in select countries. Overall, this fluctuation confirms a longer-term trend identified in the 2019 report: the increase of global demand for energy leads to higher costs and prices. What is new, however, is the volatility with which prices soar and crash. Volatility reflects the fact that the pace of the energy transition is not clear: scenarios produced by the International Energy Agency project world oil demand in 2040 ranging from between 44 and 104 million barrels per day⁹. Current price hikes are partly due to the pandemic, but the overall upward trend is likely to persist as the EU’s energy market continues to transition towards renewable energy in order to achieve its 2030 target of 40% (revised upwards from 32%).

What does this mean for the future? The impact of climate change will be global but unevenly distributed. Some states in Europe’s South and Southern neighbourhood face severe water scarcity even under the best case scenario, hitting hardest the most vulnerable populations within these countries, from rural farmers to urban slum-inhabitants¹⁰. With the increase in extreme weather events, the need for humanitarian assistance will increase. The urgency of climate change is likely to generate more active climate diplomacy to pressure for increased emission cuts in other states. The EU has increased its contribution to the climate fund designed to help developing states mitigate and adapt to the effects of climate change, to €25.5 billion per year; yet the fund is still \$20 billion short of its own target¹¹. In several states that have not committed to net-zero, financing is not the main obstacle; political engagement will be key. However, decision-makers keen to meet the targets of the COP26 will face fluctuations of energy prices which may derail the timing and social acceptability of the transition. Lastly, states relying solely on fossil fuel exports for their economies will urgently have to diversify their sources of income or face collapse. Several of them are located in the EU’s extended neighbourhood: Algeria, Libya, Yemen and Iraq are particularly vulnerable.

⁷ Climate Action Tracker, “Climate summit momentum: Paris commitments improved warming estimate to 2.4°C”, May 2021, https://climateactiontracker.org/documents/853/CAT_2021-05-04_Briefing_Global-Update_Climate-Summit-Momentum.pdf

⁸ Oxford Languages, « Word of the Year 2019 », <https://languages.oup.com/word-of-the-year/2019/>

⁹ International Energy Agency, “Net Zero by 2050: A Roadmap for the Global Energy Sector”, May 2021, <https://www.iea.org/reports/net-zero-by-2050>

¹⁰ United Nations, *WORLD SOCIAL REPORT 2020, INEQUALITY IN A RAPIDLY CHANGING WORLD*, New York, 2020 (<https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/02/World-Social-Report2020-ExecutiveSummary.pdf>)

¹¹ Time, “Rich Nations to Miss Climate Fund Goal Even by 2025”, 20 September 2021, <https://time.com/6099648/climate-funding-shortfall/>

- Major surprises **in demographic trends** are uncommon as it is a very slow-moving field with few elements that can change its course. Still, projections for world population growth were revised downwards by the United Nations even before the pandemic; we are not growing as fast or much as we thought¹².

The main reason for this is that fertility rates dropped more than expected not just in North America and Europe, but also Latin America. Even Africa will have 16 million people fewer in 2030 than projected – 1.688 million instead of 1.704. However, this deceleration is unevenly distributed: the Sahel zone could double in size within the next two decades¹³. China’s population is projected to halve by 2066 according to updated calculations, which led the government to loosen its child-restrictions to three in 2021¹⁴. COVID-19 further slowed global population growth – partly because of the excess deaths it caused (4.9 million people had passed away from it at the time of writing¹⁵) but more because it depressed fertility rates by 0.41% globally in 2020¹⁶. In the EU after the pandemic, this rate will at most return to the previous, low level. Therefore, absent migration, the EU’s trend towards an older and smaller population will continue: until 2025, we will grow from 446 to 449 million, then stabilise, and then start shrinking - ever faster after 2030¹⁷.

At the same time, the pandemic slowed, but did not reverse, the global trend of migration¹⁸. Due to movement restrictions, this was 27% or 2 million people lower in 2020 than expected. Half of these moved somewhere within their region of origin¹⁹.

What does this mean for the future? Europe’s demographic trajectory remains problematic if the labour market and our ageing patterns remain the same. Economic growth is directly linked to size of the active population, and Europeans over the age of 64 suffer on average from at least one chronic disease. Given these trends, Europe will in future have a smaller economy but will require more funding for its healthcare systems²⁰. Possible but politically sensitive solutions include the integration of more migrants, further promotion of women into the labour market, and (so far unsuccessful) programmes designed to increase fertility rates. That said, technology could in time decouple economic growth from population size,

¹² United Nations, *World Population Prospects 2019 revision*, New York, 2019
(https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf)

¹³ Benoit Kalasa, « Population, climate and resource dynamics in the Sahel », UNFPA,
https://www.wilsoncenter.org/sites/default/files/media/documents/event/Benoit_Kalasa_Population_Trends.pdf

¹⁴ South China Morning Post, “China’s population could halve within the next 45 years, new study warns”, September 2021, <https://www.scmp.com/news/china/science/article/3150699/chinas-population-could-halve-within-next-45-years-new-study>

¹⁵ Our World in Data, “Cumulative confirmed COVID-19 deaths”, 19 October 2021,
<https://ourworldindata.org/grapher/cumulative-covid-deaths-region>

¹⁶ US Department of Health and Services, National Vital Statistics System, “Births: Provisional Data for 2020”, May 2021, <https://www.cdc.gov/nchs/data/vsrr/vsrr012-508.pdf>. INSEE, “Nombre de naissances en 2021”, September 2021, <https://www.insee.fr/fr/statistiques/5429540?sommaire=5348638#tableau-figure1>. Deutsche Welle, „Italian birth rate sinks further amid pandemic“, March 2021, <https://www.dw.com/en/italian-birth-rate-sinks-further-amid-pandemic/a-56881275>

¹⁷ European Commission, “Report on the Impact of Demographic Change”, 2020,
https://ec.europa.eu/info/sites/default/files/demography_report_2020_n.pdf

¹⁸ European Commission, « 2021 Strategic Foresight Report », September 2021,
https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2021-strategic-foresight-report_en

¹⁹ United Nations, “Growth of international migration slowed by 27%, or 2 million migrants, due to COVID-19, says UN”, <https://www.un.org/en/desa/growth-international-migration-slowed-27-or-2-million-migrants-due-covid-19-says-un>

²⁰ European Commission, “Report on the Impact of Demographic Change”, 2020,
https://ec.europa.eu/info/sites/default/files/demography_report_2020_n.pdf

especially when teamed with innovation, while lifestyle changes could dramatically improve healthy ageing in Europe.

- Global **economic growth** has been a constant feature since the 18th century despite a few dents in the trend. Amongst these is the pandemic, which reduced GDP by 3.53% in 2020²¹. This is less than originally feared, primarily because advanced economies provided massive financial support. Global growth is now resuming fast, compensating almost entirely for the losses: by 2024, this may be only 3 percent less than anticipated before the pandemic - if vaccine rollouts facilitate the return to normal economic patterns globally by the end of 2022. Amongst the reasons are lower losses than after the global financial crisis. That said, economic forecasts do have an upward bias - they tend to be too optimistic. They also struggle with accuracy because they cannot quantify new developments such as innovations or other disruptive events²². They need to be treated with caution, as they can be easily upended by inflation and debt²³.

The most affected economies will be those that are most reliant on tourism, and those with larger service sectors – and particularly low- and middle-income economies²⁴. The pandemic also further exasperated inequalities: on the one hand, it pushed 97 million people into poverty in 2020 alone; on the other, it increased the wealth of the world's billionaires by 54%, as stock markets reached record heights, and online services were boosted by the pandemic²⁵. This led to renewed calls for a 'wealth tax' in the United States and Latin America, as well as by the IMF and the United Nations²⁶.

Global **trade** fell by 5.3% in 2020, largely because of pandemic restrictions, but also for more structural reasons²⁷. The pandemic exposed import-dependence on products such as gas, facemasks, and above all semiconductor chips, which are crucial for products such as cars, computers and even electric toothbrushes. In the EU (and elsewhere) this triggered debates on supply chains and 'onshoring' of essential products, i.e. moving their production closer. These debates gained force because of geopolitical tensions, especially between China and the United States, which raised concerns that unilateral trade dependence on anyone could bring about unacceptable vulnerabilities. In October 2020, the European Council endorsed a new aim for the EU: 'strategic autonomy while preserving an open economy'²⁸. This was a conceptual breakthrough,²⁹ and was certainly due in part to the COVID crisis.

²¹ World Bank, <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG>

²² Masayuki Morikawa, "Uncertainty in long-term macroeconomic forecasts: Ex post evaluation of forecasts by economics researchers", RIETI Discussion Paper 19-E-084, 2019

²³ OECD, "The long game: Fiscal outlooks to 2060 underline need for structural reform", October 2021, https://www.oecd-ilibrary.org/economics/the-long-game-fiscal-outlooks-to-2060-underline-need-for-structural-reform_a112307e-en

²⁴ International Monetary Fund, *World Economic Outlook, Managing Divergent recoveries*, Washington D.C., April 2021 – Chapter 2

²⁵ CBS News, "Billionaires got 54% richer during pandemic, sparking calls for 'wealth tax'", 31 March 2021, <https://www.cbsnews.com/news/billionaire-wealth-covid-pandemic-12-trillion-jeff-bezos-wealth-tax/>

²⁶ Reuters, "U.N. chief pushes tax on rich who profited during pandemic", April 2021, <https://www.reuters.com/article/us-health-coronavirus-un-idUSKBN2BZ281>

²⁷ World Trade Organisation, "World trade primed for strong but uneven recovery after COVID-19 pandemic shock", March 2021, https://www.wto.org/english/news_e/pres21_e/pr876_e.htm

²⁸ Special meeting of the European Council of 1-2 October 2020, Conclusions point 3. <https://www.consilium.europa.eu/en/press/press-releases/2020/10/02/european-council-conclusions-1-2-october-2020/>

²⁹ Luuk van Middelaar, "Pandemonium – Saving Europe", Agenda publishing, 2021, p. 160

Unsurprisingly, the fall in trade has re-ignited a debate on de-globalisation, a misnomer for three reasons. Firstly, most international trade has always been regional. Secondly, while it is true that the economies of the US and China continue to decouple, there is no strong evidence that the world economy is fracturing along regional lines. For the last decade, the average distance traversed by merchandise trade flows has been stable at around 4,800 km³⁰. Third, the pandemic – and the subsequent supply chain interruptions - revealed primarily that the international entanglement of the components of complex products - from cars to machine tools to electronics - is so deep that a broader dismantling of trade chains would likely trigger global economic collapse, making deglobalisation nearly impossible from an economic point of view. This is probably the main reason why global trade patterns have not significantly changed, despite rhetoric to the contrary. Lastly, there is a possibility that globalisation will increase even further as wealth creation is shifting towards digital services (including finance). Most world regions, including Europe, are already surpassing their pre-pandemic levels of trade, including services, as trade volume is projected to grow by 10.8% in 2021 and 4.7% in 2022³¹.

However, this scenario depends on several variables. It could be derailed by port delays, increased shipping costs, critical shortages of semiconductors from Asia or supply side disruptions resulting from a rapid recovery in emerging economies. The aftershocks of the pandemic unsettling of global supply chains should be felt into 2023³². Beyond this, global trade is expected to return to its pre-pandemic growth levels.

What does this mean for the future? The economic effects of the pandemic are still being felt, and will continue to be felt, in the poorest countries. Although 2021 saw some recovery in many world regions, Sub-Saharan Africa in particular continues to see more people living in extreme poverty – 40 million more than in 2019, giving a total of 478 million people. By some accounts, 90% of the global poor will live in Sub-Saharan Africa by 2030³³. Globally, this means that the goal of reducing extreme poverty to 3% will be reached 7 years later than expected before the pandemic³⁴. The economies of fragile developing countries such as the Philippines, India, South Africa and Brazil are likely to recover more slowly than others³⁵. But others have benefitted: South Korea and China coped with the pandemic better than expected. By some estimates, China is now poised to become the world's largest economy in 2028 – two years earlier than previously thought³⁶.

³⁰ DHL, “DHL Global Connectedness Index 2020 signals recovery of globalisation from COVID-19 setback”, December 2020, <https://www.dhl.com/global-en/home/press/press-archive/2020/dhl-global-connectedness-index-2020.html>

³¹ OECD, “Trade in goods and services forecast”, <https://data.oecd.org/trade/trade-in-goods-and-services-forecast.htm>

³² Supply Chain, “Semiconductor shortages could last into 2023, Supplyframe says”, July 26, 2021 (<https://www.supplychainquarterly.com/articles/5158-semiconductor-shortages-could-last-into-2023-supplyframe-says>)

³³ Christophe R. Quétel, “On the Nature and Determinants of Poor Households’ Resilience in Fragility Contexts”, *Journal of Human Development and Capabilities*, May 2021

³⁴ World Bank Blogs, “Updated estimates of the impact of COVID-19 on global poverty: Turning the corner on the pandemic in 2021?”, June 2021, <https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty-turning-corner-pandemic-2021>

³⁵ The Economist, “Which economies are most vulnerable to covid-19’s long-term effects?”, December 2020, <https://www.economist.com/graphic-detail/2020/12/15/which-economies-are-most-vulnerable-to-covid-19s-long-term-effects>

³⁶ CEBR, “Macroeconomic forecasting”, 26 December 2020, <https://cebr.com/service/macroeconomic-forecasting/>

For the EU, trade policy should serve three objectives: to support the green and digital economic transition; to shape global rules to ensure a level playing field; and to increase the EU's capacity to pursue its interests and enforce its rights – with partners where possible, and autonomously if needed³⁷.

- The biggest pandemic winner was, of course, the **technological realm**. Already a trend before 2020, digitalisation was pushed forward by on average up to seven years as work, services and social connections moved even more online³⁸. All areas were affected, but the impact was strongest in education and health. eHealth, for instance, increased by 10% in France. Globally, E-commerce grew two to five times faster than before the pandemic, and the videoconference service Zoom, for instance, saw an increase of 535% in daily traffic in 2020³⁹. Though limits became visible – coining terms such as Zoom fatigue –, the knock-on effects on other areas was strong. For instance, the labour market is now set to transition faster towards the digital realm, boosted by the additional effects of robotics. Especially in the medical sector, robots played important roles, in Europe and elsewhere, such as in Rwanda, China, Colombia and Japan⁴⁰. Orders for robots surged by 20% in the United States in 2020⁴¹. Major progress also occurred in the field of Artificial Intelligence (AI). AI was used, along with Big Data, to model the evolution of the pandemic, to track and trace, and in the medical field, including in the diagnosis of the virus.

Not all of technology's advances have been positive. Even before the pandemic, several ethical questions were raised. Because of this, by mid-2020, 60 countries had a national AI strategy (while the EU is developing an overarching one). Several countries have, or are developing, a blockchain strategy⁴². Blockchain and quantum computing attract strong interest from policy-makers. In addition, technology has a decidedly geopolitical component, with the United States, China and Europe competing with each other for leadership in this field.

Several voices – including the Pentagon's former chief software officer – express concerns about hostile actors misusing AI. As the US National Security Commission on AI noted, *“we fear AI tools will be weapons of first resort in future conflicts. AI will not stay in the domain of superpowers or the realm of science fiction. (...) the U.S. government is a long way from being “AI-ready.”*⁴³

³⁷ European Commission, “Trade policy review: An open, sustainable and assertive trade policy”, April 2021, <https://ec.europa.eu/trade/trade-policy-and-you/publications/>

³⁸ McKinsey & Company, “How COVID-19 has pushed companies over the technology tipping point—and transformed business forever”, October 5, 2020, (<https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever>)

³⁹ Digital in the Round, “20 Astonishing Video Conferencing Statistics for 2021”, July 2021, <https://digitalintheround.com/video-conferencing-statistics/>. McKinsey Global Institute, “The Future of work after Covid-19”, February 18, 2021, <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>

⁴⁰ IEEE Spectrum, “How robots became essential workers in the COVID-19 response”, September 2020, <https://spectrum.ieee.org/how-robots-became-essential-workers-in-the-covid19-response>

⁴¹ LA Times, “As COVID-19 wanes, employers are accelerating the use of robots. Where does that leave workers?”, May 2021, <https://www.latimes.com/politics/story/2021-05-04/covid-automation-robots-trends-effects-on-workers>

⁴² OECD, *Digital Transformation in the Age of COVID-19*, Paris, 2020, <https://www.oecd.org/digital/digital-economy-outlook-covid.pdf>

⁴³ Financial Times, “US has already lost AI fight to China, says ex-Pentagon software chief”, 10 October 2021, <https://www.ft.com/content/f939db9a-40af-4bd1-b67d-10492535f8e0>. National Security Commission on

Although European Union member states have made significant progress, they, too, are far from ready. The EU has identified AI as a key area in which it aims to become a standard-setter, shaping the global landscape in a normative way.

What does this mean for the future? The interplay between the US, China and the EU will determine the global race on how AI will play out⁴⁴. The EU's normative powers and research capacities, together with American business dynamism, could prevent Chinese dominance, provided the US agrees to embed its leading role in a broader multilateral framework.

At the same time, technology's faster than expected advances mean that the labour market will undergo a faster transition than previously thought. The pandemic has increased the number of those needing to transition to a new job by 2030 by 25%⁴⁵. Here, as before, it is not clear how this will play out in numbers or pace (estimates range from 10% to 30% by 2030), but it is also estimated that more jobs will be created than lost – in Europe, this could even mean a net increase of up to 884 000 jobs by 2030⁴⁶.

- The transition to a **geopolitical landscape** shaped by competition is now a fact, when it was merely an expectation in 2019. While relations between China and the US have continued to deteriorate – fuelled by Chinese cyber-attacks, disinformation campaigns and strong language -, EU-US transatlantic relations appear more stable with the election of Joseph Biden to the American presidency. States begin to coalesce around visions for the future: many, though not all, democracies rally around the United States; those pushing for an alternative system gravitate towards China and Russia. Many, however, still hope to navigate between the two rivals. Moreover, while during the Cold War there was almost no connectivity between the two blocs, today competing global visions are tempered by strong economic, technological, and logistical connections, not only between the two 'majors' but also in the tangled network of other key actors. China in its catch-up race therefore focuses in its relations less on geography or size, and more on numbers, which are key in the multilateral system. Since the last report came out, it has overtaken the United States in the numbers of embassies around the world, and secured de facto majorities in bodies such as the United Nations Human Rights Council⁴⁷. Trade along the Belt and Road Initiative (BRI) has increased by 38% between 2020 and 2021⁴⁸. Meanwhile, democracies have started closing ranks. The EU sought to pick up from where it had left off with the US prior to the election of Donald Trump: The summit with Joe Biden in June 2021 signalled cooperation on global health, climate change, trade and technology, as well as agreement

Artificial Intelligence, "Final Report", 2021, <https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf>

⁴⁴ Politico, "China wants to dominate AI. The U.S. and Europe need each other to tame it.", March 2021, https://www.politico.com/news/2021/03/02/china-us-europe-ai-regulation-472120?utm_source=Sailthru&utm_medium=email&utm_campaign=Recode%2010.13.2021&utm_term=Record

⁴⁵ McKinsey Global Institute, "The Future of work after Covid-19", February 18, 2021, <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>. Other estimates range between 10 and 30%.

⁴⁶ European Commission Joint Research Centre, "The Future of Jobs is Green", Luxemburg 2021

⁴⁷ Wall Street Journal, "How China Is Taking Over International Organizations, One Vote at a Time", 29 September 2020, <https://www.wsj.com/articles/how-china-is-taking-over-international-organizations-one-vote-at-a-time-11601397208>

⁴⁸ Economist Intelligence Unit, "Belt and Road Quarterly: Q2 2021", July 2021, <https://www.eiu.com/n/belt-and-road-quarterly-q2-2021/>

to work towards “*a more democratic, peaceful and secure world*”⁴⁹. However, the alliance of the United States with the United Kingdom and Australia on cooperation in the Indo-Pacific, which was announced in September (‘AUKUS’) raised some eyebrows in the EU, the more so as it was linked to a military deal that injured France. Meanwhile, the pandemic has weakened democracy in 80 countries, meaning that 34% of the world’s population lives in states where democracy is deemed to be in decline.⁵⁰ By way of response, the US is convening a Summit for Democracy in late 2021 with the aim of focusing on the challenges and opportunities facing these countries.

Interdependence by way of connectivity raises the question of conflict and conflict resolution at a time of interdependence. ‘Connectivity wars’ challenge the democratic world by the use of all available means other than war to inflict damage or extort concessions⁵¹. With regard to Europe, examples of this are the weaponisation of migration, more recently by Morocco and Belarus, but also repeatedly by Turkey. Disinformation and cyber-attacks (up from 113 in 2019 to 139 in 2020 in the EU⁵²) also fall within this context; as well as threatening behaviour that remains just under the threshold of conflict. Examples are troop deployments (Russia on the border of Ukraine), patrolling of ships (Turkey off the coast of Cyprus) and seizure of civilian aircraft passing through their airspace (Belarus).

What does this mean for the future? International relations will continued to be defined by how states see the future of world governance, and what means they use to solve their conflicts. Here, the EU remains a major player, due to its strong normative role, its economic weight, and its network of relations. That said, it may not be sufficiently equipped to meet the challenges that come with connectivity wars. Only three European states have offensive cyber capabilities, leaving deterrence an under-explored field. The EU will remain vulnerable to manipulation when it comes to migration⁵³. But China, too, will face future challenges as opposition to its ambitions is taking shape. The extent of its success – or failure – will depend in large part on its economic trajectory, which could range anywhere between 2% and 6% GDP growth per annum over the next decade, depending on the scenarios⁵⁴.

Blind spots of the future: Elements of surprise

Around the beginning of the 20th century, mathematicians and physicists alike were convinced that one day, everything in the world would be predictable, an idea captured in Isaac Asimov’s “*Foundation*” novels. But today, it is becoming clearer that the challenge of the future is not merely a mathematical one – as quantum physics advance, so does the notion that our world will always

⁴⁹ European Council, “EU-US summit statement: “Towards a renewed Transatlantic partnership”, June 2021, <https://www.consilium.europa.eu/en/press/press-releases/2021/06/15/eu-us-summit-statement-towards-a-renewed-transatlantic-partnership/#>

⁵⁰ Sebastian Hellmeier et al., « State of the world 2020: autocratization turns viral », *Democratization*, Volume 28, 2021 - Issue 6

⁵¹ Mark Leonard, “Connectivity wars: why migration, finance and trade are the geo-economic battlegrounds of the future”, European Council on Foreign Relations, 2016, https://ecfr.eu/wp-content/uploads/Connectivity_Wars.pdf

⁵² Center for Strategic and International Studies, “Significant Cyber Incidents Since 2006”, https://csis-website-prod.s3.amazonaws.com/s3fs-public/211004_Significant_Cyber_Incidents.pdf?2Myw9Ho.s7gTK8W0FLhN8NC0DPbs2Bod

⁵³ John R. Allen et al, *Future War and the Defence of Europe*, (Oxford University Press: Oxford, 2021)

⁵⁴ Scobell A. et al., “China’s Grand Strategy, Trends, trajectories and Long-term competition”, Rand Corporation, 2020 (https://www.rand.org/pubs/research_reports/RR2798.html)

contain uncertainties. This is nothing new to foresight, which is not about prediction, but about reflection on what the future might bring. Inevitably, foresight reflects current priorities and levels of knowledge at any given time, and by the same token, outdated foresight reveals what was previously not a priority or not known. We identify these areas in the coming paragraphs but in doing so, we are not berating ourselves for not paying closer attention to them. The purpose is rather to improve our foresight capacities through better understanding why, and where, we were surprised.

- While the 2019 report referenced an increased risk in **pandemics**, it under-estimated the likelihood or extent of such an event. It was not alone in this as most involved in pandemic preparedness built their plans on the much less contagious SARS, or less deadly swine flu. In contrast to today, there were no models available to calculate the probabilities of such an event. This has certainly changed: while we have no certainty over the nature or extent of the next pandemic, the risk of a pandemic of the magnitude of COVID-19 is currently estimated at 2.5-3.3% annually, meaning that within the next ten years there is a 22-28% chance of this happening, and within the next 25 years a 47-57% chance⁵⁵. (Note that these numbers can be superseded at any time with newer estimates.) This should not be blown out of proportion, however: the greatest threat to future health will be from non-communicable diseases such as diabetes or cancer, projected to cause 80% of deaths by 2040. Europe and the developed world generally are particularly vulnerable to these diseases due to their lifestyle choices such as smoking, poor diet, and lack of exercise. Ironically, the pandemic itself furthered unhealthy lifestyles, with smoking rates rising by up to 19%, weight gain reported by more than a third of the population, and exercise rates dropping by more than half⁵⁶. In addition, antimicrobial resistance is projected to increase further, potentially causing up to 10 million deaths globally by 2050⁵⁷.

What does this mean for the future? Improving global pandemic preparedness will be an important determinant in the extent and impact of another pandemic; it could also prepare the ground for improved healthcare in states that are currently challenged in this regard. Just like security measures became permanent after terrorist attacks, virus screening is likely to become a regular part of our lives in order to detect future outbreaks. At the same time, global health will continue to suffer from the side effects of wealth, which are obesity and its related diseases. By 2030, 51% of the world population is projected to be overweight – already, more people die from being overweight than being underweight⁵⁸.

- While the last report identified increased digitalisation as a trend, it underestimated the potential for **remote working**. Before the pandemic, just 5% of employees in the EU were working from home. In large part, this was because working from home was seen by employers as lowering productivity, and because videoconferencing services were not used as standard meeting facilitators. The pandemic changed attitudes to both: not only are 90%

⁵⁵ Marco Marani et al, “Intensity and frequency of extreme novel epidemics”, Proceedings of the National Academy of Sciences of the United States of America, August 2021, <https://www.pnas.org/content/118/35/e2105482118>

⁵⁶ Han Shi Jocelyn Chew1 & Violeta Lopez, “Global Impact of COVID-19 on Weight and Weight-Related Behaviors in the Adult Population: A Scoping Review”, International Journal for Environmental Research and Public Health. 2021 Feb; 18(4): 1876.

⁵⁷ O’Neill Institute for National and Global Health Law, “Behind the Headlines: 10 Million Deaths From Antimicrobial Resistance by 2050 (or Not?)”, February 2020, <https://oneill.law.georgetown.edu/behind-the-headlines-10-million-antimicrobial-deaths-by-2050-or-not/>

⁵⁸ World Health Organisation, “Obesity and overweight”, <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

of employees as productive as home as they are in the office, digital platforms such as Zoom or Slack have been widely accepted. Surveys indicate that a quarter to a third of employees in OECD countries would like to continue working from home, and employers are beginning to accommodate such requests⁵⁹.

Of course, this has downsides, too: remote working is not possible for all jobs, in fact, only about half have the potential to be done remotely, particularly in finance, management, and professional services⁶⁰. This could create further inequalities. In addition, remote working comes with the potential of overwork⁶¹, and although it cuts emissions by way of reducing transport (business travel is projected to fall by 20%⁶² in the medium term), the digital economy's carbon footprint stood at 4% of emissions in 2020, and is projected to increase to 5.5% in 2025⁶³.

What does this mean for the future? Remote working is likely to remain a feature of the future of work, although it will not become the norm. With it come challenges of cyber security that need to be addressed. This rapid change has triggered questions on other aspects of the future of work. The four-day working week, for instance, is now being tested in Canada, Belgium, and by various companies around the world as a way to increase worker flexibility⁶⁴. This could have interesting knock-on effects for motivation – but the jury is still out on whether it increases or decreases innovation.

- Although COVID-19 did not so much change urbanisation as a global phenomenon, it nevertheless spurred surprising new thinking on city life, notably related to public transport, nature, quality of life, and pollution. Bicycle use for instance increased by 23% in several European cities as well as in the Americas, as citizens chose cycling over public transport with the attendant infection risks⁶⁵. The sale of e-bikes, which make cycling accessible to the elderly and those in hilly areas, increased by 47% in Europe to 30 million per year, meaning that by 2030, bicycle sales could be double that of cars⁶⁶. Restrictions on mobility improved somewhat as nitrogen dioxide (NO₂) levels temporarily dropped in some European cities by 50%⁶⁷, but other air pollutants such as particulate matter (PM2.5 and

⁵⁹ Tablet, “The Great Office Refusal”, 6 October 2021, <https://www.tabletmag.com/sections/news/articles/great-office-refusal-joel-kotkin>

⁶⁰ McKinsey & Company, “What’s next for remote work: An analysis of 2,000 tasks, 800 jobs, and nine countries”, November 2020, <https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries>

⁶¹ OECD, “Teleworking in the COVID-19 pandemic: Trends and prospects”, September 2021, <https://www.oecd.org/coronavirus/policy-responses/teleworking-in-the-covid-19-pandemic-trends-and-prospects-72a416b6/#biblio-d1e1079>

⁶² McKinsey & Company, “The comeback of corporate travel: How should companies be planning?”, July 2021, <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/the-comeback-of-corporate-travel-how-should-companies-be-planning>

⁶³ Trends Informative, “Digital pollution: A crossroads for the challenges of today”, March 2021, <https://trendsformative.com/digital-pollution-a-crossroads-for-the-challenges-of-today/>

⁶⁴ Autonomy, “Going public: Iceland’s journey to a shorter work week”, June 2021, https://autonomy.work/wp-content/uploads/2021/06/ICELAND_4DW.pdf

⁶⁵ Ralph Buehler & John Pucher, “COVID-19 Impacts on Cycling, 2019–2020”, *Transport Reviews*, Volume 41, 2021 - Issue 4

⁶⁶ Forbes, “E-Bike Sales To Grow From 3.7 Million To 17 Million Per Year By 2030, Forecast Industry Experts”, December 2020, <https://www.forbes.com/sites/carltonreid/2020/12/02/e-bike-sales-to-grow-from-37-million-to-17-million-per-year-by-2030-forecast-industry-experts/?sh=1ebd79472876>

⁶⁷ European Environment Agency, “Air quality and COVID-19”, May 2021, <https://www.eea.europa.eu/signals/themes/air/air-quality-and-covid19/air-quality-and-covid19>

PM10) remained more present; meanwhile, in the absence of restaurants, bars and entertainment, parks were rediscovered by many citizens. Recognising this, several cities seized the moment to further ‘green’ themselves, by subsidising the purchase of bicycles, creating new bicycle lanes, and ‘greening’ streets by removing parking places, and refurbishing parks. While this potential for improved urban life was identified in the 2019 report, its magnitude was not. At the same time, easier remote working and fear of contagion in city centres resulted in significant numbers of people relocating to the countryside.

What does this mean for the future? As both climate change and urbanisation evolve simultaneously, COVID-19 has opened the opportunity for cities to turn into more attractive living and working spaces. The need for “cleaner” urbanisation was further strengthened by the release of new WHO guidelines in September 2021 making substantial reductions in the guideline concentrations of several air pollutants including NO₂, PM2.5 and PM10⁶⁸. In sum, this is a positive development that affects cities in Europe and elsewhere.

- **Populism** discovered a new field to score points in during the pandemic: health. Opposing measures such as facemasks and vaccines, populists from Donald Trump to Brazil’s President Bolsonaro, but also in Europe, presented themselves as the defenders of liberty. In part, this was because the pandemic itself created an environment of division in which populists thrive: it affected generations and genders differently, countries and regions, occupations and economies, pitting everybody against everybody. However, in sum, populists did not manage to use the pandemic entirely to their advantage: where populist parties were in government at the time of the pandemic, their lack of measures against it led to a 10% higher death rate⁶⁹. In Brazil, Bolsonaro has been accused of crimes against humanity for his poor handling of the crisis, and Trump had to leave office in 2021 despite his attempts to stay on with extra-legal means. While this does not mean that populists will disappear, their rise appears at least to have been stunted, also within European states. Perhaps this is also partly due to more citizen-centric consultation methods, which were introduced, for instance, in Ireland, Estonia, Luxemburg, France, and Romania.

What does this mean for the future? The main drivers of populism – social divisions, irreconcilable visions of societies, growing inequalities and an uncertain future – remain very present and therefore the populist drive for power will continue. Donald Trump, for instance, appears intent on running again in the American presidential elections of 2024 and the vast majority of the Republican party base seem to approve.⁷⁰ Given the agility with which populists all over the world managed to seize the pandemic for their narratives, we can expect them to do the same for future challenges.

- **Terrorism** was identified as an enduring feature of Europe’s security landscape in the 2019 report. While the number of attacks in Europe increased from three in 2019 to ten in 2020, casualty rates remained low because of rudimentary methods. The novelty resides in Salafi-

⁶⁸ <https://apps.who.int/iris/handle/10665/345329>.

⁶⁹ Kiel Institute for the World Economy, “Populism and COVID19: How Populist Governments (Mis)Handle the Pandemic”, Kiel Working Papers 2192, July 2021, <https://www.ifw-kiel.de/publications/kiel-working-papers/populism-and-covid19-how-populist-governments-mishandle-the-pandemic-16424/>

⁷⁰ The Hill, “Nearly 80 percent of Republicans want to see Trump run in 2024: poll”, October 2021, <https://thehill.com/homenews/campaign/577453-nearly-80-percent-of-republicans-want-to-see-trump-run-in-2024-poll>

Jihadism expanding substantially in Africa⁷¹. Our report hypothesised that terrorists would use their African bases to prepare attacks in Europe, but instead, Africa itself became the theatre for their operations. The continent has overtaken the Arab world in terms of casualties and attacks. Burkina Faso experienced the largest increase in terrorism in the world in 2019, with nearly 600 people killed, and similar developments were noted in Mozambique (where ISIS staged an uprising in 2021 killing 3,000), the Democratic Republic of Congo (DRC) and Niger⁷². Following the American withdrawal from Afghanistan, it is also possible that the Afghani outlet of the Islamic State (IS-Khorasan) will exploit the Taliban government's overstretch. Several thousands of these people are unaccounted for. At the same time, conflict has unfolded much as we expected: the total number of conflicts (40) has remained stable since the last report, but on a positive note, their duration is no longer increasing.

What does this mean for the future? Conflict resolution and prevention will remain a high priority for the international community, especially the United Nations and the EU, but tools and mechanisms so far seem to have limited effectiveness as conflict numbers across the world remain stable and at much higher levels than during the Cold War. Both Africa and Central Asia have so far been neglected as theatres where terrorist groups that are a threat to Europe regroup, train, and perpetrate attacks. The real worry must be that with population growth and climate change added to the equation, containment efforts will become largely insufficient.

New trends or outliers? Some weak signals

Spotting a trend early gives foresight a considerable advantage as it allows for early investments, preparations, and leverage. This means searching and identifying what are called 'weak signals': early, barely detectable signs that a possible new development is underway. But as their name indicates, weak signals are not strong on certainty and need to be monitored further before they can be embedded in a trend. By definition, a list of weak signals will therefore contain elements that do not turn out to be trends, but one-off events without strategic relevance. Below we list some such 'signals' that could point to new trends.

- The first weak signal is that foresight as a discipline has gained international traction since the last report. China, for instance, has announced its intention to be prepared for 'Black Swans' as well as 'Grey Rhinos', and the EU's first strategic foresight Commissioner has played a crucial role in establishing the method as a policy tool throughout the EU. In general, awareness of systemic risks, and the interlinkages between different, apparently unrelated sectors such as health and civil protection have increased, in large part due to the pandemic, but also to climate change. That said, this is not the first time foresight has had a heyday: in times of uncertainty, such as the 1970s and the 1990s, it was equally popular only to be discarded later..
- The success of the COVID vaccine developed by BioNTech has drawn attention to the potential and role of biotech start-ups, especially in Europe. Other medical innovations that will change the future, if adopted, have included 3D-printed organs, bionics to replace

⁷¹ Europol, "European Union Terrorism Situation and Trend Report 2021", June 2021, <https://www.europol.europa.eu/activities-services/main-reports/european-union-terrorism-situation-and-trend-report-2021-tesat>

⁷² Giovanni Faleg, Katariina Mustasilta, "Salafi-Jihadism in Africa: A winning strategy", EUISS Brief, June 2021, <https://www.iss.europa.eu/content/salafi-jihadism-africa>

organs such as eyes, nootropics to boost brain performance, and dermal tattoo biosensors assisting in the management of metabolic processes, diabetes or liver failure. The first implantation of a microchip connected to a computer into a pig's brain by Elon Musk's Neuralink could pave the way for future medical breakthroughs.

- In the years since the last report, the lab-grown meat industry has increased substantially in size and funding, raising hopes that CO₂ emissions from cattle – the equivalent of China's CO₂ emissions – could be cut significantly should it be possible to enable its mass production. This matters because diet change is the least popular action citizens are willing to adopt to prevent climate change⁷³. Alternative proteins have entered the market too, with the European Food Safety Agency approving the first alternative protein source based on mealworms in 2021. In general, food innovations in Europe have increased almost ten-fold since 2018. The share of people eating no or little meat has increased to a third of Europe's population⁷⁴.
- Several innovations were triggered by the climate change threat. As searches for alternatives to fuel-powered air travel continues, the world's first hydrogen-powered passenger plane took off in 2020. Airbus has released three hydrogen-fueled concept planes that could enter service by 2035. A French start-up has developed a mechanism to create bioluminescence in common, non-toxic, and non-pathogenic bacteria which can produce clean, safe, synthetic bioluminescence. This could be used for urban lighting for instance, cutting electricity costs and light pollution significantly. The World Food Programme and WEDEW installed the first water generator that can turn vapour into water in Uganda, offering a possible solution to water scarcity caused by climate change.
- Civilian space travel started at the same time as the space race resumed, with China launching a Mars rover mission and the UAE sending the first Arab astronauts into space. (It also has plans for a human colony on Mars by 2117.) Meanwhile however, the increasing number of satellites makes space not just crowded, but also an environmental hazard, as they emit light at night-time.
- Private and public digital currencies are being rapidly developed, with seven states having launched one at the time of writing, 16 running pilots and 14 developing them⁷⁵.
- Facebook announced the launch of a new project, the Metaverse (a name taken from 1992 science fiction novel *Snowcrash*), essentially a virtual reality accessible by 3D glasses. This space should be designed for entertainment, shopping and interaction with others. While it is not clear how well customers will receive the Metaverse, one thing is evident: without data, especially from the Internet of Things, it will be impossible to create a convincing environment. This in itself has raised privacy and security concerns.
- In 2021, the African Continental Free Trade Area entered into effect – if it achieves its objective of free trade integration by 2030, this could have many positive effects for both the continent and Europe⁷⁶ - but the journey will not be without challenges.

⁷³ UNDP, *People's Climate Vote, Results*, January 2021 (<https://www.undp.org/publications/peoples-climate-vote#modal-publication-download>)

⁷⁴ Veganz, *Veganz Nutrition Study 2020*, "<https://vegan.com/blog/vegan-nutrition-study-2020/>

⁷⁵ Atlantic Council, "Central Bank Digital Currency Tracker", <https://www.atlanticcouncil.org/cbdctracker/>

⁷⁶ Giovanni Faleg, "African Futures 2030", March 2021, EU Institute for Security Studies, <https://www.iss.europa.eu/content/african-futures-2030>.

What happens next?

The analysis above is a first attempt to analyse what has changed, and what is perceived to have changed, about our common future over the last two and a half years. Undertaken for the European Strategy and Policy Analysis System (ESPAS), the paper marks a staging-post in an on-going reflection on global trends and how they are evolving over time. This reflection will lead to the publication of a more comprehensive five-yearly Global Trends Report in spring 2024. For the first time, this next report will be able to draw on the very significant intensification of foresight and global trends analysis within the European institutions which is already a characteristic of the current five-year EU policy cycle (2019-2024).

The work pioneered by the ESPAS process over the last decade has encouraged and been matched by a series of initiatives within the EU system. These include the designation of a Commission Vice-President responsible for strategic foresight, the publication of an annual Commission Strategic Foresight Report since 2020, the deepening of work within the Commission on ‘mega-trends’, ‘resilience dash-boards’ and ‘horizon scanning’⁷⁷; the launch of a ‘Ministers for the Future’ Network to encourage national executives to identify and focus on longer-term challenges and build national foresight capacities⁷⁸; the development of routine work within the European Parliament on risks, capabilities and resilience; the upgrading of foresight structures in the Parliament, Council, and other institutions and bodies; and closer cooperation with not only with member-state foresight bodies, but also those in partner countries around the world.

This paper is published on the occasion of the 2021 ESPAS annual conference and is designed to further promote and encourage the culture of foresight now becoming mainstream within the EU institutions and beyond. We hope that it acts as a catalyst not only for reflection, but for considered and focussed action, as Europe faces the complex challenges ahead.

⁷⁷ European Commission, Resilience dashboards https://ec.europa.eu/info/strategy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en

⁷⁸ European Commission, Ministers for the Future, https://ec.europa.eu/info/files/ministers-future_en

About ESPAS

The European Strategy and Policy Analysis System (ESPAS) provides a framework for cooperation and consultation at administrative level between the European Parliament, the European Commission, the Council of the European Union, and the European External Action Service, with the European Investment Bank, the Committee of the Regions, the European Economic and Social Committee, the European Union Institute for Security Studies and the European Court of Auditors as observers, to work together on medium and long-term trends facing or relating to the European Union.



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