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The climate change crisis

Understanding the trends affecting an unpredictable future

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The climate change crisis

Climate change is going to be a major determinant of economic growth, as well as one of the biggest drivers of policy decision-making and social change over the coming years and decades. Being a dominant theme in our forecasting and analysis, our country analysts look at how climate change and the energy transition affect growth and domestic policy, while our industry analysts explore how sectors are adapting, as well as the risks and opportunities inherent in businesses throughout this transition.

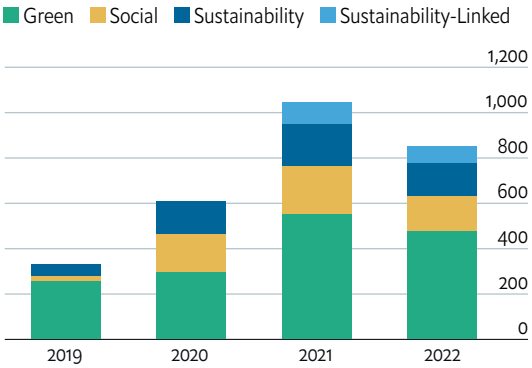
To this end, we examine the economic transformations taking place, most prominently in the **energy sector**, but also in sectors as diverse as electric vehicles (EVs), land use and agriculture, shipping, aviation, and others. Additionally, as the impacts of climate change become more apparent, we provide insights on the increasing **need for economies to adapt and build resilience** to the rapidly increasing risks of fires, floods, droughts, heatwaves and other physical risks. We also monitor **the pool of financing** that is growing at an unprecedented rate to fund these massive transformations, but that still struggles to meet the needs of the moment, while placing these trends in the context of the global political and diplomatic efforts to kick-start this change, which as of now is both unprecedented but still insufficient.

In this paper we select a handful of key charts from recent analysis produced by the team and explain why a trend or issue that often seems to be country- or sector-specific can shed light on these larger issues. We aim to show how EIU's country- and sector-level approach to understanding the impact of climate change, and the implications of the transition towards lower emissions, can give us a unique perspective on the larger picture.

Financing

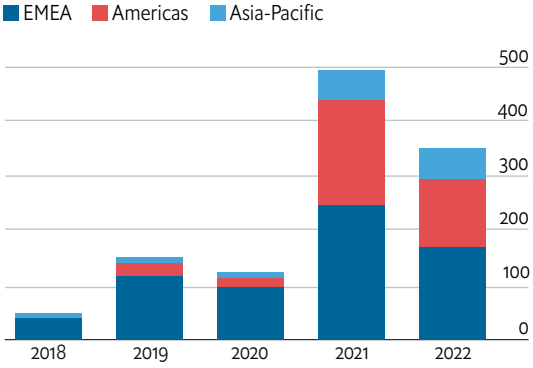
Investment into sustainable finance will dip, then recover

Sustainable bond issuance dipped in 2022
(US$ bn)



Sources: JP Morgan; Environmental Finance; EIU.

Sustainability-linked loans fell in 2022
(US$ bn)



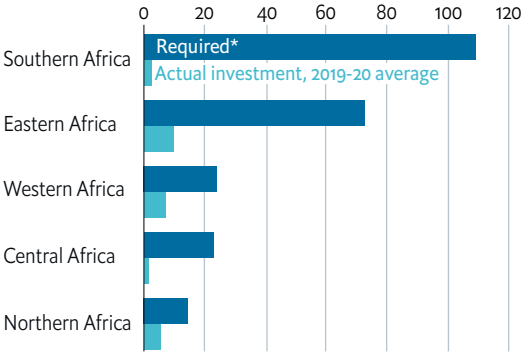
Sources: Bloomberg; EIU.

Ultra-low interest rates amid the pandemic triggered a surge in sustainable financing, with record-high inflows of funds-based on environmental, social and governmental (ESG) standards in 2021. However, the ESG investing landscape changed dramatically in 2022 owing to Russia's war on Ukraine. Share prices in the oil and gas sector rose as the war-induced energy crisis forced countries to turn to fossil fuels, causing conventional funds to outperform green ones. In addition, recession fears, high inflation, rising interest rates and an overexposure of ESG funds to troubled technology stocks further encouraged a pivot away from these investments.

With the war set to continue throughout 2023 and beyond, the transformation of ESG will persist as well. Regulators will also play a crucial role in accelerating interest in sustainable funds, amid a dim global economic outlook. This will entail creating clearer sustainability reporting standards to boost the credibility of these assets over the long run. However, it will not be enough to generate another ESG investment boom in 2023, and tight monetary policy and a growing backlash against "woke capitalism" will not help. But it will lay a foundation that will gradually raise the appeal of these funds, especially as the global economy recovers going into 2024 and market sentiment improves.

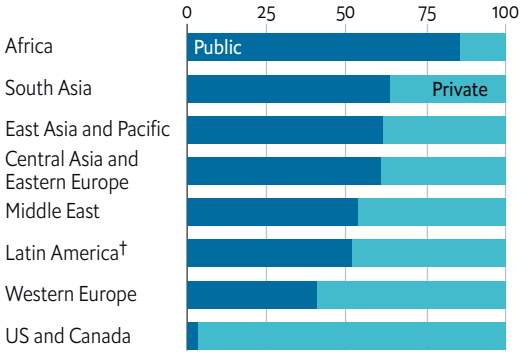
More money is needed to fight climate change

Africa, annual funding to meet climate goals (US$ bn)



Source: Climate Policy Initiative.

Climate funding, 2019-20 average, by sector (%)



*Annually to 2030 †Includes the Caribbean

Africa, which is responsible for only 3% of emissions, is suffering from multi-year droughts, catastrophic floods and other effects of climate change. African countries need US$277bn annually to meet their Nationally Determined Contributions (NDCs) under the Paris Agreement, but in 2019 and 2020 they received less than US$30bn annually. Southern Africa faces the biggest funding gap, of more than US$100bn annually.

One of the main reasons for the lack of sustainable funds in the region is a lack of private investment; the private sector provides just 14% of known climate financing in Africa, according to the Climate Policy Initiative, a think-tank. Private investment in fossil fuels, at US$29bn annually, is about three times the amount for clean energy. This contrasts with more developed regions like North America, where some countries get about 96% of their climate financing from the private sector. In addition, most of the current funding in Africa comes from development banks, but this often arrives in the form of loans, not grants, adding to the burden. In the absence of external funding, Africa will fall short of achieving its climate goals.

Energy decarbonisation

China's road to net zero: reshape the country and the world

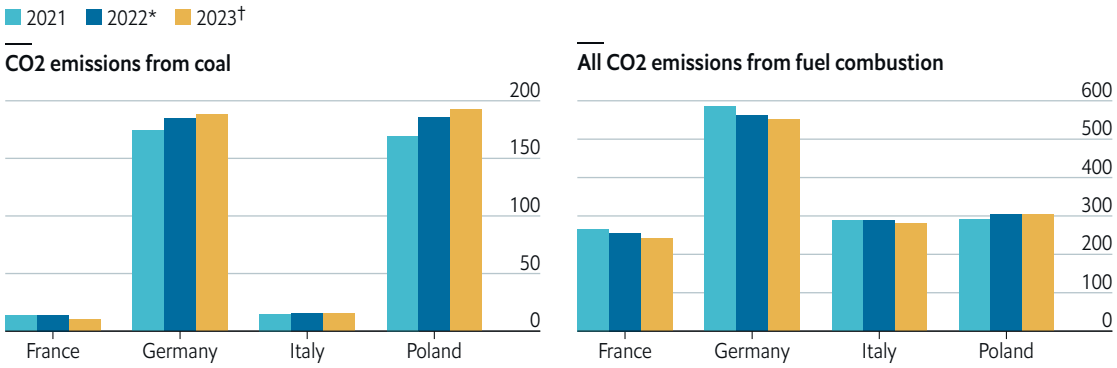
China's central government is building several large-scale clean energy bases

Large scale clean energy bases in mainland China.
Sources: State Council; EIU.

With the war in Ukraine and the changes that it has catalysed for global energy supply chains, it is important to look at how countries align themselves in what is expected to be a transformative period. China, for instance, is looking to remodel its energy usage amid significant pressure to decarbonise the country's energy- and emission-intensive industries, such as steel and cement. The government is ordering more solar to reduce emissions from the power sector, which is the country's largest emitter owing to its reliance on coal. We forecast that coal consumption will peak as soon as 2026 and decline steadily thereafter. Even as coal power remains indispensable in the short term, this should be seen as an indicator of larger global changes in the longer term.

Europe's energy crisis may impede its energy transition progress

Increased use of coal will slow net-zero efforts
(CO2 emissions, m tonnes)



Source: EIU.

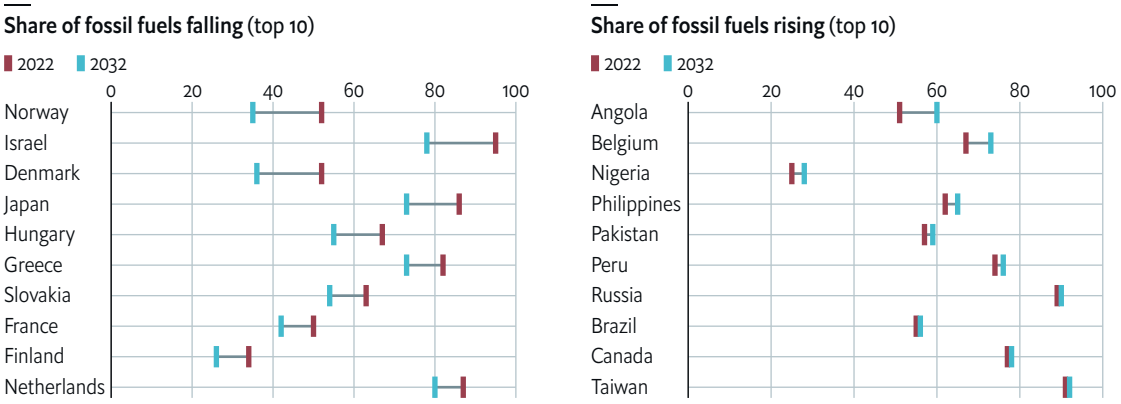
*EIU estimates †EIU forecasts

Several European countries have increased the use of coal to generate electricity owing to the 2022-23 energy crisis, leading to a rise in carbon emissions—in Germany and Poland this rise was significant, while in France and Italy it was marginal. The International Energy Agency (IEA) estimates that global coal usage increased by 1.2% in 2022 year on year. Germany and Poland are expected to continue increasing coal usage, and thereby their emission levels, this year, while France will cut back. In January climate activists protested against the demolition of an abandoned village in order to expand a coal mine.

Germany has legislation to phase out coal by 2038, but in November 2022 a draft law was approved for an early phase-out of coal-fired power plants in western Germany by 2030. Overall, policymakers are prioritising energy security over the energy transition in the short term, while also making efforts to switch to alternatives like renewables or nuclear. The EU has shortened the permitting process for new renewable power plants to a maximum of six months. Stricter emission-reduction targets may be set in the long term.

Fossil fuels' share will fall in some countries but rise in others

Fossil-fuel share will rise to meet energy demand and fill the nuclear gap
(combined share of fossil fuels in energy mix; %)



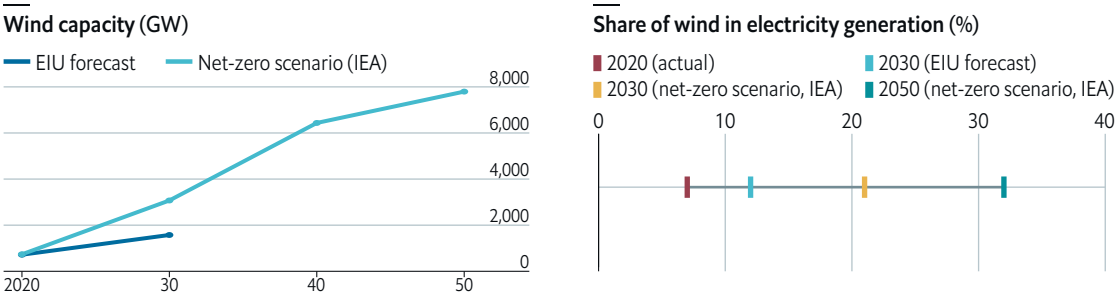
Source: EIU.

In 2022 the share of fossil fuels (oil, gas and coal) in total global energy consumption was estimated to be about 81%, and we are forecasting a marginal drop to 78% by 2032. The slow transition to non-fossil fuel sources in the energy mix will be further complicated by a rise in fossil fuel consumption in absolute terms as more energy is required to fuel the growing global economy. Most of this reduction in the combined percentage share of fossil fuels in the total energy mix will be driven by the electricity sector, owing to the wider availability of low-emissions sources for power generation.

Over the next decade Norway, France and Israel will make good progress in changing their energy mix with the rapid deployment of solar and wind power capacity to replace fossil fuels. Meanwhile, in some other countries, including Belgium, Canada, the Philippines and Nigeria, the share of fossil fuels will increase. Efforts to decarbonise outside the electricity sector have been slower and require an accelerated transition to clean mobility and alternatives for industrial uses. Governments will need to adopt a "carrot and stick" approach that includes incentives and strict regulations to decarbonise their energy sources.

Wind energy expansion is unlikely to achieve the 2050 net-zero target

Global wind power addition needs to double for a net-zero future



Sources: IEA; EIU.

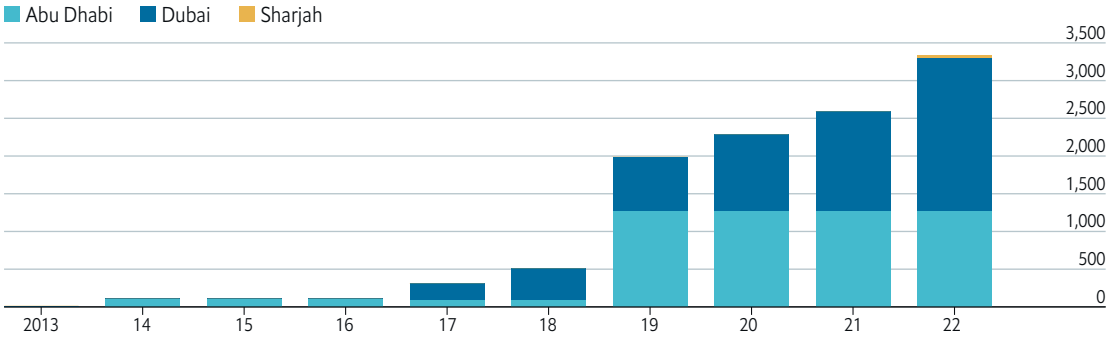
*IEA's net-zero is an aspirational scenario

Global wind power capacity expanded fivefold between 2010 and 2022, when it totalled about 900 GW, or 7% of total power generation. However, despite the rapid expansion, wind power's share in total electricity generation will be only half the level required to put the world on track to reach net-zero emissions by 2050—the normative scenario of the IEA. The IEA estimates that to achieve this, the share needs to increase to 21% by 2030; however, under the existing and expected policy environment, our forecast places it at 1,575 GW by end-2030, or just 12% of total power generation.

The UAE will channel oil money into renewable energy

The UAE's grid-ready renewables capacity is rising strongly

(MW; end-period)



Sources: local corporate reporting; EIU calculations.

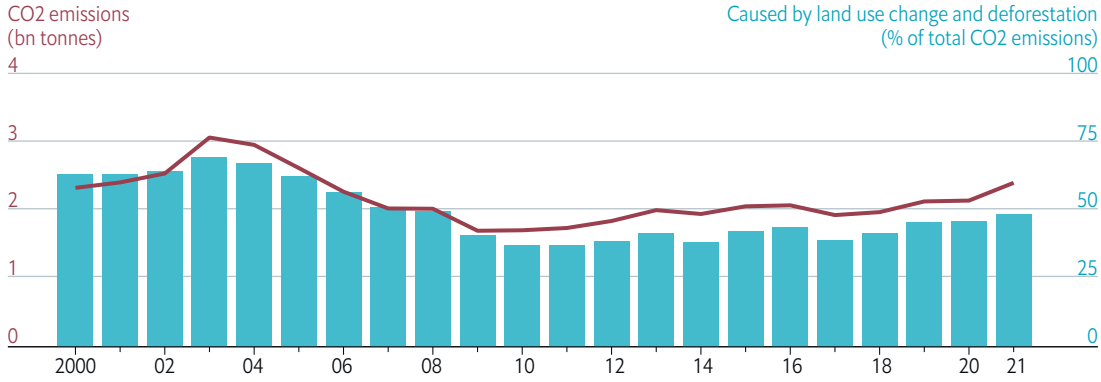
The UAE is among the world's largest hydrocarbons producers and is investing more into the sector to capitalise on high global oil prices. However, its government is also determined to channel some of the resulting wealth into clean energy, with an ambitious target of reaching net-zero emissions by 2050.

Investment is enabling a rapid expansion in the UAE's renewables capacity, particularly for solar energy. The UAE is also investing in renewables abroad; Masdar, the Abu Dhabi government's clean energy company, aims to have 100 GW of renewables capacity worldwide by 2030. The country is also determined to green its international profile; the annual COP28 international climate change summit will take place in Dubai in late 2023.

Non-energy decarbonisation

Brazil's deforestation is likely to be reversed under Lula

Deforestation has become the main source of CO2 emissions once again



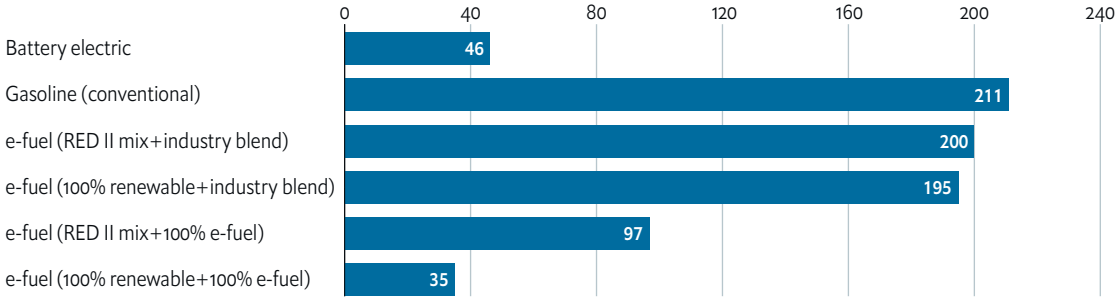
Source: Observatório do Clima.

We expect to see significant policy shifts in Brazil this year, with Luiz Inácio Lula da Silva of the centre-left Partido dos Trabalhadores assuming power. Under Lula's predecessor, Jair Bolsonaro, Brazil attracted significant negative international attention as deforestation escalated to its highest levels in more than a decade. The above chart shows that deforestation has become a major contributor to Brazil's carbon dioxide (CO_2) emissions over that period.

We expect Lula's administration to reduce illegal deforestation by increasing oversight and enforcing environmental regulations more strictly. The biggest challenge on this front will be to appease the agriculture sector, which has grown rapidly in recent years, partly because it has been able to expand into previously forested areas. However, given that deforestation in the Amazon threatens the global climate, Lula will attract significant international support for his efforts.

EVs and decarbonisation of the automotive sector

The Life cycle of CO2 emissions for e-fuels will be higher than for electric cars
(CO2 emissions, g CO2e/km)



Source: Transport & Environment.

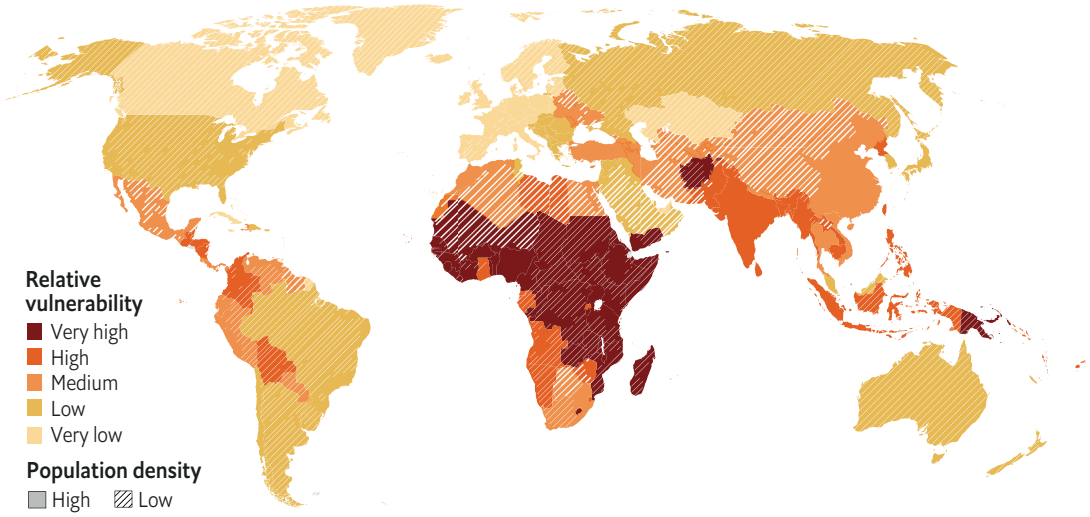
*For e-fuels, we have considered combinations of electricity mix for production and blends

There is significant debate as to whether the use of e-fuels can supplement the move to fully-electric vehicles as a way to decarbonise the auto industry. This debate has become highly charged because of the corporate interests involved, with German automakers lobbying for e-fuels to be exempted from the EU's 2035 ban on the sale of new fossil-fuel cars. We believe that in terms of life cycle CO2 emissions, the crucial question is how green each country's electricity production is. If more power was produced from renewables, EVs and e-fuels would produce far less emissions than they do currently.

Adaptation

Developing countries will need more assistance from developed countries

Poorer countries are more vulnerable to the impacts of climate change
(relative vulnerability to climate change-related natural hazards)



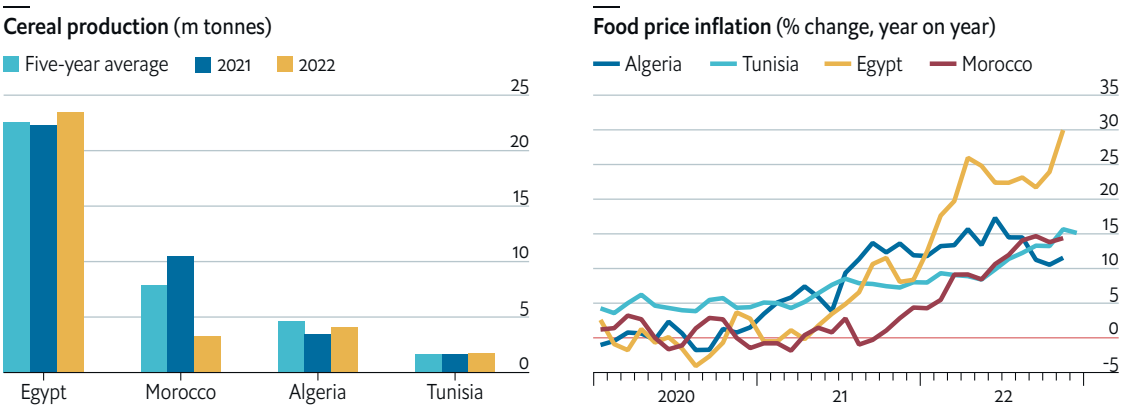
Source: UN Intergovernmental Panel on Climate Change.

Most climate models currently predict that temperatures will rise by 2-3°C by 2100, well beyond the UN's stated ambition of keeping warming to within 1.5°C. Even if warming is successfully limited to the more likely target of 2°C, the physical impacts (droughts, flooding, heatwaves and extreme storms) will still be unprecedented. The above map shows that poorer countries, particularly those in Africa, would be hardest hit by these climate change effects.

This fact is now driving global discussions over climate change, turning them into a battle for financing. Developing countries argue that they are not responsible for most emissions and will need funding from developed countries to implement the measures needed to cope with "loss and damage" from climate change. At the COP27 climate summit in November 2022, developed countries agreed to set up a loss and damage fund (although details are still sketchy); however, previous funding has fallen far short of pledges.

A lack of rain in North Africa will threaten harvests

Drought hits North African cereal output while food prices remain elevated



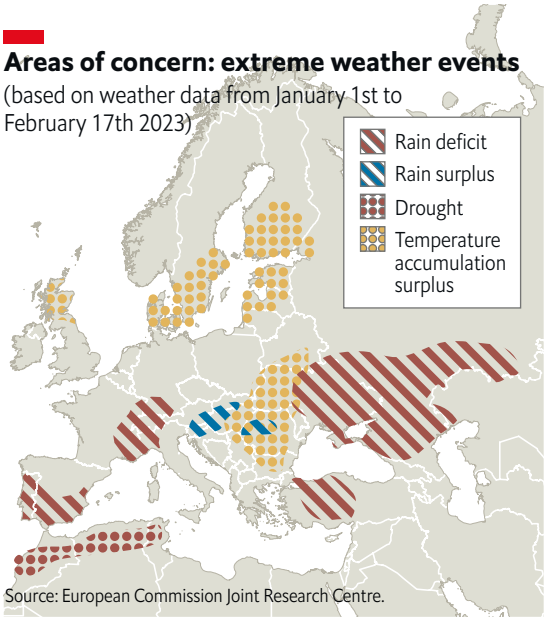
Sources: Food and Agriculture Organisation; Haver; EIU.

Agriculture accounts for 10-12% of GDP in North African countries and is a large source of employment. Repeated droughts over the past few years and a shortage of rain during the crucial planting season for 2023 mean that water scarcity will remain a pressing issue in the region, with accelerating climate change presenting a major downside risk.

Our cereal production and food prices charts compare trends across countries in Africa. They show the effect that drought had on cereal output in 2021 and 2022, and that food prices remained elevated, and in some cases are still rising. This is a source of increasing public discontent, and government attempts to ease cost-of-living pressures through subsidies are straining already stretched budgets. However, prices will remain substantially above pre-coronavirus levels, and the long-term prospects for food production are worrying.

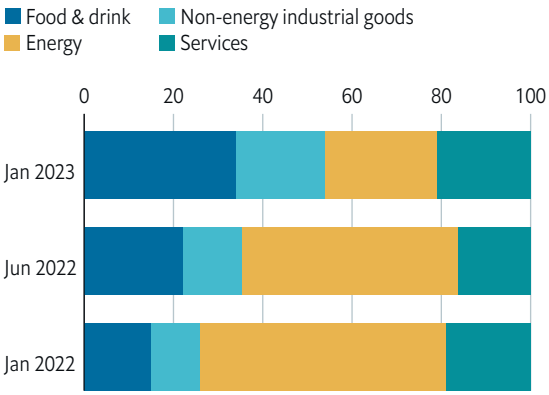
Low rainfall will lift food prices in Europe

Areas of concern: extreme weather events
(based on weather data from January 1st to February 17th 2023)



Source: European Commission Joint Research Centre.

Food prices are driving inflation more than energy
(contribution to annual inflation; %)



Sources: Eurostat; EIU.

Above-average temperatures have caused below-average rainfall in several parts of Europe in early 2023, particularly the western and central regions. As a result, France and Spain, among others, have put restrictions on water use, and the lack of significantly more rainfall will probably lead to new measures in the spring. The agriculture sector, which has already been hit by higher input costs, including energy, labour and transport, will also be affected by dry weather. Europe's largest agricultural producers, which include France, Italy, Spain, Germany, Poland and the Netherlands, will be most affected by low rainfall. We expect crop yields to be lower in 2023, which may push food prices higher and put further inflationary pressure on the economy.

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