FINANCIAL TIMES

THURSDAY 30 NOVEMBER 2023 EUROPE

Haley's chances are not as slim as they seem

EDWARD LUCE, PAGE 19

Can Ukraine ever free itself of oligarchs?

BIG READ, PAGE 17

Profit and loss
Tributes paid to Munger

Houston Cofield/Bloomberg

Charlie Munger, the vice-chair of Berkshire Hathaway and investment partner of Warren Buffett who has died aged 99, pictured in May 2019 at a shareholders' day in Omaha, Nebraska.

Tributes to Munger, who was instrumental in turning Berkshire into an investment powerhouse, were paid across the financial world yesterday following his death on Tuesday.

"Berkshire Hathaway could not have been built to its present status without Charlie's inspiration, wisdom and participation," said Buffett, who is 93.

Munger's death brings Berkshire closer to an era in which an empire worth nearly $800bn is steered by less familiar leaders. With a fortune valued at $2.6bn, he told the Financial Times this year he had lived during "a perfect period to be a common stock investor".

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Briefing

▶ **Property giant Signa files for administration**
The European company that owns half of New York's Chrysler Building, almost all of Germany's big department stores and part of Selfridges in London has filed for administration, leaving lenders fearful for their exposure.— PAGE 6

▶ **UAE denies pitching deals**
Sultan al-Jaber, the COP28 climate summit's president-designate and Abu Dhabi National Oil Company head, has denied claims he used the UAE's role as host to discuss oil deals.— PAGE 2; FT VIEW, PAGE 18

▶ **Gaza truce under strain**
Far-right ministers in Israel have piled pressure on Benjamin Netanyahu to spurn a broader hostage-for-prisoner release deal with Hamas, even as talks go on over extending the truce.— PAGE 4

▶ **IPO step for Golden Goose**
Buyout group Permira has chosen Bank of America, JPMorgan and Mediobanca as joint co-ordinators for the forthcoming market listing of Italian luxury sports shoe brand Golden Goose.— PAGE 6; LEX, PAGE 18

▶ **Exxon yields to scrutiny**
The biggest western oil producer has agreed to join the UN's flagship methane emissions reporting programme as it seeks to present a more transparent image on monitoring.— PAGE 8

▶ **Milei pick calms markets**
Argentina's president-elect Javier Milei has named Luis Caputo, a former finance minister from the mainstream centre-right, as his economy minister, in a choice that has boosted markets.— PAGE 4

▶ **Russia winter assault fear**
Moscow has built up a stockpile of missiles and intends to use them to try to destroy Ukraine's power and heating infrastructure in the coming months, the head of Nato has warned.— PAGE 2

▶ **Dublin alert to grievances**
Ireland's trade minister has vowed to heed concerns over pressure on housing, days after Dublin's worst riots in decades were stoked by far-right agitators whipping up anti-immigration fears.— PAGE 2

US accuses Indian official of plotting to kill Sikh separatist in New York

- Agents foiled alleged plan
- Intermediary indicted in Manhattan
- Target rails at Modi government

DEMETRI SEVASTOPULO — WASHINGTON

US federal prosecutors have accused an Indian government official of orchestrating a plot to kill a Sikh activist in New York, complicating the Biden administration's efforts to boost ties with India to help counter China.

The allegations were contained in an indictment filed yesterday by the US Department of Justice, which charged another Indian citizen with working with the official to carry out the plot. The Indian official was not named or charged in the indictment.

Although federal prosecutors did not name the target of the alleged plot, the Financial Times has confirmed it was Gurpatwant Singh Pannun, a dual US-Canadian citizen who is general counsel for Sikhs for Justice, a US-based group that is part of a separatist movement pushing for the creation of an independent Sikh state called Khalistan.

The indictment, filed in federal court in Manhattan, alleged the Indian official, referred to as CC-1, described himself as a "senior field officer" whose responsibilities include "intelligence". It said the official directed the foiled plot from India.

The official allegedly "recruited" the Indian citizen charged in the indictment, identified as Nikhil Gupta, in May by promising to arrange for criminal charges in India against him to be dropped.

> Accusations complicate White House efforts to boost ties with India to help counter China

Gupta then allegedly contacted a criminal associate who he did not realise was a "confidential source" for US law enforcement. The source introduced Gupta to a purported hit man who was actually an undercover law officer.

He was arrested in the Czech Republic in June at the request of US authorities, according to the indictment, and charged with murder-for-hire and conspiracy to commit murder-for-hire.

Pannun told the FT he believed the government of Indian Prime Minister Narendra Modi was trying to kill him because he was organising a referendum on whether Punjab, the majority Sikh province in India, should be an independent country.

Before the indictment was filed, India's ministry of external affairs said New Delhi had established "a high-level inquiry committee to look into all the relevant aspects of the matter" on November 18. It added that it would "take necessary follow-up action" depending on the committee's findings.

The Indian government said it would not have any further comment after the allegations were made public.

President Joe Biden has invested heavily in expanding relations with India as a critical component of a strategy to counter China in the Indo-Pacific region. US and officials from allied countries have said the alleged connection with New Delhi has complicated that strategy.

The case has become so diplomatically sensitive that Bill Burns, CIA director, and Avril Haines, US director of national intelligence, travelled to India separately recently to raise concerns over the alleged plot, said people familiar with their travel. Biden also raised the case with Modi at the G20 summit in New Delhi in September.

Washington's concerns emerged after the murder in a Vancouver suburb of Sikh separatist Hardeep Singh Nijjar, also part of the Khalistan movement. In September, Justin Trudeau, Canada's prime minister, said there were "credible allegations" that the Indian government was linked to Nijjar's murder, who was fatally shot in June.

Rate-cut confidence fuels US bond market rebound

Analysis ▶ PAGE 10

Austria	€4.50	Morocco	Dh50
Bahrain	Din1.8	Netherlands	€4.50
Belgium	€4.50	Norway	NKr45
Croatia	Kn33.91/€4.50	Oman	OR1.60
Cyprus	€4.20	Pakistan	Rupee350
Czech Rep	Kc125	Poland	Zl 25
Denmark	DKr46	Portugal	€4.20
Egypt	E£80	Russia	€5.00
France	€4.50	Serbia	NewD530
Germany	€4.50	Slovenia	€4.20
Greece	€4.20	Spain	€4.20
Hungary	Ft1450	Switzerland	SFr6.70
India	Rup220	Tunisia	Din7.50
Italy	€4.20	Turkey	TL110
Luxembourg	€4.50	UAE	Dh24
Malta	€4.20		

DeepMind AI opens short cut to marvel materials by 'finding' 2mn new crystals

MICHAEL PEEL — LONDON

Google DeepMind researchers have discovered 2.2mn crystal structures that open potential progress in fields from renewable energy to advanced computation, showing the power of artificial intelligence to discover novel materials.

The hoard of theoretically stable but experimentally unrealised combinations identified using an AI tool known as GNoME is more than 45 times larger than the number of such substances unearthed in the history of science, according to a paper published in Nature yesterday.

The researchers plan to make 381,000 of the most promising structures available to scientists to test their viability in fields from solar cells to superconductors. The venture underscores how harnessing AI can shortcut years of experimental graft and potentially deliver improved products and processes.

"It's hard to imagine any technology that wouldn't improve with better materials in them," said Ekin Dogus Cubuk, a co-author of the paper.

The researchers set out to uncover crystals to add to the 48,000 they calculated as having been identified. The known substances range from bronze and iron to more recent discoveries.

"From microchips to batteries and photovoltaics, discovery of inorganic crystals has been bottlenecked by expensive trial-and-error approaches," the Nature paper says. "Our work represents an order-of-magnitude expansion in stable materials known to humanity."

Researchers from the University of California, Berkeley and the Lawrence Berkeley National Laboratory have already used the findings as part of experimental efforts to create materials, according to another paper published in Nature yesterday.

The team deployed computation, historical data and machine learning to guide an autonomous laboratory, known as the A-lab, to create 41 novel compounds from a target list of 58 — a success rate of more than 70 per cent.

The techniques outlined in the two Nature papers would enable new materials to be identified "with the speeds necessary to address the grand challenges of the world", said Bilge Yildiz, a Massachusetts Institute of Technology professor not involved in the research.

"This expansive database of inorganic crystals ought to be filled with 'gems' to be uncovered, to advance solutions to clean energy and environmental challenges," said Yildiz.

World Markets

STOCK MARKETS

	Nov 29	Prev	%chg
S&P 500	4562.35	4554.89	0.16
Nasdaq Composite	14296.59	14281.76	0.10
Dow Jones Ind	35463.88	35416.98	0.13
FTSEurofirst 300	1813.79	1807.32	0.36
Euro Stoxx 50	4371.49	4348.02	0.54
FTSE 100	7423.46	7455.24	-0.43
FTSE All-Share	4047.89	4059.87	-0.30
CAC 40	7267.64	7250.13	0.24
Xetra Dax	16166.45	15992.67	1.09
Nikkei	33321.22	33408.39	-0.26
Hang Seng	16993.44	17354.14	-2.08
MSCI World $	3012.57	3007.99	0.15
MSCI EM $	985.47	977.54	0.81
MSCI ACWI $	691.99	690.46	0.22
FT Wilshire 2500	5872.22	5867.57	0.08
FT Wilshire 5000	45708.50	45676.80	0.07

CURRENCIES

Pair	Nov 29	Prev	Pair	Nov 29	Prev
$/€	1.098	1.098	€/$	0.911	0.911
$/£	1.270	1.268	£/$	0.788	0.789
£/€	0.864	0.866	€/£	1.157	1.155
¥/$	147.395	147.880	¥/€	161.766	162.388
¥/£	187.154	187.548	£ index	81.787	81.546
SFr/€	0.960	0.965	SFr/£	1.111	1.114

CRYPTO

	Nov 29	Prev	%chg
Bitcoin ($)	37720.00	37832.33	-0.30
Ethereum	2024.28	2049.04	-1.21

COMMODITIES

	Nov 29	Prev	%chg
Oil WTI $	77.26	76.41	1.11
Oil Brent $	82.13	81.47	0.81
Gold $	2025.65	2013.70	0.59

GOVERNMENT BONDS

Yield (%)	Nov 29	Prev	Chg
US 2 yr	4.67	4.77	-0.10
US 10 yr	4.31	4.34	-0.03
US 30 yr	4.50	4.52	-0.02
UK 2 yr	4.51	4.61	-0.10
UK 10 yr	4.25	4.33	-0.08
UK 30 yr	4.59	4.64	-0.05
JPN 2 yr	0.04	0.06	-0.02
JPN 10 yr	0.68	0.75	-0.07
JPN 30 yr	1.63	1.71	-0.08
GER 2 yr	2.83	2.92	-0.09
GER 10 yr	2.43	2.49	-0.06
GER 30 yr	2.68	2.72	-0.04

Prices are latest for edition
Data provided by Morningstar

INTERNATIONAL

Climate summit

COP28 chief denies pitching for oil deals

Jaber insists all contacts have centred on global push to realise 1.5C target

ATTRACTA MOONEY — LONDON
PILITA CLARK — DUBAI
ALICE HANCOCK — BRUSSELS

The president-designate of COP28 and head of the Abu Dhabi National Oil Company yesterday rejected allegations he had used the United Arab Emirates' position as host of the global climate summit to discuss oil and gas deals.

Sultan al-Jaber said in Dubai less than a day before COP28 opens that he had never seen nor used briefing papers obtained by the non-profit Centre for Climate Reporting alongside the BBC, which outlined talking points for the president-designate to discuss possible fossil fuel deals with 15 countries including Brazil, China, Egypt and Germany.

"These allegations are false, not true, incorrect and not accurate. It is an attempt to undermine the work of the COP28 presidency," Jaber said at the Dubai Expo City venue for the summit.

"I promise you, never ever did I see these talking points that they refer to or that I ever even used such talking points in my discussions," he said.

The UAE, one of the world's largest oil and gas producers and a significant overseas investor, has struck deals worth about $200bn over the past year, including renewable energy projects, prompting criticisms it is looking to influence decisions at COP28 reached by the almost 200 countries gathered.

"Do you think the UAE or myself would need the COP or the COP presidency to go and establish business deals or commercial relationships?" he said.

Every conversation he had with governments or stakeholders "was centred around one thing only", he said, and that was how to keep alive a target to limit global temperature rises to 1.5C. But he acknowledged he had been called on to "engage" with governments and oil and gas companies. "Sometimes I am told 'you can't do that'. We are damned if we do and damned if we don't," he said.

> 'Sometimes I am told "you can't do that". We are damned if we do and damned if we don't'

Organisers say up to 180 heads of state or government had registered to attend the two-week summit.

The choice of the UAE as COP28 host a year ago drew questions on whether one of the world's biggest oil and gas producers should oversee global climate talks.

Wopke Hoekstra, EU climate envoy, said it was clear the "whole world is watching. There is no alternative, there is no way out and there is no escape route other than to deliver on ambition in full. Climate talks should be about one topic only and that is climate."

Under the 2015 Paris agreement, countries agreed to limit global temperature rises since pre-industrial times to well below 2C and ideally to 1.5C.

This year's summit is expected to include a fierce debate about the future of fossil fuels, chief contributor to global warming. The EU, France and Ireland, among others, are pushing for a phaseout of fossil fuels but expect resistance from economies that rely on production such as China, Russia and Saudi Arabia.

Teresa Ribera, Spain's climate minister, said the energy sector must be "predominantly free of fossil fuels ahead of 2050". John Kerry, US climate envoy, supported calls for a phaseout of unabated fossil fuels, or those burnt without the emissions being captured.

"The problem is . . . this burning of fossil fuel without abatement," he said, adding the US would be calling for faster action on climate change at the summit.

See The FT View

Military alliance

Nato warns of Moscow missile stocks primed for Ukraine winter assault

HENRY FOY — BRUSSELS
CHRISTOPHER MILLER — KYIV
MAX SEDDON — MOSCOW

Russia has built up a large stockpile of missiles and intends to use them in a bid to destroy Ukraine's power and heating infrastructure in the coming months, Nato's secretary-general has warned.

With the front line largely frozen after Ukraine's counteroffensive failed to make significant gains, Kyiv has stepped up calls for more air defence supplies from western allies as it girds for another winter bombardment.

"Russia has amassed a large missile stockpile ahead of winter, and we see new attempts to strike Ukraine's power grid and energy infrastructure, trying to leave Ukraine in the dark and cold," said Jens Stoltenberg, Nato secretary-general, following a meeting of allied foreign ministers and their Ukrainian counterpart in Brussels yesterday.

"We must not underestimate Russia. Russia's economy is on a war footing."

The warning from the head of the US-led military alliance, which Ukraine has applied to join, comes as EU countries and US lawmakers continue to squabble over respective new financial support packages for Kyiv, raising questions on the longevity of western backing as Russia's invasion grinds on.

Antony Blinken, US secretary of state, said he saw "no sense of fatigue" among Nato regarding support for Ukraine.

Russia is planning to spend Rbs10.8tn ($122bn) on defence next year, three times the amount allocated in 2021, the year before the full-scale invasion and 70 per cent more than was planned for 2022, according to a bill signed by President Vladimir Putin.

Arms manufacturers are working three shifts a day to meet the defence ministry's orders. Several civilian factories have shifted to defence production, as well as some non-industrial sites, including a bakery that makes drones.

Russia's intelligence agencies have also stepped up their operations to import western dual-use technology — goods that have both potential civilian and military applications — for the defence industry. The rush for parts has forced Russia to seek ways around western sanctions and export controls by smuggling western-made technology through third countries such as Turkey, according to western officials.

Russia is accepting whatever parts arms manufacturers can get to increase missile production, western officials say, even if that makes them less accurate. A senior Ukrainian intelligence official told the Financial Times Russia was receiving frequent shipments of munitions from Iran and North Korea, including Iranian drones and North Korean artillery shells and rockets.

The artillery is arriving in quantities that will ensure Russian troops can at least continue fighting at a level consistent with the hostilities in recent months.

Stoltenberg said Russia was "now weaker politically, militarily and economically" than before the February 2022 invasion and had "lost a substantial part of its conventional forces. Hundreds of aircraft. Thousands of tanks. And more than 300,000 casualties."

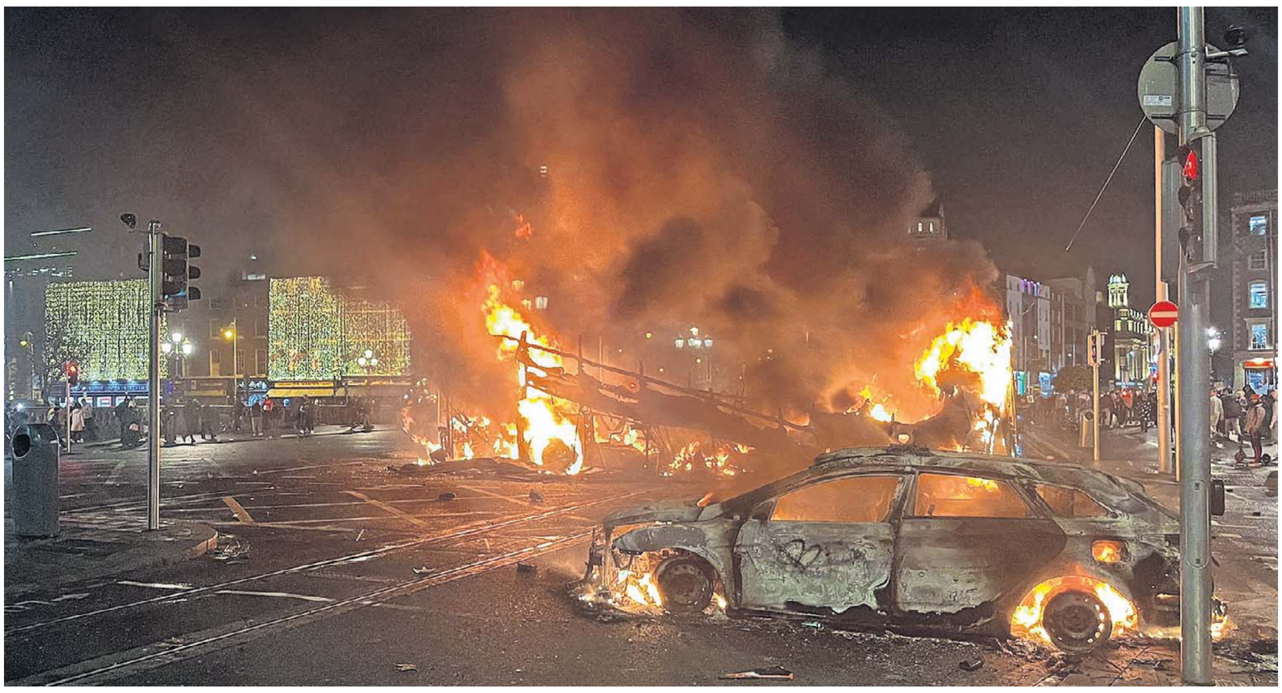
See FT Big Read

Ireland. Social policy

Dublin pledges to heed migration fears after riots

Minister aims to ease concerns over placing asylum seekers in areas 'where there is tension'

ANDY BOUNDS — BRUSSELS
JUDE WEBBER — DUBLIN
CLARA MURRAY — LONDON



In flames: a car and bus burn in Dublin during riots a week ago after stabbings that were attributed to an Algerian immigrant by the far right
Peter Murphy/AFP/Getty Images

Ireland's trade minister has vowed to heed concerns about pressure on housing days after Dublin's worst riots in decades were stoked by far-right agitators whipping up anti-immigration fears.

"We do need to try to listen to what people are saying," Simon Coveney said in an interview. That included social support and giving reassurances to local communities when placing asylum seekers in short-term accommodation such as hotels in inner city areas "where there is tension and concern".

The government has been struggling to accommodate an increasing number of refugees. It warned on Tuesday about the "very real possibility" of running out of room for them in the coming days.

Coveney denied Ireland was following fellow EU states such as the Netherlands and Italy, where more than a fifth of voters back anti-immigrant parties.

Rampaging youths set buses on fire, clashed with police on one of Dublin's busiest streets and looted shops last Thursday after three children and a care worker were stabbed outside a school by a man far-right groups had claimed was an Algerian immigrant. Coveney said the alleged perpetrator was naturalised and had lived in Ireland for 20 years.

Speaking in Brussels, he said a handful of people peddling a "warped agenda built on hate and anger and dividing society" had stirred anti-immigration sentiment on social media, tarnishing the country's welcoming and socially progressive reputation.

Ireland has no mainstream far-right party but as immigration has grown, fringe groups on social media platforms had "weaponised the very real and legitimate issues" the country had failed to resolve, said Aoife Gallagher, a Dublin-based senior analyst at the Institute for Strategic Dialogue (ISD), a think-tank.

Gallagher said Ireland had been hit by multiple challenges, including a housing crisis and a lack of access to education, healthcare and mental health services. "The depletion of services is very much contributing to the far right's ability to create an 'us versus them' narrative."

Coveney said most Irish people were "very comfortable" with immigration. The government has stressed that healthcare, among other sectors, would grind to a halt without it. About 40 per cent of doctors in Ireland trained abroad, the fourth highest in the OECD.

As 141,600 people arrived in the year to April 2023, pushing immigration to a 16-year high, anti-immigration messaging on social media has surged.

The ISD, which focuses on extremism and disinformation, counted an average of 2,876 posts about immigration in Ireland a day from January 1 to April 3, up 300 per cent from the whole of 2022 and 1,800 per cent since 2020.

Immigration is part of Ireland's profound social transformation this century. The once poor, inward-looking Catholic nation has embraced global technology companies and workers from the EU and beyond while holding referendums ditching longstanding bans on gay marriage and abortion.

Over the past two decades, the portion of its population born abroad has doubled to 20 per cent.

Two foreigners — a Brazilian Deliveroo rider and a Filipino nurse — were among those who rushed to help victims of Thursday's knife attack. Coveney noted that one of the injured children was the daughter of immigrants.

But the pace of change has been too fast for some. Bryan Fanning, professor of migration and social policy at University College Dublin, noted that more than 30 per cent voted against legalising abortion in 2018 and many "ordinary" conservatives felt "disrespected".

"Ireland became very progressive, very quickly," he said. "So the question is not whether we have a very, very dangerous far right but whether some aspect of that far right can reach out and convince ordinary, everyday people."

Police say last week's riots involved "hooligans" and opportunists and Coveney said "some far-right activists in the UK are also active in Ireland".

> A handful of people are peddling a 'warped agenda built on hate and anger and dividing society'
> Simon Coveney

But they followed increasing protests by far-right groups with rallying calls on social media — some from prominent figures with millions of followers. Lawmakers were blockaded into Ireland's Dáil parliament in September as protesters outside erected a mock guillotine. Far-right groups have disrupted LGBT+ book events in public libraries and seized on recent high-profile murders committed by foreigners.

Many of the protests have taken aim at immigrants amid rising pressures on housing and public services.

Despite booming tax revenues that have swollen state coffers so much that Ireland is setting up a long-term sovereign wealth fund, even increases in homebuilding remain far short of meeting demand. That has left a generation of young people, as well as Ukrainians fleeing Russia's war and other asylum seekers, struggling to find homes.

Ireland has taken in nearly 100,000 Ukrainians since the start of Russia's full-scale invasion last year, prompting taoiseach Leo Varadkar to say there was now a "limit on our capacity".

More than 400 other asylum seekers are being housed in tents because other accommodation is full.

Energy supply

EU ports reship more than 20% of LNG imports from Russia

ALICE HANCOCK — BRUSSELS

More than a fifth of Russia's liquefied natural gas reaching Europe is reshipped to other parts of the world, boosting Moscow's revenues despite EU efforts to curb them in response to the full-scale invasion of Ukraine.

While contracts for so-called transshipment of Russian LNG have been banned in the UK and the Netherlands, data suggests permitted Russian gas shipments are routinely transferred between tankers in Belgium, France and Spain before being exported to buyers on other continents.

The ship transfers are crucial for Russia as it attempts to make best use of its Arctic fleet. Transshipment usually takes place between Russian "ice-class" tankers that are used to run between the Yamal peninsula and north-western Europe and regular LNG tankers that then sail on to other ports, freeing up the ice-class vessels to return north.

Ports in Belgium, Spain and France still receive significant volumes from the Siberian plant Yamal LNG, whose biggest shareholders are Russia's second-largest natural gas producer Novatek, China National Petroleum Corporation and the French energy company TotalEnergies.

Of the 17.8bn cubic metres of Russian liquefied natural gas flowing to the EU between January and September this year, 21 per cent was transferred to ships destined for non-EU countries including China, Japan and Bangladesh, according to data from the Institute for Energy Economics and Financial Analysis, a think-tank.

Zeebrugge in Belgium and Montoir-de-Bretagne in France received the most Russian LNG of EU ports this year.

Unlike coal and oil, Russian gas has not been placed under sanctions by the EU but the European Commission has said member states should rid themselves of Russian fossil fuels by 2027.

Ana Maria Jaller-Makarewicz, lead energy analyst at the IEEFA, noted that while volumes of LNG transshipments in Europe had fallen since Russia's invasion, they remained significant and potentially had been overlooked. "The EU is not thinking about [it] when they are talking about a ban," she said. "They don't count a transshipment."

Amund Vik, former Norwegian state secretary for energy and adviser to the consultancy Eurasia Group, said EU governments were caught in a bind. Member states would find it "hard to bang the drum [against] exporting [Russian LNG] elsewhere if they are using it themselves", he said. "You will see them tiptoeing around this topic this winter."

The EU previously imported 155bn cubic metres of piped gas from Russia, about 40 per cent of its total supply. To replace that gas, the bloc has vastly increased its imports of LNG from countries including the US, Norway and Qatar. But the EU is also set to import record volumes of the super-chilled fuel from Russia this year.

EU policymakers have defended the continuation of imports from Russia as due to long-term contracts agreed before the war that, if broken, would force European groups to pay compensation to Russia. Belgian gas company Fluxys has, for example, a 20-year contract with Yamal that ends in 2039.

The Belgian energy ministry said it was "determined to tackle this issue" and was "gathering intelligence on effective approaches".

Fluxys said because gas was not under sanctions, "no client can therefore legally be denied access" to its LNG terminal.

The French energy ministry said it had no plans to prevent transshipment of Russian LNG at French ports.

But EU officials have repeatedly voiced concern over the levels of Russian LNG entering the bloc.

Policymakers are due to agree rules next month that will allow EU states to prevent access to EU gas infrastructure for Russian and Belarusian operators.

Additional reporting by Sarah White

Gas giant: the ice-class LNG tanker Rudolf Samoylovich docks in France

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INTERNATIONAL

Central banks wary of victory dance in battle against inflation

Policymakers at odds with markets on rate cuts amid fears of bumps in road

VALENTINA ROMEI — LONDON
MARTIN ARNOLD — FRANKFURT

Inflation's sharp slowdown across advanced economies has created a stand-off between markets and central banks over when borrowing costs will edge lower.

While central bankers warn it is too early to do a victory dance in their fight for stable prices, investors are already celebrating by betting on how soon interest rates will be cut.

The course of inflation will be crucial in determining which side is proved right. Several factors, such as flattening energy prices and strong wage growth, threaten to delay policymakers' mission to complete the "last mile" of bringing inflation down to their 2 per cent target.

Germany's central bank president, Joachim Nagel, this week warned of "a bumpy road ahead, with ups and downs in inflation over the near future".

Investors are pricing in the first quarter-point rate cuts by both the US Federal Reserve and the European Central Bank by June, followed by a further two

> 'Monetary policy will have to remain restrictive for a period of time'
> Clare Lombardelli, OECD

or three cuts over the remainder of 2024. The Bank of England is expected to move later, lowering rates for the first time by August, with one or two further cuts to follow before the year's end.

Those expectations, measured by pricing trends in swaps markets, have emerged despite rate-setters' repeated warnings that rates will remain high throughout next year.

German inflation data released yesterday recorded a bigger than expected fall to 2.3 per cent in November, while inflation in Spain fell for the first time since June. Eurozone data released today is expected to show inflation slowed from 2.9 per cent in October. Economists at UBS and Barclays forecast it will ease to 2.6 per cent this month, down more than three-quarters from its peak just over a year ago and close to policymakers' goal.

However, ECB president Christine Lagarde said last week it was premature to "start declaring victory" against inflation, warning it was set to reaccelerate "in the coming months" as recent disinflationary forces fade.

Nagel forecast eurozone inflation would return above 3 per cent as energy subsidies that had kept a lid on prices were withdrawn. Most economists expect eurozone inflation to rise to 3.5 per cent in December and still be above 2 per cent until at least the start of 2025, according to the average of forecasts compiled by Consensus Economics.

Using the term for a deceptive basketball move, US Federal Reserve chair Jay Powell said this month it would not be "misled" by a few months of encouraging price data, pointing out that "inflation has given us a few head fakes" in the past. On Tuesday, Christopher Waller, one of the Fed's most hawkish policymakers, signalled that rates were unlikely to rise further and could be cut if inflation continued to slow, but his views on possible rate cuts remain fairly isolated among policymakers.

Headline US annual inflation eased to 3.2 per cent in October. But it is expected to remain above 3 per cent until January 2024 and slow to only 2.4 per cent by the end of that year, according to Consensus Economics.

Jonathan Haskel, an external member of the BoE's Monetary Policy Committee, warned this week that labour market pressures and low productivity growth left little scope to cut UK interest rates "any time soon".

UK inflation reached 4.6 per cent in October, down from a peak of 11.1 per cent a year ago, but the BoE expected it would ease to 3 per cent only by the end of 2024, taking a further year to reach 2 per cent. "We're more worried [than independent forecasters] about persistence," said BoE deputy governor Dave Ramsden last week.

The OECD warned the "full effects" of the cumulative tightening over the past two years had yet to be felt. Clare Lombardelli, the OECD's chief economist, told the Financial Times: "Monetary policy is going to have to remain restrictive for a period of time — we are still worried about inflation persistence. You are going to need real rates to be high."

Several factors might make it a long slog for advanced economies to bring inflation down to the crucial 2 per cent level. One is the steep downward correction of energy prices from their surge a year ago after Russia's full-scale invasion of Ukraine has almost worked its way through the data. Year-on-year declines in consumer energy prices have played a big role in dragging down the headline rate of inflation. In the US, energy prices fell 4.5 per cent year on year in October; in the eurozone they were down 11.2 per cent.

But this impact is expected to fade as annual energy inflation flattens out and could even turn positive again. Food prices have also been slowing for several months. Eurozone food inflation peaked at 17.9 per cent in March and is expected to fall below 7 per cent in November. The slowdown in inflation has been "rapid because of base effects, but what comes next is certainly slower in the making", said Samy Chaar, chief economist at Lombard Odier.

Another important element central bankers have identified as likely to keep inflation elevated is the rapid growth of wages, which pushes up costs for labour-intensive services companies that pass it on via higher prices to customers.

While the last mile may be the slowest for rate-setters and investors, Chaar said the falls in headline rates meant households would feel better off as wages finally caught up with the surge in costs. "It means there [will be] some form of purchasing power next year."

Additional reporting by Tommy Stubbington and Sam Fleming in London

Riding high: an elderly man takes to his bike with bird cages in Beijing this month
Jade Gao/AFP/Getty Images

Life cycle

$101mn prize to fight ageing

A competition has been launched to encourage technological breakthroughs that will help people live longer and healthier lives as governments grapple with the increasing burden of ageing societies.

X Prize, a US-based non-profit organisation, is offering $101mn for research teams that can show they develop treatments that will restore key muscle, brain and immune functions for 65- to 80-year-olds.

The scientists will need to prove their therapies can lead to an improvement equivalent to turning back the biological clock by at least 10 years — with an ultimate goal of 20 years. Any treatment must take a year or less and the competition will last seven years.

A study from the London Business School and Oxford and Harvard universities estimated that adding one healthy year of life to the population was worth $38tn to the global economy. *Hannah Kuchler*

Special tribunal

French justice minister cleared on conflict of interest charges

LEILA ABBOUD — PARIS

The French justice minister was acquitted of charges of conflicts of interest and abuse of office yesterday, ending a years-long saga that had cast a cloud over president Emmanuel Macron's pledge to run a clean government.

The decision by a special tribunal in Paris will clear the way for Éric Dupond-Moretti, a former celebrity defence lawyer who Macron named as an unconventional pick for justice minister in 2020, to remain in his post.

But it also reignited criticism of the tribunal, known as the *Cour de Justice de la République* (CJR), which is made up of three judges and 12 members of parliament, for being overly politicised and ineffective. The body is the only one that can judge ministers for alleged wrongdoing committed while in office.

When he was first elected in 2017, Macron promised to run a more transparent government where any minister who was placed under official investigation would have to step down. In France, such a move is called *mise en examen* and is one step short of an indictment.

But Macron has since backed several ministers and top advisers who have run into legal problems to stay in office until definitive judgments have been passed. That has sparked criticism from political opponents and activist groups such as Transparency International.

His labour minister Olivier Dussopt is also on trial on charges of favouritism in awarding a contract when he was mayor of a small town in south-east France in 2009. He denies wrongdoing.

The Dupond-Moretti case was centred on whether he abused his position to settle old scores with magistrates and prosecutors with whom he had clashed during his time as a defence lawyer.

The CJR ruled in Dupond-Moretti's favour and declined to follow the prosecutors' request for a conviction and a one-year suspended prison sentence.

INTERNATIONAL

Israel

Far right warns Netanyahu on hostage deals

Prime minister told not to broaden release of Palestinian prisoners

NERI ZILBER — TEL AVIV

Far-right ministers in Israel piled pressure on Benjamin Netanyahu to spurn a broader hostage-for-prisoner release deal with Hamas, even as talks continued over extending the temporary truce in Israel's war against the militant group.

Two of the Israeli prime minister's cabinet ramped up attacks on the ceasefire, warning that his coalition government was under threat if he pursued a more ambitious swap with Hamas.

The threats came as the militants were yesterday expected to released another 12 women and children who have been held in Gaza, including two dual nationals. In return Israel would free a further 30 Palestinians from Israeli prisons.

Mediators in Qatar were also yesterday working to extend the existing agreement — due to expire this morning — by a further 48 hours. But claims from Hamas that the youngest hostage, a 10-month-old baby, and two other members of his family had been killed in captivity cast a shadow over the discussions. The current truce agreement, which took effect last Friday, has the potential to be extended to 10 days. But there have also been discussions about a broader deal that would probably require Israel to commit to a more lasting halt to its offensive and to release large numbers of Palestinian prisoners, including those convicted of murder.

In return, Hamas and other militant groups would release more hostages from Gaza, potentially including the dozens of Israeli soldiers being held in the strip.

However, Netanyahu said yesterday that Israel would resume its military campaign "after completing this stage of the return of our hostages", adding that: "There is no situation in which we do not go back to fighting until the end."

Netanyahu faces international and domestic pressure, particularly from hostage families, to extend the truce to secure the release of all the civilians and soldiers Hamas seized during its October 7 attack on Israel.

US secretary of state Antony Blinken is scheduled to return to Israel today, where he is expected to push for a continuation of the pauses in the hostilities to facilitate the release of more hostages and allow more aid into Gaza.

But Netanyahu, who has vowed to destroy Hamas, also faces public resistance from far-right members of his government to any further deals with the militant group.

Bezalel Smotrich, Israel's finance minister, warned that broadening the current agreement was "not on the agenda, not even as a suggestion". "This is a plan to eliminate the State of Israel," Smotrich added on the social media platform X.

Itamar Ben-Gvir, Israel's national security minister, wrote: "Stopping the war = dissolution of the government."

Far-right members of the coalition have been particularly opposed to the release of any Palestinian prisoners beyond women and children.

Argentina

Markets cheer Milei's choice for economy minister

CIARA NUGENT — BUENOS AIRES

Argentina's libertarian president-elect Javier Milei has named a former finance minister from the country's mainstream centre-right as his economy minister, in a conventional choice that has boosted markets wary of Milei's radical image.

Luis Caputo ran Argentina's finance ministry and then briefly its central bank from 2017 to 2018 under conservative former president Mauricio Macri, who once called him "the [Lionel] Messi of finance".

A former trader who worked at JPMorgan and Deutsche Bank, Caputo is known for close ties with Wall Street and Buenos Aires' banking sector.

The selection of Caputo, who is not a champion of Milei's flagship campaign pledge to replace the peso with the US dollar, has been read by analysts as a sign that other reforms will be prioritised first. Most Argentine economists have classed dollarisation as risky and unfeasible.

Milei said yesterday that Caputo, who travelled with the president-elect this week to Washington for talks with the US Treasury and IMF officials, "is the economy minister".

However, his office did not immediately respond to a request for comment. Milei, who has no executive experience, has previously backtracked on appointments. This month, he cancelled the choice of Carolina Píparo — previously confirmed as head of his social security agency — in order to name another appointee in her place.

Milei had previously tapped Emilio Ocampo, an economic history professor and proponent of dollarisation, to lead and "shut down" Argentina's central bank. But soon after his election victory, Ocampo backed away from the role amid rumours of Caputo's appointment to the economy ministry.

Milei has not confirmed who will head the central bank.

This year, Caputo's economics consultancy Anker Latinoamerica published a paper saying dollarisation would be "difficult", though "not impossible" to implement, and would require a "complex legal and financial architecture".

Milei has said his economic plan will focus on rapidly cutting spending and dealing with more than 23.8tn pesos of short-term peso-denominated liabilities held by local creditors.

"It is clear that the first problem we have to resolve is [those liabilities]," Milei said yesterday. "It is fundamental that we do it . . . with a lot of expertise, because if we make a mistake there, we will end up with hyperinflation."

Caputo has indicated he favours a voluntary swap of the short-term instruments for sovereign bonds, to signal to the market that debts will no longer be paid by money printing but with public funds. He will also need to renegotiate Argentina's $43bn loan from the IMF, on which it has missed almost all of its targets this year.

In 2018, Caputo faced a federal investigation into whether he failed to properly disclose links to offshore investment funds specialising in high-risk emerging market bonds when he joined Macri's government in 2015. He previously claimed he had cut ties with the funds before taking office.

Middle East. Besieged enclave

War in Gaza exacts horrific toll on children

Physical and mental damage from Israeli attacks will stay with the young for life

MAI KHALED — KHAN YOUNIS
HEBA SALEH — CAIRO

Victim of war: a Palestinian carries a child wounded in an Israeli air strike on Rafah in southern Gaza last week
Mohammed Saber/EPA-EFE/Shutterstock

When Donia Abu Mohsen, 13, briefly regained consciousness after an Israeli missile strike in south Gaza, she was covered in broken masonry and lying on a rooftop where the blast had flung her. Her father was bleeding next to her, and her sister, Dania, nine, was crying.

Donia cannot remember what happened next after the attack last month, but she woke in hospital to find her right leg had been amputated. "I noticed the leg injuries on the roof, but I didn't feel anything then," she said from her bed at Nasser Hospital in Khan Younis. "When I saw it here, I broke down in tears."

Relatives delivered yet more awful news: her parents had been killed along with another sister, Dalia, six, and baby brother Mohamed. "I felt my heart had stopped," she said. "My parents were very loving. I think of them every day and I pray the war will end."

Like Donia, thousands of young Palestinians have been injured or have lost their parents, or both, in weeks of Israeli attacks that have turned Gaza into what António Guterres, UN secretary-general, said is a "graveyard for children".

Until the truce that began on Friday, children were being killed, maimed and orphaned daily in Israel's offensive. Many who survived have disabilities and traumas that will stay with them for life, doctors say. Children make up almost half of Gaza's 2.3mn people.

"Children are living through a long horror film," said Ayed Abu Eqtaish of Defense for Children International-Palestine, a civil society group. "On top of the fear, everything they should receive as a right, like clean water and bread, is difficult to get."

Israel launched its war in Gaza in response to Hamas's October 7 cross-border attack in which 1,200 people were killed and 240 abducted, including children, say Israeli officials. Israel says it aims to "root out" the militant group.

Of 14,800 Palestinians killed by Israel since October 7, 6,000 are children, according to Gaza's health authorities. At least another 9,000 have been injured, many suffering horrific burns and wounds requiring amputation. About 3,500 children are missing, believed crushed under the rubble.

Aid workers say doctors in Gaza have a term — wounded child no surviving family — for those who survived explosions in which their kin perished. "This is unique to the Gaza Strip where you now have an avalanche of human suffering and attacks killing several generations of the same family," said Hiba Tibi, West Bank and Gaza country director of Care International UK.

Wounded children have joined the flood of people overwhelming Gaza's few functioning hospitals where doctors struggle with depleted supplies and almost no electricity, sometimes operating without anaesthesia.

Naheed Abu Taima, director of Nasser Hospital, said children often arrived in a critical condition. "They'd lost limbs, or have severe internal injuries which force us to operate to remove organs like the spleen or parts of the liver and intestines."

Injured children also suffered severe psychological shock manifested in symptoms such as incontinence and an inability to sleep. "This is caused by experiencing fear and terror, the loss of family members or even just witnessing cruel and painful scenes," he said. "The traumas will stay with them always if they are not treated, but right now we do not have the means to provide this."

At the hospital, Abboud, two, his arms and legs bandaged, cried as his mother, Fidaa Abu Mansour, tried to comfort him. The boy suffered burns on his limbs and chest from an Israeli strike on his home last month. His parents saved him and his sister, but his grandmother and aunt died of their injuries.

"Abboud cries all the time, and when he sees a doctor or anyone dressed in white he screams," said Abu Mansour, who has also been caring for the three sons of a cousin who was killed with her baby just hours after giving birth.

Amir, six, the youngest of the three, was still in shock and has to wear nappies, said Abu Mansour. "He saw the killing of his mother and baby brother. He didn't speak for days and now he's withdrawn and doesn't interact."

Israeli restrictions on food, clean water and fuel for treatment plants and generators have been eased but people are still going hungry, aid agencies say.

More than 1.7mn displaced Gazans now live in crowded shelters or private homes in unhygienic conditions, increasing the spread of respiratory illness and diarrhoea, the UN has said.

> 'Abboud cries all the time, and when he sees a doctor or anyone dressed in white he screams'

Tibi said fear and stress had reduced the milk of breastfeeding mothers, who now have to mix formula with dirty water. "You can imagine the impact on babies," she said. "In addition, formula isn't easily available so they use less of it with more water so the baby feels full."

The UN and humanitarian groups have called repeatedly for a lasting ceasefire but Israel, backed by the US, insists it must destroy Hamas while seeking to minimise civilian casualties. Benjamin Netanyahu, Israel's prime minister, said war will resume after the truce allows for the return of hostages.

Some young victims are determined to salvage something from the wreckage of a war they had no role in starting.

Mohamed Nawfal, 13, lost a leg and two fingers in an Israeli strike on November 4. "I was very sad when I heard my leg was amputated, but I thought maybe God will compensate me with something better. He knows I'm strong and can withstand it," he said.

Mohamed is sad he can no longer play football but would content himself supporting Real Madrid, his favourite team. "I won't give in. I've been told I can have a prosthetic leg and there are championships for players like me," he added.

Corporate levy

Vietnam tax increase hits multinationals

MERCEDES RUEHL — SINGAPORE
SONG JUNG-A — SEOUL

Vietnam will raise its tax rate in effect on multinational companies, in a move that could hit foreign direct investment in the country.

A top exporter of electronics and textiles, Vietnam has seen its FDI rise sharply as global companies search for a manufacturing alternative to China amid rising geopolitical tensions, a strategy known as "China plus one".

Technology groups such as Samsung, Intel, Apple and Sony as well as clothing and footwear companies such as Crocs and Adidas have boosted their factory presence in the south-east Asian country in recent years.

Vietnam's corporate income tax was already 20 per cent but it offered tax breaks and holidays to big foreign investors, allowing companies such as Samsung to pay as little as 5 per cent tax.

Parliament yesterday voted to raise the corporate levy to 15 per cent. The finance ministry estimated the move would affect 122 multinationals and generate 14.6tn dong ($603mn).

The long-planned change, which comes into effect in January, could dent Vietnam's appeal to foreign investors, said some companies. Mitigating measures — such as direct financial support for high-tech groups — were expected to offset the impact of the tax rise, but no details were provided.

The move brings Vietnam in step with a global minimum tax rate, which was backed by US Treasury secretary Janet Yellen and agreed by nearly 140 countries at the OECD in 2021. Under the rules, large companies with annual global turnover of more than €750mn paying less than 15 per cent in a low-tax jurisdiction will face a top-up levy either there or in their home country.

> 'Investors don't just invest in Vietnam because of tax benefits. It has other advantages'

Other countries that have benefited from the "China plus one" trend, such as Thailand, are expected to follow suit.

FDI is a pillar of Vietnam's economic growth, accounting for 4 to 6 per cent of gross domestic product and totalling $438bn as of last December, according to research by HSBC.

Samsung assembles half of its smartphones in the country, while Intel has its largest global factory for assembling, packaging and testing chips there, and has been considering expanding.

Both Samsung and Intel did not comment. The Korean and US chambers of commerce in Vietnam did not respond to a request for comment.

An employee at a foreign company with large operations in Vietnam told the Financial Times it had been paying about 5 per cent tax, and was "closely watching" whether the government would provide alternative incentives.

"A sharp increase in taxes will be a big burden for companies investing there."

But Trinh Nguyen, a senior economist at Natixis, thought the impact would be less severe. "Investors don't just invest in Vietnam because of tax benefits. It has other advantages such as low input costs including electricity and wages [as well as] access to large markets."

National creditors

Sri Lanka debt accord aids push for IMF funds

BENJAMIN PARKIN — NEW DELHI

Sri Lanka has reached a preliminary debt restructuring deal with national creditors including India, Japan and France, paving the way for the bankrupt country to revive a stalled IMF loan programme after it secured a similar pact with China last month.

The Paris Club, which represents creditor nations, said in a statement that Sri Lanka had agreed "in principle" to restructure the debt it owed to its non-Chinese bilateral lenders.

This will help the country, which defaulted on its debts last year, to secure the next tranche of a $3bn IMF lending package agreed in March that has been stalled since September due to disagreements among lenders. The next disbursement is awaiting approval by the IMF's executive board.

The agreement will "open the way for approval of the second disbursement under the [IMF] arrangement", the Paris Club said. It said its creditor committee commended the Sri Lankan authorities "for their continuous efforts in implementing the reforms necessary for their country's return to a sustainable path".

Sri Lanka has foreign debts of around $40bn, the largest share of which is owed to Chinese lenders, with Japan, India and commercial bondholders also large creditors. Sri Lanka has yet to reach a deal with the commercial bondholders, which could yet slow down progress on the country's economic recovery.

The Paris Club said it expected Sri Lankan authorities to "continue to engage with their private creditors to find as soon as possible an agreement".

Ranil Wickremesinghe: has vowed to return Sri Lanka to normality

Sri Lanka in May 2022 became the first country in the Asia-Pacific region to default on its debts in two decades, the result of domestic economic mismanagement and a surge in global inflation following the coronavirus pandemic and Russia's invasion of Ukraine.

A sharp drop in foreign currency reserves led to shortages of imported food, fuel and medicine, devastating living standards on the island and triggering mass protests that ultimately toppled the government of Gotabaya Rajapaksa, then president.

His successor, Ranil Wickremesinghe, has vowed to return the island to normality. But progress on securing the IMF funds Wickremesinghe hopes will help to restore economic stability has been complicated by disagreements among creditors.

China, whose significance as a lender to the developing world has grown enormously through programmes such as its $1tn Belt and Road Initiative infrastructure scheme, has disagreed with established Paris Club creditors over how to manage debt restructurings.

Holdings pattern Riyadh takes 10% Heathrow stake and buyout firm Ardian 15% as Ferrovial offloads stock in £2.4bn deal LEX

Companies & Markets

Europe-based property giant Signa files for administration

- Lenders scramble to assess exposure
- Luxury-store owner employs 40,000

SAM JONES — BERLIN
OLAF STORBECK — NUREMBERG
LAURA ONITA — LONDON

The European property giant that owns half of the Chrysler Building, almost all of Germany's biggest department stores and part of Selfridges in London filed for administration yesterday, leaving lenders across Europe racing to assess their exposure to the group.

Signa Holding is the central entity in the sprawling business empire of Austrian billionaire René Benko, part of a web of companies that owns Signa's portfolio of assets, which includes scores of luxury properties.

"This will be one of the most complex corporate restructurings since the financial crisis," said one Vienna-based lawyer who is familiar with Signa.

> 'There is debt issued from all over the place and I don't think anyone knows who owns what after this'

"There is debt issued from all over the place and I don't think anyone, even most insiders, even knows who owns what after this."

In a statement yesterday, the heavily indebted group said Signa Holding had applied for self-administration — a procedure in Austrian corporate law in which a company restructures itself without handing control of the process to an external administrator.

Other key elements of the Signa network, a multi-layered ownership structure of more than 1,000 corporate entities and trusts in Europe, the US and offshore, are still operational, however, including Signa Prime, which people with knowledge of the details say holds the group's most valuable assets.

In total, 120 banks are exposed to Signa, according to a person with knowledge of the group's borrowing. They include Switzerland's Julius Baer and Credit Suisse, now part of UBS, as well as Austria's Raiffeisen, Bank of China, France's Natixis and Italy's UniCredit.

Julius Baer has outstanding debts of more than SFr600mn ($655mn) to Signa, and Raiffeisen Bank International more than €750mn, people familiar with the details say.

Both banks declined to comment on client relationships, but stressed their commercial loan books were well collateralised.

In a note last week, analysts at JPMorgan estimated that Signa owed at least €13bn to lenders in total. Many are smaller regional banks that have financed local property projects.

Signa Holding's administration will send a shockwave across central Europe's retail sector as it prepares for its most important month of the year.

Signa is the majority owner of the region's biggest department stores, including Germany's Galeria Kaufhof and KaDeWe, and Switzerland's Globus.

It is also a shareholder in the Selfridges Group, though its stake was diluted as the crisis began to take hold this month by its co-investor, Thailand's Central Group, which exercised equity conversion rights attached to a shareholder loan.

Germany's biggest department store chain, Galeria Karstadt Kaufhof (GKK), which is owned by Signa, and has itself struggling financially for years, said that there was no immediate impact from Signa's administration.

In total, around 40,000 people work in Signa-owned businesses, according to investor presentations prepared by the company in 2022.

Signa has 90 days to present a plan to creditors, which they must accept in order to avoid full administration.

Additional reporting by Owen Walker in London

Star power Permira selects banks for IPO of Italian sports shoe brand Golden Goose

The shoe brand is a favourite among celebrities such as Taylor Swift and Selena Gomez — Jeremy Moeller/Getty Images

IVAN LEVINGSTON AND ARASH MASSOUDI — LONDON
SILVIA SCIORILLI BORRELLI — MILAN

Permira has selected Bank of America, JPMorgan and Mediobanca as joint global co-ordinators for the forthcoming market listing of the private equity group's Italian luxury sports shoe brand Golden Goose.

The banks could be joined by others in leading roles on the deal as Permira prepares to list Golden Goose in Milan as soon as the first half of next year, according to five people with knowledge of the decision.

Golden Goose's initial public offering, one of the most anticipated in Europe, is expected to value the company at roughly €3bn ($3.3bn), one of the people said. Investment bankers at Lazard are advising Permira on the IPO process, people familiar with the matter said, cautioning that the plans were still subject to change.

The brand, whose shoes sport a "Super-Star" logo and cost about €500 a pair, is a favourite among stars such as Taylor Swift and Selena Gomez. Permira bought the company, which was founded in Venice 23 years ago, in 2020 from rival Carlyle for about €1.3bn.

Golden Goose's distressed trainers have become a status symbol among aspirational luxury shoppers in the US, according to New York-based luxury brand consultant Robert Burke.

"They resonate with the US shopper because they are a made-in-Italy product and they have this distressed design that sets them apart," he said, adding that "their existing customer is very loyal".

Carlyle, which had bought the company in 2017 from Ergon Capital Partners and retains a minority stake, propelled the brand's expansion into the US and China.

Chief executive Silvio Campara, a former Armani group executive in Asia, was installed in 2018 with a remit of expanding sales internationally. Campara is its second-largest shareholder and before becoming CEO he ran the company's commercial operations. The brand has expanded into clothing and accessories.

Golden Goose said last week that its revenues had risen 16 per cent in the third quarter to €145mn, while adjusted core profit grew 18 per cent over the same period. This month the brand completed the acquisition of one of its suppliers, Sirio.

The IPO would be the latest by a European footwear brand, following the $8.6bn listing of German sandal maker Birkenstock in October.

Permira, JPMorgan, Bank of America, Mediobanca and Lazard declined to comment.

Additional reporting by Annachiara Biondi in London

See Lex

Deutsche boss says Brussels should look at abandoning bonus curbs

OWEN WALKER, STEPHEN MORRIS AND JOSHUA FRANKLIN — LONDON

Deutsche Bank's chief executive has said that Europe should consider lifting a cap on banker bonuses, becoming the latest banker to call on Brussels to follow the UK's lead.

Christian Sewing said EU-based banks were suffering from an "unlevel playing field" in attracting talent, after the UK scrapped the cap last month.

Introduced in 2014 when the UK was part of the EU, the cap limits bonuses to twice base pay for staff. UK politicians characterised its removal as a benefit of Brexit and one that harmonised the UK's rules with those in New York, Switzerland and hubs in Asia.

"If [removing the cap] is done in most parts of the world where major financial institutions are sitting, we need to take [that] into account and consider [how] to stay competitive and get these talents," Sewing said at the Financial Times' Global Banking Summit.

On Monday, Santander executive chair Ana Botín welcomed the removal of the UK cap and said that a similar move in the rest of Europe would help better align bankers' interests with those of shareholders.

Bankers — backed by UK regulators — have long argued that the EU-mandated cap is counterproductive and does not result in lower levels of pay.

An unintended consequence has been to boost salaries artificially and shrink bonuses, giving lenders less flexibility to cut pay in fallow years or for instances of incompetence or misconduct.

Executives cautioned that removal of the cap should not encourage an increase in risk-taking. "I'm not a fan of just unleashing inappropriate amounts of risk-taking," said HSBC chief executive Noel Quinn.

He said that it was "appropriate to reconsider the bonus cap now we have the ability to do so, but we have to remain sensible. The most important thing about running a financial organisation is retaining the confidence of stakeholders. Once you start losing confidence of your stakeholders . . . that is not a good journey for anyone."

Sewing said that any decisions on bonuses should be tied to the impact they have on risk culture, which he argued had improved in the years since the excesses of the financial crisis.

Ikea and Lego build on belief in future of bricks-and-mortar stores

INSIDE BUSINESS
EUROPE

Richard Milne

A stretch of waterfront in central Copenhagen gained renown for two contrasting pieces of design: the elegance of the Bicycle Snake bridge leading up to the wacky Kaktus Towers of Bjarke Ingels, the architect. Now this part of the Danish capital recently became home to a third, a new city-centre Ikea store.

The death of the store has been foretold many times. High streets around the world have been hollowed out as online shopping grows seemingly inexorably. But the privately owned Ikea and Lego, the Scandinavian groups, are betting big on the continued relevance of the store even as they invest heavily in ecommerce as well.

"You remember [people talking about] the death of the book, and now the coolest thing is the book," says Jesper Brodin, chief executive of Ingka, the main Ikea retailer. "I don't want to be retro. But people want to have an experience — it needs to be a great day out."

The current economic slowdown in many developed countries due to high interest rates and inflation is hitting many retailers hard. But Ikea and Lego, in shifting their strategies subtly on what a store can be, have been able to buck gloomy trends in their industries.

Ikea's Copenhagen store looks pretty similar to its big out-of-town warehouses, just far more compact. It is one of 60 stores that the group opened in the past year, many of them in city centres rather than on the outskirts of towns.

Customers may have been prepared to trek to the suburbs to buy a sofa or a new kitchen, but not for smaller purchases — and it is those the flat-pack retailer is hoping to gain with its more central shops, a big part of the transformation of its business model.

An Ikea is scheduled to open in the prime London site of Oxford Circus next year. The new stores helped Ikea to healthy sales growth of 7 per cent to €48bn in the year to August.

It is a similar story with Lego, the largest toymaker by sales and profits. Under Niels Christiansen, chief executive, who took over at the end of 2017, the Danish group has almost tripled the number of its stores. Number 1,000 opened in September in San Antonio, and Lego plans to open about 150 this year alone. Its consumer sales increased by 3 per cent in the first half even as the broader toy market declined.

> 'We might be considered the fish that swims against the stream but we are still at the beginning of becoming more accessible'

For the maker of the plastic bricks, opening stores is about taking back control of the sales process and giving children and adults alike a temple to the Lego brand. Toys R Us went bankrupt in 2017, taking with it 10 per cent of Lego's distribution. "Stores will still be relevant," says Christiansen.

For Ikea and Lego, selling stuff is not the sole raison d'être of stores. Both are neutral about whether the sale is in the shop or online but want to get closer to where shoppers are and allow them to see and feel the products.

Tolga Öncü, Ingka's retail operations manager, says that when Ikea opened a compact store in Stockholm's central Gallerian mall, not only did business boom there but there was uplift at its two other stores on the outskirts of the Swedish capital and in online sales. Better still, half the shoppers at Gallerian were classified as "new to Ikea", meaning they had not visited one of its other stores in at least a year.

"We might be considered sometimes to be the fish that swims against the stream," says Öncü, referring to the retailer's different approach to retailing. "But for us in Ikea, I would assume that we are still at the beginning of becoming more accessible." The retailer now measures total sales for each city, based on stores and online combined.

It has even found new uses for existing stores. The out-of-town warehouses with vast shelves full of products have turned out to be useful fulfilment centres for online shopping, allowing Ikea to avoid needing big distribution centres for ecommerce that many retailers need. It has also made mistakes. Öncü concedes that it first thought city-centre customers would not want Ikea's infamously labyrinthine layouts, but after feedback it has reverted to the classic flow of its bigger stores.

For Lego, its stores are a shop window for its brand and offer it far more control over that than it had at, say, Toys R Us. Christiansen is bullish over the need for physical sites, noting that Lego just opened in Tulsa, a city in Oklahoma of just 400,000 people.

"That's probably a town we wouldn't have found big enough five years ago," he says, adding that he sees no sign of the growth in new openings stopping anytime soon. "I don't see that we are approaching a ceiling."

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COMPANIES & MARKETS

Retail

Křetínský pushes Casino to sell stores

Czech billionaire wants indebted French group to shed assets before bailout

ADRIENNE KLASA AND LEILA ABBOUD
PARIS

Daniel Křetínský has pushed Casino's management to sell its largest stores months before his planned bailout, said people familiar with the matter, an outcome Jean-Charles Naouri, the retailer's founder, had sought to avoid when striking the deal with the Czech billionaire.

When Křetínský won the battle for Casino in July as part of a court-supervised debt restructuring, rival bidders accused the billionaire of planning to strip the French retailer of its assets.

Naouri, who spent decades building the group, wanted to keep it intact as he sought to cut debt. The finance ministry was also wary about the impact on jobs in France, where Casino employs more than 50,000 people.

In July, Křetínský vowed to "preserve the maximum possible, rational perimeter" of the group.

But a person close to the tycoon said he had expressed concerns to Naouri about the feasibility of keeping the stores months ago. "Now it is obvious to everyone, but [Křetínský] was right about it from the beginning," the person said.

If completed, the divestments of Casino's hyper and supermarkets would reduce the group dramatically, capping years of asset sales that Naouri undertook to pay down debt. The group's remaining assets would mostly comprise inner-city stores such as Monoprix in Paris.

Clément Genelot, analyst at Bryan Garnier, said that while the group would find itself on a firmer financial footing once the debt was cut and with the cash-burning hypermarkets stripped out, its revenues would shrink to an estimated €7.5bn by 2025 from €33.6bn last year.

'These sales would in no way affect our desire to become the controlling shareholder of Casino'

"They have sold everything that was worth anything . . . From now on, since they can't finance the cash burn through asset sales they have to reduce the cash burn by de-consolidating the stores that are losing the most money," Genelot said.

Intermarché, Système U, Auchan and Carrefour, the French food retailers, are among bidders lining up to buy stores they want. Lidl and Aldi, the German discounters, are also planning to make offers, the people said.

Casino, Intermarché, Auchan, Carrefour and Lidl declined to comment. Aldi and Système U did not reply to requests to comment.

That the auction is taking place before the completion of Křetínský's plan to lead a €1.2bn recapitalisation of Casino shows how rapidly the business has deteriorated since July. Casino is racing to complete the bankruptcy proceedings by early next year, at which point Křetínský will assume control. It issued a profit warning last week saying its French business was on course for an operating loss this year of up to €140mn compared with an operating profit or more than €1.3bn last year.

Křetínský's holding company said: "These sales would in no way affect our desire to become the controlling shareholder of Casino and to invest in the development of the rest of the group."

Genelot predicted Casino would need to close its headquarters in Saint-Etienne, leading to more than 2,000 job cuts. "Clearly all the promises made to the government and unions [on jobs] are now untenable," he added.

Financials

KKR secures full control of Global Atlantic and rejigs its own finances

ANTOINE GARA — NEW YORK

US private equity group KKR is buying the remaining 37 per cent stake in Global Atlantic, the life insurer it took control of in 2021, for $2.7bn as it takes full ownership of a fast-growing business whose overall value has soared in recent years.

KKR said yesterday it was purchasing the outstanding stake at a more than $7bn valuation: far above the price it paid when buying a majority stake in Global Atlantic at a $4.4bn valuation in February 2021. The rising price of the life insurer comes as its overall assets have more than doubled to $158bn since 2020, causing its book value to rise.

During Global Atlantic's initial sale to KKR, minority shareholders — predominantly wealthy clients at Goldman Sachs — had the option to hold on to their investment and be bought out by KKR at a later date.

Scott Nuttall, co-chief executive of KKR, in an interview with the Financial Times rejected the idea the group was forced to buy its remaining stake in Global Atlantic as its value has crept higher.

"We are not doing this because we have to, we are doing it because we want to and this has been a home-run investment," said Nuttall. He pointed to synergies that KKR could gain with full ownership, such as selling private equity funds it has designed for wealthy individuals to Global Atlantic's clients.

'We are not [buying the 37% stake] because we have to, we are doing it because we want to'

As part of the deal, New York Stock Exchange-listed KKR is also rearranging its finances so that public stockholders can better understand operations that have become increasingly broad and complex.

The group will change the way it reports quarterly earnings to focus on how quickly it is compounding its overall earnings and assets.

In the years after KKR went public in 2009, it has stood apart from competitors such as Blackstone in retaining most of its profits, instead of paying them out in dividends to shareholders. The strategy has allowed KKR to reinvest its profits in acquisitions and build an increasingly large pool of investment assets on its balance sheet.

KKR's pool of directly owned private equity assets has grown from less than $10bn a decade ago to more than $26bn currently, and is expected to pay large dividends to the buyout group in coming years, according to Nuttall.

KKR will divide its operations into three business segments: fee-related earnings from its asset management operations, insurance earnings and balance sheet assets called "strategic holdings".

It will create a new profit metric called "total operating earnings" to highlight its more predictable earning streams, such as base management fees, spread-related profits from its insurance operations and dividends earned from its balance sheet investments.

KKR will also lower the pay dealmakers earn from base management fees and increase their participation in performance-based fees. The combined changes are expected to boost KKR's overall earnings.

Oil & gas. Climate change

ExxonMobil ends resistance to methane checks

US group says technological advances mean it can join the UN's reporting programme

MYLES MCCORMICK AND JAMIE SMYTH
HOUSTON

ExxonMobil has agreed to join the UN's flagship methane emissions reporting programme as it seeks to present a more transparent image after years of resisting external monitoring of its approach to climate change.

The biggest western oil producer told the Financial Times that advances in technology meant it was now in a position to join the Oil and Gas Methane Partnership, a standardised reporting framework to monitor industry emissions of the potent greenhouse gas, led by the UN Environment Programme.

The decison is a U-turn for Exxon, which as recently as its annual meeting in May urged shareholders to vote against a resolution calling for it to join the programme, arguing that doing so would be "duplicative" and "unnecessary". "Now seems like the right time," Vijay Swarup, Exxon's director of technology, said in an interview at the company's headquarters in Spring, Texas, just north of Houston. "What has happened over the last couple of years is the technology has evolved."

"We wanted to make sure that we had the . . . technology road map to meet what OGMP requires you to do," he said. "If we say something we're going to do it — we're not going to say something that we can't do."

China, the world's biggest methane emitter, this month said it would also start tracking and monitoring its methane emissions, regarded as the fastest way to help limit global warming.

The Exxon move also comes as government officials gather at COP28 in the United Arab Emirates to debate tough new rules to crack down on emissions of methane, which has more than 80 times the global warming potential of carbon dioxide across a 20-year period, according to the UNEP.

Some countries are already moving to impose penalties, including the US, where the Inflation Reduction Act will introduce a charge of $900 a tonne of methane emitted in 2024, rising to $1,500 a tonne in 2026. The US Environmental Protection Agency is set to finalise a rule forcing companies to find and plug emissions as soon as this week.

The OGMP was established in 2014 as a protocol enabling companies to systematically measure, manage and report methane emissions. It was rebooted in 2020 into a more ambitious and comprehensive reporting framework dubbed OGMP 2.0.

Change of heart: an ExxonMobil refinery in Rotterdam. In May it urged shareholders to vote against a resolution calling for it to join the UN programme
Peter Boer/Bloomberg

Most big western oil groups are members of the partnership.

Exxon's decision to join leaves Chevron as the only western supermajor outside the group.

Ben Cahill, senior fellow at the Center for Strategic and International Studies, said the UN programme was a good initiative, which had attracted more national oil companies as members in the past year.

"To show they are serious about tackling methane, big oil and gas companies need to share detailed annual data on overall emissions and emissions intensity, set interim and long-term targets, and create clear plans to cut non-emergency flaring and venting," he said.

Several big players in the US shale patch including ConocoPhillips, Devon Energy and Pioneer Natural Resources — which Exxon agreed to buy last month for $60bn — joined the programme in 2022. Exxon insisted the Pioneer deal played no role in its decision to join the OGMP.

Exxon has sought to present a more open image since losing a boardroom battle in 2021 with activist investor Engine No. 1, which claimed its emissions policies ran counter to the Paris climate agreement.

The motion calling on the company to join the OGMP at this year's annual meeting, proposed by the Sisters of St Francis, was defeated. But it received the backing of 36 per cent of shareholders, more than any other motion put forward by investors.

At the time, Exxon chief executive Darren Woods said that quantification technologies were "still emerging and do not currently provide consistent, repeatable results".

He also said that in many of the countries in which Exxon operated there were "significant access and security issues", adding that membership would involve "onerous legal obligations, including a requirement for us to indemnify the United Nations".

'We wanted to make sure that we had the technology road map to meet what [we are required] to do'

Swarup said the extent of the company's operations meant it needed to "do [its] homework" before signing up to new protocols.

"There is no company that matches our scale and that then requires a different assessment and a different level of complexity," he said. "We want to be able to back up what we say with actual technical depth and a technical confidence that we can do that."

As part of a new internal hub dubbed the Center for Operations and Methane Emissions Tracking, Exxon has introduced a host of technologies, including sensors and optical gas imaging cameras, to monitor its oil and gas operations for large-scale methane releases, as well as smaller leaks from equipment.

Automobiles

General Motors wheels out $10bn buyback

CLAIRE BUSHEY — CHICAGO
ALEXANDRA WHITE — NEW YORK

General Motors has announced plans to return "significant capital" to shareholders as it seeks to move past difficulties with its goals for EVs and driverless cars and from a six-week strike that cost it $1.1bn.

GM yesterday announced a $10bn share buyback and said that it would increase its quarterly dividend by 3 cents per share — or 33 per cent — to 12 cents.

That helped push the company's shares up 9.5 per cent in late-morning trading in New York, their having gained as much as 11.8 per cent to hit a two-month high earlier in the day.

The "massive buyback was well above expectations", Deutsche Bank analyst Emmanuel Rosner said.

The announcement came as the company reinstated its earnings guidance for fiscal 2023, having withdrawn it about a month ago after thousands of US workers walked off the job to demand better pay and conditions.

The strike resulted in approximately 95,000 fewer cars and trucks being built and a $1.1bn hit to adjusted operating earnings, chief financial officer Paul Jacobson said.

GM reached a tentative deal with the United Auto Workers in late October, as did competitors Ford and Stellantis. The action resulted in the manufacturer agreeing to raise wages for its workforce 25 per cent as well as to include its joint-venture battery plants under its main contract with the union.

The pay deal will cost GM $9.3bn over the life of the four-year contract, with chief executive Mary Barra saying that it would add $575 in cost per vehicle over the period.

At the battery plants, it will increase costs by $3 per kilowatt-hour.

"The cost of new labour agreements have been a concern for investors and a drag on our stock," Barra said. "The net result was higher than we anticipated, but not significantly."

Barra said that foreign carmakers in the US had also raised wages, "so the same relative gap [with competitors] is being restored".

GM planned to cut spending on Cruise, its self-driving unit, by "hundreds of millions of dollars", Jacobson said. Last month one of the vehicles injured a pedestrian in San Francisco. The California Department of Motor Vehicles has accused the GM subsidiary of having "misrepresented" the details of the crash, and the carmaker has hired a law firm to review its response.

GM yesterday projected adjusted earnings of $7.20-$7.70 a share in the 2023 fiscal year. That compares with its previous outlook of $7.15-$8.15 a share and analysts' estimates of $7.45.

The company said it expected adjusted automotive free cash flow of $10.5bn-$11.5bn, compared with the previous forecast of $7bn-$9bn.

Technology

Apple seeks to axe Goldman card partnership

MICHAEL ACTON — SAN FRANCISCO
BROOKE MASTERS — NEW YORK

Apple has proposed winding down its credit card and savings account partnership with Goldman Sachs sooner than planned.

A term sheet offered by Apple would create an option to end the current multiyear contract in the next 12 to 15 months, according to people familiar with the matter. The term sheet would only go into effect if the iPhone maker is able to find an alternative provider for the two services.

The Wall Street Journal first reported the move. Goldman said in February it would explore "strategic alternatives" for its consumer platform, including credit cards. Long known for its prowess in investment banking, the group is now seeking to balance that highly cyclical business by growing its asset and wealth management arm.

Apple and Goldman launched the credit card for US consumers in August 2019, promising a "new level of privacy and security" that would differentiate it from others on the market.

Apple's savings account, also serviced by Goldman, was launched this year, offering 4.15 per cent annual interest, well ahead of the average rate on US savings accounts at the time. The tech company in August said the service had exceeded $10bn in deposits.

The two product launches marked a push by Apple to shake up the financial services space, in a direct challenge to Wall Street banks. The tech group has a long history of partnering with other companies until it has sufficient expertise to go it alone — such as the transition away from Intel processors to in-house-designed chips in Mac computers.

The iPhone maker has a history of teaming up until it can go it alone

Apple is looking to generate more value from the millions of users of its devices by expanding its service offerings. Its credit card is built into its tap-to-pay wallet service, Apple Pay. More than 75 per cent of iPhone owners already use Apple Pay.

The tech group's partnership with Goldman got off to a bumpy start as the two disagreed over advertising for the product. Apple wanted to market the card as "the most secure credit card ever", but cooler heads at the bank warned that superlatives would open the product up to lawsuits.

Apple would not confirm the move and Goldman declined to comment.

Berkshire vice-chair used 'uncommon sense' to shape an investment style and reap riches

Munger, who died on Tuesday at 99, was the force behind Buffett's lucrative decision to expand beyond bargain stocks

ERIC PLATT — NEW YORK

There is perhaps no one more celebrated today for making money than Warren Buffett. But the tens of billions of dollars he amassed — and the zealous investment groupies that followed — might never have materialised if not for Charlie Munger.

Munger, who died on Tuesday at 99, was Berkshire Hathaway's acerbic vice-chair and Buffett's trusted business partner, instrumental in driving the man who became known as the Oracle of Omaha away from his cigar-butt investment style where he could hope to get one last drag on a low-valued stock.

The shift away from a style Buffett took from Ben Graham, father of value investing, helped make Berkshire the juggernaut it is today. The conglomerate is worth more than $780bn, with stakes in Apple, Coca-Cola and Bank of America as well as ownership of the BNSF railway and Geico, the insurer. It all can be traced back to Munger.

"Charlie shoved me in the direction of not just buying bargains, as Ben Graham had taught me," Buffett once said. "This was the real impact he had on me. It took a powerful force to move me on from Graham's limiting view. It was the power of Charlie's mind. He expanded my horizons."

The Omaha native was born on January 1 1924 to Alfred and Florence Munger, living through the Great Depression, studying meteorology while in the army during the war, and graduating from Harvard Law School, though he had never completed his undergraduate studies. It was a point that almost prevented his admission, but a family friend's call to the dean secured his spot. His time in the army took him to California, which he eventually made his home.

> 'You have to learn to fold early when the odds are against you, or if you have a big edge, back it heavily'

While his law practice and real estate investments would help him mint his first million, it was his association with Buffett that made him a household name. (When he was first named to the Forbes billionaires list, he told the magazine: "I've been associated with Warren so long, I thought I'd be just a footnote.")

Munger told Janet Lowe for her 2000 biography of him, *Damn Right*: "Like Warren, I had a considerable passion to get rich. Not because I wanted Ferraris. I wanted the independence. I desperately wanted it. I thought it was undignified to have to send invoices to other people. I don't know where I got that notion from, but I had it."

The two investors did not meet until 1959, though they had grown up in the same city; Munger worked at the Buffett & Son grocer's as a teenager in the 1930s.

Buffett was in 1959 pitching a family on his investment partnership but struggling to get half of the couple's attention. When they ultimately handed him a $100,000 cheque, Buffett was flummoxed. Behind the decision, the family patriarch said, was the fact that Buffett reminded him of Munger.

The couple's children eventually organised a dinner for the two men. The timing was fortuitous: Graham, Buffett's mentor, had just retired and Buffett needed a sparring partner with whom to discuss investment ideas.

Charlie Munger, vice-chair of Berkshire Hathaway, built his career on understanding misjudgments that affected his and others' decision-making. Below, Munger with Warren Buffett at an annual Omaha investor event — Daniel Acker/Bloomberg; Scott Morgan/Reuters

In Munger he found a quick-witted accomplice with a wry sense of humour. At first they exchanged stock tips, but each made their own investments for their respective firms: the Buffett Partnership and Wheeler, Munger & Company. Their partnership was informal, with investments judged independently, but they would often end up on the same side of a shareholder register. By 1978, Munger had joined Buffett on the Berkshire board.

$780bn	3.8mn
Value of the Berkshire Hathaway business	Percentage gain for Berkshire from 1964 to the end of 2022

It was their separate investments in a company called Blue Chip Stamps — which ran trading stamps, akin to a loyalty programme — that cemented the partnership, when the business was merged in a restructuring with Berkshire in 1983. The move, intended to resolve potential conflicts of interest, handed a 2 per cent stake in Berkshire to Munger. With it, he became a central figure in a company that was quickly moving far beyond its textile roots.

The cardinal error in Graham's approach, Munger believed, was that he was trying to avoid the kind of pain he experienced in the Great Crash of 1929 by seeking out bargains. It also meant that Graham was missing scores of wonderful companies that were trading at fair prices.

The shift in approach generated outstanding results for Berkshire. Even as a bull market helped lift the broader US stock market, their returns stood out. By the end of 2022, Berkshire had gained nearly 3.8mn per cent since 1964, far outpacing the roughly 24,000 per cent return in the S&P 500 over the same time. It is that gulf that made the pair the Lennon and McCartney of the investment world.

Munger, taciturn at times (he was known to respond to questions at Berkshire's annual meeting by saying "I have nothing to add"), banked his career on understanding the misjudgments that affected his and others' decision-making. It is why Berkshire has attempted — mostly successfully — to sit patiently when others are bidding stocks to records, and why it was slow to invest in technology companies as they began to power the US market. But when Buffett and Munger eventually struck, as they did with Apple, they were willing to go big.

"Playing poker in the army and as a young lawyer honed my business skills," Munger said. "What you have to learn is to fold early when the odds are against you. Or if you have a big edge, back it heavily, because you don't get a big edge often. Opportunity comes, but it doesn't come often, so seize it when it does come."

> 'I had a considerable passion to get rich. Not because I wanted Ferraris — I wanted the independence. I thought it undignified to have to send invoices to other people'

His straightforward approach to investing, as well as his belief in operating a business honestly, helped endear him to everyday Americans who watched as business and markets became complex. He went on diatribes about cryptocurrencies, investment bankers, private equity firms, and the use of earnings before interest, tax, depreciation and amortisation — a measure that he argued was nonsense.

His delivery was blunt. "Miss Manners clearly would need to do a lot of work on Charlie," Buffett wrote in 2000.

Yet that was what attracted tens of thousands of Berkshire shareholders to Omaha each year to hear from the investor. His maxims — see sidebar — filled books.

Munger's ability to transfix an audience with his "tell it as it is" approach resonated over decades, even as his country's divisions intensified. (He outlasted scores of protesters who showed up at Berkshire's annual meetings.) Munger described himself as an atypical Republican, with his conservative bent often shifting far from the party line.

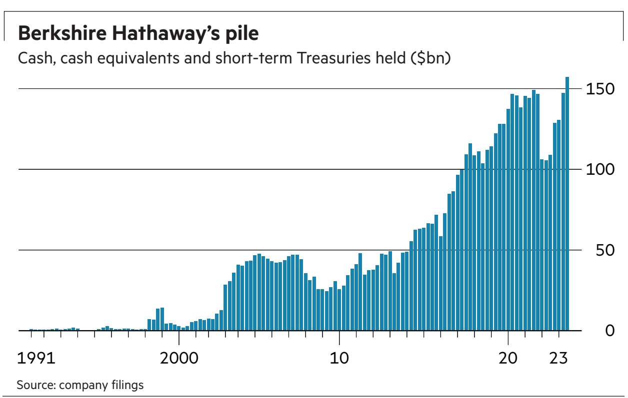
He pushed his law firm and Buffett in the 1960s to help fund the legal defence of doctor Leon Belous, a case that paved the way for legal abortion in California and that Munger said "was the first chink in the armour of abortion restrictions". Looming population challenges formed part of his reasoning.

That calculated mindset defined him. He told acolytes that they "should recognise reality even when one doesn't like it" and that "there isn't a single formula" for success in business or investing.

He said: "Life is a whole series of opportunity costs. You've got to marry the best person who is convenient to find that will have you. An investment is much the same sort of process."

Asked earlier this year about his imprint on the world, Munger said: "I would like my legacy to be a more relentless determination to develop and use what I call an uncommon sense."

See Lex



'It's so simple'
The master's maxims on life and business

Charlie Munger's aphorisms have filled books. A selection:

"Take a simple idea and take it seriously."

"Show me the incentive and I will show you the outcome."

"There is more dementia about finance than there is about sex."

"To say accounting for derivatives in America is a sewer is an insult to sewage."

"If mutual fund directors are independent, then I'm the lead character in the Bolshoi Ballet."

"It's not the adultery I mind. It's the embezzlement."

"I think you would understand any presentation using the word ebitda [earnings before interest, taxes, depreciation and amortisation] if every time you saw that word you just substituted the phrase 'bullshit earnings'."

"The worshipping at the altar of diversification — I think that is really crazy."

"That bastard who created that foolish accounting system who, so far as I know, has not been flayed alive, ought to be."

"Acquire worldly wisdom and adjust your behaviour accordingly. If your new behaviour gives you a little temporary unpopularity with your peer group . . . then to hell with them."

"I think when you're buying jewellery for the woman you love, financial considerations probably shouldn't enter into it."

"Our experience tends to confirm a long-held notion that being prepared, on a few occasions in a lifetime, to act promptly in scale, in doing some simple and logical thing, will often dramatically improve the financial results of that lifetime."

"A few major opportunities, clearly recognisable as such, will usually come to one who continuously searches and waits, with a curious mind that loves diagnosis involving multiple variables. And then all that is required is a willingness to bet heavily when the odds are extremely favourable, using resources available as a result of prudence and patience in the past."

"Understanding both the power of compound interest and the difficulty of getting it is the heart and soul of understanding a lot of things."

"In my whole life, I have known no wise people (over a broad subject-matter area) who didn't read all the time — none, zero. You'd be amazed at how much Warren reads and at how much I read. My children laugh at me. They think I'm a book with a couple of legs sticking out."

"It's so simple. You spend less than you earn. Invest shrewdly, and avoid toxic people and toxic activities, and try and keep learning all your life, etc, etc. And do a lot of deferred gratification because you prefer life that way. And if you do all those things you are almost certain to succeed. And if you don't, you're going to need a lot of luck."

Harriet Agnew

Technology

Alibaba founder urges reform as rival gains ground

ELEANOR OLCOTT AND QIANER LIU
HONG KONG
RYAN MCMORROW — SAN FRANCISCO

Jack Ma has called on Alibaba to "change and reform" as the ecommerce giant he founded tries to find a new path after abandoning parts of its ambitious restructuring plan and its main Chinese rival gains ground.

"I firmly believe that Alibaba will change and reform," Ma wrote in a post on Alibaba's internal forum yesterday and seen by the Financial Times. "I believe that Alibaba employees are always watching and listening," he said.

He was responding to an employee post about the "stunning" third-quarter financial results from PDD Holdings, which saw Alibaba's upstart rival nearly double revenue to $9.4bn.

The results sent its shares 18 per cent higher on Tuesday in New York. This gives the group behind Pinduoduo and Temu a market value of $183bn, only just below the $195bn of Alibaba, long China's biggest ecommerce company.

Ma's intervention comes at a critical moment for Alibaba, with new chief Eddie Yongming Wu rethinking the group's restructuring plan, under which the company was expected to split into six different business units, so-called "mini babas".

Jack Ma posted on the Chinese group's forum after PDD's sales rise

Earlier this month, Wu cancelled parts of the restructuring, including the spin-off of the cloud business, and delayed the listing of the grocery business, citing "market conditions".

In his post, Ma congratulated PDD on its "execution over the past few years" but added it was only companies that "reformed for the future" that earned "respect".

The enigmatic founder, who stepped down as chief executive in 2013 and as chair in 2019, has kept a low profile since the cancellation of Ant Group's initial public offering three years ago. In March, he made a rare publicised trip to Hangzhou, where Alibaba has its headquarters. This was just before the group announced the restructuring programme. Alibaba's core domestic ecommerce businesses Taobao and Tmall have been battling growing competition from Pinduoduo and ByteDance.

Many Alibaba employees were yesterday discussing how Pinduoduo would soon eclipse them, according to one person close to the company. The U-turn on the restructuring plan has created a lot of confusion internally, employees said.

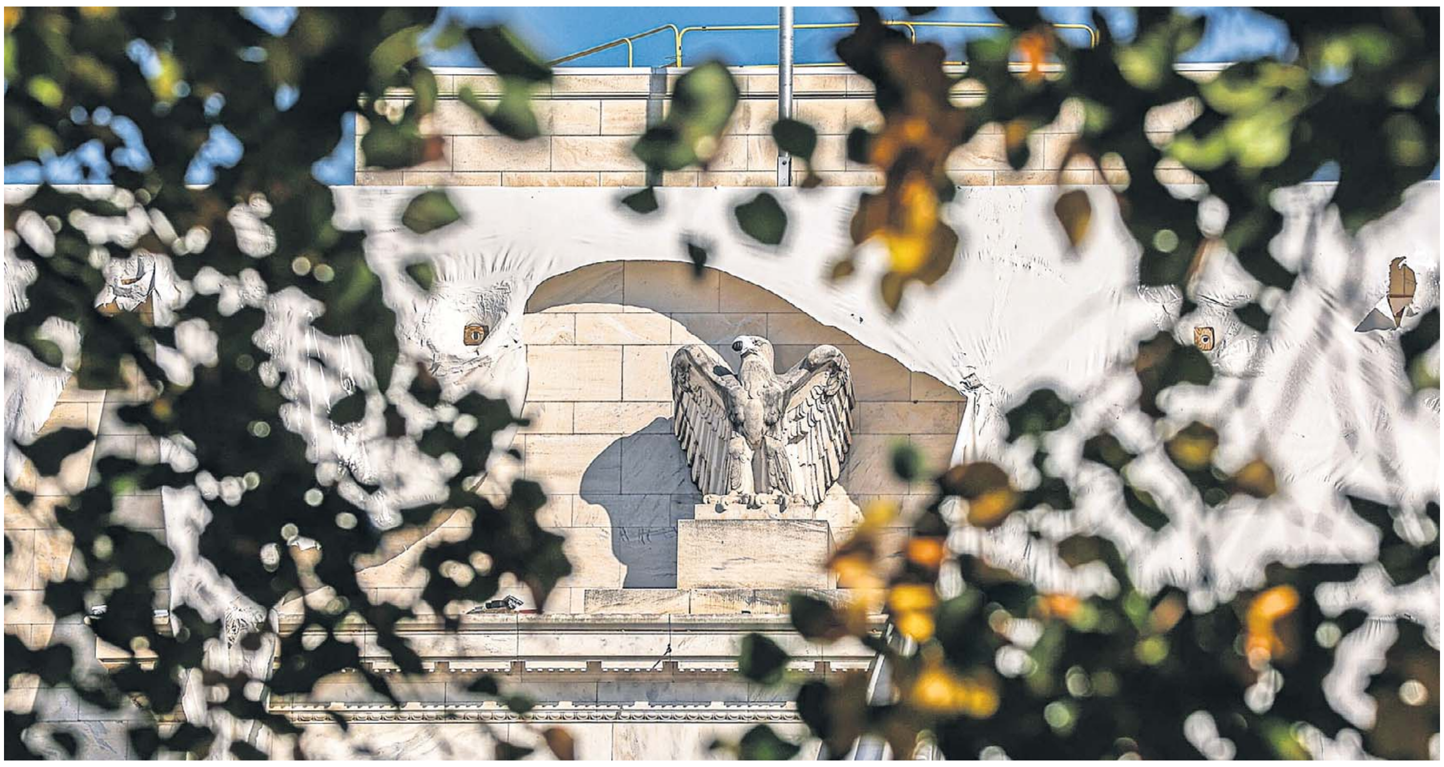
Alibaba had also planned to create a separate business to handle IT services across all divisions, from ecommerce to media, two employees said. But after months of preparation, the plans were cancelled.

Alibaba declined to comment.

COMPANIES & MARKETS

Fixed income. Monetary policy

US bonds rebound from sell-off on rate cut optimism



Eagle eyes: interest rate futures indicate investors have swung to fully pricing in a quarter-point rate cut by the Fed's June meeting — Valerie Plesch/Bloomberg

Sharp rally after early autumn woes puts debt on track for best month in nearly 40 years

JENNIFER HUGHES, KATE DUGUID AND HARRIET CLARFELT — NEW YORK

US bonds are on track to record their best monthly performance in nearly four decades, as growing optimism about interest rate cuts by the Federal Reserve next year fuels a rebound from an early autumn sell-off.

The Bloomberg US Aggregate Bond index, a widely tracked measure of total returns on US fixed income, has risen 4.3 per cent in November, putting it on course for its best monthly showing since 1985.

The rally has nudged the benchmark's total returns this year into positive territory, raising hopes it can avoid notching up a three-year string of losses — an unprecedented event in its 47 years.

Bond prices have surged and yields dropped this month as traders have increased their bets that the Fed has finished raising interest rates.

Prices of government debt around the world have followed the US higher, leaving the Bloomberg Global Aggregate Bond index on course for its best month since the financial crisis in 2008.

Interest rate futures indicate investors have swung to fully pricing in a quarter-point cut by the Fed's June meeting, compared with expectations in mid-October that there was no chance of a cut by mid-2024. Some traders have begun to bet on cuts as soon as May.

"If you'd polled 1,000 portfolio managers six weeks ago, I doubt any would've said we'd be at these levels now, but there's a lot of fast money that can move on just one or two events," said John Kerschner, portfolio manager at Janus Henderson.

The rally has also pushed down yields on 10-year Treasuries from a 16-year peak of 5.02 per cent a month ago to a low of 4.25 per cent yesterday. That is below levels on September 20, when the Fed last published its quarterly economic projections. These contained a higher-for-longer message that drove yields towards their peak.

Bullish investors were encouraged on Tuesday by one of the Fed's most hawkish policymakers, Christopher Waller, who said he was "increasingly confident" that the Fed's current policy was "well positioned" to bring inflation back to the Fed's target of 2 per cent.

"It's not obvious this was Waller's intention, but coming from a hawk, the comments have a lot of influence. It definitely opens the door to a first-half rate cut," said Alan Ruskin, chief international strategist at Deutsche Bank.

Also bolstering sentiment was a revision of GDP data yesterday, which showed inflation was slower than previously thought in the third quarter. The PCE price index — the Fed's preferred measure of inflation — was revised downwards by 0.1 percentage point to 2.8 per cent.

Treasuries make up the biggest group in the Aggregate index. While 10-year yields are still higher than where they started the year, the recovery in recent weeks has been striking and has allowed for a recovery in other parts of the bond market.

"I think this rally is real. If I were betting, I would expect yields to be lower than they are today by year-end," said Blake Gwinn, US rates strategist at NatWest Markets. "If inflation comes down as we expect, it gives the Fed the latitude to cut.

"This is why we're starting to talk about cuts. Now the Fed can be more reactive to risks on the growth side of their mandate."

Investment-grade corporate bonds, which make up about a quarter of the Aggregate index, have also staged a powerful recovery in November. The average premium — or spread — paid by high-grade issuers to borrow compared with the US Treasury narrowed to just 1.14 percentage points this week — the tightest level since February 2022.

Corporate bond funds, including those tracking riskier junk-rated borrowers, have pulled in more than $17bn of cash in November, paving the way for the biggest monthly net inflows since July 2022.

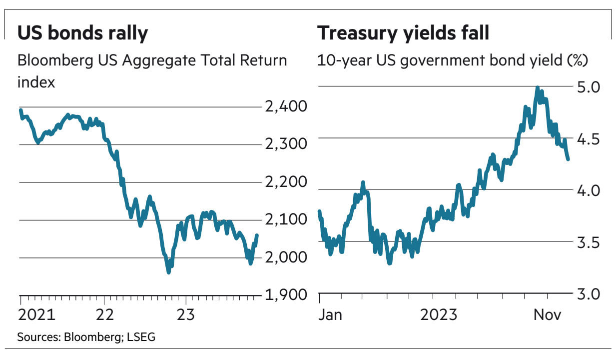
"The driver of those inflows has been the decline in rates volatility and [investors'] realisation that 'I now have the best yield support I have had in probably 16 years and the forward outlook for monetary policy has become a lot more predictable and a lot more benign'," said Lotfi Karoui, chief credit strategist at Goldman Sachs.

The fall in yields has also coincided with a shift in the US Treasury's borrowing plans. Having warned in August that they would meaningfully increase the size of bond auctions to cover tax shortfalls, officials in late October said they would slow the pace of borrowing, taking some of the pressure off prices.

Not all market participants are convinced, however, that this is necessarily the turning point that recent moves suggest it is.

"I think it's gone too far, and we'll see a small pullback by year-end," said Janus Henderson's Kerschner. "Perhaps Powell talks the market down after the Fed meeting."

The central bank's last meeting for 2023 concludes on December 13. While investors are not expecting a change in interest rates, they will play close attention to the Fed's updated economic projections.



Sources: Bloomberg; LSEG

'If I were betting, I would expect yields to be lower than they are today by year-end'

Commodities

Court rules in favour of LME over cancelled nickel trades

ALISTAIR GRAY — LONDON

The London Metal Exchange has won a legal victory against traders who sued over its decision to cancel billions of dollars worth of nickel trades as England's High Court dismissed claims that it acted unlawfully.

The largest metal exchange was accused by hedge fund Elliott Management and market maker Jane Street Capital of making hasty and unlawful decisions during a crisis in the nickel market last year, when prices more than tripled in one day.

The case against the 146-year-old City of London institution has been closely watched as a legal test of the powers of bourses to restore orderly trading in stressed markets.

The LME cancelled about $12bn worth of trades on the grounds that the nickel market had become "disorderly", a decision that wiped out both outsized gains and losses among members.

Paul Singer's Elliott sought compensation for lost profits totalling $456mn and Jane Street $15mn.

But in a ruling yesterday, Mr Justice Swift and Mr Justice Bright said Elliott and Jane Street's claims for judicial review "fail on all grounds".

The rules of the bourse permitted it to 'cancel, vary or correct' trades if considered 'appropriate'

Elliott said it would appeal, warning that it was "concerned about the precedents that it establishes".

The Florida-based hedge fund, which manages about $59bn, said the ruling raised "fundamental questions" about an "absence of trade certainty" and "a lack of effective checks and balances on UK exchanges".

The nickel price surge, over the space of a few hours in March 2022, came after a large bet on falling prices made by Chinese steel producer Tsingshan that coincided with concerns about sanctions against Russia, a top exporter.

The LME said that it had to take action to avert a broader meltdown. Chief executive Matthew Chamberlain told the court that such moves posed a "systemic risk" to the market.

The claimants' legal case was unusual because they were seeking a judicial review, which is normally brought against public sector authorities to challenge decision-making.

They based their case on several legal grounds, including that the LME acted beyond its powers and failed to consult parties that would be disadvantaged by its decision.

However, the judges at the Administrative Court highlighted that LME's trading rules allowed it to "cancel, vary or correct" trades if the venue "considers it appropriate".

The court noted the "urgency" of the situation and said it was for the LME to "decide whether, whom and how to consult, and they are entitled to a wide margin of discretion".

Personal goods

UK sportswear start-up Castore scores £950mn valuation in Raine-led round

SAMUEL AGINI — LONDON

Castore has raised roughly £150mn from a trio of investors, boosting the British premium sportswear maker's firepower as it looks to expand its brand on the global stage.

US merchant bank and investor The Raine Group led the funding round, Castore said, backed by New York and Tel Aviv-headquartered Hanaco Ventures and UK venture capital firm Felix Capital.

The fundraising values the company at £950mn after taking the new money into account, according to a person with knowledge of the matter.

Castore is looking to accelerate its growth in global sport following a wave of sponsorships with elite teams across football, Formula One, cricket and rugby. "We've now got 50, give or take, team partners around the world," said co-founder Tom Beahon. "We've proven that we can help them grow their merchandise revenues. We offer those guys something that Nike, Adidas, Puma are not able to . . . We genuinely can take that next step and try and become a truly global brand."

The 34-year-old started Castore in 2016 with his brother Phil, driven by the "entrepreneurial intuition" that there was an opportunity to serve sports teams outside of the Real Madrids and Bayern Munichs of this world.

The fundraising demonstrates the company's evolution since the brothers' parents remortgaged their home to provide start-up capital. The brothers remain Castore's largest shareholders.

Castore makes kit for elite athletes but also operates online stores for some of the world's biggest sports teams. The company competes against larger rivals such as Adidas and Nike but also the likes of US billionaire Michael Rubin's Fanatics, an ecommerce group valued at $31bn last year.

Beahon said the money could help Castore as it seeks to help teams connect with fans and increase merchandising revenues, as competitions such as the English Premier League and F1 grow in popularity. He also has his eyes on new partnerships in markets such as the Americas and the Middle East.

Castore has opted to remain a private company rather than list its shares.

"Whilst I would never rule anything out — there may well be a time that floating is the right option for us — we do think that for now having private shareholders gives us . . . the ability to think longer term," said Beahon.

A person close to Castore said it expected to generate more than £200mn in revenue and £35mn in earnings before interest, tax, depreciation and amortisation in the financial year to the end of January 2024.

Additional reporting by Laura Onita and Arash Massoudi

Castore hopes to 'become a truly global brand' after raising £150mn

Oil & gas

Activist Elliott seeks board shake-up at Phillips 66 after investing in $1bn stake

MYLES MCCORMICK — HOUSTON

The US oil refiner Phillips 66 has become the latest target of Elliott Management after the activist investor took a $1bn stake and called for new blood on the company's board to remedy "underperformance".

In a letter to the board yesterday, Paul Singer's aggressive hedge fund said Phillips 66's returns had lagged behind peers Valero and Marathon Petroleum and called for the installation of two "highly qualified new directors".

"We find the market's scepticism to be understandable, and we believe the board must take several steps to reassure investors that Phillips 66 is in the best possible position to achieve its value-creation potential," wrote Elliott partner John Pike and portfolio manager Mike Tomkins.

Shares in Phillips 66 were up 3.6 per cent in early afternoon trading yesterday. The stock had risen 27 per cent over the past five years to Tuesday, compared with a 64 per cent rise in the S&P 500 oil refining and marketing index over the same period.

The latest campaign from Elliott comes after it prevailed in a stand-off with NRG Energy this month. Following a months-long campaign by the hedge fund, the Texas utility and power producer parted ways with its chief executive and agreed to overhaul its board.

Phillips 66 was formed in 2012 through a spin-off of oil producer ConocoPhillips' downstream assets. It is one of the biggest western refining companies, with 12 plants spread across the US and Europe. It has a big presence in the oil pipeline and storage business and sells fuel to consumers via a network of about 7,200 outlets in the US and another roughly 1,300 in Europe.

'We find the market's scepticism to be understandable'
John Pike and Mike Tomkins

The Houston-based company is also active in chemicals through a stake in CPChem, which it owns with Chevron. It is converting its San Francisco refinery into one of the world's biggest renewable fuels plants at a cost of $1.25bn.

Mark Lashier, Phillips 66 CEO, said the company had "engaged in discussions" with Elliott and "welcome[d] their perspectives and the perspectives of other shareholders on our strategy and the actions we are taking to drive long-term sustainable growth and value creation".

Elliott said that the company's performance had declined in recent years "as it has shifted its focus away from its refining segment". It cited comments from Lashier in January in which he conceded the company had "taken our eye off the ball a little bit with respect to refining".

A cost-cutting programme launched in 2019 had failed to achieve its goals, Elliott said, with a widening gap between its operating costs and that of rival Valero.

Elliott ran a similar campaign against Marathon Petroleum in 2019, which led to the replacement of the CEO and the spin-off of its Speedway retail operation. "At present, we believe Mr Lashier and the rest of the management team deserve investor support so long as they demonstrate meaningful progress against these targets," it wrote.

The day in the markets

What you need to know

- Government bonds and global stocks rally as cooling inflation lifts investors
- Europe's region-wide index climbs, led by rate-sensitive real estate stocks
- London's FTSE 100 slides, weighed down by energy groups and financials

Government bonds and global stocks rallied yesterday as cooling inflation encouraged investors to bring forward the date at which they expect big central banks to begin cutting interest rates.

Yields on rate sensitive two-year Treasuries dropped 0.08 percentage points — reflecting higher prices — to 4.65 per cent, their lowest level since mid-July. Benchmark 10-year Treasury yields fell as low as 0.06 percentage points to a two-month low of 4.27 per cent.

The moves came despite data showing that US gross domestic product rose 5.2 per cent in the third quarter, marking an increase from a previous forecast.

Thomas Barkin, president of the Federal Reserve Bank of Richmond, refused to rule out a further rate rise, in contrast with Atlanta Fed president Raphael Bostic, who suggested that inflation appeared to be on a downward path. "Hawkish comments from Barkin have been completely ignored," said Lyn Graham-Taylor, a rates strategist at Rabobank.

Futures markets now suggest that roughly 1.2 percentage points of cuts are priced in 2024 for the Fed, with the first cut coming in May. Traders expect the ECB to begin cutting in April.

"We're quite surprised that either central bank is happy with that volume of easing . . . and it does not seem outlandish to suggest that some pushback could be coming," Graham-Taylor said.

The bond rally was equally strong across the Atlantic, where yields on 10-year UK gilts fell 0.07 percentage points to 4.09 per cent, their lowest level since May.

Equivalent German Bund yields — a benchmark for the eurozone — slipped 0.06 percentage points to 2.43 per cent, their lowest level since late July, after inflation in Europe's largest economy eased more than expected in November.

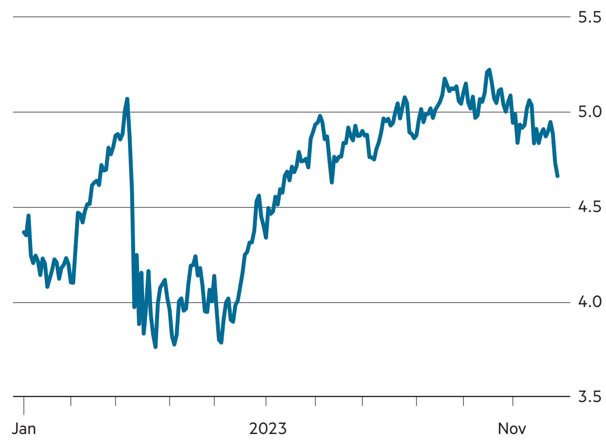
Wall Street's benchmark S&P 500 and the tech-heavy Nasdaq Composite were both up 0.2 per cent in early afternoon trading in New York.

European stocks rallied after softer than expected inflation data from Spain and Germany boosted hopes that the ECB had finished raising interest rates.

The region-wide Stoxx Europe 600 climbed 0.5 per cent, led higher by rate-sensitive real estate stocks. London's FTSE 100 lagged behind its European peers, weighed down by energy groups and financials.

The blue-chip index fell 0.4 per cent.
George Steer and Stephanie Stacey

Rate cut outlook pushes Treasury yields to July low
2-year US Treasury yield (%)



Source: Bloomberg

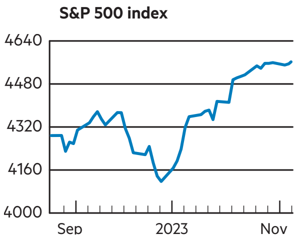
Markets update

	US	Eurozone	Japan	UK	China	Brazil
Stocks	**S&P 500**	**Eurofirst 300**	**Nikkei 225**	**FTSE100**	**Shanghai Comp**	**Bovespa**
Level	4562.31	1813.79	33321.22	7423.46	3021.69	126571.50
% change on day	0.16	0.36	-0.26	-0.43	-0.56	0.03
Currency	**$ index (DXY)**	**$ per €**	**Yen per $**	**$ per £**	**Rmb per $**	**Real per $**
Level	102.793	1.098	147.395	1.270	7.124	4.887
% change on day	0.046	0.000	-0.328	0.158	-0.393	0.424
Govt. bonds	**10-year Treasury**	**10-year Bund**	**10-year JGB**	**10-year Gilt**	**10-year bond**	**10-year bond**
Yield	4.305	2.430	0.676	4.251	2.694	10.569
Basis point change on day	-3.380	-6.300	-7.400	-7.900	0.100	-11.000
World index, Commods	**FTSE All-World**	**Oil - Brent**	**Oil - WTI**	**Gold**	**Silver**	**Metals (LMEX)**
Level	457.26	82.13	77.26	2025.65	24.65	3664.50
% change on day	0.14	0.81	1.11	0.59	-0.42	1.19

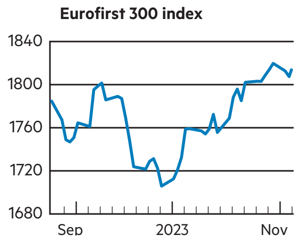
Yesterday's close apart from: Currencies = 16:00 GMT; S&P, Bovespa, All World, Oil = 17:00 GMT; Gold, Silver = London pm fix. Bond data supplied by Tullett Prebon.

Main equity markets

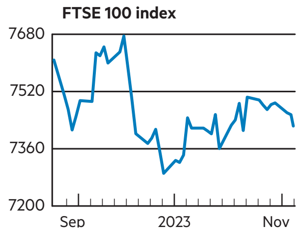
S&P 500 index



Eurofirst 300 index



FTSE 100 index



Biggest movers

%	US		Eurozone		UK	
Ups	Netapp	15.32	Infineon Tech	4.11	Jd Sports Fashion	5.71
	General Motors	9.61	Lufthansa	3.62	Fresnillo	5.62
	Hewlett Packard Enterprise	7.83	Adidas	3.16	Ocado	4.69
	Charles Schwab (the)	6.02	Cap Gemini	3.15	Rightmove	3.60
	Key	4.65	Bay.motoren Werke	2.91	Smurfit Kappa	2.94
Downs	Hormel Foods	-4.76	Philips	-3.47	Entain	-4.10
	Las Vegas Sands	-4.23	Alstom	-2.81	Prudential	-3.52
	Constellation Energy	-3.05	Grifols	-1.75	Standard Chartered	-3.29
	Humana	-1.97	Kone	-1.52	Anglo American	-2.97
	Meta Platforms	-1.92	Pernod Ricard	-1.42	Compass	-2.61

Prices taken at 17:00 GMT. Based on the constituents of the FTSE Eurofirst 300 Eurozone

All data provided by Morningstar unless otherwise noted.

Wall Street

Sports retailer **Foot Locker** leapt to a six-month high after lifting its full-year outlook on the back of strong results over the Thanksgiving week.

Comparable sales were expected to decline 8.5-9 per cent against an earlier range of 9-10 per cent, with the group benefiting from "third-quarter results . . . ahead of our expectation", said Mary Dillon, chief executive.

The US-listed shares of **Farfetch** plummeted after Richemont said it did not "envisage lending or investing" in the online fashion retailer.

This followed a report in The Telegraph newspaper a day earlier suggesting that Farfetch's chair, José Neves, planned to take the company private.

The Swiss luxury goods group has a deal in place to sell a 47.5 per cent stake in its ecommerce operation, Yoox Net-a-Porter, to Farfetch.

Carmaker **General Motors** rose sharply on announcing it would be returning more money to investors through a $10bn share buyback.

Video games retailer **GameStop** jumped ahead of its quarterly results next week. Day traders' interest in one of the original meme stocks appears to have been piqued, with GameStop being among the top trending tickers on StockTwits, a trading platform popular with retail investors. *Ray Douglas*

Europe

Medical equipment maker **Philips** retreated after the US Food and Drug Administration told patients and healthcare providers to "carefully monitor" the Dutch group's respiratory devices for "signs of overheating".

The watchdog said it had received reports linked to "thermal issues such as fire, smoke [and] burns" for the DreamStation 2.

Philips replied that it was in discussions with the FDA regarding these reports.

James Vane-Tempest, an analyst at Jefferies, said even if this problem was limited to a specific batch or faulty components, this again puts Philips "under the spotlight" for quality and safety issues.

Finland's **Musti** surged on news that a consortium had launched a takeover bid for the petcare specialist of €26 a share — 27 per cent above Tuesday's closing price. The consortium, which includes chair Jeffrey David, chief executive David Rönnberg and board member Johan Dettel, already holds a 4.2 per cent stake in the group.

Football team **Borussia Dortmund** rallied after beating AC Milan 3-1 to reach the knockout stage of the lucrative Champions League. Qualification for the last 16 of this European tournament guarantees the German club a further €9.6mn in prize money. *Ray Douglas*

London

Heading the FTSE 100 index was retailer **JD Sports**, which climbed on the back of forecast-beating results by US peer Foot Locker.

JD was joined by precious metals miner **Fresnillo**, buoyed by a rally in gold, which has hit a six-month high this week.

Taking the third spot on the blue-chip benchmark was **Ocado** after chair Rick Haythornthwaite backed the online grocer with a purchase of 9,500 shares for around £53,000.

Near the top of the FTSE 250 mid-cap index was **Spirent Communications**, the telecoms testing company, which announced it had signed an agreement with an unnamed "financial services organisation" worth $15mn.

Jefferies analyst Janardan Menon said the deal was "clearly positive", helping Spirent expand "into the financial services sector at a time when demand from the telecom services segment is sluggish".

A profit downgrade weighed heavily on **Halfords**, which trimmed the upper end of its guidance for underlying pre-tax profit from £58mn to £53mn for the full year. The auto and cycling retailer said trading had been volatile, with executives spotting "some market softening in our discretionary big-ticket categories" during the past couple of months.
Ray Douglas

AI tools will alter research and investment

Juan Luis Perez

Markets Insight

Sir Isaac Newton lost a fortune betting on the South Sea Company. Perhaps he did not take into account the "precautionary principle". If you don't understand something, even if others seem excited about it, it's better to do something else or wait until you do get it.

This principle should perhaps be borne in mind by investors and investment banks as artificial intelligence is developed for market and financial research. It could create a lot of noise.

Much has been written about shrinking "sellside" research by investment banks. Even more about the troubles of active portfolio management. Blame regulation or passive funds, but the struggle to add value increases when uncertainty rises — as a result of geopolitics, for example. At such times, the market whipsaws, with swings driven by a diffusion of views. This could be made much worse or better by the democratisation of generative AI.

Any operator will be able to create plausible comments with credible data. This might be considered by some as an alternative to the diminishing grip on the "official view of the future" that traditional financial intermediaries have today. A subscription to OpenAI and a Twitter account will be all it takes to pour fuel on the fire of uncertainty. Total cost could be as low as $30 a month for the soap box and the content generator.

But overconfidence in a potent AI tool will replicate the error of Sir Isaac. Even powerful models are influenced by context, like humans. When the St Louis Federal Reserve compared the performance of inflation estimates between a pool of professional forecasters and GPT3, the AI tool had less bias and lower errors but it was subject, like the professionals, to something akin to mood swings.

This is not just a potential problem for the inexperienced "day trader". We only need to look at how increasingly complex versions of value-at-risk models gave the confidence to many financial institutions to overextend risk in their balance sheet. Sophisticated firms may fall under the spell of a unique model that was excellent at explaining the past but is not sensitive to new uncertainties. In a way, firms focused on investing through quantitative systems have expertise dealing with this problem, as market regime changes render previous models useless. But the opaque characteristics of a GPT will complicate the forensic analysis. And while it is tempting to lean on the rich information that AI tools may add, eventually usage hits the law of diminishing returns.

> If we look at a problem from many angles, the combined prediction error will be radically reduced

However, generative AI will bring benefits. It is a wonderful tool to test many alternative hypotheses at a very low cost. There will still be flaws that come from a backward-looking perspective but if we look at a problem from many angles, the combined prediction error of the ensemble will be radically reduced. It will be possible to use an AI lens to analyse Disney strategy, for example, looking at past reaction to factors such as price changes in streaming, success of blockbusters or how weather affects amusement parks. All of this can be done by large research outlets or multi-manager platforms. But it requires investment in infrastructure, diverse subject-matter experts and lots of communication within the firm. This is difficult to sustain.

The next ecosystem could be very different. On one hand, imaginative professionals will be able to prompt multiple inquiries at a fraction of the cost. But alternatively, large firms will be the ones able to afford built-for-purpose models to chase multiple sources of returns. This could be done by an alliance with a tech company. Or we may see firms uploading data to modify the generic AI models. These options appear likely as firms such as Open AI may create a platform for other businesses. It is hard to say which is the winning hand.

Like top chess players, investment professionals may need to add new skills. With the arrival of spreadsheets, we all thought there was value in building a model that represented the future under certain assumptions. Instead, the value may lie in the proper interrogation of the AI tools. We can see that large firms may need to hire more engineers to fine-tune the process of interrogating the models. A discipline in its own right.

The Lumiere brothers commercialised the Cinematographe in 1895. By 1905 they believed they had exhausted all the creative ways of the medium. That was wrong then. We should use our creativity to expand what generative AI has to offer.

Juan Luis Perez is a former global head of research at Morgan Stanley and former group head of research, data and analytics at UBS

MARKET DATA

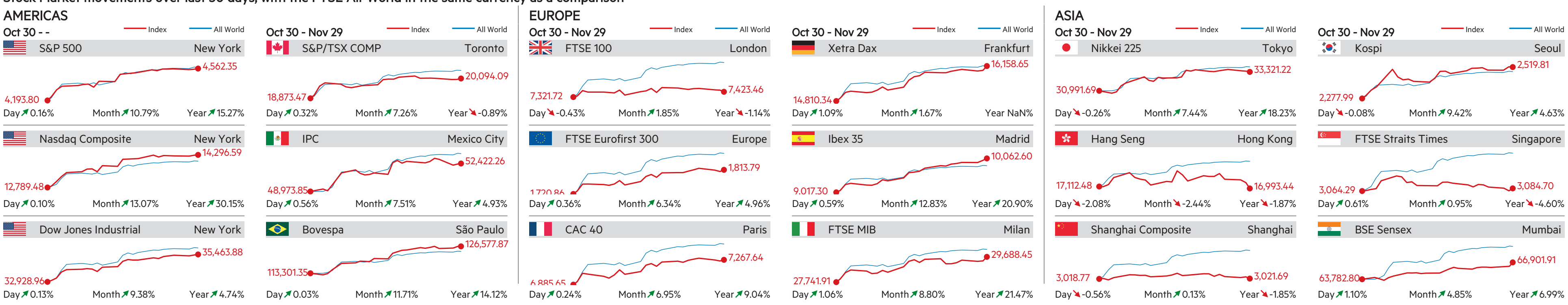
WORLD MARKETS AT A GLANCE

FT.COM/MARKETSDATA

Change during previous day's trading (%)

S&P 500	Nasdaq Composite	Dow Jones Ind	FTSE 100	FTSE Eurofirst 300	Nikkei	Hang Seng	FTSE All World $	$ per €	$ per £	¥ per $	£ per €	Oil Brent $ Sep	Gold $
0.16%	0.10%	0.13%	-0.43%	0.36%	-0.26%	-2.08%	0.14%	No change	0.158%	-0.328%	-0.231%	1.57%	0.59%

Stock Market movements over last 30 days, with the FTSE All-World in the same currency as a comparison



Country	Index	Latest	Previous
Argentina	Merval	798952.95	773419.75
Australia	All Ordinaries	7245.80	7223.10
	S&P/ASX 200	7035.30	7015.20
	S&P/ASX 200 Res	5872.60	5869.70
Austria	ATX	3279.25	3267.55
Belgium	BEL 20	3511.22	3505.19
	BEL Mid	10355.06	10261.05
Brazil	IBovespa	126571.50	126538.32
Canada	S&P/TSX 60	1211.39	1206.65
	S&P/TSX Comp	20099.98	20036.77
	S&P/TSX Div Met & Min	1541.32	1499.60
Chile	S&P/CLX IGPA Gen	29241.07	29110.24
China	FTSE A200	9157.71	9235.77
	FTSE B35	9000.71	8988.96
	Shanghai A	3168.05	3185.70
	Shanghai B	230.51	231.33
	Shanghai Comp	3021.69	3038.55
	Shenzhen A	1977.05	1992.72
	Shenzhen B	1079.37	1080.93
Colombia	COLCAP	1261.61	1260.21
Croatia	CROBEX	2013.05	2011.29
Cyprus	CSE M&P Gen	68.46	68.68
Czech Republic	PX	1389.18	1384.06
Denmark	OMXC Copenahgen 20	2206.11	2189.20
Egypt	EGX 30	24759.16	25121.73
Estonia	OMX Tallinn	1751.35	1753.88
Finland	OMX Helsinki General	9739.59	9699.74
France	CAC 40	7267.64	7250.13
	SBF 120	5519.19	5533.59
Germany	M-DAX	26313.98	26007.22
	TecDAX	3192.16	3134.24
	XETRA Dax	16166.45	15992.67
Greece	Athens Gen	1271.20	1264.69
	FTSE/ASE 20	3096.01	3084.05
Hong Kong	Hang Seng	16993.44	17354.14
	HS China Enterprise	5818.87	5957.08
	HSCC Red Chip	3326.63	3395.46
Hungary	Bux	57346.69	57176.11
India	BSE Sensex	66901.91	66174.20
	Nifty 500	17904.10	17741.80
Indonesia	Jakarta Comp	7036.09	7041.07
Ireland	ISEQ Overall	8278.20	8266.31
Israel	Tel Aviv 125	1808.74	1800.22
Italy	FTSE Italia All-Share	31644.51	31331.88
	FTSE Italia Mid Cap	41898.94	41748.09
	FTSE MIB	29688.45	29376.74
Japan	2nd Section	7228.27	7239.06
	Nikkei 225	33321.22	33408.39
	S&P Topix 150	2065.39	2076.15
	Topix	2364.50	2376.71
Jordan	Amman SE	2408.69	2397.75
Kenya	NSE 20	1508.06	1512.96
Kuwait	KSX Market Index	6633.44	6603.51
Latvia	OMX Riga	1351.96	1352.59
Lithuania	OMX Vilnius	946.38	940.69
Luxembourg	LuxX	1398.23	1395.20
Malaysia	FTSE Bursa KLCI	1446.07	1448.02
Mexico	IPC	52650.18	52359.00
Morocco	MASI	11784.33	11775.17
Netherlands	AEX	761.99	761.37
	AEX All Share	1029.81	1027.29
New Zealand	NZX 50	11235.94	11237.38
Nigeria	SE All Share	71283.34	71041.05
Norway	Oslo All Share	1017.37	1006.88
Pakistan	KSE 100	60502.00	60730.26
Philippines	Manila Comp	6265.14	6269.50
Poland	Wig	74512.85	75010.76
Portugal	PSI 20	6439.50	6438.31
	PSI General	4594.84	4576.67
Romania	BET Index	14712.11	14687.50
Russia	Micex Index	2436.57	2445.30
	RTX	1245.71	1212.57
Saudi-Arabia	TADAWUL All Share Index	11103.05	11100.92
Singapore	FTSE Straits Times	3084.70	3065.94
Slovakia	SAX	307.46	307.46
Slovenia	SBI TOP	-	-
South Africa	FTSE/JSE All Share	75241.41	75589.18
	FTSE/JSE Res 20	58176.40	58309.32
	FTSE/JSE Top 40	69303.49	69574.16
South Korea	Kospi	2519.81	2521.76
	Kospi 200	336.62	337.52
Spain	IBEX 35	10062.60	10003.40
Sri Lanka	CSE All Share	10513.28	10452.22
Sweden	OMX Stockholm 30	2233.00	2214.81
	OMX Stockholm AS	835.44	827.48
Switzerland	SMI Index	10802.88	10760.38
Taiwan	Weighted Pr	16915.54	16942.30
Thailand	Bangkok SET	1387.69	1401.42
Turkey	BIST 100	8009.33	8009.33
UAE	Abu Dhabi General Index	9222.93	9251.11
UK	FT 30	2616.60	2604.80
	FTSE 100	7423.46	7455.24
	FTSE 4Good UK	6689.64	6712.11
	FTSE All Share	4047.89	4059.87
	FTSE techMARK 100	6164.65	6188.56
USA	DJ Composite	11573.39	11546.49
	DJ Industrial	35463.88	35416.98
	DJ Transport	14917.06	14816.24
	DJ Utilities	865.43	867.83
	Nasdaq 100	16029.10	16010.43
	Nasdaq Cmp	14296.59	14281.76
	NYSE Comp	15993.06	15929.15
	S&P 500	4562.31	4554.89
	Wilshire 5000	42053.18	41446.59
Venezuela	IBC	57618.21	58690.18
Vietnam	VNI	1102.80	1095.43
Cross-Border	DJ Global Titans ($)	531.51	532.32
	Euro Stoxx 50 (Eur)	4371.49	4348.02
	Euronext 100 ID	1352.75	1350.84
	FTSE 4Good Global ($)	11656.52	11650.42
	FTSE All World ($)	457.26	456.62
	FTSE E300	1813.79	1807.32
	FTSE Eurotop 100	3613.04	3602.63
	FTSE Global 100 ($)	3137.18	3140.76
	FTSE Gold Min ($)	1851.95	1758.59
	FTSE Latibex Top (Eur)	4440.00	4432.20
	FTSE Multinationals ($)	3181.47	3174.34
	FTSE World ($)	837.56	835.97
	FTSEurofirst 100 (Eur)	4901.12	4894.82
	FTSEurofirst 80 (Eur)	5928.14	5897.19
	MSCI ACWI Fr ($)	691.99	690.46
	MSCI All World ($)	3012.57	3007.99
	MSCI Europe (Eur)	1842.90	1849.35
	MSCI Pacific ($)	2780.09	2767.98
	S&P Euro (Eur)	1924.14	1913.19
	S&P Europe 350 (Eur)	1865.45	1857.69
	S&P Global 1200 ($)	3323.25	3321.15
	Stoxx 50 (Eur)	3950.17	3943.07

(c) Closed. (u) Unavaliable. † Correction. ♥ Subject to official recalculation. For more index coverage please see www.ft.com/worldindices. A fuller version of this table is available on the ft.com research data archive.

STOCK MARKET: BIGGEST MOVERS

AMERICA

ACTIVE STOCKS	stock traded m's	close price	Day's change
Tesla	191.3	248.12	1.40
Nvidia	98.4	480.83	2.62
Microsoft	46.5	378.41	-4.29
Apple	31.2	189.92	-0.48
Amazon.com	30.0	146.43	-0.60
Meta Platforms	29.0	332.47	-6.52
Advanced Micro Devices	28.3	124.22	2.21
Alphabet	15.6	135.82	-1.38
General Motors	14.7	31.67	2.78
Broadcom	11.0	940.69	-5.66

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Netapp	90.08	11.97	15.32
General Motors	31.67	2.78	9.61
Hewlett Packard Enterprise	16.74	1.22	7.83
Charles Schwab (the)	59.17	3.36	6.02
Key	12.49	0.56	4.65
Downs			
Hormel Foods	30.43	-1.52	-4.76
Las Vegas Sands	45.65	-2.02	-4.23
Constellation Energy	120.65	-3.80	-3.05
Humana	500.38	-10.08	-1.97
Meta Platforms	332.47	-6.52	-1.92

Based on the constituents of the S&P500

LONDON

ACTIVE STOCKS	stock traded m's	close price	Day's change
Shell	140.4	2553.50	-27.00
Astrazeneca	128.8	10032.00	132.00
Rio Tinto	97.4	5400.00	-32.00
Hsbc Holdings	95.9	594.80	-12.40
Bp	91.4	471.95	-3.05
Rolls-royce Holdings	81.1	263.40	5.10
Anglo American	73.0	2138.50	-65.50
Unilever	70.0	3753.50	-32.50
Diageo	69.0	2740.00	-34.50
Reckitt Benckiser	58.3	5390.00	-24.00

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Easyjet	446.40	25.20	5.98
Spirent Communications	115.20	6.40	5.88
Jd Sports Fashion	157.30	8.50	5.71
Fresnillo	590.40	31.40	5.62
Pets At Home	308.80	15.00	5.11
Downs			
Digital 9 Infrastructure	34.00	-5.30	-13.49
Qinetiq	306.00	-13.60	-4.26
Entain	800.20	-34.20	-4.10
Prudential	854.20	-31.20	-3.52
Currys	44.62	-1.60	-3.46

Based on the constituents of the FTSE 350 index

EURO MARKETS

ACTIVE STOCKS	stock traded m's	close price	Day's change
Stellantis	411.4	19.71	0.98
Intesa Sanpaolo	289.9	2.65	0.02
Novartis N	276.4	88.35	-0.46
Unicredit	265.4	25.33	0.57
Roche Gs	220.6	246.18	0.52
Nestle N	219.4	103.23	-0.28
Ubs N	201.8	21.78	0.64
Santander	170.5	3.80	0.02
Asml Holding	153.3	629.70	10.00
Totalenergies	144.4	61.96	-1.23

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Stellantis	19.71	0.98	5.25
Infineon Tech.ag Na O.n.	35.69	1.40	4.08
Sartorius Sted Bio	206.90	7.65	3.84
Capgemini	188.35	5.75	3.15
Ubs N	21.78	0.64	3.02
Downs			
Totalenergies	61.96	-1.23	-1.95
Pernod Ricard	155.80	-2.25	-1.42
Muench.rueckvers.vna O.n.	386.90	-3.20	-0.82
Hermes Intl	1896.60	-15.20	-0.80
Kering	391.35	-2.70	-0.69

Based on the constituents of the FTSEurofirst 300 Eurozone index

TOKYO

ACTIVE STOCKS	stock traded m's	close price	Day's change
Lasertec	4965.4	32740.00	1630.00
Mitsubishi Ufj Fin	1047.2	1253.50	-36.50
Toyota Motor	1008.9	2802.50	47.50
Tokyo Electron	503.8	23955.00	65.00
Fast Retailing Co.,	489.0	37390.00	-230.00
Denso	474.5	2298.00	21.00
Sumitomo Mitsui Fin	469.8	7264.00	-196.00
Asahi Holdings,	419.8	5491.00	41.00
Softbank .	382.5	6049.00	-91.00
Advantest	382.0	4487.00	-43.00

BIGGEST MOVERS	Close price	Day's change	Day's chng%
Ups			
Lasertec	32740.00	1630.00	5.24
Kyocera	8185.00	201.00	2.52
Tse Growth Market Core Index	976.56	23.49	2.46
M3	2435.00	55.00	2.31
Rakuten	602.80	13.10	2.22
Downs			
Sumitomo Dainippon Pharma Co Ltd	467.00	-24.00	-4.89
Kobe Steel,	1703.50	-76.50	-4.30
Seven & I Holdings Co.,	5500.00	-219.00	-3.83
Gs Yuasa	2136.50	-73.50	-3.33
Kawasaki Kisen Kaisha,	5026.00	-169.00	-3.25

Based on the constituents of the Nikkei 225 index

UK MARKET WINNERS AND LOSERS

FTSE 100	Nov 29 price(p)	%Chg week	%Chg ytd
Winners			
Rolls-royce Holdings	263.40	10.9	183.3
Fresnillo	590.40	9.3	-34.4
Rightmove	546.60	8.7	6.1
B&m Eur Value Retail S.a.	576.00	7.9	40.3
Sainsbury (j)	283.50	6.1	30.4
Smurfit Kappa	2872.00	5.9	-6.5
Endeavour Mining	1834.00	5.8	4.7
Howden Joinery	732.60	5.3	30.3
Jd Sports Fashion	157.30	4.6	24.9
Ocado	593.60	4.6	-3.5
Intertek	3984.00	4.0	-1.3
M&g	210.40	3.5	11.8
Losers			
Entain	800.20	-9.2	-39.1
Whitbread	3110.00	-7.0	21.4
Prudential	854.20	-6.6	-24.0
Burberry	1450.00	-5.8	-28.5
Vodafone	70.81	-5.5	-15.8
Rentokil Initial	434.60	-4.7	-14.6
Anglo American	2138.50	-4.4	-33.9
Pearson	927.40	-4.1	-1.1
Flutter Entertainment	12460.00	-3.9	10.1
Diageo	2740.00	-3.4	-24.8
Int Consolidated Airlines S.a.	153.70	-3.2	24.1
St. James's Place	647.40	-3.2	-40.9

FTSE 250	Nov 29 price(p)	%Chg week	%Chg ytd
Winners			
Energean	1036.00	10.4	-20.6
Centamin	96.80	8.9	-14.0
Marshalls	250.00	7.2	-8.9
Syncona	126.60	6.7	-29.8
Bridgepoint	226.40	6.4	18.9
Spirent Communications	115.20	6.0	-55.5
Easyjet	446.40	5.8	36.3
Pz Cussons	145.40	5.4	-30.4
Johnson Matthey	1606.50	4.8	-24.4
Clarkson	2990.00	4.7	-7.6
Pets At Home	308.80	4.1	8.0
Softcat	1290.00	4.0	8.4
Losers			
Digital 9 Infrastructure	34.00	-20.2	-60.6
Firstgroup	159.70	-8.7	59.2
Hipgnosis Songs Fund	66.60	-8.6	-22.7
Discoverie	624.00	-8.1	-14.4
Virgin Money Uk	144.55	-7.9	-20.4
Currys	44.62	-7.2	-16.5
Ceres Power Holdings	188.10	-6.1	-46.4
888 Holdings	76.30	-6.1	-11.3
Coats	66.00	-5.7	-0.3
Mitie	100.40	-5.6	35.1
Liontrust Asset Management	560.00	-5.1	-50.0
Qinetiq	306.00	-4.5	-13.9

FTSE SmallCap	Nov 29 price(p)	%Chg week	%Chg ytd
Winners			
Record	76.00	12.4	-16.8
Abrdn Eur Logistics Income	63.60	11.8	-7.3
Augmentum Fintech	96.40	11.6	-14.3
Rank	78.00	9.7	-5.4
Trustpilot	131.70	9.3	36.1
Trifast	77.00	8.5	6.1
Funding Circle Holdings	38.70	7.8	-29.6
Porvair	620.00	7.6	0.6
Pphe Hotel	1270.00	7.6	0.8
De La Rue	66.60	7.4	-15.2
Abrdn China Investment	439.00	7.3	-20.0
Ncc	120.20	7.3	-39.8
Losers			
Petrofac	22.40	-37.9	-68.3
Xaar	135.00	-24.2	-30.4
Halfords	185.00	-20.7	-10.2
Saga	113.60	-9.4	-10.0
Capita	19.29	-8.1	-20.8
Oxford Biomedica	172.00	-8.0	-61.0
Robert Walters	396.00	-7.9	-26.7
Card Factory	102.60	-7.9	31.2
Helical	214.50	-5.9	-36.1
Marston's	31.80	-5.9	-19.2
Paypoint	499.50	-5.8	-2.3
Prs Reit (the)	79.70	-5.6	-9.6

Industry Sectors	Nov 29 price(p)	%Chg week	%Chg ytd
Winners			
Mining	10044.64	7.0	-10.1
Real Estate & Investment Servic	2174.58	4.0	2.6
Aerospace & Defense	7866.22	2.5	53.9
Household Goods	11975.21	2.0	20.8
Electricity	10787.74	2.0	0.9
Construction & Materials	8625.63	1.7	25.6
Industrial Engineering	13124.12	1.6	-4.9
Automobiles & Parts	1551.83	1.6	4.4
General Industrials	6241.89	1.5	3.0
Food Producers	7252.08	0.6	27.8
Software & Computer Services	2345.28	0.6	32.8
General Financial	13827.10	0.5	19.6
Losers			
Personal Goods	22000.51	-3.5	-28.5
Travel & Leisure	6618.28	-3.4	6.5
Life Insurance	5871.76	-3.3	-16.7
Mobile Telecommunications	1916.09	-3.2	-10.1
Beverages	21566.57	-2.9	-22.4
General Retailers	3538.35	-2.7	5.4
Industrial Metals	6498.29	-2.0	-17.0
Tobacco	28187.81	-1.7	-20.9
Banks	3433.65	-0.8	4.5
Support Services	9845.92	-0.7	-1.0
Health Care Equip.& Services	10715.88	-0.7	-2.3
Food & Drug Retailers	3927.63	-0.7	-4.5

Based on last week's performance. †Price at suspension.

CURRENCIES

Nov 29	Currency	DOLLAR Closing Mid	DOLLAR Day's Change	EURO Closing Mid	EURO Day's Change	POUND Closing Mid	POUND Day's Change
Argentina	Argentine Peso	360.0484	0.5049	395.1538	0.3374	457.1694	1.1795
Australia	Australian Dollar	1.5102	0.0046	1.6575	0.0041	1.9176	0.0080
Bahrain	Bahrainin Dinar	0.3770	-	0.4138	-0.0002	0.4787	0.0006
Bolivia	Bolivian Boliviano	6.9100	-	7.5837	-0.0042	8.7739	0.0103
Brazil	Brazilian Real	4.8873	0.0206	5.3639	0.0197	6.2057	0.0335
Canada	Canadian Dollar	1.3589	0.0005	1.4914	-0.0003	1.7255	0.0026
Chile	Chilean Peso	867.9850	-2.1550	952.6154	-2.8894	1102.1193	-1.4331
China	Chinese Yuan	7.1242	-0.0281	7.8188	-0.0351	9.0459	-0.0250
Colombia	Colombian Peso	3994.9500	40.1600	4384.4669	41.6916	5072.5682	56.9168
Costa Rica	Costa Rican Colon	530.8550	0.3400	582.6145	0.0535	674.0503	1.2262
Czech Republic	Czech Koruna	22.1148	0.0266	24.2710	0.0159	28.0801	0.0669
Denmark	Danish Krone	6.7936	0.0034	7.4560	-0.0003	8.6261	0.0145
Egypt	Egyptian Pound	30.9488	0.0680	33.9664	0.0560	39.2971	0.1326
Hong Kong	Hong Kong Dollar	7.8047	0.0069	8.5657	0.0029	9.9100	0.0204
Hungary	Hungarian Forint	344.4101	0.9942	377.9908	0.8842	437.3128	1.7766
India	Indian Rupee	83.3263	-0.0175	91.4507	-0.0694	105.8031	0.1026
Indonesia	Indonesian Rupiah	15395.0000	-40.0000	16896.0588	-53.2086	19547.7434	-27.6660
Israel	Israeli Shekel	3.6839	0.0028	4.0431	0.0008	4.6776	0.0090
Japan	Japanese Yen	147.3950	-0.4850	161.7663	-0.6214	187.1540	-0.3944
..One Month		147.3942	-0.4865	161.7657	-0.6226	187.1530	-0.3962
..Three Month		147.3929	-0.4893	161.7646	-0.6248	187.1514	-0.3995
..One Year		147.3871	-0.5008	161.7602	-0.6337	187.1530	-0.4052
Kenya	Kenyan Shilling	153.2000	0.1000	168.1373	0.0175	194.5249	0.3563
Kuwait	Kuwaiti Dinar	0.3085	0.0001	0.3385	-0.0001	0.3917	0.0006
Malaysia	Malaysian Ringgit	4.6523	-0.0193	5.1059	-0.0239	5.9072	-0.0174
Mexico	Mexican Peso	17.1905	0.0325	18.8666	0.0253	21.8275	0.0670
New Zealand	New Zealand Dollar	1.6243	-0.0061	1.7827	-0.0077	2.0624	-0.0053
Nigeria	Nigerian Naira	789.5000	-	866.4779	-0.4757	1002.4634	1.1824
Norway	Norwegian Krone	10.6652	0.0158	11.7050	0.0110	13.5420	0.0361
Pakistan	Pakistani Rupee	285.5000	-	313.3369	-0.1720	362.5121	0.4276
Peru	Peruvian Nuevo Sol	3.7344	0.0042	4.0985	0.0024	4.7417	0.0109
Philippines	Philippine Peso	55.3775	-0.0335	60.7769	-0.0702	70.3153	0.0404
Poland	Polish Zloty	3.9570	0.0118	4.3428	0.0105	5.0243	0.0208
Romania	Romanian Leu	4.5309	0.0032	4.9727	0.0008	5.7531	0.0109
Russia	Russian Ruble	88.7000	-0.8000	97.3484	-0.9319	112.6263	-0.8818
Saudi Arabia	Saudi Riyal	3.7513	0.0006	4.1171	-0.0016	4.7632	0.0064
Singapore	Singapore Dollar	1.3325	0.0005	1.4624	-0.0003	1.6919	0.0026
South Africa	South African Rand	18.5988	-0.0638	20.4122	-0.0812	23.6157	-0.0530
South Korea	South Korean Won	1289.7000	-4.0000	1415.4486	-5.1696	1637.5896	-3.1415
Sweden	Swedish Krona	10.3554	-0.0221	11.3650	-0.0305	13.1486	-0.0125
Switzerland	Swiss Franc	0.8750	-0.0034	0.9603	-0.0043	1.1110	-0.0030
Taiwan	New Taiwan Dollar	31.2535	-0.2125	34.3008	-0.2522	39.6840	-0.2227
Thailand	Thai Baht	34.8175	-0.1175	38.2123	-0.1500	44.2093	-0.0969
Tunisia	Tunisian Dinar	3.0937	-0.0028	3.3953	-0.0049	3.9282	0.0011
Turkey	Turkish Lira	28.9185	0.0022	31.7381	-0.0150	36.7191	0.0462
United Arab Emirates	UAE Dirham	3.6723	-0.0008	4.0304	-0.0030	4.6629	0.0045
United Kingdom	Pound Sterling	0.7876	-0.0009	0.8643	-0.0015	-	-
..One Month		0.7876	-0.0009	0.8642	-0.0015	-	-
..Three Month		0.7876	-0.0009	0.8641	-0.0015	-	-
..One Year		0.7877	-0.0010	0.8630	-0.0015	-	-
United States	United States Dollar	-	-	1.0975	-0.0006	1.2697	0.0015
..One Month		-	-	1.0973	-0.1708	1.2698	0.0015
..Three Month		-	-	1.0971	-0.1707	1.2698	0.0015
..One Year		-	-	1.0957	-0.1707	1.2699	0.0014
Vietnam	Vietnamese Dong	24270.0000	30.0000	26636.4077	18.2925	30816.7360	74.3693
European Union	Euro	0.9112	0.0005	-	-	1.1569	0.0020
..One Month		0.9110	0.0005	-	-	1.1568	0.0020
..Three Month		0.9107	0.0005	-	-	1.1567	0.0020
..One Year		0.9094	0.0005	-	-	1.1556	0.0020

Rates are derived from WM Reuters Spot Rates and MorningStar (latest rates at time of production). Some values are rounded. Currency redenominated by 1000. The exchange rates printed in this table are also available at www.FT.com/marketsdata

FTSE ACTUARIES SHARE INDICES

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	£ Strlg Nov 29	Day's chge%	Euro Index	£ Strlg Nov 28	£ Strlg Nov 27	Year ago	Div yield%	Cover	P/E ratio	X/D adj	Total Return
FTSE 100 (100)	7423.46	-0.43	6687.38	7455.24	7460.70	7512.00	4.01	2.42	10.29	290.59	7924.29
FTSE 250 (250)	18467.58	0.44	16636.41	18387.00	18438.55	19186.16	3.64	1.04	26.45	579.32	15864.50
FTSE 250 ex Inv Co (168)	19060.85	0.64	17170.85	18939.66	19008.81	19710.49	3.82	0.82	31.78	611.71	16719.24
FTSE 350 (350)	4088.54	-0.31	3683.13	4101.06	4105.25	4152.78	3.96	2.24	11.26	155.58	8652.01
FTSE 350 ex Investment Trusts (265)	4035.44	-0.32	3635.30	4048.54	4052.60	4092.47	4.02	2.26	11.01	156.15	4415.96
FTSE 350 Higher Yield (133)	3495.24	-0.53	3148.67	3513.99	3514.18	3579.66	5.69	2.29	7.67	185.44	8474.31
FTSE 350 Lower Yield (217)	4267.59	-0.06	3844.44	4270.05	4278.91	4301.19	2.10	2.09	22.79	95.15	5371.33
FTSE SmallCap (222)	6066.13	0.16	5464.64	6056.44	6073.82	6211.34	4.03	-0.25	-99.04	201.51	10558.27
FTSE SmallCap ex Inv Co (115)	5032.32	0.13	4533.34	5025.77	5051.19	4996.82	4.25	-0.30	-78.48	162.22	9099.81
FTSE All-Share (572)	4047.89	-0.29	3646.52	4059.87	4064.18	4112.30	3.96	2.18	11.55	153.58	8649.28
FTSE All-Share ex Inv Co (380)	3963.02	-0.32	3570.06	3975.67	3979.85	4018.01	4.03	2.22	11.17	153.03	4402.84
FTSE All-Share ex Multinationals (512)	1070.58	0.54	800.94	1064.87	1066.36	1081.84	4.17	1.42	16.85	41.45	2372.83
FTSE Fledgling (71)	10506.38	0.86	9464.61	10417.19	10368.75	11583.48	3.07	-1.20	-27.19	309.53	23449.88
FTSE Fledgling ex Inv Co (31)	15820.92	2.22	14252.18	15476.63	15250.03	15144.38	2.37	-3.96	-10.66	446.18	34289.06
FTSE All-Small (293)	4213.95	0.20	3796.11	4205.75	4216.23	4331.92	3.98	-0.29	-87.35	139.15	9405.00
FTSE All-Small ex Inv Co (146)	3792.28	0.21	3416.25	3784.24	3800.46	3759.88	4.17	-0.38	-62.57	121.64	8683.56
FTSE AIM All-Share (670)	715.53	0.42	644.58	712.57	714.95	844.22	2.09	1.06	45.22	13.75	856.60
FTSE All-Share Technology (17)	2450.85	0.70	2139.36	2433.92	2424.64	2000.66	1.58	1.58	40.14	36.35	3613.60
FTSE All-Share Telecommunications (6)	1219.18	0.14	1064.23	1217.54	1224.10	1523.38	8.69	0.44	26.28	99.61	2022.40
FTSE All-Share Health Care (12)	13562.68	0.53	11838.93	13491.27	13560.92	14334.64	2.61	1.50	25.44	351.48	12866.01
FTSE All-Share Financials (256)	4593.85	-0.42	4009.99	4613.37	4624.68	4559.70	4.74	2.31	9.13	211.89	5349.21
FTSE All-Share Real Estate (51)	805.43	1.27	735.49	795.29	803.41	841.19	4.53	-3.03	-7.29	33.85	887.25
FTSE All-Share Consumer Discretionary (81)	5078.31	-0.27	4432.88	5091.87	5097.97	4575.10	2.33	2.06	20.81	110.87	5507.37
FTSE All-Share Consumer Staples (22)	17066.45	-0.74	14897.39	17193.33	17245.19	19700.83	4.65	1.58	13.59	721.17	16331.07
FTSE All-Share Industrials (83)	6974.98	0.11	6088.50	6967.60	6939.52	6301.93	2.23	2.23	20.12	151.97	8262.57
FTSE All-Share Basic Materials (21)	7686.52	-0.90	6709.60	7756.08	7755.20	9194.54	6.07	2.33	7.07	458.77	11112.48
FTSE All-Share Energy (15)	8831.89	-0.89	7709.40	8911.32	8889.93	8682.95	4.23	4.69	5.03	371.37	11205.00
FTSE All-Share Utilities (8)	9043.90	0.00	7894.46	9044.24	8996.70	8517.54	4.86	2.18	9.44	415.57	14463.17
FTSE All-Share Software and Computer Services (16)	2660.92	0.69	2322.73	2642.69	2631.60	2159.50	1.56	1.63	39.51	38.84	4149.84
FTSE All-Share Technology Hardware and Equipment (1)	3787.43	1.33	3306.07	3737.60	3887.10	5028.47	4.24	-0.47	-49.69	142.95	5078.30
FTSE All-Share Telecommunications Equipment (1)	257.52	5.88	224.79	243.21	242.76	629.04	5.43	1.51	12.18	13.99	382.00
FTSE All-Share Telecommunications Service Providers (5)	1913.19	0.00	1670.04	1913.28	1923.93	2334.31	8.78	0.42	27.08	157.69	2896.54
FTSE All-Share Health Care Providers (1)	11360.47	0.45	9916.61	11310.09	11360.47	11024.93	0.22	4.26	105.96	43.16	10585.21
FTSE All-Share Medical Equipment and Services (2)	5214.14	-0.15	4551.45	5221.79	5230.35	5443.26	2.78	0.62	57.71	144.86	5175.38
FTSE All-Share Pharmaceuticals and Biotechnology (9)	19385.17	0.57	16921.42	19276.02	19379.26	20502.38	2.61	1.55	24.65	504.08	16560.21
FTSE All-Share Banks (12)	3386.10	-1.00	2955.74	3420.14	3419.29	3231.88	6.48	3.20	4.82	218.66	3185.55
FTSE All-Share Finance and Credit Services (8)	11891.07	0.13	10379.77	11875.55	11860.56	10952.23	1.79	1.91	29.40	220.71	16307.18
FTSE All-Share Investment Banking and Brokerage Services (32)	8970.93	1.29	7830.77	8856.95	8873.88	8604.59	5.01	1.89	10.58	400.21	13262.33
FTSE All-Share Closed End Investments (192)	11159.69	0.06	9741.35	11153.42	11167.45	11688.96	3.04	1.38	23.87	309.37	7194.88
FTSE All-Share Life Insurance (6)	5977.64	-1.70	5217.91	6080.95	6193.17	6705.16	5.47	0.40	45.29	327.63	7687.07
FTSE All-Share Nonlife Insurance (6)	3838.92	-0.82	3351.02	3870.78	3889.77	3597.52	2.73	1.12	32.81	86.97	8378.65
FTSE All-Share Real Estate Investment and Services (10)	2058.12	2.08	1796.55	2016.22	2042.60	2126.59	2.47	-0.08	-538.85	40.95	6281.99
FTSE All-Share Real Estate Investment Trusts (41)	1997.63	1.13	1743.74	1975.32	1994.44	2090.55	4.90	-3.30	-6.18	92.08	3185.37
FTSE All-Share Automobiles and Parts (3)	1559.79	0.80	1361.54	1547.45	1546.41	1277.70	1.19	-3.35	-25.19	18.60	1639.86
FTSE All-Share Consumer Services (1)	3324.83	-2.61	2902.26	3413.84	3403.95	3014.43	1.84	2.12	25.69	61.00	4295.83
FTSE All-Share Household Goods and Home Construction (11)	9960.86	1.19	8694.89	9843.89	9876.73	8410.43	5.89	1.91	8.90	513.37	9478.20
FTSE All-Share Leisure Goods (2)	28912.18	0.57	25237.59	28748.29	29213.15	19947.19	4.15	1.00	24.05	1198.55	33770.10
FTSE All-Share Personal Goods (4)	18869.79	0.51	16471.54	18774.24	19096.89	28468.31	3.45	2.17	13.37	496.10	15134.19
FTSE All-Share Media (10)	11091.35	-0.49	9681.70	11146.36	11229.51	9461.70	2.37	1.93	21.80	262.54	8004.62
FTSE All-Share Retailers (21)	2370.27	1.04	2069.02	2345.77	2323.12	1910.21	2.45	2.68	15.21	49.50	3166.26
FTSE All-Share Travel and Leisure (29)	6511.52	-0.24	5683.94	6527.02	6516.43	6394.41	0.88	2.36	48.12	57.29	6790.26
FTSE All-Share Beverages (5)	21658.53	-1.21	18905.85	21923.13	22146.01	28845.98	2.95	2.03	16.69	622.57	17788.64
FTSE All-Share Food Producers (8)	7440.69	0.28	6495.02	7419.57	7415.81	5919.15	2.16	2.71	17.15	104.04	7359.70
FTSE All-Share Tobacco (2)	28187.86	-1.16	24605.33	28519.43	28535.37	36426.17	8.78	1.60	7.10	2008.23	28692.32
FTSE All-Share Construction and Materials (15)	9113.71	1.03	7955.40	9020.58	9014.00	7327.62	3.76	2.52	10.56	279.01	11493.90
FTSE All-Share Aerospace and Defense (8)	8234.18	-0.08	7187.66	8240.49	8071.85	5132.55	1.54	3.72	17.39	127.08	10225.52
FTSE All-Share Electronic and Electrical Equipment (11)	10738.80	0.41	9373.95	10695.39	10736.24	10538.11	1.70	2.41	24.44	165.33	10795.62
FTSE All-Share General Industrials (7)	5023.06	0.65	4384.66	4990.45	4944.43	5024.51	3.60	1.53	18.09	165.24	6868.41
FTSE All-Share Industrial Engineering (6)	14340.56	0.04	12517.95	14335.28	14367.41	16216.93	2.28	2.22	19.72	321.07	19657.57
FTSE All-Share Industrial Support Services (29)	9506.08	-0.23	8297.91	9527.81	9575.88	9836.51	2.27	1.39	31.56	211.01	11184.17
FTSE All-Share Industrial Transportation (7)	5230.21	0.28	4565.48	5215.49	5255.62	5493.67	1.87	3.59	14.94	91.89	5569.49
FTSE All-Share Industrial Materials (1)	16002.99	-2.44	530.69	16403.06	16303.04	16002.99	2.16	3.29	14.11	345.06	20602.83
FTSE All-Share Industrial Metals and Mining (8)	6998.73	-1.05	6109.23	7073.15	7077.84	8302.12	6.40	2.46	6.37	443.99	11449.31
FTSE All-Share Precious Metals and Mining (5)	9651.06	2.34	8424.46	9430.72	9235.73	10150.88	3.05	-1.42	-23.04	294.42	7016.69
FTSE All-Share Chemicals (7)	9494.25	-0.55	8287.58	9546.90	9550.68	13148.96	3.70	1.29	20.96	269.95	9754.80
FTSE All-Share Oil. Gas and Coal (13)	8580.68	-0.89	7490.12	8658.12	8637.15	8429.14	4.24	4.70	5.02	360.71	11290.19
FTSE Sector Indices											
Non Financials (316)	**4921.48**	**-0.26**	**4433.49**	**4934.11**	**4937.26**	**5033.48**	**3.73**	**2.14**	**12.56**	**174.88**	**9232.36**

Hourly movements	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	High/day	Low/day
FTSE 100	7429.79	7428.82	7443.89	7442.96	7447.44	7454.47	7445.44	7425.66	7428.45	7457.32	7409.30
FTSE 250	18395.20	18430.89	18457.15	18417.05	18419.94	18422.91	18469.22	18486.51	18487.93	[illegible]	18394.78
FTSE SmallCap	6059.07	6048.53	6049.50	6049.26	6060.50	6063.14	6065.12	6073.04	6073.85	6076.98	6041.94
FTSE All-Share	4048.50	4049.07	4056.72	4055.04	4057.91	4060.61	4056.59	4049.05	4050.86	4061.25	4040.15

Time of FTSE 100 Day's high:13:36:30 Day's Low08:31:45 FTSE 100 2010/11 High: 8014.31(20/02/2023) Low: 7256.94(07/01/2023)
Time of FTSE All-Share Day's high:13:36:30 Day's Low08:32:00 FTSE 100 2010/11 High: 4377.36(16/02/2023) Low: 3933.17(27/10/2023)
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FT 30 INDEX

	Nov 29	Nov 28	Nov 27	Nov 24	Nov 23	Yr Ago	High	Low
FT 30	2616.60	2604.80	2617.20	2623.90	2620.20	0.00	2895.30	2454.10
FT 30 Div Yield	-	-	-	-	-	0.00	3.93	2.74
P/E Ratio net	-	-	-	-	-	0.00	19.44	14.26

FT 30 hourly changes

8	9	10	11	12	13	14	15	16	High	Low
2604.8	2609.2	2614.8	2609.1	2611.8	2614.2	2612.2	2615.6	2619.2	2620.5	2600.4

FT30 constituents and recent additions/deletions can be found at www.ft.com/ft30

FT WILSHIRE 5000 INDEX SERIES

	Nov 28		Nov 28
FT Wilshire 5000	45708.50	FT Wilshire Mid Cap	5572.29
FT Wilshire 2500	5872.22	FT Wilshire Small Cap	5021.13
FT Wilshire Mega Cap	6074.81	FT Wilshire Micro Cap	4339.00
FT Wilshire Large Cap	5992.40		

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FTSE SECTORS: LEADERS & LAGGARDS

Year to date percentage changes

Aerospace & Defense	53.07	Banks	4.32	FTSE SmallCap Index	-2.79
Software & Comp Serv	29.76	Automobiles & Parts	4.25	Equity Invest Instr	-3.43
Food Producers	26.71	Fixed Line Telecomms	3.94	Health Care Eq & Srv	-6.42
Leisure Goods	25.35	Electronic & Elec Eq	2.92	Health Care	-7.47
Construct & Material	24.99	Household Goods & Ho	2.87	Pharmace & Biotech	-7.54
General Retailers	24.11	Industrial Eng	2.29	Telecommunications	-10.25
Food & Drug Retailer	21.04	Nonlife Insurance	1.89	Personal Goods	-12.02
Media	20.33	Real Est Invest & Se	1.27	Consumer Goods	-12.57
Technology	17.47	Electricity	1.10	Industrial Metals &	-14.54
Consumer Services	15.21	Industrial Transport	0.69	Mobile Telecomms	-15.65
Industrials	13.20	Financials	0.57	Oil Equipment & Serv	-15.74
Financial Services	11.77	Beverages	31.66	Life Insurance	-16.66
Gas Water & Multi	8.08	Support Services	-0.33	Mining	-17.12
Travel & Leisure	6.33	FTSE 100 Index	-0.38	Basic Materials	-17.90
Utilities	6.18	FTSE All{HY-}Share Index	-0.67	Tobacco	-20.92
Oil & Gas Producers	5.37	NON FINANCIALS Index	-1.06	Beverages	-22.52
Oil & Gas	5.14	Real Est Invest & Tr	-1.90	Chemicals	-26.53
		FTSE 250 Index	-2.04	Tech Hardware & Eq	-48.53

FTSE 100 SUMMARY

FTSE 100	Closing Price	Day's Change	FTSE 100	Closing Price	Day's Change
3I Group PLC	2231	27.00	Intertek Group PLC	3984	-22.00
Admiral Group PLC	2703	-6.00	Jd Sports Fashion PLC	157.30	8.50
Airtel Africa PLC	111.80	-0.60	Kingfisher PLC	220.10	-
Anglo American PLC	2138.5	-65.50	Land Securities Group PLC	628.60	6.60
Antofagasta PLC	1418.5	-2.50	Legal & General Group PLC	228.50	3.30
Ashtead Group PLC	4734	12.00	Lloyds Banking Group PLC	43.45	1.00
Associated British Foods PLC	2388	15.00	London Stock Exchange Group PLC	8910	-4.00
Astrazeneca PLC	10032	132.00	M&G PLC	210.40	5.60
Auto Trader Group PLC	718.20	7.00	Marks And Spencer Group PLC	253.60	1.50
Aviva PLC	415.60	-9.00	Melrose Industries PLC	523.00	4.60
B&M European Value Retail S.A.	576.00	11.40	Mondi PLC	1400	19.00
Bae Systems PLC	1035	-15.50	National Grid PLC	1025.5	1.50
Barclays PLC	140.30	0.18	Natwest Group PLC	206.40	3.20
Barratt Developments PLC	508.20	5.80	Next PLC	7930	30.00
Beazley PLC	550.50	-6.00	Ocado Group PLC	593.60	26.60
Berkeley Group Holdings (The) PLC	4646	54.00	Pearson PLC	927.40	-6.40
BP PLC	471.95	-3.05	Pershing Square Holdings LTD	3126	-22.00
British American Tobacco PLC	2514.5	-35.50	Phoenix Group Holdings PLC	463.70	-0.90
Bt Group PLC	122.55	0.40	Prudential PLC	854.20	-31.20
Bunzl PLC	2943	-32.00	Reckitt Benckiser Group PLC	5390	-24.00
Burberry Group PLC	1450	-4.00	Relx PLC	3046	-19.00
Centrica PLC	147.40	-1.75	Rentokil Initial PLC	434.60	-8.10
Coca-Cola Hbc AG	2179	-26.00	Rightmove PLC	546.60	19.00
Compass Group PLC	2017	-54.00	Rio Tinto PLC	5400	-32.00
Convatec Group PLC	225.00	-1.40	Rolls-Royce Holdings PLC	263.40	5.10
Croda International PLC	4450	-47.00	Rs Group PLC	744.80	-14.00
Dcc PLC	5362	-66.00	Sage Group PLC	1130	-1.50
Dechra Pharmaceuticals PLC	3824	-	Sainsbury (J) PLC	283.50	2.20
Diageo PLC	2740	-34.50	Schroders PLC	401.00	2.00
Diploma PLC	3374	56.00	Scottish Mortgage Investment Trust PLC	720.00	7.20
Endeavour Mining PLC	1834	36.00	Segro PLC	820.40	11.80
Entain PLC	800.20	-34.20	Severn Trent PLC	2716	-12.00
Experian PLC	2918	15.00	Shell PLC	2553.5	-27.00
F&C Investment Trust PLC	884.00	-5.00	Smith & Nephew PLC	1021.5	0.50
Flutter Entertainment PLC	12460	-65.00	Smith (Ds) PLC	284.20	4.10
Frasers Group PLC	894.50	11.50	Smiths Group PLC	1636.5	-3.00
Fresnillo PLC	590.40	31.40	Smurfit Kappa Group PLC	2872	82.00
Glaxosmithkline PLC	1401	-10.80	Spirax-Sarco Engineering PLC	9176	22.00
Glencore PLC	443.95	-3.10	Sse PLC	1830.5	5.50
Haleon PLC	331.10	-4.30	St. James's Place PLC	647.40	10.60
Halma PLC	2124	4.00	Standard Chartered PLC	640.40	-21.80
Hargreaves Lansdown PLC	710.40	7.00	Taylor Wimpey PLC	129.10	2.10
Hikma Pharmaceuticals PLC	1722.5	-18.00	Tesco PLC	284.40	0.60
Howden Joinery Group PLC	732.60	7.20	Unilever PLC	3753.5	-32.50
HSBC Holdings PLC	594.80	-12.40	Unite Group PLC	982.50	8.00
Imi PLC	1579	10.00	United Utilities Group PLC	1125	7.50
Imperial Brands PLC	1834.5	-7.00	Vodafone Group PLC	70.81	-0.05
Informa PLC	738.00	-3.80	Weir Group PLC	1873.5	-
Intercontinental Hotels Group PLC	6116	-8.00	Whitbread PLC	3110	-67.00
International Consolidated Airlines Group S.A.	153.70	1.50	Wpp PLC	703.00	4.20

FTSE GLOBAL EQUITY INDEX SERIES

Nov 29 Regions & countries	No of stocks	US $ indices	Day %	Mth %	YTD %	Total retn	YTD %	Gr Div Yield
FTSE Global All Cap	10081	771.06	0.2	9.9	13.4	1263.64	15.7	2.1
FTSE Global All Cap	10081	771.06	0.2	9.9	13.4	1263.64	15.7	2.1
FTSE Global Large Cap	2000	705.97	0.2	9.9	16.1	1192.84	18.5	2.1
FTSE Global Mid Cap	2293	934.53	0.2	9.7	5.8	1440.94	8.0	2.3
FTSE Global Small Cap	5788	955.43	0.1	9.8	6.0	1405.95	8.0	2.1
FTSE All-World	4293	456.62	0.2	9.9	14.2	792.64	16.6	2.1
FTSE World	2622	835.97	0.2	10.3	15.5	1947.13	17.9	2.1
FTSE Global All Cap ex UNITED KINGDOM In	9802	815.75	0.2	10.0	13.7	1310.30	15.9	2.1
FTSE Global All Cap ex USA	8319	522.78	0.5	8.6	6.9	959.49	10.1	3.1
FTSE Global All Cap ex JAPAN	8652	804.22	0.2	10.1	13.5	1329.35	15.8	2.1
FTSE Global All Cap ex Eurozone	9443	814.43	0.2	9.6	13.3	1304.50	15.5	2.0
FTSE Developed	2117	768.22	0.2	10.3	15.6	1266.39	17.9	2.0
FTSE Developed All Cap	5726	793.20	0.2	10.3	14.6	1288.02	16.9	2.0
FTSE Developed Large Cap	775	733.98	0.2	10.4	18.0	1231.46	20.4	2.0
FTSE Developed Europe Large Cap	197	421.76	0.1	9.7	11.4	863.92	15.1	3.3
FTSE Developed Europe Mid Cap	343	621.17	0.3	13.2	9.7	1102.08	13.0	3.2
FTSE Dev Europe Small Cap	735	823.90	0.3	14.0	3.0	1404.09	6.1	3.3
FTSE North America Large Cap	220	1001.38	0.2	11.0	21.9	1529.69	23.7	1.5
FTSE North America Mid Cap	418	1148.76	0.0	9.6	5.2	1625.57	6.8	1.9
FTSE North America Small Cap	1295	1125.57	-0.3	9.7	6.0	1523.77	7.5	1.7
FTSE North America	638	639.82	0.1	10.7	18.5	999.56	20.3	1.6
FTSE Developed ex North America	1479	284.07	0.4	9.2	9.2	561.60	12.5	3.1
FTSE Japan Large Cap	164	422.97	0.3	7.2	14.0	637.44	16.7	2.2
FTSE Japan Mid Cap	348	559.15	0.8	4.7	5.7	801.61	8.3	2.5
FTSE Global wi JAPAN Small Cap	917	629.93	1.1	5.1	6.0	939.70	8.8	2.6
FTSE Japan	512	172.00	0.4	6.7	12.3	290.34	15.0	2.2
FTSE Asia Pacific Large Cap ex Japan	1218	671.09	0.7	6.2	-0.1	1260.67	2.7	3.0
FTSE Asia Pacific Mid Cap ex Japan	902	1011.33	0.9	8.1	5.1	1828.64	7.6	2.8
FTSE Asia Pacific Small Cap ex Japan	2556	577.34	1.0	8.7	8.1	1011.61	10.6	2.5
FTSE Asia Pacific Ex Japan	2120	537.77	0.7	6.4	0.5	1073.45	3.2	3.0
FTSE Emerging All Cap	4355	725.22	0.7	6.4	3.0	1305.26	6.1	3.1
FTSE Emerging Large Cap	1225	658.70	0.6	5.9	1.3	1192.87	4.4	3.1
FTSE Emerging Mid Cap	951	1101.75	0.6	8.1	7.8	1993.61	11.0	3.1
FTSE Emerging Small Cap	2179	833.68	0.9	7.7	10.7	1431.64	13.8	2.8
FTSE Emerging Europe	150	143.88	0.6	5.0	12.0	314.38	16.6	3.3
FTSE Latin America All Cap	251	816.41	1.2	11.5	17.0	1727.60	24.0	6.6
FTSE Middle East and Africa All Cap	326	695.88	0.5	9.5	-3.9	1321.84	-0.5	3.7
FTSE Global wi UNITED KINGDOM All Cap In	279	332.68	0.5	7.7	5.9	707.46	9.9	3.9
FTSE Global wi USA All Cap	1762	1092.02	0.1	10.7	17.9	1607.20	19.6	1.5
FTSE Europe All Cap	1466	473.78	0.2	10.5	10.5	931.31	14.0	3.3
FTSE Eurozone All Cap	638	473.14	0.3	12.5	14.2	922.10	17.8	3.2
FTSE EDHEC-Risk Efficient All-World	4293	486.60	0.2	8.9	5.0	786.99	7.6	2.6
FTSE EDHEC-Risk Efficient Developed Europe	540	342.93	0.3	11.6	9.3	623.24	12.8	3.4
Oil & Gas	137	405.38	0.4	0.8	-0.8	869.18	3.4	4.2
Oil & Gas Producers	89	412.84	0.5	0.1	1.4	910.91	5.8	4.2

Nov 29 Sectors	No of stocks	US $ indices	Day %	Mth %	YTD %	Total retn	YTD %	Gr Div Yield
Oil Equipment & Services	26	278.15	0.1	3.0	0.1	538.90	4.2	4.7
Basic Materials	422	600.64	0.8	7.9	0.5	1147.51	4.0	3.7
Chemicals	208	802.83	0.1	9.0	3.0	1460.85	5.6	2.8
Forestry & Paper	18	253.82	1.3	4.4	0.8	534.41	4.6	4.6
Industrial Metals & Mining	114	530.08	0.8	9.1	7.2	1057.41	11.3	4.1
Mining	82	909.39	1.7	5.6	-6.9	1860.07	-2.5	4.8
Industrials	841	530.61	0.2	10.9	8.8	864.57	10.9	2.0
Construction & Materials	162	654.25	0.1	11.8	17.5	1125.33	19.8	2.0
Aerospace & Defense	37	980.29	0.7	9.0	8.3	1554.26	9.9	1.5
General Industrials	82	272.36	-0.1	11.7	14.1	493.69	16.9	2.4
Electronic & Electrical Equipment	170	621.54	0.2	11.7	3.7	907.76	5.2	1.6
Industrial Engineering	169	1065.29	-0.1	9.4	8.4	1730.16	10.5	2.0
Industrial Transportation	131	916.74	0.4	8.8	1.6	1540.90	4.7	3.4
Support Services	90	555.93	0.4	13.0	10.0	840.89	11.7	1.5
Consumer Goods	581	576.95	0.6	7.8	7.3	994.45	9.7	2.5
Automobiles & Parts	144	596.37	1.8	10.5	36.8	988.41	40.1	2.0
Beverages	73	734.13	0.1	5.1	-5.3	1276.17	-3.4	2.6
Food Producers	133	681.71	-0.1	5.8	-5.4	1204.81	-3.2	2.8
Household Goods & Home Construction	63	573.93	0.5	7.6	6.8	992.55	9.5	2.4
Leisure Goods	57	268.67	0.4	9.5	17.0	385.76	18.6	1.4
Personal Goods	99	918.21	-0.3	7.4	-0.7	1439.15	0.9	2.0
Tobacco	12	931.52	0.4	8.2	-6.6	2819.79	-1.8	7.0
Health Care	353	709.77	-0.5	5.6	-2.6	1152.30	-0.9	1.9
Health Care Equipment & Services	133	1351.52	-0.5	9.1	-2.0	1674.82	-1.1	1.1
Pharmaceuticals & Biotechnology	220	480.39	-0.5	3.3	-2.9	843.12	-0.7	2.4
Consumer Services	438	604.39	0.0	10.3	17.7	873.52	19.0	1.1
Food & Drug Retailers	66	299.12	0.3	5.0	-4.9	488.01	-2.5	2.6
General Retailers	144	1090.48	0.2	11.2	22.4	1504.60	23.5	0.9
Media	80	355.21	-0.5	11.8	22.6	517.16	24.1	1.2
Travel & Leisure	148	499.70	-0.2	9.0	12.9	738.75	14.2	1.3
Telecommunication	82	129.48	0.4	8.1	0.6	319.07	4.9	4.5
Fixed Line Telecommuniations	29	98.51	0.3	7.4	-2.1	281.34	2.8	5.6
Mobile Telecommunications	53	155.10	0.5	8.4	2.0	327.72	6.0	3.9
Utilities	209	310.16	0.6	7.7	-3.7	752.72	-0.3	3.7
Electricity	151	347.40	0.6	8.2	-5.0	828.42	-1.8	3.5
Gas Water & Multiutilities	58	313.97	0.6	6.7	-0.6	792.81	3.3	4.1
Financials	853	272.38	0.2	10.0	5.0	542.13	8.4	3.3
Banks	273	201.56	0.4	9.4	1.7	453.44	6.5	4.7
Nonlife Insurance	70	413.27	-0.5	7.7	13.0	710.67	16.2	2.8
Life Insurance	50	217.68	-0.4	5.8	-4.4	437.02	-0.7	4.0
Financial Services	218	475.61	0.1	11.7	12.1	735.07	13.9	1.6
Technology	377	668.18	0.4	14.5	51.1	880.41	52.4	0.8
Software & Computer Services	179	1027.77	0.7	15.0	51.6	1251.21	52.5	0.5
Technology Hardware & Equipment	198	580.72	0.1	13.9	50.5	826.17	52.2	1.1
Alternative Energy	22	105.07	-0.2	12.1	-42.6	151.36	-42.4	0.5
Real Estate Investment & Services	140	240.84	0.1	10.5	-4.1	482.20	-1.5	2.7
Real Estate Investment Trusts	102	423.68	0.6	12.3	-2.7	1032.76	0.7	4.1
FTSE Global Large Cap	2000	705.97	0.2	9.9	16.1	1192.84	18.5	2.1

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UK STOCK MARKET TRADING DATA

	Nov 29	Nov 28	Nov 27	Nov 24	Nov 23	Yr Ago
Order Book Turnover (m)	63.07	41.98	144.18	144.18	144.18	33.38
Order Book Bargains	531786.00	419349.00	386587.00	386587.00	386587.00	361425.00
Order Book Shares Traded (m)	1510.00	1159.00	1469.00	1469.00	1469.00	1375.00
Total Equity Turnover (£m)	6670.85	4488.60	11128.98	11128.98	11128.98	5905.38
Total Mkt Bargains	1017173.00	902632.00	766637.00	766637.00	766637.00	789312.00
Total Shares Traded (m)	8099.00	4937.00	5318.00	5318.00	5318.00	4692.00

† Excluding intra-market and overseas turnover. *UK only total at 6pm. ‡ UK plus intra-market turnover. (u) Unavaliable. (c) Market closed.

All data provided by Morningstar unless otherwise noted. All elements listed are indicative and believed accurate at the time of publication. No offer is made by Morningstar or the FT. The FT does not warrant nor guarantee that the information is reliable or complete. The FT does not accept responsibility and will not be liable for any loss arising from the reliance on or use of the listed information.
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UK RIGHTS OFFERS

Issue price	Amount paid up	Latest renun. date	High	Low	Stock	closing Price p	+or-

There are currently no rights offers by any companies listed on the LSE.

UK COMPANY RESULTS

Company		Turnover		Pre-tax		EPS(p)		Div(p)		Pay day	Total	
Attitude Group	Int	11.768	7.666	0.031	0.133L	0.070	0.060L	0.00000	0.00000	-	0.000	0.000
Augmentum Fintech	Int			0.893	1.043L	0.500	0.600L	0.00000	0.00000	-	0.000	0.000
Benchmark Holdings	Pre	169.476	157.707	12.694L	21.383L	3.160L	4.400L	0.00000	0.00000	-	0.000	0.000
Brickability Group	Int	324.840	352.669	15.970	14.740	3.740	3.740	1.07000	1.01000	Feb 22	3.220	3.050
Celebrus Technologies	Int	13.006	8.133	0.252	1.056L	0.670	3.350L	0.52000	0.80000	Jan 12	3.070	2.950
Chelverton UK Dividend Trust	Int			6.935L	8.279L	32.590L	39.780L	2.94250	2.94250	Jan 12	6.093	5.693
easyJet	Pre	8171.000	5769.000	432.000	208.000L	41.300	22.400L	0.00000	0.00000	-	0.000	0.000
Eco Animal Health Group	Int	38.009	34.859	0.626L	3.039	1.930L	1.960	0.00000	0.00000	-	0.000	0.000
Fandango Holdings	Int			0.110L				0.00000		-	0.000	
Fidelity China Special Situations	Int			147.058L	115.683L	30.630L	22.770L	0.00000	0.00000	-	6.250	5.500
GB Group	Int	132.360	133.816	57.282L	0.024L	21.800L	0.300L	0.00000	0.00000	-	4.000	3.810
Halfords Group	Int	873.500	767.100	19.300	18.700	6.700	6.200	3.00000	3.00000	-	7.000	9.000
IG Design Group	Int	444.050	521.184	34.053	31.925	0.246	0.231	0.00000	0.00000	-	0.000	0.000
Pets at Home Group	Int	774.200	727.200	34.700	52.000					Jan 12		

Figures in £m. Earnings shown basic. Figures in light text are for corresponding period year earlier.
For more information on dividend payments visit www.ft.com/marketsdata

UK RECENT EQUITY ISSUES

Issue date	Issue price(p)	Sector	code	Stock	Close price(p)	+/-	High	Low	Mkt Cap (£m)

§Placing price. *Introduction. ‡When issued. Annual report/prospectus available at www.ft.com/ir
For a full explanation of all the other symbols please refer to London Stock Exchange Service notes.

MARKET DATA

FT500: THE WORLD'S LARGEST COMPANIES

Stock	Price	Day Chg	52 Week High	52 Week Low	Yld	P/E	MCap m
Australia (A$)							
ANZ Bank	24.18	-0.18	26.08	22.39	6.25	10.13	48117.08
BHP Group	46.19	-0.24	50.05	41.66	8.70	12.02	155026.14
CmwBkAu	103.33	-0.01	111.38	93.05	4.08	17.46	114639.67
CSL	262.20	5.32	314.21	228.65	1.32	38.37	83867.76
NatAusBk	28.10	-0.26	32.15	25.10	5.58	11.93	58097.39
Telstra	3.78	-	4.46	3.75	4.25	22.54	28919.92
Wesfarmers	52.72	0.50	54.28	45.13	3.58	24.13	39592.53
Westpac Bank	21.15	-0.10	24.10	20.03	6.14	11.68	49142.83
Woolworths	34.28	-0.21	40.35	33.05	2.90	25.81	27728.16
Belgium (€)							
AnBshInBv	57.18	-0.09	62.01	49.17	1.33	20.67	109018.1
KBC Grp	52.48	0.30	72.46	48.78	7.57	6.88	24027.67
Brazil (R$)							
Ambev	13.47	-0.18	16.55	12.28	5.73	14.77	43418.98
Bradesco	14.22	-0.01	15.18	11.15	6.52	10.49	15508.79
Cielo	3.75	0.03	5.82	3.24	8.10	5.78	2084.59
ItauHldFin	26.69	0.45	26.80	19.53	5.67	8.22	27077.42
Petrobras	37.25	-0.60	41.86	23.61	40.37	-	56724.3
Vale	73.10	-0.37	96.30	61.00	7.42	6.16	67889.85
Canada (C$)							
Bausch Hlth	9.57	0.26	13.81	7.56	-	-13.83	2542.26
BCE	53.32	0.05	65.66	49.57	7.26	20.63	35795.47
BkMontrl	109.89	1.42	137.64	102.67	5.30	10.64	58303.62
BkNvaS	59.36	1.79	74.41	55.20	7.12	9.12	53027.89
Brookfield	58.88	11.29	63.88	41.28	0.94	446.60	69948.82
CanadPcR	96.47	1.14	112.96	94.45	0.81	20.45	66149.39
CanImp	53.18	0.79	64.85	47.44	6.51	10.67	36437.78
CanNatRs	89.49	0.75	93.44	67.13	3.90	12.77	71348.04
CanNatRy	155.29	2.01	175.39	143.13	2.01	19.41	74098.73
Enbridge	46.96	0.59	56.37	42.75	7.63	24.35	73446.42
GtWesLif	42.82	-0.69	43.95	29.58	4.84	17.38	29385.9
ImpOil	78.30	-0.18	85.11	60.19	2.25	8.15	31976.01
Manulife	26.32	0.10	27.50	23.65	5.42	3.83	35103.49
Nutrien	75.45	0.21	113.27	70.69	3.63	7.70	27458.68
RylBkC	118.61	1.29	140.18	107.92	4.53	11.25	122403.62
SHOP	100.42	0.59	101.91	44.06	-	-46.83	88936.24
Suncor En	44.78	0.26	48.26	37.09	4.65	9.43	42775.6
ThmReut	189.25	-1.07	193.43	156.67	1.39	31.80	63434.9
TntoDom	83.49	0.88	94.05	75.89	4.60	10.60	110716.33
TrnCan	50.50	-0.16	65.77	43.70	7.43	54.71	38555.55
China (HK$)							
AgricBkCh	2.86	-0.02	3.28	2.50	-	3.75	11264.24
Bk China	2.84	-0.02	3.45	2.60	8.81	3.63	30428.47
BkofComm	4.58	-0.09	5.65	4.23	8.84	3.68	20546.01
BOE Tech	0.56	-	0.87	0.47	-	8.65	14.28
Ch Coms Cons	3.41	-0.07	5.52	3.38	7.20	2.86	1930.52
Ch Evrbrght	2.17	-0.04	2.78	2.15	9.52	2.97	3525.2
Ch Rail Cons	4.36	-0.04	7.46	4.33	6.10	2.28	1159.9
Ch Rail Gp	3.40	-0.10	6.30	3.38	6.24	2.53	1832.87
ChConstBk	4.48	-0.07	5.70	4.01	9.35	3.21	138001.95
China Vanke	7.90	-0.39	17.78	7.20	13.36	4.23	2233.45
ChinaCitic	3.56	-0.03	4.74	3.34	10.04	2.96	6788.35
ChinaLife	10.56	-0.32	15.84	10.14	5.01	9.55	10068.13
ChinaMBank	27.35	-0.70	53.00	27.30	6.86	4.62	16087.89
ChinaMob	62.50	-	70.20	50.75	6.76	9.47	164043.43
ChinaPcIns	16.60	-0.64	26.50	16.40	6.63	6.50	5902.84
ChMinsheng	2.60	-0.06	3.52	2.48	9.01	3.56	2771.74
ChMrchSecs	14.00	-0.05	15.91	13.02	3.78	15.71	14585.2
Chna Utd Coms	4.35	-0.02	6.45	4.13	2.45	17.76	18907.32
ChShenEgy	25.30	0.25	28.70	21.45	11.42	7.60	10948.58
ChShpbldng	3.94	-0.01	5.32	3.46	0.07	-61.87	12213.23
ChStConEng	4.94	-0.07	7.35	4.86	5.01	4.03	28651.97
ChUncHK	4.95	-0.06	6.58	4.16	6.06	7.82	19406.25
CNNC Intl	6.89	-0.08	7.58	5.92	2.13	14.27	18262.59
CSR	3.16	-0.04	5.26	3.06	6.90	7.01	1769.76
Daqin	7.19	0.03	8.21	6.51	-	11.84	15513.43
GuosenSec	9.48	-0.04	10.90	8.56	2.79	17.92	12160.87
HaitongSecs	4.40	-0.09	6.01	4.32	5.20	9.54	1922.18
Hngzh HikVDT	35.02	-0.26	48.84	31.21	1.96	26.88	44773.78
Hunng Pwr	3.81	-0.04	5.28	3.04	-	-88.79	2294.59
IM Baotou Stl	1.55	-0.01	2.14	1.52	-	24.37	6852.83
In&CmBkCh	3.72	-0.04	4.73	3.35	8.79	3.54	41369.51
IndstrlBk	14.60	-0.20	18.27	14.49	7.97	3.95	42573.79
Kweichow	1774.71	5.67	1935	1585	1.43	33.03	312931.58
Midea	0.32	0.02	0.44	0.26	-	-1.15	12.34
New Ch Life Ins	15.50	-0.42	25.00	15.34	7.55	4.25	2053.72
PetroChina	5.07	-0.04	6.05	3.42	9.24	5.62	13706.06
PingAnIns	35.75	-1.35	64.15	35.60	7.62	7.23	34114.15
PngAnBnk	9.72	-0.23	15.74	9.70	5.17	4.19	26476.15
Pwr Cons Corp	4.95	-0.08	8.15	4.94	1.97	7.63	9082.23
SaicMtr	15.05	-0.32	15.65	13.09	4.44	10.85	24681.55
ShenwanHong	0.08	0.00	0.15	0.07	-	5.11	84.01
ShgPdgBk	6.82	-0.05	8.22	6.77	5.89	5.71	28098.84
Sinopec Corp	4.01	-0.04	5.47	3.55	9.86	7.77	12715.4
Sinopec Oil	1.86	-0.02	2.39	1.86	-	63.27	3542.69
Denmark (kr)							
DanskeBk	175.85	0.35	179.80	126.90	-	353.73	22317.36
MollerMrsk	10870	195.00	17265	9800	18.27	1.63	11940.53
NovoB	689.40	1.50	742.20	439.70	0.89	46.59	348589.44
Finland (€)							
Nokia	3.25	0.02	4.88	2.91	2.75	4.48	20283.23
SampoA	39.32	-0.26	45.46	34.55	4.55	27.85	21643.04
France (€)							
Airbus Grpe	135.56	1.00	138.76	107.04	1.32	27.87	117602.48
AirLiquide	173.76	-0.60	175.00	131.86	1.69	28.83	99878.96
AXA	28.44	-0.04	30.34	24.60	5.93	9.95	70389.95
BNP Parib	56.92	0.44	67.02	47.02	6.80	8.17	71682.71
ChristianDior	670.00	5.50	872.00	621.50	1.78	18.38	132731.94
Cred Agr	11.80	0.05	12.03	9.29	8.83	6.56	39534.54
Danone	59.15	0.10	61.88	48.04	3.36	29.20	43999.17
EDF	12.00	-	12.05	7.27	2.41	-2.31	53889.44
Engie SA	15.87	-0.05	15.97	12.55	8.76	-5.01	42421.57
EssilorLuxottica	177.24	0.66	188.40	155.15	1.81	34.20	88234.33
Hermes Intl	1897	-14.80	2050.5	1432	0.68	50.67	219791.45
LOreal	431.85	1.15	442.60	330.00	1.38	40.05	254039.19
LVMH	690.50	6.00	904.60	655.00	1.73	21.75	380464.92
Orange	11.26	-0.05	11.87	9.10	6.17	18.59	32866.81
PernodRic	155.75	-2.30	218.00	154.90	2.72	16.28	43696.65
Renault	35.83	0.80	43.96	31.05	0.69	3.17	11627.21
Safran	160.14	-1.06	162.38	114.56	0.84	21.98	75092.74
Sanofi	84.87	-0.89	105.18	80.60	4.16	12.48	117808.88
Sant Gbn	59.42	0.91	62.14	43.75	3.34	11.27	33025.41
Schneider	167.20	1.16	167.98	129.56	1.87	23.96	105116.73
SocGen	22.74	0.23	28.39	19.33	7.42	4.95	20040.13
Total	61.68	-1.51	64.80	50.55	4.39	8.61	163294.81
UnibailR	49.68	0.06	73.09	39.68	-	-7.39	7615.7
Vinci	112.12	1.00	112.40	91.88	3.54	14.37	73554.12
Vivendi	8.75	0.01	10.22	7.99	2.84	-9.09	9894.97
Germany (€)							
Allianz	231.00	0.45	234.55	192.48	4.90	10.60	102249.37
BASF	42.98	0.27	53.77	40.25	7.85	-21.22	42095.94
Bayer	30.67	0.12	65.66	30.22	7.77	21.01	33068.78
BMW	96.07	2.91	113.46	82.16	8.78	5.57	63472.59
Continental	71.60	1.58	79.24	54.30	2.08	21.59	15716.7
Deut Bank	11.27	0.18	12.36	7.95	2.64	4.96	25239.93
Deut Tlkm	21.94	0.06	23.13	18.50	3.17	19.90	120042.56
DeutsPost	44.73	0.54	45.03	29.68	4.14	12.32	60466.66
E.ON	11.98	-0.01	12.29	8.89	4.23	54.83	34713.77
Fresenius Med	37.28	-0.03	49.62	28.82	2.98	18.50	12004.98
Fresenius SE	28.57	0.07	31.22	23.29	3.20	16.17	17512.19
HenkelKGaA	62.70	-0.08	70.10	58.36	2.90	19.49	17877.43
Linde	376.40	0.80	379.85	286.40	0.96	60.20	200308.15
Mercedes-Benz	59.29	1.33	76.10	55.08	8.71	4.14	69615.29
MuenchRkv	387.50	-2.60	392.30	292.40	2.97	19.00	58037.46
SAP	144.54	2.00	144.96	96.12	1.41	97.06	194881.25
Siemens	152.88	1.46	167.00	119.48	2.76	13.89	134228.9
Volkswgn	119.45	1.50	187.00	105.95	7.23	5.03	38685.28
Hong Kong (HK$)							
AIA	69.20	-0.95	93.65	61.15	2.21	99.53	101422.6
BOC Hold	21.05	-0.30	28.25	20.45	6.41	7.12	28515.74
Ch OSLnd&Inv	14.42	-0.58	23.20	13.94	5.46	7.34	20221.77
ChngKng	38.15	-0.65	51.20	37.70	5.94	7.25	17347.23
Citic Ltd	7.25	-0.10	10.86	6.53	9.23	2.3	27022.82
Citic Secs	16.08	-0.40	19.18	13.54	3.30	10.63	5398.14
CK Hutchison	39.15	-0.70	54.55	38.35	7.43	5.23	19212.31
CNOOC	12.86	0.02	14.28	9.71	10.94	4.26	73450.47
HangSeng	87.50	-1.80	135.50	86.00	5.12	12.20	21434.03
HK Exc&Clr	279.60	-4.60	382.40	269.60	2.54	30.86	45419.71
MTR	28.10	-0.90	43.00	27.70	4.74	42.70	22384.33
SandsCh	19.04	-0.92	30.80	18.74	-	-30.53	19744.29
SHK Props	76.40	-1.45	115.90	75.40	6.44	9.31	28366.28
Tencent	317.00	-2.60	411.00	266.03	0.73	14.51	386191.76
India (Rs)							
Bhartiartl	995.40	10.50	1007.1	735.80	0.31	67.58	71826.05
HDFC Bk	1559.15	30.50	1757.5	1460.25	1.04	16.89	142004.89
Hind Unilevr	2525.05	14.50	2769.65	2393	1.57	56.82	71200.09
HsngDevFin	2724.3	-23.05	2927.4	2160	1.16	18.17	61324.4
ICICI Bk	939.60	14.10	1008.7	796.00	0.54	17.70	79036.6
Infosys	1459.6	16.90	1672.6	1185.3	2.35	24.36	72701.21
ITC	437.20	1.95	499.70	325.35	2.95	26.94	65435.83
L&T	3083.75	33.75	3115.45	2045	0.72	37.65	50869.49
OilNatGas	192.00	-1.95	203.40	139.20	7.40	6.33	28987.48
Reliance	2400.7	6.30	2856	2180	0.34	24.71	194937.25
SBI New	568.60	4.15	629.55	499.35	2.02	7.48	60899.59
SunPhrmInds	1202.2	10.85	1214.8	922.45	0.89	33.76	34616.73
Tata Cons	3513.75	43.60	3679	3070.25	1.46	27.58	154297
Israel (ILS)							
TevaPha	35.85	-1.18	41.25	26.37	-	-4.86	10915.95
Italy (€)							
Enel	6.43	-0.01	6.52	4.92	6.02	16.20	71779.1
ENI	15.11	-0.09	15.83	11.69	5.78	5.72	55976.63
Generali	18.97	-0.04	20.06	16.39	6.07	7.16	32463.63
IntSPaolo	2.65	0.02	2.68	1.99	6.15	8.02	53103.12
Unicred	25.33	0.57	25.50	12.10	3.87	5.94	49603.35
Japan (¥)							
AstellasPh	1788	-14.50	2360.5	1748	3.42	29.79	21952.43
Bridgestne	6030	-29.00	6134	4548	3.21	10.99	29197.74
Canon	3768	-20.00	3912	2790.5	3.51	14.44	34096.28
CntJpRwy	3470	-30.00	3926	2984	0.79	12.75	24248.45
Denso	2298	21.00	2613.75	1597.25	2.05	19.53	49138.64
EastJpRwy	7912	-39.00	8949	6706	1.29	23.38	20286.99
Fanuc	4107	72.00	4645	3603	2.66	24.24	27949.55
FastRetail	37390	-230.00	37900	25386.67	0.69	38.77	80723.78
Fuji Hvy Ind	2582.5	-69.00	3115	1980	3.00	7.88	13209.07
Hitachi	10005	-189.00	10465	6295	1.48	13.64	62935.07
HondaMtr	1505	-21.00	1821	1000.33	2.71	8.59	55487.64
JapanTob	3778	-25.00	3817	2555.5	5.58	14.14	51263.62
KDDI	4634	24.00	4767	3873	2.97	14.92	72395.73
Keyence	62440	760.00	71890	49950	0.49	40.35	103028.51
MitsbCp	6931	-109.00	7732	4194	2.65	10.19	67595.71
MitsubEst	1097.91	7.71	1101.32	948.63	-	-	-
MitsubishiEle	2005	-24.50	2109.5	1273	2.03	17.44	29208.17
MitsuiFud	976.56	23.49	1147.48	774.38	-	-	-
MitUFJFin	1253.5	-36.50	1344	734.20	2.60	9.63	107900.86
Mizuho Fin	2484.5	-79.00	2724.5	1636	3.49	9.64	42801.77
Murata Mfg	2849	-19.50	2994.5	2146	1.79	7.74	39188.46
Nippon TT	172.00	-1.30	183.40	147.48	2.84	11.92	105665.88
Nissan Mt	575.00	-11.30	712.50	408.10	1.77	7.09	16465.35
Nomura	599.30	-0.40	661.70	473.50	2.89	16.07	12862.89
Nppn Stl	3414	-100.00	3816	2161.5	5.37	5.42	22011.58
Panasonic	1523.5	-19.50	1808	1074.5	2.01	8.37	25367.66
Seven & I	5500	-219.00	6619	5162	2.03	21.27	33077.32
ShinEtsuCh	5170	-35.00	21055	3797	1.97	15.18	70997.77
Softbank	6049	-91.00	7297	4766	0.74	6.23	60327.69
Sony	12735	-90.00	14100	9994	0.60	17.34	106661.19
SumitomoF	7264	-196.00	7849	4528	3.37	12.05	65916.83
Takeda Ph	4130	-67.00	4873	3917	4.44	21.17	44338.5
TokioMarine	3606	-71.00	3793	2511	2.82	18.87	48990.9
Toyota	2802.5	47.50	2911.5	1764	2.18	12.36	310205.67
Mexico (MeX$)							
AmMovil	16.40	0.11	20.25	15.66	2.62	11.28	41116.45
FEMSA UBD	215.30	1.80	222.36	148.18	1.54	33.54	27067.37
WalMrtMex	66.71	-0.45	77.45	59.28	1.50	23.26	67761.24
Netherlands (€)							
ASML Hld	629.20	9.50	698.10	500.30	0.92	33.82	276386.54
Heineken	82.72	-0.50	106.30	81.54	2.08	18.56	52292.61
ING	12.77	0.12	13.57	9.59	4.35	7.94	50719.9
Unilever	43.49	-0.25	50.93	42.97	3.30	22.32	137981.01
Norway (Kr)							
DNB	204.80	-0.90	224.40	177.45	9.63	11.54	29622.38
Equinor	342.25	-7.00	382.85	278.70	2.79	4.19	96371.13
Telenor	115.65	1.00	134.95	87.60	8.00	28.44	15175.35
Qatar (QR)							
QatarNtlBk	15.85	0.10	19.76	14.31	3.94	8.17	40208.02
Saudi Arabia (SR)							
AlRajhiBnk	75.70	-	7317	0.00	1.65	18.35	80718.68
NatnlCombnk	34.25	-	1552.5	0.00	4.16	10.80	54781.02
SaudiBasic	79.30	0.30	2115	0.00	5.35	60.14	63418.02
SaudiTelec	38.45	-	8480	0.00	4.16	15.58	51248.9
Singapore (S$)							
DBS	31.76	0.13	36.40	30.30	4.83	8.58	61474.79
JardnMt US$	39.46	-0.61	54.79	38.66	5.44	23.24	11435.61
OCBC	12.69	0.07	13.39	11.93	5.27	8.66	42804.27
SingTel	2.29	0.01	2.74	2.25	4.22	16.61	28375.73
UOB	27.32	0.12	31.40	26.62	4.86	7.45	34290.97
South Africa (R)							
Firstrand	67.36	-0.15	74.77	58.60	5.86	9.37	20316.16
MTN Grp	101.00	-1.32	149.42	87.00	3.21	9.24	10232.47
Naspers N	3429.63	-10.37	3789.200	2826.08	0.20	9.51	34203.73
South Korea (KRW)							
HyundaiMobis	230500	-3000.00	250000	197500	1.70	7.26	16738.39
KoreaElePwr	18570	-410.00	22750	16030	-	-0.59	9243.45
SK Hynix	130400	-1000.00	134400	73100	0.90	-11.19	73607.43
SmsungEl	72700	-	73600	54500	1.94	14.19	336514.85
Spain (€)							
BBVA	8.70	0.11	8.71	5.30	4.91	7.49	56933.76
BcoSantdr	3.80	0.02	3.87	2.67	3.08	6.63	67460.54
CaixaBnk	4.20	0.01	4.23	3.12	5.46	9.32	34556.47
Iberdrola	11.31	0.03	12.25	9.88	6.76	15.81	78789.55
Inditex	37.54	0.32	37.68	24.04	2.02	24.30	128406.78
Repsol	14.03	-0.13	15.87	12.46	4.96	6.14	19662.28
Telefonica	3.89	0.03	4.15	3.22	7.66	15.06	24537.72
Sweden (SKr)							
AtlasCpcoB	138.65	0.80	140.95	106.54	1.45	27.12	20898.9
Ericsson	52.58	0.83	70.67	48.53	4.73	15.13	15651.08
H & M	175.04	0.84	189.58	108.88	3.52	47.73	24261.14
Investor	215.50	1.25	223.60	186.66	1.91	4.99	37915.41
Nordea Bk	116.90	-0.52	134.94	103.86	7.72	8.03	40062.88
SEB	126.80	1.00	139.40	105.20	5.10	8.30	25908.1
SvnskaHn	99.24	0.26	112.90	83.92	5.31	8.20	18637.67
Swedbank	193.25	1.45	219.90	161.60	4.83	7.69	21125.32
Telia Co	24.92	0.14	29.21	20.98	5.96	-6.71	9462.58
Volvo	242.20	3.70	242.50	186.50	2.77	13.21	37152.43
Switzerland (SFr)							
ABB	34.09	0.21	35.74	27.78	2.36	21.20	73327.02
CredSuisse	0.82	0.01	5.86	0.66	11.88	-0.31	3611.19
Nestle	99.13	-0.27	116.84	97.09	2.91	28.04	302505.39
Novartis	84.84	-0.44	90.16	69.89	3.61	26.97	220836.86
Richemont	109.50	1.00	161.10	102.95	2.09	16.49	65328.31
Roche	236.40	0.50	313.05	230.90	3.93	17.67	189823.22
Swiss Re	102.75	-0.55	104.20	83.10	5.44	20.17	37285.39
Swisscom	511.40	-1.60	619.40	495.70	4.20	16.28	30277.75
UBS	23.90	0.70	23.94	14.38	2.30	2.32	82743.9
Zurich Fin	435.50	0.60	458.30	393.00	5.36	15.55	72847.51
Taiwan (NT$)							
Chunghwa Telecom	120.00	0.50	128.00	110.50	3.93	25.00	29785.26
Formosa PetChem	84.50	-0.20	90.00	78.00	1.30	-61.99	25755.34
HonHaiPrc	102.00	-0.50	116.50	94.00	5.21	11.46	45243.67
MediaTek	948.00	6.00	951.00	621.00	8.04	18.31	48521.48
TaiwanSem	574.00	-1.00	594.00	442.50	1.92	15.77	476266.86
Thailand (THB)							
PTT Explor	35.00	0.25	36.50	29.50	5.60	13.52	28712.67
United Arab Emirates (Dhs)							
Emirtestele	24.30	0.70	38.98	11.60	2.93	24.15	57535.64
United Kingdom (p)							
Anglo American	2138.5	-65.50	3648.5	16.78	7.32	15.90	36319.91
AscBrFd	2388	15.00	2403	1539.5	1.83	25.06	23159.53
AstraZen	10032	132.00	12828.45	9778	2.24	32.29	197429.3
Aviva	415.60	-9.00	467.30	366.00	7.46	-20.99	14451.71
Barclays	140.30	0.18	198.86	128.12	5.17	4.05	26853.88
BP	471.95	-3.05	570.57	4.75	4.20	6.03	101576.34
BrAmTob	2514.5	-35.50	3453	2403	6.63	6.50	71403.26
BT	122.55	0.40	161.40	109.40	6.28	6.48	15473.77
Compass	2017	-54.00	2250	1830.5	1.56	27.90	43765.59
Diageo	2740	-34.50	3881.5	2719	2.83	16.67	77949.26
GlaxoSmh	1401	-10.80	1609	16.64	4.12	11.06	72847.05
Glencore	443.95	-3.10	583.25	410.95	6.26	7.43	69096.5
HSBC	594.80	-12.40	665.60	481.00	5.47	6.30	146370.28
Imperial Brands	1834.5	-7.00	2140	1553.5	7.70	10.42	20712.3
Jardine Mathes.	62.50	-	53.91	42.92	3.51	36.81	18112.67
LlydsBkg	43.45	1.00	54.33	39.42	5.52	5.50	35064.44
LSE Group	8910	-4.00	8970	7052	1.20	73.88	59129.32
Natl Grid	1025.5	1.50	1229.21	918.00	5.03	13.90	48024.61
Natwest Group	206.40	3.20	310.00	168.00	6.67	4.62	23082.28
Prudential	854.20	-31.20	1357.5	814.00	1.73	8.61	29861.82
ReckittB	5390	-24.00	6570	5308	3.40	17.42	48979.62
RELX	3046	-19.00	3090	2272	1.79	33.40	73002.2
RioTinto	5400	-32.00	6354	4509.5	7.11	13.03	85791.82
RollsRoyce	263.40	5.10	267.00	86.25	-	13.36	28149.73
Shell PLC	2553.5	-27.00	2801	2149.45	3.31	7.90	212968.23
StandCh	640.40	-21.80	799.40	578.80	2.21	8.38	21670.75
Tesco	284.40	0.60	307.23	219.96	3.83	14.48	25575.52
Unilever	3753.5	-32.50	4868.64	3738	3.96	13.42	119101.23
Vodafone	70.81	-0.05	103.24	69.73	11.17	1.89	24345.46
WPP	703.00	4.20	1082	656.00	5.60	14.41	9594.32
United States of America ($)							
21stC Fox A	29.73	-0.14	37.26	28.67	1.48	12.84	7348.81
3M	98.46	-0.05	130.02	85.35	6.07	-34.96	54381.14
AbbottLb	103.15	1.09	115.83	89.67	1.90	35.25	179074.44
Abbvie	138.69	0.61	168.11	130.96	4.16	28.57	244862.38
Accenture	335.35	2.79	335.80	242.80	1.32	29.17	222932.87
Activision Bli.	94.42	-0.05	94.57	70.94	-	36.23	74289.5
Adobe	621.57	-1.75	628.60	318.60	-	55.78	283000.82
Advanced Micro	124.22	2.21	132.83	60.05	-	-3109.69	198752
AEP	79.49	-0.24	100.32	69.38	4.11	20.73	41800.64
Aflac	82.08	-0.10	83.45	60.20	2.00	11.02	47964.97
AirProd	267.46	-0.94	328.56	251.63	2.52	27.38	59431.68
Allstate	135.95	0.41	142.15	100.57	2.56	-13.16	35576.36
Alphabet	135.82	-1.38	141.22	84.86	-	28.75	803782.76
Altria	41.82	-0.01	51.57	39.07	8.98	11.02	73955.96
Amazon	146.43	-0.60	149.26	81.43	-	116.36	1513206.93
AmerAir	12.39	0.22	19.08	10.86	-	3.20	8100.57
AmerExpr	167.81	2.15	182.15	140.91	1.33	17.08	122294.57
AmerIntGrp	64.95	0.31	65.72	45.66	2.03	9.91	45597.52
AmerTower	207.46	4.24	228.97	154.58	2.97	101.33	96716.03
Amgen	265.89	0.37	288.46	211.71	3.06	17.94	142298.49
Amphenol Corp	90.71	0.80	90.73	72.00	0.91	29.58	54272.72
Analog Devices	184.42	1.22	200.10	154.99	1.73	25.43	91520.58
Aon Cp	322.34	-0.81	347.37	280.89	0.71	25.10	64537.74
Apple	189.92	-0.48	198.23	124.17	0.49	31.91	2953778.66
Applied Materi.♦	151.05	2.99	157.76	93.68	0.72	20.19	126807.39
Aptiv	82.81	0.86	124.88	71.01	-	25.13	23423.93
ArcherDan	73.42	-0.63	97.90	69.31	2.31	9.80	39160.85
AT&T	16.24	0.06	22.84	13.43	6.83	-13.89	116080.58
Autodesk	216.68	9.31	229.43	179.61	-	54.48	46317.23
AutomData	230.43	1.44	274.92	201.46	2.08	28.10	94776.96
AutoZone	2600	-2.18	2750	2277.88	-	20.08	45847.74
Avago Tech	940.69	-5.66	999.87	514.83	1.88	29.33	388256.16
BakerHu	33.30	-0.53	37.58	26.12	2.09	82.20	33502.56
Bank of NY	47.54	0.44	52.26	39.65	3.11	13.84	36557.9
BankAm	30.38	0.85	37.85	24.96	2.89	8.74	240379.61
Baxter	36.36	0.02	56.92	31.01	3.19	-6.51	18443.75
BectonDick	236.97	-0.31	287.32	228.62	1.52	42.91	68817.3
BerkshHat	546612.53	-256.46	566569.97	442363.5	-	9.21	312512.6
Biogen	231.16	3.75	319.76	220.86	-	12.62	33494.65
BlackRock	747.72	10.96	768.30	596.18	2.64	21.87	111232.67
Boeing	224.30	1.93	243.10	172.56	-	-29.94	135696.24
Booking Holdings	3118.81	-23.10	3251.71	1907.38	-	27.39	108814.88
Bristol-Myers	48.85	-0.07	81.44	48.42	4.60	13.01	99403
Broadcom	940.69	-5.66	999.87	514.83	1.88	29.33	388256.16
Cadence Design	276.77	6.05	277.52	154.88	-	85.01	75298.6
CapOne	110.71	2.13	120.94	83.93	2.17	8.44	42163.55
CardinalHlth	105.74	-0.42	107.15	68.53	1.88	105.87	26061.54
Carnival	14.95	0.32	19.55	7.53	-	-11.57	16735.71
Caterpillar	249.99	2.49	293.88	204.04	1.92	15.59	127266.04
Centene Corp	72.39	-0.57	87.84	60.83	-	14.85	38670.81
CharlesSch	59.17	3.36	86.63	45.00	1.59	17.22	104830.23
Charter Comms	397.63	-3.66	458.30	302.21	-	13.37	58817.54
Chevron Corp	144.51	-1.00	184.55	140.72	4.05	9.18	272798.56
Chipotle Mexic.	2192	-14.67	2238.5	1344.05	-	54.84	60158.69
Chubb	224.39	-0.60	231.37	183.40	1.49	16.00	91550
Cigna	283.19	-2.90	340.11	240.50	1.66	12.98	82865.59
Cintas Corp	549.78	-4.58	559.94	425.00	0.87	41.25	55996.85
Cisco	48.20	0.35	58.19	45.56	3.15	15.91	195839.21
Citigroup	45.72	0.86	52.74	38.17	4.46	7.25	87502.68
CME Grp	214.62	-1.32	221.76	166.55	4.05	26.27	77261.02
Coca-Cola	58.24	-0.34	64.99	51.55	3.09	24.20	251789.15
Cognizant	70.74	-0.56	72.71	54.25	1.58	16.55	35469.92
ColgtPlm	77.56	-0.32	82.09	67.62	2.43	43.38	63856.64
Comcast	41.52	-0.35	47.46	33.78	2.69	26.15	166729.18
ConocPhil	114.05	-0.93	127.35	91.53	3.41	10.95	135423.88
Constellation	237.80	-3.97	273.65	208.12	1.42	27.89	43674.99
Corning♦	28.21	0.45	37.10	25.26	3.89	38.17	24068.06
Corteva	45.59	0.09	67.55	43.22	1.31	29.07	32128.6
Corteva	45.59	0.09	67.55	43.22	1.31	29.07	32128.6
Costco	589.50	-4.51	599.94	447.90	0.65	42.62	260993.35
CrownCstl	115.05	3.92	151.89	84.72	5.35	29.31	49895.9
CSX♦	31.83	-0.22	34.38	27.60	1.32	16.10	62900.05
CVS	68.02	-1.30	104.83	64.41	3.39	31.10	87534.71
Danaher	223.05	4.29	249.58	182.09	0.47	26.21	164817.69
Deere	363.33	3.31	450.00	345.55	1.31	10.91	104637.81
Delta	36.79	0.75	49.81	30.60	-	7.90	23673.02
Devon Energy	44.93	0.11	70.42	42.59	10.03	6.15	28786.65
Digital Realty	138.11	1.21	138.24	86.33	3.53	108.88	41825.39
DiscFinServ	89.77	2.55	122.50	79.04	2.78	6.21	22447.7
Disney	92.68	0.18	118.18	78.73	-	75.44	169624.53
Dollar General	129.14	1.64	255.68	101.09	1.74	13.41	28342.1
DominRes	46.86	-0.14	63.94	39.18	5.69	17.38	39212.3
DukeEner	91.05	-0.08	106.43	83.06	4.41	19.52	70173.3
DuPont	71.51	0.58	78.74	62.80	1.93	35.27	30752.47
Eaton	225.91	1.32	240.44	151.59	1.48	33.41	90207.06
eBay	40.94	-0.19	50.75	37.17	2.29	17.30	21247.86
Ecolab	188.58	0.17	191.41	140.13	1.11	45.94	53771.67
Edwards Lifesc.	67.57	0.47	94.87	60.57	-	29.94	40982.3
Elevance	468.34	-7.15	544.01	412.00	1.18	17.46	110040.76
Eli Lilly	591.60	-	629.97	302.14	0.71	82.50	561610.16
Emerson	87.99	0.09	100.62	76.94	2.36	15.83	50160.25
EOG Res	123.46	-0.18	144.82	98.52	2.55	8.33	71995.65
Equinix	803.47	6.55	821.63	640.92	1.62	92.90	75432.75
EquityResTP	57.05	0.06	69.45	52.57	4.51	26.86	21663.31
Exelon	38.63	-0.53	44.37	35.71	3.61	18.07	38453.75
ExxonMb	103.27	-0.63	120.70	98.02	3.49	8.27	409250.53
Fedex	255.29	1.88	270.95	162.61	1.85	15.55	64185.13
Fidelity NIS	58.60	1.69	77.28	46.91	3.37	-1.50	34716.58
Fiserv	-	-	-	-	-	-	-
FordMtr	10.63	0.26	15.42	9.63	5.64	10.33	41778.59
Franklin	24.63	0.66	32.88	21.88	4.83	15.41	12179.14
GenDyn	245.29	0.07	256.86	202.35	2.10	20.16	66938.87
GenElectric	119.31	0.46	120.74	59.85	0.20	12.93	129855.34
GenMills	62.72	-0.70	90.89	60.33	3.53	15.27	36457.83
GenMotors	31.67	2.78	43.63	26.30	1.14	4.43	43364.62
GileadSci	74.88	0.37	89.74	72.87	3.95	17.23	93297.39
GoldmSchs	338.93	4.03	386.50	289.36	2.95	14.44	110528.65
Halliburton	37.33	-0.20	43.85	27.84	1.50	13.79	33407.81
HCA Hold	248.82	2.17	304.86	215.96	0.93	12.31	66599.36
Hew-Pack	29.23	0.59	33.90	25.22	3.54	10.83	28882.15
Hilton Worldwi.	167.37	-	172.40	123.74	0.36	35.13	42920.41
HiltonWwde	167.37	-	172.40	123.74	0.36	35.13	42920.41
HomeDep	313.07	1.82	347.25	274.26	2.52	19.80	311581.65
Honywell♦	195.02	0.75	220.65	174.88	2.08	24.17	128567.13
HumanaInc	500.38	-10.08	558.04	423.29	0.67	18.66	61601.53
IBM	157.01	1.36	157.27	120.55	4.20	66.90	143368.75
IDEXX Laborato.	470.22	-0.58	564.74	372.50	-	49.93	39052.57
IllinoisTool	242.32	1.07	264.19	214.66	2.16	24.02	72910.67
Illumina	100.13	3.59	238.55	89.00	-	-3.77	15900.64
Intcntl Exch	112.76	-0.02	118.79	94.16	1.42	37.51	63032.84
Intel	45.06	0.83	45.30	24.73	2.70	-196.16	189972.96
Intuit	587.44	22.37	599.00	370.62	0.52	70.70	164445.34
John&John	151.53	-0.10	181.04	144.95	3.02	30.77	364774.93
JohnsonCn	52.67	0.40	70.43	47.90	2.71	17.70	35832.46
JPMrgnCh	154.65	1.11	159.38	123.11	2.58	9.96	447079.98
Kimb-Clark	121.62	-0.37	147.87	116.32	3.84	25.11	41100.39
KinderM	17.38	0.09	19.36	15.89	6.41	15.68	38632.03
KLA Corp	548.21	1.07	562.84	355.88	0.95	22.73	74519.45
Kraft Heinz	35.13	0.01	42.80	30.68	4.55	13.74	43088.3
Kroger♦	43.53	-0.39	50.41	42.10	2.36	19.69	31311.82
LasVegasSd	45.65	-2.02	65.58	43.77	-	652.89	34895.19
LibertyGbl	16.26	0.18	21.89	15.01	-	-2.24	2785.77
Lilly (E)	591.60	-	629.97	302.14	0.71	82.50	561610.16
Linde	413.15	2.42	416.19	302.17	1.18	36.16	200330.08
Lockheed	446.35	-1.92	508.10	393.77	2.64	16.38	110738.86
Lowes	200.95	0.90	237.21	181.85	2.09	19.71	115971.3
Lyondell	94.11	0.20	102.05	79.20	5.12	14.56	30525.69
Marathon Ptl	148.66	-1.33	159.65	104.32	1.90	5.46	56445.8
Marsh&M	196.68	-0.58	201.96	151.86	1.20	29.93	96976.99
MasterCard	410.81	1.80	418.60	336.43	0.52	38.55	382214.06
McDonald's	280.33	-1.76	299.35	236.77	2.12	25.87	203335.13
McKesson	458.40	-3.20	473.18	331.75	0.47	17.11	60995.84
Medtronic	79.15	0.52	92.02	68.84	3.40	29.60	105314.67
Merck	100.18	-0.01	119.65	96.36	2.87	82.21	253845.76
Meta	332.47	-6.52	342.92	108.54	-	38.80	737952.75
Metlife♦	63.68	0.49	77.33	48.95	3.17	148.28	47135.31
Microsoft♦	378.41	-4.29	384.30	219.35	0.70	39.14	2812442.39
Mnstr Bvrg	54.53	-0.75	60.47	47.13	-	40.29	56735.27
MondelezInt	70.83	-0.60	78.59	60.75	2.17	23.56	96392.23
Monsanto	10.07	0.02	11.13	9.56	-	51.84	251.75
MorganStly	78.58	1.70	100.99	69.42	3.94	13.83	128974.26
Netflix	476.85	-2.15	485.00	273.41	-	50.79	208707.71
NextEraE♦	58.55	0.39	88.61	47.15	3.05	14.47	120117.23
Nike	110.92	2.17	130.22	88.66	1.23	34.16	135767.51
NorfolkS	213.98	1.58	261.71	183.09	2.42	19.28	48388.65
Northrop	467.30	-2.79	549.87	414.56	1.51	15.52	70464.63
NXP	205.88	5.85	225.57	150.90	1.80	19.50	53067.02
Occid Pet	60.04	-0.02	70.53	55.51	1.03	10.15	52857.47
Oracle	116.38	0.14	127.54	78.06	1.24	34.46	318808.59
Pepsico	167.24	-1.63	196.88	155.83	2.82	29.32	229925.37
Perrigo	30.17	-0.29	40.28	26.81	3.53	-71.92	4088.23
Pfizer♦	30.02	0.33	54.93	28.93	5.39	7.99	169477.09
Phillips66♦	122.16	4.16	125.19	89.74	3.30	5.27	53742.77
PhilMorris	93.54	-0.61	105.62	87.23	5.42	18.12	145212.06
PNCFin	132.16	2.57	170.28	109.40	4.53	9.08	52644.76
PPG Inds	139.74	1.66	152.89	120.33	1.77	25.12	32950.69
ProctGmbl	151.28	-1.01	158.38	135.83	2.43	25.67	356549.75
Prudntl	96.98	1.09	108.81	75.37	5.05	17.92	35009.78
PublStor	258.83	2.17	316.48	233.18	3.86	11.22	45511.67
Qualcomm	128.93	2.34	139.94	101.47	2.36	16.90	143885.88
Raytheon♦	80.98	0.79	108.84	68.56	2.76	21.51	116441.25
Regen Pharm	808.39	7.25	853.97	668.00	-	21.40	86601.88
S&P Global♦	416.40	3.42	428.65	321.15	0.84	58.72	131915.52
Salesforce	230.21	5.29	238.22	126.34	-	145.80	223994.33
Schlmbrg	51.92	-0.40	62.78	42.73	1.64	19.04	73896.88
Sempra Energy	73.11	-0.41	84.13	63.75	3.19	18.56	23004.32
Shrwin-Will	275.66	2.21	283.80	205.43	0.87	30.63	70559.61
SimonProp	123.62	1.52	129.95	100.17	5.82	18.81	40329.72
SouthCpr	71.49	-0.35	87.59	58.51	4.54	19.88	55269.67
Starbucks	100.68	-0.51	115.48	89.21	2.06	30.73	114437.27
StateSt	71.61	1.50	94.74	62.78	3.51	9.70	22097.67
Stryker	292.51	0.47	306.93	226.17	1.01	41.37	111122.98
Sychrony Fin	31.37	0.48	37.69	26.59	2.93	5.71	12981.04
T-MobileUS	148.89	0.51	153.36	124.92	-	29.70	172181.79
Target♦	131.99	0.32	177.68	102.93	3.23	18.35	60934.74
TE Connect	131.21	1.02	146.60	111.94	1.73	20.34	40777.35
Tesla Mtrs	248.12	1.40	299.29	101.81	-	70.78	788752.39
TexasInstr	154.68	1.78	188.12	139.48	3.14	18.59	140481.01
TheTrvelers	177.66	0.82	194.45	157.33	2.13	18.86	40577.45
ThrmoFshr	492.99	7.07	609.85	415.60	0.26	33.74	190477.69
TJX Cos♦	88.59	-0.55	93.78	72.92	1.36	26.33	101354.1
Truist Financial Corp	32.41	0.85	53.34	25.56	6.41	7.49	43224.18
Twitter	53.70	0.35	60.16	31.30	-	-402.23	41093.72
UnionPac	221.59	0.36	240.48	183.69	2.34	20.26	135080.71
UPS	152.75	2.01	197.80	133.68	4.11	13.26	110477.44
USBancorp	37.81	0.77	49.93	27.27	5.07	10.54	58862.85
UtdHlthcre	536.66	-3.88	553.00	445.68	1.27	24.05	496365.78
ValeroEngy	124.65	-0.59	160.16	104.18	3.20	4.30	42437.46
Verizon	37.73	0.26	44.73	30.14	6.91	7.55	158599.74
VertexPharm	350.79	3.75	387.42	282.21	-	27.14	90393.46
VF Cp	17.02	0.11	34.28	12.85	9.45	56.79	6616.85
Visa Inc	254.86	1.92	255.28	202.13	0.68	32.38	402852.08
Walgreen	20.03	0.05	42.29	19.75	9.82	-5.09	17304.12
WalMartSto	155.97	-2.68	169.94	136.09	1.43	30.39	419789.76
Walt Disney	92.68	0.18	118.18	78.73	-	75.44	169624.53
Waste Manage.	169.40	-0.29	173.71	148.31	1.59	30.51	68228.14
WellsFargo	44.03	0.66	48.84	35.25	2.72	11.13	159882.94
Williams Cos	36.48	0.15	36.69	27.80	4.78	16.38	44371.79
Workday	266.11	28.78	267.49	142.13	-	-561.78	69720.82
Yum!Brnds	125.79	-0.60	143.25	115.53	1.87	25.44	35259.97
Zoetis♦	176.40	-0.58	194.99	140.76	0.79	37.18	80985.36
Zoom	68.47	0.94	85.13	58.87	-	147.62	17411.4
Venezuela (VEF)							
Bco de Vnzla	8.79	-0.06	9.20	1.75	83.58	-	904.74
Bco Provncl	19.98	-0.51	79400	6.80	-	3.63	225.54

Closing prices and highs & lows are in traded currency (with variations for that country indicated by stock), market capitalisation is in USD. Highs & lows are based on intraday trading over a rolling 52 week period.
♦ ex-dividend
■ ex-capital redistribution
price at time of suspension

FT 500: TOP 20

	Close price	Prev price	Day change	Day change %	Week change	Week change %	Month change %
Workday	266.11	237.33	28.78	12.13	3.07	13.6	28.88
GenMotors	31.67	28.89	2.78	9.61	0.79	12.7	16.20
CrownCstl	115.05	111.13	3.92	3.53	8.03	11.6	28.02
RollsRoyce	263.40	258.30	5.10	1.97	20.80	10.9	31.74
Fidelity NIS	58.60	56.91	1.69	2.96	2.48	7.7	24.19
Zoom	68.47	67.53	0.94	1.39	3.70	7.3	15.39
Autodesk	216.68	207.37	9.31	4.49	4.71	6.9	10.89
MollerMrsk	10870.00	10675.00	195.00	1.83	485.00	6.7	-8.35
Midea	0.32	0.30	0.02	6.67	0.00	6.7	10.34
Tesla Mtrs	248.12	246.72	1.40	0.57	12.51	5.9	19.64
CharlesSch	59.17	55.81	3.36	6.02	-0.12	5.8	18.08
Sychrony Fin	31.37	30.89	0.48	1.55	1.21	5.7	11.68
Continental	71.94	70.02	1.92	2.74	1.92	5.6	5.64
SHOP	100.90	99.83	1.07	1.07	4.29	5.6	56.80
MTN Grp	101.00	102.32	-1.32	-1.29	6.01	4.9	-0.12
Renault	35.97	35.03	0.95	2.70	0.70	4.8	10.80
SaicMtr	15.05	15.37	-0.32	-2.08	1.00	4.7	-0.79
MitsubEst	1097.91	1090.20	7.71	0.71	40.51	4.6	9.74
AmerTower	207.46	203.22	4.24	2.08	4.43	4.4	20.63
E.ON	12.03	11.99	0.04	0.33	0.44	4.2	4.20

Based on the FT Global 500 companies in local currency

FT 500: BOTTOM 20

	Close price	Prev price	Day change	Day change %	Week change	Week change %	Month change %
SandsCh	19.04	19.96	-0.92	-4.61	-1.29	-10.4	-10.68
Bayer	30.63	30.56	0.08	0.25	-3.43	-9.9	-9.92
ChinaMBank	27.35	28.05	-0.70	-2.50	-1.95	-8.8	-13.17
PingAnIns	35.75	37.10	-1.35	-3.64	-1.65	-7.7	-11.95
PernodRic	155.80	158.05	-2.25	-1.42	-10.25	-7.4	-5.58
LasVegasSd	45.65	47.66	-2.02	-4.23	-1.62	-7.4	-2.99
Prudential	854.20	885.40	-31.20	-3.52	-29.60	-6.6	1.58
Vale	73.05	73.47	-0.42	-0.57	-4.43	-6.2	8.04
ChinaLife	10.56	10.88	-0.32	-2.94	-0.32	-5.7	-1.31
MTR	28.10	29.00	-0.90	-3.10	-0.80	-5.7	-4.57
Vodafone	70.81	70.86	-0.05	-0.07	-4.06	-5.5	-6.79
New Ch Life Ins	15.50	15.92	-0.42	-2.64	-0.46	-5.4	-13.63
ChinaPcIns	16.60	17.24	-0.64	-3.71	-0.28	-5.3	-12.31
AIA	69.20	70.15	-0.95	-1.35	-2.85	-5.2	0.51
SouthCpr	71.49	71.84	-0.35	-0.49	-3.39	-5.0	-0.05
Panasonic	1523.50	1543.00	-19.50	-1.26	-57.50	-4.8	3.92
Anglo American	2138.50	2204.00	-65.50	-2.97	-34.00	-4.4	2.44
China Vanke	7.90	8.29	-0.39	-4.70	0.03	-4.4	4.65
PngAnBnk	9.72	9.95	-0.23	-2.31	-0.21	-4.3	-6.99
Ch Rail Gp	3.40	3.50	-0.10	-2.86	-0.05	-4.2	-10.76

Based on the FT Global 500 companies in local currency

BONDS: HIGH YIELD & EMERGING MARKET

Nov 29	Red date	Coupon	S*	M*	F*	Bid price	Bid yield	Day's chge yield	Mth's chge yield	Spread vs US
High Yield US$										
HCA Inc.	04/24	8.36	BB-	Ba2	BB	113.75	4.24	0.00	0.12	-
High Yield Euro										
Aldesa Financial Services S.A.	04/21	7.25	-	-	B	71.10	28.23	0.00	0.64	25.98
Emerging US$										
Peru	03/19	7.13	BBB+	A3	BBB+	104.40	2.60	-	-	0.34
Colombia	01/26	4.50	-	Baa2	BBB-	109.50	2.33	0.16	0.52	1.28
Brazil	04/26	6.00	-	Ba2	BB-	115.15	2.78	-0.01	0.65	1.73
Poland	04/26	3.25	-	A2	A-	111.22	0.98	0.03	0.16	-0.07
Mexico	05/26	11.50	-	Baa1	BBB-	149.00	1.61	0.00	-0.12	0.56
Turkey	03/27	6.00	-	Ba2	BB+	101.26	5.82	0.00	0.17	3.07
Turkey	03/27	6.00	-	B2	BB-	102.88	5.43	0.14	0.83	4.38
Peru	08/27	4.13	BBB+	A3	BBB+	103.50	3.66	0.01	-0.02	0.80
Russia	06/28	12.75	-	Baa3	BBB	168.12	2.48	0.07	0.05	-
Brazil	02/47	5.63	-	Ba2	BB-	101.48	5.52	0.08	0.80	-
Emerging Euro										
Brazil	04/21	2.88	BB-	Ba2	BB-	103.09	0.05	0.01	-0.09	-1.19
Mexico	04/23	2.75	BBB+	A3	BBB+	107.76	0.76	0.00	-0.07	-1.56
Mexico	04/23	2.75	-	Baa1	BBB-	106.48	-0.26	-	-	-0.36
Bulgaria	03/28	3.00	BBB-	Baa2	BBB	117.04	1.00	0.02	-0.15	-1.42

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company. US $ denominated bonds NY close; all other London close. *S - Standard & Poor's, M - Moody's, F - Fitch.

BONDS: GLOBAL INVESTMENT GRADE

Nov 29	Red date	Coupon	S*	M*	F*	Bid price	Bid yield	Day's chge yield	Mth's chge yield	Spread vs US
US$										
FleetBoston Financial Corp.	01/28	6.88	BBB+	Baa1	A-	129.00	2.54	-0.01	-0.05	-
The Goldman Sachs Group, Inc.	02/28	5.00	BBB+	A3	A	117.21	2.47	0.00	0.32	-
NationsBank Corp.	03/28	6.80	BBB+	Baa1	A-	127.69	2.72	-0.01	0.06	-
GTE LLC	04/28	6.94	BBB+	Baa2	A-	128.27	2.80	0.00	-0.11	-
United Utilities PLC	08/28	6.88	BBB	Baa1	A-	130.43	2.62	-0.07	-0.22	-
Barclays Bank plc	01/29	4.50	A	A1	A+	96.46	5.02	0.00	0.02	-
Euro										
Electricite de France (EDF)	04/30	4.63	A-	A3	A-	137.45	0.82	-0.01	0.10	-
The Goldman Sachs Group, Inc.	02/31	3.00	BBB+	A3	A	124.42	0.68	0.00	-0.11	-
The Goldman Sachs Group, Inc.	02/31	3.00	BBB+	A3	A	121.70	0.93	0.00	0.02	-
Finland	04/31	0.75	AA+	Aa1	AA+	111.08	-0.27	0.00	-0.05	-0.87
Yen										
Mexico	06/26	1.09	-	Baa1	BBB-	98.73	1.34	-0.02	-0.14	0.27
£ Sterling										
innogy Fin B.V.	06/30	6.25	BBB	Baa2	A-	137.45	2.19	-0.03	0.02	-
innogy Fin B.V.	06/30	6.25	BBB	Baa2	A-	128.68	3.20	0.00	-0.01	0.40

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company. US $ denominated bonds NY close; all other London close. *S - Standard & Poor's, M - Moody's, F - Fitch.

INTEREST RATES: OFFICIAL

Nov 29	Rate	Current	Since	Last
US	Fed Funds	5.25-5.50	26-07-2023	5.00-5.25
US	Prime	8.50	26-01-2023	8.25
US	Discount	5.50	01-08-2023	5.25
Euro	Repo	4.0	14-09-2023	3.438
UK	Repo	5.25	03-08-2023	5.00
Japan	O'night Call	0.00-0.10	01-02-2016	0.00
Switzerland	Libor Target	-1.25-0.25	15-01-2015	-0.75--0.25

INTEREST RATES: MARKET

Nov 29 (Libor: Nov 28)	Over night	Change Day	Change Week	Change Month	One month	Three month	Six month	One year
US$ Libor	5.06157	0.010	0.000	-0.003	5.46283	5.64983	5.82266	6.04143
Euro Libor	-0.64957	-0.064	0.000	0.001	-0.61943	-0.58057	-0.55600	-0.48571
£ Libor	0.18063	-0.005	0.000	0.001	4.20130	5.35820	4.74470	0.81363
Swiss Fr Libor				-0.002	-0.77540	-0.75300	-0.70280	-0.55320
Yen Libor				0.000	-0.06005	-0.02617	0.07165	0.04867
Euro Euribor				-0.001	3.84700	3.95500	4.02600	4.01500
Sterling CDs				0.000	0.50000	0.63000	0.78500	
US$ CDs				0.000	5.41000	5.53000	5.58000	
Euro CDs				-0.060	3.87000	3.92000	3.93000	

Nov 29	Short term		7 Days notice		One month		Three month		Six month		One year	
Euro	3.63	3.93	3.72	4.02	3.72	4.02	3.77	4.07	3.78	4.08	3.63	3.93
Sterling					0.45	0.55	0.58	0.68	0.71	0.86	0.90	1.05
US Dollar	5.14	5.34	5.17	5.37	5.31	5.51	5.43	5.63	5.48	5.68	5.43	5.63
Japanese Yen	-0.30	-0.10	-0.30	-0.10	-0.25	0.05	-0.15	0.05	-0.05	0.15	0.00	0.20

Libor rates come from ICE (see www.theice.com) and are fixed at 11am UK time. Other data sources: US $, Euro & CDs: Tullett Prebon; SDR, US Discount: IMF; EONIA: ECB; Swiss Libor: SNB; EURONIA, RONIA & SONIA: WMBA.

BOND INDICES

	Index	Day's change	Month's change	Year change	Return 1 month	Return 1 year
Markit IBoxx						
ABF Pan-Asia unhedged	208.65	0.45	4.61	2.42	4.98	6.33
Corporates(£)	337.69	0.25	3.19	4.51	3.54	2.29
Corporates(€)	217.29	0.27	1.89	4.82	2.21	3.24
Eurozone Sov(€)	213.90	0.31	2.73	3.07	3.07	-1.26
Gilts(£)	264.56	0.28	3.28	-1.86	3.47	-6.91
Overall(£)	277.71	0.27	3.12	-0.28	3.34	-4.57
Overall(€)	211.05	0.29	2.40	3.36	2.72	-0.10
FTSE						
Sterling Corporate (£)	-	-	-	-	-	-
Euro Corporate (€)	104.47	-0.05	-	-	0.54	-1.73
Euro Emerging Mkts (€)	746.01	-2.69	-	-	3.79	8.82
Eurozone Govt Bond	110.04	-0.19	-	-	-0.34	-0.64

CREDIT INDICES	Index	Day's change	Week's change	Month's change	Series high	Series low
Markit iTraxx						
Crossover 5Y	367.16	-11.40	-10.17	-96.64	475.45	365.06
Europe 5Y	66.74	-1.79	-1.47	-21.50	90.18	66.15
Japan 5Y	64.70	-0.54	-0.99	-14.49	80.75	64.38
Senior Financials 5Y	77.26	-2.39	-1.64	-23.99	103.71	76.63
Markit CDX						
Emerging Markets 5Y	189.32	0.65	0.52	-38.85	245.20	187.63
Nth Amer High Yld 5Y	405.85	-2.41	-4.17	-	447.71	402.79
Nth Amer Inv Grade 5Y	63.09	-0.62	-0.74	-16.47	81.85	62.60

Websites: markit.com, ftse.com. All indices shown are unhedged. Currencies are shown in brackets after the index names.

VOLATILITY INDICES

	Nov 29	Day Chng	Prev	52 wk high	52 wk low
VIX	12.92	0.23	12.69	30.81	12.45
VXD	11.71	0.87	10.84	29.87	3.10
VXN	16.27	0.12	16.15	32.60	5.85
VDAX	13.52	-0.01	13.52	93.30	-

† CBOE. VIX: S&P 500 index Options Volatility, VXD: DJIA Index Options Volatility, VXN: NASDAQ Index Options Volatility. ‡ Deutsche Borse. VDAX: DAX Index Options Volatility.

BONDS: BENCHMARK GOVERNMENT

	Red Date	Coupon	Bid Price	Bid Yield	Day chg yield	Wk chg yield	Month chg yld	Year chg yld
Australia	-	-	-	-	-	-	-	-
	05/32	1.25	77.53	4.46	-0.07	0.05	-0.31	0.96
	02/50	1.00	89.87	2.23	-0.05	0.09	-0.23	0.70
Austria	02/29	0.50	88.70	2.86	-0.05	-0.08	-0.34	0.45
	02/47	1.50	70.41	3.35	-0.03	-0.03	-0.47	0.78
Belgium	06/27	0.80	93.28	2.81	-0.05	-0.05	-0.24	0.54
	06/47	1.60	68.56	3.60	-0.03	-0.03	-0.43	0.80
Canada	03/25	1.25	96.00	4.57	-0.09	-0.07	-0.24	0.75
	06/30	1.25	86.45	3.61	-0.08	-0.08	-0.41	0.67
	12/48	2.75	88.73	3.42	-0.04	-0.10	-0.37	0.42
Denmark	11/29	0.50	88.60	2.59	-0.06	-0.09	-0.32	0.37
	11/39	4.50	120.04	2.91	-0.04	-0.05	-0.34	0.70
Finland	09/24	0.00	97.18	3.68	-0.06	-0.08	-0.07	1.47
	09/29	0.50	87.72	2.83	-0.07	-0.08	-0.37	0.37
France	05/28	0.75	91.55	2.78	-0.06	-0.07	-0.30	0.50
	05/48	2.00	75.45	3.51	-0.03	-0.04	-0.43	0.80
Germany	08/29	0.00	87.46	2.37	-0.07	-0.08	-0.28	0.42
	08/48	1.25	74.03	2.70	-0.03	-0.03	-0.38	0.86
Greece	-	-	-	-	-	-	-	-
	01/28	3.75	102.06	3.21	-0.06	-0.07	-0.40	-0.18
Ireland	-	-	-	-	-	-	-	-
	05/26	1.00	95.56	2.90	-0.10	-0.11	-0.21	0.72
	02/45	2.00	78.78	3.42	-0.03	-0.03	-0.39	0.72
Italy	02/25	0.35	96.38	3.53	-0.05	-0.05	-0.31	0.73
	05/30	0.40	90.62	1.95	-0.02	0.02	-0.31	0.48
	03/48	3.45	83.31	4.60	-0.01	-0.03	-0.54	0.71
Japan	04/25	0.05	99.96	0.08	0.00	0.03	-0.03	0.01
	12/29	0.10	98.25	0.39	-0.02	0.04	-0.10	0.21
	12/49	0.40	73.21	1.67	0.00	0.08	-0.12	0.30
Netherlands	07/27	0.75	93.33	2.71	-0.07	-0.07	-0.24	0.60
	01/47	2.75	96.45	2.96	-0.03	-0.02	-0.43	0.85
New Zealand	05/31	1.50	78.88	4.92	-0.08	0.06	-0.52	0.83
	09/40	2.50	116.76	2.98	-0.03	-0.03	-0.40	0.71
Norway	08/30	1.38	86.93	3.60	-0.03	-0.01	-0.42	0.40
Poland	-	-	-	-	-	-	-	-
	07/27	2.50	90.85	5.32	-0.05	0.10	0.05	-1.75
	04/47	4.00	78.57	5.67	-0.05	0.13	-0.14	-1.98
Portugal	04/27	4.13	103.82	2.92	-0.05	-0.02	-0.21	0.54
Spain	-	-	-	-	-	-	-	-
	10/29	0.60	86.42	3.15	-0.05	-0.06	-0.37	0.47
	10/46	2.90	83.28	4.03	-0.03	-0.03	-0.46	0.82
Sweden	06/30	0.13	113.55	1.15	0.01	-0.02	-0.23	1.41
	03/39	3.50	108.80	2.79	-0.01	0.05	-0.31	0.93
Switzerland	04/28	4.00	112.75	0.99	-0.04	-0.02	-0.02	0.05
	06/29	0.00	95.05	0.91	-0.05	-0.03	-0.11	-0.04
United Kingdom	-	-	-	-	-	-	-	-
	07/27	1.25	90.34	4.13	-0.05	0.08	-0.21	0.87
	07/47	1.50	55.30	4.63	-0.03	0.11	-0.39	1.20
United States	-	-	-	-	-	-	-	-
	03/25	0.50	94.18	5.06	-0.09	-0.08	-0.18	0.73
	02/30	1.50	84.62	4.35	-0.08	-0.09	-0.50	0.61
	02/50	0.25	60.50	2.25	-0.02	-0.04	-0.31	0.64

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company.

GILTS: UK CASH MARKET

Nov 29	Price £	Red Yield	Change in Yield Day	Week	Month	Year	52 Week High	52 Week Low	Amnt £m
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
Tr 0.125pc '24	99.19	5.00	0.40	-0.79	3.09	52.91	99.19	96.10	35.55
Tr 2pc '25	95.83	4.47	-1.54	-1.76	-3.25	43.27	97.82	92.80	39.93
Tr 0.125pc '26	91.60	4.23	-1.86	-1.40	-3.42	38.24	92.38	87.71	35.32
Tr 1.25pc '27	90.69	4.02	-2.43	-2.43	-7.16	25.63	93.30	86.03	40.99
Tr 0.5pc '29	83.78	4.01	-2.43	-2.20	-8.66	28.53	87.71	78.59	28.92
Tr 1pc '32	79.10	4.03	-1.95	-1.71	-9.84	30.84	110.14	74.53	35.96
Tr 4.25pc '36	100.00	4.25	-1.62	-1.62	-9.77	26.87	109.78	94.63	31.68
Tr 4.5pc '42	99.42	4.55	-1.09	-1.09	-8.63	32.27	114.17	92.93	28.35
Tr 3.75pc '52	86.96	4.57	-1.08	-0.87	-8.60	36.42	106.00	79.70	25.11
Tr 4pc '60	91.39	4.48	-0.88	-0.67	-8.76	41.32	116.89	83.11	25.13

Gilts benchmarks & non-rump undated stocks. Closing mid-price in pounds per £100 nominal of stock.

GILTS: UK FTSE ACTUARIES INDICES

Price Indices Fixed Coupon	Nov 29	Day's chg %	Total Return	Return 1 month	Return 1 year	Yield
1 Up to 5 Years	81.85	0.20	2397.47	0.99	1.79	4.21
2 5 - 10 Years	144.95	0.59	3157.16	3.35	-1.76	4.00
3 10 - 15 Years	151.45	0.70	3588.76	5.17	-5.44	4.27
4 5 - 15 Years	145.51	0.62	3259.55	3.91	-2.83	4.11
5 Over 15 Years	194.17	0.77	3464.98	8.04	-15.34	4.50
7 All stocks	130.36	0.51	2988.41	4.09	-5.76	4.37

Index Linked	Nov 29	Day's chg %	Month chg %	Year's chg %	Total Return	Return 1 month	Return 1 year
1 Up to 5 Years	333.67	0.11	0.59	2.52	2850.09	0.73	3.56
2 Over 5 years	510.46	0.37	6.95	-12.41	3915.45	7.10	-11.86
3 5-15 years	455.72	0.35	3.32	-2.04	3720.09	3.51	-1.13
4 Over 15 years	547.70	0.38	9.55	-18.88	4070.07	9.67	-18.54
5 All stocks	491.90	0.31	5.51	-9.97	3851.51	5.66	-9.34

Yield Indices	Nov 29	Nov 28	Yr ago		Nov 29	Nov 28	Yr ago
5 Yrs	3.96	4.05	3.08	20 Yrs	4.54	4.59	3.45
10 Yrs	4.14	4.22	3.24	45 Yrs	4.36	4.41	3.03
15 Yrs	4.41	4.47	3.41				

Real yield	inflation 0% Nov 29	Dur yrs	Previous	Yr ago	inflation 5% Nov 29	Dur yrs	Previous	Yr ago
Up to 5 yrs	0.75	2.37	0.80	-0.24	0.37	2.39	0.41	-0.60
Over 5 yrs	1.05	18.84	1.07	0.06	1.02	18.90	1.04	0.03
5-15 yrs	0.66	9.31	0.70	-0.13	0.56	9.32	0.59	-0.22
Over 15 yrs	1.15	24.83	1.17	0.10	1.13	24.84	1.15	0.09
All stocks	1.04	15.33	1.06	0.05	1.00	15.41	1.02	0.01

See FTSE website for more details www.ftse.com/products/indices/gilts
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COMMODITIES

www.ft.com/commodities

Energy		Price*	Change
Crude Oil†	Jan	77.61	1.20
Brent Crude Oil‡		82.13	0.66
RBOB Gasoline†	Jan	2.22	0.02
Natural Gas†	Jan	2.83	-0.01
Base Metals (♠ LME 3 Months)			
Aluminium		2215.50	-3.00
Aluminium Alloy		1580.00	55.00
Copper		8470.50	19.50
Lead		2142.00	-9.50
Nickel		17105.00	375.00
Tin		23550.00	240.00
Zinc		2509.00	-29.00
Precious Metals (PM London Fix)			
Gold		2025.65	11.95
Silver (US cents)		2465.00	-10.50
Platinum		928.00	4.00
Palladium		1059.00	-5.00
Bulk Commodities			
Iron Ore		128.44	-4.59
Baltic Dry Index		2696.00	305.00
Richards Bay ICE Futures		107.50	-2.60

Agricultural & Cattle Futures		Price*	Change
Corn♦	Dec	450.50	-1.00
Wheat♦	Dec	549.50	5.75
Soybeans♦	Jan	1348.75	2.25
Soybeans Meal♦	Dec	451.80	1.50
Cocoa (ICE Liffe)✠	Dec	3586.00	32.00
Cocoa (ICE US)♥	Dec	4395.00	25.00
Coffee(Robusta)✠	Jan	2528.00	-11.00
Coffee (Arabica)♥	Dec	180.70	-2.95
White Sugar✠		735.90	-2.30
Sugar 11♥		27.05	0.06
Cotton♥	Mar	80.11	0.51
Orange Juice♥	Jan	409.95	-4.35
Live Cattle♣	Dec	171.85	3.08
Feeder Cattle♣	May	134.88	-
Lean Hogs♣	Dec	68.90	1.03

	Nov 28	% Chg Month	% Chg Year
S&P GSCI Spt	560.47	-5.23	-7.86
DJ UBS Spot	102.05	-3.41	-11.43
TR/CC CRB TR	311.23	-3.55	5.52
LEBA EUA Carbon	58.91	-1.98	129.94
LEBA UK Power	1048.00	-37.43	-39.60

Sources: † NYMEX, ‡ ECX/ICE, ♦ CBOT, ✠ ICE Liffe, ♥ ICE Futures, ♣ CME, ♠ LME/London Metal Exchange.* Latest prices, $ unless otherwise stated.

BONDS: INDEX-LINKED

	Price Nov 28	Yield Nov 28	Yield Prev	Month return	Value stock	Market	No of stocks
Can 4.25%' 26	106.93	1.861	1.946	1.17	5.25	69676.40	8
Fr 0.10%' 25	98.48	1.332	1.388	0.29	12.79	249329.46	18
Swe 1.00%' 25	128.64	1.617	1.617	0.39	35.93	232419.83	7
UK 0.125%' 26	98.30	0.868	0.894	0.22	13.45	513503.79	31
	-	-	-	-	-	-	-
UK 2.00%' 35	242.78	0.740	0.781	3.13	9.08	513503.79	31
US 0.625%' 26	95.68	2.731	2.850	0.86	42.42	1619767.58	48
US 3.625%' 28	105.48	2.301	2.429	1.58	16.78	1619767.58	48

Representative stocks from each major market Source: Merill Lynch Global Bond Indices † Local currencies. ‡ Total market value. In line with market convention, for UK Gilts inflation factor is applied to price, for other markets it is applied to par amount.

BONDS: TEN YEAR GOVT SPREADS

	Bid Yield	Spread vs Bund	Spread vs T-Bonds		Bid Yield	Spread vs Bund	Spread vs T-Bonds
Australia	4.46	2.09	0.11	Netherlands	2.71	0.33	-1.64
Austria	2.86	0.49	-1.49	New Zealand	4.92	2.54	0.56
Canada	3.61	1.24	-0.74	Norway	3.60	1.22	-0.75
Denmark	2.59	0.21	-1.76	Portugal	2.92	0.54	-1.44
Finland	2.83	0.45	-1.52	Spain	3.15	0.78	-1.20
Germany	2.37	0.00	-1.98	Sweden	1.15	-1.22	-3.20
Italy	1.95	-0.42	-2.40	Switzerland	0.91	-1.46	-3.44
Japan	0.39	-1.98	-3.96	United States	4.35	1.98	0.00

Interactive Data Pricing and Reference Data LLC, an ICE Data Services company.

MANAGED FUNDS SERVICE

LGT Wealth Management (CI) Limited (JER)
Sir Walter Raleigh House, 48 - 50 Esplanade, St Helier, Jersey, JE2 3QB
FCA Recognised
Volare Offshore Strategy Fund Limited

Fund	Bid	Offer	D+/-	Yield
Bridge Fund	£ 2.1801	-	0.0075	2.45
Global Equity Fund	£ 3.3966	-	0.0021	1.56
Global Fixed Interest Fund	£ 0.7404	-	0.0030	6.07
Income Fund	£ 0.6254	-	0.0027	3.44
Sterling Fixed Interest Fund	£ 0.6750	-	0.0043	-
UK Equity Fund	£ 1.8066	-	0.0103	3.54

Algebris Investments (IRL)
Regulated

Fund	Bid	Offer	D+/-	Yield
Algebris Financial Credit I EUR	€ 184.02	-	-0.20	0.00
Algebris Financial Credit R EUR	€ 157.24	-	-0.17	0.00
Algebris Financial Credit Rd EUR	€ 90.33	-	-0.10	6.40
Algebris Financial Income I EUR	€ 193.64	-	-0.03	0.00
Algebris Financial Income R EUR	€ 174.65	-	-0.03	0.00
Algebris Financial Income Rd EUR	€ 101.68	-	-0.02	5.24
Algebris Financial Equity B EUR	€ 183.74	-	0.01	0.00
Algebris Financial Equity R EUR	€ 153.02	-	0.01	0.00
Algebris IG Financial Credit I EUR	€ 101.21	-	0.15	0.00
Algebris IG Financial Credit R EUR	€ 99.16	-	0.14	0.00
Algebris Global Credit Opportunities I EUR	€ 134.58	-	0.11	0.00
Algebris Global Credit Opportunities R EUR	€ 130.92	-	0.10	0.00
Algebris Global Credit Opportunities Rd EUR	€ 110.55	-	0.09	4.11
Algebris Core Italy I EUR	€ 144.17	-	0.19	0.00
Algebris Core Italy R EUR	€ 135.85	-	0.17	0.00
Algebris Sust. World B	€ 108.62	-	-0.57	0.00
Algebris Sust. World R	€ 107.07	-	-0.56	0.00

The Antares European Fund Limited
Other International

Fund	Bid	Offer	D+/-	Yield
AEF Ltd Usd	$ 516.83	-	10.31	0.00
AEF Ltd Eur	€ 469.52	-	9.16	0.00

Artemis Fund Managers Ltd (1200)F (UK)
57 St. James's Street, London SW1A 1LD 0800 092 2051
Authorised Inv Funds

Fund	Bid	Offer	D+/-	Yield
Artemis Corporate Bond I Acc	101.54	-	0.67	4.73
Artemis Positive Future Fund	60.21	-	-0.15	0.00
Artemis Target Return Bond I Acc	111.16	-	0.32	4.33

Ashmore Group
61 Aldwych, London WC2B 4AE. Dealing team: +352 27 62 22 233
Authorised Inv Funds

Fund	Bid	Offer	D+/-	Yield
Emerging Markets Equity Fund	$ 124.52	-	0.58	0.00
Emerging Markets Equity ESG Fund	$ 140.42	-	0.77	0.00
Emerging Markets Frontier Equity Fund	$ 182.10	-	0.43	1.05
Emerging Markets Blended Debt Fund	$ 54.97	-	0.21	5.05
Emerging Markets Blended Debt ESG Fund	$ 87.21	-	-0.99	0.00
Emerging Markets Active Equity Fund	$ 119.95	-	0.79	0.00
Emerging Markets Corporate Debt Fund	$ 58.18	-	0.11	6.57
Emerging Markets Debt Fund	$ 59.06	-	0.08	5.66
Emerging Markets Local Currency Bond Fund	$ 64.20	-	0.52	5.07

Atlantas Sicav (LUX)
Regulated

Fund	Bid	Offer	D+/-	Yield
American Dynamic	$ 6915.94	-	15.31	-
American One	$ 7652.25	-	13.61	-
Bond Global	€ 1539.92	-	7.69	0.00
Eurocroissance	€ 1338.07	-	7.92	0.00
Far East	$ 978.88	-	-10.84	0.00

Blue Whale Investment Funds ICAV (IRE)
www.bluewhale.co.uk, info@bluewhale.co.uk
FCA Recognised - Ireland UCITS

Fund	Bid	Offer	D+/-	Yield
Blue Whale Growth USD T	$ 10.84	-	0.06	-

Brooks Macdonald International Fund Managers Limited (JER)
Third Floor, No 1 Grenville Street, St Helier, Jersey, JE2 4UF
+44 (0) 1534 700 104 (Int.) +44 (0) 800 735 8000 (UK)
Brooks Macdonald International Investment Funds Limited

Fund	Bid	Offer	D+/-	Yield
Euro High Income	€ 1.2222	-	0.0037	2.93
High Income	£ 0.6459	-	0.0028	5.28
Sterling Bond	£ 1.2483	-	0.0054	3.70

Brooks Macdonald International Multi Strategy Fund Limited

Fund	Bid	Offer	D+/-	Yield
Balanced Strategy A	£ 0.9251	-	-0.0018	0.02
Balanced Strategy	£ 0.9243	-	-0.0017	1.06
Cautious Balanced Strategy A	£ 0.8918	-	-0.0001	-
Growth Strategy A	£ 0.9384	-	-0.0020	-
High Growth Strategy A	£ 0.9381	-	-0.0025	0.77
Cautious Balanced Strategy	£ 1.2474	-	-0.0002	-
Growth Strategy	£ 1.9636	-	-0.0043	-
High Growth Strategy	£ 2.7510	-	-0.0074	-
US$ Growth Strategy	$ 1.8057	-	-0.0008	-

Dealing Daily. Initial Charge Nil for A classes and up to 2% for other classes

Brown Advisory Funds plc (IRL)
http://www.brownadvisory.com Tel: 020 3301 8130
FCA Recognised

Fund	Bid	Offer	D+/-	Yield
Global Leaders Fund USD C	$ 23.34	-	0.07	0.00
Global Leaders Sustainable Fund USD C	$ 14.02	-	0.04	0.00
Global Sustainable Total Return Bond GBP B	£ 9.20	-	0.03	0.91
Global Sustainable Total Return Bond USD B	$ 9.76	-	0.04	0.00
US Equity Growth Fund USD B	$ 53.80	-	0.06	0.00
US Flexible Equity Fund USD B	$ 27.70	-	0.01	-
US Mid-Cap Growth Fund USD C	$ 17.93	-	-0.07	0.00
US Small Cap Blend Fund USD B	$ 21.83	-	-0.15	-
US Smaller Companies Fund USD B	$ 34.39	-	-0.16	0.00
US Sustainable Growth Fund USD C	$ 28.18	-	-0.02	0.00
US Sustainable Value Fund USD C Acc	$ 11.06	-	-0.05	-

CG Asset Management Limited (IRL)
25 Moorgate, London, EC2R 6AY
Dealing: Tel. +353 1434 5098 Fax. +353 1542 2859
FCA Recognised
CG Portfolio Fund Plc

Fund	Bid	Offer	D+/-	Yield
Absolute Return Cls M Inc	£ 131.11	131.70	-0.02	-
Capital Gearing Portfolio GBP P	£ 36030.67	36229.34	3.71	-
Capital Gearing Portfolio GBP V	£ 175.21	176.18	0.01	-
Dollar Fund Cls D Inc	£ 153.85	154.31	-0.31	1.30
Dollar Hedged GBP Inc	£ 89.54	89.81	0.33	1.29
Real Return Cls A Inc	£ 184.44	184.99	-0.15	1.80

Chartered Asset Management Pte Ltd
Other International Funds

Fund	Bid	Offer	D+/-	Yield
CAM-GTF VCC	$ 360720.20	360720.20	-5076.36	-
CAM GTi VCC	$ 780.49	-	-32.39	-
RAIC VCC	$ 1.64	1.64	0.03	2.06

Dodge & Cox Worldwide Funds (IRL)
48-49 Pall Mall, London SW1Y 5JG.
www.dodgeandcox.worldwide.com 020 3713 7664
FCA Recognised
Dodge & Cox Worldwide Funds plc - Global Bond Fund

Fund	Bid	Offer	D+/-	Yield
EUR Accumulating Class	€ 16.22	-	0.02	0.00
EUR Accumulating Class (H)	€ 10.83	-	0.04	0.00
EUR Distributing Class	€ 11.34	-	0.02	2.45
EUR Distributing Class (H)	€ 7.50	-	0.03	2.54
GBP Distributing Class	£ 12.07	-	-0.01	2.18
GBP Distributing Class (H)	£ 8.15	-	0.04	2.51
USD Accumulating Class	$ 12.86	-	0.05	0.00

Dodge & Cox Worldwide Funds plc-Global Stock Fund

Fund	Bid	Offer	D+/-	Yield
USD Accumulating Share Class	$ 31.83	-	0.09	-
GBP Accumulating Share Class	£ 41.25	-	-0.08	0.00
GBP Distributing Share class	£ 27.44	-	-0.06	-
EUR Accumulating Share Class	€ 43.51	-	0.01	-
GBP Distributing Class (H)	£ 14.48	-	0.05	0.26

Dodge & Cox Worldwide Funds plc-U.S. Stock Fund

Fund	Bid	Offer	D+/-	Yield
USD Accumulating Share Class	$ 40.44	-	0.06	-
GBP Accumulating Share Class	£ 49.57	-	-0.17	0.00
GBP Distributing Share Class	£ 29.49	-	-0.11	0.86
EUR Accumulating Share Class	€ 47.73	-	-0.06	0.00
GBP Distributing Class (H)	£ 15.82	-	0.03	0.17

Dragon Capital
www.dragoncapital.com
Fund information:info@dragoncapital.com
Other International Funds

Fund	Bid	Offer	D+/-	Yield
Vietnam Equity (UCITS) Fund A USD	$ 27.67	-	0.30	0.00

EdenTree Investment Management Ltd (UK)
PO Box 3733, Swindon, SN4 4BG, 0800 358 3010
Authorised Inv Funds

Fund	Bid	Offer	D+/-	Yield
EdenTree Short Dated Bond Cls B	94.11	-	0.26	2.49

Euronova Asset Management UK LLP (CYM)
Regulated

Fund	Bid	Offer	D+/-	Yield
Smaller Cos Cls One Shares	€ 53.11	-	0.45	0.00
Smaller Cos Cls Two Shares	€ 33.74	-	0.29	0.00
Smaller Cos Cls Three Shares	€ 16.84	-	0.15	0.00
Smaller Cos Cls Four Shares	€ 22.19	-	0.19	0.00

FIL Investment Services (UK) Limited (1200)F (UK)
Beech Gate, Millfield Lane, Lower Kingswood, Tadworth, KT20 6RP
Callfree: Private Clients 0800 414161
Broker Dealings: 0800 414 181
OEIC Funds

Fund	Bid	Offer	D+/-	Yield
Index Sterling Corporate Bond Fund P-ACC-GBP	£ 0.85	-	0.00	2.99
Sustainable Multi Asset Balanced Fund W-ACC-GBP	£ 0.95	-	0.00	1.61
Emerging Mkts NAV	£ 7.21	-	-0.16	2.08
American Fund W-ACC-GBP	£ 59.89	-	-0.19	0.00
Cash Fund W-ACC-GBP	£ 1.07	-	0.00	1.77
Sustainable Emerg Mkts Equity Fund A-ACC Shares	£ 1.52	-	0.01	-
Sustainable Global Equity Fund W-ACC-GBP	£ 33.21	-	-0.02	0.44
Japan Fund W-ACC-GBP	£ 6.17	-	0.00	1.41
Japan Smaller Companies Fund W-ACC-GBP	£ 3.59	-	0.04	0.67
Select 50 Balanced Fund PI-ACC-GBP	£ 1.15	-	0.00	-
Special Situations Fund W-ACC-GBP	£ 43.22	-	-0.09	3.45
Short Dated Corporate Bond Fund W-ACC-GBP	£ 11.00	-	0.02	3.69
Sustainable Water & Waste W-ACC-GBP	£ 1.14	-	-0.01	0.57
Sustainable Water & Waste W-INC-GBP	£ 1.13	-	0.00	-
UK Select Fund W-ACC-GBP	£ 3.75	-	0.03	2.60
Global Enhanced Income W-ACC-GBP	£ 2.45	-	0.01	4.37
Index UK Gilt Fund P-ACC-GBP	£ 0.73	-	0.01	2.11
Sustainable Multi Asset Conservative Fund W-ACC-GBP	£ 0.91	-	0.01	1.73
Sustainable Multi Asset Growth Fund W-ACC-GBP	£ 0.98	-	0.00	1.46

Findlay Park Funds Plc (IRL)
30 Herbert Street, Dublin 2, Ireland Tel: 020 7968 4900
FCA Recognised

Fund	Bid	Offer	D+/-	Yield
American EUR Unhedged Class	€ 170.23	-	-1.25	0.00
American Fund USD Class	$ 186.97	-	-0.55	0.00
American Fund GBP Hedged	£ 90.90	-	-0.27	0.00
American Fund GBP Unhedged	£ 147.41	-	-1.32	0.00

Foord Asset Management
Website: www.foord.com - Email: info@foord.com
FCA Recognised - Luxembourg UCITS

Fund	Bid	Offer	D+/-	Yield
Foord International Fund | R	$ 46.02	-	0.07	0.00
Foord Global Equity Fund (Lux) | R	$ 16.23	-	-0.01	0.00

Regulated

Fund	Bid	Offer	D+/-	Yield
Foord Global Equity Fund (Sing) | B	$ 19.46	-	-0.01	0.00
Foord International Trust (Gsy)	$ 44.87	-	0.07	0.00

GAM
funds@gam.com, www.funds.gam.com
Regulated

Fund	Bid	Offer	D+/-	Yield
LAPIS GBL F OWD 50 DIV.YLD-Na-D	£ 99.81	-	-0.51	1.30
LAPIS GBL MED DEV 25.YLD-Na-D	£ 85.54	-	-0.72	-
LAPIS GBL TOP 50 DIV.YLD-Na-D	£ 113.11	-	-0.68	3.02

Guinness Global Investors

Fund	Bid	Offer	D+/-	Yield
Guinness Global Equity Income Y GBP Dist	£ 19.01	-	-0.14	2.18
Guinness Global Innovators Y GBP Acc	£ 30.38	-	-0.19	0.00
Guinness Sustainable Global Equity Y GBP Acc	£ 10.76	-	-0.13	0.00

HPB Assurance Ltd
Anglo Intl House, Bill, Douglas, Isle of Man, IM1 4LN 01638 563490
International Insurances

Fund	Bid	Offer	D+/-	Yield
Holiday Property Bond Ser 1	£ 0.50	-	0.01	0.00
Holiday Property Bond Ser 2	£ 0.63	-	0.00	0.00

Janus Henderson Investors (UK)
PO Box 9023, Chelmsford, CM99 2WB Enquiries: 0800 832 832
www.janushenderson.com
Authorised Inv Funds

Fund	Bid	Offer	D+/-	Yield
Janus Henderson Instl UK Index Opportunities A Acc	£ 1.14	-	0.00	3.18

M & G Securities (1200)F (UK)
PO Box 9038, Chelmsford, CM99 2XF
www.mandg.co.uk/charities Enq./Dealing: 0800 917 4472
Authorised Inv Funds

Fund	Bid	Offer	D+/-	Yield
M&G Charibond Charities Fixed Interest Fund (Charibond) Inc	£ 1.08	-	0.01	-
M&G Charibond Charities Fixed Interest Fund (Charibond) Acc	£ 39.72	-	0.21	2.84
M&G Charity Multi Asset Fund Inc	£ 0.86	-	0.01	4.28
M&G Charity Multi Asset Fund Acc	£ 106.90	-	0.69	4.08

MMIP Investment Management Limited (GSY)
Regulated
Multi-Manager Investment Programmes PCC Limited

Fund	Bid	Offer	D+/-	Yield
UK Equity Fd Cl A Series 01	£ 3080.40	3080.41	-231.75	-
Diversified Absolute Rtn Fd USD Cl AF2	$ 1688.02	-	45.93	-
Diversified Absolute Return Stlg Cell AF2	£ 1579.00	-	-1.96	-
Global Equity Fund A Lead Series	£ 1747.16	1747.16	-5.31	-

Marwyn Asset Management Limited (CYM)
Regulated

Fund	Bid	Offer	D+/-	Yield
Marwyn Value Investors	£ 329.72	-	-6.14	0.00

Milltrust International Managed Investments ICAV (IRL)
mimi@milltrust.com, +44(0)20 8123 8316 www.milltrust.com
Regulated

Fund	Bid	Offer	D+/-	Yield
British Innovation Fund	£ 121.92	-	2.89	0.00
MAI - Buy & Lease (Australia)	A$ 103.45	-	0.50	0.00
MAI - Buy & Lease (New Zealand)	NZ$ 91.20	-	-6.06	0.00
Milltrust Global Emerging Markets Fund - Class A	$ 89.96	-	-0.02	0.00

Milltrust International Managed Investments SPC
em@milltrust.com, +44(0)20 8123 8316 www.milltrust.com
Regulated

Fund	Bid	Offer	D+/-	Yield
Milltrust Alaska Brazil Fund SP A	$ 107.82	-	1.87	0.00
Milltrust Laurium Africa Fund SP A	$ 97.87	-	0.58	0.00
Milltrust Marcellus India Fund SP	$ 136.42	-	0.32	0.00
Milltrust Singular ASEAN Fund SP Founders	$ 124.23	-	0.90	0.00
Milltrust SPARX Korea Equity Fund SP A	$ 119.54	-	1.05	0.00
Milltrust Xingtai China Fund SP A	$ 86.87	-	-0.60	0.00
The Climate Impact Asia Fund SP A	$ 70.62	-	-0.22	0.00
The Climate Impact Asia Fund (Class B)	$ 69.72	-	-0.21	0.00

Mirabaud Asset Management (LUX)
www.mirabaud.com, marketing@mirabaud-am.com
Please find more details on our website: www.mirabaud-am.com
Regulated

Fund	Bid	Offer	D+/-	Yield
Mir. - Glb Strat. Bd I USD	$ 119.05	-	0.23	0.00
Mir. - DiscEur D Cap GBP	£ 158.69	-	-0.18	0.00
Mir. - UKEq HA Cap I GBP	£ 131.73	-	-1.14	0.00

Oasis Crescent Global Investment Funds (UK) ICVC (UK)
Regulated

Fund	Bid	Offer	D+/-	Yield
Oasis Crescent Global Equity Fund USD A (Dist)	$ 35.22	-	0.17	-
Oasis Crescent Global Income Fund USD A (Dist)	$ 9.94	-	0.01	3.73
Oasis Crescent Global Low Equity Fund USD D (Dist)	$ 12.27	-	0.05	1.36
Oasis Crescent Global Medium Equity Fund USD A (Dist)	$ 13.72	-	0.06	0.82
Oasis Crescent Global Property Equity Fund USD A (Dist)	$ 7.79	-	0.03	2.07
Oasis Crescent Global Short Term Income Fund USD A (Dist)	$ 0.94	-	0.00	2.82
Oasis Crescent Variable Fund GBP A (Dist)	£ 9.56	-	-0.01	0.71

Omnia Fund Ltd
Other International Funds

Fund	Bid	Offer	D+/-	Yield
Estimated NAV	$ 929.86	-	0.72	0.00

Orbis Investments (U.K.) Limited (GBR)
28 Dorset Square, London, NW1 6QG
www.orbis.com 0800 358 2030
Regulated

Fund	Bid	Offer	D+/-	Yield
Orbis OEIC Global Cautious Standard	£ 12.11	-	0.01	0.00
Orbis OEIC Global Balanced Standard	£ 20.16	-	0.04	0.37
Orbis OEIC Global Equity Standard	£ 23.79	-	-0.10	2.43

Platinum Capital Management Ltd
Other International Funds

Fund	Bid	Offer	D+/-	Yield
Platinum All Star Fund - A	$ 149.04	-	-	0.00
Platinum Global Growth UCITS Fund	$ 8.82	-	-0.01	0.00
Platinum Essential Resources UCITS Fund SICAV USD Class E	$ 9.42	-	-0.70	0.00
Platinum Global Dividend UCITS Fund	$ 45.34	-	-0.01	0.00

Polar Capital Funds Plc (IRL)
Regulated

Fund	Bid	Offer	D+/-	Yield
Artificial Intelligence I USD ACC	$ 17.96	17.96	0.05	0.00
Asian Stars I USD Acc $	$ 14.41	-	0.25	0.00
Biotechnology I USD	$ 36.43	36.43	-0.43	0.00
China Stars I USD Acc $	$ 9.63	9.63	0.06	0.00
Emerging Market Stars I USD Acc	$ 11.67	-	0.19	0.00
European Ex UK Inc EUR Acc	€ 15.38	15.38	-0.01	0.00
Financial Opps I USD	$ 14.05	-	0.00	2.48
Global Convertible I USD	$ 13.58	13.58	0.06	0.00
Global Insurance I GBP	£ 10.71	-	-0.20	0.00
Global Technology I USD	$ 85.00	-	0.39	0.00
Healthcare Blue Chip Fund I USD Acc	$ 18.50	18.50	-0.08	0.00
Healthcare Dis I Acc USD $	$ 10.95	-	-0.08	0.00
Healthcare Opps I USD	$ 62.96	-	-0.33	0.00
Income Opportunities B2 I GBP Acc	£ 3.08	3.08	0.00	0.00
Japan Value I JPY	¥ 180.97	180.97	-1.08	0.00
North American I USD	$ 36.59	36.59	-0.14	-
Smart Energy I USD Acc $	$ 9.00	9.00	0.06	0.00
Smart Mobility I USD Acc $	$ 8.30	8.30	0.06	0.00
UK Val Opp I GBP Acc	£ 12.44	12.44	0.11	-

Private Fund Mgrs (Guernsey) Ltd (GSY)
Regulated

Fund	Bid	Offer	D+/-	Yield
Monument Growth 28/11/2023	£ 527.55	532.57	2.14	0.00

Prusik Investment Management LLP (IRL)
Enquiries - 0207 493 1331
Regulated

Fund	Bid	Offer	D+/-	Yield
Prusik Asian Equity Income B Dist	$ 169.07	-	-1.07	6.21
Prusik Asia Fund U Dist.	£ 191.99	-	0.13	0.00

Purisima Investment Fds (CI) Ltd (JER)
Regulated

Fund	Bid	Offer	D+/-	Yield
PCG B ✠	335.18	-	0.32	-
PCG C ✠	325.41	-	0.31	-

Ram Active Investments SA
www.ram-ai.com
Other International Funds

Fund	Bid	Offer	D+/-	Yield
RAM Systematic Emerg Markets Eq	$ 230.96	230.96	1.64	-
RAM Systematic European Eq	€ 523.25	523.25	-0.98	0.00
RAM Systematic Funds Global Sustainable Income Eq	$ 155.61	155.61	-0.30	0.00
RAM Systematic Long/Short European Eq	€ 151.94	151.94	0.14	0.00

Ruffer LLP (1000)F (UK)
2nd floor, 20-22 Bedford Row, London, WC1R 4EB
Order Desk and Enquiries: 0345 601 9610
Authorised Inv Funds
Authorised Corporate Director - Waystone Management (UK) Limited

Fund	Bid	Offer	D+/-	Yield
LF Ruffer Diversified Rtrn C Acc	99.03	-	0.33	-
LF Ruffer Diversified Rtrn C Inc	96.54	-	0.33	2.53
LF Ruffer Equity & General C Acc	567.21	-	0.87	1.38
LF Ruffer Equity & General C Inc	505.57	-	0.78	1.40
LF Ruffer Gold C Acc	257.58	-	13.58	-
LF Ruffer Gold C Inc	155.24	-	8.18	-
LF Ruffer Total Return C Acc	529.45	-	-1.26	2.49
LF Ruffer Total Return C Inc	322.48	-	-0.76	2.53

Rubrics Global UCITS Funds Plc (IRL)
www.rubricsam.com
Regulated

Fund	Bid	Offer	D+/-	Yield
Rubrics Emerging Markets Fixed Income UCITS Fund	$ 140.83	-	0.62	0.00
Rubrics Global Credit UCITS Fund	$ 17.10	-	0.05	0.00
Rubrics Global Fixed Income UCITS Fund	$ 170.85	-	0.57	0.00

Slater Investments Ltd (UK)
www.slaterinvestments.com; Tel: 0207 220 9460
FCA Recognised

Fund	Bid	Offer	D+/-	Yield
Slater Growth A Acc	580.54	580.54	0.02	-
Slater Income A Inc	132.69	132.69	0.52	5.85
Slater Recovery A Acc	301.18	301.18	-0.24	0.48
Slater Artorius	255.56	255.56	-1.77	0.61

STONEHAGE FLEMING
GLOBAL BEST IDEAS EQUITY FUND

Stonehage Fleming Investment Management Ltd (IRL)
www.stonehagefleming.com/gbi
enquiries@stonehagefleming.com
Regulated

Fund	Bid	Offer	D+/-	Yield
SF Global Best Ideas Eq B USD ACC	$ 255.48	-	-0.32	0.00
SF Global Best Ideas Eq D GBP INC	£ 305.61	-	-2.23	0.00

Superfund Asset Management GmbH
www.superfund.com, +43 (1) 247 00
Other International Funds
Other International Funds

Fund	Bid	Offer	D+/-	Yield
Superfund Green Gold	$ 890.59	-	20.48	0.00
Superfund Green Silver	$ 777.26	-	15.20	0.00

Regulated

Fund	Bid	Offer	D+/-	Yield
Superfund Green US$	$ 648.80	-	6.31	0.00

Toscafund Asset Management LLP (UK)
www.toscafund.com
Authorised Funds

Fund	Bid	Offer	D+/-	Yield
Aptus Global Financials B Acc	£ 5.48	-	-0.02	3.90
Aptus Global Financials B Inc	£ 3.41	-	-0.01	4.02

Toscafund Asset Management LLP
www.toscafund.com

Fund	Bid	Offer	D+/-	Yield
Tosca A USD	$ 436.74	-	-3.62	0.00
Tosca Mid Cap GBP	£ 120.64	-	-6.43	0.00
Tosca Opportunity B USD	$ 252.81	-	-15.03	0.00
Pegasus Fund Ltd A-1 GBP	£ 28.24	-	-0.30	0.00

Troy Asset Mgt (1200) (UK)
2nd floor, 20-22 Bedford Row, London, WC1R 4EB
Order Desk and Enquiries: 0345 608 0950
Authorised Inv Funds
Authorised Corporate Director - Waystone Management (UK) Limited
Trojan Investment Funds

Fund	Bid	Offer	D+/-	Yield
Trojan Ethical Global Inc O Acc	103.05	-	-0.16	2.66
Trojan Ethical Global Inc O Inc	97.92	-	-0.15	2.70
Trojan Ethical O Acc	129.15	-	0.25	0.07
Trojan Ethical O Inc	129.05	-	0.25	0.08

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Guide to pricing of Authorised Investment Funds: (compiled with the assistance of the IMA. The Investment Association, Camomile Court 23 Camomile Street, London EC3A 7LL. Tel: +44 (0)20 7831 0898.)

OEIC: Open-Ended Investment Company. Similar to a unit trust but using a company rather than a trust structure.

Different share classes are issued to reflect a different currency, charging structure or type of holder.

Selling price: Also called bid price. The price at which units in a unit trust are sold by investors.

Buying price: Also called offer price. The price at which units in a unit trust are bought by investors. Includes manager's initial charge.

Single price: Based on a mid-market valuation of the underlying investments. The buying and selling price for shares of an OEIC and units of a single priced unit trust are the same.

Treatment of manager's periodic capital charge: The letter C denotes that the trust deducts all or part of the manager's/operator's periodic charge from capital, contact the manager/operator for full details of the effect of this course of action.

Exit Charges: The letter E denotes that an exit charge may be made when you sell units, contact the manager/operator for full details.

Time: Some funds give information about the timing of price quotes. The time shown alongside the fund manager's/operator's name is the valuation point for their unit trusts/OEICs, unless another time is indicated by the symbol alongside the individual unit trust/OEIC name.

The symbols are as follows: ✠ 0001 to 1100 hours; ♦ 1101 to 1400 hours; ▲ 1401 to 1700 hours; # 1701 to midnight. Daily dealing prices are set on the basis of the valuation point, a short period of time may elapse before prices become available. Historic pricing: The letter H denotes that the managers/operators will normally deal on the price set at the most recent valuation. The prices shown are the latest available before publication and may not be the current dealing levels because of an intervening portfolio revaluation or a switch to a forward pricing basis. The managers/operators must deal at a forward price on request, and may move to forward pricing at any time. Forward pricing: The letter F denotes that that managers/operators deal at the price to be set at the next valuation.

Investors can be given no definite price in advance of the purchase or sale being carried out. The prices appearing in the newspaper are the most recent provided by the managers/operators. Scheme particulars, prospectus, key features and reports: The most recent particulars and documents may be obtained free of charge from fund managers/operators. * Indicates funds which do not price on Fridays.

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ARTS

A magnificently awful matriarch

The House of Bernarda Alba
National Theatre (Lyttelton), London
★★★★☆

She Stoops to Conquer
Orange Tree Theatre, Richmond-upon-Thames
★★★★☆

Ghosts
Sam Wanamaker Playhouse, London
★★★☆☆

THEATRE
Sarah Hemming

Three households; three classic dramas; three generational clashes. And three new approaches. First, to the National, where **The House of Bernarda Alba** has had a makeover in Rebecca Frecknall's desolately powerful production of Lorca's tragedy.

No thick stone walls or paved courtyards here: in Frecknall's staging, the family of desperate women are literally boxed in a huge, icy mansion of small, tight rooms, with Merle Hensel's teal set filling the Lyttelton stage. The beating Andalusian sun is glimpsed through the windows or in the oppressive heat that has dogs howling offstage and the sisters writhing in their cloying black dresses.

Part prison, part fortress, the house is ruled over by Harriet Walter's magnificently awful Bernarda, as tightly clenched and joyless as a frosted rose bud. So warped is she by her terror of scandal in a grimly judgmental, misogynist society, she has condemned her daughters to a living death in this ice-box, convincing herself that this makes them safe.

But the walls here are gauze: we see the longing that overtakes these young women in the solitude of their rooms, see the danger seeping through the iron gates, see that no lock and key will keep a lid on desire.

The play was originally written in 1936 as Spain tipped into civil war and the social and political metaphors are clear: repress people and they will break. Alice Birch's pungent new version also emphasises its psychological terrain. Frecknall's staging begins diffusely, with the sisters isolated around the house while gossiping neighbours gather in the dining room for the funeral of Bernarda's husband. His death has sentenced his daughters to eight years of cloistered mourning. Only Angustias, the oldest, has a route out through imminent marriage, and her fiancé, Pepe El Romano, becomes an object of fascination for the sisters.

But while Angustias has his hand, the youngest daughter, Adela, has his heart and continues, recklessly, to meet him in secret. This can only end one way and as the tragedy gathers, Frecknall's production pulls into bleak, shocking focus, ending in one sad room with Walter's rigid Bernarda intoning, "She died a virgin," despite evidence to the contrary.

> Bernarda Alba has condemned her daughters to a living death in this ice-box

The splintered action of the opening is demanding and rather stilted, with fragments of story unfolding simultaneously around the set. But Frecknall's approach pays dividends, gradually pulling the threads together as the story spirals to its conclusion. And she uses choreography eloquently to express simmering lust and terror: James McHugh's muscle-bound Pepe spins and slinks sensuously through the house; a seething mob pursues an unmarried mother.

In a terrific ensemble, Isis Hainsworth's mutinously sensual Adela, Rosalind Eleazar's sad, pinched Angustias and Lizzie Annis's desperately jealous Martirio stand out, together with Thusitha Jayasundera's all-seeing housekeeper. And at the centre is Walter's granite Bernarda. There are multiple tragedies bound up in this story, and one of them is hers: a woman refusing to see truth and thus miserably complicit in her own oppression.

To January 6, nationaltheatre.org.uk

Top: Harriet Walter in 'The House of Bernarda Alba'. Above: the blissfully comic 'She Stoops to Conquer' — Marc Brenner

Tradition, rebellion and the generation gap are on show too in Oliver Goldsmith's **She Stoops to Conquer**, but here it's to blissful comic effect. Director Tom Littler pitches Goldsmith's 1773 comedy into the 1930s with sparkling results.

"I love everything that's old," declares country landowner Mr Hardcastle — a joyously funny David Horovitch, who rumbles and wheezes like an old boiler during an unexpected cold snap, and chunters on about Colonel Wallop and the Battle of Belgrade to anyone within earshot.

That preference for antiquity extends to Hardcastle's butler, Diggory, a man of ancient years with a tenuous grasp on proceedings (Richard Derrington, very funny) and, more importantly for the plot, on matters of decorum. So when visiting young buck Charles Marlow (Freddie Fox), mistaking his host for an innkeeper, starts issuing high-handed demands, Hardcastle bristles like a hedgehog. Given that Marlow is a suitor for Hardcastle's daughter, Kate (Tanya Reynolds), this presents a problem.

The move in period brings fresh piquancy to the clash between old and new: here Hardcastle's tweedy mind struggles to comprehend a world of jazz, flappers and motor cars. And it adds edge to the class satire and gender politics: the running joke that young Marlow is a nervous wreck with women of his own class but a lothario with serving girls carries a sting in a society about to be upended.

Kate, who "stoops" to conquer, disguising herself as a barmaid to loosen Marlow's inhibitions, is the sort of woman who could probably run the upcoming war effort single handed.

But Littler keeps all that as a hint of bitters in a comic cocktail. This is a warm, affectionate affair, delivered with lovely timing by an excellent cast. Fox's Marlow is wonderfully funny: a quivering jelly in polite conversation with real Kate; a pouting peacock with Kate the "barmaid". Reynolds winds him in with similar delightful precision — her suggestive furniture polishing is quite something.

There's nimble supporting work from Robert Mountford and Sabrina Bartlett as their two besties, from Guy Hughes as meddling half-brother Tony Lumpkin and from Greta Scacchi as aspiring fashionista Mrs Hardcastle, dressed in the same gaudy colours as the baubles on her Christmas tree and every bit as subtle. In the cosy setting of the Orange Tree, it's a seasonal treat.

To January 13, orangetreetheatre.co.uk

There's intimacy, as well, in Henrik Ibsen's **Ghosts** in the diminutive Sam Wanamaker Playhouse. But here that proximity tends to claustrophobia. The audience are trapped with the characters in the unravelling nightmare of a toxic secret.

We're back with scandal and oppression, as in *The House of Bernarda Alba*. "He will inherit nothing from his father," says Helene Alving vehemently at one point, talking about her beloved son Osvald. But in fact Osvald has inherited the worst thing of all, a fact that will become plain as the drama spirals towards its bleak conclusion, and the truth about the revered Captain Alving emerges.

Shockingly frank for its day, Ibsen's 1882 drama is haunted by ghosts and brutal on hypocrisy. In Joe Hill-Gibbins' production, the story plays out as a brooding psychodrama, steeped in candlelight, with the characters clasped in an unfurnished, carpeted room. There are ghosts of all sorts here — indeed the characters themselves have an almost spectral presence, melting on and off the stage like restless spirits, succumbing to the story as if playing out a ritual.

Hattie Morahan as Helene and Stuart Thompson as Osvald bring a mesmerising intensity to this mother-son dance of death, and there's welcome black comedy from Paul Hilton as the self-serving priest. It's all a little muted, though, and the pacing feels strangely slow in places; nevertheless Hill-Gibbins and designer Rosanna Vize make eloquent use of candlelight, snuffing out tapers along with the characters' hopes.

To January 28, shakespearesglobe.com

Paul Hilton and Hattie Morahan in Ibsen's 'Ghosts' — Marc Brenner

Prowling singer brings mini-opera to life

CLASSICAL

Boulez Ensemble
Pierre Boulez Saal, Berlin
★★★☆☆

Shirley Apthorp

Two world premieres and three women centre-stage: last Friday's concert at Berlin's Pierre Boulez Saal looked exciting.

It was Ukrainian conductor Oksana Lyniv who had suggested that Munich-based Russian composer Vladimir Genin write two operatic miniatures. He responded with *Alkestis* (2015) and *Orpheus. Eurydike. Hermes* (2017) — both setting poems by Rainer Maria Rilke for solo voice and strings.

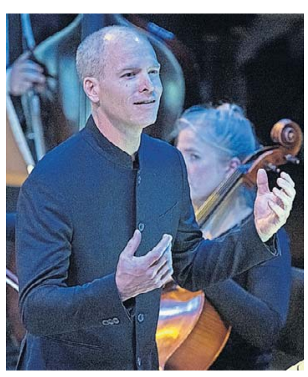
It took longer than anticipated for the works to receive their first performance, but time has made the ancient Greek themes of love, loss, sacrifice and regret more relevant than ever.

It is part of the Boulez Saal's brief to experiment with form in the presentation of chamber music, with an eye to the future. This is the second music-theatre evening in the hall this month, following a dynamic incarnation of Handel's *Aci, Galatea e Polifemo* with puppetry by South African director Janni Younge.

Neither evening quite met conventional definitions of music theatre — the Handel because the boldly illustrative nature of the puppetry inevitably sidelined the singers, and the Genin pieces because almost no staging was attempted. Better, then, to view both as innovative takes on the medium of chamber music and set aside any operatic expectations.

Alkestis preceded the interval. Here, with mezzo Susan Zarrabi singing the single role carefully, the Boulez Ensemble occasionally ventured into microtonal territory — or were they just playing out of tune? In retrospect, there were probably moments of both. Most orchestral entries were ragged, which suggested insufficient rehearsal, but also a lack of trust between players and conductor.

After the interval, Thea Musgrave's *Orfeo II* continued the theatrical theme, but without singers; a solo flautist, Alberto Acuña Almela, played the title role, while a solo violin in the hall's upper circle answered with snatches of Gluck.



Christopher Ainslie sings 'Orpheus. Eurydike. Hermes'

The moment Christopher Ainslie set foot on the stage for *Orpheus. Eurydike. Hermes* at the end of the evening, everything shifted. Ainslie has theatre in every molecule. He knows how to stand on a stage in front of an audience. Simple, right? Evidently not. He prowled around the seated chamber orchestra like a caged lion, and when he sang, his entire body participated. This was music theatre. It is a skill set. This was the instant when the evening became more than a chamber music concert.

Though Ainslie is a countertenor, Genin's short drama called for him to add his baritone register and, at times, to speak and shout. The orchestra spoke too. Rilke's evocative text picks the moment when Orpheus looks back and loses everything. Genin's music is largely tonal, deft and pictorial without lapsing into kitsch. It is not radical, not experimental, but it is also never dull.

Still, it would have benefited from more precision and greater dynamic range. Lyniv seldom looked up from the score and beat time with grimly metronomic determination; she did little to shape the lines, and often barely held things together.

Lyniv is clearly a strong and significant musical figure, with plenty to say and boatloads of courage, but it would do her good to spend a bit of time out of the limelight, working on her technique.

boulezsaal.de

FT BIG READ. UKRAINE

Zelenskyy's government is taking action against politically influential business figures. But will a new generation take their place in the wake of the war, an economic slump and the state crackdown?

By Ben Hall

Twilight of the oligarchs

When Igor Kolomoisky, one of Ukraine's most powerful oligarchs, was arrested on suspicion of embezzlement this autumn, the news was covered in a brief report on 1+1, one of the country's most popular and influential television channels.

The coverage, which included pictures of him in court, was symbolic of the rapid collapse in Kolomoisky's influence. After all, he is the owner of 1+1.

Television was once the favourite tool of influence of Ukraine's oligarchs looking to influence government decisions. It was a means to smash political reputations through smear campaigns or, conversely, embellish them — as 1+1 did with Volodymyr Zelenskyy, helping turn its star entertainer into a winning presidential candidate.

But wartime broadcasting rules, with common news content across the main channels, have put paid to that. Some oligarchs like Rinat Akhmetov, Ukraine's richest man, have given up their TV licences, while others have sold out.

"There will never be a critical mass of influence from TV channels in Ukraine again," says Hlib Vyshlinsky, executive director of the Centre for Economic Strategy, a think-tank in Kyiv. To Vyshlinsky, the decline in the importance of television is part of a much bigger shift. "We may be free of the oligarchs. I do not believe they will rebuild their influence."

Ukraine's oligarchs once dominated the economy, with monopolies on energy and commodities and with the help of allies inside politics and the judiciary.

But the combined effects of Russia's war, an economic slump and exceptional powers for the state under martial law have cut Ukraine's politically influential tycoons down to size. Many have lost vast paper wealth as Russian forces destroyed their factories — losses that started with Russia's invasion of Crimea and eastern Ukraine in 2014.

The oligarchs have not just lost wealth. The war has also turned the political dynamics against them. Power has been concentrated in the hands of a popular president and its even more popular armed forces. Parliament, where businessmen could once buy the support of MPs, has been sidelined.

The war has accelerated anti-corruption reforms in Ukraine on multiple fronts as the country tries to reassure its western backers and put itself on a path to EU membership. But the declining importance of the oligarchs is perhaps the most spectacular change of all.

"I can assure you 100 per cent there won't be any oligarchs as a result of this war," says Rostyslav Shurma, deputy head of the office of the presidency and Zelenskyy's business affairs adviser. "Martial law has allocated to the government every power the government needs to deal with the oligarchs."

The European Commission this month recommended the EU formally start accession negotiations with Ukraine, hailing its progress in reducing the power of the oligarchs.

Yet outside of Zelenskyy's government, few Ukrainians are ready to write off the oligarchs definitively. Ukraine still has to prove it can prosecute tycoons accused of corruption and legally recover stolen assets.

The EU is demanding its regulators and law enforcement bodies act systematically to prevent state capture — where important institutions become dominated by private interests. But some worry a new generation of connected business people will simply take the place of the current generation of oligarchs. "The war has naturally diminished the role of the oligarchs," says Daria Kaleniuk, a prominent anti-corruption campaigner in Kyiv. "Whether they are finished is not clear. What is clear is that some will try to return to positions of influence."

Losing wealth and power

Ukraine's rich list tells the story of declining power and wealth. The Ukrainian edition of Forbes magazine last December calculated that the combined wealth of the top 20 billionaires had roughly halved to $22bn since Russia's full-scale invasion.

The biggest loser was Akhmetov, whose two vast steel plants in Mariupol were destroyed in Russia's offensive. Although still Ukraine's richest man, his fortune was estimated to have shrunk from $13.7bn to $4.4bn.

Tellingly, second and third place on the rich list went to Maxim Lytvyn and Alex Shevchenko, the co-founders of Grammarly, a San Francisco-based writing app, who emigrated to the US and Canada as students.

The September arrest of Kolomoisky, a brash corporate raider, was hailed by campaigners as a milestone in the country's efforts to tackle corruption. He has been under investigation in the US on suspicion of fraud and money laundering for years and was placed under sanctions by Washington for corruption in 2021. Ukrainian state entities have accused him in civil cases in overseas courts of massive fraud. But Kolomoisky faced no criminal action in Ukraine until he was detained on suspicion of embezzlement.

From left: Petro Poroshenko, the former president, and business people Rinat Akhmetov, Igor Kolomoisky and Kostyantin Zhevago. Below: Vsevolod Knyazev, the former chief justice of Ukraine's Supreme Court, was arrested this year over claims he had been caught taking a bribe, which he has denied

FT montage: EPA-EFE/Shutterstock/AFP/Getty Images/Photothek; Global Images Ukraine via Getty Images

There are three different investigations into embezzlement and money laundering related to PrivatBank, a bank he co-owned and which collapsed and which regulators found a vast hole in its books due to fraudulent lending.

Kolomoisky declined to respond through his lawyers to requests for comment for this article but has previously denied any wrongdoing in connection with the PrivatBank case.

Demands from the US, EU and IMF to clamp down on graft and prosecute corrupt oligarchs have ratcheted up as financial and military aid for Kyiv has increased. With signs of faltering support in Washington and parts of Europe, the pressure on Zelenskyy to show results has become acute. With all the sacrifices they are making during the war, the Ukrainian public is also clamouring for justice.

The swoop against Kolomoisky was one of several actions taken by the authorities in recent months to show they are serious about confronting alleged corruption.

In September, Zelenskyy fired his defence minister, Oleksiy Reznikov, for having mishandled a military procurement scandal. In May, anti-corruption agents arrested Vsevolod Knyazev, the chief justice of the Supreme Court, claiming he had been caught taking a $2.7mn bribe, which he has denied. Several other oligarchs have had assets seized or lost licences to operate businesses. "Oligarchic clans have no future in Ukraine," the president pronounced on X following Kolomoisky's arrest.

After communism

Ukraine's oligarchs emerged after the end of communism in the 1990s. Many used their money to capture political and regulatory bodies, first at a local level, securing favourable terms of business and building up monopoly positions particularly in oil, gas, mining, coking coal production and steel.

Many entered politics directly. All but one of Ukraine's dozen richest oligarchs pre-2022 served either as an MP, a government minister or regional governor. Petro Poroshenko, a confectionery magnate first elected to parliament in 1998, rose to become president in 2014 following the Maidan revolution.

Most were not true power brokers in the sense of deciding elections but instead would latch on to whoever held power or was about to gain power, the Centre for Economic Strategy noted in a report on Ukraine's oligarchs.

Their role has not been entirely malign. Rivalry between oligarchs with their own regional fiefs and competing TV networks gave Ukraine a kind of pluralism, in contrast to Russia, where the top oligarchs united behind Boris Yeltsin in the mid-1990s and have largely supported Vladimir Putin over the past two decades.

"The competition among oligarchic groups has helped Ukraine maintain its imperfect democracy. It is one of the reasons Ukraine didn't have the same trajectory as Russia," says Silviya Nitsova, an expert on oligarchs at the University of North Carolina at Chapel Hill.

Following the Maidan revolution in 2014 against the corrupt pro-Moscow President Viktor Yanukovich and Russia's subsequent invasion of Crimea and eastern Ukraine, patriotic oligarchs also helped stabilise the country. Appointed governor of Dnipropetrovsk region in eastern Ukraine, Kolomoisky raised a private militia to fend off Russian separatists. He was fired as regional governor in 2015 after allegedly sending armed men to seize the headquarters of Ukrnafta, the state oil company in which he had a large minority stake. He said they were security guards.

Kolomoisky claimed the state, the majority shareholder, was defrauding him and his business partner, Gennadiy Bogolyubov, of revenues from the company. He took his claim to international arbitration and lost.

The 2021 tribunal ruling — an unredacted copy of which has been seen by the Financial Times — provides a damning account of Kolomoisky's alleged business methods.

The panel dismissed the case because it concluded the two men had seized management control of Ukrnafta using "bribery and corruption", including by paying $100mn into a fund for Leonid Kuchma, then president.

Once they had gained management control of Ukrnafta, they signed contracts selling cheap oil and gas to other businesses they owned, costing the oil producer billions of dollars. The tribunal ruled that it could not determine the scale of the losses but it was "convinced those contracts were fraudulent".

Kolomoisky declined to comment through his lawyer on the Ukrnafta case and the arbitration panel's decision.

An uncomfortable relationship

Zelenskyy beat Poroshenko by a landslide in the 2019 election, promising to crack down on graft. But his ambiguous relationship with Kolomoisky initially cast doubt on the sincerity of his pledge.

Kolomoisky's channel had purchased Zelenskyy's hit comedy shows and promoted his presidential campaign. Kolomoisky returned from self-exile abroad after Zelenskyy's win. Early in his term, the president chose one of the oligarch's lawyers as his chief of staff.

But the new president quickly came under pressure from Kyiv's western backers, particularly the IMF, to prosecute corrupt oligarchs. They also wanted him to safeguard an earlier clean-up of the banks, which had been ridden with fraudulent lending.

PrivatBank, Ukraine's largest lender which was co-owned by Kolomoisky and Bogolyubov, was nationalised in 2016 after regulators found a $5.5bn hole in its balance sheet. Regulators claim the owners siphoned off depositors' money to their own companies in heavily disguised transactions. An emergency recapitalisation of the bank cost the Ukrainian state the equivalent of 6 per cent of gross domestic product.

Given the unreliability of Ukraine's judicial system, the state-owned bank is trying to claw back $1.9bn plus interest of up to $2.5bn from its former owners in England's High Court.

A lawyer for Kolomoisky told the FT in June that he regarded the case as part of "a politically motivated campaign against him that commenced with the wrongful expropriation of the bank from him and his fellow shareholders". A lawyer for Bogolyubov says he "utterly rejects the allegations".

Kolomoisky, meanwhile, launched multiple actions in Ukrainian courts to regain ownership. As concern grew in the IMF, EU and US, Zelenskyy turned against his former supporter and pushed through a law in 2020 blocking any attempts to reverse the nationalisations. It fell well short of the criminal prosecutions demanded by campaigners but it marked the first move by the president to defy the oligarchs.

Rising tensions with Moscow provided another reason to act. The Ukrainian authorities swooped in 2021 against Viktor Medvedchuk, a pro-Russian Ukrainian oligarch close to Putin, freezing his assets and shutting down three TV channels under his control.

Later that year, Zelenskyy made his biggest move, pushing an anti-oligarch law through parliament. A person meeting three out of four criteria — wealth of at least 2.7bn hryvnia ($74mn), ownership of a monopoly, participation in politics or significant media influence — would be registered and required to declare all assets. The law has never been fully implemented but it had an impact — Poroshenko transferred ownership of his TV channels to their staff; Vadim Novinsky, a pro-Russian lawmaker, gave up his seat in parliament.

Diminishing wealth of Ukrainian oligarchs

Wealth in Feb 2022 | **Wealth in Dec 2022**

Rinat Akhmetov
Metinvest, DTEK
$13.7bn | **$4.4bn**

Maxim Lytvyn
Grammarly
$4bn | **$2.3bn**

Alex Shevchenko
Grammarly
$4bn | **$2.3bn**

Viktor Pinchuk
Interpipe
$2.6bn | **$2.2bn**

Kostyantin Zhevago
Ferrexpo
$2.1bn | **$1.4bn**

Oleksandr & Halyna Geregy
Epicentr K
$1.8bn | **$1.2bn**

Vlad Yatsenko
Revolut
$1.1bn | **$1.1bn**

Vadim Novinsky
Smart Holding
$3.5bn | **$1bn**

Gennadiy Bogolyubov
Privat Group
$2bn | **$1bn**

Serhiy Tihipko
TAS Group, Universal Bank
$1.5bn | **$870mn**

Source: Forbes.UA

'We may be free of the oligarchs. I do not believe they will rebuild their influence'

The law was controversial from the outset because it gave the power to the executive to designate oligarchs rather than the judiciary. Critics warned the government might use it to punish its opponents but not others. Kolomoisky, for example, kept hold of his TV channels. "This is a double-standard policy," Poroshenko told the FT this year.

Zelenskyy's government has also faced criticism about seizures of oligarchs' assets. While the nationalisation of stakes in oil producer Ukrnafta and refiner Ukrtatnafta owned by Kolomoisky and Bogolyubov can be justified as critical to the country's war effort, other actions were more contentious.

Ukraine's state enforcement service last month froze a 50.3 per cent stake in two mines owned by London-listed Ferrexpo, a producer of iron ore. It is trying to recover assets from oligarch Kostyantin Zhevago, whom Ukraine is trying to extradite from France on fraud charges.

The billionaire, who served as an MP for two decades and owns a TV channel, holds a 49.5 per cent stake in Ferrexpo. The company says the seizure of its subsidiaries breaches a fundamental principle of corporate ownership and penalises the other shareholders, which include BlackRock and Schroders.

"It's a way to damage me without thinking of the damage to the investment climate," says Zhevago.

Ukraine's powerful tycoons were at the apex of a system of state capture that has corrupted Ukrainian politicians, bureaucrats and judges for decades so their demise would be a huge advance for democracy and the rule of law, say anti-corruption campaigners.

But, campaigners say, Ukraine needs to take a more systematic approach — with well-resourced and independent regulators and a clean and effective judiciary — to prevent any comeback or attempted state capture by new actors who might enrich themselves during the war or reconstruction.

Another concern is the vast power wielded by the team of unaccountable advisers around Zelenskyy, which creates a potential opportunity for influence peddling. "There is a risk new oligarchs will emerge through connections to power and through embezzlement schemes," says Kaleniuk, the activist.

Marcin Walecki, head of the Kyiv office of the National Democratic Institute, an NGO, says Ukraine still has loose rules on lobbying, high upper limits on corporate donations to MPs and no enforcement of curbs on outside income for MPs.

Ukraine "may be free of the oligarchs", says Vyshlinsky, but the underlying incentives for state capture may not have completely changed. "We may get a competitive corruption system as opposed to a monopolistic one."

The FT View

FINANCIAL TIMES
'Without fear and without favour'

ft.com/opinion

A climate summit focused on oil and gas

UAE is under intense pressure to deliver a successful COP28

The backdrop to the COP28 climate conference starting in Dubai today was always inauspicious. War blights the Middle East and Europe, the global economy is still scarred by the pandemic and a cost of living crisis, and voters have just delivered a surge of support to climate sceptics, from the Netherlands to Argentina. To cap it all, a cloud descended this week on the meeting's hosts, the United Arab Emirates, and the man it chose as president-designate of this year's COP, Sultan al-Jaber.

Picking a COP president whose day job is running the state-owned Abu Dhabi National Oil Company, or Adnoc, was contentious from the outset. More than 100 US and EU lawmakers took the unusual step of demanding his removal in May. Concerns resurfaced this week when leaked briefing documents appeared to show the UAE planned to use its role as COP host to discuss fossil fuel deals with 15 nations.

The Financial Times also revealed the UAE's transactional approach to COP. Its analysis concluded UAE state companies and funds could be linked to almost $200bn in investments around the world, mostly in green energy, in the year before the summit.

That the UAE would exploit its position as host to boost sales of the fossil fuels responsible for the climate problem that COP28 is aiming to fix beggars belief. Jaber yesterday strongly denied what he called false allegations that his country planned to use the summit to further its commercial interests, insisting he had never seen or used the leaked talking points.

Yet the reports heap further pressure on the Adnoc chief and the UAE to demonstrate that they can act as neutral mediators, and deliver a successful COP in a year that has repeatedly broken global temperature records. The meeting needs to advance a new fund aimed at helping poor countries deal with the growing incidence of climate-related loss and damage. A "global stocktake" of progress since the 2015 Paris climate accord should also become a springboard to ensuring future COPs do more to address the persistent failure to cut carbon emissions.

> The nation must show that it can act as a neutral mediator in a year that has repeatedly broken global temperature records

To narrow the gap between the Paris goals and actions taken to date, some countries will be pushing for an agreement to phase out the use of fossil fuels, the biggest contributor to global warming. But others are pushing for fossil fuel use only to be "phased down" over time.

One potential upside to the "cheque book COP" accusations against the UAE, however, is that the furore puts a spotlight on the climate plans of big national oil companies such as Adnoc. These have enjoyed less scrutiny than publicly traded oil majors such as ExxonMobil and Shell, though they account for more than half of global oil and gas production and nearly 60 per cent of reserves.

Overall, almost no oil or gas group is doing enough to advance a greener global economy, despite what many claim. Oil and gas producers account for a mere 1 per cent of total clean energy investment globally, and more than 60 per cent comes from just four companies: Equinor, TotalEnergies, Shell and BP. Carbon emissions from oil groups' own operations, meanwhile, amount to nearly 15 per cent of all energy-related greenhouse gas emissions — equal to the energy-related emissions of the US.

Jaber insisted yesterday a significant number of global oil and gas companies were now ready to align around targets of net zero carbon emissions by 2050. Whether these companies do indeed come out with detailed blueprints on how they intend to reduce their production and transmission emissions, and scale up clean energy investments, will be a test of whether COP28 can achieve something, despite the controversy that has surrounded it.

Opinion Film

Why Godzilla is Japan's most put-upon worker

María Hergueta

Leo Lewis

There is a moment in the latest Godzilla film when the creature glares directly into the camera, its snorting, radioactive rage every bit as infinite and incomprehensible as it was in the 1954 original.

But look carefully behind those mad, luminescent eyes and there is something even more boundless: fatigue. Specifically, the tiredness of extreme overwork. Because, over the course of nearly 70 years and 37 films, Godzilla has in many ways been Japan's most put-upon worker — a scaly Stakhanov toiling year after year in the mines of metaphor.

Whenever postwar Japan has required a diverting, sometimes quite silly allegory to help make sense of seven decades of breathtaking domestic and global change, it has leaned with confidence on Godzilla. It has done so knowing that everything from nuclear threat, environmental catastrophe and pandemic to geopolitical rifts, political hubris and human stupidity can be projected on to the teeth, claws and dorsal spines of this one, city-smashing monster.

> It is a metaphor for national rebirth — only by destroying this fiend can the country flourish

Just as the Japanese have grown used to trains running on time, they have come to rely on Godzilla: a ruthlessly efficient encapsulator of life in a world where terrible threats keep arising and of our collective — often wrong-headed, prejudiced or ill-informed — response to the inevitability.

For Japan, of course, but also for the world in general, therefore, there has hardly been a more apt time for him to roar up once again from the depths.

Given how readily Godzilla can epitomise any misery the viewer wants to see, the latest outing — *Godzilla Minus One* (*Gojira -1.0* in Japanese) — works the monster's allegorical powers especially hard.

The film is set in the immediate postwar ruins of 1940s Tokyo: there is considerably less architecture than in previous films for the monster to destroy, which makes the obliteration of what little has been rebuilt much more poignant.

The central (human) character of the film is a traumatised Japanese veteran, followed from the battlefield and into civilian life by the inexorable reptile. The man helps to care for an infant found orphaned in the war's rubble and joins a team on a minesweeper in the waters off Tokyo.

There is, as ever, a nuclear warning in all this — the monster becomes more dangerous when mutated by US nuclear tests — but on its most straightforward reading, the film is a metaphor for the process of national rebirth. Godzilla represents the collective despair and guilt of war felt by its participants, and war's capacity to remain destructive well after the final bullet is fired. It is only by utterly destroying this fiend that a new Japan (signified by the infant) can flourish.

But, of course, Godzilla can lift far more contemporary metaphorical weight than that. Japan in 2023 may well feel that it has suffered traumas that must be aggressively wiped out for things to move on.

Can it be a coincidence that Godzilla's appearance in this new film is preceded by the wholesale bloating of marine life? Under the monster's malign influence, Japan's cherished seaboard becomes a mass of fish deformed by huge bubbles, much — perhaps — as its financial and property markets did in the 1980s before the nation confronted their collapse. It is only by wiping this crisis from the collective memory (as time and generational distance are now gradually doing) that the nation can truly put the destructiveness of the episode behind it.

But there is more. In keeping with tradition, the monster is ultimately felled by a scheme hatched by a tousle-haired scientist. In this case (spoiler alert), it is given a rampage-ending case of the bends by being first plunged to the depths of the ocean and then sped back to the surface on giant inflated balloons.

Rapid reflation from the trough of deflation, in other words, saves the day. Now where, as Japan finally emerges into an inflationary era from decades of stagnant prices and wages, could that idea have come from?

Wondering whether any of this was intentional does not spoil the fun. Quite the opposite — the central joy of this monster is how very easily the outwardly unmalleable creature can be squeezed into any interpretation.

But that is also the source of its bleakness. Godzilla, like every crisis it represents and however permanent the monster's dismissal seems as the credits roll, can absolutely be relied upon to return as the symbol of some fresh blight. Each new film, for all the gnashing and tail-thrashing, accepts this with a realism that, as a world clamours for quick fixes and easy answers, can too often be missed.

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Both Israel and the Palestinians have security concerns

Josep Borrell, the EU's top diplomat, makes some fine observations in his article but sadly too often indulges in exactly the sort of lazy slogans and talking points that have been the hallmark of western diplomatic failure on Israel-Palestine for decades ("Why a Palestinian state is the best security guarantee for Israel", Opinion, November 27).

First, politicians always frame this as being only about Israeli security, the security of the occupier not the occupied. Palestinians are currently being forcibly evicted in both the West Bank and Gaza. They are losing their land, lives and futures. Israelis have security concerns but ignoring Palestinian ones highlights the imbalanced, distorted approach. This is why an international presence is needed.

Second, European politicians like Borrell got overexcited about the normalisation deals between some Arab states and Israel. These were never peace deals, the states were not at war and it was a distraction from the volcanic core of the conflict. This must be the focus.

Third, Borrell refers to justice and equal rights for both peoples. This is laudable and vital but to achieve this you have to dismantle what almost the entire human rights community, including Israeli human rights groups, have referred to as Israel's system of apartheid. As it stands, an Israeli Jew has superior rights to any Palestinian not just in Israel proper, but also in the West Bank and Gaza. That will never lead to lasting security.

Finally, accountability for the crimes committed by all parties is essential. It is the failure to do so in the past that encourages actors to continue doing so, not least Israel, which enjoys a disturbing climate of impunity for whatever its leaders wish to do.

Chris Doyle
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Armchair generals should leave battlefield to the IDF

When Israel is forced to combat its murderous enemies, the non-combatants from presidents to prime ministers, from salons to talking heads at CNN and other militarily-ignorant broadcasters, render military advice to the Israel Defense Forces, as if Israel's generals are too close to the battlefield and fresher civilian eyes will give a more nuanced view ("White House urges Israel to show restraint in offensive on southern Gaza", Report, November 29).

This advice, especially from those who daily criticise the Jewish state, is just too "precious". Even savants like Senator Chris Murphy (a Democrat for Connecticut) and Senator Bernie Sanders, the independent from Vermont — neither of whose biographies indicate any military service — feel obliged to give military advice to the professionals. I suspect the incoming fire from pro-Palestinian voices critical of Israel's desire to defend itself has forced these armchair generals to adjust their political beliefs.

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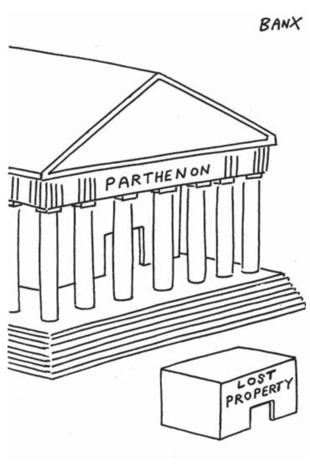

More generous pensions are likely to fuel inflation

Toby Nangle (Opinion, November 28) asserts that mandating an increase to minimum employer pension contributions "would be disinflationary".

This is not obvious to me. If workers place less value on pension contributions than on wages today — a reasonable assumption or why would governments need to mandate a change — then they feel worse off and demand some compensation.

Typically, wages would then fall by less than the increase in pension contributions, and so overall employer costs rise. Other things being equal, that would be inflationary and not disinflationary, as it is overall employer costs, not measured wages, that help determine price inflation.

Of course, the extent of price inflation that materialises depends on a variety of factors including on whether expectations are de-anchored, the impact of the mandated increase in contributions on overall savings and the central bank's response. While there is some evidence supportive of the notion that mandating an increase in pension contributions might boost aggregate savings, I fear that Nangle's article fails to discuss the likelihood that it also engenders a supply cost shock and so we need to contend with the possibility that it may have an inflationary impact in net terms.

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A $10tn opportunity for private sector investors

We were pleased to see the FT highlight the need to transform adaptation financing to help developing countries tackle climate change (Opinion, November 16).

However, one omission is the critical role private investors must play — as is increasingly in focus in the run-up to COP28. According to a recent OECD report, only 4 per cent of adaptation financing mobilised by official development interventions has come from the private sector.

Our research suggests the green economy will create an opportunity worth $10.3tn to 2050, in global gross domestic product in 2020 prices, by unlocking opportunities in resilient infrastructure, reforestation and rehabilitation, sustainable agriculture and emerging technologies such as water desalinisation. Crucially, this presents an opportunity for investors to grab early mover advantage, divest from stranded assets and capture competitive returns.

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OUTLOOK
ASIA

The upside-down world of North Korea's elections

by Christian Davies

There is only one choice on a North Korean ballot paper. Voters drop their ballot into one of two boxes — white for "Yes", and black for "No" — but "No" has never won.

North Koreans had no option but to vote in local elections held in the east Asian dictatorship on Sunday. But while the results were preordained, the process serves as an important ritual binding the people to the regime. North Korea holds regional elections every four years, but only allows a single candidate to stand in each district.

"The logic is that we help to strengthen the regime by acting and voting for those who are loyal to the party," says Ahn Chan-il, a North Korean escaper who now heads the World Institute for North Korea Studies. "It didn't occur to us that the electoral system might be weird — we thought it was natural for only one person to stand."

Those who are "elected" serve in rubber-stamp bodies that only meet a few days a year. The North Korean regime has historically used elections as a pretext to restrict internal movement, track the whereabouts of citizens who may have left their local area without permission and intensify compulsory "political education" sessions.

Elections also hold propaganda value. "This is not about being democratic," says Rachel Minyoung Lee, a North Korea expert and non-resident fellow at the Stimson Center think-tank in Washington. "This is about trying to seem to the world like a more 'normal state' while showing its own people that it is trying to change for the better."

The North Korean election process is undergoing some changes itself. Under reforms revealed by state media in October the candidates in some districts were selected via a primary-like process, in which two people who are supposed to represent different regions, professions and genders can ostensibly compete for support. The new system, which remains highly opaque, hints at the possibility of slightly greater citizen participation in the selection of local-level officials in one of the world's most repressive countries.

The North Korean authorities also acknowledged this week that in a handful of very rare instances, some people appear to have actually voted "No". According to state media, 0.09 per cent voted against candidates for provincial councils, and 0.13 per cent against city council candidates.

Andrei Lankov, a professor of history at Kookmin University in Seoul, stresses that whatever their real feelings, North Korean voters have no incentive to cast a "No" vote. "If you vote 'No' you are likely to be seen as a subversive element, and no matter how people vote, the declared result will be the same," he says.

But while Kim Jong Un's electoral reforms do little to facilitate democratic participation, they are consistent with his efforts to overhaul the country's governance — and its image. Lee notes that under Kim's father, the Workers' Party of Korea had withered as it came to revolve around the whims of the leader. Kim the younger, by contrast, has sought to restore collective decision-making and revitalise the party's internal structures.

That involves the leader being seen to take a step back. Kim did not stand in 2019 elections for the Supreme People's Assembly, the rubber-stamp parliament, a first for a North Korean ruler. He was also reported by state media not to have given a speech at a major WPK plenum he attended in June this year, something described by South Korea's unification ministry as "highly unprecedented".

The millennial dictator has also warned his propagandists not to make wildly exaggerated claims about his talents, instead playing up his humility and responsiveness to the people's needs. "In the name of highlighting [the leader's] greatness, we end up hiding the truth," he wrote in 2019.

"With his reforms, Kim is trying to create the image of a single-party rather than a single-person regime," says Peter Ward, a fellow at the University of Vienna's European Centre for North Korean Studies. "That allows him to distance himself from failure, while also making the regime look less ridiculous."

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Opinion

Black Friday bonanza could lead to a festive hangover

BUSINESS

Brooke Masters

Last week, while most of my family was watching American football in a turkey-induced stupor, I got bored. So I pulled out my smartphone and ordered a new camera lens to boost the quality of my holiday snapshots.

Turns out I wasn't the only one. US online shoppers have busted through forecasts, shelling out a record $38bn for the post-Thanksgiving period. The $12.4bn spent on what is known as Cyber Monday made it the biggest US digital shopping day of all time, according to Adobe, which tracks online spending.

This spree — up nearly 8 per cent on last year — has raised hopes of a bumper festive season. It was accompanied by a bigger surge in visits to indoor malls and department stores than in 2022, as well as somewhat more modest year-on-year increases in overall credit card spending, according to Placer.ai and Mastercard.

Though recent economic sentiment surveys have been negative, the resilience of American consumers has surprised forecasters all year. Retail spending helped to drive explosive 5.2 per cent gross domestic product growth in the third quarter.

But the economic picture remains murky heading into Christmas. Labour markets are slowing, mortgage rates remain high and the resumption of student loan payments after a pandemic pause could crimp spending. Then again, cooling inflation and falling gas prices might also translate into shoppers with a bit more money to splash.

That puts the onus on companies to be cautious about reading too much into a few days of record spending, particularly when it is fuelled by Black Friday promotions.

Many were caught out last year when a pandemic-fuelled surge in goods spending ebbed and customers shifted back to buying services. E-commerce groups that rolled up companies that sell through Amazon are struggling, and Amazon itself was left with extra staff and warehouses after mistaking a one-time bump for a long-term change.

That means executives must probe the source of last weekend's online spending bonanza carefully.

Some of the jump is due to the rapid spread of shopping apps and websites optimised for mobile use. Customers who once had to go to a store or fire up a desktop can now shop while watching TV. Mobile devices accounted for more than half of November sales for the first time this year.

> US companies should be cautious about reading too much into a few days of record spending

Another boost stems from the rapid growth of buy now, pay later programmes that let shoppers defer their payments across several months. BNPL spending was up 17 per cent year on year to $8.3bn for November to the end of Monday. Personal finance experts worry that the ease of use encourages customers to spend beyond their means.

But the biggest driver of the holiday binge by far was promotional discounting that averaged as much as 30 per cent in some categories, such as toys and electronics, Adobe's data shows.

As anyone who has ever handed over their contact details can attest, retailers and ecommerce sites have gone hog wild this year with promotional texts, emails and app driven alerts. Such sales pump up holiday weekend revenue but can damage bottom lines if they absorb customer spending that would otherwise have gone to higher margin goods at another time.

Executives at Walmart, the electronics chain Best Buy, and Dicks, which sells sporting equipment, have all warned in recent weeks about the growing reliance on price cuts and promotions to sell goods. Best Buy CEO Corie Barry in particular warned that promotions "are up versus last year, and in many cases, up compared to where they were pre-pandemic".

Last year, customers who had been burnt by Covid-related shortages and shipping woes started making their holiday purchases in late October. This year, shoppers stayed on the sidelines much longer and waited for the holiday promotions to start.

"We saw growth weaken very significantly in October and November," Adobe's Vivek Pandya said. "Customers are very price sensitive and they know they are going to get good deals . . . on the marquee days."

Having conditioned people to respond to special offers, online retailers now run a risk that their bricks and mortar counterparts know only too well: jaded customers who refuse to pay full price. In the physical store context, that has previously meant shoppers who held their nerve in December could score deep discounts right before Christmas.

If the same sentiment spreads to ecommerce, companies could be in for a heck of a holiday hangover.

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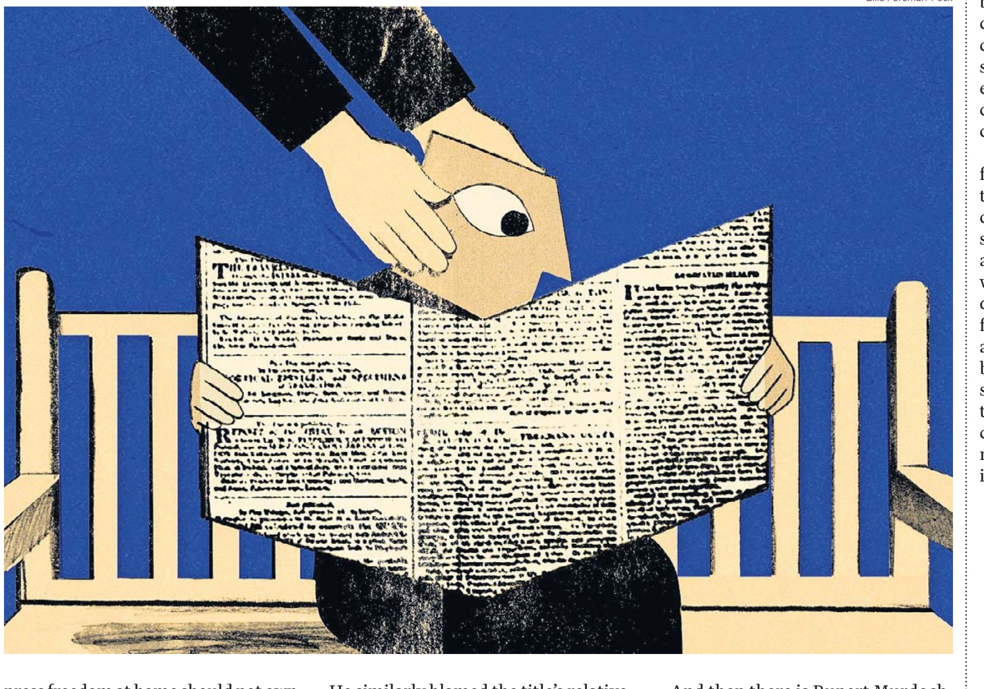
Spare us the sanctimony on media owners



Ellie Foreman-Peck

BRITAIN

Robert Shrimsley

By all means block the deal but spare us the sanctimony. A campaign is on to prevent Sheikh Mansour bin Zayed al-Nahyan, vice-president of the United Arab Emirates, buying a major piece of the British media. That the titles in question, the Daily and Sunday Telegraph and the Spectator, are about the most important publications to the Conservative party is quickening anxiety.

For all the shifts in the media landscape, newspaper groups, and the right-wing press particularly, still carry an outsize weight in setting the political agenda. So it is not hard to see why the ownership of the Tory house journals — previously home to Boris Johnson's scratchings — matters to Conservatives, who are making their case with high moral tone. They have a devastatingly simple argument. Sheikh Mansour is a leader of a foreign nation and one that does not believe in press freedom.

The UAE is a valued ally and investor in the UK. But it is not a good place to be a journalist. In the words of Reporters Without Borders (RSF): "As soon as they emit the slightest criticism, journalists and bloggers find themselves in the crosshairs of the UAE's authorities, who are masters of online surveillance." They can face prison for "insulting the state or spreading false information". In RSF's rankings of press freedom, the UAE stands 145th out of 180.

While the Spectator is thriving, the Telegraph (where I worked in the 1990s) is not the institution it was. Once a bastion of serious if somewhat crusty journalism, the title now too often descends into shrill populist paranoia and heated anti-immigrant rhetoric.

The would-be buyers are a joint venture of the Sheikh's IMI and a US private equity firm RedBird Capital. Their supporters argue that IMI is not a UAE state entity — though it comes close — and point to safeguards to protect editorial independence. Redbird will run the titles alone under the vigilant leadership of former CNN president Jeff Zucker. Sheikh Mansour, we are told, will be a passive investor.

Yet media history shows how little these defences are worth and it is naive to believe coverage would be allowed to be inimical to the UAE's interests. As other proprietors have shown, you don't need to interfere directly as long as you appoint an editor whose views align with yours and who is "sensitive" to your interests. The UAE has many welcome UK investments including Manchester City. But a football club cannot help decide the next Tory leader.

So yes, those calling for the UK to block the deal under public interest powers are right. For all the assurances, there is a principle here. A state-related entity from a country with no regard for press freedom at home should not own, even passively, a pillar of the British media. (I should note that the Financial Times is part of an employee-owned Japanese media group.)

But if we are going to have this conversation, let's spare ourselves the humbug of pretending that existing British media moguls are as hands-off and virtuous as a Disney princess is chaste. Individuals buy newspapers for status or power and invariably use them to advance personal or professional interests. And the roll call of UK press barons is hardly one to shout about.

In 2015, the Telegraph's chief political commentator resigned, claiming that the Barclay family, the outgoing owners, were suppressing stories about HSBC because it was an important advertiser.

> Let's stop pretending that existing press barons are as hands-off and virtuous as a Disney princess is chaste

He similarly blamed the title's relative silence over Hong Kong on a fear of upsetting Chinese interests. The Barclays' predecessor, Conrad Black, was jailed for fraud in the US. He was later pardoned by Donald Trump.

If the Redbird IMI deal is blocked, the beneficiary could be the bid led by Sir Paul Marshall, co-owner of GB News, which gives airtime to race-baiters and conspiracy theorists.

Robert Maxwell, the late owner of the Mirror, stole hundreds of millions from the company's pension fund. A perennial interferer in his papers, he even rigged a "spot the ball" competition to avoid paying out the £1mn prize.

Lord Evgeny Lebedev, the current co-owner of the Evening Standard, owes his media empire to the money made by his father, a former KGB officer and Russian oligarch, currently on Canada's sanctions list. Lebedev, a supporter of Boris Johnson in the London mayoral elections, ennobled by the former prime minister, also part-owns the Independent with a Saudi businessman thought to be close to the regime.

And then there is Rupert Murdoch. The tycoon is a genuine newsman who saved British's press from the grip of the print unions. But his political influence is immense and, to many, malign. Aside from that, his stewardship has been replete with scandals. The UK phone-hacking saga, centred on his papers, led to the closure of a title and the jailing of journalists. One of the then editors is now his CEO at News UK. In the US, his Fox News network paid out $787mn to the Dominion voting equipment business for accusing it of being part of a plot to steal the 2020 presidential election, a claim the network knew was untrue.

These then are some of the existing owners. Viewed against them, the damage the sheikh could do is probably limited. And yet the conservative campaigners are probably right. There is an absolute principle worth defending.

On that basis the deal should probably be blocked. But let's not delude ourselves about what counts for a fit and proper owner in the UK.

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Why Nikki Haley is the wild card for 2024

AMERICA

Edward Luce

Is America doomed to a rerun of the last election? Whichever of the two parties dumped its frontrunner would probably have next year's vote sewn up. Though Joe Biden and Donald Trump are both unpopular, America seems resigned to a stale but terrifying repeat of 2020. The likeliest — or least implausible — disrupter at this point is Republican outlier Nikki Haley.

The former South Carolina governor is no moderate, as she is sometimes mislabelled. Haley would impose a five-year term limit on civil servants, send US special forces into Mexico and sharply cut social security. She thinks Biden is weak on Russia, China and Hamas. But the contents of her platform are irrelevant. Everyone looks moderate compared to Trump. Because she is not him, Haley would have dramatically better prospects of defeating Biden.

Her problem is that Trump is still the prohibitive favourite for the nomination. Yet the odds against a Haley upset are not as remote as they seem. Money is no issue. This week the group funded by billionaire Charles Koch endorsed Haley. In the past few days, she has gained support in the critical early contests of Iowa and New Hampshire. Unlike her two main non-Trump rivals, Haley has divided her resources between the two states. By contrast, Ron DeSantis, Florida's governor, has bet the ranch on the Iowa caucuses. Chris Christie, the former New Jersey governor, is gambling on New Hampshire.

Haley is tied with DeSantis in Iowa and leads Christie in New Hampshire. If she finished second to Trump in both states, she could bring momentum into her home state of South Carolina, which holds the third primary in February. At that point, donor and media pressure on DeSantis and Christie to drop out would become acute. The other contender, Vivek Ramaswamy, a self-made billionaire, is angling so cartoonishly to be Trump's running mate that his fast-dwindling fan base would probably not matter. By contrast, almost all of Christie's voters and some of DeSantis's would go to Haley. Indeed, that outcome is likely. Dubbed by Rupert Murdoch's New York Post as DeFuture, DeSantis looks increasingly like DePast. Christie's opposition to Trump, meanwhile, is too principled to have wild card potential. His strategy was predicated on goading Trump to the debate stage, which he has failed to do.

> She has deftly threaded the needle between the Maga base and 'Never Trump' voters

Haley, on the other hand, has deftly threaded the needle between the Maga base and "Never Trump" voters. In the first Republican debate, she raised her hand when candidates were asked if they would back Trump were he to be the nominee. She also said she would be inclined to pardon Trump if she became president. This lends a veneer of plausibility to her claim that she would be Trumpian without the chaos.

The critical moment would come in the Super Tuesday primary in early March. The number of delegates on offer in the opening primaries is trivial. Super Tuesday is when Trump would expect to lock down the prize. If he emerged from that big contest without having done so, he would be badly wounded. At which point Haley would remind Republicans that she would beat Biden by a clear margin. Trump, on the other hand, would still be playing victim-in-chief.

Haley would also have the legal calendar on her side. The scriptwriters of America, Season Six, might be accused of stretching credulity at this point but it is conceivable that Trump will be criminally convicted before the general election. The day before Super Tuesday, March 4, is the opening day of Trump's Washington trial for the January 6 2021 storming of Capitol Hill. That will immediately be followed by Trump's New York trial over paying hush money to a porn star. The other two — in Florida on the classified documents and in Georgia on his attempt to overthrow the state presidential result — could start at some point in the campaign.

Trump's legal schedule will be so crowded he will have little time to stage his big rallies. His money pressures will also be mounting. Haley, who is nothing if not entirely biddable, has scope to offer Trump a deal in which he would pull out of the race in exchange for a pardon. That, in short, is her path to the big prize.

It would be spurious to put numbers on her chances. They are not high. But it is worth stressing that America is not relishing another Trump vs Biden contest. The fact that Haley has been on many sides of many issues might be a problem. But she is a politician; it has been known to happen. It is precisely Haley's malleability that would make her dangerous to Biden in the general election. This leaves Democrats in the awkward position of both dreading Trump and rooting for him.

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The UK needs a new public body to spur productivity

Diane Coyle

Why are economists — and politicians — obsessed with productivity? For two reasons. The first is that unless productivity is rising, living standards stagnate; productivity growth reflects businesses and public services using inputs of labour, capital and materials more effectively, producing more for less. That is what drives economic progress.

The second is that productivity is flatlining in the UK, diverging sharply from its previous year-by-year growth. Other economies have also experienced a productivity growth slowdown since the mid-2000s, but the UK now has lower levels and weaker growth (or both) than other G7 countries. The succession of economic shocks — the financial crisis, the pandemic, Russia's invasion of Ukraine — help explain the general slowdown, as does demographic change. But what explains the UK's specifically dismal productivity problem?

Some culprits will be depressingly familiar. A new report from The Productivity Institute (TPI) documents the consequences of the decade of declining spending per capita on education at all levels above primary school, the way expenditure on research and development as a share of GDP has fallen far behind other G7 economies and the confusing mishmash of small business support schemes. There is no shortage of diagnostic evidence about the wide range of productivity-limiting challenges. But two overarching weaknesses stand out: long-term under-investment and policy churn.

> Two weaknesses stand out: long-term under-investment and policy churn

Investment in the UK has been lower, as a share of GDP, than in other G7 countries for decades. This is true whether investment by businesses in equipment and buildings, or by public and private sector alike in R&D, or in human capital through education and health. Recent TPI work shows that even industries we think of as Great British success stories, such as finance or software, invest less as a share of their own value added than their global comparators. Increasing investment is a top priority for a more prosperous economic future.

The second UK weakness is part of the explanation for this dire investment record: policy churn has been widely documented in areas including taxation, education, local and regional government and industrial policy. Policies are not well co-ordinated, either across departmental boundaries or between national, devolved and local government. Edicts from the centre land on under-resourced regional authorities with insufficient regard for local needs and strengths.

The combination of the confrontational Westminster style of politics and the UK's extreme political and economic centralisation seem to make the churn worse than elsewhere. No wonder the uncertainty deters investors, whose time horizon is far longer than that of politicians.

This political economy context is why this week's report, which captures the views of many of the UK researchers investigating productivity, calls for a new independent and statutory body to monitor, evaluate and report on policies for productivity and growth.

This institution would parallel the Office for Budget Responsibility, with a remit covering supply-side policies. It would co-ordinate across areas of policy and levels of government, with a focus on spatial economic growth, and would involve relevant stakeholders in its assessments. And it would need to be protected from policy churn itself with a statutory footing.

Many other countries, such as Australia, have established similar commissions that can offer insights on how to design an authoritative and expert body. This would not solve the UK's productivity problem — sadly, there really is no silver bullet. But it would help curtail the damaging uncertainty that is deterring investment in productivity and hence our future standard of living.

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Lex.

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Charlie Munger: Chuck never chanced it

The beauty of living to 99 is getting the chance to enjoy the fruits of compound returns. Charlie Munger died just short of reaching the century mark.

He is best known as Warren Buffett's curmudgeonly sidekick. The Oracle of Omaha himself has never been shy to attribute the success of Berkshire Hathaway to Munger's wisdom and acumen.

Munger was not solely obsessed with buying companies that traded cheaply, an approach espoused by Benjamin Graham and David Dodd, the long-ago scholars who influenced a young Buffett. He believed good companies always triumphed over time and thus did not need to be purchased at bargain basement prices.

In this year's shareholder letter, Buffett discussed Berkshire's winnings from American Express and Coca-Cola, big blue-chip bets made in the 1990s. According to data from S&P Dow Jones Indices, Berkshire returned 20 per cent on average annualised in the 45 years Munger was associated with the group. That is a remarkable 8 percentage points ahead of the S&P 500.

But the real lesson for investors is that sitting back and simply taking a market equity return creates meaningful wealth, if not billionaire status. A sum of $1mn invested in Berkshire in 1978 would today be worth a staggering $3.7bn. At the S&P 500 return, the pot still comes in at a heady $163mn. This century, Berkshire has struggled to exceed the returns of the S&P 500. This reflects a long-running bull market and the group's sheer size with the resulting dearth of home-run opportunities.

Buffett wrote in the letter this year: "All told, our 10 controlled and non-controlled behemoths leave Berkshire more broadly aligned with the country's economic future than is the case at any other US company."

Munger and Buffett have lived extraordinary lives. Whatever Munger and Buffett's investing skills, they correctly attribute their vast success to riding America's economic ascendance, not resorting to excessive leverage or cash dividends for quick gains.

Ordinary investors cannot replicate Berkshire's advantage of a cheap insurance float. But investors with long horizons and the willingness to stick to general rather than exotic equity risk can still get rich. They may not live to 99 or become billionaires. But there is more than enough for everyone to prosper without being greedy.

Golden Goose: scuff love

Christmas is coming and the goose is getting fat. For Permira, the bird in question is Golden Goose.

The UK private equity group hopes to list the Italian footwear brand in Milan early next year at a reported valuation of €3bn. Fast-growing and highly profitable, Golden Goose appears to live up to its name. But narrowly focused fashion brands have a mixed history with public markets. Investors should be cautious.

Fashion is at best cyclical and at worst ephemeral. Turmoil at Gucci shows that even famous names get it wrong. Golden Goose, in contrast, is a challenger. Its distressed-look trainers cost about $500 a pair, reminding cynics of "Derelicte", a spoof brand purveying the look of vagrants in the movie Zoolander.

It is hard to imagine Golden Goose enjoying the enduring appeal of Birkenstocks. The sandal brand tested the market last month when it listed in New York. Shares disappointed on debut but have made up losses since.

That precedent invites comparisons between the two groups. Golden Goose and Birkenstock should both raise sales by about one-fifth this year. Both have ebitda margins in the low 30s.

The average price for Birkenstocks is about a tenth of Golden Goose sneakers at €50. But the top dog in clogs has a bigger market and merits a premium. An enterprise value of 20 times forward ebitda for Birkenstock beats the 15 times trailed for Golden Goose.

Dr Martens, like Golden Goose, is a niche footwear company, backed by Permira. The maker of rock 'n' roll boots listed in London in early 2021.

The valuation back then was rich at more than 20 times ebitda. That has dwindled to less than 6 times today. The sole has peeled off sales growth. The story is similar at Tod's of Italy, which trades on 7 times.

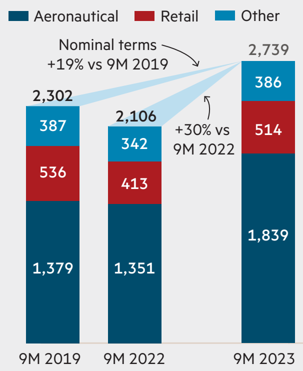
Bankers may well pull Golden Goose up by its bootstraps for a rating of 15 times at flotation. But longer term, the business will have its work cut out to convince investors it is worth a gander.

Heathrow: on-time departure

The airport's revenues have increased this year as passengers return to the skies. Ferrovial is selling 25 per cent at an enterprise value near £26bn, about 13 times next year's ebitda. That is a premium to other listed airports. The new owners may hope to lift retail revenues, where Heathrow underperforms.

Recovery has been driven by passenger growth

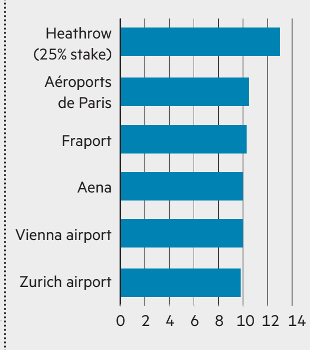
Analysis of revenue (£mn)



Source: Heathrow

Heathrow stake sale achieved a premium valuation

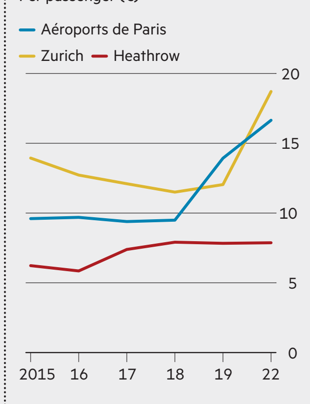
EV/forward ebitda



Sources: S&P Global; FT research

Retail revenues lag behind

Per passenger (€)



Source: Citigroup

Ask Londoners who enjoy travelling, and Heathrow will be among their pet peeves. Most have a story of lost baggage or delays. Yet the congested hub is something of a trophy asset, reflected in the £2.4bn that Saudi Arabia's Public Investment Fund and French buyout firm Ardian have bid for Ferrovial's 25 per cent stake.

Other Heathrow shareholders, which include the Qatar Investment Authority, Caisse de dépôt et placement du Québec, and Singapore sovereign wealth fund GIC, can choose to keep their holdings, buy Ferrovial's shares, or tag along and sell into the bid.

Ferrovial's exit after 17 years is well timed. PIF and Ardian value Heathrow's equity at £9.5bn. Add in the year-end net debt, which Mediobanca Research pencils in at £16.3bn, and the implied enterprise value is just shy of £26bn. That is a near-30 per cent premium to Heathrow's regulated asset base. It is about 13 times next year's ebitda, projected to decline given the cut in regulated landing fees.

Listed competitors travel at around 10 times. Vinci, which bought 50.1 per cent of Gatwick in 2018, paid more, but that was for a pre-pandemic majority purchase. Ardian and PIF might end up stuck at 25 per cent.

Ardian targets mid-teen returns for infrastructure investments such as this. It will not be easy to achieve. Assume that over the next decade Heathrow increases its ebitda by 3 per cent a year and cuts interest costs gradually. Hold annual capital spending and tax steady at £800mn-£900mn. At an exit multiple of 12 times ebitda, Ardian could achieve an internal rate of return in the high single digits. True, this might creep into the double digits should the new investors leverage their own investment. And there may be room to nudge up Heathrow's cash flows. Analysis by Citi suggests that it underperforms on retail revenues compared with Zurich and ADP.

None of these rough-and-ready numbers factor in the — increasingly remote — prospect of a third runway. Nevertheless, at this point, Ferrovial has extracted a good price for its holding.

Philips: benighted

Steady equities are nicknamed "sleep well" stocks. Dutch medical-equipment group Philips hardly qualifies. Devices to manage sleep disorders are giving its shareholders nightmares.

The machines are meant to help sleep apnoea sufferers breathe easily. But consumer complaints have spawned hefty liability lawsuits.

The original device had a face mask that prompted safety concerns. Philips initially underplayed the issue, as multinationals habitually do when a scandal erupts. It later suggested to the market that the worst was over. Despite this, the share price collapsed. Chief Frans van Houten was replaced by insider Roy Jakobs a year ago.

On Tuesday the US Food and Drug Administration issued a "device safety communication" for DreamStation 2. Philips launched this gadget three years ago to replace the discredited predecessor. The FDA is worried the new device is prone to overheating.

The bulk of DreamStation 2 sales comes from the US, estimated at €200mn for 2024. That figure may seem a pittance. Next year's group revenues should hit €19bn.

But its risk-adjusted personal injury liabilities alone could top €1.3bn, thinks Lisa Bedell Clive at Bernstein. The US's justice department is also involved. Tack on any DoJ settlements, plus other costs, and Philips is looking at more than €2bn of risk.

Lex believes that figure could double in a worst-case scenario. The FDA noted that the complaints had increased in number in the past three months but, more importantly, that they stretch back three years.

Philips has received four FDA notices since June 2021. The watchdog is plainly vengeful and investors should be nervous. They include Exor, the Agnelli family's investment group, which paid €2.6bn for 15 per cent of the Dutch group last summer.

The stock duly fell 5 per cent yesterday. Expect earnings estimates to weaken. Philips's nightmare is far from over.

Loyalty cards: basket trade

Old businesses can learn new tricks. UK supermarkets, for example. They have absorbed a thing or two from Big Tech about network effects. These are competitive benefits big businesses reap from aggregating diverse demand.

Tesco and J Sainsbury have this year been grabbing market share, helped by promotions that offer cheaper prices exclusively to loyalty-card customers.

Such "two-tier" pricing is so prevalent that Competition and Markets Authority chief Sarah Cardell has vowed to investigate. But the groups may already have achieved their aim. They have expanded their captive audiences, whose data is valuable. Tesco launched its Clubcard two decades ago.

Traditionally, customers built up points that could be turned into discounts on future purchases. Loyalty pricing, where cheaper prices are available immediately, is a recent phenomenon. Tesco first offered Clubcard customers cheaper prices in 2019. Sainsbury's launched its rival scheme, Nectar Prices, in April.

Sainsbury's has since added more than 3mn Nectar card members, taking the tally to 14mn. Clubcards are now used in 80 per cent of Tesco's UK sales. Spending on promotions accounts for more than 27 per cent of all grocery sales, according to Kantar.

As inflation eases, the CMA says suppliers do not intend to cut list prices to retailers. Instead, they plan to pay for temporary but splashy price promotions in supermarkets, online and on apps. Loyalty-card data helps supermarkets sell targeted ads.

Sainsbury's expects to generate £90mn in additional profit by March 2026 from such activities. Shore Capital's Clive Black estimates Tesco could generate £200mn to £300mn in so-called retail media profits in the 2027 financial year.

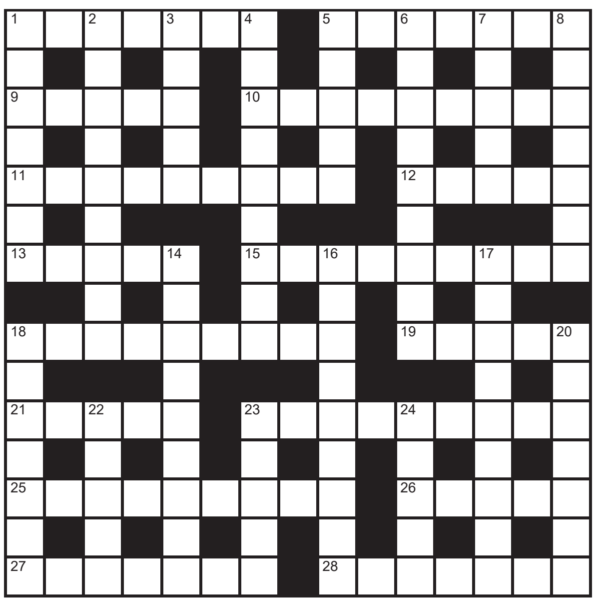
Once signed up, few loyalty-card members bother to unsubscribe.

You can create network effects with biscuits and bananas, just as you can with likes and cat videos.

Lex on the web
For notes on today's stories go to **www.ft.com/lex**

CROSSWORD

No 17,588 Set by SLORMGORM



ACROSS

1 Force fearsome person to accept love (7)
5 Attractive fellow left impression (7)
9 Small desire to be fashionably posh (5)
10 I'm going to bed Goth with dog in Barking (9)
11 In-house worker moving around Hue street (9)
12 Resinous substance Pelé mistakenly smuggled (5)
13 Promotional copy of obscure book (5)
15 Flexible board on a house (east-facing) (9)
18 Putin is one ultimately camp occupier (9)
19 Closely-set poles blocking Scottish river (5)
21 Rifles and axes (5)
23 Present got in front of Santa World? (4,5)
25 Princess man adored without restraint (9)
26 Cardinal getting ecstasy is a state (5)
27 Serious king left to go home (7)
28 Chap succeeding Brown's almost irrelevant (7)

DOWN

1 Insult flipping short savage making trouble (7)
2 A conservative playing hideous type of tunes (4,5)
3 One serving tea without drop of milk's unusual (5)
4 Headless horseman seen on horse in this? (9)
5 Pair of eejits will case bar to find spoil (5)
6 Arrogant type like Bojo sitting in hearing (9)
7 Some renovating lead fireplace in Fife (5)
8 Figure out what to do if Morecambe's fully booked? (3,4)
14 Bishop invigorated sermon with it! (9)
16 Aviator primarily flying to Saturn? (9)
17 Hair product G'n'R perhaps gets over Slash? (9)
18 Release a bit of gas on bowel's fourth movement (7)
20 European ousting leader of Attlee & Co? (7)
22 Drink of wine one catholic knocked back (5)
23 Clue transmitted over the airwaves (5)
24 Neglected kid mostly playing Nintendo? (5)

Solution 17,587

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C	A	C	T	I		B		U		R		T		A
U		H		S	P	O	T	T	E	D	D	E	E	R
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JOTTER PAD

Managing Climate Change

Thursday November 30 2023
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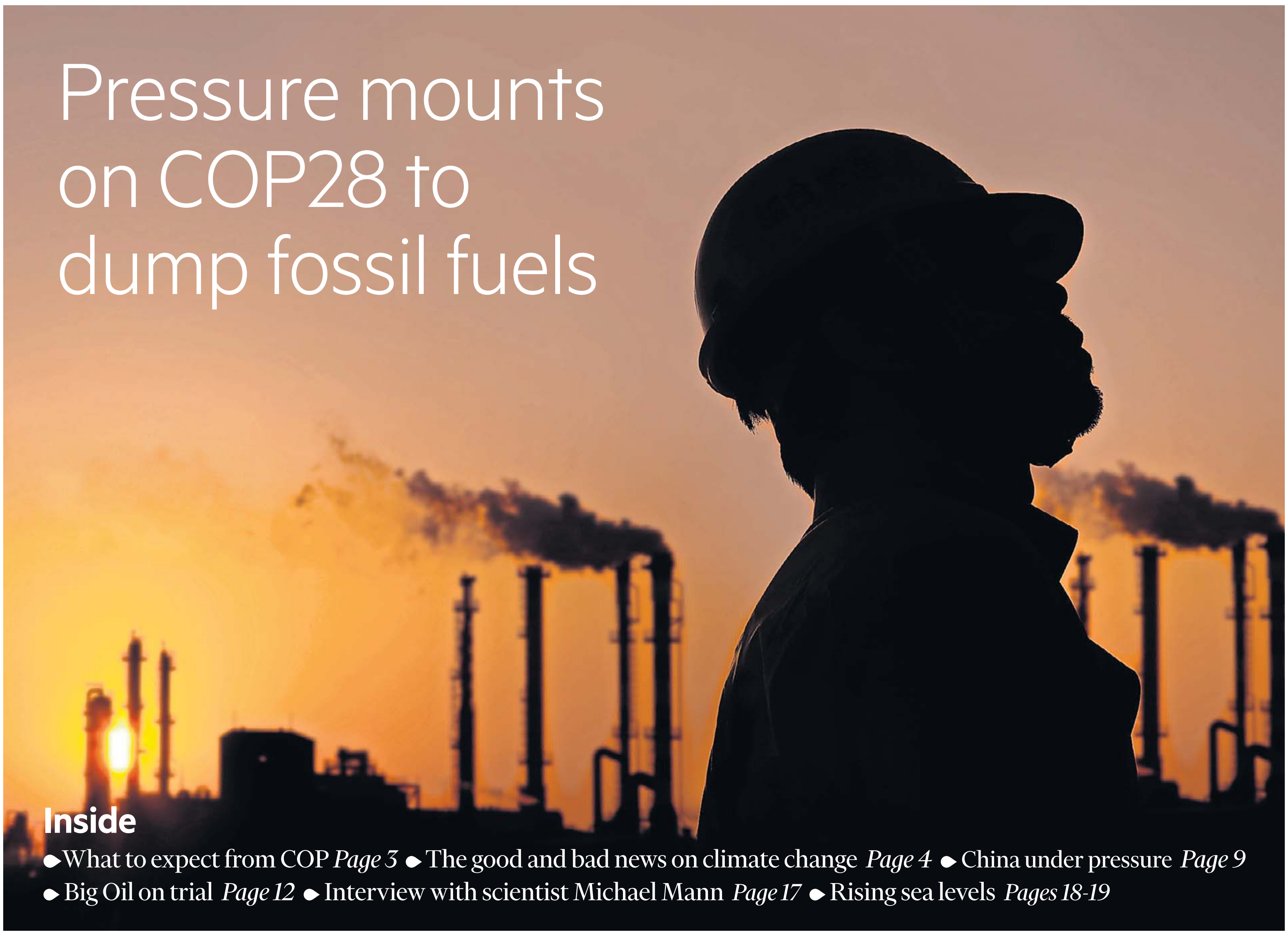


Tom Wang/Alamy

Pressure mounts on COP28 to dump fossil fuels

Inside

UN summit Success in Dubai rests on whether a global deal can be reached on ending use of fossil fuels, writes *Attracta Mooney*

As the United Arab Emirates gears up to host the COP28 climate conference, many politicians, business leaders and civic organisations say the measure of the summit's success will come down to one issue: whether there is a global agreement to dump all fossil fuels.

For years, the UN summit — which rotates location annually and draws in tens of thousands of delegates, including negotiators and politicians from almost 200 countries — skirted around the chief cause of climate change: the burning of fossil fuels. Fossil fuels account for about three-quarters of all climate change-inducing greenhouse gas emissions.

But circumstances changed in recent years. Countries agreed to reduce coal usage at COP26 in Glasgow. Then, more than 80 countries backed a proposal to dump fossil fuels at COP27 in Egypt last year — although there was no global agreement.

Now, there is growing pressure on the UAE, one of the world's largest oil and gas producers, to oversee negotiations that place a shift away from hydrocarbons at the heart of the COP28 outcome.

Eamon Ryan, Ireland's environment minister, says COP28 needs to deliver "strong language on fossil fuels" and "clear language" that outlines a limited role for so-called abatement, which is where greenhouse gas emissions are captured through technology or natural processes.

"The agreement in Dubai . . . has to include clear measures for the phasing out of fossil fuels," Ryan says.

Continued on page 2

Pressure mounts on COP28 to dump fossil fuels

Continued from page 1

Ireland, alongside France, Spain, Kenya and 11 other countries, is part of a group of countries known as the High Ambition Coalition that called for a phasing out of fossil fuel production at preliminary climate talks last month. Countries such as the US have called for a shift away from fossil fuels being burnt without capturing emissions.

Supporters typically want a deal to "phase out" fossil fuels by the middle of the century, with the use of oil, gas and coal reduced over time as alternative options, such as renewable energy and electric vehicles, are ramped up.

Romain Ioualalen, global policy campaign manager at advocacy organisation Oil Change International, says the "defining question" of this COP is whether or not the UAE can oversee an agreement on dumping fossil fuels.

"I don't think COP28 will be seen as a success if it doesn't come to terms with the root cause of climate change," Ioualalen argues.

Reaching an agreement is unlikely to be straightforward. Russia, among leading oil and gas producers, warned this year that it would oppose a global deal to reduce the use of fossil fuels. Saudi Arabia and China have also consistently blocked efforts to ditch oil and gas.

The International Energy Agency, however, has said there can be no new oil and gas projects if the world is to limit the long-term average rise to 1.5C, the temperature after which scientists warn of potentially catastrophic impacts on the global climate. Countries agreed to limit the temperature rise to well below 2C and ideally to 1.5C above pre-industrial levels under the landmark Paris Agreement.

As COP28 president, the UAE will be charged with overseeing the negotiations, helping to steer conversations and develop an agreement. The state came in for heavy criticism over its decision to appoint Sultan al-Jaber, who also heads up the Abu Dhabi National Oil Company, as president-designate this year, given concerns that his ties to the fossil fuel industry will impede progress at the summit.

Rather than focusing on a pact to dump fossil fuels, Jaber has prioritised building support for an agreement to triple renewable energy capacity and double energy efficiency. Supporters have also argued the UAE can play an important role in convening the oil and gas industry. In October, Jaber said the sector needed to prepare for an inevitable "phase down" of fossil fuels.

Call to action: businesses and investors want clearer policy on fossil fuels — Alamy

A COP28 spokesperson added that countries needed to "define the right language that they can all commit to" and that "the COP presidency is eager to find ways in which we can move this conversation forward."

Avinash Persaud, climate envoy for Barbados, says while "phase out" is his goal, developing nations face big challenges — including a high cost to transition their economies. "Pressing for more ambition on phasing out fossil fuels without a financial solution for developing countries is empty ambition," he says.

Persaud adds that there are also issues concerning the equitable treatment of nations, with poorer countries that have discovered oil and gas being asked to leave those products in the ground, while richer nations continue to get richer by pumping fossil fuels.

Businesses have become vocal about the need for clearer policy on this. More than 130 big companies, including Ikea, Volvo Cars and AstraZeneca — collectively representing nearly $1tn in global annual revenues — last month called for governments attending the COP28 conference to agree a timeline to ditch unabated fossil fuels, where emissions are not captured.

Investors also want clarity on an agreement, says Hortense Bioy, global director of sustainability research at data provider Morningstar: "Pushing back policies will not drive the investment needed."

> 'Pressing for more ambition on phasing out fossil fuels without a financial solution for developing countries is empty ambition'

One COP veteran, who was heavily involved in fossil fuel discussions at COP27, says many of the most vocal opponents of an agreement have fewer negotiating chips this year. Last year, countries pushing for a shift from coal, oil and gas backed down on a fossil fuel pact in a trade-off for an agreement to create a so-called loss and damage fund. Recent positive discussions on climate change between China and the US also potentially pave the way for a stronger outcome from COP28.

Cinzia Bianco, a visiting fellow at the European Council on Foreign Relations, says there is a growing likelihood that the final agreement ends up with a "compromise position" about working towards an energy system free of unabated fossil fuels.

There are concerns, however, that negotiations could be derailed if they descend into a discussion on abatement. Saudi Arabia is among those that have called for carbon-removal technologies, such as carbon capture and storage (CCS), to be given a bigger role in discussions.

A recent report from London-based think-tank the Energy Transitions Commission argued that around 15 per cent of the fall in greenhouse gas emissions needed to come from CCS, direct air capture or other carbon-removal options, but with 85 per cent from a reduction in fossil fuel use, if the world is to limit a temperature rise to 1.5C.

Lord Adair Turner, chair of the commission, says abatement technologies are unlikely to play a bigger role because the costs of CCS or other methods are "still high", while there are many sectors where there are cheaper, cleaner options, such as renewables. "Carbon capture can't be an excuse for business as usual," he says.

Turner has called on COP28 to commit to phasing out fossil fuels, with the following two or three UN climate summits setting out a pathway for how that would happen.

A failure to reach an agreement would be bad news for investors, businesses and the global goal to limit the temperature rise to 1.5C, says Bioy: "It would be tragic to hear 1.5C died in Dubai."

Inside

What to expect at the UN climate talks

COP28 The future of fossil fuels and who pays for climate damage will be up for debate, writes *Aime Williams*

'Not on track': this year's COP is expected to show that the world is falling short of the Paris target to limit global warming to 1.5C
Ina Fassbender/Getty

Tens of thousands of people are expected to descend on Dubai in the United Arab Emirates for the UN's COP28 climate summit where, during the next two weeks, negotiators will spend long hours haggling over how to limit global warming.

COP talks are often fractious. This year, diplomats are expected to argue over whether to phase out fossil fuels and who should help poorer nations pay for climate damages.

Scientists are increasingly concerned about rapid warming and the frequent extreme weather events propelled by it. For the world to achieve the goals of the Paris Agreement — struck at COP21 in 2015, to limit global warming to 1.5C above pre-industrial levels — scientists from the UN's Intergovernmental Panel on Climate Change now say greenhouse gas emissions need to fall by 43 per cent by 2030 compared with 2019.

As a result, an important part of the COP28 agenda is the "global stocktake" to assess the progress countries have made towards cutting emissions. This year's summit is expected to make clear that the world is not on track to limit global warming by the amount agreed in Paris and that more needs to be done. But by whom, and how, will be among the key questions up for debate.

The global stocktake
Parties at COP28 will be expected to sign off on a document measuring how the world is progressing in reducing emissions in line with the Paris Agreement goal of limiting warming to 1.5C. Countries will then need to agree on pathways to bring emissions under control. According to a UN report released this month, the world is heading for a temperature rise of between 2.5C and 2.9C and must take urgent action.

Despite almost 200 countries promising to set out plans for net zero emissions, many setting targets by 2050, the report said the world was "not on track".

"Because of the global stocktake, the stakes are particularly high [at this COP]," says Alden Meyer, a senior associate at climate and energy consultancy E3G. "This is the chance to send a signal, to have transformation and the course correction . . . to say that we're really going to double down on meeting what we committed to in Paris in 2015."

The future of fossil fuels
At COP27 in Egypt, more than 80 countries backed a proposal to gradually dump fossil fuels, which are by far the largest contributor to climate change, accounting for about three-quarters of greenhouse gas emissions. But the proposal was derailed by major oil and gas producing countries, including Russia and Saudi Arabia. This year, countries are again heading for a clash over whether to dump fossil fuels, and in what timeframe. Negotiators will also have to agree on how abatement technologies, which capture and store carbon emissions, fit in.

The US and the EU member states are among the countries calling for a timeline to phase out "unabated" fossil fuels (those burnt without the capture of emissions). But Russia — one of the world's largest crude oil producers — has said it would oppose any deal to reduce the use of fossil fuels. The UAE, an oil-producing country, will have the opportunity as the presiding nation to shape the outcome of these talks.

> Rich countries will be under pressure to deliver on pledges to help poorer countries adapt

The loss and damage fund
Countries agreed to set up a fund to help the developing world tackle the ravages of climate change when they met in Egypt last year. However, at COP28, governments will actually have to set up the fund and fill it with cash.

Talks about the fund ahead of COP28 have been fraught, with tensions between developed and developing countries running high over who should pay into it, and who should be allowed to claim money from it.

Developing countries have argued that the developed world, which is responsible for about 80 per cent of carbon emissions, should pay into the fund. The US and others have pushed back on the suggestion that any countries should be obliged to pay. A preliminary agreed text says the loss and damage fund will "invite financial contributions with developed country parties continuing to take this lead to provide financial resources". But this will need to be supported by all the almost 200 countries and adopted at COP. How much money will be contributed to the fund and who pays into it remain open questions. John Kerry, US presidential climate envoy, said the US will commit "several million dollars". The EU has pledged a "substantial contribution".

Methane and other greenhouse gases
The US and China agreed ahead of COP28 to rally other nations into having a summit on methane, a potent global warming gas, to be held as part of the talks. They agreed to include a broader array of greenhouse gas emissions in their next round of climate targets.

"It does seem that, finally, climate actors and national leaders around the world are recognising that methane is the key to limiting near-term temperature rises," says Paul Bledsoe, a former White House official and a lecturer at the American University. "For most of the last 30 years, these talks have been completely dominated by CO_2, and other greenhouse gases have been essentially ignored."

Although China has so far declined to join the global methane pledge — a broad agreement between 150 countries to collectively reduce methane emissions by 30 per cent by 2030 — it has announced it will track and reduce its methane emissions. However, it has not specified any targets or timelines. US officials say they hope to announce additional grant funding to tackle methane emissions at COP28.

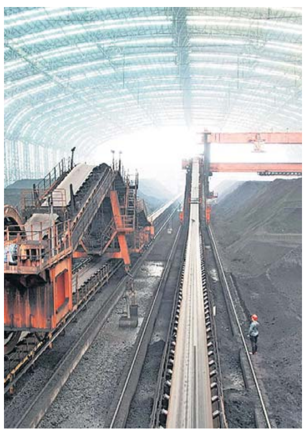
Financing adaptation
Rich countries will be under pressure to deliver on existing pledges to help poorer countries adapt to global warming — including a commitment made at COP26 in Glasgow to spend $40bn per year in adaptation finance by 2025.

A recent UN report found that developing countries need up to $387bn a year to adapt to climate change. But there is a "gap" of about $360bn between the money needed and the amount being spent.

China's coal habit casts doubt on Xi's promises

Energy policy

Reliance on the fuel puts clean energy progress at risk, writes *Edward White*



Coal storage in Jiangsu

In mid-October, as the Israel-Hamas war threatened to spill into a regional conflict, Sultan al-Jaber travelled to Beijing in pursuit of a diplomatic breakthrough on another existential problem: China's climate change policy.

It was the third trip by the president-designate of the UN COP28 climate summit to China this year. And his quiet shuttle diplomacy — albeit overshadowed by the conflict in the Middle East — highlights a deepening concern among western diplomats and experts that China's President Xi Jinping might be wavering in his commitment to fight climate change.

China is the world's biggest emitter of greenhouse gases, accounting for about 30 per cent of the global total, due to a massive reliance on coal-fuelled industry and power stations. But it is developing renewable energy rapidly. In 2020, Xi pledged two key targets — known as the *shuang tan*. First, that the country of 1.4bn people would reach peak CO_2 emissions by 2030. Second, that China will achieve net zero emissions by 2060.

The rise of China's world-beating clean tech industry has propelled stunning growth in renewable energy installations, drawing cautious optimism over national climate change policy. Since 2021, though, the number of new coal-fired power plants has also surged, sparking fears that Xi's policymakers are prioritising energy security and economic growth over climate pledges.

"If you look across China's clean tech sector — wind, solar, electric vehicles and energy storage — those are now just snowball[ing] by themselves," says Li Shuo, director of the China Climate Hub at the Asia Society Policy Institute in the US. "But you still need to deal with the dirty side of the energy system."

According to data from the Centre for Research on Energy and Clean Air, a European think-tank, a "spree" of permits for new coal power plants in China, which started in mid-2022, has continued through 2023. Taking into account projects announced or in the preparation stage, but not yet permitted, China's coal power capacity could still rise by 33 per cent from 2022 levels, according to CREA.

Li points to a "long list" of issues that have battered Chinese climate change momentum since around mid-2021. It includes a spate of blackouts in China and the Russia-Ukraine war, which contributed to anxieties around energy security. The country's macroeconomic slowdown and property crisis have shifted the government's focus back to growth and protecting jobs.

The deterioration of US-China relations to a new low has also hampered progress. Talks between Xi's envoy Xie Zhenhua and his US counterpart John Kerry were frozen for almost a year following the visit of then-US House Speaker Nancy Pelosi to Taiwan in 2022.

But, in a sign that tensions may be easing, the pair formally reignited bilateral climate negotiations in July and have held further talks since then. At a meeting in San Francisco this month, US President Joe Biden and President Xi also expressed renewed willingness to co-operate on climate policy and to accelerate the rollout of clean energy.

Both countries agreed to include a broader array of greenhouse gases in their existing 2035 climate targets, including methane and nitrous oxide (previous commitments by China covered only carbon dioxide).

> 'Wind, solar, EVs . . . are now snowball[ing]. But you still need to deal with the dirty side of energy'

Many in the west believe China's leadership at COP is needed to encourage developing nations to agree on a new global emissions stocktake, as well as a new fund for loss and damage. However, the FT reported only in July that China, backed up by Saudi Arabia, had obstructed G20 climate negotiations in India. China refused to debate targets to reduce total emissions by almost half by 2030, and rejected an agreement for global emissions to peak by 2025.

Michal Meidan, director of the China Energy Programme at the Oxford Institute for Energy Studies, points out that the reversion to coal is, at the least, "complicating" the outlook for China's longer-term goals.

"China's carbon emissions will peak before 2030," she says. "But how high, and how soon before 2030? And then, in order to undo all of that before 2060, how much is it going to cost? How many stranded assets? What does it mean for people employed by the coal sector? All of those are open questions."

Meidan adds that, while the pace and breadth of China's renewable energy achievements often go unappreciated in the west, the mood among Chinese policymakers appears to have shifted.

"Two years ago, there were lots of voices in Beijing saying we can peak in 2026-2027 at a relatively low rate. Those voices are softer now," she says.

Ahead of COP, there is also concern that moves by western capitals to block Chinese companies from clean tech investment will weaken the west's case in encouraging China to strengthen its climate commitments. That includes Biden's Inflation Reduction Act, which doles out hundreds of billions of dollars in clean tech subsidies while blocking Chinese involvement, as well as the EU's decision in September to launch an anti-subsidy probe into China's electric vehicle industry, to shield European manufacturers before they are priced out.

"I don't think China is naive enough to believe this will be sorted in the climate negotiations, but the Chinese side will explicitly register their concern regarding unilateralism and trade measures," says Li at the Asia Society.

"Trade politics is definitely getting into the climate space."

US climate law triggers global shifts in cleantech supply chain

Legislation

Trading partners struggle to compete with potential $1tn spending of President Biden's Inflation Reduction Act, writes *Amanda Chu*

When US President Joe Biden passed his flagship climate law last year, he ushered the world into a new era of industrial policy.

The Inflation Reduction Act (IRA) marked the most significant legislative action the US has ever taken to reduce emissions, with $370bn in tax credits, grants and loans to rapidly decarbonise the world's largest economy — while also building out a domestic supply chain for clean technologies.

Overnight, the US became one of the most attractive destinations for clean-tech investment, much to the ire of the country's trading partners, including the EU, which said the law had created "unfair competition".

"Europe was probably in the lead if you had asked me 18 months ago, but now I think they're playing catch-up," says Fredrik Mowill, chief executive of Hystar, a Norwegian hydrogen company. Hystar is scouting sites for its first gigafactory in North America, a decision Mowill says was catalysed by the IRA.

The move by Hystar underscores the profound shifts under way in the global supply chain as a result of Biden's climate law, with investors rushing to make historic commitments to manufacture in the US, and countries racing to protect their stake in the clean energy future. More than $200bn has been invested in US clean energy this year, a 37 per cent increase on the previous year, according to an analysis by think-tank Rhodium Group.

Many countries have since introduced competing incentives to counter the IRA and protect domestic industries. In March, the EU proposed the Net-Zero Industry Act, promising to speed up administrative timelines and allow member states to match incentives for projects at risk of going abroad.

Similarly, in its 2023 budget, Canada proposed C$20.9bn ($15.5bn) worth of incentives, including tax credits for clean electricity and hydrogen, as part of its Made in Canada plan, which cites the IRA as a "major challenge" to the country's competitiveness.

"There's a little bit of an arms race . . . between industrial nations. Nobody wants to lose their competitive edge," says Chris Taylor, chief executive of GridStor, a US battery storage company. "Industrial policy is back at the forefront all over the globe."

But sceptics question whether any country can compete with the size and might of the IRA, which analysts at banks such as Credit Suisse and Goldman Sachs predict could result in more than $1tn of federal spending because of the uncapped nature of its tax credits.

Its movement away from globalisation in a crucial decade for climate action has also sparked concern among analysts that a slower trajectory of emission reductions may result.

> 'There's a little bit of an arms race . . . between industrial nations'
> **Chris Taylor, GridStor**

"There is a lot more that could be done in terms of developing low-carbon energy in the US if restrictions compelling or incentivising companies to use American-made products were abandoned," says Ed Crooks, Americas vice-chair of consultancy Wood Mackenzie.

So far, the Biden administration has walked a tightrope as it tries to balance climate policy with domestic manufacturing within the IRA. Developers say its domestic content restrictions are too difficult to meet, while local manufacturers demand a stricter interpretation of a US-made product.

Wind turbine manufacture in the US

Andrés Gluski, chief executive of AES, one of the largest renewables developers in the world, says that, even with IRA tax credits, US restrictions on Chinese imports make the country a more expensive market for projects than Chile, for example, where solar panels are 50-80 per cent cheaper.

But he adds: "The US is such a big economy that there is a worry that it will suck up a lot of the equipment, a lot of the financing available — I'm not seeing that." Gluski suggests the "most important part of the IRA" may be in its ability to deploy capital at nascent technologies and help commercialise new solutions.

Others question whether US-made products can be competitive with imports especially once the 10-year sweeteners in the IRA expire. China is the leading producer of clean technologies, making three-quarters of the world's batteries and solar modules, and processing more than half of critical materials, such as cobalt and graphite. And a BloombergNEF report has warned that new US solar cell factories could become "functionally obsolete" in the next five years because of long timelines for construction and lack of competitiveness, compared with Asia.

The US clean energy buildout is also running into a tight labour market, a tough macroeconomic backdrop, and an outdated grid and permitting system. Nearly 90 per cent of construction companies are struggling to hire workers, according to Associated Builders and Contractors, a US industry lobbying group. Delays in tax credit rules and threats from the Republican party to roll back the IRA have further raised uncertainty for investors.

"How [the IRA] plays out is the thing that keeps us as investors awake at night, because the IRA is a fantastic front-end incentive to get factories built, but it does nothing to keep them solvent for the 30 years," warned David Scaysbrook, co-founder of Quinbrook Infrastructure Partners, at the FT's Investing in America summit on November 7. "There'll be a great upfront sugar hit of new manufacturing capacity, and then you're going to see a bunch of broken dreams," he predicted.

Why putting a price on carbon is fraught with difficulty

Carbon pricing

Canada is the latest state to run into political obstacles, writes *Delphine Strauss*

"Axe the tax" has become the rallying cry for political opponents of Justin Trudeau, Canada's prime minister. Last month, they forced him into an embarrassing climbdown over his flagship climate policy.

Canada's carbon pricing system, in place since 2019, is seen as a test case of how to win voters' support for a green transition that carries costs for consumers in the short term. It gives each province and territory the freedom to design its own system, with the proceeds — set to rise over time, in line with the federal price on pollution — collected locally and returned to households through a system of rebates.

But, despite this design, the levy remains so unpopular that Trudeau was pressured into agreeing a three-year delay to its imposition on home heating oil, in order to keep alive his chances of re-election in 2025.

Trudeau's travails show how difficult it remains to win public acceptance for policies that impose the upfront costs of the net zero transition on households and companies already struggling with high inflation.

Other leaders are similarly hesitant. In France, president Emmanuel Macron, stung by the *gilets jaunes* protest movement that began in 2018 over fuel taxes, has called for a "regulatory pause" on new green measures. In the UK, Prime Minister Rishi Sunak has delayed bans on the sale of new gas boilers and new petrol and diesel cars.

All this comes in the context of a drive by US President Biden's administration to turn the green transition into a vote-winning, job-creating juggernaut — by pouring taxpayer money into subsidies for clean energy investment.

This subsidy-driven approach has alarmed some economists, because it looks likely to be a vastly more expensive method of achieving climate goals than market-driven mechanisms.

"It sounds so much nicer, but the numbers just don't work out . . . The state doesn't have deep enough pockets to pay for all of the decarbonisation we need," says Georg Zachmann, a senior fellow at Bruegel, a Brussels-based economic think-tank.

For years, economists have been urging governments to put a price on carbon — via taxes or emissions-trading systems — as the most cost-effective way to spur investment in decarbonisation, encourage energy efficiency, and create a level playing field for companies adopting clean technology.

In October, the IMF warned that the fiscal cost of tackling climate change could be "unsustainable" without a tax on pollution. Vitor Gaspar, IMF director of fiscal affairs, said that "scaling up the current policy mix, heavy on subsidies and other components of spending" could raise public debt in a typical economy by 40-50 percentage points of gross domestic product by the middle of this century.

But any global deal to set a carbon price — or even adopt the IMF's suggestion of a looser minimum price floor for big emitters — remains an elusive goal.

Trudeau: delayed move as poll looms

"It's the theoretical ideal, but it's practically infeasible," says Misato Sato, a research fellow at the Grantham Research Institute on Climate Change and the Environment.

An annual stock-take by the World Bank found that direct carbon-pricing mechanisms — whether taxes, credits or emissions trading systems — covered just 23 per cent of global greenhouse gas emissions in 2023, up from 7 per cent a decade ago but very little changed from 12 months earlier.

More worryingly, less than 5 per cent of global emissions were covered by a price high enough to drive investments at the scale and pace needed and, in many countries, carbon prices did not keep pace with inflation.

This means the effect of carbon taxes and trading is still "dwarfed" by the impact of traditional fuel excise duties and fossil fuel subsidies worth more than $1tn a year, the World Bank said.

Yet economists believe that, despite this sluggish progress, there are grounds for optimism, with a growing recognition that carbon pricing needs to be part of a mix of policies, combined with regulation, subsidies to spur innovation, and fiscal help for poorer households and countries to adjust.

Developing countries should not yet be expected to burden their economies with carbon prices as high as those already in place in the EU, since they did not bear the same responsibility for past emissions, argues Simone Tagliapietra, a senior fellow at Bruegel.

China's nascent emissions trading scheme does not yet have a broad enough scope or a high enough price, notes Zachmann — but it could be ramped up in future, and is already prompting other big emitters in the region, including India and Indonesia, to develop their own strategies.

Sato says the EU's policy of returning revenues from its emissions trading schemes to member states, to be spent on climate-related activities, has "visibly worked to buy political support for those schemes".

Meanwhile, the EU's new Carbon Border Adjustment Mechanism — which, from 2026, will tax carbon-intensive imports from countries outside the bloc that have weaker climate regulations — could spur some key trade partners into action. But, as the EU extends its pricing regime to areas that affect voters more directly, such as transport and buildings, it is increasingly important to channel the revenues into protecting poorer households and helping those on middle incomes to take up greener alternatives, says Tagliapietra.

"Carbon pricing should go hand in hand with carbon dividends . . . Without carbon dividends, it is socially and politically unsustainable," he says.

The good and bad news on climate change

OPINION

Martin Wolf

In containing runaway climate change, humanity is, predictably, succeeding at what it does best — technological innovation — and failing at what it does worst — reaching difficult political agreements.

The question is whether the successes of the former will outweigh the failures of the latter. The answer is that the odds have improved, but they are still not good enough.

By now, there is less doubt over whether technology will, in time, triumph. That was not how it looked two decades ago. But the combination of technological innovation with learning by doing has led to a huge reduction in the cost of renewable energy. Solar and wind are increasingly competitive with conventional fuels. An energy system based on clean electricity is now conceivable.

Given, in addition, renewable energy's other advantages — less local pollution and wider geographical distribution of energy-generating resources — it will win, in the end. But "in the end" is likely to be too late. The energy transition needs to accelerate. Time matters.

These points come out powerfully from the International Energy Agency's latest World Energy Outlook.

On the optimistic side, it argues for the first time that, under its "stated policies scenario" (STEPS), based on governments' actual policies, "each of the three fossil fuel categories [oil, natural gas and coal] is now projected to reach a peak by 2030". That is the first time this result has emerged under this scenario.

On the pessimistic side, however, even these large and ongoing shifts away from today's overwhelming reliance on fossil fuels will not be enough to achieve net zero emissions by 2050. On the contrary, consumption of oil and natural gas is forecast to plateau after 2030, not fall sharply, as is needed. That would require much faster deployment of clean energy technologies and, therefore, higher investment than is now expected.

This pessimism may be understood in two ways.

The first is that the global average surface temperatures are already at least 1.1C above pre-industrial levels, while emissions of greenhouse gases have not yet even peaked. On our present path, there is next to no chance of limiting the global temperature increase to below 1.5C, as scientists recommend.

The second is that moving more rapidly in a better direction, as defined by the IEA in its "net zero emissions (NZE) by 2050" scenario, will require increased investment in clean sources and so both stronger incentives and more finance.

This last point will be particularly important for emerging and developing countries (other than China), where finance is in short supply — partly because these destinations are deemed so risky by investors.

Green transition: renewable energy sources, such as wind, are increasingly competitive — Sean Gallup/Getty

Fortunately, the higher investment needed in clean energy is more dependent on redirection away from investment in fossil fuels than on a big overall increase.

Investment in fossil fuels is expected to be around 60 per cent of investment in clean sources in 2023. This ratio would fall to 10 per cent in 2020, under the NZE 2050 scenario.

Given this huge shift in the composition of investment, overall energy investment need only increase from 3 to 4 per cent of world output between 2023 and 2030. The question, then, is how to implement more quickly what looks to be a more feasible and less costly transition. The policy challenge this raises is to create a supportive policy framework. This must cover incentives, regulations and financing. On the last of these, for example, the big challenge is to get finance to flow to emerging and developing countries. Part of the solution is to use the balance sheets of multilateral development banks more imaginatively.

Yet behind such relatively technical policy challenges lie political obstacles. These are, above all, distributional.

The high-income countries, which benefited from emissions-intensive growth in the past, need to help the poorer ones transition to a different path now. Not surprisingly, they expect no domestic political benefit to come from making any such large-scale transfers of resources abroad.

Equally, little benefit will come to the producers of fossil fuels, such as the United Arab Emirates, host of COP28, from accelerating the transition away from what they depend on. No more do businesses engaged in the fossil fuel industry wish to advance this shift.

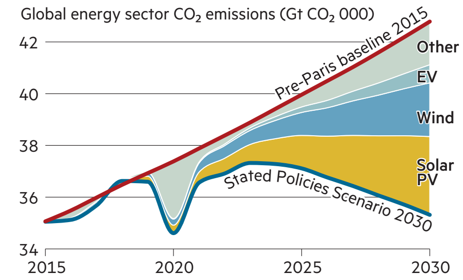
Again, relatively poor people, even in rich countries, do not wish — or feel unable — to bear the costs of a brand new electric car, a heat pump, or better insulation, if they are to switch to a low-emissions lifestyle. They will need significant help. But that, too, will create political difficulties.

Will COP28 accelerate the shift to clean energy? The answer depends heavily on how these distributional difficulties — both global and domestic — are dealt with. The energy transition has, indeed, become more feasible and cheaper than one used to think. That offers an opportunity. Yet costs are still to be borne. The negotiations will only succeed if the countries and the people with broader shoulders are prepared to do so.

Martin Wolf is the FT's chief economics commentator

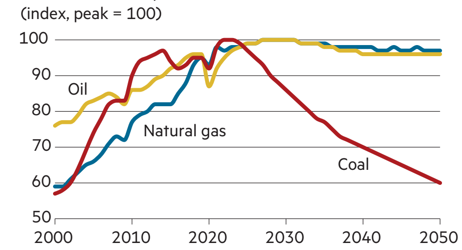
Solar PV, wind power and electric vehicles cut emissions by 6 Gt below the pre-Paris baseline

Global energy sector CO_2 emissions (Gt CO_2 000)



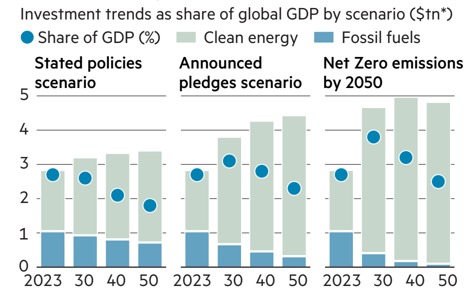
All fossil fuels peak before the end of this decade

Fossil fuel consumption in Stated Policies Scenario (index, peak = 100)



Investment requirements as a share of GDP are projected to fall after 2030

Investment trends as share of global GDP by scenario ($tn*)



*2022 market exchange rate Source: IEA World Energy Outlook 2023

Tangle of climate disclosure rules risks causing 'reporting fatigue'

Compliance

Companies urge flexibility to ease burden of new but differing requirements, writes *Patrick Temple-West*

Next year is poised to be a seminal one for companies' climate disclosures. Thousands of multinationals with businesses in Europe will be required to start reporting their climate impact under the Corporate Sustainability Reporting Directive (CSRD).

Their reports are expected to include more information about pollution, water use, and impact on communities.

At the same time, in the US, the Securities and Exchange Commission is expected to adopt climate disclosure rules. If the rules are finalised largely as proposed in 2022, they will impose a requirement to reveal unprecedented detail about companies' climate risks. Certain information on emissions would also need to be audited.

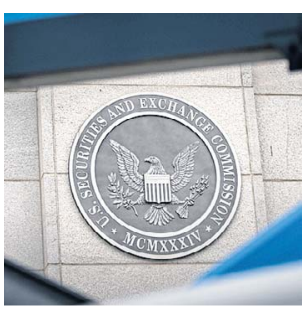
Other global economies are also pushing mandatory climate disclosure. Australia has proposed, from July, new reporting that aligns with the International Sustainability Standards Board, which is setting guidelines to follow.

However, with all of these new rules coming into operation at about the same time, companies are raising concerns about competing regulatory regimes.

Scores of US companies have written to the SEC to urge it to allow some leeway where its regulations diverge from European requirements. And, last year, the American Chemistry Council, which lobbies for chemical companies, asked the SEC for "flexibility" when the commission's climate rules conflict with those of the EU and UK.

"We have noticed that, due to an evolving landscape, [companies] are facing a 'reporting fatigue' — confused by the requirements of various standards and frameworks and the requirements of investors and rating agencies," says Eelco van der Enden, chief executive of the Global Reporting Initiative, an Amsterdam-based non-profit founded in 1997 to measure companies' environmental and social impacts.

Businesses want reporting requirements they can comply with at a low cost, he says. "We are not that worried about mismatches between requirements. We are, however, aware that small [and medium-sized] enterprises have more difficulty accounting for their emissions and, if required to, find it challenging delivering information for scope 3 (emissions)." Scope 3 is the broadest measurement of greenhouse gas emissions and includes those produced by a company's suppliers.



The SEC has yet to finalise its rules

The climate reporting picture in the US is complicated by a new law in California, the biggest state by population.

In 2026, California will require public and private companies with more than $1bn in annual revenues that conduct business in the state to disclose emissions, with Scope 3 emissions included from 2027.

California's new rules go further than the SEC's planned requirements, says Lily Hsueh, associate professor of public policy and economics at Arizona State University. "The state's new laws are poised to have substantial influence worldwide," she says. "Subsidiaries of companies that didn't have to report their emissions before will now be subject to disclosure requirements."

As the fifth-biggest economy in the world (if it were a country), California is "in effect exercising its immense market leverage to establish climate disclosures as standard practice in the US and beyond", Hsueh says.

Many global businesses already voluntarily report some climate information. The CDP (a non-profit formerly known as the Carbon Disclosure Project) said last year that 400 companies from the S&P 500 had disclosed data on their climate response in 2021.

Still, the organisations writing standards for climate disclosures have recognised the challenges companies face and are trying to simplify obligations. The ISSB was established by accounting standards setter the International Financial Reporting Standards Foundation to establish standards for the environmental, social and governance (ESG) reporting that it hopes will be embraced by governments.

Beginning next year, the ISSB will take over the monitoring of companies' climate disclosures that adhere to the Task Force on Climate-related Financial Disclosures (TCFD). The TCFD was created in 2017 to encourage companies to report their annual emissions and include a climate risk analysis in their annual reports.

"This announcement provides yet further clarification of the so-called alphabet soup of ESG initiatives for companies and investors," says Emmanuel Faber, ISSB chair. The TCFD was seen as a precursor to the accounting standards established by the ISSB.

Last year, the ISSB and the independent Global Reporting Initiative said they would share information in an effort to create a global disclosure system. The CDP has also aligned its questionnaire with the TCFD since 2018.

In 2024, many countries will start adopting and implementing ISSB standards into their laws and rules, notes Kristina Wyatt, chief sustainability officer at Persefoni, a carbon-tracking software provider. For now, "there is a bit of anxious waiting to see what will be in the final SEC rule," she says. "There will necessarily be some mismatch between the SEC and the EU because they rest on different legal frameworks."

The EU's CSRD rules require companies to report on the impact of climate change and sustainability issues on their business and the environmental impact of their operations. This concept of "double materiality" for corporate reporting does not exist in the US.

But the closer the SEC, EU and ISSB can be to each other, the better, says Wyatt. "The more of a mismatch between the SEC and the EU, the more likely it is that companies will file different reports for different jurisdictions," she says. "That translates into additional cost, effort and risk of inconsistency. That's not optimal for companies or their investors."

Commitments Become Results

The GGX × TCFD Summit, sponsored by Japan's Ministry of Economy, Trade and Industry (METI), convened in Tokyo on October 2. That gathering combined two events formerly held separately: the Global Green Transformation Conference focused on reconciling decarbonization and economic vitality, and the Task Force on Climate-related Financial Disclosures Summit, focused on quantifying the effect of corporate activity. Cosponsoring the 2023 gathering were Japan's TCFD Consortium and the World Business Council for Sustainable Development (WBCSD).

TOKYO GX WEEK

GGX × TCFD SUMMIT

JAPAN WEEKS

Welcome Message

Carrot and Stick

Hatakeyama Yojiro, *Director General, Industrial Science, Technology and Environment Policy Bureau, Ministry of Economy, Trade and Industry (METI)*

"Japan has declared its goal of achieving carbon neutrality by 2050," Hatakeyama reminded his listeners." Achieving that goal will depend, he emphasized, on "green transformation."

"The Japanese government has developed a package of policies for the realization of GX. Twenty trillion yen worth of GX Economy Transition Bonds will be issued over the course of 10 years to bring out a cumulative total of more than ¥150 trillion, or $1.1 trillion, in public and private decarbonization investments. The advance investment and implementation of carbon pricing, along with showing the schedule for implementing such policies to provide predictability, work as a carrot and stick for incentivizing businesses to make earlier commitments towards GX."

"Actions for climate change mitigation cannot wait," intoned Hatakeyama in conclusion. He expressed "confidence that today's discussions between world-leading investors, corporate executives, and policymakers will highlight ways that financing and disclosure can contribute to the global green transformation."

Opening Remarks

Challenge Zero

Tokura Masakazu, *Chairman, Keidanren (Japan Business Federation)*

"Japan's green transformation," declared Tokura, "has launched into the implementation phase. Keidanren is promoting its Challenge Zero project based on the recognition that achieving GX will hinge on technologies that do not yet exist. Nearly 200 companies and organizations have declared ambitious plans for R&D, social deployment, and finance, and I hope that they will receive robust, long-term support."

Sustainable Finance

Kato Masahiko, *Chairperson, Japanese Bankers Association (JBA)*

"Companies face mounting expectations in regard to sustainability disclosure. And the banking industry is moving to help corporate clients cope with the related challenges. We at Mizuho Bank, for example, have earmarked ¥100 trillion for sustainable finance over the years to 2030. And we are reinforcing our client engagement in regard to sustainability by mobilizing our expertise in industrial and technological matters."

In Real Time

David Atkin, *CEO, Principles for Responsible Investment (PRI)*

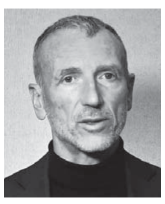
"The PRI team is here in Tokyo this week," revealed Atkin, "for our annual PRI in Person conference. We're witnessing the increasing momentum of sustainable finance in real time. Efforts are underway to create a shift towards economies, societies, and industrial structures centered on clean energy. More than 120 Japanese investors have joined us as PRI signatories, making a public commitment to responsible investment."

Keynotes

Italy's G7 Presidency

Gianluigi Benedetti, *Ambassador, Embassy of Italy in Tokyo*

"Decarbonizing," observed Benedetti, "is essential for two reasons: One is to maintain competitive industry in an international market where the cost of carbon emissions will have an increasingly large impact on the cost of production. The other is to avoid the economic and social impacts that carbon leakage and deindustrialization of the most advanced economies could have. The Italian G7 presidency will start from the legacy of the Japanese presidency, moving forward on this common path and trying to reach goals that are even more ambitious."



Inaugural Standards

Emmanuel Faber, *Chair, International Sustainability Standards Board (ISSB)*

The ISSB will assume the responsibility for TCFD monitoring in 2024. "We launched this June," reported ISSB chair Faber, "our inaugural standards. IFRS S1 provides a set of overarching disclosure requirements designed to enable companies to communicate to investors about the sustainability-related risks and opportunities they face over the short, the mid-, and the long term. IFRS S2, which sets out specific climate-related disclosures and is designed to be used with IFRS S1, also incorporates the recommendations of the TCFD."

Management for Transcendent Risk

Miyazono Masataka, *President, Government Pension Investment Fund*

"The Government Pension Investment Fund manages more than ¥200 trillion in a broadly distributed investment that spans numerous nations and markets. Climate change risk affects all asset classes and issues, so even distributed investment cannot negate it completely. That risk presents an extremely high likelihood of manifesting over the long term, and that is why we at the Government Pension Investment Fund lent our support early on to the TCFD and is why we employ its analytical methodology."

Fiduciary Responsibility

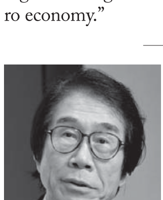
Mizuno Hiromichi, *Founder and CEO, Good Steward Partners*

"I have asked portfolio managers if they believe that climate risk will affect their performance, and the answer has been universally 'Yes.' When portfolio managers perceive a fundamental risk to their portfolio, they have a fiduciary responsibility to manage that risk. And the TCFD has provided a high-level framework for climate opportunity and risk disclosure. It is not necessarily the final word, but it has the best chance of becoming a mainstream disclosure framework for sustainability."

Four Key Strategies

Mary Schapiro, *Vice Chair for Global Public Policy at Bloomberg and Special Adviser to the Founder; Head of the TCFD Secretariat; Vice Chair, Glasgow Financial Alliance for Net Zero (GFANZ)*

"Our transition plan framework identifies at GFANZ identifies four key strategies of transition finance: One, support climate solutions—the technologies and products that will enable the economy to decarbonize; two, finance business models already aligned with a science-based pathway to net-zero; three, go where the emissions are and finance companies that have credible transition plans; and four, back the managed phaseout of high-emitting assets at risk of being stranded in a net-zero economy."



Real-World Disclosure

Ito Kunio, *Chair, TCFD Consortium; Director, Hitotsubashi CFO Education and Research Center*

"The number of Japanese organizations that support the TCFD," comments Japan's iconic TCFD spokesperson Ito, "is 1,454—more than double the number in the second most numerous nation. The Tokyo Stock Exchange has revised its Corporate Governance Code to mandate TCFD disclosure for Prime Market listees. I hope that through today's discussions companies will enhance their TCFD disclosures and that financial institutions will appropriately evaluate them, resulting in the provision of financing for addressing climate change."

Panel Discussion 1

Industrial Decarbonization

Chair Peter Bakker, of the World Business Council for Sustainable Development, opened the industrial decarbonization discussion with a question about the importance of green product demand. "The Japanese government believes," answered METI's Kobayashi Izuru, "in persuading consumers and other downstream buyers to prefer green products and materials over less green ones. Green products are generally more expensive, so we need policy intervention."

"We really need to think outside the box," insisted the World Economic Forum's Nancy Gillis, "to think of how financing models can support the supply side." "Our green procurement pledge is doable," argued the UN Industrial Development Organization's Rana Ghoneim, "and it is something that all governments need to start on today."

JFE Steel's Tezuka Hiroyuki identified a dilemma. "We are striving to reduce carbon dioxide emissions in production 30% by 2030, and the resultant steel will be as good as traditional high-carbon steel. But it will cost more, so policy supports for developing and securing green markets will be necessary." The same dilemma affects the chemical industry, commented Mitsubishi Chemical Group's Mita Noriyuki. Mita, who chairs the International Council of Chemical Associations' Energy and Climate Change Leadership Group, highlighted the need for "policy innovation to create green demand in the early stages [of the journey to net-zero]."

Panel Discussion 2

Solution Provider and Avoided Emissions

Chair Hayashi Reiko, of BofA Securities Japan, prefaced the discussion with an explanation of the title. "Companies are expected to create value," said Hayashi, "by contributing to solving social challenges through their business activity." In regard to greenhouse gas emissions, the Greenhouse Gas Protocol's Phase 1, 2, and 3 guidelines suffice, Hayashi explained, for steering reductions in negative impacts. "But a new approach is necessary to promote positive impacts."

Uehara Hirotoshi, of Panasonic, offered a quantitative look at his company's plans for solution-providing. "We will contribute to 200 million tons of avoided emissions and will continue to report progress in avoided emissions as a sign that we are accelerating business transformation and growth." "Our ecological transformation," explained Veolia Asia's Philippe Breant, "is based on three pillars. The first is the recycling of resources. The second is the depollution of waste. And the third is decarbonization."

"Investors are motivated by opportunity, by what is going to be the growth market," reflected Nomura Asset Management's Jason Mortimer. "Where can we invest to deliver returns? That's what's really interesting on the avoided emissions side." "Various ways of calculating avoided emissions were available," recollected Schneider Electric Japan's Hiruta Takako. "However, in order to avoid any sense of greenwashing, we are developing an international standard for methodologies, including avoided emissions, at the International Electrotechnical Commission."

Panel Discussion 3

The Future of Climate-Related Financial Disclosure

Chair Nagamura Masaaki, of Tokio Marine Holdings, opened the financial disclosure discussion by seeking input from Mitsubishi UFJ Financial Group's Ishikawa Tomohiro. "More than 650 financial institutions, including 20-plus in Japan, have committed to net-zero," responded Ishikawa, who serves on the GFANZ working group for transition finance. "In order to assess the financial institutions' contribution to net-zero, we need to focus not only on financed emissions but look into other metrics, such as avoided emissions, as discussed in Japan's public-private working group and GFANZ."

"One thing I would flag," offered GFANZ's Alex Michie in seconding Ishikawa's comments, "is the importance of high-quality net-zero transition plans. GFANZ delivered a transition plan framework to COP27 last year. And we've seen well over 50 financial institutions using that framework this year."

"We in the Japanese government," reported the Financial Services Agency's Ikeda Satoshi, "recognized the need for a financial framework that assessed the impact of action by the corporates. And we have sought to ensure that financing will flow to companies that tackle carbon emission reduction."

JERA's Kitagawa Keiko summarized the measures at her company—Japan's largest electric power provider—to attain net-zero. "TCFD has taken hold among investors," she added, "and they have rushed to hear about our decarbonization strategy."

Panel Discussion 4

Further Promotion of Transition Finance

Chair Kihara Shinichi, of METI, summarized at the outset of the transition finance discussion Japanese government support for and participation in transition finance. He then invited the International Capital Market Association's Nicholas Pfaff to describe his association's framework for promoting transition finance. "We revised the Climate Transition Finance Handbook this June," replied Pfaff, "which summarizes four key elements; climate transition strategy and governance, business model environmental materiality, 'scienced-based' strategy and targets, and implementation transparency."

"Our transition will require an unbelievable capital allotment," acknowledged Climate Bonds Initiative's Sean Kidney. "It is important to redirect capital into transition. We need to explore every possibility for decarbonization and policies, such as Invest EU, the US Inflation Reduction Act, and Japan's GX, to become a boom. I hope Japan will lead the way in showing how to finance transition."

"We have talked a lot about green finance," remarked the European Investment Bank's Eila Kreivi. "But we are now focusing more on transition finance. It's like retrofitting buildings, because we cannot expect to tear down all existing buildings and build new net-zero buildings instead."

"We issued ¥20 billion in transition bonds last year," said IHI's Kubota Nobuhiko. IHI used the proceeds to help finance its work in developing technologies for using, transporting, and storing ammonia, a net-zero alternative to fossil fuels, and Kubota introduced examples of those technologies.

Closing Remarks

Concept to Action

Peter Bakker, President and CEO, World Business Council for Sustainable Development

Bakker had quoted COP28 president-designate Sultan Al Jaber in remarks earlier in the day: "Come to [the climate summit in] Dubai not with pessimism but with hope, not with more commitments but with actionable solutions." And he wrapped up the GGX x TCFD Summit in that spirit. "Climate transition is no longer just a concept. It is a driving force, a call to action."

tcfd-summit.go.jp/resultEn.html

Organiser

METI Ministry of Economy, Trade and Industry

Co-organisers

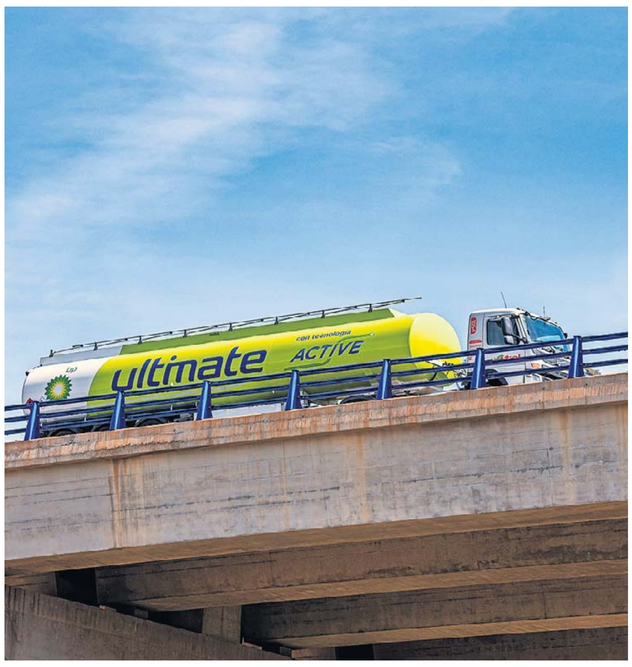
World Business Council for Sustainable Development

TCFD Consortium

Ad placement by METI

Oil and gas companies stall on net zero plans

Fossil fuels Progress has been mixed, as producers argue they have to meet high demand alongside green investment goals, writes *Tom Wilson*



In the years following the Paris climate agreement in 2015, some of the world's largest oil and gas producers made commitments to cut their emissions as political and corporate leaders rallied around new efforts to slow global warming.

Eight years later, as politicians and executives prepare to meet in Dubai, the commitments remain in place — but the role of the hydrocarbons industry in the world's shift towards clean energy has become more contested.

While the biggest oil and gas companies, particularly in Europe, are investing in greener products such as biofuels and renewables to lower their emissions, the energy crisis sparked by resurgent demand and Russia's invasion of Ukraine has been used by some leaders to justify continued investment in fossil fuel production.

"Progress on emissions has stalled," says Mike Coffin, a former BP geologist who is now head of oil, gas and mining at Carbon Tracker, a think-tank. "We've seen incremental progress from some people and some new net zero goals," following on from initial targets, he notes, but very few commitments to cut production. "Decarbonising oil and gas producers basically means planning for production decline," he argues.

An alternative view is that the perceived slowdown in progress is just a necessary recalibration in the move from the heady optimism of target setting to the reality of execution.

"It's only really when you get into doing something that you understand the challenges," says Joanne Salih, a partner in the energy and natural resources division at consultancy Oliver Wyman. "This is not a case of committing less, or stopping or stalling, it's a time to make realistic plans and start implementing, and the oil and gas industry has a real part to play in that."

Operational emissions

Decarbonisation efforts by oil and gas companies focus on reducing emissions in two categories: operational emissions released during production, known as scope 1 and scope 2; and lifecycle emissions released when the fuels are burnt, known as scope 3.

Given that drastic cuts in lifecycle emissions can only really be achieved by selling — and therefore burning — less fossil fuel, most producers have focused on scope 1 and 2.

In 2022, their production, transporting and processing of oil and gas produced the equivalent of 5.1bn tonnes of greenhouse gas emissions — which represented just under 15 per cent of all emissions from energy and industrial processes, according to the International Energy Agency. However, based on an IEA analysis of the 40 largest oil and gas companies, only about half of global oil and gas production comes from companies that have declared targets to reduce their scope 1 and 2 emissions. And "only a fraction" of those targets have the pace of reductions needed, it adds. The IEA estimates that the industry's scope 1 and scope 2 emissions will have to fall by more than 50 per cent this decade for the world to be on track to achieve net zero global emissions by 2050.

The picture across the industry is mixed. In Europe, Italy's Eni has pledged to reduce its scope 1 and 2 emissions to net zero by 2035, while BP and Shell are targeting 50 per cent declines by 2030. By contrast, in the Gulf, the world's biggest oil producer Saudi Aramco is only seeking a 15 per cent decline by 2035 and that is on a "carbon intensity" basis — meaning it aims to reduce the average amount of emissions for each unit of energy produced, rather than absolute emissions. This will make it easier for Aramco to increase overall production and still hit its target.

The state-owned Saudi Arabian giant is spending billions of dollars on increasing its maximum production capacity from 12mn barrels a day of crude oil to 13mn b/d by 2027.

Companies can cut their scope 1 and 2 emissions by reducing methane leakage, eliminating the flaring of excess gas on site, powering oil and gas production facilities with green electricity, installing carbon capture and storage (CCS) technology, and expanding the use of green hydrogen to power refineries.

Of these, cutting methane emissions is a main agenda item at COP28. Methane is the principal component of natural gas and a potent contributor to global warming, accounting for about 30 per cent of the global temperature rise since the industrial revolution.

Sultan al-Jaber — who is both president-designate of COP28 and head of the Abu Dhabi National Oil Company (Adnoc) — is pushing for fossil fuel-

Clockwise from top left: Shell and BP are among only nine of the biggest oil producers to have committed to addressing Scope 3 emissions, according to Carbon Tracker (see table, right).
Below: demand for fossil fuels remains high, Sultan al-Jaber
Andrey Rudakov/Bloomberg, Alamy, John MacDougall/AP

intensive companies to join a "Global Decarbonization Alliance" and commit to "near zero" emissions of methane from their operations by 2030. More than 20 companies are in talks to join the body, he told the FT in October. If it comes about, the alliance will be presented as a major achievement by the United Arab Emirates.

Coffin says he welcomes the initiative but warns it should not distract from the thornier problem of scope 3 emissions. "Yes, it is a step in the right direction but that is not all you need to do," he notes.

Supply and demand

While the industry's operational emissions are significant, the IEA estimates they are only 15 per cent of the lifecycle emissions of gas and 20 per cent of oil. That means as much as 85 per cent of the industry's carbon emissions are produced when its products are burnt by consumers. But, so far, only nine of the world's largest oil and gas producers have committed to address scope 3 emissions, according to Carbon Tracker: Eni, TotalEnergies, Repsol, BP, Shell, Equinor, Occidental Energy, Suncor and Chevron.

And it says only Eni's targets can be judged to be "potentially Paris-aligned" as they include interim goals to cut emissions in absolute terms before 2050, and cover all of Eni's products.

The difficulty with scope 3 emissions is one of responsibility — specifically the question of who is responsible for cutting fossil fuel demand. While some companies have responded to political, social and employee pressure to commit to reducing supply, industry executives say those actions have not been accompanied by government interventions to cut demand.

"As long as society believes that, by starving [fossil fuel] supply, you will somehow force demand to come down as well, that is not a sustainable way of tackling the energy transition," said Ben van Beurden, former Shell chief executive, shortly before stepping down last year. "Supply needs to adjust but it needs to adjust to less demand."

In 2023, however, oil demand is on track to average 102.2mn b/d — its highest ever annual level, according to the IEA. In response, energy companies — including those with more ambitious emissions-reductions targets — have become more likely to argue in favour of continued investment in oil and gas than they were a few years ago.

"We firmly believe we need to continue to invest in today's energy system . . . at the same time, we are investing heavily in our transition growth engines, businesses that help the world pivot to a net zero scenario," said Anja-Isabel Dotzenrath, head of gas and low-carbon energy at BP, at an FT energy conference in October.

BP slowed the pace of its planned retreat from oil and gas in a strategy update in February but still has one of the most aggressive transformation plans in the sector. The UK-listed energy major has pledged to cut its oil and gas output by 25 per cent by 2030, compared with 2019 levels — down from a previous target of a 40 per cent decline. This remains one of the only hard commitments to reduce production in the industry. At the same time, BP says it will increase spending on its five "transition" businesses — biofuels, convenience, charging, renewables and hydrogen — from 30 per cent of capital expenditure in 2022 to 50 per cent by the end of the decade.

Maarten Wetselaar, chief executive of Spanish oil and gas group Cepsa and a former Shell director, agrees that growing energy demand means the sector cannot stop producing fossil fuels until renewable alternatives exist to replace them. Still, he says companies like his have an important role in driving the green energy transition.

"We should expect the industry to do it, to lead in building these new green value chains, particularly on the molecular side — biofuels, hydrogen," he says. "I don't think it will happen without the oil and gas industry stepping up behind it."

Last year, he launched a new strategy to pivot the Spanish group from fossil fuels to greener forms of energy and committed to invest at least €5bn — equivalent to 60 per cent of the group's total capital expenditure — on new low-carbon business, such as green hydrogen and biofuels, by 2030.

Policies and incentives

Saudi Aramco has no plans to reduce output, though. Instead, it is betting that by cutting scope 1 and 2 emissions, it can provide the "lowest-carbon" barrel of oil in the industry and find a market for its vast resources for as long as possible.

Similarly, Adnoc has earmarked $150bn in capital expenditure over the next five years, largely focused on expanding its oil and gas production. Last November, it established a new "low-carbon solutions and international growth" division under executive director Musabbeh Al Kaabi. Then, in January, it said it would spend $15bn on decarbonisation projects between 2023 and 2030, to include investments in clean power, CCS, electrification of its oil and gas operations, and elimination of flaring.

"We see a world where all sources of energy will be required," Al Kaabi told the FT this year. "If there is a way that we can maintain fossil fuels while minimising the emissions, I think that's a more pragmatic way to address climate change."

In total, national oil companies are likely to invest $1.8tn in upstream oil and gas developments and expansions over the next 10 years, according to an analysis by US-based non-profit the Natural Resource Governance Institute.

The biggest US oil companies are following a similar playbook. ExxonMobil last month announced plans to acquire US oil producer Pioneer for $60bn, while Chevron has agreed a takeover of Hess for $53bn, in two of the biggest oil and gas deals this century. In both cases, the companies are acquiring rather than shedding fossil fuel production, betting that larger, more efficient operations will make them more resilient if oil prices fall as demand weakens. ExxonMobil and Chevron are also investing heavily in CCS in the hope of proving capturing and storing carbon emissions can be executed at scale.

"To believe that we can just simply reduce the production of oil and gas, whilst simultaneously facing rising demand and with no clear alternative, will result in the shocks that we've seen over the last couple of years," says Salih at Oliver Wyman. "What we're having now is a far more measured and logical conversation about what it really takes to make this happen."

Part of the solution, energy executives say, is legislation like President Joe Biden's Inflation Reduction Act, which has encouraged green investment in the US. In Europe, carbon pricing and consumption mandates mean there are more restrictions on oil and gas than in the US but fewer incentives to invest in alternatives. "We don't have good supply incentives in Europe and we don't have good demand incentives in the US," says Cepsa's Wetselaar.

The argument goes that, as the availability of low-carbon alternatives increases, oil and gas will be naturally replaced over time. But the risk is this does not achieve emissions cuts fast enough, warns Carbon Tracker's Coffin.

"At the last few COPs, we've got phasedown of fossil fuels, but clearly we need the global community to get behind a phaseout of fossil fuels over time and planning for a decarbonised energy system," he says.

Stagnation in climate ambitions across the industry

Carbon Tracker's assessment of how well oil and gas companies measure up against the Paris emissions targets, top 10 by rank

Rank	Company	Scope 3 emissions	Net-zero by 2030	Interim absolute	Full-equity share basis	Third-party crude	Potentially Paris-aligned
1	Eni	Yes	Yes	Yes	Yes	Yes	Yes
2	Total	Yes	Yes	Yes	Partial	Yes	–
3	Repsol	Yes	Yes	Yes	Partial	–	–
4	BP	Yes	Yes	Yes	Partial	–	–
5	Shell	Yes	Yes	–	Yes	Yes	–
6	Equinor	Yes	Yes	–	Partial	–	–
7	Oxy	Yes	Yes	–	–	n.a.	–
8	Suncor	Yes	–	Yes	Yes	–	–
9	Chevron	Yes	–	–	–	Yes	–
10	Conoco	–	n.a.	n.a.	Yes	n.a.	–

Source: Carbon Tracker

Airlines look to flight path reform to help cut emissions

Aviation

An EU plan to streamline control of airspace to boost fuel efficiency has stalled, reports *Philip Georgiadis*

Airlines face their biggest challenge since the invention of the jet engine: how to decarbonise an industry built on the power of fossil fuels.

The aviation sector is one of the hardest in the world to clean up. The industry is responsible for about 2 per cent of global carbon dioxide emissions, according to the International Energy Agency, but its proportion of emissions is set to increase as airlines push forward with growth plans and other sectors decarbonise more rapidly.

Airlines have, nonetheless, committed to reaching net zero by 2050 using new fuels and technologies. But this ambitious pledge relies on significant scientific breakthroughs in the coming decades, from how to turn waste products and other non-fossil fuel materials into cost-effective cleaner fuels, to safely powering an aircraft using hydrogen or electricity.

Virgin Atlantic's first transatlantic flight fully powered by so-called sustainable aviation fuel — biofuel or synthetic fuel — took off this week. The industry believes using cleaner fuel could cut net emissions by 70 per cent.

Many environmental groups and scientists are sceptical, though — particularly about whether these alternative fuel sources are truly sustainable amid worries over changes in land use to grow crops for biofuels. However, alongside planning for a clean fuel revolution, airline executives in Europe are also stepping up lobbying for the greater adoption of an emission reduction already within their grasp: reforming the flight paths that aircraft follow through the skies. "We have to look at . . . how to improve how we fly," says Adina Vălean, EU Transport Commissioner.

The Single European Sky (SES) — first proposed by the European Commission in 2004 and amended in 2020 — is a programme to reform the organisation of fragmented airspace in the region that could lead to drastic emissions savings. Yet it has never been fully implemented.

Airlines rarely fly the most efficient paths between two airports, instead building flight routes to take into account airspace congestion and restrictions as they snake through separate blocks of airspace overseen by national air traffic controllers.

Implementing the SES would allow aircraft to carve the most optimal routes through the skies, saving time and fuel. Planes could fly more consistently at higher altitudes, burning less fuel, and descend more efficiently and smoothly to land, according to an EU report.

The sector believes it could cut emissions in Europe by up to 10 per cent overnight if the reforms were fully implemented — the equivalent of 11.6 megatonnes of carbon per year.

"There is overwhelming agreement that reform to Europe's fragmented airspace and change-resistant air traffic management system will have an immediate impact in terms of fuel burn and thus emissions," says Andrew Charlton, managing director of Aviation Advocacy, a consultancy.

But the apparently simple reforms have stalled spectacularly. European airline bosses complain there has been almost no progress from EU member states in implementing the initiative in the nearly two decades since it emerged.

Reform has been slow as countries remain hesitant over giving up control of their airspace, and protective of their national air navigation service providers, which are typically state owned and operated.

Airspace congestion: airlines are rarely able to fly the most fuel-efficient path

"There has been a real reluctance to move on it . . . there is a fear at member state level of relinquishing control," says one industry executive. Unions in some countries are also powerful: there had been 65 days of strikes at French air traffic control by mid-November, according to calculations by airline Ryanair.

"There is a feeling that state-owned air navigation service providers need protecting; that, without them, somehow national sovereignty will be at risk," Charlton says.

> European airline bosses complain there has been almost no progress from EU member states in implementing reforms

The International Air Transport Association earlier this year said the SES amounted to a "political failure". And Ourania Georgoutsakou, managing director of Airlines for Europe, a lobbying group, sees it as a missed opportunity to "have a real impact on the carbon emissions of flying in Europe". Regulators in Brussels agree. "We need member states to move on the common agreement of the SES," Vălean says.

Airlines dismiss the air navigation service providers as "monopolies" that overcharge for their services anyway, and have stepped up their lobbying for reform — not only for the emissions savings, but also to cut fuel bills — one of the industry's biggest costs.

But the SES has been stalled for so long that many bosses acknowledge they sound like broken records. Even so, some hope that the urgency of tackling climate change, and the difficulties in decarbonising the industry more thoroughly, could yet focus minds.

"EU and member states have talked the talk for decades. We know they can implement ambitious regulation when they put their minds to it . . . Now is the time for governments to walk the walk on the SES to ensure it can finally take off and unlock more efficient flying today," says Georgoutsakou.

Carbon credit credibility is vital for African businesses

Africa Trusted markets are required to support the growth of affordable technologies, says *David Pilling*

Valerie Labi's mission is to convince Ghana's growing delivery and courier market to abandon their petrol-thirsty motorcycles and replace them with electric bikes.

But, to make it work, the co-founder of German-Ghanaian start-up Wahu Mobility will have to sell more than the pedal-assisted, designed and made-in-Ghana e-bikes that her Accra factory is beginning to churn out. She will have to sell carbon credits.

Without a cross-subsidy from the sale of carbon credits, Wahu's bikes would be priced at about $2,000 — much too expensive for its target market of delivery-fleet riders. "We cannot scale without carbon at that price point," she says.

Wahu's plan is to sell carbon credits within the framework of a bilateral agreement signed between Switzerland and Ghana (and Vanuatu) at last November's COP27 climate summit in Sharm el-Sheikh. Under the deal, which comes under Article 6.2 of the Paris Agreement, Accra will act as broker for Internationally Transferred Mitigation Outcomes to Switzerland. In return, Ghana's government will take a cut, with the rest of the payment going to Wahu.

Carbon credits are broadly divided between cheaper credits in voluntary markets, where the quality can be questionable, and more expensive credits in regulated markets, such as the EU's Emissions Trading System.

Wahu's proposition is that its bikes will induce companies such as Bolt and Glovo, to switch to electric in their food-delivery and courier businesses. So-called smart monitoring of e-bikes will provide records of distances travelled and carbon emissions avoided. Wahu has been given a $200,000 grant to hire First Climate, a Swiss consultancy, to develop its carbon-pricing model.

For some African climate-related businesses, such as Wahu, the successful functioning of carbon markets is not a nice-to-have, but core to their strategy. Unfortunately for them, these markets' credibility has taken a battering, with rising scepticism about the utility of credits linked to avoided emissions.

That is particularly true in the forestry sector. A report in UK newspaper The Guardian in January alleged that 90 per cent of rainforest carbon offsets certified by Verra, a standard for voluntary carbon credits, were worthless. Verra disputes the methodology, but the allegations have undermined confidence in carbon offsets as a credible tool for big companies, from Shell to Gucci, to use in their net zero emission strategies.

In October, South Pole, a Swiss company that sells carbon offsets, ended a project in Zimbabwe that had generated millions of carbon credits from the prevention of deforestation around Lake Kariba. The credits, it decided, were not worth the paper they were written on.

As a result of these and other setbacks, prices of carbon offsets traded by Xpansiv, which operates a carbon exchange, have fallen by more than 80 per cent in less than two years. Its Global Emission Offset contract, used by airlines to offset carbon emissions, was trading at 44 cents in November, down from $3.43 at the start of the year.

Despite the setbacks, many insist that carbon credits are an indispensable part of fighting climate change and deforestation. One sector in Africa that depends heavily on the acceptance of such credits is clean cookstoves.

Kenya-based company Burn designs and makes stoves in Nairobi that significantly reduce wood and charcoal used for cooking. It then sells credits derived from the reduced emissions compared with those that would have resulted from felling trees and burning wood. And it uses the money to subsidise the cost of cookstoves, reducing the price of a wood stove from $20 to $5.

'There's a lot of work going on around what kind of claims companies can credibly make'

Molly Brown, head of carbon strategy at Burn, acknowledges the controversy around credits and the damage that has done to prices. "There's a lot of work going on around what kind of claims companies can credibly make," she says. "We all know that if you're going from being BP to being net zero BP in the next five years, even if you decrease the oil [you produce], there's still millions of tonnes of CO_2 you're emitting. How can you make sure that you offset that and what kinds of claims can you credibly make about that?"

The cookstove industry, Brown says, is working on new standards to meet the demand. One is the so-called fraction of non-renewable biomass (or fNRB), which measures how much wood can be cut without damaging a forest. A certain amount of cutting or burning is sustainable, she says, since any forest will naturally grow each year. The fNRB seeks to quantify safe levels.

"We know that charcoal is a huge driver of deforestation in the Congo Basin, so we want to be protecting it, we want to be reducing the amount of charcoal that's being burnt," says Brown. But calculations are complex and, in order to put such claims on a credible footing, she cautions, they need to be "triple-checked [and] peer-reviewed".

Powerful: selling carbon credits helps Wahu Mobility produce more affordable electric bikes for Ghana's delivery market
Francis Kokoroko

When it comes to deforestation, it is not only voluntary markets that are being tested. Lee White, Gabon's minister of water, forests, the sea and environment until August, was seeking to monetise carbon sequestered by rainforests that cover 90 per cent of the country.

Last year, he came to market with 90mn tonnes of carbon credits generated from improved forestry practices in Gabon, one of the few nations that is a net remover of carbon. "The UNFCCC [UN Framework Convention on Climate Change] never came up with a methodology of converting reductions into sellable credits," complains White. "It is a failure of the UN system."

White lost his job this year after the administration of which he was part, headed by President Ali Bongo, was ousted in a military coup. Not all attempts to sell carbon credits end so dramatically, but his is a cautionary tale.

"People call me an expert," White says of his efforts to prove and register Gabon's millions of tonnes of carbon credits. "I said: you can call me an expert when we finally sell them."

Critical test for carbon credits, Page 18

African nations unite on Nairobi Declaration

Diplomacy

Leaders across the continent say a rethink on financing from developed nations would speed up the move to net zero. By *David Pilling*

For years, many African countries have struggled to position themselves in relation to the climate debate raging in the global north.

The continent of 54 countries, which has emitted less than 3 per cent of cumulative carbon, is the least equipped financially to deal with the consequences — whether droughts (or flash floods) in the Horn of Africa, or changing weather patterns for smallholder farmers who depend on rain to water their crops.

Meanwhile, demands that nations such as Nigeria, Angola or Mozambique — all big or potentially big producers of hydrocarbons — should forgo exploiting their oil and gas resources strike many as absurd when 600mn Africans lack access to regular electricity supplies.

"Every American man, woman and child emits 17 tonnes of carbon; every European emits 6.5-7 tonnes of carbon a year," Mo Ibrahim, a Sudanese-British billionaire and governance campaigner, told the Africa Climate Summit in Nairobi in September — adding that emitters should pay for their emissions through a tax. "Who gives you the right to emit all this carbon? If you pay for it, then you'll change."

But, now, the Nairobi Declaration, adopted by the 54 nations of the African Union at the September summit, offers an opportunity to rally around a common position. It recognises climate change as "the single biggest threat to all life on Earth" and demands "urgent and concerted action from all nations to lower emissions", within the framework of "common but differentiated responsibilities".

According to Akinwumi Adesina, president of the African Development Bank: "The very fact that African leaders and heads of institutions came together to say that it is time for Africa's needs, in particular for climate adaptation, to be known . . . that, itself, is a success."

The declaration calls for developed nations to cut carbon emissions more quickly. It also links the climate issue to what African leaders say is a pressing need to overhaul a global financial system that, they argue, condemns countries to perpetual indebtedness and deprives them of the resources needed to adapt their economies.

"We call for a comprehensive and systematic response to the incipient debt crisis outside default frameworks," it states. Among the proposals is a tax on fossil fuel trade, maritime transport and aviation, as well as a global financial transaction tax to provide "affordable and accessible finance for climate positive investments at scale".

The declaration also calls for the implementation of a long-discussed plan to reallocate IMF special drawing rights to poorer nations. Many countries lack the financial resources to protect rainforests, develop climate-resistant infrastructure or food strategies, or to build industries to compete in a low-carbon economy. As African leaders put it in the declaration: "No country should ever have to choose between development aspirations and climate action."

'The very fact that African leaders came together . . . that itself is a success'

Adesina says the Nairobi Declaration emphasises the need to step up renewable energy generation on the continent, to insure against climate-related disasters, to recognise Africa's renewable energy potential and carbon sinks, and to build a strategy for critical minerals.


Mo Ibrahim

The AfDB backs each of these requirements, he adds, citing the bank's support — with a $50mn fund and a $250mn blended finance facility — of a planned 10GW "desert to power" solar development in the Sahel region. By 2025, this project is supposed to bring power to 250mn people in 11 countries, 90mn of them for the first time. The AfDB has also set up a facility to insure countries against catastrophic weather events, Adesina says, and 15 have already taken out policies.

James Mwangi, founder of Climate Action Platform for Africa, a think-thank, highlights the declaration's commitment to what he calls "green industrialisation". He points to ArcelorMittal's "decarbonisation road map" in South Africa as an example. The steel multinational is piloting a project to produce green sheet steel using green hydrogen made in either South Africa or Namibia: "Instead of moving a volatile, hard-to-move gas somewhere else, just do the stuff you're going to do in place."

Kenya, which has abundant geothermal resources, presents further opportunities. It could manufacture goods with low embedded carbon — potentially an advantage once the EU's Carbon Border Adjustment Mechanism comes into effect from 2026.

There is also potential for Africa in carbon removal, through technologies such as biochar — a carbon-like substance made from burning organic material at high temperatures — Mwangi says. However, there are still many sceptics, he concedes.

Even so, for him, the Nairobi Declaration is the flicker of recognition that, in positioning itself in response to climate change, Africa should be much more ambitious.

Brazil's progress on forests and farming risks setback from oil

Policy

Success cutting deforestation and planned agricultural reforms contrast with expansion in hydrocarbons, writes *Michael Stott*

The Amazon rainforest is often portrayed as a giant carbon sink for the world, soaking up emissions generated elsewhere. So it may come as a surprise that Brazil, home to 60 per cent of the rainforest, is the world's fifth-biggest emitter of CO_2 — with more than two-thirds of those emissions coming from agriculture, forestry and other land use.

Those numbers highlight how the country's path to reaching its target of net zero emissions by 2050 has little in common with that of most other countries, where energy, industrial processes and waste are the biggest problems.

"The challenges and opportunities are different for Brazil to most other countries," says Arthur Ramos, who leads Boston Consulting Group's climate practice in Brazil. "While power generation is 90 per cent renewable, deforestation and agriculture are the biggest issues to tackle as they account for 70 per cent of emissions. Deforestation alone accounts for 50 per cent."

Even before taking office at the start of the year, President Luiz Inácio Lula da Silva signalled his commitment to Brazil's pledge of net zero emissions by 2050 by attending the COP27 climate summit in Egypt and announcing that his administration would "do whatever it takes to have zero deforestation".

Destruction of the Amazon rainforest had surged under Lula's far-right predecessor, Jair Bolsonaro, and the new government has restored resources for environmental agencies that had been cut back. It has also taken quick action to fulfil an existing pledge to halt deforestation completely by 2028.

"In the first eight months of this year, the Lula government has achieved a 48 per cent reduction of deforestation," says André Aranha Corrêa do Lago, secretary for climate, energy and environment at Brazil's foreign ministry. "If you take into consideration the atypical profile of our emissions . . . this means we are close to reducing more than 20 per cent of our emissions in one year."

Almost all deforestation in the Brazilian Amazon is unlawful, the result of illegal logging, mining and ranching. Land grabbers also seize forest to convert it to pasture for farming or land speculation.

Ilona Szabó, president of the Igarapé Institute, an independent think-tank based in Rio de Janeiro, believes "Brazil will probably be the country which most reduced emissions in 2023, simply because of the result in reducing deforestation".

On agriculture, the government intends to present a plan at COP28 in Dubai to recover degraded pasture by offering farmers financing to buy or lease unproductive land and improve it. Brazil currently has about 200mn head of cattle on 200mn hectares of land — a low level of productivity that the government believes could be doubled with better technology.

Brazil is the world's largest exporter of soyabeans, poultry, coffee, sugar cane, frozen beef and orange juice, and has long been a technological pioneer in boosting crop yields, but its cattle ranching is relatively low tech.

Its farm exports, however, face a threat from a new EU law adopted this year banning the import of many farm products from recently deforested land. Farmers will need to supply traceability data showing their supply chain is deforestation-free.


Deforestation in the Amazon

"Cattle farming is the biggest challenge within the agricultural sector," says Ramos. "As well as the conversion of land for ranching, there is also the question of methane emissions, which can be reduced by changing the feed given to cattle and increasing the productivity of land used."

In the energy sector, Brazil has both challenges and opportunities. The country's high proportion of renewably generated electricity — the result of decades of investment in hydroelectric dams and recent solar and wind projects — could allow it to compete in emerging global markets such as green hydrogen.

However, the country is also engaged in a big build-up of its oil industry, with the government aiming to turn Brazil into the world's fourth-biggest producer of crude by 2029, thanks to the development of giant offshore fields.

"The Brazilian government and [state-controlled energy company] Petrobras must stop the country's colossal expansion of oil and gas," argues Martin Dietrich Brauch, a researcher at the Columbia Center on Sustainable Investment in New York. "This expansion is inconsistent with climate action and with the role that the country wants to play in emissions reduction."

Brauch's call is unlikely to be heeded, though. The Lula government is committed to the expansion of oil, arguing that it needs the revenues to fund social justice and pay for better infrastructure and a shift to clean energy.

Nonetheless, with Brazil set to host COP30 in 2025, there is optimism that the country can build on its strengths in renewables, halt deforestation and improve agricultural technology. "Brazil knows it has to do more, but it's not reaching the [negotiating] table timidly — it is coming with results," says Szabó.

The Brazilian delegation at COP will insist on a stronger multilateral approach to combating climate change, says Corrêa do Lago at the foreign ministry: "The lack of trust that exists among countries today is acute. We have to fight that."

China may be close to a climate tipping point

OPINION

Pilita Clark

If you want to be hopeful about the world's chances of tackling climate change, look to China.

It is such a force in the electric car market that, last year, for the first time, it became home to more than half the electric vehicles on the world's roads.

An equally impressive surge in solar and wind power means that China, alone, now has more big solar farm generating capacity than the rest of the world put together.

And forecasts suggest that the country is poised to smash its clean energy targets five years early.

If you want to feel despair about the world's hopes of addressing climate change though, also look to China

The country has been on a coal power permit binge, approving the equivalent of two new coal power plants a week last year — the highest level since 2015.

And its hunger for fossil fuels makes China by far the world's biggest carbon dioxide polluter, pumping out nearly a third of annual emissions, or more than the US, the EU, and Africa combined.

In other words, no country holds the fate of the planet's climate in its hands like China. This is both deeply unsettling and — from Beijing's perspective — deeply unfair. Gargantuan as its annual emissions now are, China has, over time, produced far fewer greenhouse gases than the US, the biggest historic emitter. Even now, the average American still produces a lot more emissions than the average Chinese person.

Still, if China doesn't cut its pollution faster, it will make it much harder to meet the Paris Agreement goal to limit global warming to 1.5C over pre-industrial levels.

The world has already warmed by at least 1.1C and staving off 1.5C requires global emissions to nearly halve by 2030 and reach net zero by about 2050.

But China plans to have its emissions peak by 2030 and to reach carbon neutrality by 2060.

"It's just a matter of pure mathematics that if China's emissions keep going up until 2030, those Paris goals go out the window," says Lauri Myllyvirta, a China energy analyst at the Centre for Research on Energy and Clean Air in Helsinki.

So is there any hope that China might move faster?

Myllyvirta turned heads in November with analysis showing that China's green energy spree means its carbon emissions are set to fall in 2024 and could even go into structural decline.

That decline is not guaranteed, though. China is not immune from the domestic political tensions that divide influential fossil fuel groups from green energy advocates in western countries.

Today, however, the country faces a rising set of competitive pressures that it has not had to reckon with before.

It became a global green juggernaut thanks to a sustained industrial policy that has given it an iron grip on clean energy supply chains, including the minerals needed for the technologies of the future.

It has, for instance, most of the processing and refining capacity for key clean energy materials such as lithium, cobalt and graphite. It produces three-quarters of the world's lithium-ion batteries. But one of the aims of the US Inflation Reduction Act (IRA), the biggest climate law in US history, is to build up American green supply chains. At the same time, across the Atlantic, the EU has responded to the IRA with its own efforts to boost net zero industries.

Beijing's green energy policies are already having an impact and now it faces more pressure from rivals
Getty Images

> China became a global green juggernaut thanks to a sustained industrial policy

Some China-watchers think this intensifying competition will encourage Beijing to keep up its clean energy boom, or perhaps expand it further. It certainly seems unlikely to slow down its efforts if its rivals speed up theirs.

None of this means a new green trade landscape will evolve smoothly.

In October, the EU launched an anti-subsidy investigation into China's electric car industry. This was amid fears that cheaper Chinese imports will hit Europe's carmakers in the way they struck the bloc's solar panel industry more than a decade ago.

That has led to charges from China of green hypocrisy, says Bernice Lee, a climate expert at the Chatham House think-tank in London. "I am hearing Chinese stakeholders say of the EU: 'You tell us you care about climate, but you would rather start from scratch building up your own electric car supply chains than buy cheap stuff from us that's available now. Who is being hypocritical here?'", she says.

Then, there is the EU's groundbreaking carbon border tax: a levy on carbon-intensive imports such as cement, that is designed to stop EU companies moving to countries with weaker climate policies, and spur cleaner industry abroad. That has raised concern in both China, with its rising emissions, and the US, where emissions are falling but some object to having to pay EU carbon taxes.

One solution proposed this year by Paul Bledsoe, a former White House official under President Bill Clinton, and Ed Gresser, an ex-trade official, would give EU companies access to the IRA's green benefits, if Brussels rethought its carbon border tax. A big benefit of the plan, say its proposers, would be the "strong incentives" for big emitters such as China to cut their emissions.

That idea is unlikely to fly and China may resist any measures that do. But Beijing's soaring green industrial might — coupled with rising pressure from competitors — is raising hopes of a turning point in the world's biggest emitter that few had dared imagine, until now.

Pilita Clark is an FT business columnist

Clockwise from left: Norrbotten, Norrland; a Sámi herder; forestry, a key Swedish export: a wind farm in western Sweden
Alamy; AFP via Getty Images; Getty Images/500px

EU faces conflict over rewilding plans

Nature restoration
Bloc is split on conservation law as green industries demand trade-offs, writes *Alice Hancock*

The frozen far north of Sweden is one of the EU's least populated lands. Norrland, as the country's uppermost third is known, covers a sparsely inhabited 261,292 sq km. But its strong power grid connection means that it could be ripe for renewable energy projects.

It is also home, however, to the indigenous Sámi people, as well as important bird and animal habitats. Ancient taiga forests sit alongside vast wetlands. Elk, lynx and wolverine wander the frigid landscape.

And that, says a report on decarbonising the Swedish energy system by 2050 for the Confederation of Swedish Enterprise, creates "very strong conflicts of interest". It points out that the entire area is part of the historical land of the Sámi and is largely untouched nature that is protected as a World Heritage Site, a nature reserve, a national park, a protected state forest and swamp forests (as well as many other protection classes, often overlapping).

"In Sweden it is, counter-intuitively, often even more difficult to build things in areas with low population density, as they may be national parks, nature reserves, important habitats or otherwise areas with pristine nature," explains Staffan Qvist, chief executive of energy consultancy Quantified Carbon and a co-author of the report.

At the same time, though, Sweden was one of five EU countries — including Finland and the Netherlands — that said they could not support Brussels' Nature Restoration Law, aimed conserving nature. The law was provisionally agreed among policymakers, despite the opposition, in November

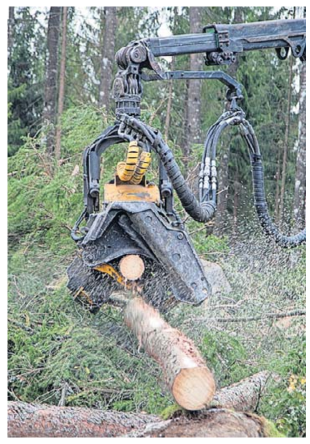
One reason for Stockholm's opposition to the rules, which set an EU-wide target of restoring 30 per cent of the EU's natural habitats by 2030, is the strength of its forestry industry, which accounts for 10 per cent of Sweden's exports, according to the Swedish Forest Industry Federation.

Sweden's position demonstrates the trade-offs governments across the EU face as they shift towards greener economies. Renewable power development has become an imperative, fuelled by a need to replace Russian gas following Moscow's invasion of Ukraine. But Brussels is also pushing member states to outline "net zero industrial valleys" to boost clean technology production, and to acknowledge the need to start mining for minerals critical to the green transition, rather than rely on imports. The EU's largest deposit of rare earth elements has been discovered at Kiruna, a town near Sweden's northernmost tip.

The Nature Restoration Law has proved equally contentious in the European parliament. A campaign by the centre-right European People's party, the EU's largest political group, called for the law to be rejected on the basis that it would undermine food security and was incompatible with renewables targets. The European Commission, the EU's executive arm, which tabled the original proposal, rejected both claims.

But, as the proposal has passed through the EU legislative process, it has been gutted of much of its original intention, demonstrating how nature has fallen down the priority list, campaigners say. Clauses on preventing nature conservation efforts from deteriorating and how restoration should be measured have all been watered down.

Ioannis Agapakis, a lawyer in biodiversity governance at ClientEarth, an environmental charity, argues that prioritising renewables and green industries above nature is short-sighted: "Under no circumstances should this



happen at the expense of EU nature and biodiversity, especially amid a biodiversity crisis that is worsening extreme weather events and natural disasters, such as droughts, flooding and wildfire."

EU officials say one main benefit of the law will be to push governments to pay more attention to spatial planning on a continent that needs to balance competing claims from agriculture, housing, industry, energy production and biodiversity.

"We are asking for a high level of coherence from member states when they make their go-to areas [for renewable power permits], their restoration areas, their maritime spatial plans," says one senior EU official. "Things have to make sense and be coherent. And civil society has to be involved."

Several renewables organisations, including trade associations WindEurope and SolarPower Europe, and non-profit the Renewables Grid Initiative support the law, arguing that nature and green energy could coexist. "Nature restoration and the expansion of wind energy go hand in hand," WindEurope said at the time of a European parliament vote on the law in June.

Nonetheless, member states are still concerned there is simply not enough space to conserve nature outside of already designated Natura 2000 sites (an EU network of protected areas).

"We say a lot of net zero industries and critical raw materials are important," says one EU diplomat. "There needs to be a way to achieve both [nature restoration and green energy goals]. You could do it if there was some flexibility in the plans."

Federal states such as Austria and Germany also have to push regional governments to accept the targets, while many EU politicians, particularly from more rightwing parties, fear a backlash from farmers and industry at EU elections next June.

Kathy Fallon, director of land and climate at Clean Air Task Force, a non-profit, says some damage to nature is inevitable: "Unfortunately, we may need to reckon with the possibility of trading off some natural resources, and compensating for those losses, in order to stave off the worst effects of climate change on nature."

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Adaptation Climate resilience born out of necessity. Could other regions adopt the island's rainwater harvesting system? By *Esan Swan*

Water insecurity: clockwise from top left, Bermuda's pastel-coloured houses topped with the island's distinctive white, stepped-roof design; an underground water tank; Deundé Cox is continuing a centuries-old tradition; an aerial view of the archipelago; a stepped slate roof detail. Below: roofing company founder Jonathan Gray

Meredith Andrews, for the FT

The Bermuda solution? It's up on the roof

On top of a two-storey house, Deundé Cox meticulously applies white paint to the roof to seal it from the elements and help keep it cool in the summer — continuing a custom that has existed for hundreds of years on the subtropical island of Bermuda.

"It feels good to be a part of that tradition and to carry it on," says Cox who, with his father, co-owns the decorating business Inside Out Painting which has been operating for more than two decades on the island.

For many tourists, the British Overseas Territory in the western north Atlantic Ocean — known for its pink sand beaches, luxury hotels, tax haven status, and role as a global insurance hub — is close to a vision of paradise.

However, due to climate change, Bermuda — which is home to about 64,000 people — faces rising sea levels, water insecurity and stronger, more frequent hurricanes, which threaten a fragile coastal marine environment and a way of life.

Most of Bermuda's fresh water is locked underground in an aquifer, a layer of water-bearing rock sometimes referred to as a lens. So, for its domestic water supply, the archipelago has, for centuries, relied on rainwater.

The architectural design that helped make this viable was the distinctive Bermuda roof. To capture rainwater, early settlers built the roofs using tiles made of limestone quarried on the island, and stepped down in such a way to slow the flow into the gutters. Water would then stream into downpipes, to underground tanks.

Today, many old houses still have original white stepped roof tiles and all buildings are designed to capture rainfall. The water is collected and stored in large cisterns beneath houses, hotels and offices before being pumped back up.

Other small, but more populous, island nations — particularly in the Caribbean — are now facing similar water security challenges.

"Freshwater systems on small islands are exposed to dynamic climate impacts and are among the most threatened on the planet," explains Adelle Thomas, senior fellow at the University of Bahamas.

"Increasing trends in drought are apparent in the Caribbean due to climate change," she says. "Rainwater harvesting is one such adaptation strategy to address water insecurity as a result of climate change."

Alyssa-Amor Gibbons, an architectural designer and sustainability consultant at Spinnaker Group in Barbados, says she does not see why a Bermuda-style roof would not work more widely in similar places such as in the Caribbean.

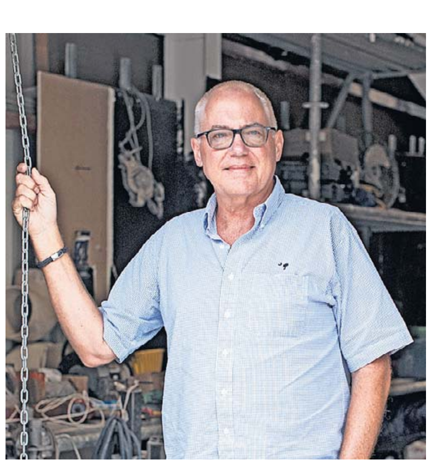
> 'You cannot put a roof on a building, whether it's commercial or residential, unless it's approved for potable water catchment'

"You can see something working well and you understand the concept behind it, but then it somehow hasn't [translated] across to somewhere else," she says. "It's probably a cultural thing."

David Smith, managing director at Smith Warner International, an engineering consultancy based in Jamaica, agrees. "There is widescale societal acceptance [in Bermuda] that this is the design that should be used," he says, adding that he was impressed by the standardised roof design. "I'm from Jamaica, myself, and I don't know if there would be such acceptance."

The origins of the Bermuda roof derive from survivors of shipwrecks in the 17th century, says Michael Jarvis, professor at the University of Rochester in New York.

Waterproof tanks made with lime, brick dust and oil were probably fed by gutters from nearby thatch or shingle roofs dating back to the 1610s, he says. "The technique is as old as Bermuda's settlement itself and was vital for making it a viable colony."



Most roofs are now made from synthetic components and a mixture of cement and foam materials, which have replaced the original tiles, says Jonathan Gray, founder and president of roofers JW Gray, based near Hamilton, the island's capital.

"In Bermuda, you cannot put a roof on a building, whether it's commercial or residential, unless it's approved for potable water catchment," he says. "It's a necessity."

However, with the hundreds of thousands of tourists that visit each year, capturing rainfall no longer meets the island's needs. To cope with extra demand, the government provides water from six desalination plants which produce about 200mn gallons annually.

The strength of the roofs as well as their aesthetic properties are among the reasons why Bermudian Guilden Gilbert, president of building company The Bermuda Roof, began importing the style to the Bahamas in 2005.

"Once I moved here, and saw the roof damage from some of the storms, I started to think about the quality of the Bermuda roof," Gilbert says.

When category 5 Hurricane Irma came through Turks and Caicos in 2017, Gilbert's roofs stayed on while many around were blown off. His roofs do not come with the water catchment fixtures, though. He says building a cistern in the Bahamas would be challenging because the water lens is too close to the surface. "It's easier to build a well for water than it is to build a [cistern]," he says, adding that the government supplies potable water throughout the country at relatively low cost.

Price is one factor that could prohibit the adoption of the Bermuda roof elsewhere, notes Gray. In Bermuda, the average cost of the roofs is about $27 per square foot. In the Caribbean, typical costs are more like $10 to 12 per sq ft for a covering such as asphalt shingles.

Still, Bermuda's white roofs are "iconic," Gray adds, and were "born out of necessity using local resources."

"In Bermuda, it just makes sense."

Litigation has its limits in curbing Big Oil

Emissions

Court cases may have reduced investors' returns but only by small amounts so far, reports *Henry Mance*

Campaigners in the Netherlands protesting against Shell
Peter Boer/Bloomberg

In May 2021, a Dutch court ruled that Shell must reduce its carbon emissions in line with the Paris accord. It was the first time that a judge, anywhere, had ruled that the climate treaty created obligations for individual companies, even in the absence of specific domestic laws.

"The court clearly says that you can't wait for society to change: as a big polluter, you also have a responsibility in stopping dangerous climate change," insists Sjoukje van Oosterhout, lead researcher at Milieudefensie, the Dutch branch of campaign group Friends of the Earth, which brought the case.

Yet, more than two years on, Shell is moving further away from the pathway that the court mandated: namely, of reducing emissions by at least 45 per cent by 2030. Wael Sawan, the oil company's chief, has promised to maintain oil output while cutting investments in renewables. "We see no movement whatsoever in terms of trying to comply with the verdict," says van Oosterhout.

Shell continues to argue that emissions cuts should be decided by governments, rather than courts. Its next step is an appeal, due to be heard in April 2024. But, even if it loses again, it may opt to comply with the judgment simply by selling an oil refinery or its oil-trading business — which would cut its own emissions but do little for the climate.

In this way, the case highlights the difficulties in using climate litigation to change Big Oil behaviour. As of May, 2,365 climate-related cases had been filed in countries from the US to Russia, notes the Sabin Center for Climate Change Law, a research institute. However, several oil majors have doubled down on fossil fuels, seeking to benefit from high prices following Russia's invasion of Ukraine.

Franck Gbaguidi, an analyst at Eurasia Group, a political risk consultancy, says investors are yet to see the litigation as a systemic risk — tending to take a "siloed" view of each case, instead of "connecting the dots" between them.

A working paper by the UK's Grantham Research Institute found that company share prices did underperform after cases were filed, but only by small amounts. Climate litigation "is not coming up in conversations", says Oswald Clint, an oil and gas analyst at research company Bernstein.

Several factors might explain the lack of investor concern. The effects of novel litigation are hard to capture in analysts' financial models. Court case outcomes are highly uncertain — an attempt to hold Shell's directors liable for climate inaction in England failed this year, with the plaintiff, the charity ClientEarth, refused permission to appeal.

Cases can also drag on for many years, which may lead some chief executives, board directors and investors to believe they will be unaffected. "There is short-termism," says Gbaguidi.

Frank Elderson, a member of the European Central Bank's executive board, suggested in September that companies may have a "false sense of security" about their legal position. The Shell case in the Netherlands, he added, could oblige all companies in the country to align with the Paris accord.

"You ought to be very frightened if you're a CEO," reckons former Unilever chief executive Paul Polman, who has supported some climate litigation. By ignoring the legal risks, boards are "playing with fire", he believes.

And this is not the only way in which climate litigation targets Big Oil. While Milieudefensie's case against Shell was aimed at the company's future emissions, many US climate lawsuits demand damages for past behaviour. Among the biggest is California's case against ExxonMobil and other oil majors, filed in September.

"The reputation of Exxon in particular is they fight everything to the death," says Richard Wiles, president of the Center for Climate Integrity, a Washington-based consultancy. "I would expect the majors to battle for as long as they can," he says. "That may not be as long as they want."

The damages claims are based on leaked documents, which show company awareness of climate risks. A 1978 Exxon memo summarised the scientific consensus as "man has a time window of five to 10 years" before tough decisions about energy strategies were critical.

"If you really add up what the impacts are of climate change, and hold companies responsible for their fair share of that, it's into the trillions of dollars," says Wiles. "That's not even considering potential fines under consumer fraud statutes or treble damages under racketeering statutes, which could add hundreds of billions of dollars."

The US oil industry has attacked the cases as part of a co-ordinated campaign. For years, it has fought to transfer them from state to federal courts. But, this year, the Supreme Court has, in effect, ended those attempts. Two key cases, one brought by Massachusetts, the other by Honolulu, could proceed to trial by 2025.

> 'Often litigation isn't going to be your friend because of the time it takes'

Still, some environmentalists worry that litigation cannot drive change quickly enough. "There's a lot of appetite from philanthropists [to fund litigation]," says Will McCallum, co-executive director of campaign group Greenpeace UK. Yet, given emissions cuts are needed in the next decade, "often litigation isn't going to be your friend because of the time it takes". Greenpeace UK sees it as just one tool alongside political lobbying and public campaigns.

Wiles adds that legal cases can produce funds for climate adaptation and help shape the public debate. "This is just the beginning of litigation against these companies," he says. "You can imagine all sorts of additional claims that might involve insurance companies, suits against directors, wrongful death claims, all sorts of things."

Pressure grows for more scrutiny of fund green claims

Sustainable investing

Focus increases on the means considered necessary to bring 'infant' sector to maturity, writes *Alice Ross*

Regulators object to vague labelling

Allegations of "greenwashing", faltering returns, and a political backlash in the US have made it a tricky time for sustainable investing. Now, regulators and investors are focusing on the next steps for what is often referred to as a movement in its infancy. With global fund inflows remaining steady, many say better disclosure, joined-up thinking on regulation, and political action are what is needed for the sector to mature.

Sustainable investing came about due to pressure from pension funds and other investors wanting to channel their money into companies seeking climate solutions — or away from companies making the problem worse.

The fund management industry was happy to oblige, flooding the market with funds labelled "green", "sustainable" or "ESG" (referring to environmental, social, and governance standards). Sometimes, this was done with little regard to holdings, with managers making only small tweaks to funds before relabelling them.

That prompted accusations of "greenwashing" — overstating sustainability credentials — and led to regulatory action. In the EU, the Sustainable Finance Disclosures Regulation, set out two years ago, requires market participants to justify the sustainability claims of their financial products. In the US, in September, the Securities and Exchange Commission brought in a new rule requiring funds to invest in line with their names. And, by the end of this year, the UK's Financial Conduct Authority is expected to confirm restrictions on how the terms "green", "sustainability" and "ESG" can be used.

Among some investors, however, there is a new fastidiousness about pushing for change, driven by an ESG backlash in the US, along with a desire for more political action.

Last December, Vanguard, the world's second-largest asset manager, pulled out of the Net Zero Asset Managers initiative — a group of investors committed to reducing greenhouse gas emissions. Vanguard said it did not believe it should "dictate company strategy" at the businesses in which it invests.

Meanwhile, in his annual letter to investors this year, Larry Fink, chief executive of BlackRock, the world's largest asset manager, said it was for governments to play the role of "environmental police". He later said he had stopped using the term "ESG" as it had been "weaponised" by people at both ends of the political spectrum.

This debate over ESG has reduced inflows into US funds, but there has been no obvious effect more broadly.

Net inflows to conventional and other non-sustainable funds in the first three quarters of this year were negative, according to data from Morningstar. Net inflows to sustainable funds also turned negative in the US in this period, but not in the rest of the world. At the end of October last year, sustainable funds worldwide made up 6.2 per cent of total assets. At the end of October this year, they made up 6.7 per cent.

> 'You can't row back the momentum developed over the past 10 years'

"You can't row back the momentum that's developed over the past 10 years," says Mark Lewis, head of climate research for Andurand Capital Management and a member of the Financial Stability Board's Task Force on Climate-related Financial Disclosures, whose final report came out last month. "The investors we have are as interested as ever in sustainability issues."

One area that has been less contentious is disclosure itself: requiring companies to reveal their environmental footprint — which can include carbon emissions and biodiversity impact. This can be a tool for investors who want to understand the risks companies are facing, without committing to push the companies to change.

Non-profit CDP (formerly the Carbon Disclosure Project), which runs the global disclosure system for investors and companies on environmental impact, says companies recorded their environmental data in record numbers this year. "I don't see investors backing away from data," says Pratima Divgi, head of capital markets at CDP North America.

In contrast to the stance taken by Vanguard, plenty of professional investors view it as their role to encourage companies to set targets for cutting emissions. In the UK, Chris Hohn, a hedge fund manager, launched the Say on Climate campaign, which calls on companies to give shareholders an annual vote on their climate change efforts. Just 0.4 per cent of companies disclosed a credible climate transition plan in sufficient detail in 2022, according to CDP.

Disclosure will be a key goal as sustainable investment moves into its next phase, when investors are likely to be more discerning and wary of greenwashing. However, if companies are to set clear targets to cut emissions, they need governments to clarify their expectations. That will help all investors — regardless of their appetite for engagement — to calculate climate-related risks properly. Ultimately, disclosure is only a means to an end, points out Andurand's Lewis. "What we really want to see is political action."

Alice Ross's book 'Investing to Save the Planet' is published by Penguin Business

Food and farming rise up the agenda at this year's COP

Food security

Reducing waste and cutting meat consumption are among the main challenges, writes *Philippa Nuttall*

Sultan al-Jaber, president-designate of COP28, has promised to make adapting and transforming food systems a priority at the climate talks in Dubai.

Food systems create one-third of global greenhouse gas emissions, according to the UN, and the more frequent extreme weather that these emissions can cause also destroy harvests and affect food supplies around the world. So news of Jaber's pledge was welcomed as "fantastic" by Henry Dimbleby, co-founder of the restaurant chain Leon and lead adviser on England's National Food Strategy — a government-commissioned independent review. He adds that modern intensive agriculture has led to a "global collapse" in biodiversity.

Now, policymakers have the chance to begin transforming the climate-farming-nature nexus from a vicious to a virtuous circle. Agreeing a common way forward will be challenging, though.

Greenhouse gas emissions contributing to climate change occur at every stage of the modern food system — from production to transportation and the end consumer, with significant waste throughout the value chain.

At the same time, the overuse of land, fertilisers and pesticides threatens the insects on which food production relies and ultimately jeopardises yields as nutrients in the soil decrease. Sustainable food systems, on the other hand, can reduce emissions with healthy soils acting as carbon sinks.

"Global food systems are broken — and billions of people are paying the price," said UN secretary-general António Guterres in July. Yet food and farming have been largely peripheral in climate negotiations. Only Malawi and Liberia have included all of their food production, consumption, loss and waste in the updated, nationally determined plans that countries must submit before COP28, explaining how they plan to meet Paris Agreement commitments.

Dimbleby says food and farming are "difficult subjects" for politicians to broach with voters. Despite praise from food and health experts, his recommendations were, in the main, not taken up by the government and he was critical of its response. His proposals included helping people "escape the junk food cycle" through salt and sugar taxes and better access to fruit and vegetables.

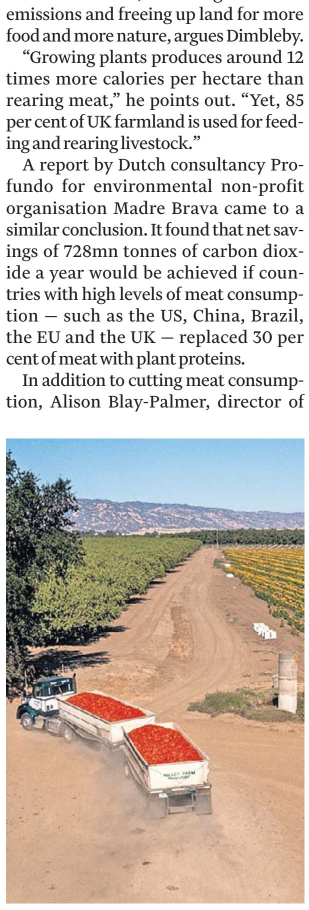
One big problem to address is "the shocking amount of waste in the system", he says, which includes "food that's never eaten, agricultural inefficiency and unproductive land".

Cutting global meat consumption is central to moving food production in a better direction, reducing livestock emissions and freeing up land for more food and more nature, argues Dimbleby.

"Growing plants produces around 12 times more calories per hectare than rearing meat," he points out. "Yet, 85 per cent of UK farmland is used for feeding and rearing livestock."

A report by Dutch consultancy Profundo for environmental non-profit organisation Madre Brava came to a similar conclusion. It found that net savings of 728mn tonnes of carbon dioxide a year would be achieved if countries with high levels of meat consumption — such as the US, China, Brazil, the EU and the UK — replaced 30 per cent of meat with plant proteins.

In addition to cutting meat consumption, Alison Blay-Palmer, director of the Laurier Centre for Sustainable Food Systems at Wilfrid Laurier University, Canada, says returning to food systems "based on local food production, distribution and processing" will play a key part — along with educating children on the benefits of healthy local food.



Tomato harvest in California

Dimbleby agrees this is important for social cohesion and people's health, but believes in a global food system to mitigate risks and keep down costs — especially for countries that would struggle to be self-sufficient.

Jess Halliday, chief executive of RUAF, a global consortium of cities, researchers and non-profit organisations working on urban agriculture, sees a role for city farms in providing food. As a form of "green infrastructure", they can also "help cities adapt to climate change, by reducing urban heat islands or improving drainage in flood-prone areas," she says.

A host of other food and farming projects are now being funded the $13bn Agriculture Innovation Mission for Climate initiative, launched by US President Joe Biden and co-led by the US and the United Arab Emirates. "Public-private partnerships and increased investment in climate-smart agriculture are critical to developing and deploying innovations to address food insecurity and climate change," explains Tom Vilsack, US agriculture secretary.

One beneficiary of this initiative is GreenLight Biosciences, a US-based company developing "climate smart biopesticides". These products interfere with the ribonucleic acid (RNA) in cells to kill pests by triggering a process that "silences" certain genes. Andrey Zarur, the company's co-founder and chief executive, compares traditional pesticides to "carpet bombing" and says his solution is akin to using "sniper shots to deal with pests on our fields".

Despite concerns from environmental organisations such as Friends of the Earth that the potential health and environmental impacts of such technologies are unknown, Zarur describes the technology as "extraordinarily effective and safe for health, residues, the environment, our food and biodiversity".

He says artificial experimentation has a crucial role to play in solving food security challenges. "Agriculture is not a natural process," he argues. "[It is] as artificial as a battery plant".

Further Progress in Promoting Decarbonization

Nikkei's Net-Zero Project, launched in April 2021, has marked further progress in 2023 in advancing its namesake goal. Its steering group, the Nikkei Net-Zero Committee, and corporate project members held their second plenary session of 2023 on September 4. The session included reports from the corporate project members, summarized here, about company-specific initiatives. It also included updates on the Nikkei Net-Zero Committee's four subcommittees and on developments in Japanese government decarbonization policy.

The Nikkei Net-Zero Committee comprises public- and private-sector researchers, academics, and a journalist. Chairing the committee is Professor Yukari Takamura, of the University of Tokyo Institute for Future Initiatives. The group probes issues and opportunities through its four subcommittees, conducts surveys of public perceptions of corporate efforts to decarbonize, and presents awards for notable contributions to achieving carbon neutrality.

Yukari Takamura
Professor, Institute for Future Initiatives, The University of Tokyo

Thematic Focus

Corporate project members and committee members bring specialized expertise to the subcommittees, which supplement that expertise with input from government representatives. The subcommittees address decarbonization issues from the thematic focuses of energy, circular economy, financial disclosure, and behavioral transformation.

In the past year, the energy subcommittee devoted special attention to the challenges of promoting decarbonization on a regional basis and reconciling decarbonization and increased self-sufficiency in energy. Representatives of corporate project members from the electric power industry and other sectors exchanged insights into those subjects with Nikkei Net-Zero Committee members. They heard from an official of Japan's Ministry of the Environment about government initiatives for promoting renewable energies in the public and private sectors. They heard, too, from an official of the Ministry of Economy, Trade and Industry. He discussed how Japan's feed-in tariffs promote decarbonization by obliging electric power companies to purchase renewable-generated electricity from third parties.

Members of the circular economy subcommittee discussed ways of shaping a more robust framework for ensuring continued use and reuse of resources. Addressing the subcommittee at one of its gatherings were officials from Japan's Ministry of Economy, Trade and Industry and Ministry of the Environment. The ministry officials highlighted the decarbonization benefits of improving resource efficiency by designing longer life and reusability into products. One of them emphasized the potential for Japan to offset its shortage of mineral resources by tapping those available in urban waste.

Sustainability has become a fixture in the International Financial Reporting Standards since the November 2021 establishment of the International Sustainability Standards Board (ISSB). The ISSB deploys standards to ensure the inclusion of sustainability in valuing financial assets. Recent meetings of the disclosure subcommittee have been forums for discussing decarbonization in the context of the ISSB regime.

An important facet of sustainability that companies will need to disclose under the ISSB regime is behavioral transformation. Discussions at the energy, circular economy, and disclosure subcommittees and at the plenary sessions highlighted sound decisions by corporations and individuals as the key to achieving carbon neutrality. After the September 4 plenary session, members of the behavioral transformation subcommittee, joined by a Ministry of the Environment official, gathered to discuss that subject.

The Nikkei Net-Zero Committee

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Yukari Takamura
Professor, Institute for Future Initiatives, The University of Tokyo

Members
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NIKKEI脱炭素プロジェクト

The Nikkei Net-Zero Awards

The Nikkei Net-Zero Committee provides motivational recognition for noteworthy decarbonization initiatives through the Nikkei Net-Zero Awards program. It announced the honorees for 2022 on March 14, 2023: four grand prize winners in the project category and a single grand prize winner in the policy proposal category. The deadline for submitting initiatives for consideration as 2023 honorees is November 30, and the Nikkei Net-Zero Committee will announce the winners in spring 2024.

One of the project category honorees for 2022 was the credit card issuer Credit Saison. It received recognition for a credit card that monitors the carbon dioxide emissions occasioned by cardholders' personal consumption and allows the cardholders to offset those emissions by purchasing carbon credits.

The other three project category honorees were a venture that installs photovoltaic panels on abandoned farmland in Fukushima Prefecture and grows buckwheat under the panels; a venture in Okayama Prefecture that grows vegetables in greenhouses heated with electricity from an on-site generator fueled with biomass and recovers the carbon dioxide from the generator for storage and reuse; and an app developed by companies, municipalities, university student groups, and nonprofit organizations in Shizuoka Prefecture that earns merchandise credits through such activity as using public transport, recycling apparel, and eschewing checkout bags.

Daiwa House Asset Management was the grand prize honoree in the policy proposal category. It received recognition for implementing a one-stop registry for information about buildings' carbon footprints. The registry provides owners, tenants, investors, appraisers, government agencies, and energy utilities with a common grasp of that information and thus promotes decarbonization-sensitive investment and financing.

Nikkei Net-Zero at COP28

The 28th UN Climate Change Conference of the Parties (COP28) opens today, November 30, in Dubai, United Arab Emirates, and will continue until December 12. Representatives of corporate members of the Nikkei Net-Zero Project will deliver presentations at the COP28 Japan Pavilion between 10:30 a.m. and noon on Friday, December 8. Attendance on-site or through an English-language webinar is free, but attendees need to register in advance:
https://events.nikkei.co.jp/63145/

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CORPORATE PROJECT MEMBERS

NYK
Yuko Tsutsui, *Executive Officer, Deputy Chief Executive of ESG Strategy Headquarters*

Sail Green

Company was first-time participant in Carbon Net-Zero plenary session, and presentation therefore included corporate overview. NYK's business encompasses global logistics, centered on marine transport. Japan relies on imported oil, coal, and liquefied natural gas for nearly all its energy, and nearly all its energy imports arrive via sea routes. Nearly all large ships, meanwhile, run on fuel oil, and curtailing carbon dioxide emissions from vessels is pressing decarbonization issue for all shipping companies. NYK's medium-term management plan calls for attaining net-zero carbon emissions by 2050.* That meshes with recently toughened stance by UN International Maritime Organization. NYK is moving to reduce carbon emissions short term through conversions to lower-carbon fuels and optimized navigation. Will launch ammonia-fueled tugboat in FY2024 and ammonia-fueled ammonia carrier in FY2026.

* https://www.nyk.com/english/esg/esg-story/

Earth hacks
Sumihito Sekine, *President and CEO*

Turning Decarbonization into Value

Established in May as 50:50 joint venture between advertising agency Hakuhodo and trading house Mitsui & Co., Earth hacks focuses on reducing output of carbon dioxide. Company addresses goal through commercial initiatives for reshaping consumer and corporate behavior. Operates under banner of "Creating value from decarbonization."* Works to nurture virtuous circle where "low carbon" becomes selling point for products and services and where growth in sales of such products and services reduces output of carbon dioxide. Aspires to reposition decarbonization appeal from ascetic approach of simply urging abstention from high-carbon items to indulgent approach of encouraging fulfillment through consumption of low-carbon items. Measures center on disclosing amount of carbon output from products and services, positioning decarbonization as lifestyle fulfillment factor, and restructuring consumer-corporate relations around decarbonization.

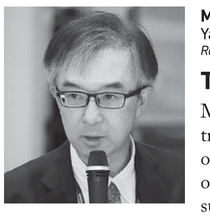
* https://earthhacks.jp/

EY Japan
Tokuya Takizawa, *Chief Sustainability Officer*

Value-Led Sustainability

EY aims to eliminate its absolute carbon emissions and then offset its remaining emissions to reach net-zero by 2025. Presentation covered five emphases: One, reduce output of carbon dioxide in business travel by 35%, compared with 2019; two, supply offices with 100%-renewable energy; three, promote purchase power agreements to nurture supply and demand for renewable energies; four, adopt nature-based solutions and carbon-reduction technologies to remove or offset more carbon from the atmosphere; and five, encourage clients to invest in services and solutions that spawn value from decarbonizing and require at least 75% of EY suppliers to set Science Based Targets by 2025.* In addition, EY is developing tools to enable its teams to monitor carbon dioxide emissions in client work and is investing in projects, such as forestation and renewable energy development, to offset in-house emissions not yet eliminated.

* https://www.ey.com/en_gl/value-realized-annual-report



Mizuho Financial Group
Yasuhiko Ushikubo, *Senior Executive Officer, Head of Research and Consulting Unit, Group Chief Sustainability Officer*

Transition Finance

Mizuho is striving to become carbon neutral in Scope 1 (emissions from company's own activities) and Scope 2 (emissions occasioned by company's energy consumption) under Greenhouse Gas Protocol by 2030. Efforts include switching electricity consumption to renewable energy. Biggest challenge will be reducing emissions in category 15, "financed emissions," of Scope 3 (other emissions occasioned indirectly by company's activities). Supporting clients' initiatives towards decarbonization entails increased exposure to carbon-related sectors. Mizuho has set Scope 3 (financed emissions) targets for electric power, oil and gas, and coal mining (thermal coal) sectors and will set targets this year for steel, automotive, maritime transportation, and real estate sectors. Has raised its sustainable finance target to ambitious level of ¥100 trillion to create further money flow, which is key to achieving decarbonized society.*

* https://www.mizuhogroup.com/investors/esg

Miura
Daisuke Miyauchi, *President and CEO*

Comprehensive Approach

Big issue remaining for decarbonization is to address use of heat, which accounts for 60% of carbon dioxide emissions in industrial sector. Shifting to alternative energy sources is vital in efforts to attain carbon neutrality by 2050, but in absence of new breakthroughs, prospects for achieving 46% reduction in greenhouse gases by 2030 will be in jeopardy.* Switching to energy-conserving equipment entails upfront costs, but we should promote this in view of the number of years such equipment will be in continuous use. All members of society should participate in working to reduce energy consumption so that we can achieve our goal of reducing carbon dioxide emissions on schedule.

* https://www.miuraz.co.jp/csr/

Mitsui Fudosan
Yu Yamamoto, *General Manager, Sustainability Promotion Department*

Scope 3 Methodology

Real estate developer Mitsui Fudosan's total supply chain emissions are between 4.2 million tons and 5.5 million tons annually.* Somewhat more than half of those emissions occur during construction of buildings. Reducing such "upstream" emissions is therefore important emphasis in company's decarbonization action plan, adopted two years ago. Mitsui Fudosan and fellow real estate companies worked out methodology in accordance with government protocols, and Real Estate Companies Association of Japan issued manual in June 2023 for making calculations. Mitsui Fudosan has begun using manual for all construction orders placed since October 2023. Numerous unknowns remain in regard to how adjustments in different inputs will affect actual emissions. Company will work to visualize cause-and-effect dynamics as it strives to help meet national emissions-reduction targets for 2030 and 2050.

* https://www.mitsuifudosan.co.jp/english/esg_csr/carbon_neutral/

NGK Insulators
Ryo Ishihara, *Vice President, General Manager, ESG Management Department*

Multifaceted Approach

Company's activity in manufacturing products based on ceramic materials entails emitting large amounts of carbon dioxide. NGK Insulators adopted environmental vision in 2021 that provides for reducing emissions 50% by 2030, compared with 2013, and completely by 2050.* Fourfold program for achieving targeted reductions consists of developing and marketing products and services that contribute to decarbonization, as in projects for localizing electric power generation and consumption; reducing in-house consumption of energy through wide-ranging conservation in plants and offices; making dramatic improvements in production processes, as in switching to ammonia and hydrogen fuel; and making expanded use of renewable energies, such as solar power. Program is progressing largely on schedule, but Scope 3 fulfillment will require broadened activity in getting suppliers to participate in emissions-reduction initiatives.

* https://www.ngk-insulators.com/en/sustainability/environment-vision.html

JERA
Hisahide Okuda, *President, Director, CEO, and COO*

Fuel Conversion

Roadmap formulated by JERA in 2020 calls for eliminating net emissions of carbon dioxide in power generation through two-pronged approach: achieving zero emissions in thermal power generation and incorporating renewable energy sources. Planning and preparations are proceeding on or ahead of schedule. Switching fuels—to ammonia and hydrogen—is especially important stratagem in eliminating emissions of carbon dioxide in thermal power generation. JERA is converting its coal-fired plants to ammonia and is preparing to introduce mixtures of more than 50% ammonia. It is considering US projects for producing ammonia. JERA operates US power plant that runs on fuel mixture of hydrogen and natural gas and plans to conduct pilot-plant generation with hydrogen by 2028 in Japan.*

* https://www.jera.co.jp/corporate/about/zeroemission

Kyushu Electric Power
Koshiro Suga, *General Manager, Corporate Strategy Division*

Road to Carbon Neutrality

Kyuden Group has committed to achieving carbon neutrality by FY2050, working through supply and demand: decarbonizing power sources and promoting electrification. Aims to reduce greenhouse gas emissions in supply chain 60% by FY2030, compared with FY2013.* Domestic greenhouse gas emission reduction target for FY2030 is 65%, above Japan's reduction target of 46%. Is developing renewable energy, maximizing use of nuclear power, and reducing carbon intensity of thermal power. Has achieved about 60% of its target of 5 GW by FY2030, including projects invested in or under development. Is developing 220 MW offshore wind farm, for example, in Kitakyushu. Is working to improve electrification rate in Kyushu, as by providing electric vehicle charging at apartment buildings and leasing for induction cooktops and heat pump water heaters to promote all-electric homes.

* https://www.kyuden.co.jp/english_company_esg_carbonneutral-vision2050_index.html

Nikkei SDGs Forum Symposium

SUSTAINABLE DEVELOPMENT GOALS

The Autumn 2023 Nikkei SDGs Forum Symposium was held in Tokyo on September 12. Also livestreamed on Nikkei Channel, the symposium brought together participants from many fields to appraise global progress on the UN's Sustainable Development Goals (SDGs) as we pass the midway point between their formulation and the target year of 2030.

OPENING REMARKS

Message to the Nikkei SDGs Forum

António Guterres, *Secretary-General of the United Nations*

This year's Nikkei SDGs Forum shines a spotlight on a stark truth: the Sustainable Development Goals are in trouble.

On every front, our world faces deep challenges — from climate chaos and conflicts, to poverty, inequalities, mistrust and division. Progress towards the Goals has stalled, and in the case of poverty and hunger, reversed.

We count on partners like Nikkei, as part of the SDG Media Compact, to help get the message out that the SDGs need a rescue plan.

The discussions taking place during this Forum among governments, businesses, civil society and media alike can help accelerate progress in a number of key areas.

From ending poverty and hunger, to transforming education, to ending climate change and the destruction of our natural environment, to reforming the global financial system so developing countries can get the support they need to invest in their people, we need all hands on deck.

World leaders coming to New York this month to attend the important Summits around the SDGs, climate ambition, health and financing for development must arrive with credible plans to get the SDGs back on track, and invest in a better future for people and planet.

But we all have a role to play. As you meet for this important Forum, I am counting on your continued commitment to work as one to rescue the SDGs and leave future generations the sustainable legacy they deserve.

PRIVATE SECTOR

Disaster Resilience Bonds as SDGs finance

Megumi Muto, *Vice President of Development Finance, Mobilization, and Partnership (International), Chief Sustainability Officer (CSO), Japan International Cooperation Agency (JICA)*

JICA's annually issued "theme bonds" are an agenda-setting tool that highlights current initiatives as part of the agency's pursuit of human security and quality growth through official development assistance. With natural disasters increasingly prevalent, JICA launched "Disaster Resilience Bonds" as theme bonds this year.

Funds raised from the bonds will be allocated to disaster risk reduction and reconstruction from natural disasters in developing regions based on the "Build Back Better" principles of the 2015 Sendai Framework. This will include a sector loan to rebuild infrastructure on the earthquake-struck Indonesian island of Sulawesi and work to increase resilience to natural disasters in the Philippines.

Every dollar spent on ex-ante risk reduction and resilience reduces post recovery costs by $15, not to mention reduction in human casualties. JICA's Disaster Resilience Bonds will ensure that vulnerable communities are better prepared against natural disasters, "leave no one behind" in accordance with the SDGs promise.

"Good Tech": Realising a sustainable future through technology

Yuko Kawakami, *Executive Officer and Business Transformation Service Leader, IBM Japan*

A recent IBM study found that 48% of Japanese CEOs identified sustainability as their biggest challenge. Despite 95% of companies setting ESG targets, only 10% achieve anything significant. To move beyond lip service and effect real change, companies need to wake up to sustainability's economic merits and incorporate it into their business model. Technology can make that happen.

IBM is serious about sustainability. The company has its own ESG framework designed to help make a more ethical, equitable, and environment-friendly future. IBM is also using AI, Blockchain and IT infrastructure to help solve environmental, societal, and governance challenges, from predicting natural disasters around the world to helping companies gather and analyse vast quantities of data for ESG reporting. With a 50-year track record in sustainability, proprietary green technologies, and world-leading R&D, IBM Consulting works to help clients become sustainable and profitable.

"Human-centered automation" for more fulfilled lives

Kiyohiro Yamamoto, *Director, President, and Group CEO, Azbil*

Automation company Azbil was founded in 1906, setting itself a mission to "free people from drudgery." Today its technology helps people live happier, more fulfilled lives while directly contributing to a sustainable society.

In fiscal year 2022, Azbil helped its customers cut 2.76 million tons of carbon emissions.* It aims to increase this figure to 3.4 million tons annually by FY 2030. The challenge is achieving balance: hitting environmental targets while still increasing the wellness and satisfaction of people working in offices and manufacturing plants and delivering on customer goals. Azbil's advanced energy-saving systems are found in landmark buildings throughout Asia and its cloud-based predictive maintenance services in a range of manufacturing plants.

Internally, Azbil believes in enhancing the health and happiness of employees through "people-oriented management." Diverse, healthy and fulfilled employees are more productive and serve customers better.

* https://www.azbil.com/csr/basic/environment/core_business_activities/contribution/contribution-to-the-environment/index.html

The promise of value-led sustainability

Tokuya Takizawa, *Chief Sustainability Officer (CSO), EY Japan*

Value-led sustainability is everybody's business. While each link in the value chain has its own concerns—for suppliers, these include human rights and biodiversity; for employees, DE&I and health and safety; for customers, ethical purchasing—the promise of value can unite all of these actors in a combined effort to build a more sustainable world.

It's useful to think of the long-term value that businesses can deliver in terms of four categories: people, client, societal and financial value. For example, efforts to create social value by preserving biodiversity can present business opportunities, and leveraging technology can produce more consumer value from the same limited resources.

With sustainability reporting policies coming into effect globally, the need to create a plan and work toward it has never been more urgent. The most important thing is to keep moving forward step by step.

Maximising human capital for business portfolio innovation

Takahiro Yamada, *President and CEO, ABeam Consulting*

Sustainable growth, creating both social and economic value, depends above all on business portfolio innovation. Alongside making full use of digital capabilities, one key to business portfolio innovation is maximising human capital.

In the past, human capital management has often been poorly integrated with management and business strategy. However, as corporations face increasing challenges and uncertainty, choice and concentration will be necessary: targeted investment in key business domains, and active attempts to attract the best talent. The Chief Human Resources Officer (CHRO) has an important role to play in this process, working alongside the CEO, CSO, and CFO to ensure that human capital considerations are incorporated into management and business strategy. Human capital investment, and its financial and other outcomes, must be quantified, measured, and reviewed against concrete goals to create a virtuous cycle of investment and value creation.

Key drivers for creating financial and social value through business

Yoshifumi Kishida, *Chief Sustainability Officer (CSuO), Nomura Holdings*

With all the SDGs said to be seriously off track, Nomura Holdings sees three key drivers for achieving them as planned: private finance, sharing initiatives through disclosure, and policy engagement.

Decarbonising the world will cost an estimated US$150 trillion.*[1] Nomura Holdings' contributions to sustainable transition finance have already made it Number 1 in domestic renewable energy project financing and won international recognition as Lead Manager of the Year for Transition Bonds in Environmental Finance's Bond Awards 2023.*[2] Nomura is also constantly improving its disclosure to better share information on initiatives, and learning from other companies' disclosure as well.

Finally, in policymaking, Nomura Holdings participates actively in groups ranging from Keidanren to the London Stock Exchange's Sustainable Bond Market Advisory Group. There is only so much one company can achieve, but working to improve the system itself in this way can amplify everyone's efforts.

*1 "World Energy Transitions Outlook 2023" International Renewable Energy Agency *2 Inframation, Jan–Dec 2022

Gross Circulation Value: Quantifying the value of reuse

Shinichiro Fujisaki, *President and CEO, Aucnet*

A circular economy is a prerequisite for carbon neutrality, but the lack of a unified, quantitative way to measure the achieved greenhouse gas reductions has hampered consumer buy-in. In response, Aucnet has developed the concept of Gross Circulation Value (GCV), a measurement of the value created by business activity based on the reuse of products.

GCV encompasses both financial and environmental value. Environmental value is defined as opportunity (potential emissions avoided via reuse) minus risk (emissions actually generated). This makes it possible to quantify and visualise the benefit of a given consumer action to the planet and other people, which is a powerful basis for emotional appeal.

Aucnet is now working on refining the techniques for calculating and measuring GCV, with future plans to measure the value of recycling-based business activity to further support the circular economy.

SMBC Group's sustainability initiatives

Masayuki Takanashi, *Sumitomo Mitsui Financial Group, Group Chief Sustainability Officer*

The theme of SMBC Group's latest medium-term management plan is "fulfilled growth," a world where economic value and social value creation go hand in hand. SMBC has identified five priority areas: the environment; DEI and human rights; poverty/inequality; declining birth rate/ageing population; and reviving Japan.

For the environment, SMBC supports customer decarbonisation through multiple solutions. Over 1,200 companies already use Sustana, an SMBC-developed digital tool to reduce GHGs. The company has also developed a credit card service that lets corporates visualise carbon emissions.

With one in seven children born into poverty, inequality is an issue in Japan. Reduced educational opportunities make it harder to break the cycle. SMBC has tied up with NPOs and supplementary education providers to offer coupons, financial education and study tablets to financially challenged children. The goal is a society where everyone can enjoy prosperity and happiness.

CONVERSATION

The evolution of ESG Management from a PBR analysis and Human Capital Perspective

Kunio Ito, *Chair of TCFD Consortium, Chair of Human Capital Management Consortium, Director of Hitotsubashi CFO Education and Research Center*
<Moderator>
Koichi Sakai, *ESG Fellow, Nikkei BP Intelligence Group*

Professor Ito began with an in-depth analysis of the JPX Prime 150, the index of Japan's top value-creating companies. Why, asked Sakai, had Ito chosen to focus his lens on that specific group? "Japanese companies are not good at creating corporate value," Ito explained. "Forty per cent of companies in the TOPIX 500 have a price-to-book ratio (PBR) of less than one. I hope my analysis of the JPX150 will inspire weaker companies to do better."

The JPX Prime 150 companies outperform the TOPIX 500 on almost every measure. Their average PBR is 3.6%, their average ROE is 16%, and their net profit margin 13%. They also boast a higher proportion of external directors, female directors and foreign shareholders, while intangible assets account for over 80% per cent of their market capitalisation.

JPX Prime 150 companies are spearheading Japan's governance revolution. They have engaged their investors in dialogue and incorporated sustainability into their medium- and long-term planning. That is a good start, argues Professor Ito, but ESG management by itself is not enough.

To succeed, ESG management needs to be galvanised by companies granting their employees greater autonomy and exploiting their diversity of talent. Professor Ito has coined the acronym ESGH, where the H stands for human capital. "Human resources are not a cost. Just like capital, placed in the right environment, they can grow in value," he said.

Ito proposed looking at human capital in balance sheet terms, replacing "shareholder's equity" with "human capital" on the right and net business assets with the human resource portfolio on the left. Provided the employees are happy and feel well utilised, they will exceed the human capital cost, creating "human value added" (HVA), which will in turn drive up corporate value. ESG management will only advance if employees are granted greater freedom.

CONVERSATION

Climate change action the world urgently needs

Kaoru Nemoto, *Director, United Nations Information Centre, Tokyo*
<Moderator>
Miki Baba, *Editor-in-Chief, Nikkei ESG*

This year's record-breaking summer heat in the northern hemisphere was a stark reminder that climate change is moving much faster than our action. Halfway to 2030, only 15% of SDG targets are on track in a satisfactory way. As Kaoru Nemoto explained, this is a result of cascading crises of COVID-19, climate, and the war in Ukraine and the cost-of-living crisis thereof. At this halftime of the SDG implementation, we need all hands on deck to get things moving again—and this issue cannot be left to governments alone. "The media, like everyone else, has a role to play," Nemoto said.

We need a strong sense of urgency, as we have been delaying our action despite the clear warning of climate science. Worst are the developing countries which have been most exposed at the front line of climate crisis, while they contribute little to the global emissions causing climate change. Their calls for climate justice are rising for developed nations to step up and provide substantial financial support to deal with these issues. This is echoed by the growing wave of climate litigation worldwide, in which younger and more vulnerable plaintiffs sue businesses and governments over decisions that threaten their future.

What, Miki Baba asked, can the media do to help at this juncture? Nemoto set out a vision of more solution-based climate coverage. Because sensationalist, disaster-oriented climate reporting makes people turn away from the problem in despair, the media should also highlight the many ways governments and businesses can take to address climate change, and promote lifestyle change at the individual level. The "1.5℃ Promise" media campaign is one example of reframing climate action as a challenge for us to face in solidarity rather than an inevitable catastrophe. We must use the remaining years of the SDGs timeframe to build up momentum and win this battle for the world.

TALK SESSION

Businesses that drive the SDGs forwards

From left:
Norichika Kanie, *Professor, Graduate School of Media and Governance, Keio University*
Eriko Suzuki, *CEO & Founder, Kind Capital*
<Moderator>
Lina Sakai, *CEO & Founder, Fermenstation*

Professor Kanie got the discussion underway by pointing out that the SDGs are in trouble. According to the latest Global Sustainable Development Report (GSDR), bar a few exceptions like "access to mobile networks" and "achieving full employment," work toward most goals has either stagnated or gone backwards. The GSDR has published a new model for transformation: two intersecting S curves, one representing "dominant unsustainable pathways" on their way to phase-out, the other "emerging sustainable pathways" en route to stabilisation.

This transformation to sustainability won't come cheap. Estimated at an annual $2.5 trillion before Covid, the funding gap for the SDGs has since grown to $3.9 trillion. Attracting investment is key to achieving the goals.

Angel impact investor Eriko Suzuki took a largely positive view. The sums flowing into impact investing are growing steadily. This money, which once came solely from the foundations of the socially conscious wealthy, now comes from a broader array of sources.

Suzuki's personal background—experience living in the Middle East and Africa, and jobs first in finance and then at a drone manufacturer in Silicon Valley—was what motivated her to get into angel investing. "The job I do didn't really exist five or ten years ago. I needed to create the job and figure out how to create value for communities," she said.

The drone company where she worked was a start-up with an interest in solving social problems: it used to send its drones into disaster areas. "Fast-growing ventures always need to have purpose. Purpose attracts and inspires talent and also attracts investment," Suzuki said.

Lina Sakai founded Fermenstation, a "circular economy" company that turns food waste and other surplus biomass into raw materials like ethanol, 14 years ago. She points to a paradox: while vociferous in their support for the SDGs, investors too often suffer from unrealistic short-term thinking.

"Social impact businesses develop more slowly than normal businesses and are more challenging to evaluate. We can't achieve the SDGs if investors insist on quick returns. Both sides need to set clearer KPIs for evaluation purposes," Sakai says.

Sakai's firm has prospered by forging partnerships with the large Japanese companies that buy the raw materials Fermenstation makes. She thinks they have a major part to play in changing the general mindset towards sustainability inside Japan. "We provide the big firms with raw materials, then they do the communication on our behalf. People think, 'Oh, I saw that product mentioned in such-and-such a place too' and awareness rises," she explained.

But with corporate venture capital accounting for 40% of Japanese VC, is there a risk of the big firms usurping the start-ups' territory? No, says Sakai, because start-ups move faster and are unafraid to test things in a way big companies cannot.

Professor Kanie pointed out that a broader change in perspective is also required. Traditional GDP still counts environmentally destructive activity as a positive. The world needs a new metric that takes social and natural capital into account.

The Nikkei SDGs Forum Symposium is supported by

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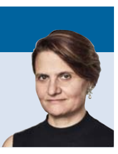
Lessons from our neighbourhood fight to cut wasted energy

OPINION

Leyla Boulton



A year ago, I launched a campaign to equip old UK houses like mine with carbon-cutting tech to help tackle climate change. A year on, do I think individuals can really make a difference in the fight against global warming?

The answer is yes, but using the democratic levers available to citizens to make change happen can be slow and painstaking. My north London neighbourhood has had to battle to overcome restrictions on retrofitting listed and conservation-area homes in a borough that is full of them. It may sound obscure, but this cause has wider relevance as reducing carbon emissions from old housing stock has a big part to play in the UK's green energy transition.

If you can make it easier to change homes that are among the most protected in the country, then you can change everything else and drive demand for green goods and services.

In Islington, we thought we would be pushing on an open door: the council itself has declared its ambition to become a net zero borough by 2030, and it owns many of the draughty Georgian and Victorian buildings requiring an upgrade.

Here are the five lessons we learnt:

1 To unleash people power, appeal to citizens' economic self-interest and focus on a clear objective

Having been thwarted by planning permission rules in attempts to install solar panels and double glazing, many residents were receptive to our call urging Islington council to change these rules, to protect the environment as well as historic architecture.

Launched after oil and gas prices shot up in the wake of Russia's invasion of Ukraine, our petition attracted not just the climate-conscious but neighbours who saw economic benefits from cutting their fossil fuel consumption. Our securing of 2,000 signatures after weeks of shoe-leather campaigning, combined with media appearances, prompted the council, dominated by the Labour party, to begin work on a supplementary planning document (SPD).

2 Offer politicians support to keep difficult promises

Having resisted pressure from a vocal minority of car-owning residents to scrap traffic restrictions, Islington council was vulnerable to the question of how it would meet its 2030 net zero target when it comes to housing. According to Sakina Sheikh, chair of the London Assembly's planning and regeneration committee, buildings and construction account for 68 per cent of the capital's carbon emissions. This makes the Conservative government's

Street level: Leyla Boulton (second right) and fellow campaigners — Chris Dorley-Brown

gutting of the retrofit component of the UK's once world-leading climate strategy particularly wrong-headed in London. But, as former Conservative minister Amber Rudd said recently, "you can't make politicians do things that will cost them votes . . . what you need is to mobilise public support for climate action".

3 Promote examples of good governance but beware of petty politics

My starting point was reform by the Conservative-controlled council in Kensington and Chelsea, which had encouraged residents to install solar panels. Conceived by Sarah Buckingham, the borough's head of conservation and design, who had written the national rules for heritage quango Historic England, the council's system promised approval of retrofit measures as long as they met conditions to protect a building's historical character. It has since extended the approach to double-glazing windows.

"A lot of people don't even try to retrofit because they think the planning officer will say no," says Wera Hobhouse, the Liberal Democrats' spokeswoman on net zero and MP for historic Bath. Yet low uptake of the Royal Borough of Kensington and Chelsea (RBKC)'s new system prompted Islington's deputy leader to mock our suggestion that it build on the Tory council's example. Cem Kemahli, RBCK's lead councillor for planning, maintains that he had expected a slow start. Still, it's hard not to conclude the council would have got more traction with the support of a local campaign like ours.

4 Enlist experts

My campaign co-leader Anne-Marie Huby and I were short of expert knowledge on exactly what to ask for. We teamed up with Chris Procter, a local architect who last year produced a Climate Emergency Conservation Toolkit setting out how to make 19th century houses more sustainable. A hunger for this information has made councils up and down the country seize on the guide. A shortage of guidance and skills is also why Ben Ridley, founder of Architecture for London, an architectural practice, set up his own contracting firm to do retrofit work for clients. "At the start I was trying to convince people that's what they should do," he says. "Now, 50 per cent of client briefs say 'how can we make this thing as sustainable as possible?'"

5 Encourage bureaucracies to communicate and cut waste

As we wait for Islington officials to produce the first draft of the long-promised SPD, an inability to write plain English and resistance to new ways of working are sources of frustration.

Exhibit A: the council's introduction to a new service to tell residents what is already possible under poorly-understood rules: "The service is directed towards informally dealing with general planning process issues relating to a number of defined areas and is unlikely to be suitable for anyone seeking comments on the acceptability of a proposed scheme".

Submitting a planning application under the current system is a gamble — residents have no idea whether or not it will succeed. But if the council were to set out conditions for a successful application, residents could submit their plans with more confidence.

Will our efforts be in vain? No, but there's only so much we can achieve given what Wilfrid Petrie, who ran French utility Engie's British arm until 2019, calls the UK's "lack of government commitment and master planning". Angela Rayner, the shadow minister for levelling up, says. if Labour comes to power in elections next year, a Warm Homes Plan would "upgrade every home that needs it, cutting bills and creating thousands of good jobs for electricians, engineers, and construction workers".

Labour's intention to rely on local authorities to shape the plan makes a local success, in a borough like ours, all the more pressing.

Leyla Boulton is development editor, FT Live, and senior editor, Financial Times

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Electric vehicles The once enthusiastic but now cooling 'public narrative', plus cost and infrastructure concerns, put the brakes on growth. By *Peter Campbell*

EVs reach for market beyond early adopters

For months, the Ford dealership in the North Hills neighbourhood of Los Angeles sold the electric Mustang Mach-E at a mark-up, citing huge demand. Today, more than 100 of the battery models sit on its lot, waiting for buyers.

Down the road, the rival Kia dealership is offering money off its new battery vehicles, while the neighbourhood's Mercedes-Benz outlet has phoned around potential customers to advertise its new, more generous financing offer on electric cars.

From California to the UK and Germany, discounts are creeping into a segment that was previously such a hotbed of activity that customers had to wait months to take delivery of their cars.

The electric vehicle (EV) market is still growing, with each month breaking new sales records. However, the pace of growth has slowed, as eager early buyers give way to a more sceptical mass market. The result is a significant challenge for an industry that is racing to decarbonise in order to hit emissions targets.

"The challenge for us is that we are moving from a category of early adopters," says Luca de Meo, chief executive of French carmaker Renault, which is preparing a launch of affordable EVs in Europe. "They have the money, it's cool to buy a Tesla or a new Chinese whatever, and they can change in six months. It's a niche of the market. But, if we want to move to 30, 40, 50 per cent of the mix, we need to attack the mass market."

Despite a flurry of new products, though, efforts to sell EVs to mainstream buyers have faltered. Rising prices and interest rates have made it harder for EVs, which are generally more expensive than internal combustion cars, to win over new customers. Among their well-documented concerns is the inadequacy of the charging infrastructure.

But another significant reason for slowing demand is the coolness towards the sector shown by governments that once proudly promoted EV technology.

Two years ago, at the COP26 climate summit in Glasgow, countries, cities and carmakers signed a pledge to phase out sales of new non-zero emission vehicles by 2040. The agreement was spearheaded by the UK hosts and signed by more than 30 countries, including Chile and the Netherlands, and almost 40 cities or states, including New York, California and São Paulo.

However, two years later, as global climate delegations prepare to travel to Dubai for the COP28 summit, some of the same voices are sounding caution on the technology they championed.

Nowhere is this seen more poignantly than in the UK, which has pushed back the end-date for the sale of new combustion-engined cars from 2030 to 2035. Even though interim sales targets will still propel the EV sector to account for the government target of 80 per cent of sales by the end of the decade, the message it sent to consumers was they can wait for another five years.

"There was a bit of disappointment on the backtracking of the public narrative," says Sandra Roling, director of transport at the Climate Group, a non-governmental organisation that helped draft the original Transport Pledge from COP26. "It is important to stay the course." She says the main impact of the rollback was "confusion for everyone, for consumers, for businesses".

Even so, business buyers — which, in advanced markets such as the UK, account for more than half of sales — are still driving significant adoption of EVs, she says.

Carmakers are also expecting EV sales to continue to rise steadily. "We are confident in the UK remaining a lead market, that is at least faster than the average," says Thomas Becker, who leads sustainability at German group BMW, which owns the UK's Mini and Rolls-Royce brands.

He believes that — after Europe's standout leader in EV adoption, Norway, and the Netherlands — "of the big European markets, the UK is faster". BMW expects a "steady continuation" of the rising EV interest it has seen, led by the Mini brand, which will turn fully electric this decade.

But, like others in the industry, the company still believes a widescale expansion of the charging infrastructure is needed to allay motorists' worries about running out of battery power or being forced to queue for a charging point. "Charging has to grow with the fleet — this really is decisive," Becker says. "You cannot just say the job is done."

Attracting investors into charging is still difficult, with the nascent market offering poor returns. According to Vittorio Carelli, an analyst at rating agency Fitch, the EV industry is stuck in a

A BMW showroom in Berlin: the company says greater expansion of charging infrastructure is needed — Krisztian Bocsi/Bloomberg

> There is a 'complete lack of historical data' on a range of issues

"vicious cycle", with motorists put off by the apparent lack of chargers, and charging operators put off by the relatively low numbers of EVs on the road.

"There is no money if the development of the asset infrastructure does not provide a sufficient amount of return," he argues.

A "complete lack of historical data" on a range of issues — from charging locations to the best utilisation rate to maximise profit while not keeping motorists waiting — is holding back investment, Carelli suggests. The best case for investors, he adds, is to treat charging businesses as unprofitable but with tremendous potential.

Some companies, such as Chargepoint and Allego, and large operators, such as Tesla are now ramping up their installations.

And, for all the political headwinds, carmakers — as they face tightening emissions rules — still expect the road to EVs to be a one-way street. "At the end of the day, governments are going to do what governments are going to do," says Jim Rowan, chief executive of Volvo Cars. "We have got to run our own race."

Ship shortage holds back sector's role in moving captured carbon

Maritime transport

Vessels could deliver CO_2 to offshore storage sites, reports *Oliver Telling*

The shipping industry delivers about 90 per cent of world trade and is powered almost entirely by fossil fuels, making it a notable contributor to pollution. But some think it could now play a vital role in efforts to stop carbon emissions entering the atmosphere.

As lawmakers and businesses face growing pressure to cut global emissions in the lead up to this year's COP28 conference, some are betting that systems that capture and store carbon underground will contribute to these efforts. While much of the CO_2 captured will be transported through pipelines, experts say ships will also be needed to ensure the captured gas reaches offshore storage sites, such as those under the North Sea.

Ships have flexibility to change route

With consumption of fossil fuels expected to decline, demand for transporting CO_2 could open up a new line of business for companies that traditionally shipped oil and gas.

"CO_2 storage is going to be very important [and] shipping is going to play a big role," says Lein Mann Bergsmark, vice-president of supply chain research at analysis group Rystad Energy.

Although environmentalists say efforts should be focused on phasing out fossil fuels altogether, the volume of CO_2 captured annually is expected to grow from about 40mn tonnes to 600mn tonnes by 2030, according to Rystad. The analyst predicts as much as 15 per cent of that could be carried by ships which, unlike fixed pipelines, can change route and facilitate transport to storage sites around the world.

But there is currently a severe shortage of ships able to meet the expected demand. And it is unlikely that more vessels will be built in the near future, shipping insiders say, given uncertainty over how the nascent carbon capture industry will develop.

The current size of the carbon-carrying fleet is tiny. Just four ships are in operation, Rystad says. These transport relatively small amounts of CO_2 for the food industry, which uses it in products including fizzy drinks. However, this fleet is unlikely to expand significantly anytime soon. Currently, only five new ships are on order, according to shipbroker Gibson. Three of these are being constructed to aid the Northern Lights project, a Norwegian government initiative that plans to store CO_2 below the North Sea.

Richard Matthews, director of consultancy and research at Gibson, says the shipbroker is "trying to stimulate investment from shipowners", but these businesses face uncertainty over future demand, as well as the exact size and types of ships that will be required.

There are currently about 40 commercial carbon capture and storage facilities which, together, are able to capture more than 45mn tonnes of CO_2 annually, according to the International Energy Agency. This is a small fraction of the 36.8bn tonnes in worldwide emissions last year. Specialist ships can also take years to build: if a CO_2 carrier was ordered today, it may not be completed until 2027, Matthews points out.

In 2021, shipping equipment manufacturer Wartsila announced it had been granted "approval in principle" for a cargo tank design suitable for carrying liquid CO_2. But Roger Holm, president of Wartsila's marine power division, says the company is yet to receive its first order, and the development of carbon capture is still in its "early phase".

Even if carbon-carrying vessels suddenly multiplied, their environmental benefit would be countered by the shipping industry's slow progress in decarbonising its own emissions.

Diplomats at the UN's International Maritime Organisation this summer set a new target for shipping to achieve net zero emissions "by or around" 2050. But they are yet to agree a carbon levy or another economic measure that would

> The current size of the carbon-carrying fleet is tiny. Just four ships are in operation

incentivise the shipping industry to invest in more expensive green fuels. Regulation of the industry remains difficult due to its international nature.

Holm suggests carbon capture systems could be installed on ships, themselves — as part of efforts to slash emissions. He says Wartsila is hoping to test its own system next year on a ship owned by Norwegian group Solvang, with the goal of capturing 70 per cent of CO_2 emissions at the point of exhaust. But Holm adds that such technology requires the development of more ships and ports that can facilitate the transport of captured CO_2.

Mann Bergsmark agrees the world faces a "chicken and egg" dilemma: while there are not enough carbon-carrying ships, there is also a shortage of active storage projects to incentivise the construction of more vessels.

"There are not enough [organisations] that are standing ready to transport [or] store the CO_2," she adds. "This is going to be one of the most important challenges."

Industrials Mixed political messages and a lack of business incentives are holding back greater uptake of the technology, writes *Ian Johnston*

Carbon capture faces high cost hurdles

Carbon capture: onshore facilities for Northern Lights under construction
Svein Ove Soreide

The hope of seeing the Northern Lights has long drawn tourists to Norway, but a Norwegian carbon capture and storage (CCS) project of the same name is now attracting plenty of interest of its own.

Northern Lights, a joint venture between oil companies Shell, Equinor and TotalEnergies, has welcomed 6,000 visitors — including politicians, industry leaders and climate campaigners — to its site in Øygarden, near Bergen, in western Norway, since construction began in 2021. It will be the world's first system offering cross-border transportation and storage of clients' carbon dioxide emissions when it launches next year.

The process involves capturing carbon from industrial or power plant emissions and injecting it into depleted oil wells or aquifers. Oil and gas companies have sought to play a leading role in developing CCS technology, but some accuse them of using it as a means to justify continued fossil fuel extraction. The International Energy Agency criticised the industry's "excessive expectations and reliance on" the technology just last week — saying it was "not a way to retain the status quo".

Northern Lights says it will offer a comprehensive service to carbon emitters. "We compare it with waste handling: you put your trash on the kerb and we come and pick it up," explains Børre Jacobsen, the venture's managing director. It has signed deals to handle a small proportion of global emissions from Yara, a Norwegian fertiliser producer, and Heidelberg Materials, a German cement manufacturer.

Heavily polluting industries are betting on CCS technology to cut their greenhouse gas emissions. But, despite rapid growth in the sector, the technologies remain expensive, and have not yet been proven at the scale needed to abate emissions fully.

Total investment in CCS projects reached a record $3bn in 2022, according to the IEA. However, the organisation says: "current [CCS] policies are wholly insufficient to support outcomes that match government net zero emissions pledges." Based on present plans, 115mn tonnes of CO_2 will be captured in 2030, compared with 40mn tonnes now. To reach net zero emissions, 1bn tonnes of CO_2 will need to be captured by the end of the decade, the IEA says.

While Jacobsen expects progress by 2030, he notes that CCS will face technical barriers, as with any developing technology. "Most timelines will probably slip a little bit, by a year or two," he says.

It is set to be a big topic at the COP28 summit this month. COP president-designate Sultan al-Jaber, who is also chief executive of Abu Dhabi state oil company Adnoc, has said the world must "get serious about carbon capture technologies" if it is to reduce industrial emissions.

Experts say mechanical carbon removal methods are likely to be a necessary part of tackling climate change but that governments should focus efforts on reducing current greenhouse gas emissions through other means, such as rolling out renewables, or increasing energy efficiency.

"We should be trying to get rid of the CO_2 emissions without applying CCS and, once we've got to the stage where we can't really substitute, then we've got to apply it," says Paul Fennell, professor of clean energy at Imperial College London. "It's uniquely important for decarbonising some very challenging industries, particularly cement, iron and steel."

The IEA has said there should be no new oil and gas drilled if the world is to meet its goal of net zero emissions by 2050. But industry executives reject the idea that the technology is a means to justify further oil and gas exploration.

"CCS has nothing to do with the continuation of production of hydrocarbons," says Guido Brusco, chief operating officer of natural resources at Italian energy group Eni, which is active in several CCS projects in the UK, Italy and elsewhere. However, the UK government has announced both new oil and gas licences in the North Sea and £20bn in funding for carbon capture and storage. "I'm annoyed that the government is deliberately trying to conflate CCS with new oil and gas," Fennell says.

Brusco expects Eni to avoid the delays that have plagued some projects by pumping CO_2 into unused oil and gas reservoirs, rather than aquifers. US oil major Chevron's CCS site in Gorgon, Australia, was delayed by excess water in its reservoirs. The company spent $3.2bn building a CCS system to accompany a $54bn natural gas project, but the project has missed a target of capturing and storing 80 per cent of the CO_2 it produces for a seventh consecutive year.

This month, Eimear Bonner, chief technology officer at Chevron, told the FT the company is working to remove the excess water, saying the technology is working "very well". But Chevron stored just a third of the CO_2 it captured in the year to June 2023. Missing targets has cost the group tens of millions of dollars in carbon offsets.

> 'The rate of investment has been slow . . . it's not directly revenue generating'
> **Jon Gluyas, Durham University**

In the UK, CCS projects are not set to be in operation until 2025, with questions remaining over its commercial viability. "The rate of investment has been slow, unsurprisingly. It's not directly revenue generating — you've got to create a market in terms of carbon credits," notes Jon Gluyas, professor of geoenergy, carbon capture and storage at Durham University.

More government support to carbon prices is needed to make polluting without capturing emissions more expensive, says Jacobsen, and businesses should be rewarded for using the system. Longer term, "you need to get away from subsidies if this is to take off. Will there be a premium [paid to businesses using carbon capture]? If big corporations are serious, they need to start buying carbon-free materials."

Interview Michael Mann The climate scientist tells *Philippa Nuttall* 'there is no path to meaningful climate action that doesn't go through democratic governance'

'Our destiny is mostly in our own hands'

Mann explaining to climate activists and advocates that 'it is not too late'
Julian Meehan

American climate scientist Michael Mann is on a mission to protect the world against the "doomers" — fellow academics or campaigners who have decided it is too late to avoid the worst impacts of climate change.

In his latest book, *Our Fragile Moment*, Mann uses palaeoclimatology (the study of prehistoric climates) to demonstrate why he believes certain of his peers are wrong to throw up their hands in despair.

He is insistent, nonetheless, that urgent political action is needed to avoid humanity creating a world in which it would be much less pleasant to live. "Our destiny is still mostly in our own hands" is the main message of *Our Fragile Moment*, Mann says, by video link from Philadelphia.

Best known for his "hockey stick" graph that showed the dramatic rise in global warming since the industrial revolution, Mann has been director of the Penn Center for Science, Sustainability and the Media at the University of Pennsylvania since September 2022.

While his 2021 book *The New Climate War* dealt with the politics of climate change, and the solutions needed to bring down emissions, *Our Fragile Moment* is aimed at "explaining to climate activists and advocates that it is not too late". Mann analyses geographic records to show how and why global warming happened in the past and to underline his message that "warming does really stop when carbon emissions go to zero."

Some scientists argue that, the longer it takes to reach net zero, the greater the risk that global warming will continue long after greenhouse gas emissions have been cut. But Mann quotes a favourite aphorism of his friend and mentor Stephen Schneider, a professor of environmental biology at Stanford University who died in 2010: "The truth is bad enough! We don't need to scare the pants off of people with exaggeration. Palaeoclimate records tell us the models are right and, if we stop burning fossil fuels, we can prevent additional warming."

The "obstacles" to stopping global heating "are not physical, they are political", insists Mann. However, he agrees that the odds on whether we take the necessary steps don't look good at the moment. The idea of a "fragile moment" can be applied to much more than just climate change, he says — citing, in particular, "threats to democracy", not least in the US.

"There is no path to meaningful climate action that doesn't go through democratic governance," Mann says. "If we, the US, as the greatest legacy polluter don't lead, the rest of world won't follow."

And he acknowledges polls showing Donald Trump as favourite to win the next US presidential election. "If we lose the battle in the US, I am not very optimistic about where any of this goes."

> 'If we lose the battle in the US, I am not very optimistic about where any of this goes'

Mann draws parallels between the fall of the Mesopotamian civilisation in about 4200BP (before the present) and the conflict in Gaza today, where an "underlying factor" is "competition for water and other resources". A hotter world will mean more drought and, various studies suggest, more conflict as people fight for decreasing access to water: "If we can't understand that climate change is making the world less safe, more politically unstable . . . there isn't any hope for us, because it is hitting us right in the face, right now."

He draws "some hope" from the fact the world has "thwarted an existential threat" before in the form of the use of thermonuclear weapons during the cold war. "We've stared into the abyss and blinked at least once before," says Mann. Climate change is a "deeper, more ingrained problem", although he believes "we can look to the past for some cautious optimism."

Mann would like to see more nuance across the board on the framing of climate change, including the 1.5C warming level cited in the Paris Agreement. This temperature rise "isn't a cliff that we go off at", says Mann — even though it is often presented as such.

He believes the figure is important, as "we need actionable targets, or there is nothing really holding politicians' feet to the fire." But "we need to make it clear that every fraction of a degree [of warming] matters."

Similarly, in his latest book, Mann suggests a figure of 8bn people is "beyond the natural 'carrying capacity' of our planet" but admits conversations about population and climate action are difficult. "They require a level of nuance it is hard to maintain in the social media, binary world we seem to increasingly inhabit," he says. "It is obvious the planet can only support so many human beings. We can inflate the numbers through technology, but there are limits."

Discussions about population are often avoided because, historically, they have sometimes "led us to problematic places where the blame seems to be placed preferentially on the developing world and on people of colour", says Mann. "The racial overtones that have emerged in the past are problematic and troubling, and we need to flip the switch.

"It is possible to say a population is too large for the planet to support and still recognise that culpability does not apply equally across the board. In the developed world, our footprint is orders of magnitude bigger than in the developing world. More people means more carbon, more warming, and more climate change, but not all people are the same."

Instead of focusing on population by itself, Mann advocates increasing support for the education of women, which can limit population growth and help address climate change.

A multitude of studies show that extreme weather events, more frequent in a warmer world, have a bigger impact on women than men. The loss and damage fund, agreed at the COP27 summit last year, can help drive change in this area, increase resilience and allow poorer nations to leapfrog to clean energy, says Mann.

Whether and how negotiators "put more meat on the bones" of the fund will be Mann's focus at COP28. "There are all sorts of things about COP28 that can make one feel uneasy," but "I think there is some potential" for loss and damage. The fund, he says, also comes back to a core message of his book: "We can work together to solve this problem, but it requires co-operation at an unprecedented scale."

'It looks like we've lost control' of our ice sheets

Environment

Scientists warn on the rate of melting – and say research into mitigating the impact is needed. By *Clive Cookson*

Oceans are warming at an accelerating rate, with average water temperatures increasing almost twice as fast between 2010 and 2020 as during the 1990s — and 2023 registering as the hottest year ever known in seas across the globe.

"Sea levels are rising because heat causes water to expand and ice to melt," says Matthew England, professor at the University of New South Wales Centre for Marine Science and Innovation in Australia. "Ecosystems are also experiencing unprecedented heat stress; the frequency and intensity of extreme weather events are changing rapidly; and the costs are enormous."

England is one of thousands of scientists diving into the physics, chemistry and biology of ocean warming, to gain a more detailed understanding of the processes involved — and decide how best to remediate their adverse effects.

About 90 per cent of the excess heat generated by human activity is absorbed by the oceans, so England's team is working out the pattern of heat absorption around the globe. Data from thousands of floating robotic observatories maintained by the international Argo programme, combined with older measurements by ship-borne devices, show that the Southern Ocean around Antarctica is absorbing most heat — almost as much as the Pacific, Atlantic and Indian oceans combined.

The scientists, who published these findings in the journal Nature Communications, say the outlook for heat uptake in the next few decades has profound implications for regional and global climate change but remains uncertain. "It is critical we understand exactly how and where the ocean warms, both now and into the future," says Sjoerd Groeskamp, an oceanographer at the Royal Netherlands Institute for Sea Research, and co-author of the study.

One of the most intensively researched consequences of ocean warming in the Southern Ocean is the melting of Antarctic ice. This ice takes three forms. Thinnest is the sea ice resulting from seasonal freezing; thickest is the ice sheet that coats the continent at an average depth of more than 2,000 metres; in between are the floating ice shelves, often hundreds of metres thick, which extend from the landmass into the ocean.

Data deep dive: deployment of a floating robotic observatory from a French research vessel in polar waters

Supercomputer simulations by the British Antarctic Survey (BAS), published in the journal Nature Climate Change, show that accelerated melting of the West Antarctic Ice Sheet, driven by warming of the Southern Ocean, is unavoidable for the rest of this century — even in the most optimistic scenario of reducing greenhouse gas emissions. The ice sheet is the continent's largest contributor to sea level rises, currently losing 80bn tonnes of ice per year, and it contains enough ice to raise global sea levels by five metres. The researchers do not predict how much will actually melt, because their model does not simulate all factors, such as snowfall on the ice sheet. But BAS ice specialist Kaitlin Naughten gives a depressing message.

"It looks like we've lost control of melting of the West Antarctic Ice Sheet," she says. "If we wanted to preserve it in its historical state, we would have needed action on climate change decades ago. The bright side is that, by recognising this situation in advance, the world will have more time to adapt to the sea level rise that's coming. If you need to abandon or substantially re-engineer a coastal region, having 50 years' lead time is going to make all the difference."

Another study, of 100,000 satellite radar images, led by the University of Leeds in the UK and published in the journal Science Advances, found almost all ice shelves on the western side of Antarctica had lost volume between 1997 and 2021, releasing a net 7.5tn tonnes of meltwater into the ocean. In contrast, most ice shelves on the eastern side remained steady or grew in volume.

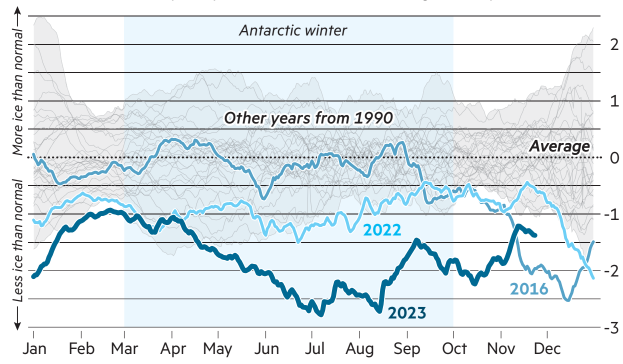
The reason is that ocean temperature and currents are different on each side of the continent. "The western half is exposed to warm water, which can rapidly erode the ice shelves from below, whereas much of East Antarctica is currently protected from nearby warm water by a band of cold water at the coast," says study leader, Benjamin Davison. "We expected most ice shelves to go through cycles of rapid but shortlived shrinking, then to regrow slowly. Instead, we see almost half [in the west] are shrinking, with no sign of recovery."

> 'It is critical that we understand exactly how and where the ocean warms, both now and into the future'

A team led by the French National Centre for Scientific Research (CNRS) carried out a similar analysis of satellite images at the opposite end of the world. The study, published in Nature Communications, found the ice shelves of northern Greenland — once considered stable — had lost a third of their volume since 1978. Three have collapsed completely since 2000 and the remaining five are thinning fast as the warming ocean melts them from the bottom. If the ice shelves are no longer in place to buttress the north Greenland ice sheet, "this could have dramatic consequences in terms of sea level rise", the researchers say.

Antarctic sea ice hit record lows in 2023

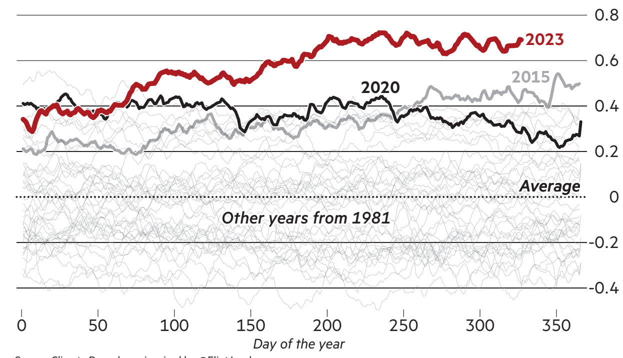
Sea ice extent anomaly compared with 1990-2023 average (mn square kilometres)



Source: Arctic Data Archive System

Ocean warming soars above average

Daily global sea surface temperature anomaly compared with 1981-2023 average (C)



Source: Climate Reanalyzer, inspired by @EliotJacobson

UN-based checks on carbon credits face critical test

Emissions rules

Scheme involving Rwandan cookstoves is the first to receive compliance label. By *David Pilling* and *Kenza Bryan*

The UN system for avoiding flaws in the controversial issue of carbon credits is now facing a critical test — after a German carbon-offset non-profit organisation secured a clearance label from a Swiss registry group.

The question of how to trade carbon credits in a credible and effective way — in order to help governments hit national emission reduction goals — has long been a difficult one. And it remains on the agenda at the UN COP28 climate summit in Dubai, this month.

A centralised system to allow companies and countries to exchange carbon credits was created by the 2015 Paris Agreement, under what is known as 'Article 6', and was further developed at the Glasgow summit in 2021.

But, in an unusual move, Rwanda's government has now guaranteed that it will forfeit the right to claim certain carbon emissions reductions in its national decarbonisation target — a big change in the way the market has worked so far.

Rwanda extended this guarantee by using a "corresponding adjustment" tool created by the UN. The tool was designed to ensure the estimated cuts in carbon dioxide entering the atmosphere were not double-counted by the company buying the corresponding carbon credits and the country where the project takes place. This enabled Swiss carbon registry platform Gold Standard to certify that more than 54,000 credits for German non-profit Atmosfair, worth $327,000 at recent market prices, meet the rules of the nascent UN system.

Gold Standard says these will be the first such credits in voluntary markets to receive a government guarantee against double-counting.

In a letter seen by the FT, Juliet Kabera, director-general of the Rwanda Environment Management Authority, wrote to Atmosfair last month, authorising its use of certain carbon reduction credits by companies or other countries, and promising not to use the emission reductions to "demonstrate achievement" of its own climate goals.

Atmosfair issues offsets designed to compensate, in theory, for emissions from a range of polluting activities, including flying. One of its projects, backed by the Rwandan government, makes and distributes cookstoves, which it says require 80 per cent less wood than standard cookstoves. It estimates that this saving equates to 300,000 tonnes of CO_2 annually.

Rwanda's annual greenhouse gas emissions were 2.63mn tonnes in 2018, with livestock being the biggest source. It has pledged to cut emissions by at least 16 per cent by 2030.

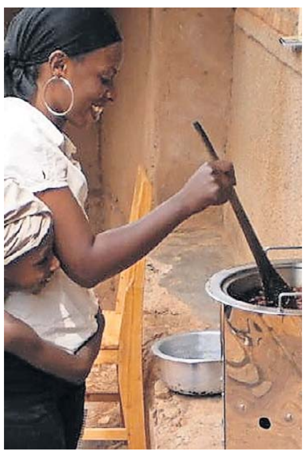
But the Gold Standard registry is now among those in the carbon credit industry to have come under scrutiny for schemes it has endorsed. Jonathan Crook, a policy expert at non-profit Carbon Market Watch, says the guarantee from Rwanda should allow the credits to fetch a higher price than equivalent credits in the voluntary markets.

However, certain aspects of the accounting framework for internationally traded credits must still be resolved by UN bodies, he notes, creating uncertainty around demand for credits that are given an 'Article 6' label.

> 'There are issues on the table that could create a risk for countries if they engage too early'

Unresolved questions include whether credits issued with an Article 6 label could be revoked by the country if they are found not to meet certain integrity tests.

The quality of carbon credits generated by clean cookstoves has been questioned by some scientists because they are issued for so-called reduced emissions, based on hypotheticals about how many trees would have been cut down if the stoves had not been used. It has also proved difficult to monitor how heavily stoves are actually used.



An Atmosfair cookstove

Broader questions from scientists about the methodology behind carbon credits in voluntary markets — particularly those linked to the avoidance of deforestation — have also dented confidence in the concept of offsetting.

"Carbon credits are not something you can touch — they are based on trust — so we put a huge amount of effort into verifying that the things that we claim are happening are actually happening," says Jamie Ballantyne, director of communications at Gold Standard.

It is estimated that, out of 2.3bn people who cook on open fires using charcoal or wood, 950mn live in Africa, according to a McKinsey report. The World Health Organization says that some 3.2mn people a year die prematurely of diseases attributable to household pollution from open cooking fires.

The world's largest carbon-offsetting company, South Pole, has previously bought credits that were certified by Gold Standard, according to a database maintained by the registry. These include credits linked to the provision of safe drinking water in Rwanda, which were meant to reduce carbon emissions from burning firewood to boil water.

South Pole chief executive Renat Heuberger stepped down this month after allegations of the overstatement of the amount of carbon emissions saved by a separate project, aimed at reducing deforestation at a site in Zimbabwe. South Pole said in October it was terminating its contract with the developer of the project and had been working on its "group-wide quality control and due diligence processes".

High Seas treaty is a 'critical step' in protection of the oceans

Governance

Threats such as deep-sea mining are mobilising nations, although progress has not been smooth, writes *Patrick Temple-West*

In the wake of a landmark treaty this year to protect the world's oceans, countries and financiers are making a renewed effort to protect vulnerable parts of the deep seas.

The UN High Seas Treaty, for the conservation of oceans, was finally adopted in June, after years of delay. The treaty covers the two-thirds of the world's waters that are not within national jurisdictions.

There are more than a dozen international organisations that regulate the oceans, but none has comprehensive oversight of the deep seas far from countries' coastal waters. These waters have been considered 'global commons', but the lack of regulation has left them vulnerable to exploitation. Environmentalists say the treaty is a big step towards protecting biodiversity by controlling human activity in unregulated areas.

"It is a major accomplishment that the treaty is completed — it is clearly a win," says Liz Karan, director of ocean governance at the Pew Charitable Trusts, a non-profit that campaigns on conservation.

There are 83 signatories to the agreement, including the EU and countries from Australia to the US. "This historic high seas treaty creates a co-ordinated approach to establishing marine protected areas on the high seas, a critical step to conserving ocean biodiversity," said US secretary of state Antony Blinken in September.

But countries still need to ratify the treaty to be bound by it. "It really is just the start," Karan explains, adding that the next UN ocean conference — in Nice, France, in June 2025 — is a good deadline for ratification.

Not everything has been smooth sailing in ocean governance, though.

In March, Michael Lodge, secretary-general of the UN-affiliated International Seabed Authority (ISA), came under fire for allegedly steering countries to support certain deep-sea mining projects. The ISA regulates deep-sea mining in international waters. Environmentalists have argued that this activity could cause irreversible damage, in the absence of convincing evidence that it is safe. Companies have yet to seriously start digging underwater, although some countries have an eye on the tax revenues the industry could provide.

In a March letter to the ISA, Germany said it was "seriously concerned" with the authority's approach. Lodge responded, saying the allegations about the ISA's position on deep-sea mining were "untrue and I reject such a baseless allegation". In August, the ISA's conference closed without resolving deep-sea mining, "due to different positions among delegations".

The UK government has said it supports a moratorium on licences for mining the seabed until there is better evidence about how damaging the work might be. It joined Germany and other countries that have backed a pause in deep-sea mining, to study its environmental consequences.

However, commercialising the oceans has consequences than the solely environmental, says Yoshitaka Ota, director of the Ocean Nexus project at the University of Washington. He has been studying ocean governance and how communities in small island nations or coastal areas are affected by global warming. Ocean Nexus is a collaboration of researchers and institutions that aims to advance social justice through ocean governance.

Deep-sea mining

It says the societal consequences of global warming are not as obvious in the ocean as they are on land. For example, hotter temperatures push fish into deeper waters, where they are harder for small-scale fishermen to reach.

Governance discussions should pay close attention to the needs of communities, notably in developing nations, where livelihoods depend on the oceans, Ota says. "Achieving both ocean justice and equity requires dismantling systemic inequity through ocean governance," he argues.

While governments are working on the UN treaty, financial institutions are now developing fundraising tools to protect the oceans.

In September, the International Capital Markets Association published standards for issuing "blue bonds", which are modelled on green-labelled debt. As part of its blue-bond standards, the ICMA cited research from the US National Oceanic and Atmospheric Administration that oceans absorb about 31 per cent of carbon dioxide emissions released.

The standards did not include "non-renewable extractive industries", so deep-sea mining, dredging and offshore oil and gas work is not eligible for blue-bond status, according to Nordea Asset Management. A record total of blue bonds has been issued by companies and countries this year, Nordea says.

In August, the US International Development Finance Corporation supported $500mn of insurance for Gabon's ocean territory, in a deal that helps lower the interest rate on the African nation's debt. In return, Gabon has promised to spend at least $125mn on sustainable fisheries and marine management. Gabon's ocean territory is home to the world's largest population of leatherback turtles, and an important seasonal breeding ground for whales, dolphins and sharks.

"The Gabon blue bond will generate an expected $163mn in financing for new marine conservation efforts over the next 15 years," DFC chief executive Scott Nathan says.

View from the deck: rising sea levels up close

OPINION

Emily Caruso

Icebergs ahead: the Skirr yacht approaching Tasiilaq, Greenland
Brian Carlin

It is always uplifting to see land after a long period at sea. Normally, there are a few hours between the first call of "land ho" and finally making fast, but this was far from the case in our approach to Kiritimati, in the middle of the Pacific Ocean.

It could easily be missed altogether without careful navigation, given the low-lying nature of these atolls. We carefully planned our arrival to coincide with first light and maximise daylight hours to enable us to see the reefs and scant landmarks.

After more than a week at sea, the first sign of any human presence we saw was the diesel tanker that services the island. I was skipper of our 72ft yacht, on a trip run by expedition company Pangaea Exploration, and we had just sailed 1,250 nautical miles from Tahiti. It was the strangest feeling to find this tiny land mass, surrounded by the deepest water, and simply drop anchor.

We were the third yacht to clear in after three years of closed borders because of the pandemic. We anchored off the west of the island and landed our Rib (rigid inflatable boat) on the dock.

The Republic of Kiribati covers more than 3.4mn sq km of the Pacific Ocean and is home to 119,000 residents over 32 atolls and one remote raised coral island. Among them lies Kiritimati (Christmas Island), which has the greatest land area of any atoll on Earth.

A local family became our most welcoming hosts. During our stay, we had an island tour on the back of a flatbed truck, dodging land crabs and seeing the local flora and fauna. We visited the towns of London and Banana, and were treated to a wonderful meal with entertainment by our hosts. These were proud people with a rich heritage and strong identity who deserved our respect.

At night, we returned to the yacht, where we sat out on deck, and the sea came alive around us, with large fish chasing smaller ones around the hull. We were at least six days from any kind of repatriation or rescue, but we were in the company of the kindest people you could hope to meet.

In the 1950s and 1960s, however, Britain and the US tested atomic and hydrogen bombs on or near Kiritimati. During the tests, local families were evacuated from their island. Now, living at an average of two metres above sea level, the people of Kiribati will also find themselves among the first victims of climate change as sea levels rise. When you have met the people and seen the reality, it is harder to turn a blind eye to the responsibilities of developed nations.

Fast-forward eight weeks and the second part of the story begins.

I had sailed inside the Arctic Circle before — but always in the Gulf Stream, which affects local temperatures at all latitudes. It had always been my ambition to go to the ice, and this year I had the opportunity to skipper one of Skirr Adventures' 68ft ex-Clipper race yachts from the south of England to Scotland, then Iceland, and on to Greenland.

We received a detailed briefing from Sir Robin Knox-Johnston, founder of the sailing expedition company and the Clipper Round The World yacht race, before departure. This covered how to interpret ice forecasts, manage sheet ice, and manoeuvre the vessel in different conditions.

As we traversed the Denmark Strait between Iceland and Greenland, we logged the sea temperature and it was fascinating to watch it fall from 15C to as low as 4.8C as we moved into the Arctic current. Whales and dolphins were present in every moment.

Around 70 nautical miles off the Greenland coast, we spotted the first iceberg. This is life on the very edge, and I felt privileged to experience it. Icebergs are fluid and dynamic, no two are the same. We were running a full radar watch and had all crew clipped on to the boat. Knowing how cold the sea was made us particularly attuned to the risk of a person falling overboard.

As we closed on the coast, we were ready to encounter the low-lying sheet ice Knox-Johnston had described, and push pieces away from the bow as we crept our way in. But there wasn't any. Aside from icebergs and growlers (fragments that have broken away), there was no sheet ice on the approaches to Tasiilaq or, later on, to Scoresby Sound.

We were ready to push pieces of ice away from the bow, but there weren't any

In our time ashore, as we engaged the support of local Inuit guides, it was not hard to see how the melting sea ice has changed their lives and increased their dependence on tourism. There was a small cruise ship in Scoresby Sound during our stay and the local people were keen to maximise the fleeting economic opportunity. On a hike led by the tourist office — which included rifle protection in case of an encounter with a polar bear — there was little snow, and the howl of huskies was one of the subtle reminders of what "normal" life here looked like.

For those of us in expedition sailing, it is a moral dilemma: measuring the value of seeing the impact of climate change first hand, versus being part of the problem. This small, niche industry is not without reproach but, compared with larger, more invasive cruise ships, it is without doubt the better option.

In my 17 years of sailing, I have been able to see these largely inaccessible places and meet the people who live there. As the ice melts in Greenland, the Inuit have had to adapt. But, for the Kiritimati islanders facing rising sea levels, it may soon be too late.

The writer is a professional yachtswoman and skipper