In this review of key trends for the Chemical industry, Natrium Capital looks forward into 2023. The past year has tested the resilience of the Chemical industry as the global economy has been fraught with political and macroeconomic instability.

2023 is likely to be a challenging year. The worst of the energy price rises has been seen but core inflationary pressures will continue. We expect further interest rate rises, albeit the pace of these changes has peaked, and economic activity remains weak. This all comes with the ongoing environmental pressure for a circular economy. In this uncertain environment, business leaders are focussed on seeking new opportunities for growth and on investing to provide greater supply chain and feedstock flexibility.

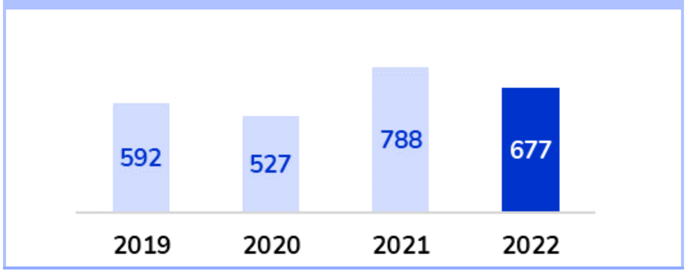
Obtaining debt finance for dealmaking is more difficult and higher interest rates will continue to put pressure on firms with high leverage. Despite these barriers, we expect steady Mergers and Acquisitions (M&A) activity as businesses restructure and divest non-core activities and capital is invested by Private Equity.

INTRODUCTION

Chemicals M&A has remained active in 2022 despite numerous challenges. Deal completions have been hampered by three main factors: firstly, and probably most importantly, by lack of clarity for forecasting caused by macroeconomic instability and political changes; secondly by inflation and global supply chain challenges damaging current business models and forcing management time to be spent on solving existing problems, rather than on growth by acquisition and thirdly by lack of finance.

The war in Ukraine has exacerbated an already rising trend in energy prices in Europe and contributed to further disruption to global supply chains which were already strained from the Coronavirus pandemic. Together these factors have led to soaring inflation across many economies, with some cost increases being passed down to the end consumer and having a drastic impact on the cost of living. Central banks have acted to puncture the inflationary spiral with dramatic interest rate hikes. The era of low-cost money has ended, and it is becoming increasing difficult to fund certain transactions. The higher interest rates and squeeze on company profits are impacting valuations and some transactions are on hold awaiting a better trading environment.

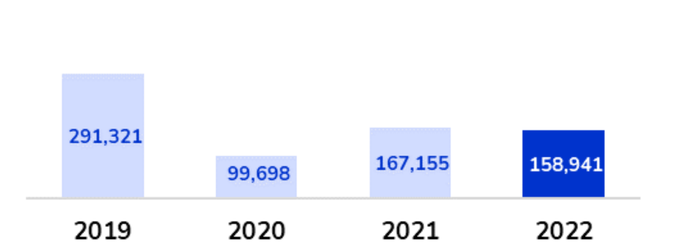
Figure 1. *Total Volume of Chemicals and Materials Transactions*



Source: *Mergermarket, Global Chemicals and Materials Deals*

There is little doubt that these challenges will continue into 2023 and it is expected that conditions will continue to worsen before signs of a recovery. There are reasons to be cautiously optimistic about the future, however, and the Chemical industry has proved its resilience in the face of cyclical downturns before.

***Figure 2.** Aggregate Disclosed Transaction Value ($m) -Chemicals and Materials*



Source: *Mergermarket, Global Chemicals and Materials Deals*

CHEMICALS M&A

2022 has seen a steady decline in overall M&A activity, which we expect to bottom out at the start of 2023 before recovering in the second half of the year. The first half of the year saw more headline-grabbing transactions over $1bn, but increasingly volatile equity markets, rising interest rates and slowing economic activity has weighed on deal activity in the second half. The volume of transactions has declined from the heights of last year and has settled back at a similar level to pre-pandemic (see Figure 1). The aggregate value of deals has also reduced in comparison to 2021 (see Figure 2), with average EBITDA multiples falling slightly to at c.13.9x (see Figure 3) vs c.14.2 in 2021..

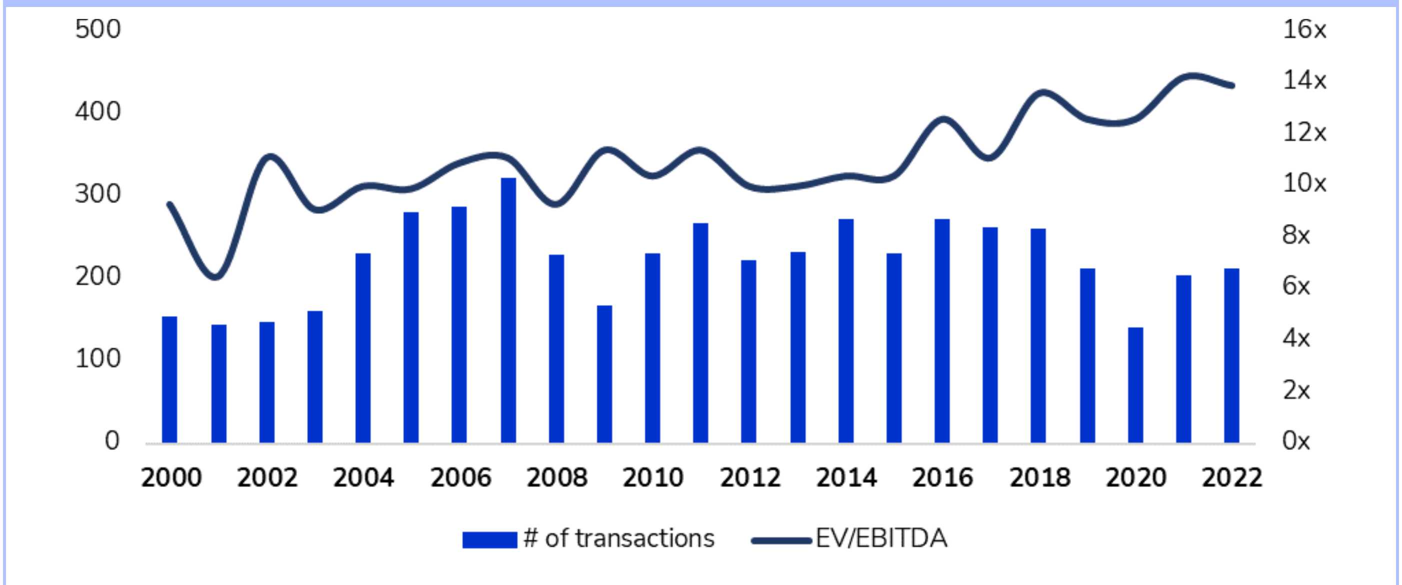
Transactions are likely to be smaller, with fewer over-$1bn deals expected in this depressed market because of difficulties raising debt finance. Although a slow-down is expected, the Chemicals M&A landscape is nonetheless in a better position than April 2020, and there's cause for optimism as many Private Equity and corporate buyers have large amounts of capital to deploy as soon as there is greater certainty around macroeconomic and market conditions in 2023.

M&A activity in the Chemical sector has largely been between targets and buyers in the same region (see Figure 4), rather than cross-continent transactions, while there are some notable inter-regional trends including North American acquisitions by European companies making up 42% of the aggregate value of European deals. Transactions between North American and Chinese firms represent a small proportion of overall deal activity.

Royal DSM N.V. have been extremely active in 2022 with the divestiture of their Protective Materials business to Avient Corporation for an EV of €1.44bn and their Engineering Materials business to Lanxess AG (Advent International) for an EV of €3.85bn. The latter deal was announced concurrently with the news of a merger with Firminech SA to establish a leading company in nutrition, beauty and well-being.

The Chemical distribution sector has continued the consolidation and globalisation trend that we have seen for the last few years. Notable deals include the

***Figure 3.** Global Chemicals M&A Activity*



Source: *Mergermarket & Natrium Capital, Chemicals and Materials by announcement date, excluding China. Value only includes transactions with disclosed financials*

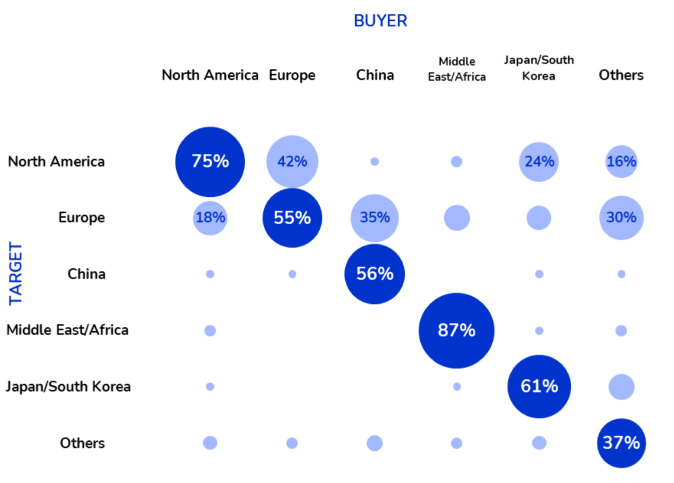
SELECTED GLOBAL CHEMICALS M&A ANNOUNCED 2022

Date	Target	Buyer	Seller	EV ($M)	EV/Sales	EV/ EBITDA
18-Feb	DuPont de Nemours (Mobility & Materials unit)	Celanese Corporation	DuPont de Nemours, Inc.	11,000	3.1x	13.8x
07-Mar	Precoat Metals, Inc.	AZZ, Inc.	Sequa Corporation	1,280	1.8x	9.3x
10-Mar	Bayer CropScience LP (Environmental Science Professional business)	Cinven Partners LLP	Bayer AG	2,600	3.9x	13.0x
20-Apr	Royal DSM N.V (Protective Materials business)	Avient Corporation	Royal DSM N.V.	1,485	4.1x	13.1x
17-May	Perstorp Holding AB	Petronas Chemicals Group Berhad	PAI Partners SAS	2,415	-	8.2x
31-May	Firmenich SA	Royal DSM N.V.	-	20,722	4.1x	21.7x
31-May	Royal DSM N.V. (Engineering Materials business)	Advent International Corporation; Lanxess AG	Royal DSM N.V.	3,971	-	11.0x
31-May	Lanxess AG (High Performance Materials business unit)	Advent International Corporation	Advent International Corporation; Lanxess AG	2,683	-	-
01-Jun	EverZinc Group SA	U.S. Zinc Corporation	OpenGate Capital Management, LLC	406	-	11.6x
02-Jun	Borealis AG (Nitrogen business)	Agrofert, a.s.	Borealis AG	867	-	-
29-Jul	INEOS Styrolution High-tech Materials (Ningbo) Co Ltd (50% Stake)	China Petroleum & Chemical Corporation	INEOS Styrolution APAC Pte Ltd	10,381	-	-
09-Aug	Huntsman Corporation (Textile Effects business)	Archroma Management LLC	Huntsman Corporation	718	0.9x	7.6x
12-Aug	Avient Corporation (Distribution business)	H.I.G. Capital, LLC	Avient Corporation	950	-	-
08-Sep	Meridian Adhesives Group LLC	American Securities LLC; Existing Management	Arsenal Capital Partners, L.P.	900	-	11.0x
15-Sep	Sequa Corporation	Veritas Capital Fund Management, L.L.C.	Carlyle Group Inc	1,600	-	-
11-Oct	Braskem S.A.	Apollo Capital Partners GmbH	Petroleo Brasileiro SA; Novonor	15,242	0.7x	3.5x
14-Oct	Connell	Caldic B.V. (Advent International)	Wilbur-Ellis	-	-	-
			Average		2.4x	11.3x
			Median		2.5x	11.0x

acquisition of the Asian Specialty Chemical distributor Connell by Caldic (Advent International) in October, and the exploration of a sale of US-based chemical distributor, Univar.

While there has been a raft of successful transactions, regulatory headwinds have caused challenges for others. In November, DuPont announced the termination of the $5.2bn acquisition of Rogers Corp which they said was due to not receiving timely clearance from regulators. AkzoNobel received pushback from the South Africa Competition Commission over their intended acquisition of Kansai Paint's South Africa and Mauritius-based Plascon businesses. In addition, auctions have been paused for Trinseo Styrenics and Cepsa Quimica due to bids not reaching the required level for a sale.

***Figure 4.** Regional Preferences in M&A*



Source: Accenture - The changing face of M&A in the Chemical industry

UKRAINE CONFLICT

On the 24th February 2022, war returned to Europe. Russian forces launched a large-scale invasion of Ukraine – a major escalation since the Russian annexation of Crimea in 2014. As the Ukrainian military defended their territory, Western allies imposed vast economic sanctions on Russia including prohibiting all transactions with the National Central Bank of Russia, ceasing exports of key goods, freezing individual bank accounts, and seizing other assets. Although there are political overtures looking to establish a settlement, fighting in Ukraine is likely to continue into 2023 with further economic consequences.

Figure 5. *Protests against the war in Ukraine*

Source: Pixabay

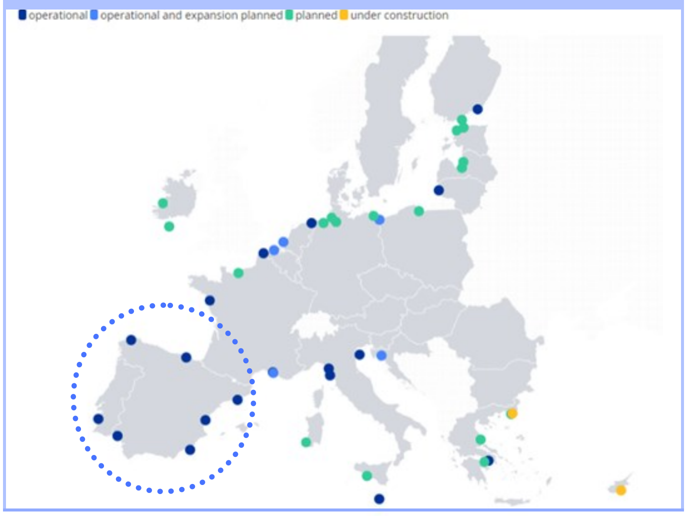
Many international companies including Dow, Solvay and Shell have pulled out of Russia by halting operations and exports as well as ceasing new investment and divesting Russian subsidiaries, often leading to large impairment charges. BASF likely faces the largest challenge as they announced that they were to wind down all operations in Russia and Belarus with the exception of the businesses to support food production, to prevent triggering a global food crisis. BASF's subsidiary Wintershall Dea has written off its financing of Nord Stream 2 totalling roughly €1 billion. Despite this, BASF has a heavy reliance on Russian gas and in March announced that a 50% cut in gas supply would result in a complete cessation of operations at its flagship Lugwigshafen site, the world's largest integrated chemicals complex.

One direct consequence on M&A was the termination of the purchase of Borealis' nitrogen fertiliser business by EuroChem for €455m. "We have closely assessed the most recent developments around the war in the Ukraine and sanctions that have been put in place," commented Thomas Gangl, Borealis CEO. "As a consequence, we have decided to decline EuroChem's offer for the acquisition of Borealis' nitrogen business...". Borealis have since received a binding offer from Czech firm AGROFERT for an Enterprise Value of €810m.

ENERGY COST

Spiking energy costs have been a universal challenge for industrial companies, particularly in Europe, as the war has impacted energy markets. Companies have been affected by high hydrocarbon feedstock and energy costs. In particular, the cost of European Nitrogen has become prohibitively expensive, affecting fertilisers and certain engineering polymers. There is no quick fix for Europe's overdependence on Russian oil and natural gas. The infrastructure necessary to shift away, including for renewables, nuclear and LNG require years of planning and construction. LNG terminals are being planned in the EU, however, can take 2-3 years before becoming operational. Different regions may fare better as Iberia already has several operational terminals.

Figure 6. *Map of LNG Terminals in EU*

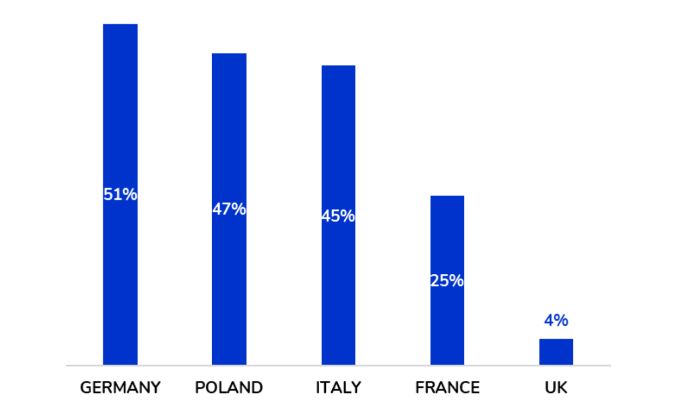


Source: European Council

Europe was slow to react despite warning signs including the annexation of Crimea in 2014, and instead strengthened ties with the East with the completion of Nord Stream 2 which began construction in 2011. Explosions at both Nord Stream pipelines in September has left them inoperative.

Continental Europe implemented programmes aiming to reduce gas usage. In Germany, 75% of surveyed companies saved on natural gas during the programme without curtailing production (source: ifo Business Survey 2022). The EU has also discussed a bloc-wide cap on gas prices in a bid to ease costs. Despite these initiatives, EU gas is likely to remain massively more expensive than the Henry Hub (traded on NYMEX) and imports of LNG will continue.

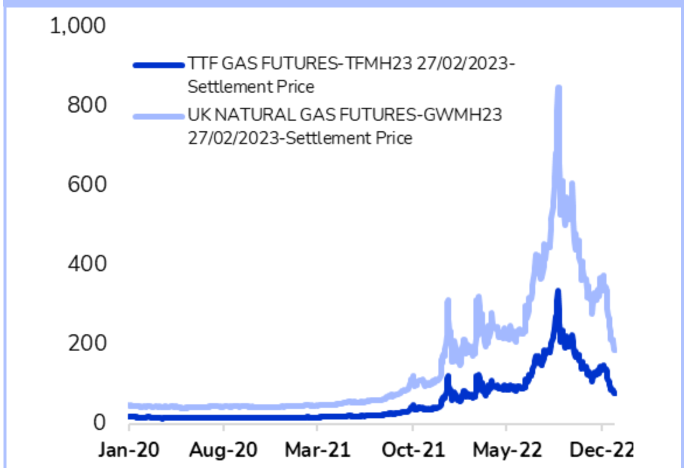
Figure 7. *Natural Gas Reliance on Russia, 2019*



Source: iea.org

Russia looked to combat Western sanctions by ordering that payments for gas must be made in Rubles in an effort to stabilise the national currency. This led to confusion in Europe as to whether this would contravene the sanctions in the EU and many settled for a mechanism whereby payments were made into Gazprombank in Euros before being transferred to a separate account in Rubles by Russia.

Figure 8. *European Natural Gas Futures Prices (USD)*



Source: S&P Capital IQ

Russia has at times halted supplies of natural gas, driving up the price, and has threatened that full supply will not be resumed until sanctions have been lifted on Moscow.

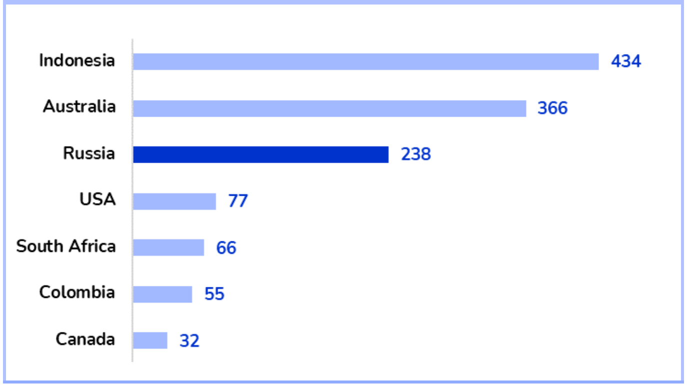
European gas prices have started to come down in recent weeks as storage facilities have been replenished and ships carrying LNG have been queueing off the coast due to a shortage of space to unload. Price escalation has also been ameliorated by the unseasonal mild weather in Europe at the end of the year. A more severe winter could impact relations with Russia. The Chemical industry will likely continue to be affected but in general has survived well during a turbulent period. However, if high energy prices in the EU are sustained this may result in a reduction of capital investment in the region or perhaps a relocation of production to lower energy cost areas, such as North America and the Middle East.

SUPPLY CHAINS

Changing import and export patterns globally due to Western sanctions on Russia has led to a significant realignment in global supply chains, and the general economic slowdown has troubled many countries' normal trading activities and altered typical inventory holding periods.

Russian gas accounted for about 50% of Europe's gas imports (source: S&P Global Market Intelligence) with countries in Central and Eastern Europe particularly dependent, as having the fewest LNG terminals hindered a switch from Russian gas to LNG. Meanwhile, in 2021, Russia was the world's third largest exporter of coal by volume, with the top three exporters accounting for about 60% of global supply (source: S&P Global Market Intelligence).

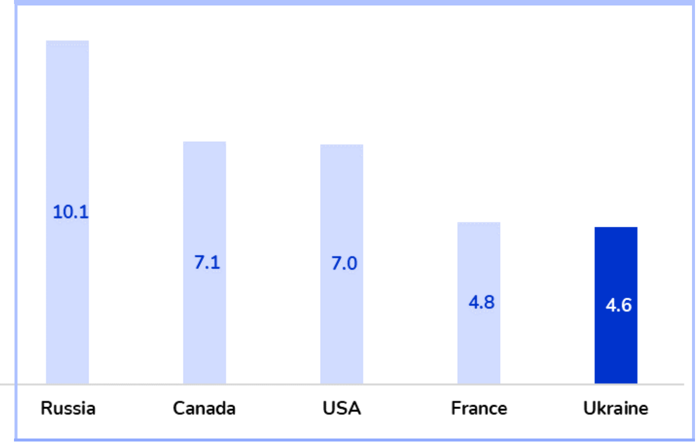
Figure 9. *Exports of Coal by Country (million tonnes)*



Source: Statista, Natrium

Western trading partners are expected to account for a dwindling percentage of Russia's trading turnover in the new year, with China, India, Turkey, Belarus and Kazakhstan becoming Russia's prominent importers. Russian exports to China are set to almost double in volume from 2021 by 2023 (source: S&P Global Market Intelligence), as Russia turns to allies in other parts of the world. In the first nine-months of the year, Gazprom was thought to have increased its gas supplies to China by 61% (source: Interfax). This trend will continue if Russia cuts gas supplies to Europe altogether in the coming winter months.

Figure 10. *Exports of Wheat by Country, 2020 ($bn)*



Source: The Observatory of Economic Complexity

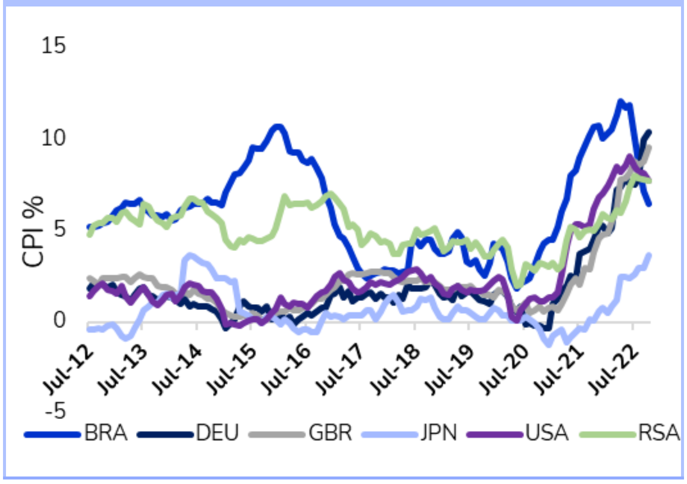
War-related disruptions in the energy and grain markets are causing sharp price increases that are being seen in raw material and food costs, as global supply chains struggle to keep up with global demand. Ukraine is one of the world's largest exporters of grain; however vessels at Ukrainian ports have been blocked by the Russian military in the Black Sea. The ripple is being felt across much of Europe and Africa where economies have seen rising inflation coupled with a devaluation of the local currency. The Black Sea Grain Initiative was agreed in Turkey in order to facilitate the safe navigation of foodstuffs, grain and fertiliser from Ukrainian ports to the rest of the world, with a large amount of the shipments going directly to lower income countries.

During the record-breaking heat wave in the summer, falling Rhine water levels started to impact the supply chains of European Chemicals, severely restricting the usual product transportation via low-level barges along the river. Flowing past some of Europe's largest industrial complexes, the Chemical producers reliant on the inland trade waterway for transportation of product and feedstock faced disruption. The Northwest European butadiene market saw steep spot prices increases August as robust export demand and tight supply added to the seasonal strains (source: Platts, S&P Global). At least two producers experienced butadiene production issues in the European market. The low water levels, falling to 0.56cm in early August at the German Kaub choke point, also effected solvent producers, with North and Central Europe seeing a decline in product volume and delayed barge loadings as a result (source: Chemical Week). However, the European ethylene market remained fairly robust against the decline in water levels, and the levels started to return to normal towards the end of the year. Weakened demand across Central Europe provided some slack.

INFLATION

In Natrium Capital's Investment Banking Review of 2021, we called out a risk of high inflation due to labour shortages, energy costs and supply chain disruptions and highlighted the already rising commodity food prices. These worries came to light this year and were compounded by the conflict in Ukraine resulting in much higher inflation than predicted. All of the above challenges coupled with the continued fallout from the coronavirus pandemic have led to soaring inflation across the globe, with the effects being felt most strongly in Europe, Africa and North America.

Figure 11. *Global Inflation Rates*



Source: The World Bank

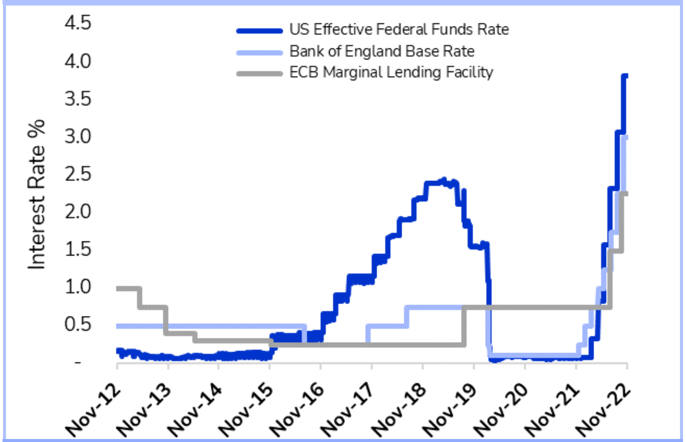
This raises several challenges for businesses. The ability of firms to pass on any raw material price increases to customers and the time lag in doing so has caused volatility and pressure on margins for many firms. Besides raw materials, staff costs have jumped, both because of labour shortages and because employers need to help to combat the rising cost of living. In the UK, average regular pay growth for the private sector was 6.2% in June to August 2022, and 2.2% for the public sector (source: Office for National Statistics). In many sectors, including rail and healthcare, staff have taken a large real pay cut due to small or no pay rises, which has prompted union action and strikes resulting in widespread disruption.

As energy prices have come down from the peak earlier in the year, so too will this component of inflation. Some analysts feel inflation has already peaked, and if not that it will early in 2023.

INTEREST RATES AND VALUATIONS

Central banks have raised interest rates throughout the year to combat soaring inflation, with further hikes likely, but markets are relieved that the rate of change has peaked.

Figure 12. *Interest Rates*



Source: Bank of England, US Federal Reserve, European Central Bank

With interest rates in many developed economies at their highest point in over a decade and uncertainty surrounding monetary policy in the medium term, the availability of new debt financing is tight and the cost of that debt is high. This will likely continue to have an impact on the number of larger transformational deals due to their financing requirements, however smaller deals may be completed, financed with a higher proportion of corporate cash.

As sellers delay bringing assets to market, and buyers struggle with the availability of financing, it is likely to cause some downward pressure on valuations which had otherwise been steadily rising over the last few years (see Figure 3). Increases in the cost of debt will reduce the valuations of businesses modelled on discounted cash flow and LBO basis. It may take some time for businesses to acclimatise to the corrections in valuations, particularly those that were very highly valued just 12 months ago, but eventually there will be clarity over the "new normal" and normal deal activity will resume.

Figure 13. *10 Year UK Bond Yield*

Source: S&P Capital IQ

While this will have a clear impact on the interest costs suffered by companies with large amounts of debt, it will also have an impact on deal structure. Private Equity buyers typically engage in highly leveraged transactions but may now instead opt for structures involving a greater proportion of equity with a view to refinancing when interest rates have stabilised.

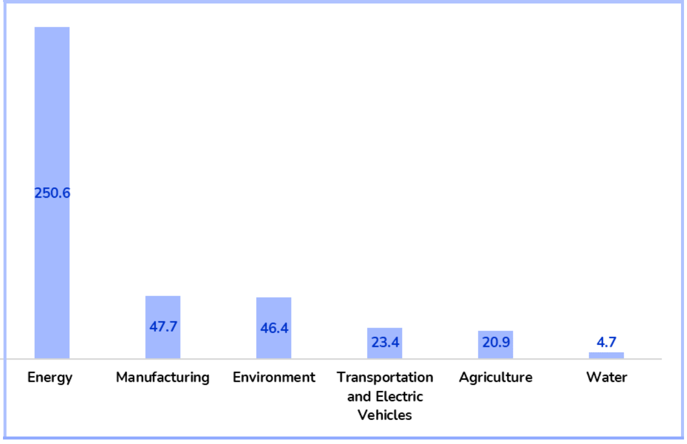
THE ENVIRONMENT

Environmental concerns have risen on the agenda despite the challenging economic backdrop due to pressure from big institutional investors, pledges from brand owners and government regulation. As a consequence defossilisation and carbon circularity, including mechanical and advanced chemical recycling, are attracting a lot of attention and investment. We can expect this trend to continue into 2023.

Climate protests have picked up in both frequency and intensity, causing widespread disruption all over Europe. The COP27 Summit was held in Sharm El-Sheikh, Egypt in November and drew attendance from politicians, activists and business leaders. At the summit, there was recognition from developed countries of the need to provide financial support to developing countries which tend to be those most impacted by climate issues, as highlighted by the devastating floods in Pakistan. A spotlight was shone on corporations accused of "greenwashing", with the extra scrutiny key to supporting meaningful change, as opposed to companies hiding behind empty initiatives.

The Inflation Reduction Act of 2022 (IRA) represents the largest ever investment in Green Technology in the US with almost $400bn of funding and subsidies aimed at reducing emissions. The bill recognises the deflationary impact of investment in renewable energy and aims to curb inflation and reduce the deficit in the US. The bill has however caused tensions with the EU who feel that the bill will be unfairly driving investment away from Europe into the US and represents a breach in WTO rules.

Figure 14. *Inflation Reduction Act Investment by Sector ($bn)*



Source: Mckinsey

The investment will see an increase in demand for electronic chemicals and related materials such as those for solar power. The localised manufacture of these in the US will not impact Europe to the same extent but will lead to demand reduction in China.

POLITICS

Political instability in Europe triggered a devaluation in Sterling and the Euro against the strengthening US Dollar. Although this is causing issues for importers in Europe, it does provide an opportunity for US investors in the region. While still recovering from Brexit, the UK saw two Prime Ministers ousted in as many months as pandemic mismanagement and a disastrous "mini-budget" undermined confidence. Elsewhere, Italy elected Giorgia Melon, the leader of the Brothers of Italy, and the Republicans took control of the House of Representatives in the US midterms, albeit by a narrower margin than "red wave" predicted by some commentators and the Democrats retained the majority in the Senate. In Brazil, right-wing president Bolsonaro suffered a loss to former left-leaning president Lula, providing hope for environmental progress in South America's largest economy.

POST-PANDEMIC RECOVERY

After the disruption of the past few years caused by the Coronavirus pandemic, some normality has resumed with companies in the Chemicals industry flocking to conferences and events including the K-Fair in Dusseldorf to showcase their products and latest innovations. Attendances may have dipped slightly from pre-pandemic levels, but successful large-scale events such as these show the renewed appetite for businesses to collaborate in-person and provided a welcome change from a fully virtual environment.

Figure 15. *K-Fair, Düsseldorf*

Photo: Messe Düsseldorf/ctillman

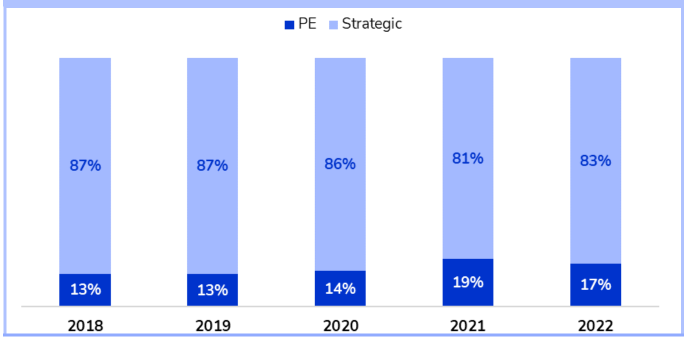
OUTLOOK FOR 2023

There is little doubt that the challenges of 2022 will continue into the new year; however, we expect an active M&A market. Tightening financial conditions mean that companies will focus on their core businesses, which will likely lead to divestitures of assets which do not align with their strategy. Continued disruption to supply chains and high raw materials costs may also trigger distressed sales and a busy restructuring market.

We expect the US to prove more resilient, as there are signs that the worst of the monetary tightening is over. Europe is likely to be less resilient with competitive pressures from high energy and commodity prices. China has been suffering from COVID restrictions for longer, and growth remains low. Asia will show better growth than the West but lower than previously forecasted.

This means that we may see regional differences in deal flow, valuations and the scale of portfolio realignment. Although challenges will persist, an economic downturn can provide an opportunity for investors to create value.

Figure 16. *PE vs Strategic (number of transactions)*



Source: Mergermarket, Global Chemicals and Materials Deals

Recently, Private Equity has been out-bidding strategics owing to a lower cost of capital underpinned by highly leveraged structures and cheap debt. Rising interest rates are now upsetting this balance and providing an opportunity for strategics with strong balance sheets to take advantage of market conditions.

The era of cheap debt appears to be over and although this provides a different economic backdrop, there is room for optimism. Business executives are still outward looking, but they report that stability in the economic environment is far more valuable than the debt interest rates. As soon as the dust settles and the "new normal" is established there will be plenty opportunity for strategic activity and value creation through acquisition to continue.

ABOUT NATRIUM CAPITAL

Natrium Capital Limited is an independent Chemicals M&A boutique set up by Alasdair Nisbet in 2012. Natrium Capital provides high level strategic and M&A advice primarily focused on the Chemical, materials, biotechnology and clean technology industries. Headquartered in London, Natrium Capital and team advise on complex global cross-border transactions and have advised on over $100bn transaction value in the sector.

Natrium Capital is authorised and regulated by the Financial Conduct Authority.

SELECT PREVIOUS DEALS OF NATRIUM CAPITAL

UNDISCLOSED

ADVISOR TO

WILBUR-ELLIS

on the merger of Connell, its Asian Speciality Chemical Distribution business with

CALDIC

Oct 2022

UNDISCLOSED

ADVISOR TO

SOLVAY

in the sale of its Amphoteric Surfactant Business in N. America & Europe to

OPENGATE CAPITAL

Jan 2021

UNDISCLOSED

ADVISOR TO

Gil Investments

in the sale of ICoNiChem to

ETI BAKIR

Dec 2020

€300m

ADVISOR TO

DOMO

in the acquisition of Performance Polyamide Business in Europe from

SOLVAY

Aug 2019

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