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CHEMICAL INDUSTRIES ASSOCIATION

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CIA First Quarter Economic Report 2022

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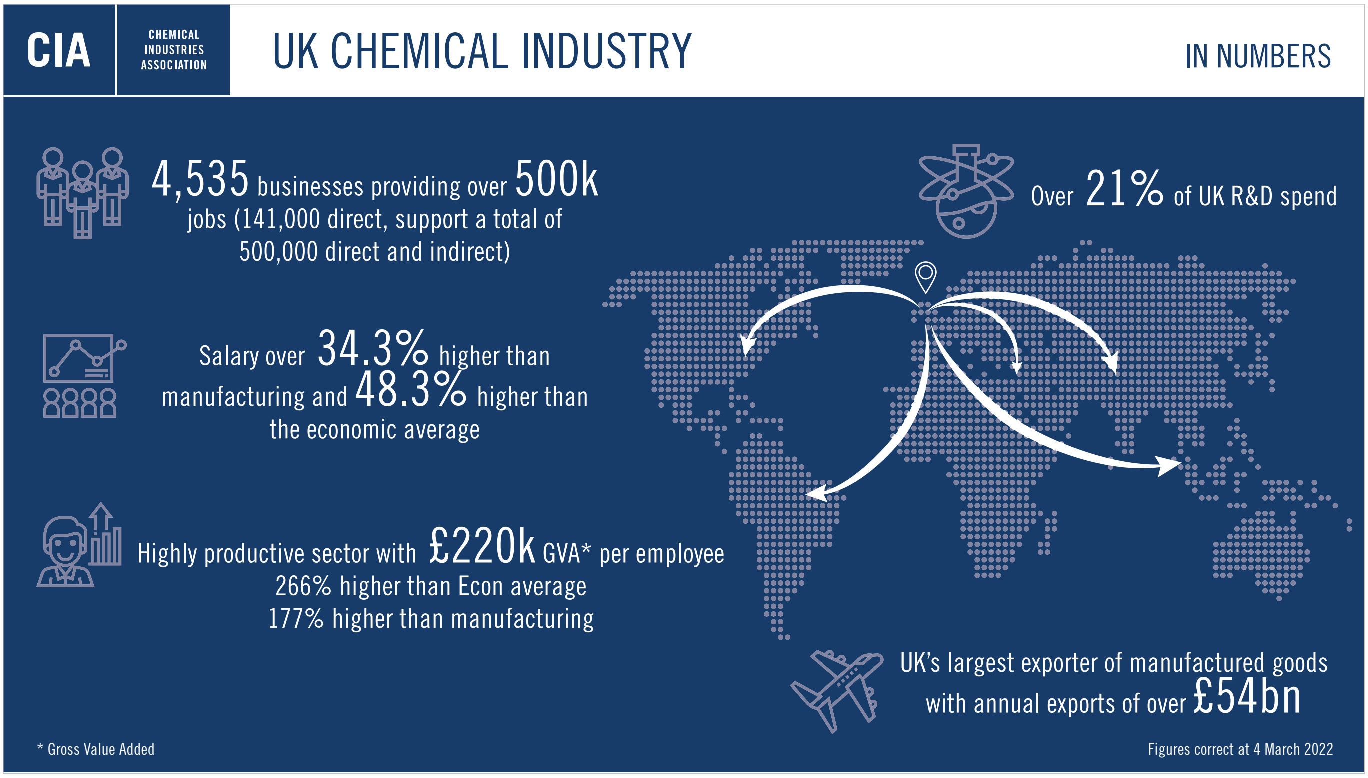
Current shape of the industry



Executive summary

I am pleased to present our latest economic report, which has been written by Tom Warren, our Head of Economics.

This report has two sections. The first is a CIA analysis of Government data via the Office for National Statistics (ONS) and other countries' statistical agencies. This section assesses the UK chemical industry's performance in the first quarter of 2022 against that of the wider economy and is followed by a look at what challenges lie ahead. The second section presents the results and further analysis of our own Q1 2022 Business Survey. Unless otherwise specified figures are for the chemical industry excluding pharmaceuticals.

Since the last economic report, Russia invaded Ukraine, forcing the western world to enact a broad range of punitive sanctions, an unprecedented move against a G20 economy. Aspects of this article will focus on the economic ramifications of the conflict rather than the humanitarian crisis which rightly has taken centre stage.

The UK economy and chemical industry alike experienced a rocky start to 2022 and, as has been the case in recent times, major economic events have been plentiful since our last update:

- Inflation rose to the 30-year high of 7.0% and is expected to surpass 10% towards the end of 2022 as the Ofgem price cap is raised for the second time this year.
- The Bank of England's monetary policy committee convened to update their approach to UK monetary policy and publish their quarterly monetary policy report. The committee enacted a fourth interest rates rise in successive meetings to 1.0%, the highest level since the aftermath of the global financial crisis.
- The Chancellor presented his Spring Statement, accompanied by updated Office for Budget Responsibly forecasts. Originally intended to be a light update on the health of the economy, the statement aimed to address the cost-of-living crisis and lay the foundation for his next Budget which is to be held in the Autumn.
- The International Monetary Fund published their April 2022 world economic outlook titled 'War Sets Back the Global Recovery', which explained that global economic prospects had worsened significantly since their January economic update.

UK GDP grew 0.8% in the first quarter of 2022, below economist's expectations while chemical output contracted 3.9%, stifled by supply and logistical issues at a time of high demand.

The labour market remains extraordinarily tight with a record number of job vacancies in the manufacturing sector and whole economy alike, a situation that is not forecast to abate till the end of 2022.

The UK's trade deficit widened to a record 5.3% of GDP in the first quarter of 2021 as the value of imports rose 9.3% while exports fell 4.9%. The chemical trade deficit also expanded, however this was due to import growth outpacing that of exports rather than exports contracting.

Turning to the CIA's Q1 2022 Business Survey which received a record level of engagement, respondents report their seventh successive quarter of sales growth which is expected to continue into the second quarter of 2022. Supply woes weighed on production levels which disappointed expectation, supporting the ONS data and highlighting a supply gap in the industry.

Accompanying the relatively positive sales and investment data was continued sharp rises in input costs as over 90% of respondents reported an increase in raw material and energy costs in the first quarter, while over 85% experienced increases in the cost of importing and exporting which led to 89% increasing the cost of their finished goods.

Energy prices continue to be the largest current issue faced by the industry, followed by raw material price increases and shortages, all of which are continuing to worsen.

Over 55% of respondents undertake some level of trade with Russia, Belarus, or Ukraine. A total ban on trade with Russia would cause largely minor impacts to respondents, largely due to two thirds confirming they had found alternative suppliers while the remaining third are continuing to look.

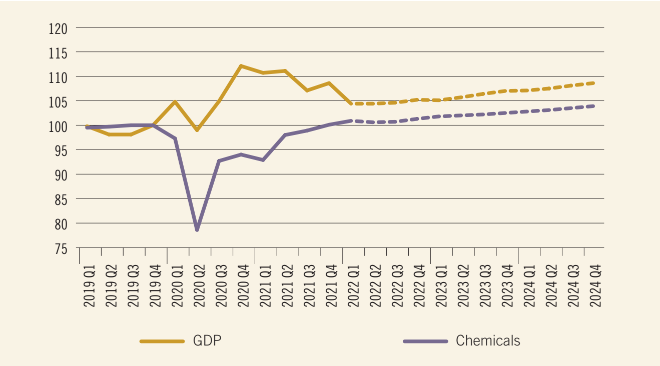
Steve Elliott
Chief Executive
Chemical Industries Association

The survey data presented in this report was collected from CIA members in January 2022. The macroeconomic data, predominantly sourced from the Office for National Statistics, was gathered up to mid-February. It is therefore important to note that economic analysis took place before the onset of the Ukraine crisis. The data is still relevant and provides a clear picture of the chemical industry's economic progression through the pandemic and what is expected for the future.

Chemical Production

After two years of resilience on a domestic and international stage, UK chemical production had a turbulent start to 2022 as supply and logistical challenges hampered output. Despite demand remaining high, Russia's invasion of Ukraine and China's zero-tolerance Covid policy is exacerbating the raw material shortages and freight disruptions that were first triggered as major economics transitioned out of lockdown restrictions. First official estimates from the ONS show that UK chemical production contracted 3.9% in the first quarter of 2022, significantly below the wider economy's GDP growth of 0.8%.

Graph 1: Monthly index of UK GDP and chemical production



Source: CIA Analysis of ONS data, IHS Markit forecasts

Currently, it is clear that the falls in UK chemical production are being dictated by supply challenges rather than diminishing demand as, after a sustained period of high demand and extended lead times, inventories within the chemical industry are low, further exposing production vulnerabilities to supply shocks. Despite the underperformance in the first quarter of 2022 relative to the wider economy, Graph 1 displays the dual speed of the chemical and total economy's output recovery through the pandemic. Turning away from a domestic focus and onto an international comparison, table one presents the difference in the level of chemical output in January 2022 compared to pre-pandemic for a number of the world's major chemical producers.

Table 1: Chemical ouput in January 2022 compared to pre-pandemic

Region	Chemical ouput in January 2022 compared to pre-pandemic
China	16.9%
USA	2.5%
EU27	6.7%
Japan	-7.3%
South Korea	3.9%
India	-1.9%
UK	9.8%

Source: CIA Analysis of ONS data, IHS Markit forecasts

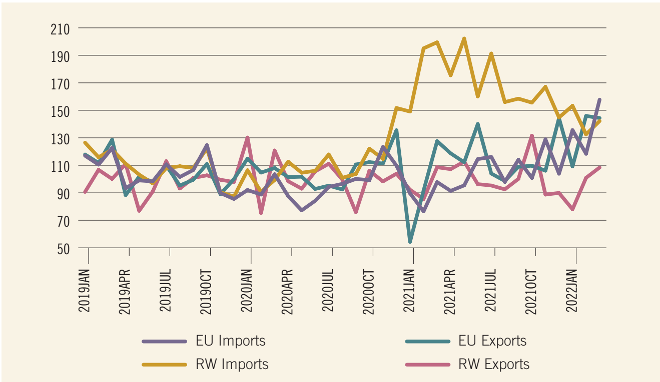
Due to the combination of a beneficial subsector structure, a large pharmaceutical industry, stockpiling ahead of the end of the transition period, and a change in consumer spending habits, the UK chemical industry experienced one of the quickest and absolute recoveries from the pandemic. Table 1 sets forth that the UK chemical industry carried this resilience into 2022 as output compared to pre-pandemic was higher in the UK than that of the US, EU27 and Japan.

Trade

Contrary to the record quarterly trade deficit experienced for total UK goods and services trade, as imports rose 9.3% while exports fell 4.9%, UK chemical exports in the first quarter of 2022 rose 3.4% to £9.1 billion. Despite the increase in chemical exports, chemical trade contributed to the UK's increased trade deficit as chemical imports rose 12.4% to £11.4 billion, increasing the trade deficit to £2.3 billion compared to £1.3 billion in the final quarter of 2021.

Breaking down chemical trade in the first quarter by location, the growth in trade was driven by the EU market. Exports to the EU rose 10.9% to £5.7 billion while exports to the US and China fell 13.7% and 12.1% to £1.1 billion and £0.2 billion respectively. Imports from the EU rose 23.4% to £8.2 billion while imports from the US and China fell 11.7% and 25.1% to £0.8 billion from both regions. The trade deficit with the EU rose 67.4% to £2.4 billion while China's fell 29.7% to £0.5 billion and there was a trade surplus with the US of £0.3 billion, down from £0.4 billion in the prior quarter.

Graph 2: Monthly index of UK chemical imports and exports with the EU and Rest of the World, 2019 Q4 = 100



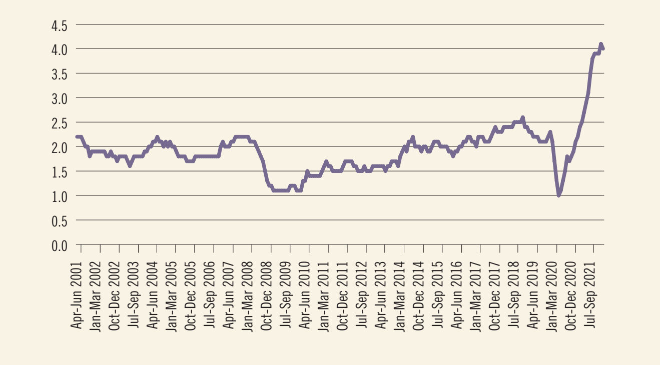
Source: CIA analysis of ONS data

Breaking down EU chemical trade and focusing on some of our key markets, exports to Ireland, the Netherlands, Germany, Belgium, France, Spain and Italy, which in the first quarter of 2022 made up 85.1% of UK chemical exports to the EU, rose 12.5%, 7.0%, 23.3%, -6.8%, 27.7%, 18.7% and 38.6% respectively in the first quarter of 2022. Imports from the same regions in the same period, which accounted for 89.7% of imports from the EU, rose 8.4%, 61.8%, 2.0%, 39.0%, 20.7%, 10.2% and 16.3% respectively. This trade data with the EU signifies a broad pick up in trade with our key partners in the region despite the enactment of the trade and cooperation agreement at the start of 2021 and full customs checks in 2022.

Labour market

The labour market remains extraordinarily tight. Job vacancies reached their 10th consecutive rolling three-month record high of just under 1.3 million in the three months to March 2022, while the redundancy rate is at record lows.

Graph 3: Number of vacancies in the manufacturing sector per 100 jobs



Source:

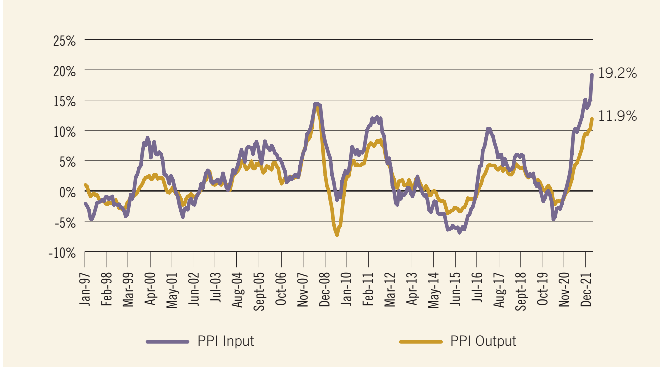
Graph 3 displays the number of job vacancies in the UK manufacturing sector per 100 jobs dating back to when records began in 2001. There are 4.0 job vacancies per hundred jobs, significantly above the pre-pandemic peak of 2.6 and the historical average of 1.8. CIA members have repeatedly highlighted the difficulty in finding and retaining new adequately skilled staff, a situation that has been exacerbated by the pandemic, triggering a significant number of early retirements of older members of the workforce.

Demand for labour and skills outpacing the supply is putting upward pressure on pay negotiations and salaries however at a time of sustained high inflation, pay growth in real terms is weak and expected to fall in the near-to-medium term. Average total pay (including bonuses) rose 5.4% while regular pay (excluding bonuses) grew 4.0% in the three months to February 2022, a real terms change of +0.4% and-1.0% respectively. For now, strong bonus payments over the past six months have kept recent real total pay growth positive.

Prices

Dubbed by the media 'the cost-of-living crisis', the 30-year high consumer price index (CPI), which currently sits at 7.0% in the year to March 2022 and is forecast by the Bank of England to surpass 10% in the final quarter of 2022, has dominated the inflationary headlines in recent months. However, as an association with a manufacturing focus, the CIA watches closely the price pressures being experienced in the production sector.

Graph 4: 12-month growth rates of producer input and output prices



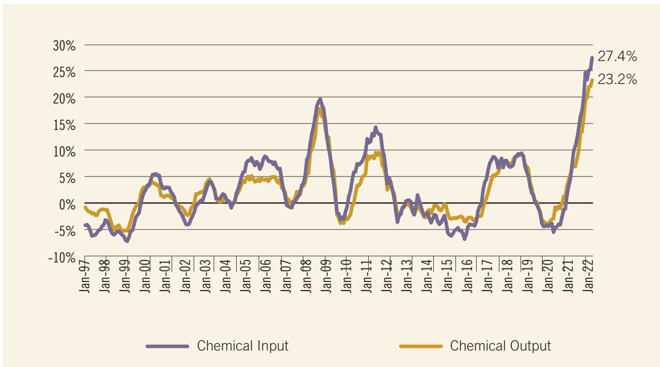
Source: Office for National Statistics

Input prices growth in the production sector accelerated to the record high of 19.2% in the year to March 2021, 7.3 percentage points higher than the 11.9% growth in output prices in the production sector in the same period. Input price growth in the production sector has accelerated quicker than output prices for the last 18 months, inflicting sustained downward pressure on producers' margins, limiting their ability to invest in the UK.

Graphs 10 and 11 in the appendix are waterfall graphs that display the contribution of each component of input and output PPI to the latest figures that were presented above. Focusing first on inputs, price pressures were broad based as all components contributed to the 19.2% rise. Inputs of crude oil, metal and non-metallic minerals, and chemicals were the largest contributors, accounting for 5.2, 4.7 and 3.4 percentage points of the 19.2% figure. Output prices also experienced a broad-based rise with only alcoholic beverages and tobacco components experiencing a fall in costs. Metals and machinery, automotive, food, and chemical and pharmaceuticals all contributed between 2.1 and 2.9 percentage points to the 11.9% rise, with specific values of 2.9, 2.8, 2.5 and 2.1 percentage points respectively.

Delving deeper into the data, it is possible to ascertain the input and output price growth in the chemical industry.

Graph 5: 12-month growth rates in chemical input and output prices



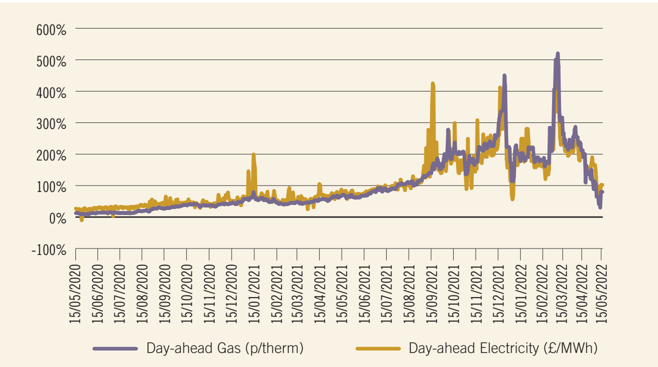
Source: CIA analysis of ONS data

Input and output price growth in the 12 months to March were both at record levels of 27.4% and 23.2% respectively. Similar to the production sector as a whole, input prices in the chemical industry have accelerated at a faster pace than output prices for the last 12 months which in turn exerts downward pressure on margins, albeit at a less severe level than witnessed in the wider production sector.

Table 6 in the appendix displays the 12-month growth rates in input prices in the six chemical subsectors while table 7 displays the growth in output prices in the same period for chemical products manufactured in the UK. Output prices of fertilisers and nitrogen compounds experienced a 100.7% rise, exacerbated by Russia's invasion of Ukraine as this is a key region to source inputs from. The two chemical subsectors that experienced the largest increases in input prices were the 'Industrial gases, other Inorganic chemicals, fertilisers and nitrogen compounds', and 'Petrochemicals' subsectors that experienced 37.7% and 31.7% price rises in the 12 months to March 2022. These subsectors are highly exposed Russia's invasion of Ukraine both directly through imports of raw materials, and indirectly through sharp rises in oil, gas and electricity prices.

Focusing in more detail on energy prices, a key feedstock for the chemical industry. Gas prices, and therefore electricity as on an average day around 40% of UK electricity is generated by burning gas, were elevated in late 2021 as reopening of major economies, force majeures and cold weather reduced supply and elevated demand.

Graph 6: UK Day ahead gas and electricity prices over the last two years



Source: CIA Energy Dataset, Inspired Energy

UK energy prices abated through the start of 2022 although remained elevated compared to the long-run norm. However, energy markets were thrown back into turmoil by Russia's invasion of Ukraine due to the fact that Russia is the third biggest producer of oil and second largest producer of natural gas and is a crucial supplier to Europe. Oil prices peaked on 8 March at $135.82 a barrel compared to the already elevated $97.35 on 23 February, the day before the invasion. Oil prices remain around $110 a barrel as the western world begins to wean itself off Russian oil and Russia use their energy exports as a weapon.

Day-ahead gas prices averaged 45.0p a therm in March 2021, experienced a pre-invasion peak of 450.1p a therm on 22 December 2021. On 7 March 2022 the average day ahead price peaked at 520.0p. In recent weeks, due to warm weather and large shipments of LNG that due to lacking pipelines couldn't be transported to the European continent at a pace to appease demand, UK day ahead gas prices have fallen back below 100p a therm. However, futures markets don't expect this to be a long-term price as forwards contracts as far out as Winter 2024 remain above 140p per therm.

Concluding with the official data, after resilient performance through the pandemic compared to the domestic and international market, the UK chemical industry experienced a bumpy start to 2022 as supply friction hampered production. Demand remains high in the near term, however, as the cost-of-living stings households and increased input costs suppress margins, looking ahead further than six months is shrouded with uncertainty.

Russia's invasion of Ukraine has exacerbated inflationary pressure that was already elevated due to major economies reopening from pandemic related lockdowns. Ramifications from the invasion are predominantly being experienced through the commodities markets as the region is a big producer of agriculture, energy and mineral goods. Inflation both for households and producers is running high and the labour market is extremely tight, phenomenon's that are not expected to improve till 2023.

Survey results

About the survey

At the close of each quarter, we survey member companies of the Association to get on-the-ground data about current trading conditions and views on what lies ahead. The information from this is incredibly useful in our work and we are grateful to all who respond.

The CIA's Q1 2022 Business Survey was live between 28 March and 8 April 2022 and received a record number of responses with over 50% of CIA membership being represented. This edition of the survey was split into three sections. The first and second sections contained the standard industry performance and challenges & opportunities questions. The third section aimed to better understand the UK chemical industry's exposure to Russia's invasion of Ukraine. There were three questions in the industry performance section that asked respondents whether the 19 variables listed below had increased, decreased or stayed the same in the first quarter of 2022 compared to the final of 2021, and what member's expectations were for these variables in the second quarter of 2022 and 12 months' time.

Industry performance variables:

1. Total sales
2. Domestic sales
3. Exports
4. EU exports
5. Rest of the world exports
6. New orders
7. Production levels
8. Capacity utilisation
9. Employee numbers
10. R&D spend
11. Capital expenditure / Business investment
12. Your level of business optimism
13. Time to deliver
14. Raw material (input) prices
15. Cost of importing
16. Cost of exporting
17. Your energy costs
18. Finished goods (output) prices
19. Your company / site profit margins

When displaying the industry performance data diffusion indexes are used. These are an easy to interpret statistical tool that can be read in the same way as Purchasing Managers Indexes (PMIs), therefore any figure below 50 indicates a contraction, above 50 an expansion while 50 means it remained constant.

Since the last CIA quarterly business survey, Russia has invaded Ukraine, significantly changing the global economic landscape. It is important to bare this in mind when comparing performance in the first quarter of 2022 to what was expected when CIA members were asked pre-invasion in the final quarter of 2021.

Industry performance

Performance in first quarter

Table 2 displays the diffusion indexes for the 19 variables mentioned in 'About the survey'. The first column is the diffusion index for the performance in the first quarter, the second column contains the diffusion index for what was expected for the first quarter when respondents were asked in the CIA's Q4 Business Survey, and the third column contains the diffusion index for the performance in the final quarter of 2021.

Table 2

	Q1	Q1 Prediction	Q4
Total sales	68.3	68.2	51.1
Domestic sales	62.7	60.7	53.6
Exports	67.3	63.1	52.4
EU exports	59.8	64.3	51.2
Rest of the world exports	65.0	60.7	53.6
New orders	57.8	60.0	45.0
Production levels	53.9	65.1	51.2
Capacity utilisation	57.0	58.0	47.7
Employee numbers	55.9	64.0	53.4
R&D spend	54.0	52.3	50.0
Business investment	55.8	62.8	53.5
Your level of business optimism	43.3	54.5	47.7
Time to deliver	68.6	55.7	60.7
Raw material (input) prices	95.2	89.5	97.7
Cost of importing	93.1	76.7	87.2
Cost of exporting	92.2	74.4	83.7
Your energy costs	94.2	84.1	94.3
Finished goods (output) prices	92.3	83.3	90.7
Your company / site profit margins	40.2	47.6	35.7

Source: CIA Q1 2022 Business Survey

Key take away

- Performance in the first quarter of the year was broadly in line with expectation and a significant improvement compared to what was experienced in the final quarter of last year. However, alongside the positive sales and investment data came a continued sharp rise in input costs and timelines on sourcing goods, inflicting more downward pressure on margins, a situation that has been exacerbated by Russia's invasion of Ukraine.

Respondents to the CIA's Q1 2022 Business Survey reported their 7th successive quarter of sales growth. After weakening performance in recent quarters, growth accelerated in the first quarter of 2022 as over 50% of respondents reported an increase in sales. Exports outperformed the domestic market, an inversion of the relationship seen in the final quarter of 2021, although there was strong growth in both regions. Exports to the rest of the world exceeded expectations while EU exports unachieved, continuing the pattern witnessed in the latter half of 2021.

Despite this positive sales data, as well as considerable growth in new orders and capacity utilisation, production growth was modest, and the worst performing metric compared to expectation. Production has been restricted by supply troubles and supports the ONS data set out in the first half of this report. Employee numbers, R&D and business investment tend to be the least volatile variables quarter-on-quarter as decisions in these areas tend to be made on a multi-year basis. With that said, accelerating growth compared to the final quarter of 2021 was reported for all three of these variables.

However, it is not all positive as alongside the resilient demand comes sustained rises in the cost of doing business, extended lead times and reduced margins. Over 90% of respondents reported an increase in their raw material and energy costs in the first quarter of the year, and over 85% reported increases in the cost of importing and exporting. As depicted in the ONS data displayed in the first section of this report, there is a high level of pass through in the chemical industry as 89% of respondents report increasing the cost of their finished goods. Further supporting the official data, the disparity between input and output prices is continuing to squeeze margins.

When the CIA presented these findings back to survey respondents it was widely communicated that finding a margin in the current economic climate was a serious challenge. These cost increases were higher than expected which can be attributed to Russia's invasion of Ukraine occurring since these expectations were made. Lead times extended faster than forecast, all these facts put together reduced respondents' optimism in the quarter.

Expectations of second quarter performance

Table 3 displays the diffusion indexes for what is expected for each of the 19 variables in the second quarter of 2022. The key takeaway from this table is that the uptick in performance reported in the first quarter by CIA survey respondents is expected to continue into the second however so too are input costs.

Table 3

	Q2 Expectation
Total sales	61.8
Domestic sales	55.8
Exports	59.6
EU exports	56.7
Rest of the world exports	54.8
New orders	63.5
Production levels	62.5
Capacity utilisation	61.8
Employee numbers	54.9
R&D spend	56.9
Business investment	61.5
Your level of business optimism	50.0
Time to deliver	54.8
Raw material (input) prices	87.3
Cost of importing	79.8
Cost of exporting	80.4
Your energy costs	80.8
Finished goods (output) prices	84.6
Your company / site profit margins	43.1

Source: CIA Q1 2022 Business Survey

Sales are expected to experience their eighth successive quarter of growth in the second quarter of 2022, albeit at a slower pace than in the first. Repeating the trend in recent quarters, exports outperform the domestic market however EU exports expand slightly quicker than the rest of the world, although the differences are fine.

After the relatively modest growth in the first quarter of the year, production levels are expected to experience a significant acceleration in the second quarter and have realigned their historic correlation with new orders and capacity utilisation.

The 'slower' moving employee number, R&D spend and business investment variables that don't tend to display large swings quarter-on-quarter, are all expected to expand in the second quarter with business investment leading the way as members aim to increase capacity to take advantage of the current levels of elevated demand.

However, aligned with previous quarters, the forecasted high demand is accompanied by further rises in the already elevated costs of doing business. Just under 80% of survey respondents expect raw material prices to rise in the quarter while 75% expect to increase their output prices, leading to further squeezes on margins. Over 69% of respondents expect energy prices to continue rising, while just under 65% expect increases in the cost of importing and exporting while lead times continue to increase. Optimism levels among business leaders are expected to have levelled out, this comes over significant contractions in recent quarters.

When the CIA presented these findings back to survey respondents it was broadly relayed that although demand looks real and robust for the next three-to-six months, after that it was very hard to forecast. There is concern that as the cost of living begins to pinch consumer expenditure and the cost of business erodes margins, a downturn in demand could leave industry picking up a large energy bill with no willing customers to pass on the cost to.

Expectations for twelve months' time

Reiterating the last point, respondents to the business survey warned that predictions for 12 months' time contain high levels of uncertainty and could be subject to large revisions moving forward. With that said, table 4 contains the diffusion indexes for what is expected for each of the 19 variables one year from now.

Table 4

	12-month prediction
Total sales	63.7
Domestic sales	53.8
Exports	62.5
EU exports	60.6
Rest of the world exports	60.6
New orders	63.5
Production levels	68.6
Capacity utilisation	65.7
Employee numbers	59.8
R&D spend	61.5
Business investment	65.4
Your level of business optimism	57.7
Time to deliver	50.0
Raw material (input) prices	74.0
Cost of importing	68.3
Cost of exporting	69.2
Your energy costs	65.4
Finished goods (output) prices	70.2
Your company / site profit margins	51.0

Source: CIA Q1 2022 Business Survey

Understandably, given the forecast rises in sales, production, investment, and prices in the second quarter of the year, expectations for 12 months' time follow a similar pattern. Sales growth is expected to continue to be driven by exports with matching performance in the EU and rest of the world. Increased sales translate to rises in new orders and capacity utilisation while production levels are expected to experience strong growth, supported as customers replenish stockpiles after a period of high demand and long lead times. Investment and R&D intentions in the industry are a positive signal that the industry backs the UK despite the impending economic turbulence, and while the Bank of England expects the unemployment to rise in a year's time, the chemical industry expects to increase its workforce.

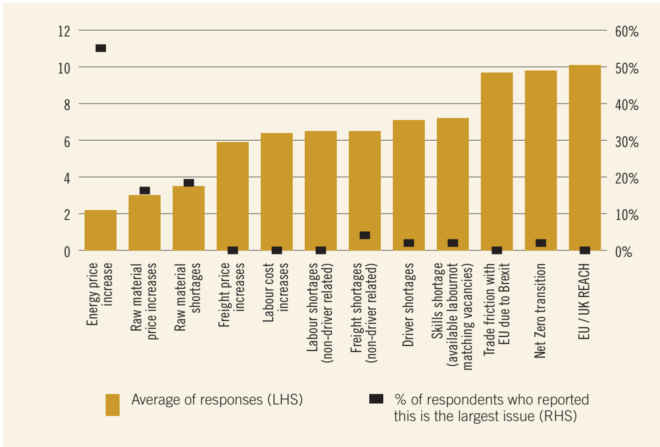
Despite the continued rise in input prices and trade costs, margins and lead times are expected to stabilise however are yet to begin to recover the ground that was lost over the last four quarters.

Challenges and Opportunities

The second section of the CIA's Q1 Business Survey focused in more detail on the challenges being faced by members which were then followed by a look at the opportunities that members identify.

The first question in this section asked respondents to rank 12 challenges faced by the industry from greatest to smallest with '1' signalling the greatest issue and '12' the smallest. If respondents felt one of the options was not a challenge they were provided an 'N/A' option. A text box allowed for members to enter challenges they felt were missed from the list. Member-provided answers had two themes, the first was associated with Russia's invasion of Ukraine and the second related to China's zero-tolerance covid policy and the potential ramifications of this. Although not provided as individual options, these challenges are covered in the list supplied as they exacerbate some of the challenges surrounding prices and logistics.

Graph 7: Displays all 12 challenges from greatest to smallest when looking left-to-right.



Source: CIA Q1 2022 Business Survey

This question was asked in the prior two CIA business surveys and the responses have been broadly consistent throughout with the top three biggest challenges remained the same, albeit the order of the second and third have switched places in the most recent set of results. Increases in energy prices remains the largest current issue faced by the industry with over 55% of respondents putting it top. Raw material price increase and shortages came in second and third with 16.3% and 18.4% of respondents saying these were the largest issue respectively. The challenges surrounding finding drivers fell from fourth to eighth while freight prices jumped from seventh to fourth on the list. Challenges ranked ninth to twelfth largest remained the same with the inversion of ten and eleven.

It is crucial to note that the challenges deemed the 'smallest' in this data still pose a serious threat to the industry in the mid-to-long term. They however are not being felt as acutely as the soaring input costs and supply frictions. It is therefore important that these challenges, including UK Reach, the net zero transition, trade friction with the EU, and the skills shortage, are not underestimated. This point was reiterated by CIA members when they were presented with the data and the CIA will continue work in these areas opposite government and other stakeholders.

The next question asked respondents whether the 12 challenges from the previous question were improving, worsening or remaining unchanged. Table 5 displays the diffusion indexes of the answers with figures above 50 indicating an improvement, below 50 worsening and 50 equals no change.

Table 5: Diffusion indexes

Challenge	Diffusion Index
Raw material shortages	26.0
Labour shortages (non-driver related)	36.4
Driver shortages	47.8
Freight shortages (non-driver related)	35.4
Raw material price increases	11.0
Energy price increases	4.1
Freight price increases	15.3
Labour cost increases	13.0
Skills shortage (available labour not matching vacancies)	29.1
Trade friction with EU due to Brexit	51.3
EU / UK REACH	50.0
Net Zero transition	50.0

Source: CIA Q1 2022 Business Survey

Understandably, the situation surrounding the less acutely felt challenges such as the net zero transition and UK Reach are not changing, there have been modest improvements in the level of trade friction with the EU as our trading relationship becomes clearer. The remaining nine challenges are all felt to be getting worse, although at significantly varied paces. Over 93.0% of respondents felt the situation surrounding energy prices was worsening while 78.0%. 73.9% and 69.4% of respondents felt raw material prices, labour costs and freight prices were worsening respectively.

Moving onto opportunities, when asked what the biggest near-term opportunity was for respondents' companies / sites, understandable the responses were largely business specific however followed a few themes:

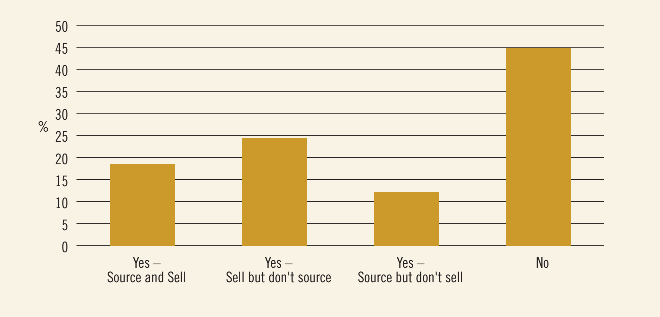
1. Increase efficiency / utilisation
2. Increase capacity
3. Increase production / capability
4. Reduce costs
5. Continued rebound of end markets
6. Take advantage of market conditions – re-worked supply chains, struggling competition etc.
7. Net zero / hydrogen economy

Despite the significant near, medium and long-term challenges faced by the industry, respondents could still identify multiple opportunities and in some cases also felt they could convert some of the challenges, including the transition to net zero and the hydrogen economy, into opportunities. Largely however, opportunities came through increased efficiency and production in order to take advantage of current buoyant market conditions.

UK chemical industry's exposure to Russia's invasion of Ukraine

The third and final section of the survey aimed to improve the CIA's understanding of our membership's exposure to Russia's unprovoked invasion of Ukraine. The first question in this section asked respondents if they sourced raw materials or sold products to the impacted region. The term impacted region refers to Russia, Belarus and Ukraine.

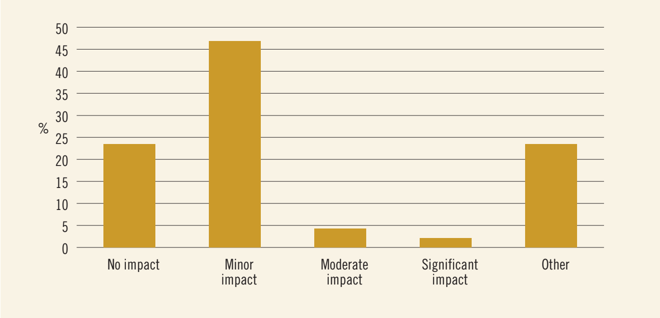
Graph 8: Do you source raw materials or sell products to the impacted region?



Source: CIA Q1 2022 Business Survey

Graph 8 shows that 55% of respondents undertake some level of trade with the impacted region with more members selling than sourcing. Respondents were then asked how a total ban on trade with Russia would impact their company/site.

Graph 9: How would a total ban on trade with Russia impact your company/site?



Source: CIA Q1 2022 Business Survey

Predominantly a trade ban with Russia would cause minor to no impact for CIA members as the ramifications are already being experienced in the form of elevated input prices and supply issues. It is important to note that a handful of respondents reported that a trade ban would cause a moderate to significant disruption to their company/site. Answers in the 'other' category largely detailed secondary impacts due to the macroeconomic change in market dynamics.

It is not by chance that CIA members are well insulated from disruptions from a trade ban, measures have been enacted to reduce the interference. Of the survey respondents who import from Russia, two-thirds report that they have already found alternative suppliers while the remaining third are continuing to look. No respondents reported that they either aren't looking for alternatives or can't find any.

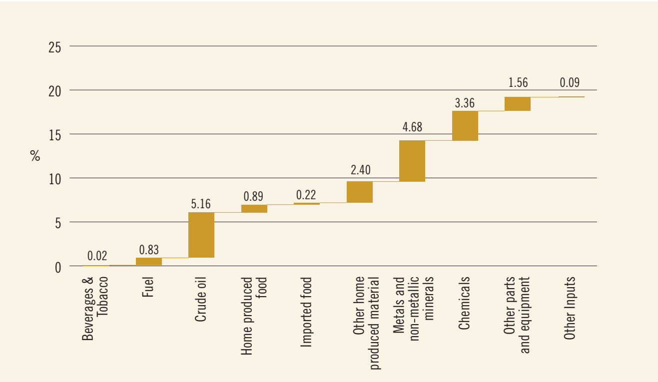
In summary of the CIA's survey data, respondents to the CIA's Q1 2022 business survey report their seventh successive quarter of sales growth which is expected to continue into the second quarter of 2022. Production was stifled by supply challenges in the first quarter however is expected to rebound in the second. Input prices continue to outpace that of finished goods, putting downward pressure on margins, however, the difference is narrow. This pattern in input and output prices is expected to continue in the second quarter and remain in place a year from now.

Demand is expected to be real and elevated in the next three-to-six months however forecasting further out than that is challenging and subject to high volatility. Energy prices is felt to be the biggest issue in the industry, followed by raw material price increases and shortages. For the third successive quarter, all three variables are felt to be worsening.

Over 55% of respondents undertake some level of trade with Russia and or Ukraine. A total ban on trade would largely cause minor impacts on respondents. All respondents who trade with the region have either found alternative suppliers or are looking to.

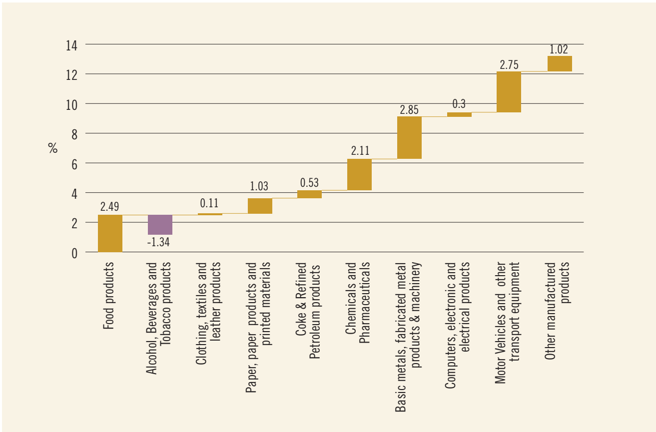
Appendix

Graphs 10: PPI input breakdown



Source: CIA analysis of ONS data

Graph 11: PPI Output breakdown



Source: CIA analysis of ONS data

Table 6: 12-month growth of input prices in chemical subsectors

	12-month growth of input prices in chemical subsectors
Dyes & Pigmants, Pesticides and Other Agrochemical Products	22.7%
Industrial Gases; Other Inorganic Chemicals, Fertilisers & Nitrogen Compounds	37.7%
Petrochemicals	31.7%
Paints, Varnishes and Similar Coatings	19.4%
Soap and Detergents, Cleaning and Polishing Preparations, Perfumes and Toilet Preparations	13.4%
Other Chemical Products	17.6%
Freight price increases	15.3
Labour cost increases	13.0
Skills shortage (available labour not matching vacancies)	29.1
Trade friction with EU due to Brexit	51.3
EU / UK REACH	50.0
Net Zero transition	50.0

Source: CIA analysis of ONS data

Table 7: 12-month growth of output prices of chemical products manufactured in the UK

	12-month growth of output prices of chemical products manufactured in the UK
Dyes and Pigments for Domestic Market	12.3%
Other Inorganic Basic Chemicals for Domestic Market	24.6%
Other Organic Basic Chemicals for Domestic Market	17.1%
Fertilisers and Nitrogen Compounds for Domestic Market	100.7%
Plastics in Primary Forms for Domestic Market	26.3%
Paints, Varnishes and Similar Coatings, Printing Ink and Mastics for Domestic Market	17.2%
Soap and Detergents, Cleaning and Polishing Preparations for Domestic Market	17.9%
Perfumes and Toilet Preparations for Domestic Market	1.6%
Glues for Domestic Market	46.1%
Other Chemical Products N.E.C. for Domestic Market	9.2%
EU / UK REACH	50.0
Net Zero transition	50.0

Source: CIA analysis of ONS data

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