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Chemicals

Sector Update

February 27, 2023

BASF's manufacturing focus shifting eastwards

We assess BASF management commentary and its actions to improve the group's overall growth trajectory. While BASF's Q4/CY22 performance was impacted by European gas crisis and impairments on its shareholding in Wintershall Dea AG (Russian activities ceased), shutdown of few units in Ludwigshafen (BASF's largest site) and rightsizing employee base is more to do with improving long term competitiveness. Positive long term outlook reflects in increasing capex budget (increased to Eur28.8bn for 2023-27 vs Eur 25.5bn in 2022-26), for which it readies a balanced global footprint with production assets close to customers in all regions.

Although BASF's current eastward shift (Asia Pacific forms ~47% of its capex budget) is focused towards China; but Europe+1 beginning to materialize will also have long term benefits for Indian manufacturers, in our view. We believe rising capex intensity augurs well for overall global chemicals sector including India, on the back of new opportunities (like battery chemicals) and newer growth centres (Asia). Domestic players' capex outlays & timelines have also remained unchanged despite near term demand challenges. Our top picks are JUBLINGR and FINEORG and we believe GNFC could benefit from BASF's TDI plant closure at Ludwigshafen.

Top Picks

Jubilant Ingrevia

Fine Organic Industries

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Key takeaways & actions for the future

- BASF wound up its Russian business along with Belarus in 2022 (~1% of BASF group's total revenue), due to Russia-Ukraine war impacting ties with the west.
- Europe's competitiveness is suffering from overregulation, slow & bureaucratic processes and high production costs, resulting in years of low market growth.
- Cost savings program (2023-24) thus focuses on rightsizing cost structures in Europe, particularly in Germany. The program is expected to generate annual cost savings of >Eur500mn and have a net effect on ~2,600 positions globally.
- Ludwigshafen site forms ~4% of Germany's natural gas consumption (on 2021 figures); hence competitiveness suffers during elevated energy prices. Renewable energy and feedstock still play a relatively small role.
- Hence structural measures to improve BASF's long term competitiveness are undertaken, with actions across 3 value chains Ammonia, Adipic Acid and TDI.
- TDI supply shut down may not trigger a significant price uptick given weak demand environment; however, it improves demand-supply balance over the medium term. GNFC is the only TDI producer in India (capacity 64ktpa).
- BASF can operate Ludwigshafen site even with ~30% of average gas volume consumed in 2021; undertaking more projects for further reduction to ~10%.
- Zhanjiang, China to be BASF's third-largest Verbund site after Ludwigshafen and Antwerp. BASF is also expanding its global presence in growing market segments, for eg: battery materials value chain.
- Dividend of Eur3.4/sh to be proposed (pay-out of Eur3.0bn). However, its share buyback program was terminated in-line with priorities for the use of cash.

Production grew by 6.6% in China and by 4.6% in India while in Japan, South Korea and Taiwan, it fell by 3%, 7.4% and 12.9%.

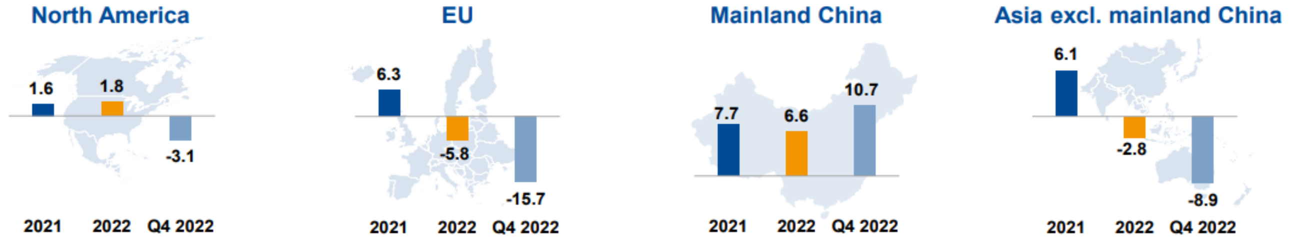
Global chemical production slows in 2022

Global chemical production grew by only 2.2% in 2022. While markets in China and North America grew, chemical production declined in Europe on lower demand and higher energy prices. Chemical production in Asia expanded by 4.2% overall, but varied across countries.

Exhibit 1: Global chemical production grew by 2.2% in 2022 and by 1.0% in Q4 2022

Chemical production compared with prior year[1]

%



Growth rates

%	2022	2021
Global GDP	3.0	6.1
Global industrial production	2.5	6.2
Global chemical production	2.2	6.1

Source: BASF

BASF's key KPI's are (a) ROCE and (b) Absolute CO2 emission

BASF's target achievements

Partly achieved 2022 targets, due to challenging market environment:

- Despite global chemical production growth of 2.2%, BASF's sales volumes declined by 7%, on lower production rates, especially in its European sites.
- EBITDA before special items declined by ~5% to Eur10.8bn, largely on lower contribution from Chemicals and Materials segments.
- ROCE of 10% was above the cost of capital rate of 9%. CO2 emissions declined to 18.4 mmt (vs 20.2mmt YoY) on significant reduction in production volumes and temporary shutdown of emission intensive plants.

Exhibit 2: Overview of financial and non-financial targets in 2022

	2022 target	2022 status
Grow **sales volumes faster** than **global chemical production** every year	>2.2%	–7.0%
Increase **EBITDA before special items** by **3% to 5%** per year	+3–5%	–5.2%
Achieve a **return on capital employed (ROCE)**[1] considerably **above the cost of capital percentage** every year	>9%	10.0%
Increase the **dividend per share** every year based on a **strong free cash flow**	>€3.40	€3.40[4]
Reduce our absolute CO_2 emissions[2] by 25% to 16.4 million metric tons by 2030 (baseline 2018)[3]	≤20.2 million metric tons	18.4 million metric tons

Source: BASF 1 ROCE is calculated as EBIT generated by the segments as a % of avg cost of capital

2 Goal includes scope 1 and scope 2 emissions. Other GHG's are converted into CO2 equivalents

Management expects weak H1CY23 followed by improved earnings environment in H2CY23 on recovery effects, especially in China

2023 growth forecasts

Global economy 1.6%,

Global industrial production 1.8%,

Global chemical production 2%

Outlook for 2023

Management guidance for BASF group

- Generate sales of between Eur84bn-87bn in 2023, while EBIT before special items is expected to be between Eur4.8bn -5.4bn.
- Management expects weak H1CY23 followed by improved earnings environment in H2CY23 on recovery effects, especially in China.
- ROCE is of between 7.2-8.0%, based on weaker earnings performance and slightly higher cost of capital basis forecast for BASF Group.
- CO2 emissions are between 18.1-19.1mn metric tons on moderate production growth and slightly higher capacity utilization at emission-intensive plants.

Forecast Assumptions

- Expect moderate growth in majority of its customer industries in 2023.
- War in Ukraine to continue but not escalate. However, further developments and its effects on economic growth are subject to a high degree of uncertainty.
- An acute gas shortage with regulatory cuts to energy-intensive industries in Europe will not materialize.
- China's exit from its zero COVID strategy to positively impact global demand.
- Planning assumes (a) average exchange rate of 1.05 USD/Eur (b) Brent crude price of USD 90 /barrel and (c) Elevated and very volatile gas prices in Europe.

Measures to increase competitiveness of BASF

In management's assessment, a balanced regional footprint is crucial for risk management Hence, it will continue to strengthen BASF's business growth outside of Europe

Management highlighted that Europe's competitiveness is increasingly suffering from overregulation, slow and bureaucratic processes, and high costs for most production input factors, resulting in years of low market growth. Additionally, high energy prices are increasing the burden on BASF's profitability and competitiveness in Europe. In management's assessment, a balanced regional footprint is crucial for risk management, and therefore it will continue to strengthen BASF's business growth outside of Europe while adapting business in home region to reflect the changed framework conditions.

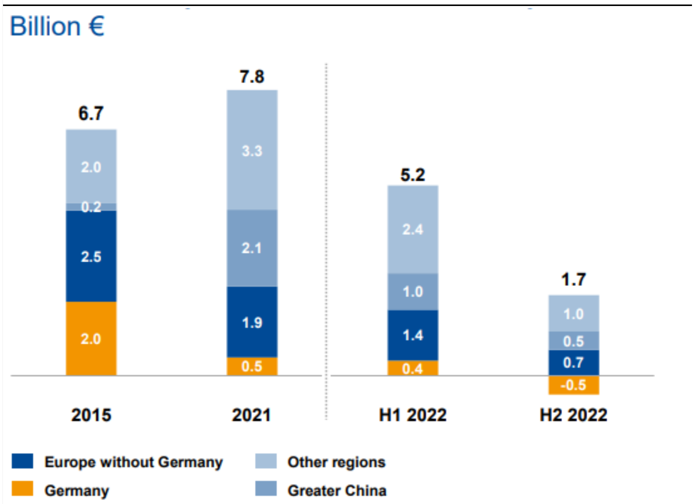
BASF's competitiveness in Europe (esp. in Germany) has steadily declined:

- **CY15:** Germany, Europe (ex-Germany), and others contributed 1/3rd to EBIT^
- **CY21 (strong year):** Europe (incl. Germany) contributed only 1/3rd to EBIT^
- **CY22 (strongest ever H1):** Earnings softened through 2022 and German operations particularly deteriorated. In H2CY22, contribution of Germany was negative, and the year ended with an overall EBIT contribution of -Eur126 mn.

Energy costs driving the group's earnings decline in Europe

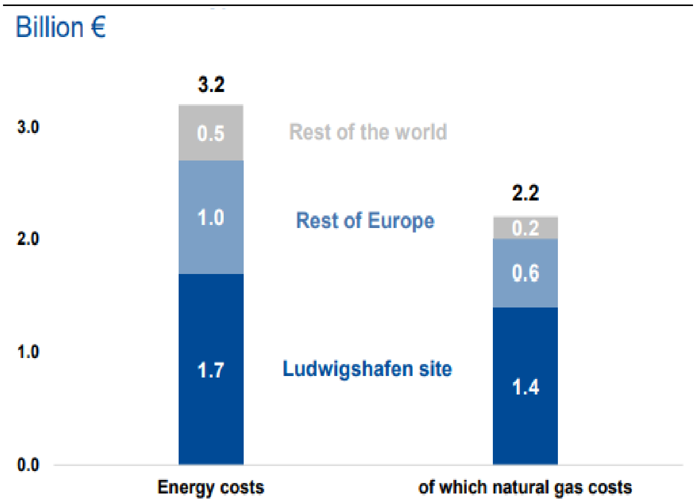
- Europe/ Ludwigshafen accounted for ~84%/53% of the Eur3.2bn increase.
- Higher natural gas costs accounted for ~69% of the increase, despite reduction in BASF's gas consumption by ~1/3rd in Europe (lower production volumes).

Exhibit 3: Germany reports negative EBIT^ in 2022



Source: BASF ^EBIT before special items

Exhibit 4: Eur3.2bn additional energy costs in 2022



Source: BASF

Cost Savings program with focus on Europe

Half of the cost savings expected to be realized at the Ludwigshafen site

- Focus on rightsizing cost structures in Europe and particularly in Germany.
- BASF will implement the program from 2023 to 2024. On completion, the program is expected to generate **annual cost savings of more than Eur500mn in non-production areas** (service, operating and research & development divisions as well as the corporate center).
- Globally, the measures are estimated to have a **net effect on around 2,600 positions**; this includes creation of new positions, particularly in hubs.

2600 net positions to be impacted (~2.3% of its global workforce)

Exhibit 5: 111,481 employees across regions (at the end of 2022)

Source: BASF

Key changes at Ludwigshafen (BASF's largest site)

- **Ludwigshafen site forms ~4% of Germany's natural gas consumption** (on 2021 figures); hence competitiveness suffers during elevated energy prices.
- **Renewable energy and feedstock's still play a relatively small role.**
- **Sells significant volumes of several base chemicals to the market** even as it mainly uses base chemicals within the site to produce vast range of ~8,000 downstream products for European and global customers.
- **Collateral output:** Emits **~7 mn metric tons of carbon dioxide/ year**
- **Gas prices to stay elevated vs historical avg, despite recent decline:** Prices averaged Eur124/Mwh (USD38/ mmBtu) for the year, 2x of 2021 level and > 10x of 2020 level. In Dec'22, it was significantly lower, averaging Eur118/ MWh (USD37/ mmBtu), but still more than 5x of U.S. gas price (Henry Hub).
- **Furthermore, lower market growth in Europe** has negatively impacted supply and demand dynamics in several value chains.

Hence structural measures to improve BASF's long term competitiveness are being undertaken, in addition to cost savings program initiated.

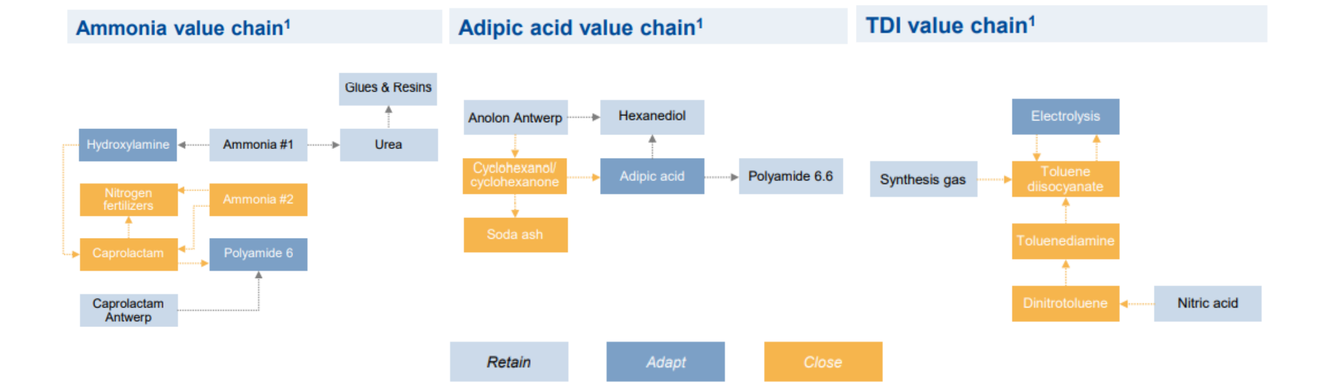
BASF's caprolactam production in Ludwigshafen is being closed down.

Its Antwerp plant is sufficient for captive and merchant market demand in Europe going forward.

Ammonia value chain

- **Ammonia is the largest consumer of natural gas as RM in Ludwigshafen,** where currently two ammonia plants are operated. Ammonia is an important input for caprolactam & for polyamide 6, adipic acid and nitrogen fertilizers.
- **Caprolactam production being closed in Ludwigshafen:** Caprolactam witnessed significant capacity build-up in recent years, especially in China, exerting pressure on European exports to Asia even before the energy crisis.
- **It significantly reduces captive demand for ammonia,** which in turn, allows closure of 1 of the 2 ammonia plant as well and associated fertilizer facilities.
- **Strengthening high value-added businesses:** Businesses like standard and specialty amines and Adblue®, remain unaffected and competitive. It's an opportunity to optimize and strengthen polyamide 6 production network.

Exhibit 6: Major changes across 3 value chains



Source: BASF

Adipic acid business margins steadily eroded, over recent years, due to overcapacities in Asia, and lower than expected domestic market growth.

Adipic acid value chain

- As one of the main precursors of polyamide 6.6, **adipic acid is an essential part of BASF's engineering plastics business.** In addition to serving captive demand, it sells production volumes to merchant market.
- Over recent years, however, the business **margins steadily eroded due to overcapacities in Asia and lower than expected domestic market growth**. This situation became worse with sharp increase in European energy prices.
- In response to this changed market environment, it **will reduce its adipic acid production capacity** in Ludwigshafen and will **close precursor plant for cyclohexanol and cyclohexanone as well as production of soda ash.**
- Adipic acid production at its JV with Domo in Chalampé, France, remains unchanged and has sufficient capacity to supply its business in Europe. It will also continue to operate polyamide 6.6 production plants in Ludwigshafen.

TDI plant and the precursor plants for DNT and TDA are being closed down

European customers to be served via its global production network with its existing TDI plants in Louisiana; South Korea, and China

Toluene Diisocyanate (TDI) value chain

- Market demand for TDI did not grow as expected and has been especially weak in Europe, Middle East & Africa. Management does not expect this to change.
- As a result, its TDI complex in Ludwigshafen continues to be underutilized and has not met economic expectations. This situation further worsened with sharply increased energy and utility costs.
- BASF Ludwigshafen TDI plant has a capacity of 300ktpa (~9% of 3420ktpa global capacity) while the global consumption is ~2500ktpa. We believe, this supply shut down may not trigger a significant price uptick given the weak demand environment; however, it improves demand-supply balance over the medium term. **GNFC is the only TDI producer in India (capacity 64ktpa).**

Exhibit 7: Planned measures structurally improve BASF Ludwigshafen site competitiveness & contribute to net-zero target

Affected production assets	Fixed cost reduction	Natural gas demand
10% of the asset replacement value at the site	>€200 million per year	-4.8 TWh/a (~15% of 2021)
Expected affected positions	**Power demand**	**CO_2 emissions[1]**
~700	-0.7 TWh/a (~11% of 2021)	-0.9 Mt/a (~12% of 2021)

Source: BASF

*Under optimal conditions and with major gas consumers taken offline, Ludwigshafen site will be able to run **at a supply rate of ~10% of its average 2021 gas consumption***

Significantly lower shutdown threshold for Ludwigshafen

- On Initial assessment regarding gas supply (when uncertainties began), BASF mentioned 50% to be a minimum for operating the Ludwigshafen Verbund site. **Now, its able to continue operations even if gas supply were to drop as far as 30% of its average 2021 consumption**.
- Optimization measures for the above include (a) using by-product ethane from its steam crackers to feed its acetylene plant and (b) recommissioning of a section in the synthesis gas plant that is independent of natural gas.
- **Further projects are being executed to aid reduction of Ludwigshafen's gas consumption even more**. By the year end, two of four natural gas turbines will be converted to allow operation with either natural gas or fuel oil.

Capex: Asia to play a key role in BASF's growth

BASF is stepping up investments in growth regions as a more balanced regional portfolio makes it more resilient.

BASF's new site in Zhanjiang (China) once completed, will be its third-largest Verbund site after Ludwigshafen and Antwerp

Asian market to play a key role in BASF's future growth: China is by far the world's largest chemical market (>45% share) and a key driver of global chemical production growth. BASF has a strong production, sales and innovation base in Asia, particularly in China, which it will continue to expand. BASF's new site in Zhanjiang (southern Chinese province of Guangdong), once completed, will be its third-largest Verbund site after Ludwigshafen, Germany, and Antwerp, Belgium.

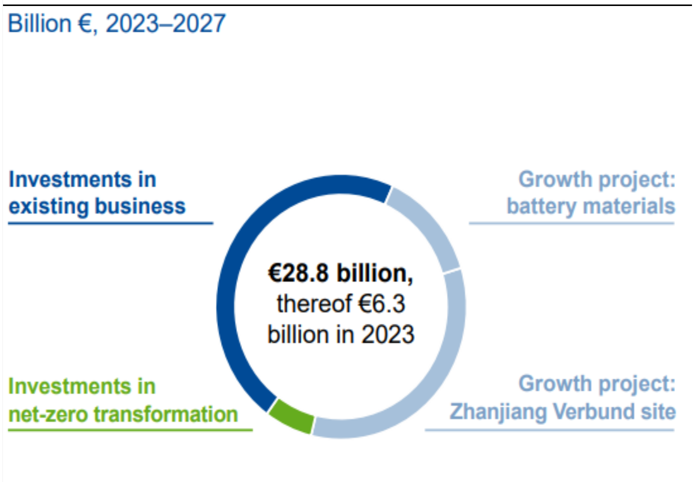
Detailed information on BASF's five-year capex budget:

- **Between CY23-27, capex of Eur28.8bn is planned (organic growth focus)** vs Eur25.6bn in the prior planning period (CY22-26)
- **Key reasons for increase are the two major growth projects**: (1) Verbund site in Zhanjiang and (2) battery materials activities. These two key projects will on average account for ~Eur2.7bn / year during the next five years.
- **Investments in BASF's existing businesses** will on average amount to Eur2.7bn/yr. **Investments in company's transformation towards net-zero** will be ~Eur400mn/ yr in this period and then increase towards 2030.

Capex share of Asia Pacific region to increase to 47% between 2023-27

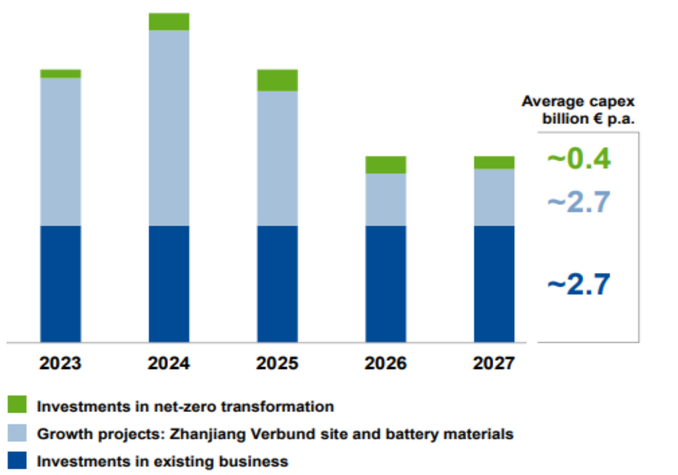
- **Capex share of Asia Pacific region to increase to 47% between 2023-27** due to Zhanjiang capex. Europe to be ~36% and the North America ~15%. ~2% relate to South America, Africa, Middle East and to unassigned regions.
- **BASF's largest single investment in North America to date** is on MDI production expansion at Geismar site, Louisiana, at an outlay of USD1bn.
- **For 2023, total capex of Eur6.3bn is planned vs ~Eur4.1bn in 2022.**

Exhibit 8: Capex budget by type of investment



Source: BASF

Exhibit 9: Planned capex to peak between 2023-25



Source: BASF

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Sr. No.	Company Name	Rating	TP (Rs)	Share Price (Rs)
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2	Fine Organic Industries	BUY	7,000	4,613
3	Jubilant Ingrevia	BUY	900	485
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5	NOCIL	Accumulate	250	218

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