IMP

IMP INTELLIGENCE SERIES

EUROPEAN CHEMICALS · CAPITAL ALLOCATION

The €50bn Misallocation

Why European Chemical Capex Since 2020 Won't Earn Its Cost of Capital

Boards know it. Lenders price it. Equity analysts model around it. Across the EU27 chemical sector, capital deployed since 2020 has been optimised for policy alignment — ESG, security, subsidy capture — rather than for returns. The math is now visible in the financial reports.

~€140 bn	EU27 chemical capex cumulative, 2020–2024
5.1 %	BASF Group ROCE 2024 (vs ~10% cost of capital)
–81 %	Confirmed new-build CAPEX, 2022 → 2025
75 %	EU27 capacity utilisation — below 30-yr norm

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ANALYSIS

Capital followed narrative, not return thresholds.

WHAT THIS PAPER ESTABLISHES:

- The volume of capital exposed
- The structural reasons returns fail
- The cliff risk in subsidy dependence
- The case archetypes most affected

2026
Wuppertal

01 · POSITION

The thesis, stated plainly

Between 2020 and 2024, the EU27 chemical industry committed roughly €140 billion in capital expenditure (Cefic). A material share — our estimate is €40–50 billion — went into transformation themes: electrification of crackers, green hydrogen, recycling and circular feedstocks, battery-chain intermediates, and EU-based capacity expansions explicitly framed against US and Asian alternatives.

These projects were not irrational. They were rational responses to policy signals — ETS, Green Deal, IPCEI, REPowerEU, the Net-Zero Industry Act — and to client decarbonisation demand. The decisions optimised for what could be reported, financed, and politically defended. They did not optimise for return on capital. The 2024–2025 financial reports of the European chemical majors now make that visible.

THE MATH, IN ONE PARAGRAPH

BASF reported Group ROCE of 5.1% in 2024 and 5.8% in 2025, against a group-level stated cost of capital of 10% (BASF steering metric — divisional WACC varies). Covestro guided 2025 ROCE-over-WACC to between –9 and –5 percentage points. Multiple sell-side estimates place the EU large-cap chemical sector ROCE below WACC across 2023–2025. When return on capital runs three to five percentage points below the cost of that capital across an entire industry for multiple years, the issue is structural — not cyclical, not transitional, not a question of patience.

Is this just the cycle?

A reasonable counter-thesis: this is the trough of a chemical cycle, layered with a one-off European energy shock and post-COVID demand normalisation. Some of the gap is exactly that. But cyclicality alone does not explain a sustained 3–5 ppt ROCE-WACC shortfall across multiple years; does not explain investment-to-closure ratios approaching 1:5; and does not explain why incremental capital decisions move structurally toward the US Gulf and the Middle East rather than waiting out the European cycle. The cyclical and structural components co-exist. This paper concerns the structural one.

What this paper is. And isn't.

This is not a critique of the energy transition, of decarbonisation, or of any individual company's strategic choices. The transition is non-optional. Climate physics does not negotiate. What this paper argues is more specific: that across 2020–2024, European chemical capital allocation shifted from return optimisation to policy alignment — with return discipline subordinated rather than abandoned — and that the consequences are now arriving in segment ROCE, in aborted final investment decisions, and in an investment-to-closure ratio of roughly 1:5 (announced capacity closures vs confirmed new-build investments, Cefic / Roland Berger dataset).

The thesis: this is not a transition problem. It is a capital discipline problem. And it is fixable — but only if it is named.

02 · CAPEX BREAKDOWN

Where the capital actually went

Cefic's 2025 Facts & Figures puts EU27 chemical industry capital spending at €28.4 bn in 2024 (down from €29.3 bn in 2023), running 35% above the 2014–2019 pre-crisis baseline. Cumulative capex 2020–2024 is in the range of €130–140 bn. Of that, our working estimate is that €40–50 bn was directed at transformation themes (electrification, hydrogen, recycling, battery-chain). This figure reflects an attribution of aggregate Cefic capex to the theme shares published by Roland Berger; it should be read as directional, not audited. The composition matters more than the headline.

Confirmed new-build investment by theme, EU27 2022–2025

Source: Cefic / Roland Berger, European Chemical Industry Closure and Investment Database, Jan 2026

Theme	Capex	Share	Status
Specialty chemicals	**€4.9 bn**	**36 %**	*Mixed — margin under pressure*
Battery value chain	**€1.9 bn**	**14 %**	*Subsidy-dependent, China oversupply*
Emissions reduction / electrification	**€1.9 bn**	**14 %**	*Negative IRR ex-subsidy*
Recycling / circular economy	**€1.5 bn**	**11 %**	*Feedstock economics broken*
Petrochemicals (selective)	**€3.8 bn capacity**	**59 %**	*Offsets only ~21% of closures*

The trajectory: confirmed new investment is collapsing

Roland Berger's tracker for Cefic shows confirmed new-build CAPEX in the EU27 chemical industry falling from €7.6 bn in 2022 to €1.5 bn in 2025 — an 81% contraction. Annual announced investment capacity dropped from 2.7 Mt in 2022 to 0.3 Mt in 2025 (–86%). Over the same period, announced closures rose six-fold to 17.2 Mt per year, totalling 37 Mt for 2022–2025 — roughly 9% of EU27 production capacity.

Read together, two patterns emerge. First, the largest closure markets (Germany, Netherlands, UK, France) are not the largest investment destinations — Belgium absorbs 36% of confirmed new capacity additions despite representing 6% of EU sales. Second, the investment that did happen since 2020 was disproportionately weighted toward transformation themes whose returns depend on policy continuity, electricity prices outside producer control, and demand projections that have not materialised on schedule.

03 · RETURN SHORTFALL

Why returns structurally fail to clear cost of capital

The single most important fact in European chemicals 2024–2025 is that ROCE, across the large-cap producers, is running below WACC. Not in one division. Not in one year. Across the portfolio, structurally.

Group-level ROCE vs cost of capital, selected EU chemical majors

Source: Company annual reports & 2024/25 disclosures. Indicative — not a peer ranking.

Company	ROCE 2024	ROCE 2025	Stated WACC	Spread
BASF Group	**5.1 %**	**5.8 %**	~10 %	**–4.2 ppt**
Covestro	**neg.**	**neg.**	n/d	**–9 to –5 ppt (guidance)**
EU large-cap (sell-side range)	**5–7 %**	**5–7 %**	9–10 %	**–3 to –4 ppt**
Top-quartile specialties	**10–14 %**	**9–13 %**	~9 %	**+0 to +5 ppt**
Commodity / cracker exposed	**<5 %**	**<5 %**	9–10 %	**–4 to –7 ppt**

The four mechanisms through which returns fail

- **Energy cost gap.** Cefic puts EU ethylene production at 3.2× US cost (2023). For new electrified crackers, that gap widens, not narrows — electricity prices in Germany and the Netherlands remain 2–3× US industrial rates. Variable cost disadvantage is not a transition story; it is a steady state.
- **Carbon cost trajectory.** EU ETS prices traded €60–80/t CO2 across 2025. The Q1 2026 official CBAM certificate price is €75.36/t. Free allocations phase out from 97.5% in 2026 to zero in 2034. Forecast scenarios (e.g. BloombergNEF) point toward ETS prices around €149/t by 2030. New EU assets must absorb a rising carbon cost line that competitors in Houston, Jubail, and Ningbo do not.
- **Utilisation.** EU27 capacity utilisation has fluctuated around 75% since 2022 — Cefic's own framing is that this is well below the 30-year norm. Asset-heavy chemistry does not earn its WACC at 75% load factor. Period.
- **Global oversupply.** China has added more chemical capacity in 2020–2024 than the rest of the world combined in key petrochemical chains — ethylene derivatives in particular (Cefic estimates ~47% of global chemical capex 2014–2024 was Chinese). The marginal global molecule in those chains is now priced by Chinese asset utilisation. European producers absorb the price, regardless of their own carbon or energy position.

04 · SUBSIDY DISTORTION

Pulling capex forward, exporting it sideways

The Inflation Reduction Act of 2022 ($369 bn in climate/clean-tech tax credits, with open-ended tax-credit upside that some analysts model at $800 bn–$1.2 trillion) reset the comparative arithmetic for chemical capital allocation overnight. The EU's response — the Green Deal Industrial Plan, Net-Zero Industry Act, IPCEI envelopes, NextGenerationEU — comes in larger headline numbers but with structurally different mechanics.

US — Inflation Reduction Act

MECHANISM: TAX CREDITS

- Tax-credit based — directly reduces operating cost
- No ceiling on uptake (open-ended on most credits)
- Transferable credits — financiable as collateral
- 10-year visibility (most provisions through 2032)
- $369 bn headline; potential $800 bn–$1.2 tn realised
- Energy structurally cheaper (gas, power, feedstock)

EU — Green Deal / NZIA / IPCEI

MECHANISM: GRANTS, LOANS, STATE AID

- Application-based — bureaucratic friction, slow
- Capped envelopes; member-state co-financing
- Not transferable; tied to specific projects
- 2–4 year visibility, multiple programme renewals
- €723 bn RRF + state aid relaxation, fragmented
- Energy structurally more expensive — ETS adds cost

The cliff problem: IRR depends on policy continuity

Most transformation chemical projects modelled in 2021–2023 cleared their IRR threshold only after assuming sustained subsidies, sustained ETS price, sustained customer willingness-to-pay for low-carbon product, and sustained policy direction. Strip out any one of those assumptions and the IRR collapses. Strip out two, and the projects destroy value. Esade's analysis tracked $21.7 bn of post-IRA cleantech investment flowing into the US versus $8.7 bn into the EU in the same period — a 2.5× ratio that does not reflect engineering or talent, but landed economics.

From a policy perspective, this is not a bug — it is the design. Subsidies are intended to distort capital allocation in favour of decarbonisation; that is the explicit mechanism by which transition is meant to occur. The corporate-finance question is narrower: when subsidy-dependent IRR is presented as a base case rather than as policy upside, the project's true return profile gets hidden inside its own justification.

> **In most transformation projects, subsidies are not upside.**
> **They are the base case.**
> *When that conditional sits inside a 25-year asset decision, the return profile is hidden inside its own justification.*

05 · NARRATIVE GAP

ESG narrative vs economic reality

The ESG investment thesis for European chemicals — that decarbonisation and circularity would deliver growth, margin expansion, and premium pricing — has not played out in the income statement. This is not a moral observation. It is an arithmetic one. We separate what the narrative promised from what the financials show.

ESG NARRATIVE (2019–2022)

Growth
Decarbonisation creates a generation-long demand wave.

Margin
Low-carbon premium product earns price uplift.

Cost
Subsidies and learning curves lower transition cost.

Risk
Carbon cost is a tailwind for first-movers.

Capital
ESG-aligned capital cheaper, more abundant.

Customer
Brand owners pay for sustainability credentials.

REPORTED FINANCIALS (2023–2025)

Growth
EU chemical volumes ~14% below 2021. Demand wave deferred.

Margin
Green premiums realised in narrow categories only.

Cost
ETS, CBAM, REACH, energy compounding, not declining.

Risk
First-mover penalty: high capex, low utilisation, China imports.

Capital
ESG funds redeeming. Industrial bonds widening.

Customer
Brand owners reverse-engineering specs to lower-cost suppliers.

Concrete examples of the gap, observable in 2025: ISCC PLUS-certified mass-balance polymers achieved price premiums in personal care and food packaging — but premiums remained narrow (typically 5–15% over conventional grades) and applied to a small share of total volume. Recycled PET utilisation in operating European chemical-recycling facilities ran 30–60% rather than the 80%+ assumed in 2021 project models. Aggregate EU chemical volumes in 2024 sat roughly 14% below 2021 levels (with significant variation across sub-segments).

A separate risk now arriving: in 2026, the mass-balance accounting method itself is under increasing scrutiny from environmental NGOs and from the European Commission's own review processes. If the methodology tightens, the one ESG-premium narrative that has actually been working for European producers loses its certification basis. That is not a hypothetical regulatory risk — it is an active policy review.

None of this means decarbonisation is wrong, or that ESG-aligned investment was misguided in principle. It means the assumptions baked into 2020–2022 capex models were too generous. The income statements of 2023, 2024 and 2025 are the correction.

06 · CASE ARCHETYPES

Four structures that show the pattern

These are anonymised structures, not company analyses. Each represents a class of decision — or in the case of D, a class of operating outcome — repeated multiple times across the EU27 sector between 2020 and 2025.

ARCHETYPE A — The electrified cracker

STRUCTURE

A €1.5–3 bn project to retrofit or build a steam cracker running on renewable electricity instead of natural gas, removing direct combustion CO2.

ECONOMICS

Capex roughly 2.5× a conventional cracker. Variable cost per tonne of ethylene rises with electricity price, falls with carbon price. In indicative project models, modelled IRR clears WACC only at sustained ETS prices above ~€120/t and German industrial power below ~€80/MWh — a band that has not yet co-existed.

VERDICT

Technically viable, financially marginal. Without subsidy bridges, NPV is negative.

ARCHETYPE B — The chemical recycling asset

STRUCTURE

A €100–500 m investment in pyrolysis or solvolysis capacity to convert mixed plastic waste into virgin-equivalent feedstock for petrochemical use.

ECONOMICS

Feedstock economics depend on the spread between mixed plastic gate fees and virgin naphtha. Mass-balance certification creates demand from brand owners. But: throughput utilisation has averaged 30–60% across operating EU sites, and the price premium customers pay is narrower than 2021 models assumed.

VERDICT

Real demand exists — but at half the unit economics planners assumed.

ARCHETYPE C — EU expansion vs US relocation

STRUCTURE

An incremental capacity decision for a specialty chemical, comparable engineering feasible at a brownfield Antwerp site or a new US Gulf greenfield.

ECONOMICS

US energy ~30–40% of EU energy cost. IRA tax credits available on multiple input categories. CBAM exposure on EU exports back into Europe partially neutralises the carbon-leakage penalty. Modelled IRR delta runs 4–7 ppt in favour of US in indicative project models.

VERDICT

Capital crossed the Atlantic where decisions were made on absolute return. A second cost the literature understates: stranded management attention. The same European leadership teams remain absorbed in domestic regulatory firefighting — REACH, CSRD, ETS, CBAM — while their US assets receive less of the strategic bandwidth they need to outperform.

ARCHETYPE D — Zombie assets

STRUCTURE

A plant that is built — sometimes commissioned, sometimes idle — but cannot run at design capacity because the green hydrogen, renewable PPA, or low-carbon feedstock it requires is materially more expensive than the project model assumed, and not yet available at scale.

ECONOMICS

Fixed cost runs while variable economics fail. Operator either runs at low load factor and absorbs unit cost penalty, or idles the plant and absorbs depreciation without revenue. Either way, the asset operates but does not earn its cost of capital — a form of ghost capacity that does not show up in standard utilisation or closure statistics.

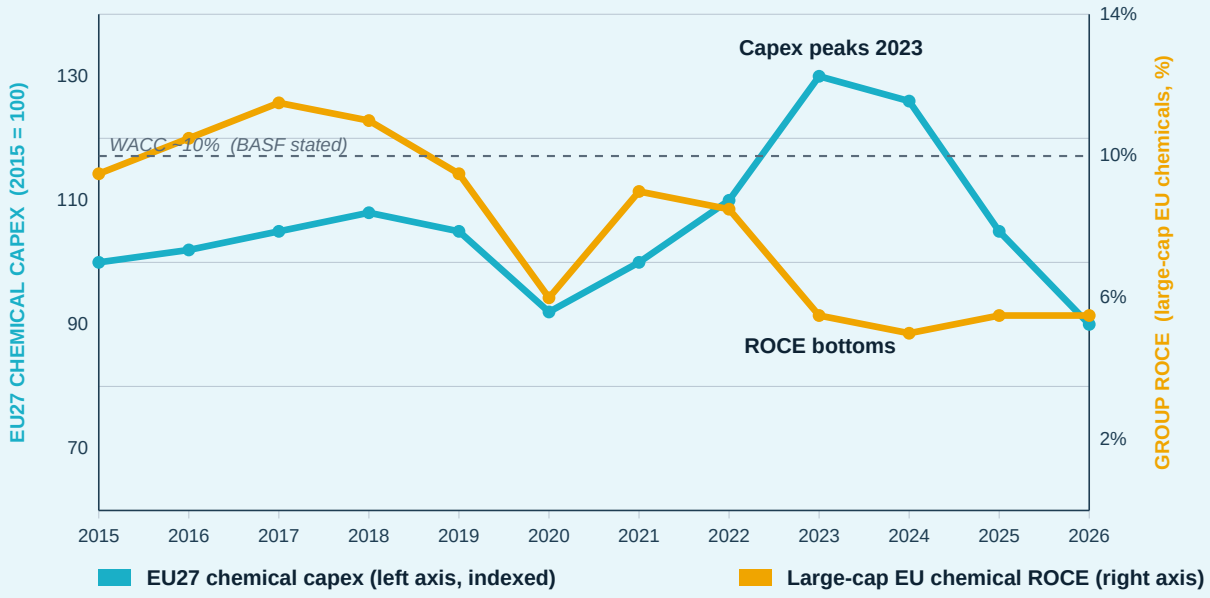
VERDICT

Not a closure. Not productive. The category that public reporting hides best.

07 · THE TRAJECTORY

Capex up, ROCE down — the divergence

EU27 chemical capital spending rose to a 35% premium over the 2014–2019 baseline by 2024. Group ROCE for the European majors declined toward 5–6%. The gap between the two trends is the visible signature of misallocation. Below, indicative trajectories for capex (Cefic EU27 sector aggregate) and large-cap European chemical ROCE.



Source: Cefic Facts & Figures 2024/2025 (capex); company annual reports (ROCE). 2026 = first-half indication. Indicative aggregate, not a peer benchmark.

Reading the chart: the gap between the lines from 2020 onward is the visible signature of misallocation. Capital spending continued rising into 2023 even as ROCE detached from the cost-of-capital line. A spread between ROCE and WACC sustained at –3 to –5 percentage points across multiple years, applied to the transformation-themed capex base, is the anchor for the value-destruction estimate underlying this paper. The 2024–2025 capex pull-back is the market's belated correction. It does not retrieve the value already destroyed, and it does not address the ghost capacity — assets that operate but do not earn — accumulating quietly inside operating fleets.

08 · IMPLICATIONS

What this means for the next four boardroom decisions

The €50 bn misallocation is not a backward-looking accusation. It is a forward-looking constraint. Decisions made between now and 2028 will determine whether European chemicals reaches structural ROCE > WACC again, or whether the sector enters a managed decline — closures continuing to outpace investment by 5:1 or worse.

FOR BOARDS

Re-introduce explicit ROCE-over-WACC hurdles in capex governance. Require any transformation project above €100 m to model IRR with subsidies stripped out. Treat subsidy-dependent IRR as the upside case, not the base case. If the base case fails, the project fails — regardless of strategic narrative.

FOR LENDERS AND INVESTORS

Require segment-level ROCE disclosure on transformation capex separately from maintenance and base portfolio. Discount any green capex narrative whose pricing assumption depends on a customer willingness-to-pay that has not been demonstrated in 24 months of order book. European industrial bond spreads have already begun pricing this; equity research has not.

FOR POLICY

The Green Deal's industrial pillar needs the IRA's mechanics, not the IRA's headline. Tax credits — transferable, financiable, with 10-year visibility — are more efficient than grants. Energy cost competitiveness is non-negotiable; without it, capex will continue leaving regardless of subsidy envelope. CBAM helps at the import border but does nothing for European exports into world markets.

FOR THE INDUSTRY ITSELF

Stop pretending the gap is closing. The 1:5 investment-to-closure ratio is structural. The sector that emerges in 2030 will be smaller, more specialised, more concentrated in Belgium-Netherlands-Antwerp-ARA petrochemical clusters, and considerably less integrated than the one that existed in 2019. Plan for that industry, not for the one that capital models in 2021 still assumed would exist.

FOUR UNCOMFORTABLE QUESTIONS FOR THE NEXT CAPEX REVIEW

1. *If our transformation capex is contingent on a €120/t carbon price, are we a chemical company or a carbon-price speculator?*
2. *Why is our Belgian capacity growing while our German core is shrinking? Are we managing a portfolio or a slow-motion geographic liquidation?*
3. *What share of our 2020–2024 transformation capex would clear our hurdle rate with subsidies removed and ETS held flat?*
4. *How much of our installed fleet is operating but not earning its cost of capital — our ghost capacity — and is it disclosed anywhere outside this room?*

09 · CLOSING

What this is, and what it isn't

Two ideas are usually conflated in the European chemical industry's public narrative. The first: that the energy transition is hard, expensive, and slow — but necessary. The second: that the capital deployed in pursuit of that transition has been disciplined.

The first is true. The second is not.

Approximately €50 bn of European chemical capex deployed since 2020 sits in projects that, on the financial reporting evidence now visible across 2024 and 2025 results, will not earn its cost of capital under current cost, utilisation, and policy assumptions. That is not a small number, and it is not theoretical. It is showing up in segment ROCE, in impairment provisions, in announced shutdowns, and in the migration of incremental decisions to other geographies.

The boards know. The CFOs know. The lenders know. The relationship managers in investor relations know. The conversation that is not happening publicly is happening in the discounting committees, in the credit reviews, in the rating-agency calls, and in quiet portfolio-rotation decisions. This paper exists because that conversation should be public. Not because public discussion changes the math, but because honest framing changes what gets done next.

WHAT WOULD NEED TO BE TRUE FOR THIS THESIS TO BE WRONG?

- EU industrial energy gap to the US closes materially — say, German power below ~€80/MWh sustained.
- A genuine, broad-based green premium emerges across categories — not narrow segments only.
- EU27 capacity utilisation returns durably above ~85% across most chains.
- China rationalises domestic chemical capacity at a pace that lifts global price floors.

None of these are impossible. None look likely on current trajectory. Treat any one as upside, not as base case.

THE THESIS, IN ONE SENTENCE

This is not a transition problem.
It is a capital discipline problem.

And capital discipline problems are fixable. But only if they are named.

10 · SOURCES

Methodology and references

All financial data drawn from public-source company filings (BASF Annual Report 2024 and Q4 2025 Statement; Covestro AG ad-hoc disclosure July 2025), industry-association publications (Cefic Facts & Figures 2024 and 2025), and independent market analyses. The €50 bn figure is an IMP working estimate of EU27 chemical transformation-themed capex 2020–2024, derived from Cefic aggregate capex data and Roland Berger's investment-theme attribution. It should be read as an order-of-magnitude reference, not an audited number.

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About this series.

The IMP Intelligence Series is a programme of structured analytical papers covering specialty chemicals, pharma/CDMO, petfood, coatings, packaging, and adjacent B2B industries. Each paper is built on public-source data, structured around a single defensible thesis, and written for an audience of operators, analysts, lenders and boards who already understand the basics and want the gap between the narrative and the math identified plainly.

HOUSE STYLE

- Public-source data only.
- One thesis per paper, stated up front.
- Numbers before adjectives.
- Anonymised case archetypes — not company attacks.
- No preamble. No moralising. No filler.

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