

Petrochemical industry rides out volatility, stays focused on net zero



HARTWIG MICHELS: 'This crisis will come with some opportunities: The shift from fossil to renewable energy and feedstock sources will certainly be accelerated.'

➤ **The 56th EPCA Annual Meeting takes place in** Berlin at a time of great uncertainty for Europe's petrochemical industry, mainly because of geopolitical events that have triggered a surge in energy and feedstock costs and raised concerns about future supply. Against this backdrop, petrochemical producers continue to invest heavily in decarbonization and face a raft of new EU climate legislation that has major implications for the industry's competitiveness. EPCA President Hartwig Michels, who is also President Petrochemicals at BASF, assesses these challenges—and some related opportunities—with Chemical Week's Ian Young. He examines how the industry is tackling the challenges and discusses ways in which the authorities could smooth the process.

Chemical Week: Rising feedstock and energy costs, as well as falling natural gas supplies from Russia, are a major challenge for the EU petrochemical industry: what can the industry do to address these challenges?

Hartwig Michels: The situation is a big challenge not only to the chemical industry, but for all industries and for society. It is great to see how all players are actively working on reducing natural gas consumption. This is easier where gas is used for energy generation. Here we are switching to other energy carriers like oil or coal. Where gas is used as feedstock the situation is far more challenging. There are no quick fixes. However, the upcoming recession will 'help' to reduce demand. In the short term I am rather confident that we will navigate through the next winter without dramatic shortages forcing us to shut down complete sites or causing the population to freeze.

However, short term we will continue to see these very high prices with a growing negative impact on industry and consumer spending. Even though we will not see these shortage-driven exorbitantly high gas prices in Europe in the mid- to long term, gas prices will be structurally higher in the future and put industrial activity with high dependency on natural gas at a disadvantage in global markets. This will lead to regional shifts in value chains using natural gas as feedstocks. But

this crisis will also come with some opportunities: The shift from fossil to renewable energy and feedstock sources will certainly be accelerated.

Governments are already realizing that these structural changes will need financial support and acceleration of approval processes. There are initial encouraging examples like the high-speed establishment of floating re-gas terminals including pipeline connections in Germany. Energy and chemical companies are also working on new business opportunities arising in this situation. Just look at the recent huge investments into offshore wind farms or the various consortia working on improving the pipeline network in Europe.

CW: The European Commission has already announced measures to cope with falling Russian gas supplies, and Germany has its three-stage emergency gas plan: what is your view of these measures—are they workable and how much will they help the industry?

Michels: BASF welcomes coordination and close exchange at the EU level, and I personally, really don't envy regulators in Europe or in the individual countries in these times. They are having to intervene in normal market mechanisms. And whatever they do will be criticized. Every interest group has good arguments why they should not be affected. And there are many comments made which simply do not recognize the existing legal situation in the EU and the respective countries, clearly giving private households preference over industrial use.

Behavioral changes or a halt in production can work quickly. However, energy-efficiency projects will take time and expected savings and timelines may not be reached. The undisputed urgency to act in this field is leading to a flood of regulations that are neither well aligned in their claims, nor take the current situation of the industry into account. If I must be critical of recent drafts, there is a lack of understanding of, on the one hand, the additional bureaucratic efforts, many of them without any impact in an environment where companies already strive to minimize their energy-cost burden and, on the other hand, realistic lead times for planning, approving, and implementation of investments to

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From Resilience to Transformation

drive energy efficiency. This will drastically reduce their feasibility and impact.

Being based in the most-affected country Germany, I have a good idea about the actions here. The German government has triggered the gas emergency plan and created the necessary transparency, which is needed to make any meaningful allocation decision, if stage 3 of this plan is triggered. As BASF—being one of the biggest gas consumers in Germany—we have of course contributed to this transparency phase, and we have developed a clear plan for our Ludwigshafen site.

If the German government enforces the emer-

‘Swift and resolute action is needed to ensure that the Paris Climate Agreement targets can be achieved.’

gency level in the Gas Emergency Plan, the Special Natural Gas Alert Plan would take effect at the Ludwigshafen site, which contains detailed plans on how we would react to natural gas cuts or pressure fluctuations. To put it simply, if the supply does not fall below around 50% of our maximum natural gas demand, we could continue to operate the Verbund with reduced load.

For BASF production sites outside of Europe, we expect hardly any impact in the event of a European gas shortage.

CW: What is the EU petrochemical industry, including BASF, doing to improve sustainability and meet net-zero targets through innovative products and technologies?

Michels: Addressing climate change is the greatest challenge of the 21st century. Swift and resolute action is needed to ensure that the targets agreed in the Paris Climate Agreement (limit global warming to 1.5°C) can be achieved. At BASF, we stand by our responsibility. We are committed to achieve net-zero emissions by 2050 and we have set ourselves an ambitious milestone on this path: By 2030, we want to reduce the greenhouse gas emissions from our production sites and our energy purchases by 25% compared with 2018, while growing production volumes. This corresponds to a decrease of around 60% compared with 1990. We are working intensively to significantly reduce the carbon footprint of our production and thus of our products and we will allocate substantial capital for this journey.

To illustrate the huge challenge, let me give you one example: This transformation will require

significantly more energy from renewable sources. Initial estimates suggest that at the Ludwigshafen site in Germany alone, we would need to roughly triple or quadruple our current electricity use of roughly 6.0 terawatt-hours (TWh) to fully implement new, low-carbon electricity-based production processes.

24 TWh of energy equals almost twice the electricity consumption of Berlin or roughly the average consumption of 11-16 million battery electric cars. To meet this demand, and as part of our ‘make and buy’ approach, we are investing in our own power assets, especially for wind power, and are increasingly buying green electricity on the market. An example would be our investment in the offshore wind farm mentioned before. Despite being the largest of its kind worldwide when fully operational in 2023, it will provide BASF with ‘only’ roughly 3 TWh of renewable energy per year.

And many other companies in our industry have embarked on this path with investments into renewable energies and advanced recycling or by developing the next generation of low-carbon technologies. It is certainly exciting to see the good progress and the increasing collaboration between players of our industry and beyond.

CW: What is the potential impact of EU policy and legislation on decarbonization, such as the EU Green Deal and Fit for 55—including the Carbon Border Adjustment Mechanism—for the petrochemical industry? How confident are you that a “transition pathway” can be found to make the EU Chemicals Strategy for Sustainability a success and preserve competitiveness?

Michels: Let me start with your second question because it is connected closely to prioritization of the heavy transformation agenda, which is crucial considering the gigantic investments it will require. Let me also point out that our industry is widely committed to the objectives of the EU Green Deal and to supporting the realization of climate neutrality for Europe by 2050. We share common goals, but I think we don’t fully agree on what the priorities and the right sequencing of EU legislation should be. We must ensure that our industry—which is facing a so-called double twin transition to achieve climate neutrality, a circular economy, implementation of the Chemicals Strategy for Sustainability, and going fully digital—is not overburdened, especially in the current environment of extreme energy prices. In my opinion, the question of when to tackle the Chemicals Strategy for Sustainability is an important example in this regard.

Therefore, we appreciate that the Commission

understands the need for prioritization and that it is orchestrating a co-creation process aimed at drafting a 'Transition Pathway' for our sector and ensuring it gets supported and implemented with the support of the EU Member States.

Beyond this, I think policy makers should consider how the whole political framework with its different elements can set a truly enabling framework rather than making existing processes less competitive. Let me give you an example of what I mean by this with the Carbon Border Adjustment Mechanism (CBAM) you mentioned, which needs re-evaluation in my opinion. The reduction of free allocations in the Emissions Trading System (ETS) and the introduction of CBAM have cost-increasing and thus price-driving effects, and a CBAM for chemicals would lead to numerous disadvantages for the chemical industry. The main hurdles for CBAM are that there are no globally harmonized calculation methods for CO₂-footprints of chemical products, the long and complex value chains of our industry, and the large share of exports in our industry. Until an environment has been created in which CBAM comes without serious negative effects, it should be suspended, or at least limited in scope. ETS with its existing carbon leakage mechanisms is focusing specifically on a transformation in Europe. This should be the priority while the CBAM focuses on lowering the CO₂-footprint of imports, which under the Paris Agreement is the responsibility of the producing country.

CW: Supply-chain disruption has been a big challenge for the international chemical industry for more than a year. How successful has the industry been in managing this situation in the short term? And what will be its long-term impact on the EU petrochemical industry?

Michels: During the last years, the logistics situation has been truly challenging not only for the chemical industry. The situation remains very dynamic. On the one hand we see early signs of improvement of container and shipping availabilities globally, on the other hand the very low water levels of the Rhine River add new challenges. The extreme shortage of interregional transport capacities did limit arbitrage business from Asia and the US into Europe, allowing European producers to pass on rising raw material costs nearly fully. This is changing now. More imported volumes of lower-cost products into Europe are putting substantial pressure on prices.

Of course, in such a situation European customers will not stay with European-made products only. They will also take advantage of lower-cost imports.

This example shows that—especially in Europe—we need to be careful to push for a complete regionalization of supply chains. Like no other region Europe depends on access to feedstocks from other regions and access to markets globally. Nevertheless, we do see and will see in some cases homeshoring of value

'Many companies in our industry are investing in renewable energies and advanced recycling.'

generation taking place especially for key intermediates that are important for domestic value chains. At BASF, we have always had a strategy to produce in our markets regionally and reduce our interregional product flow to a minimum. A recent example for this approach is the decision to establish a new Verbund site in South China, which will be serving the demand in China.

CW: The large-scale complex at Zhanjiang, China, that you just mentioned and BASF's MDI expansion at Geismar, Louisiana, are major projects. But where does Europe fit into BASF's petrochemical investment and growth strategy?

Michels: If you consider that in 2030, 50% of the global chemical market will be based in China, and until then we expect about two thirds of the total growth in global chemical production will take place in China, you should not be surprised that we are allocating a substantial portion of our capital to growth in that region. When we look at Europe, we look at a region where we have already a major presence and a region that will not grow much in the years to come. Here we will grow selectively. Take as an example the extension of our ethylene oxide and derivatives capacities in Antwerp, which is coming onstream by the end of this year. In addition, we are allocating major capital to our existing asset base in Europe, enabling the sustainability transformation in Europe. This is because the asset base in Europe is our biggest.

We are also seeing growing attractiveness for investments in the US, like you can see from the announced MDI expansion at our Geismar site. This is not only driven by a favorable feedstock situation—to a growing extent this will also be driven by very supportive legislation for investments into Carbon Capture and Storage, and Carbon Capture and Utilization. Here, the CBAM would spur global competition for investments and the US is creating a more favorable environment for such investment than the EU.