

**Investor Update 2021**  
**BASF's new Verbund site in Zhanjiang**  
**Transcript Q&A**  
**September 27, 2021**

**BASF Participants:**

- Dr. Martin Brudermüller, Chairman of the Board of Executive Directors
- Dr. Markus Kamieth, Member of the Board of Executive Directors
- Dr. Stephan Kothrade, President, Greater China

**Christian Faltz (Kepler Cheuvreux):** At your Capital Markets Day in November 2018, you saw Chinese chemical production making up for around 50% of global chemical production. That view has become even more optimistic now, according to slide 4. Obviously, China, and with it, its chemical industry, has mastered the COVID crisis much better than many other regions. Yet, COVID could also lead to a redirection of value chains, resulting in more local production. Could this not also affect chemical demand in China, away from China, as slow as this migration might be?

**Martin Brudermüller:** The fundamentals for our evaluation and forecast China did not really change. Already pre-COVID, we have actually said that more of the power goes into domestic consumption instead of exports. I would say, the current development and the strong focus on China itself, but also shutting down with COVID now is even accelerating this trend. By looking at the data of China and, on the other hand, also all the factors around the world, in the other markets, that gives us these new numbers.

I mean, everything always has an uncertainty, but I would say we feel very comfortable with this assessment that China will be an important market and even more important in the future. As you have seen in the slides, if you look at GDP per capita, you see how big the gap to the western world still is. And I think that will fuel at the very end a strong demand, domestic demand, which ultimately will be fueled by chemicals.

**Charlie Webb (Morgan Stanley):** Can BASF provide its perspective on the recent power cuts in China and the “dual controls” measure being taken by regulators? What is the direct and indirect implication for BASF?

**Stephan Kothrade:** There is now the intention of the Chinese government on all levels, especially in some provinces that have not achieved their energy savings targets, to curb power consumption. I can say that the overall impact on BASF operations in China is currently very limited. Most sites are operating at a very high production rate, and the indirect impact is sometimes even positive. Let me illustrate this with the example of our Verbund site BASF-YPC in Nanjing, where the steam cracker and all the downstream plants are running. At the same time, we see that there are margin improvements for cracker products, for acrylics, for amines, for polymers. So somehow, this is currently a net positive impact for BASF. But of course, it remains to be seen how the situation develops over the weeks and months to come.

**Andrew Stott (UBS):** The ROCE by 2030 for Zhanjiang (by using the data from slide 26) looks to be around 5% to 6% post tax, depending on the depreciation period for the assets. Would you agree? And also, how does this compare with the ROCE of the first five years of Nanjing investment?

**Markus Kamieth:** Your mathematics are certainly, let's say, in the right ballpark. However, we always look at the ROCE in a pre-tax way. When we talk about the ROCE expectations for Zhanjiang, you can be assured that the ROCE contribution of the Zhanjiang Verbund project will also fit into the overall target of BASF. This has also been the case for Nanjing already in the first years after start-up. During the expansion periods of Nanjing and with the depreciation going away, the ROCE of our Nanjing Verbund site has continuously improved and today is a strong driver for the profitability of that particular joint venture. So overall, yes, your math is right, and we expect a ROCE that will contribute overall to the targets of BASF Group.

**Chetan Udeshi (JP Morgan):** It is interesting that BASF is expecting China's share of global chemical production to rise to 68% in 2030.

**Stefanie Wettberg:** I think there might be a misunderstanding. This is the growth we show in this slide.

**Chetan Udeshi (JP Morgan):** This at a time when there is a lot of talks and focus on having a more spread-out supply chain. Does BASF not see this in discussions with customers? Isn't there a risk that BASF's expectations of the long-term growth in China, and hence the planned investments in China, are assuming a too optimistic growth rate?

**Martin Brudermüller:** BASF for a long time has the strategy to invest where the market is. We have not produced in one region to have big streams of products for good going into another market. And so, the justification of the investment in Zhanjiang is the Chinese market. As we said, as this couples back into domestic demand, a lot of the supply chains, and where we are linked in with our materials, are local. They are actually very local. We even talk about the province and not the whole of China. With this, I think we can be even more sure that this will work well overall. I would be much more concerned, if we had to export major shares into other countries and regions. We have always had very good experience with this. In today's world where we have some question marks about future globalization and trade frictions, I'm actually very happy that this is following BASF's past experience. I think this is nothing to worry about going forward.

**Markus Kamieth:** Allow me to add one additional thought: You also saw in the presentation that already today, we have a share of the business in China based on products that we actually produce in China, of almost three quarters, almost 75%. This share will go up further. Adding to what Martin said, also making the comparison to our Nanjing Verbund site: Nanjing is in the Jiangsu province and the majority of our volumes that we actually make in Nanjing never leave Jiangsu province. All the customers are there. So, it is a little bit oversimplifying to look at the overall situation in China. You have to look specifically at where you are in China, with which products, in which markets. I think Martin has laid out why we feel confident about our location also in Guangdong and the economic development that will happen around us.

**Georgina Iwamoto (Goldman Sachs):** Perhaps a core rationale for the Verbund concept is process efficiency. Do you believe it is possible for non-integrated competitors to offer the same products as BASF at the same level of carbon emissions, or does the Verbund offer potential to make carbon-based products with the lowest impact on the environment?

**Markus Kamieth:** Of course, all the products that we make in Zhanjiang eventually can be made via some chemical routes. But especially if you look at the carbon efficiency, we clearly see today that throughout the Verbund planning, our setup will have significant advantages.

A couple of examples were mentioned also in Martin's presentation. If you look, e.g., at the whole chain of C3 that will use also the large amounts of syngas, that will, of course, significantly benefit from the strong integration that we have by reusing the CO<sub>2</sub> out of the ethylene oxide production. These are significant savings of carbon dioxide emissions that you cannot realize outside of a Verbund setup where you do not have the possibility to integrate raw material streams and also energy flows in a production site like ours, at least with today's accessible technologies. Of course, you can always speculate about technologies that are today not deployable yet, but within

the today-achievable technology landscape, the best recipe to achieve these low carbon dioxide emissions is still the Verbund integration that we plan now, I would say, on the best and so far, most sophisticated level in Zhanjiang because it's a greenfield site and we benefit from planning this right from the get-go.

**Martin Brudermüller:** We are also launching the Product Carbon Footprint at the end of the year. I think if you do the mathematics here, you will see that we compare ourselves in China with a lot of competitors that somehow have at least one component based on coal, whether it's the energy or a raw material like syngas, which is normally produced totally by coal in China. As we explained, we won't do it and we even recycle CO<sub>2</sub>. You can imagine that these are all contributions, including the renewable energy, that I'm quite sure will have an advantage and add diversification by our Product Carbon Footprints of our products from this site.

**Tim Jones (Deutsche Bank):** When forecasting sales and EBITDA from the new Guangdong site, do you assume that customers in China will pay the required premiums to cover the higher costs associated with "greener" products? Do you see any regional differences in customer attitudes towards paying for higher cost "green" products between Europe, the US and China?

**Stephan Kothrade:** What I can see is that we are engaged already in many discussions with customers. It is with multinationals, but increasingly also with local customers who want to understand our CO<sub>2</sub> footprint. They want to understand the CO<sub>2</sub> burden that comes with a product they use in their own value chain. We are working on this. We will be one of the first companies in China to provide this transparency. That is why we also are a front runner when it comes to securing renewable power for our sites. You may have read that we are the largest buyer of renewable energy in the Yangtze river delta. We are number one in Jiangsu Province, we are number one in Shanghai, we are number two in the Pearl River delta, so in both most important industry regions of the country. Of course, we aim at a very high share.

At the same time, we ensure competitive pricing. If there is a cost adder, this has to be passed on to customers. But I see the willingness to enter into such a dialogue because, ultimately, it will also enable our customers further downstream to achieve their sustainability targets. This is what we have to do in a dialogue. I am very confident that this is the trend. You see the seriousness of Chinese government when it comes to sustainability in the country.

**Laurent Favre (Exane BNP Paribas):** Can you provide more details on capex spent on the new site, through the end of 2021, and a broad estimate of annual capex over the next four years? What tax rate should we assume, the standard 25% rate in China or will you have rebates?

**Markus Kamieth:** First of all, covering the last part of your question with regard to the tax rate: I think it is too early to discuss this here. I think for the time being, certainly a general tax rate is probably good enough for your models. However, as you can imagine, with a project of the size, we also have discussions with authorities in China around the taxation of our investments of the business. As Martin indicated, there are also developments in the respective area where we invest to establish, e.g., a free trade zone. There are still ongoing discussions, therefore I would say, too early to give you a precise indication. My recommendation would be: Look at it with your standard rates and assume that there could be certain upsides for BASF.

For the year 2021, the capex for our Verbund site in Zhanjiang is still somewhat limited because we are going into the final approval of the project in the first half of 2022.

**Martin Brudermüller:** A rough number for the 2021 capex is €300 million.

**Jaideep Pandya (On Field Investment Research):** Why do you have to produce HDPE? Does this mean this site is fundamentally long ethylene and the 500 kt HDPE is a plug to balance upstream ethylene versus its downstream requirements?

**Markus Kamieth:** We are not a producer of polyethylene anywhere in the world. When we got into the Verbund planning of our Zhanjiang Verbund site, it was clear that the major source of competitiveness of our downstream value chains is a mixed feed world-scale steam cracker. This is an order of magnitude of roughly 1 million tons of ethylene and the according share of propylene and higher fractions. This means that you will have downstream consumption of this appropriate amount of ethylene. To feed our strategic value chains, we need a certain share. Then we had to make a decision of how to utilize the scale, so to say, that the steam cracker provides. We analysed this in detail, and we came up with the solution to consume the appropriate amount of ethylene, then to convert it into the so-called high-density polyethylene because here the market dynamics as well as the market segments that this product goes into are most attractive to us. They are most suitable to overall provide a competitive setup of the Verbund. That was the decision. It is to some degree a decision that was driven by the economics and the scale that you need for a world-scale steam cracker. However, in the overall context of the C2 value chain, this provides us also with a good profitability mix throughout the products that are more in our strategic pathway, as well as in a very competitive HDPE setup that we will have in South China.

**Martin Brudermüller:** I think, in all fairness, we can also say: We have theoretically looked into many, many concepts at the very beginning, also other concepts: without a steam cracker, propane dehydrogenation and all the other things. So, the overall product portfolio of BASF with the mix, even with the caveat to produce high-density polyethylene here, had by far the best economics.

**Markus Kamieth:** And in BASF-YPC, so in Nanjing, there is also a polyethylene production as part of the Verbund setup and also here a significant contributor to profitability in that Verbund setup that we are already operating.

**Andreas Heine (Stifel):** How does the new Verbund site in Zhanjiang change the group sales split and the share of BASF's local production in China and what was the capital return of BASF-YPC Verbund site compared to BASF's other Verbund sites?

Any comments on the share of maintenance of the non-core growth projects of BASF, in other words: What will be invested for growth, excluding the new Verbund site and Battery Materials?

**Markus Kamieth:** If you look at the overall sales development of BASF in Greater China – now I exclude the BYC sales again – over the last ten years, we have had a sales growth of roughly 7% per year.

If you assume such a growth going forward, our Zhanjiang Verbund site will add quite a significant share of the growth of the next decade to our business in Greater China, but it will not be the majority. So, there is a lot of growth that will also come from other divisions; it will come from battery materials, but it will also come from quite a number of not Zhanjiang-related business growth activities.

That is why I would assume that the share of own manufactured products in China will go up. I don't have a specific number for you, but I would assume that we will be landing north of 80% – even 85%. I think this is a very safe number because also in other divisions growth and investments that we are doing outside of Zhanjiang, potentially in China, the key driver will be what Martin said: It is investments in China for China.

Martin showed the breakdown between the investment, the capex that we put aside until at least in the next five years for the Zhanjiang Verbund site and battery materials (see slide 27). Then you saw the on average €2.6 billion for investments in ongoing business. It is our task to allocate enough resources for profitable growth in our remaining operating divisions and global activities. Here I do not see that the share of investment or capital for growth will be lower than in the past. This is, of course, the strategy that we have, now detailing out the capex spend for the next years. But, of course, there will be sufficient capital available for attractive growth projects also going forward for other businesses.

**Martin Brudermüller:** Markus, I think we should say: We have also tightened the belt already over the recent years, made money more competitive with more projects. That was something which we clearly articulated in 2018 already, when we said we are growing more with organic growth than with acquiring. Now, certainly, in this period, we put this on top. We will look twice into this. But I can only amplify what you said: There will be money for every important project in BASF which we deem to be necessary for profitable growth and certainly also for maintenance and taking care about the existing assets.

**Gianmarco Migliavacca (Neuberger Berman):** How comfortable are you that Chinese authorities will not interfere with the Verbund site management? How are local regulatory risks, e.g., change in taxes, local policies mitigated?

**Stephan Kothrade:** We all read and hear about a lot of interference from the side of the Chinese government with companies. But we can also see that the chemical industry is clearly not in the focus. This is different. It is about companies that are in the limelight, that are part of the daily life of Chinese citizens, be it in e-commerce, the retail space, technology, tutoring, gaming etc. BASF is clearly a front runner in environmental protection, health and safety in China. The way how we operate our sites is highly important for the Chinese government, also to use us as a role model. We are welcome to invest in China. I don't see a change that all of a sudden there would be negative interference, be it via tax instruments or be it via telling us how to operate our sites. It is the contrary. We share our knowledge about emission control, about health and work safety with other companies within the framework of chemical associations and with our partners in the joint ventures. This is seen as a very positive contribution in alignment with the agenda of China.

**Martin Brudermüller:** Let me add on that because I think this is something that moves you all the time when we talk about how the general environment is to work with China and decoupling and the tensions with the US.

The overall development geopolitically is worrying, very clearly. It is not encouraging what is going to happen; it is kind of a tit for tat. That is the one part.

But the other part is: If you look at a real number, how, e.g., the U.S. economy and the Chinese economy are interlinked with each other, in both directions, import and export, it is actually severe. I cannot imagine that there is the rationale now to fully decouple those economies. I think that would hamper a lot of companies, also, by the way, U.S. companies, Chinese, but certainly also German and European ones.

What can happen is that at the forefront of technology, in the digitalization area, in semiconductors, there is more separation of technologies, where maybe some companies have to distinguish more which technology they use where.

But, I think, all the talks with the politicians we have, clearly show that there is still a favorable environment and that a strategy like ours makes sense.

I can only echo what Stephan said: We are contributing value to China all the time. We pulled the chemical industry along with responsible care, with EHS. This is also, in the long run, an important part to be in China.

I explained this several times: If you understand Chinese culture, you have to think long term and you have to benefit and to contribute. I think that will be their decision also on a company level: Which companies do that, and which don't? That is why I am not so worried about this development.

**Gunther Zechmann (Bernstein):** Can you help quantify the benefit you expect from government incentives including the free trade zone, and any tax breaks you may receive?

**Markus Kamieth:** Since these are still ongoing discussions, also partly ongoing discussions with the government and the authorities in China, I would not like to be very specific here, but we, of course, tap into the opportunities you have as a foreign investor to get support for investing into infrastructure, but also investment support. These are sizeable and attractive numbers, but certainly not in an order of magnitude that would influence our decision to invest there or not to invest there.

So, I have to say this very clearly: Our decision to invest in Zhanjiang is strategically and commercially hopefully very plausible to you and is not influenced by incentives.

But we certainly enjoy a very constructive discussion with the Chinese government around incentivizing attractive projects like our Verbund site.

**Christian Faitz (Kepler Cheuvreux):** Up until today, you were suggesting that the new Verbund site requires an investment of up to US\$10 billion. Now you are talking of an investment of between €8 billion and €10 billion. At current FX, at least the upper end of the range you provide today is quite a bit above the upper limit you suggested before. In that context, how fixed are your contracts for building and construction at the site, in the case we continue to see elevated raw material costs such as steel, concrete, general engineering work, etc.?

**Martin Brudermüller:** First of all, when you take a decision to build and to execute, you have to digest the framework conditions you have. If raw material goes up, if labor is short or whatever, that increases the cost of the investment, that's a risk.

You never have the ideal situation in terms of when you start and what the costs are, that you are right in time with each product for each product in the market in terms of supply and demand balance. You have to be a little bit flexible.

Yes, we see a cost increase through the FX part at the moment. The originally mentioned US\$10 billion was what we said when we had the idea to build a Verbund site over there. In the meantime, as we have alluded to, we have checked a lot of options. We have also reflected with our customers; we have added the one or the other plant. We have changed the capacities in certain products, also to reflect the

market demand. And with that, we have even added some plants, which we had initially not thought of.

This is how the whole investment amount actually went up a little bit. I think the most important part is – we mentioned that: There is a huge infrastructure part in there. It's the same experience we had in Antwerp in the 60s, but also in Nanjing. That caters also for going forward. What is very important: We have a large area over there. I would say this is a growth vehicle for decades of BASF. There will be a wave 3, 4, 5, 6, I would assume, and that benefits then from this. You have to think a little bit ahead already. If you really have the big plans to say: "I want to participate here," you have to build the one or the other utility a little bit bigger. Just think about the jetties. This is an enormous investment for the jetties, which then also will dilute the cost. There are many of these pieces.

Let me finally say: There are also some make-or-buy decisions where some things went differently; some went in, some went out if you look at the local framework. You can imagine: There are so many ingredients or components to the final investment sum, that this is a little bit a moving thing.

**Sebastian Satz (Barclays):** How cost-competitive will the cracker be, bearing in mind the use of electricity rather than steam? Where on the cost curve do you expect the plant to be?

**Markus Kamieth:** As we have said, this will be a mixed feed cracker. It is certainly designed to provide a certain product breadth in output, so a certain ratio between C2, C3, C4 that is appropriate for our downstream Verbund planning.

And this sets the stage already for any comparison with other crackers. You can certainly have a cash cost curve on ethylene for pure ethylene crackers that is maybe a little bit more favorable on the ethylene front, but we look at it very holistically.

We are convinced that the cracker that we invest in, together with the feedstock flexibility that we have, will provide for a mixed feed cracker setup a very favorable cost competitiveness, also within the Chinese context. Especially the variability between naphtha and butane, e.g., as feedstocks will assure that we have the flexibility also to react on certain movements on the raw material front.

This is giving us very strong confidence that we have a starting point for the entire Verbund that absolutely secures that profitability is on the left hand of the cash curve, so in the right quadrant.

**Oliver Schwarz (Warburg):** Is there a way to refit existing Verbund sites, e.g., Ludwigshafen, at a later stage to come close to the carbon profile of Zhanjiang without having to scrap major parts of those sites due to their high level of integration?

**Martin Brudermüller:** A large part of the 25% CO<sub>2</sub> savings we are targeting for 2030 is certainly also coming from Ludwigshafen because Ludwigshafen is 8 million tons of 21/22 million tons globally. That has to have a big share.

This is basically a kind of a role model how you can reshape and reschedule also an existing Verbund site. There will be a lot of drop-in measures where you replace one thing after the other. That makes it, on the one hand, also very flexible in terms of timing and how quick you are going to deploy these technologies, certainly also coupling customer requests.



Yes, there is a whole portfolio where you can also change later. It's always a question of money and whether the single cases make sense. But, you have a certain advantage if you build something from scratch in the right way. That's what Markus alluded to with the cracker. The whole industry uses steam-driven compressors because we are traditionally an industry that has a lot of steam. So the rethinking in the direction of electrification is that you electrify everything you can from scratch and you actually minimize the steam consumption and the steam balance on the site. That, e.g., is a big thing in an existing site. There are measures that have very, very high cost and a very difficult return. But on the other hand, there is also a bunch of measures where you convert a Verbund site with "old" technology into the future. So it's possible.

**Markus Kamieth:** It's fair to say that eventually this will also work the other way around because we will deploy a lot of CO<sub>2</sub>-saving technologies for the first time here in Ludwigshafen, of course, and they will also, once they are deployable, technologically ready, be able to be deployed in Zhanjiang.

For our engineers, it is a little bit of a unique situation to plan a whole Verbund site from scratch. Things that may appear small to you, like building a first Verbund site without on-purpose steam generation, is quite a revolution, also to the way we set up such a Verbund site. It certainly creates a lot of learning curves for us in all our sites globally.

**Laurent Favre (Exane BNP Paribas):** Upstream seems to be going strong still, but there are obvious headwinds in downstream – automotive, China, raw material cost inflation, logistical issues. Looking at the balance of both factors, how do you feel about the latest Vara consensus for the third quarter of BASF?

**Martin Brudermüller:** To summarize in a few sentences: The dynamics are still quite good, I have to say. It's solid across the regions and all the businesses this month; it also went like this over the recent months. We have not seen an exceptional summer lull. It was a little bit the normal seasonal thing, but not a real slump. Maybe one word about Hurricane Ida: It hit us a little bit, but not in a significant way. There will be a slight impact in Q3, but not comparable to what we had with the freeze or in other years.

Concerning the earnings quality, I can say: This is a bit similar to Q2. Chemicals and Materials certainly carry the big part of that. Margins have been reasonably well-contained in the upstream areas.

The weak piece you mention – Hans and I have alluded to that already in February – is the semiconductor shortage where I have to say: The automotive industry had played this down a little bit. We already said in February that this is more severe. It shows now that we have been right with this. It's nothing you can solve immediately. I think we had at that time more than 83 million cars in mind. We are maybe closer to 80 million. IHS already talks of 76 million this year. I think that shows that Q3 is an extremely weak quarter for automotive, and that certainly also is visible, e.g., in our Coatings division. If you produce fewer cars, you also need less paint.

Generally, maybe one remark on the downstreams: We have always said that the business model is in such a way that it takes some time to digest the high raw materials. Raw materials are still very much on the high side, so not all the downstreams have really managed to pass everything on to the customer. This is currently ongoing. I would say that gives you already enough description what you have to expect. For all the rest, you have to wait until Hans and myself give you the Q3 numbers.

**Georgina Iwamoto (Goldman Sachs):** Is it fair to say that once the new Verbund in China is up and running, it raises the mid-cycle EBITDA for BASF by around 10% at a carbon footprint more than 50% lower than current technologies?

**Markus Kamieth:** We gave you an outlook on the 2030 numbers roughly. We start this Verbund site up as of 2025 with the phase 1. That's a big steam cracker and the big N plus 1 downstream units. And then there will be what we call phase 2 around 2028. I would say, there will be certainly a ramp-up phase, and that's why we gave you an indication for, e.g., our expectations on EBITDA for 2030, once phase 1 and phase 2 are actually up and running.

Yes, you're right: If you look at the EBITDA intensity, I think what you meant was that the EBITDA margin as compared to the average of the group is significantly higher. It is. What we currently project is in the ballpark of what we have already seen in our Nanjing Verbund site. It's not out of the world. Of course, we have a different product spectrum. We have a bit of a, let's say, more differentiated and broader spectrum in Zhanjiang. It's not 100% comparable, but it's in the ballpark.

The EBITDA margin we anticipate is certainly above group average. But of course, this will also come still with quite a lot of depreciation at that point in time.

**Stefanie Wettberg:** With regard to CO<sub>2</sub>, the question was whether it's 50% lower than with current technology.

**Martin Brudermüller:** You saw these indications also compared with a coal-based player where we are significantly lower (see slide 22). I would say, 50% percent is the order of magnitude. It is not so bad.

**Markus Kamieth:** It's probably not so bad, but also here: There is no second Zhanjiang that you can exactly compare it to. We tried to give you a feeling of the ballpark if somebody would build something similar in scale and scope based on coal, based on natural gas in, let's say, the traditional, less modern way. That's kind of the indication, and I think that these numbers are plausible.

**Martin Brudermüller:** I think if you compare it to a gas-based plant instead of coal, I think your 50% is not a wrong number.

**Markus Kamieth:** It's probably the fair comparison also.

**Tim Jones (Deutsche Bank):** Do you plan to produce TDI and MDI at the Guangdong site at some point in the future?

**Markus Kamieth:** That is certainly a possibility. We are, as Martin said, already looking into opportunities to expand our Verbund beyond phase 2. But we are in very early stages and this has many variables. First of all, you have to look at how the markets develop and what kind of markets are developing very prominently around us. You have to look at competitive activity and you have to look at value chain extension opportunities. I can tell you that through our announcement and the progress that we've made in Zhanjiang, already a lot of customers as well as other value chain players have contacted us and look for opportunities to also expand on our Verbund.

Of course, when we think about, e.g., the isocyanates value chain, you are talking about a different raw material spectrum, different products and inputs that you need. But it is one possibility. We have a very successful isocyanates business also in China. The investment into our Chongqing site proved to be a very good investment for BASF. It's one possibility we're looking at. But all these things would in high, high likelihood come beyond 2030.

**Martin Brudermüller:** But let's add: If we were to build an MDI plant, the probability that it is at that site is very high.

**Markus Kamieth:** Of course, this way around, yes.

**Martin Brudermüller:** If you look at the supply situation, we have a very nice triangle: We have SCIP (Shanghai Caojing Industrial Park) in Shanghai – there is SBPC (Shanghai BASF Polyurethanes Company) –, and we have then, on the other hand, in the South Zhanjiang, and we have Chongqing. I think that would be a pretty unique footprint for MDI. I would say that is the right answer. That could be in wave 3, 4, 5, 6.

**Jaideep Pandya (On Field Investment Research):** What is your view on butanediol given that it's mainly produced in a coal-based method in China? Why is BDO not listed as expansion given significant coal-based capacity could shut down in the future?

**Martin Brudermüller:** China has developed in the market with the biggest consumption and most of the producers; it's actually, for quite some time, oversupplied. As you said, it's mainly coal based. It's very, very competitive. This is why at this moment in time, it is not on our list of priority products to expand in China.

It is also actually not a product that benefits from the Verbund so much, unless you do it the classical way, as we do it here in Ludwigshafen, in the "Reppe chemistry." But that is not the preferred raw material basis for China because natural gas as a raw material is too expensive. That's the reason why it's coal based.

In that respect, from the market opportunities, oversupplied market, not fitting to the Verbund, we are not willing to tap into coal for this. That's the reason why it is not on the list.

**Andreas Heine (Stifel):** What was used as CO<sub>2</sub> costs per ton baked in the investment return calculation?

**Markus Kamieth:** We have not only one CO<sub>2</sub> price that we're looking at; we are looking at this in various scenarios. We look at, of course, always prices that are oriented towards, let's say, trading schemes and their projections of prices. But we also look into various CO<sub>2</sub> scenarios in various regions. There's not one price that actually is taken into account when we look at the overall sensitivity of projects like this. But we take various different CO<sub>2</sub> prices into account when we do the sensitivities.

**Martin Brudermüller:** And if you turn it around: If, in China, a nation-wide CO<sub>2</sub> cost were introduced, it would actually make Zhanjiang more competitive.

**Christian Faitz (Kepler Cheuvreux):** You also earmarked around US\$5 billion capex for the next expansion step of your Nanjing Verbund site. Is that figure still valid?

**Stephan Kothrade:** We recently announced that we are going to expand some of the existing capacities at the Nanjing Verbund site. This is ethylene amines, ethanol amines. It's an expansion of the purified ethylene oxide as a precursor. We also expand propionic acid, which is a very nice product as a mold inhibitor for food and feed, and a precursor, propionic aldehyde. Then there is one smaller specialty plant, a new one, which is towards butyl acrylate. That is a new technology. But all this, if you look at the dimension, is at a much smaller scale than what we talk about in the South China Verbund site.

There is a Memorandum of Understanding that we signed with Sinopec in October 2018, where we also look into the opportunity of getting a participation at a new steam cracker in Nanjing. We are talking about this. This is not yet close to an announcement, but it's an opportunity for the future.

**Laurent Favre (Exane BNP Paribas):** To help us dimensionalize the EBITDA scenario provided: At the current profitability for key products such as HDPE/acrylics etc., how much higher than the €1.0 billion to €1.2 billion EBITDA would the site end up currently? How much lower if we use 2019/2020 spreads?

**Markus Kamieth:** I have not spent too much time in predicting, let's say, hypothetical profitability of 2030 if I plug 2020 and 2019 prices across 25 different products into this.

I can give you one piece of advice: When we project those types of profitabilities towards a timeframe 2030, we, of course, look somewhat at a normalized market development. We look at what you would probably consider mid-cycle margins. That's a word I hear a lot from you. And we, of course, then try to project what the appropriate margin level over raw materials will be.

Given the fact that we in 2020/21 have seen very high commodity margins and in 2019 have seen very low commodity margins, it's fair to assume that our projections of average margin across the entire very complex portfolio would certainly fall within that bracket.

**Chetan Udeshi (JP Morgan):** I would like to follow-up on a previous question on the ROCE from the new Verbund site. 5% to 6% post-tax ROCE implies around 7% to 8% pre-tax ROCE. This doesn't seem high. Are we missing something?

**Stephan Kothrade:** Infrastructure.

**Markus Kamieth:** The topic is, of course, if you look at the point in time, a view on 2030. You have to take into account that we have quite a significant share of infrastructure investment that you have to assume in a greenfield site.

During this phase of ramping up the site and then establishing all the downstream production assets, you have to swallow, so to say, this infrastructure investment. That means that during a certain period of time, we will have this included in our ROCE calculation. And this will, of course, over time then go out, and we will see the actual ROCE contribution of the production assets on the site.

So, yes, there is an over-proportional impact on the ROCE of the non-productive capital that sits in infrastructure; that's for sure.