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**Investor Update: Taking the next step  
in climate protection – from targets to delivery  
Transcript Q&A  
March 28, 2022**

**Dr. Stefanie Wettberg:** Lars, could you briefly explain which activities are bundled and accelerated in the Net Zero Accelerator unit you have been leading since January this year?

**Dr. Lars Kissau:** The Net Zero Accelerator unit combines four activities: one, renewable power. Here, we execute our make-and-buy strategy for wind farms and photovoltaic power. Second, infrastructure technologies. This team focuses on scaling solutions like heat pumps and e-drives. Third, the new CO<sub>2</sub>-free technologies. These teams look at scaling solutions like CO<sub>2</sub>-free hydrogen from methane pyrolysis and water electrolysis, and our eFurnace technology. And fourth, circular raw materials. Here we have combined activities around ChemCycling as well as renewable raw materials.

**Christian Faitz, Kepler Cheuvreux:** The usual question when management presents so late in a quarter: would you mind providing us with an operational update for BASF Group?

**Dr. Hans-Ulrich Engel:** What have we seen so far in Q1? We had a very strong start to the year, in both months, January and February: good, solid, robust business, good earnings. The month of March is not yet concluded but based on what we can see in the daily sales, it continues to be a strong month. The order book is well-filled. From that perspective, I'd say: Overall, we're looking at a good quarter for BASF.

**Andrew Stott, UBS:** Can you explain how the PPA contracts with ENGIE and Ørsted work? This is volume commitment, but I assume, not price?

**Dr. Hans-Ulrich Engel:** Both contracts are long-term contracts. Yes, they include a volume element, but then also, obviously, a price element which is to a certain extent market-based and to a certain extent cost-based.

Even if I want to say more, due to the terms and conditions and the confidentiality clause in the agreement, I can't say more.

**Charlie Webb, Morgan Stanley:** Can you help us understand how we should think about the implications of structurally higher energy prices in Europe as Europe tackles this energy transition and reduces its reliance on Russia? What does this mean for BASF's through-cycle margins and returns from its chemical plants in Europe? Is there a risk that European chemical production will become less competitive over the next five years?

**Dr. Hans-Ulrich Engel:** We are obviously operating in an environment where energy costs and to a certain extent raw material costs are very high. We have shown you for Q4 of last year what the energy bill was overall for that three-month period of time 800 million euros higher than in the prior year quarter.

If you look at Q1, we are now operating more or less on these high levels that we have experienced in particular in December. Due to strong demand, we are in a position to pass on most of this.

What does this all mean structurally? Personally, I think, it is too early to tell. Obviously, if you look at natural gas prices, they are very volatile today, floating between 94 low and 110 high. If you compare that to the U.S., if you take roundabout 100 euros per megawatt hour, you are at around 35 dollars per million BTU, which compares currently to 5 to 6 dollars per million BTU in the U.S.

If it continues that way, that will be certainly a challenge for European producers who are gas-dependent. But it remains to be seen. Also there, from my point of view, it is too early to say how this will develop going forward.

**Dr. Martin Bruder Müller:** I think this is a fair comment because we also don't know yet what the strategy is to actually reduce the dependency on gas. There is certainly one element, which is the acceleration of renewable energy here in Europe. So, we have to expect that we have a much faster pace of capacities. If they go along with infrastructure measures and also an overhaul of the whole duty and taxation system, that could be something that goes in the right direction, combining lower competitive energy pricing with also the low-PCF and net-zero products, which allows us for higher margins.

I think the mechanisms are clear. But to say a few weeks after the war started, this is the effect long term, I think is not certain. If we have good political support in changing the strategy and taking the steps quickly, it could actually have a very positive effect on Europe.

**Chetan Udeshi, JP Morgan:** How should we think about any structural competitive cost disadvantage for BASF as it switches more to renewable power in the future? One can argue the cost of green energy production will be even cheaper in some regions like China due to a more favorable climate?

**Dr. Martin Bruder Müller:** This is not easy to say. If you just take the energy of a, let's say, 35 to 40 years wind park, then this certainly also has to carry the capital on it at the beginning. But once it, for example, is depreciated, you don't have any variable cost because you don't have any fuel cost. And then you have the so-called golden tail, the last part of the lifetime, which is actually only one or two cent, partially, for the maintenance of such a wind park.

If you take the average cost over the lifetime and then you have staggered projects which gives you this kind of average cost in the long term, I think it is very competitive. It depends then also on the infrastructure development and how much cost we have to bring the energy in because there is one new element for us: We have now, within the sites, our gas-fired cogen plants which are deeply integrated. So in future, as we don't have the wind at site, we have actually to decouple the consumption of the electricity and the production. This additional part for using this, this is cost. I think it very strongly depends on how also politics and society are taking measures to support the transformation of its own industry. And that will be key.

If it is the only part of production cost from, for example, offshore, we are not so worried comparing this to our cost we have in today's set-up, particularly if you take higher CO<sub>2</sub> costs into consideration.

But let me also say: There are higher operating costs even if you go to the lowest possible electricity price. That is the other element I showed you where actually ultimately our customers and then at the very end of the chain the end consumer has to pay higher prices.

I think it depends on these two measures how you can decide later on the competitiveness. We stay certainly still very favorable in this direction for our European sites.

**Jaideep Pandya, On Field Research:** What is the current cost disadvantage for BASF on large products such as cracker products compared to coal-based assets in China or crude to chemical assets with coal-based power generation in China?

**Dr. Lars Kissau:** If you leave out all the costs for CO<sub>2</sub> emissions, I guess it is probably in a range of about 20 percent on the coal-based.

The crude-to-chemical is a bit different because it has a very large capex part to it; so it is probably not such a big difference.

**Andrew Stott, UBS:** Is there a reason that the Antwerp CCS project is in two phases? A practical one? Or is it just to ensure a smoothing of the financial costs?

**Dr. Martin Brudermüller:** This is also a little bit organization because the port authority of Antwerp is very much driving this, and they certainly bundle and have a part of the infrastructure then.

Then you have a second part, which is joining forces between Air Liquide and BASF to deliver our CO<sub>2</sub> preconditioned, dried, compressed to the hub in the Antwerp harbor. So the harbor participants or founding members of this consortium are many more. In the case of the BASF-site part that is only Air Liquide.

This is the only reason that you have the different responsibilities and the respective deliveries to actually connect the chain.

**Christian Faitz, Kepler Cheuvreux:** What is the cost (capex) of a world-scale eFurnace versus a conventional furnace using natural gas?

**Dr. Lars Kissau:** Again, it starts to be the standard answer: about 20 percent.

On building the cracker, of course, you have slightly higher costs. I think what is then key in the operation time is the cost of electricity, which is why we're pushing our renewable power project so much. This will really be the key to make this a competitive technology when you're operating it.

**Christiaan ter Braak, MN:** You talked about make or buy. Can you advise what the exact strategy is for the Verbund sites and/or smaller facilities?

I assume that buy (PPA) would be the quickest way to reduce emissions. What is the biggest advance to proceed with the make strategy?

**Dr. Martin Brudermüller:** In the end – I mentioned that in my presentation –, one of the most critical issues for our strategy is the access and the fast access to renewable capacity, and that, certainly, at competitive prices.

Simply looking also into the auction processes of offshore wind parks currently running and indicated, that will be more and more competitive; so there will be more and more going for these projects. You have to calculate a certain probability and you have to participate in these projects and try to differentiate. But you cannot expect that you win all of them.

So, that is the first element with the "make." So, we have most probably a restricted access. Let's see how good we are.

The second part is, then, to take off the electricity from others who build parks. And there are – it has also become clear in the past – not so many, let's say, potent and also financially strong customers who can actually take a large share of that electricity for a time horizon of 25 years. That also makes BASF as such a financially strong company a very interesting partner. In the end, this is then also balancing out the market risk, which is certainly for the producer a clear target to reduce, but on our side, getting a calculable access at a certain price, also a competitive price, in the long run.

Given the fact that we will at least double and then most probably up to triple our electricity demand in Europe until 2040, we need a really huge amount of electricity, also given the fact that Ludwigshafen is such a large site. We simply need both levers to ensure that we have the access to renewable energy.

In the end – this gives us also a certain security in pricing. You need a portfolio where different wind sources, different wind availability, a little bit of photovoltaic, different components between make and buy make this a robust, predictable scheme for our electricity prices in the future. This is why we have the two legs make and buy.

**Jaideep Pandya, On Field Research:** Have you changed your carbon price expectations in the long run due to significant rise in energy costs and short-term use of coal?

**Dr. Hans-Ulrich Engel:** Actually, Jaideep, we have not. It's something we are tracking on an ongoing basis over the years. We've certainly built in higher prices.

If you think about today's market price, which is at 80; if you go back less than 18 months, we were at prices below 20. That is certainly a significant cost that we're looking at, but something also that we need to track on an ongoing basis and then build into our respective capex projects.

**Florentine van den Eerenbeemt, NNIP:** As you are preparing to offer low-carbon products to your customers, you mentioned you will make PCFs a buying criterion to ensure carbon reduction of sales products. What would be the specific criteria that you will uphold, and as of when? Does this apply to both new and existing suppliers?

**Dr. Hans-Ulrich Engel:** That is a very specific question. Maybe I go back to what Martin explained earlier. In the first quarter of last year, we started to talk to our supplier base about their respective product carbon footprints. We've covered in the meantime about 50 percent of our Scope 3. We intend to do the remaining 50 percent by the end of this year.

The request that we have for our suppliers is pretty obvious: It is the request to lower the respective product carbon footprint on an ongoing basis and through that allow us to lower our incoming Scope 3s. But there is actually not a whole lot more that I can say at this point in time.

**Christian Faltz, Kepler Cheuvreux:** BASF once was musing about building an MTO (methanol to olefins) plant with Lurgi technology. Plans were shelved when oil got cheaper. Could those plans again be revived?

**Dr. Martin Brudermüller:** I would clearly say: no, because at the moment we have proceeded with other plans.

I think, given the situation where we are and also where the Henry Hub price is today, this is not the raw material base anymore which gives us the cost advantage or the competitive advantage we would have had with this plant. So we shelved it, but I would say there is almost zero probability that we will revitalize that.

**Retail investor from Germany:** You didn't say much about the status of your hydrogen projects. Can you please give an update on this topic?

**Dr. Lars Kissau:** First of all, the funding for the methane pyrolysis pilot reactor in Ludwigshafen was granted by the Federal German Ministry of Education and Research, and the pilot reactor was started up successfully in the second quarter of 2021. We expect the start-up of the first commercial unit before 2030.

Now, with regard to the water electrolysis unit in Ludwigshafen, here we target the start-up for 2024. You may remember: The project involves the production of 8,000 tons of green hydrogen per year. This project is conducted together with Siemens Energy, and it has been shortlisted for public funding by the German Federal Ministry for Economic Affairs and Climate Action.

**Chetan Udeshi, JP Morgan:** Management of a leading coating company recently on their CMD said that they will not pay a premium for low-carbon products. Is BASF hearing different messages from other customers in terms of willingness to pay a premium?

Is BASF banking on premium pricing in terms of planning for returns on the decarbonization investments? Also, should we see it as a requirement for a company like BASF to invest to stay relevant even if this means lower returns in the future?

**Dr. Martin Brudermüller:** I can only say to this customer: Good luck! If you find a source not to pay more, go for it. I cannot imagine that this is the case because I think we made this now very transparent. There is additional cost. There is additional opex, there is additional capex. That has to give a return.

I always told you that in the end, if you scale up for meaningful volumes for customers, we have to get a return on our investments. And I always ensured you: When we come to the scaling, we will take care of the business cases.

Tell me one customer who would like to pay more for anything? So, it is a question also of negotiation. As I said earlier, we expect that over time there will be more customers asking for and demanding these products than there is capacity.

Then it is also a question, as always, of pricing power. If you have these products to offer. We will offer them at a price that covers these additional costs.

You have all kinds of customers. We have customers with which you start a big discussion about sustainability. And once they realize it is a few cents more, they withdraw from their ideas. And then you have innovative customers in all the segments who not only volunteer and talk, but really go for the first steps.

This is why it was important to me, and I am very happy that Henkel allowed us today to talk about this joint product where both are happy. There are serious players who start to position themselves and to differentiate with these kinds of products.

So, I think you have to start with the innovative, with the courageous, with the frontrunners in each and every industry. I expect that over time others will follow.

I think that it will only be possible to have these products in scale if ultimately also the costs are paid for.

**Retail investor from Germany:** How many of your plants are subject to regulation under the EU emissions trading scheme?

**Dr. Lars Kissau:** We have a hundred plants in Europe that are subject to the ETS scheme, and they cover about 12 million tons of CO<sub>2</sub> Scope 1 emissions out of the around 18 million tons in total.

**Dr. Martin Brudermüller:** We should say that the annual free allocation of certificates is nearly stable until 2025. So, only from 2026 on do we have to expect that the free allocations will decline. This is exactly why we ramp up the measures to compensate for this additional cost.

**Georgina Fraser, Goldman Sachs:** The European chemical industry has been lobbying against implementations of energy sanctions on Russia. How do you see the political appetite for these measures evolving? Is BASF taking any steps to prepare for this possible outcome given Russia is requesting gas payments in rubles, i.e., outside of contract terms?

**Dr. Martin Brudermüller:** I think it is very clear: If you look at the numbers for the share of Russian gas for European supply particularly, but then also even more for Germany, with an even higher share, there is no way for a short-term substitute. There have to be plans and there will be plans to substitute the dependency on Russian gas step by step, but it's nothing that can happen overnight. We need a certain time.

This is why it is important that we continue with that. But on the other hand, there is a huge amount of political activity now going on to take all the measures. That starts with companies reducing their consumption of natural gas, but also finding other substitutes, to build LNG terminals to substitute that overall. And we have to live with a certain transition period, I would say, to bring that demand down.

With respect to paying, maybe, Hans, you can add.

**Dr. Hans-Ulrich Engel:** Georgina, what's important to understand is that, as BASF, we do not buy from Russian sources. We buy from Western European suppliers. So, on our end, these are euro transactions. We are in contact with our suppliers to understand what they intend to do. If in fact they have to pay in rubles, that is not yet clear at this point in time; at least we have not yet got any type of clear and reliable answers to our questions.

**Bas Bijleveld, MN:** I noticed that the second largest Verbund site, Antwerp, can become net zero in 2030, although with some compensation measures. I was wondering what BASF's target is for the largest Verbund site, Ludwigshafen, and would a similar target, net zero 2030, be feasible?

**Dr. Martin Brudermüller:** I almost expected it: If we give you two targets on site level, then you ask for the third one. Ludwigshafen is by far the most difficult one. Simply by the sheer size and by the broad portfolio, you need more distinct measures. You need also a longer time horizon.

And what we normally don't do is that we give something beyond the group targets. I think this is already now very much detailed down. We just gave you these two examples of Antwerp and Zhanjiang.

I think Zhanjiang is interesting because you already put it into the blueprint, all the opportunities, whereas all the other measures in the sites are drop-in solutions where you have to change the set-up.

This is why we took the Antwerp example: It shows that you have some measures where you can reduce. But in the end, there are also a lot of small streams, highly diluted, many sources where it's actually very, very difficult to collect all of them and you have to basically increase the amount of CO<sub>2</sub>, then you have to clean it and then you have to sequester it. That is a huge amount of cost which is, I think, never economic. This is at this very high end of the abatement cost curve.

This is why you need other measures, and that could be, as I mentioned earlier, with the biomass approach. That you actually go with negative footprints into the production and then with this basically compensate this part. Then, the overall, let's say, the burden for the environment will also be zero. I think this will then be the most economic situation.

With this example, you see that each and every site has its own footprint, and this is also why each and every site in BASF has to deliver such a plan, but we do not intend to go further in the target-setting, at least to give you more on that, beyond the group level. Be sure that within BASF Group, we certainly also follow up on a much more detailed level.

**Jaideep Pandya, On Field Research:** What is the sourcing of power in the new China cracker? What is your view on Chinese electricity prices, especially for renewables versus coal-based pricing?

**Dr. Lars Kissau:** We already concluded one direct power purchase agreement last year to ensure that the initial phase of the project is 100 percent powered by renewable power. And very recently we also concluded a 25-year agreement with the State Power Investment Corporation for another long-term green power sourcing agreement. So we are on a good way to also make this site 100 percent on renewable power.

**Dr. Martin Brudermüller:** It's also fair to say that this first agreement is for onshore wind and photovoltaic. It's a mixture out of that. As I said earlier, in the very end, the consumers have to pay for that. We would not do that if it would not be an approach to price the products on the market, that would have favorable economics. Otherwise, we wouldn't do it.

I can only say: China is very dynamic, not only on adapting legislation to make such 100 percent green purchasing powers possible. There is also a huge dynamic going on with products. We have plenty of discussions also for offshore in China and all these things. It is just evolving in China. It's again, like in many other things, fascinating how fast they move.

**Georgina Fraser, Goldman Sachs:** How much of BASF's raw material inputs today qualify as "circular" and what proportion is required to deliver BASF's sustainability targets in the long term? What are the major hurdles to switching? Availability? Technology? So it's about "circular", what proportion there is today and what is required.

**Dr. Lars Kissau:** Maybe I start with the second one. I think what's obviously required for the availability is two things: One is the actual capacity build-up on the supply side.



Because of the rather slow demand in the last couple of decades, obviously, capacities still have to be built up for circular raw materials on the renewable side and on the ChemCycling, on the recycling side as well.

The second thing that is essential is also that the regulation has to keep pace. In many markets, we still have a regulation that is favoring the fuel use of recycled or circular materials instead of the material use. Obviously, that would be tremendously helpful if that bias towards the fuel use was removed, and we actually can have more material use of circular carbon.

**Chetan Udeshi, JP Morgan:** Does BASF have any reliable Plan B if Russian gas supplies to Germany/Europe were to stop? Or as you mentioned that it will be difficult to substitute the Russian gas for German and Europe as a whole?

**Dr. Hans-Ulrich Engel:** When you look at the supply share of Russian gas, you are talking about something, order of magnitude, 40 percent of the gas that is consumed in the European Union and 55 percent of the natural gas that is consumed in Germany.

As Martin has explained already, there are no quick solutions. There are smaller solutions in place. There is the offer that the U.S. made, talking here about 15 bcm additional supply to the European market. Put the 15 bcm additional supply in the form of LNG from the U.S. in perspective to Russian pipeline gas, you are talking about a Russian pipeline gas supply of 150 bcm to 200 bcm per year. That's the order of magnitude.

If, from one day to the next, Russian supply falls away, I think in Europe as well as in Germany we will be in a situation where a curtailment will take place. We will be in a situation where allocation schemes will have to be run because, in the short term, as we said, there is no way to replace these significant volumes. Over the longer run, yes, there could be, additional LNG terminals, as Martin has alluded to, maybe on the way there, first of all, floating regas and storage units. There are lots of ideas there, but it will simply take some time.

**Dr. Martin Bruder Müller:** To add on that: There is also a make part, because certainly we are not waiting whether this now is going to happen or not. We have an intensive program where we are looking into how we can reduce our own gas consumption.

Just to give you an idea: In Ludwigshafen, this is about 60 percent for energy production, about 40 percent is raw material. When it comes to raw materials, it is actually two, three big products which consume most of the gas. One of the big ones is certainly ammonia. You could then also, e.g., have the opportunity that you might reduce or shut down an ammonia plant and ship in ammonia for a certain period of time.

As I said also: The faster we can replace with renewable energy, we can actually take down our cogen plants and also reduce the demand here. And then we have also some opportunities which we take definitely until the next winter comes: Can we replace anywhere the gas by other feedstocks, so light feedstocks, for example, that are similar in properties like natural gas, or even can go to oil-based products?

A good example is the new cogen plant, which I mentioned, at the Schwarzheide site which is basically 100 percent operable on the one hand with gas, but also with light feedstock on oil base. That gives you also the opportunity to reduce our possible consumption and in a case of allocation then actually proactively can work on that.

So, be assured that we all use that. It's a similar example like we had at the time when there was low water in the Rhine, when we had then this €250 million EBIT impact. That would not happen anymore today because we have taken so many measures in terms of what we do with cooling water and how we operate. I think this is a similar comparison to what we do now in lowering our own dependency on gas.

**Retail investor from Germany:** How large is the solar park in Schwarzheide in relation to the area of the site?

**Dr. Martin Brudermüller:** It's between 8 and 9 percent. So we still have enough space to build plants and to produce solar energy.