



Interview Kai Schaefer

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Bert Beyers: What do you actually need lime for?

Kai Schaefer: Lime is a fantastic basic material. We are usually at the beginning of many value chains with our products. Most burnt lime is used in the steel industry: for the treatment of steel melts to form slags. Lime is a reactive substance and is readily used in many processes as a product for purification or as a reducing agent and is thus very versatile. It is also used in the chemical industry, in environmental protection, such as flue gas cleaning or waste water treatment, and even in the construction industry. This is probably the application that most of us most readily associate with it: Ready-mixed mortar, sand-lime bricks, aerated concrete.

What is your perspective on carbon capture?

In the decarbonisation discussion, we are one of the industries that are called the hard-to-abate sector. It is indeed difficult for us to reduce our CO₂ emissions to zero because two thirds of our emissions come from rock and only one third from fuels, which are certainly easier to reduce. But we will not be able to reduce our emissions to zero through these technical measures. It will be necessary to capture the CO₂ produced after the kiln in some form, i.e. to use separation technologies to achieve a CO₂ waste gas stream that is as pure as possible so that it can then be recycled further.

Is that already happening, the separation?

No, that is not happening yet. These are still ideas for the future that we are working on intensively. Both as a company and through our industry association, we are involved in research projects to make this CO₂ capture as efficient as possible. And of course, such a separation is an additional process step that is also energy-intensive. Development steps are still necessary to make it as efficient and economical as possible. Also to be able to implement the whole thing on a large scale.

That means that at the moment you are paying quite a bit for CO certificates?

Yes, CO₂ emissions have already become a veritable cost item for us. As a lime industry, we still receive emission certificates for part of our emissions free of charge through the emissions trading system. However, the number of freely allocated certificates is continuously decreasing, so that we have to close the resulting gap with purchased certificates.

So there is also an economic interest in carbon capture?

It is quite clear that the economic pressure is increasing with the proportion of certificates that have to be purchased. The costs per CO₂ certificate have also risen significantly in the past two years. And it is foreseeable that the costs for the certificates will continue to rise in the future.

What are you planning in terms of carbon capture in your company?

At the moment, we use either natural gas or pulverised lignite at our two production sites in Germany. Now we are trying to convert these fuels to CO₂ -neutral fuels. And we actually already have projects in the concrete planning stage where we will convert at least part of the fuels to biogenic fuels. This will reduce a certain proportion of our

emissions in the relatively short term. The emissions that we have to capture via capture will still take some time. That will certainly take another two to three years until the necessary technologies are better understood.

What orders of magnitude are we talking about?

These are certainly veritable quantities. For our company Schaefer Kalk in Germany we are talking about about 600,000 tonnes of CO₂ per year.

And what does that look like for your industry?

The lime industry in Germany produces about 5.5 to 6 million tonnes of lime per year, and about one tonne of CO₂ is emitted for every tonne of lime produced. As an industry as a whole, we emit a good 6 million tonnes of CO₂.

In Germany, the legal situation regarding carbon capture is difficult. How do you deal with this?

At the moment, the legal situation is such that transport is also not permitted and the injection, i.e. the storage of CO₂, is also not allowed. We are, of course, in contact with the federal government. We are also in contact with the political representatives at the regional level, where we raise this issue through our associations, the lime association and the building materials association, and also say quite clearly that we see no other possibility for our industry apart from storage in order to be able to avoid significant quantities of CO₂ emissions in the foreseeable future. That is why this is a very important topic for us, which we are discussing intensively and where we already have the feeling that it is understood in principle. But we have not yet reached the point where legislative changes are being implemented.

Do you see anything happening at the political level?

We see an understanding that you say okay, in your industry a CO₂ reduction to zero is not easily possible. This means that something has to be done with the CO₂. Basically, there are two options, either storage or further use. We see further use as being one step further away than storage. Storage itself is technologically known. Yes, CO₂ is already being stored in many countries around the world. For Germany, too, there are estimates of storage potential on German soil, and it is quite considerable. In this respect, we see an increasing openness to say that we recognise that we must also make storage possible by law.

What would your logistics look like? In the USA and Canada, there is already a network of CO₂ pipelines. Is that necessary here too?

Whenever we capture CO₂ somewhere, we have it available, but it has to be brought to the place where it can be stored. And that will depend to a large extent on where these storage sites are, whether they are offshore, i.e. somewhere in the North and Baltic Seas, or whether storage can also take place on land. In any case, transport will be necessary. And here we already envisage that at least from a certain collection point or node a pipeline system should be created up to the transfer stations where storage can then take place. Whether this pipeline system can then be led back to each point source is a question that is difficult to answer. It may be possible for very large emission sites, such as in the steel industry or the chemical industry. But it will certainly not be the case for every emitter on our scale. In this respect, transport to a collection point by truck, rail or inland waterway may also be necessary.

That sounds like a considerable effort.

We have a lot of experience with pipeline systems in Germany. Natural gas is also distributed throughout Germany by pipeline. In this respect, we also know that this is a safe technical option. And it will probably also be possible to convert part of the existing natural gas network into a CO₂ network. However, these are issues that we as a company cannot answer. I think this is again a matter for the federal government and the Federal Network Agency. But pipeline

operators certainly also have ideas on how such a system could be set up.

Are you also thinking about working with other industries to increase economic leverage?

That will certainly be a possibility and it will also help, because we already see that there are emission sources in many places. For example, we are in talks with the cement industry. We have also made initial contacts with the waste incineration plants, which are also CO₂ sources, and which are also distributed throughout the area.

What time periods do you have in mind?

Good question. First of all, we would need the legal framework to enable CO₂ transport and a CO₂ network in the first place. Then it will certainly take a few years until there is planning and also a permit for such a network. And then it still has to be built. In fact, we expect it to take several years before such a system is operational. Until then, there will certainly be pilot projects here and there, perhaps even smaller pilot networks, to further verify and refine the technology. I could imagine that such smaller regional solutions will be available or close to implementation in the next three to five years.

What else will you personally see from the development?

As a company, we are already intensively engaged in this. We see the need to act quickly now. First of all, the legislator must create the necessary framework conditions to move forward in this process. Of course, we also have to create the conditions on our side to collect and concentrate the CO₂ produced and then, if necessary, liquefy it or bring it to a state in which an operator can take it over. We reckon it will take another ten years plus for these investments to mature in our industry.

So far, there are thoughts that Germany could export its CO₂ to Norway or also to other European countries such as Denmark or Great Britain. How do you see this?

I am firmly convinced that the issue can also be solved in Germany. We have all the prerequisites for this. We also have the storage capacities, both offshore and onshore. And we should use them. We should not hand over CO₂ storage to other European countries that are developing a business model for themselves. We can do that here too! We can realise this potential, this business model in Germany. And we should not let this opportunity pass us by.