



Global Energy Solutions

For Prosperity and Climate Neutrality

Where is the association Global Energy Solutions e. V. heading towards?

Interview with Christof von Branconi, Chairman of the Board of Global Energy Solutions

Bert Beyers: **What is the brand essence of Global Energy Solutions?**



Christof von Branconi, Chairman of the Board, Global Energy Solutions

Christof von Branconi: We care about a global solution to the energy and climate challenges - a solution that brings prosperity, especially for emerging and developing countries. To achieve this, the concentration of greenhouse gases in the atmosphere must be reduced. CO₂ must either be sequestered or made usable again in a circular economy. Unavoidable emissions should be neutralised with nature-based solutions.

What will Global Energy Solutions be working on over the next few months?

Thankfully, the association has received funding from the Federal Ministry for Economic Cooperation and Development (BMZ) to conduct a study over the next two years. And we have a work programme for this programme with five thematic areas. The first topic is that we project a picture of the future for the year 2050, so that we can say: This is the state we want to reach.

Global Energy Solutions always thinks globally, doesn't it?

Yes. We believe that the economic, population and wealth situation can develop positively in a certain way by 2050, taking into account the UN's development goals. As a second building block, we are putting together a toolbox of technical solutions. This starts with the production of green electricity. This continues with the options for converting electricity into hydrogen. The solutions continue with the transport options for hydrogen to the users. We are also looking at the issue of CO₂ capture and how to develop the energy grid in different regions of the world as efficiently as possible. And where and how to use Nature-based Solutions.

What is the third building block?

It is about the application of the building block in different industries, from power generation to the manufacturing industry, to the building sector, to practically all CO₂ or greenhouse gas emitters in different sectors. The fourth building block deals with the restrictions system. This means that every country, every region on earth has a different starting situation. And in order to ensure the respective development, I must of course also take the local situation into account. The last module deals with the solution picture: How does the association imagine that the greenhouse gas problem can be solved in a concise manner - while at the same time increasing prosperity on a global level?

Global Energy Solutions is the name of the association. And the claim is: For Prosperity and Climate Neutrality. That's pretty ambitious.

That's right. Today, 85 percent of the energy used worldwide still comes from fossil sources. To put it simply, over the next 30 years we have to find a way to use or replace this 85 percent in a way that is as climate-neutral as possible. The second figure to characterise the global challenge is: 40 percent of the world's population lives in China, India and Indonesia. This means that if I want to address and solve the climate problem on a global level, I will have to include the development needs and the climate problem for this large part of the world's population. Most countries currently import the majority of the energy they use. For the Federal Republic of Germany, this import share is 70 percent and at EU level 60 percent. And for all this energy that we use, we have to find renewable solutions or solutions that are climate-neutral.

Is energy self-sufficiency possible, for example for Germany or Europe?

Realistically speaking, it is hardly conceivable. We really only have three options for a solution. The first is to become more efficient. We use energy better. The second is to produce renewable energy locally, for our lives, for meeting our energy needs, for our prosperity. And if we don't have enough energy locally, then I guess we'll have to come up with something to get the energy we need from somewhere else, to import it. And it is hard to imagine that we will be able to produce more than perhaps 40 or 50 percent of renewable energy in Germany at reasonable cost. Why should we, as an exporting nation, import less in the future than in the past? And many countries in the world are in a comparable situation.

What are the next steps for Global Energy Solutions?

We have spent the last twelve months taking a close look at the value creation structure for the use of renewable energy or for the replacement of fossil fuels with renewable energy. In the process, we have identified two core problems. And I have to say, they are quite different from what we might have thought a year ago. At that time, we thought the biggest problem was to generate cheap electricity at less than two cents per kilowatt hour.

For example, in desert areas.

That's right, from our point of view, that wasn't guaranteed twelve months ago. Today we know that it is no longer an immediate problem in many areas of the world. Real projects have shown that electricity can be produced for less than two cents per kilowatt hour. The Fraunhofer Institute recently presented a so-called PtX atlas that shows worldwide where solar power or wind power can be produced at such low costs. But this is exactly where the challenge begins. I have not yet solved the problem I mentioned, namely how to transport the required energy.

What does that mean in concrete terms?

There are two work steps that are in the foreground from our point of view today. One is to come from green electricity to hydrogen. Electrolysis is traditionally used for this. Today, the world capacity for electrolysis plants is 3 gigawatts. But to supply many countries with renewable energy based on hydrogen, we need hundreds of gigawatts of installed electrolysis capacity. In Germany, the largest plants are in the order of 100 to 300 megawatts. In fact, however, we need hundreds of gigawatts and research into the question: What does scaling look like, i.e. the large-scale production of green hydrogen by electrolysis - that is the first essential step that we are now specifically researching.

And how can the hydrogen be transported?

There are only a few solutions that are being practised on a large scale today. One is to liquefy hydrogen and transport it by ship. But today there are only one or two ships that can do that. The second solution is to try to transport hydrogen by pipeline, which is limited in terms of quantity and volume. And finally, we come to the question of transporting hydrogen as a so-called derivative, i.e. as a chemical compound that contains a lot of hydrogen. Here again, three compounds are discussed: The first is ammonia, which is the combination of hydrogen and nitrogen from the air. The second is methanol, which is the combination of hydrogen, oxygen and CO₂ to produce it. And the third option is synthetic natural gas, again a combination of hydrogen and CO₂. And for these last two applications I have to be able to provide the corresponding quantities of CO₂. At economically justifiable costs, of course.

There is this project by Siemens Energy and Porsche, namely Haru Oni in the south of Chile.

And there the CO₂ is taken directly from the air. This is called Direct Air Capture. However, there is only a small amount of CO₂ in the air, about 400 ppm (parts per million, or 0.04 per cent). Therefore, you have to go to great lengths to wash it out of the air. But we, at Global Energy Solutions want to deal specifically with the issue of using CO₂ from point sources.

What do you do with the CO₂ from point sources?

We can either store it, mineralise it and make it harmless in this way. Or we can put the CO₂ to economic use - for example, by marrying it with hydrogen and thus feeding it back into the economic cycle.

Making CO₂ harmless or using it is a contentious point in the discussion. Also and especially in Germany.

We are looking for solutions to the climate problem on a global level. And we can't pay too much attention to Germany's particularities. And if you look at it globally, then the avoidance or use of CO₂ sources is the absolute order of the day. Because by capturing CO₂, I can first of all prevent it from going into the atmosphere. And there are many solutions, for example caverns, where CO₂ can be safely stored. But we are also convinced that an economy like Germany's will not function entirely on the basis of electricity. In Germany today, electricity accounts for 20 percent of primary energy demand. The remaining 80 percent is fossil energy. Of course, in 10 or 15 years we will consume less energy in total. But it will not be possible to electrify one hundred percent of the energy used then. That is why we are looking for environmentally compatible solutions to make the non-electricity-based part of energy available in a way that is as climate-neutral as possible. And hydrogen will play the decisive role here. And if I can't produce this hydrogen locally, I have to get it to Germany, for example. And there I am with derivatives, there I am with the combination of CO₂ and hydrogen.

Global Energy Solutions works actively with companies. What does that mean in concrete terms?

I mentioned our five building blocks of the toolbox earlier. The companies represent building block three. They are essentially CO₂ polluters, for example a cement manufacturer like Schwenk. For example, a company that supplies the automotive industry like Robert Bosch. Today, companies have to ask themselves questions: How do I avoid CO₂? But also: How do I use CO₂? This is precisely where opportunities lie for companies. And with this in mind, we are looking for partners - if possible from all major CO₂ emitters, steel, cement, chemicals, but also the utility industry. We want to reach into our toolbox with these companies to discuss with them which tools we need to combine in order to create a climate-neutral solution for the respective application.

Where does Global Energy Solutions want to be in two years?

We want to present our results report in two years. Then the fifth chapter with the solution pictures will have been written. And in it, we want to show what we think the paths must look like for ten billion people in 2050, so that these people can live climate-neutrally and as prosperously as possible.

Are you confident that this will succeed?

During the past twelve months we have seen that progress is being made across the board and new ideas for solutions are emerging, so it will certainly be possible to achieve the state. Technology is not the bottleneck. A central bottleneck will be financing. For the technical solutions, for example in the provision of energy, it will be important to show ways that work efficiently - from two points of view, namely that they help reduce greenhouse gas emissions and that they are economically viable. [To the Video.](#)

