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Scaling Solar

Alexander Arcache is Managing Director and founder of Kronos Solar, a German renewables company. Alexander believes agrivoltaics – the shared use of land for both solar power generation and agriculture – will be a key driver of future solar deployment.

Q | What made you establish Kronos Solar? Tell us about your career journey?

I was a consultant at McKinsey for nearly a decade but I was looking for an exit because for as long as I can remember, I wanted to be an entrepreneur.

I studied business and during my last few years at McKinsey I was advising utility clients. I had a personal network in renewable energies and sensed the potential because at the time it was a very young and dynamic industry. It seemed like a great area for entrepreneurism while offering meaningful work due to the urgency of climate change.

Back in 2008 the solar industry value chain was changing rapidly. It was a time of great turmoil because the upstream component manufacturers had most of the bargaining power due to insufficient inventory to fulfil market demand. But then capacities were building up in China creating greater supply.

I saw an opportunity to develop solar projects because on the development side it was driven by very localized, unprofessional structures that lacked nationwide operations let alone international capabilities.

So Kronos was founded in 2009. One of my co-founders was the former chief technology officer of Q Cells and we had a small amount of seed money. As we were cash constrained, we would fly with EasyJet in the UK alongside the British heading for vacation with their straw hats while my partners and I were in suits planning our drive to Cornwall.

Entrepreneurs have a tool box that includes the ability to structure and prioritize problems. You learn that at McKinsey but the other part is believing in your gut feeling, judgment and ruthless operational will.

Q | Did you encounter any significant challenges along the way?

In the early days, photovoltaics - producing electricity from sunlight via semiconductors - was mostly driven by subsidies and feed-in tariffs. In 2011 we had a near death experience when tariffs in the UK, our core country of activity, were slashed by 70%. When the market changes in such a brutal way, it tests your survival.

There was a deadline for commissioning projects to the grid in order to capture and secure the tariff. We were building a large solar park of 30 to 40 acres - which is small in comparative terms today - so we had millions of dollars at stake on a construction project where we had to make the deadline, which is a very dangerous situation.

We survived by commissioning a few sites early enough but others weren't so lucky. Entrepreneurialism often means no sleep for long periods but eventually after 2011 the upward trajectory has been pretty positive.

Q | Why did you choose the UK as your first market?

The UK market in 2011 was opening up. It hadn't previously seen renewables at large scale so we wanted to get that first mover advantage. Believe it or not, of the first five solar parks that were granted planning permission in the UK in 2011, three went to the German Kronos solar. So that was really our big success story.

Q | How worried are you about the speed of global warming?

The honest answer is I'm very worried for three main reasons. Firstly, there's a lack of global prioritization. Second, is a lack of operational control and thirdly, a lack of alignment and leadership.

On the first point, I think global warming remains pretty high on the agenda in most OECD countries and there's determination via global meetings like COP27, yet when other matters become more pressing, we lose traction and support.

The second problem is that we are capable of defining targets as a global society to map the journey yet even in our most developed democratic systems there's a lack of power to translate targets into action. Global warming doesn't ask for best efforts. It asks for results.

Take Germany as an example, this spring the new government communicated a so-called Easter package setting an enormous ambition where renewables are supposed to quadruple in deployment over the coming years. But the underlying system that allows the operational transmission into action has not changed.

And then the third one is a lack of continuous political leadership by the most important parties, which immediately leads to finger pointing, tricks and escapes.

It allows people to stray from the path that we have seemingly chosen together as a global society. And as a result, based on where we are today, I don't believe the 1.5C limitation on global warming is within reach.

Q | You recently sold a stake to EDP Renewables. What was the rationale? Is scale the most important factor in getting to net zero carbon emissions?

Scale matters greatly because it brings economies of scale and it isn't realistic to be competitive with small structures.

At the end of the day, power generation through renewables needs to meet market demand and needs to be produced at a competitive market rate. We need to be cheaper than power generation from nuclear and fossil fuels in heavy industries.

It's not the only lever but it's a material one. And as Kronos and I want to achieve much more, it was a very logical combination to team up with one of the best players globally to become a leader in our core markets in the UK, Germany, France and The Netherlands.

Q | What does being part of EDPR mean in practice for your goals?

It means that we can grow faster. We will have the ability to operate alongside the comprehensive downstream solar value chain – installation and financing - to hedge our risks.

This means that we can be more resilient and given the scale that comes with EDPR, we can invest more and therefore deploy more renewables and larger solar parks across the group.

Q | Renewables are hampered by intermittency. Does that mean we will always have to complement solar with energies like nuclear?

Renewable energies are not the only solution or a standalone solution but at the same time, if I look at the average cost of storing one kilowatt hour of renewables, it is decreasing significantly. And if we can take a similar cost curve development in battery storage that we have seen in solar - where today we can build a solar plant for 10% of the cost 15 years ago - then there's a great journey ahead for renewables even without complimentary sources of energy from nuclear or gas fired power plants. Green energy combined with storage is very exciting.

And on top of this comes the question around green hydrogen. I'm very positive on that development. Together with EDPR we are looking at the entire solutions space; so energy storage, battery driven systems and green hydrogen may be part of the equation for us going forward.

Q | What are the challenges of installing solar in the UK compared to Mediterranean countries?

It is a common misconception that the intense Mediterranean sun is required to get solar going but that's not the case. Solar radiation is one element that makes a solar system work. Other factors include local market pricing, demand for renewables, and consumers that want green power. There are also questions about the structure for offtakers (the parties who buy the electricity produced by solar developers). So it's a

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fairly complex ecosystem where many elements play a significant role.

To take an example, in Germany the grid connection, operations and maintenance costs of running a solar system are very competitive whereas the sun is maybe 50% less powerful than in some parts of Italy and Spain. But the overall question is whether it works in the local context when you put everything together. And that's a case-by-case analysis. In Germany, photovoltaic solar is extremely competitive and could even become the most competitive source of power generation going forward.

But solar radiation is important and we all wish for more sun to increase the power generation from a single panel.

Q | With the Russia-Ukraine war, have you seen an uptick in business arising from energy dependence concerns?

I think there's a greater public awareness that we need to be more independent from Russian gas and oil. Whether that translates into greater support for individual projects is a different story. It has not led to a change in the underlying system yet and brings us back to the operational transmission. In an ideal word there's a delay. In the worst case there's just political gridlock.

Q | Do you see Agrivoltaics as the future of solar?

There has been considerable talk about agriculture and solar production sharing space and in an ideal world they are not enemies but friends.

I think the idea behind agrivoltaics can be very impactful but it needs to reflect the land value of the underlying soil. For example, where we have existing grazing by sheep, it's mostly grass production so combining solar and sheep makes perfect sense. Where growing certain crops is required and that's the most compelling factor we need to question whether adding solar is really worthwhile.

At Kronos Solar we are trying to be one of the leaders in agrivoltaics. We are developing projects in France and Germany and believe this is a fantastic opportunity which needs to be dealt with in the localized context. It will be a key driver but not the leading element of solar deployment over the coming years.

Q | The fall in 'learning rates' over recent years means that energies like solar have become cheaper. Will that trend continue or do you foresee bumps in the road ahead?

For the time being I see a higher cost per kilowatt hour for solar energy amid a dramatic increase in component prices over the past 12 months.

Raw material prices have spiked and a solar power block consists of steel, glass and cable - all precious raw materials. So we are currently going through a bump but I expect that we will go back to more reasonable levels over the next 24 months and I hope that it doesn't become a long bumpy ride.

Q | Does that mean we've already extracted all the price efficiency over the past decade or so?

Efficiency in renewables needs to be distinguished into two different drivers or buckets. One is cost efficiency so that we can produce more power from a single cell and the other is technologically driven efficiency to improve the cells themselves.

I expect cell efficiency to continue but at a slower pace than in the past. We are not expecting significant jumps in contrast to the efficiency that comes from economies of scale by building these solar modules cheaper via better raw material prices and a more productive setup of components.

This has been the core driver of the shift in total system efficiency over the last decade to a greater extent than efficiency from technological advancements.

So technology improvements are being offset by the current cost increase. These technological advancements are now more gradual and smaller in scale and therefore they cannot compensate for the cost increase.

Q | Who's your sustainable hero and why?

My sustainable hero is Luisa Neubauer. First of all, she's German and we are headquartered in Germany.

She is one of the voices behind Fridays for Future (the movement started by Greta Thunberg to protest against inaction on climate change). She's a young advocate fighting global warming. She has a strong following and we need voices like hers to spread the word that things need to change.

She's an inspiration to me. And if she has the ability to inspire me I'm sure she's able to inspire the decision-makers of my generation.

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