

Renewable energies, sustainable funding and regional projects

by

■ **Éric Scotto** ■

President and co-founder, Akuo Energy

Overview

Éric Scotto may well dream about a better world where growth would no longer be synonymous with the destruction of the planet's resources, but he is not a utopian. 'Demain', the film he helped to produce, shows that sustainable solutions are within our reach. We now have to commit ourselves to putting these solutions into practice. Éric Scotto fulfilled these principles because of Akuo Energy, the company he co-founded in 2007 which develops innovative solutions on a local level to produce renewable energies and also to benefit local inhabitants. Éric Scotto says that he is not just a philanthropist: on the contrary, by proving that one can reconcile environmental, social and financial performance he says it is possible to mobilise opinion in favour of a change in energy transition.

Report by Sophie Jacolin • Translation by Rachel Marlin

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In the course of my career, I was able to take part in two revolutions: the Internet, and the renewable energies revolution. Both these revolutions convinced me that the limits of what is possible can always be pushed further.

Having studied history at the Sorbonne, I went to the United States and completed a Masters degree at Cornell having been awarded a scholarship. When I returned to France, I was not at all enthusiastic about the idea of becoming a teacher, so I immersed myself in entrepreneurial activities. In 1991, I started working for an English start-up which was launching itself into what we now know as the Internet. I stayed with this company for ten wonderful years during which previously unknown possibilities of exchanging information arose and led to a widescale globalisation movement.

I left this area in 2001 because I needed a less hectic lifestyle. During the few holidays which I had allowed myself to take after having left this job, I had come across an extraordinary book, 'Eco-Economy: Building an economy for the Earth' by Lester Brown, which triggered something in me. The author predicted a form of capitalism which would be of service to what is essential for Man, namely a healthy diet, safe drinking water, clean air, 'clean' energy, protected fish supplies, and so on. Lester Brown maintains that by ensuring that all capitalistic resources are in place in order to help this new economy, we may have a chance to change the world. Furthermore, in order to prove that this point of view was not at all utopian, a few years later the Akuo Foundation decided to associate itself with the production of the film 'Demain' (directed by Mélanie Laurent and Cyril Dion) thereby paying tribute to the initiatives which made a contribution to this new economy around the world. From the outset, the excitement created by this project showed that people expected great things from it, and were enthusiastic to activate others. Whereas we had hoped to raise 200,000 Euros in two months in order to launch this project without having to take out an advance on box office receipts and thereby maintain our independence, it only took us two days to collect this sum thanks to a crowd-funding platform. In the end, 12,000 people invested a total of 440,000 Euros. Clearly, the enthusiasm and drive is there. Now we need to make it happen.

A strategy of independence

In 2003 I created my first wind electricity generation company, Perfect Wind. At this time in France a new law had just been passed which forced energy providers to give priority to renewable energy when purchasing energy. It was ambitious to launch a company in this field at this time – the French wind turbine market only produced a total of 112 megawatts of wind power – and especially if one was not an engineer. No bank was willing to fund my project, despite the fact that General Electric had asked me to manage the final stages of two projects which it had just bought from Enron Wind. I was extremely determined, and my perseverance paid off when I found people who listened to me in Canada, and they persuaded the BNP bank to help me. Consequently, in 2004, we were able to build the largest wind farm in France. The farm harnessed 57 megawatts of wind power which represented one-third of the market, and eventually people started looking at us as major market contenders.

My professional experience of the Internet helped me to understand that the rhythm of industrial cycles had ultimately got ahead of itself. With information circulating at great speed, innovations had to be developed rapidly or else one's competitors would copy them. But what direction should we choose in light of the fact that we did not know what France's strategy for energy transition would be, starting from a mix almost exclusively concerned with nuclear energy? We realised that the going would be tough, but that we had to act quickly. In the knowledge that it takes six to seven years to develop and put into operation a wind-generated installation, we knew we could not gain a competitive edge over the major energy providers such as Suez, EDF and Gaz de France, as they could easily catch us up by using equipment greatly superior to ours.

To overcome this difficulty, my associate Patrice Lucas and I decided on a two-fold strategy. On the one hand, we could focus on regional development engineered by teams based in the local area, and on the other hand,

we could buy projects which had not been sufficiently financed in order to be built or operated. The latter turned out to be the right choice. In less than three years, Perfect Wind developed a portfolio of wind turbines generating a total of 600 megawatts, half of which came from stations which they had built. It became the second largest wind turbine generator in France. Nevertheless, we were well aware that domestic competition was tough, and that it was therefore necessary to develop the business abroad. With a team of only five people, we set up sites in Turkey and Poland.

By the end of 2005, all the energy providers finally realised that they had to have a presence in the renewable energies market. Whereas Gaz de France and Suez shared the leadership of a future company specialising in renewable energies, Perfect Wind had been contacted by EDF, Enel and various American companies. Having escaped the fall-out when the Internet bubble burst (I sold my last company in this sector in March 2000, one month before the collapse), I knew that we had to listen closely to various propositions, even ones which were over-evaluated, as they are the precursors of a groundswell. In this case, they reflected the wish of energy providers to make up lost ground in the renewable energy sector. It is obviously much easier for a major company to buy an existing 600-megawatt site rather than to start from scratch.

It goes without saying that our small company could not be floated on the stock exchange in order to raise capital. We did not want to be minority shareholders associated with an investment fund either. We were determined to keep our independence and this was non-negotiable if we wanted to defend our values and to be part of an energy revolution. Therefore, in 2006 we decided to sell our French company to the world leader in wind turbines at that time, the Spanish company Iberdrola, in order to be able to finance further ventures.

The sale of Perfect Wind France enabled us to create Akuo Energy in 2007. Two associates from major companies who had experience in the management of large companies joined us. We created a company which was competent in diverse activities in order to benefit from the entire range of renewable resources, starting with solar energy.

Another key to the success of our strategy is that we immediately concentrated on international development. In regulated and emerging markets which have a varied level of awareness of the importance which renewable energy has in their energy mix, it is not possible to concentrate on one single country. All those who relied on a single location and a single technology no longer exist. Therefore, we decided that the world was our oyster, and our aim was to take part in the emergence of a new, sustainable and decentralised energy system. Today our job is to develop, finance, build and operate power stations based on renewable energy sources.

Ten years after its creation, Akuo Energy exists in about thirty countries and across all the continents. This year we will have reached a total of 1 gigawatt of wind power, and we intend to build more plants, adding 3.5 gigawatts over the next five years.

Each area has its own solution

Our strategy has to take into account in-depth knowledge about the areas in which we operate.

Agrinergie: when agriculture and energy are one

As a result of a chance meeting, we became interested in a possible venture on the French island of Réunion. We were intrigued by the possibility of feeding nearly one million people living in a small area dominated by a volcano, and without a great deal of agricultural land. We visited the island in 2007, admittedly a long time after EDF and other leaders in the solar energy market had established themselves there. Our advantage was that we had experience in the wind energy sector whose installations require the acceptance of the local population. We had the necessary know-how and we quickly got to work. However, having granted us two building permits, the authorities took them away just as quickly. Discontent was brewing within the farming community because our solar installations were going to take up a large amount of space. Very luckily for us, the authorities handled the matter intelligently, and explained to us the nature of the constraints and the causes of the mounting social discontent. We reconsidered our position and instead suggested our 'first generation' solution, 'Agrinergie'.

The island of Réunion was reliant on one crop, sugar cane, and because of strong demographic growth, it experienced pressure on land use. Land prices soared, and many young, local farmers could not afford to set up a business. Monopolising space on the island in order to produce solar energy would merely have aggravated the local problem.

We believe in a decentralised strategy. We realised that our local presence gave us a degree of responsibility which went beyond the production of energy. More broadly speaking, we had to work on the balance and harmony of an ecosystem which was 'in the making'. So we came up with the idea of renting out plots of land and giving farmers the use of half their surface area. In so doing, we invented a new economic model. Arbitration was necessary. Rather than choosing to maximise production, like EDF and its hydro-electric power station in Sainte-Rose, we took a shareholder's decision: we reduced our profitability in the short-term, but we remained committed to be in the region for the next fifty, seventy or even one hundred years. We aimed for a long-term profitable situation which would ensure the long-lasting presence of our company in the region. This strategy was helped by the fact that we were financially independent.

Our site at Pierrefonds was officially opened in 2010 by the French president at the time, Nicolas Sarkozy, despite the fact that two weeks later, he declared a moratorium on financial aid for renewable energies and solar energy...

This 'first generation' solution was a success. However, it still used up half the agricultural plots we owned. Because of our local presence, we knew about the havoc caused by increasingly frequent tropical storms and cyclones which regularly destroyed 90% of the island's agricultural production. In discussions with farmers about how to protect ourselves in the future, we were able to devise Agrinerjie's 'second generation' project. This project still involved occupying plots, but this time half the plots were occupied with 'anti-cyclone' greenhouses made available to market gardeners and horticulturists. This solution helped to protect the island's food supply while giving farmers infrastructures which they would not have been able to finance themselves. Once again, we implemented a long-term vision of our activity in the knowledge that we had purchasing contracts which lasted twenty years. We were able to convince the banks about the opportunity of slight growth in investment linked to the greenhouses which we would be able to reimburse in sixteen or seventeen years' time, all of which would benefit the region. After the passage of Cyclone Bejisa in December 2013, we had no damage to report to our insurance companies whereas 80% of the island's agriculture had been devastated.

When one is committed to a region and one is seen to be a credible partner, there are no limits to one's imagination. For example, our local teams turned their attention to Réunion fish farms which take up a considerable amount of space. They devised the idea of covering them with solar panels thereby giving additional protection against cyclones. An unexpected advantage of this project was that by covering the fish pools, the temperature of the water dropped by three degrees and this in turn protected the fish against fish larvae predators, and so created



The first and second generation of 'Agrinerjie', and the 'Aquanergie' solution covering fish farms.

better farming conditions. Fish production has increased by 30%. One has to be very integrated into the local environment in order to invent these sorts of solutions.

The Akuo farms: a social and energy benefit

It is important for a company that the region in which it is located does well both economically and socially. In our constant search for space on Réunion, we discussed the area of a 'no man's land' which was next to the Saint-Denis prison on the island. The place was extremely suitable for a solar power plant. This area was managed by France Domaine¹, and the project for the use of the land was offered to tender. The reason that we were chosen from twenty-seven other companies is probably because, as well as our energy project, we also had a reinsertion and social rehabilitation project, all due to a technology which was a world 'first'.

At the time, renewable energies were booming in Réunion. They accounted for 30% of the electricity used in the network. Management of this network was difficult for EDF Systèmes énergétiques insulaires (SEI) which as a result experienced a fall in production. We suggested a solution which accommodated both solar energy and storage. We designed one of the largest plants of this kind in the world, with 9 megawatts of production and 9 megawatt-hours of storage capacity. Having won the tender six years previously, we therefore had a total of 29 megawatt-hours, of which 11 were in Corsica and 18 in Réunion. The president of LG, the giant Korean company, came to Paris twice to meet me in order to make sure that we would work together. In fact, we became his second-largest client in the world after General Motors.

This project ('Bardzour') was inaugurated in 2016 by the then French prime minister Manuel Valls and the regional president Didier Robert. It presented an opportunity to provide a means of social rehabilitation for prisoners by training them in 'occupations of the future' relating to solar energy, organic farming using greenhouses resistant to cyclones, and permaculture (in the Akuo farm next door). Sodexo, which caters for the prison, buys the vegetables produced on the site: this is the perfect example of a short circuit! This experience may appear to be something of an anecdote, but its success shows that it is possible to redesign a local ecosystem as long as one is attentive to what is happening in the field.

A never-ending range of possibilities

Farmers in New Caledonia asked us to help them to develop plants similar to those in Réunion. We established plants via a joint venture with the local energy provider Enercal. Indonesia is also interested in our projects and has asked us to operate plants throughout the country. Today we are among the leaders in this market. We are therefore able to move our Réunion model to a multitude of islands throughout the world.

In mainland France, we have adapted our regional projects to former quarries which are often areas which are transformed into leisure centres, and have no long-term economic model at all. We are currently changing the former Piolenc quarry near Avignon into a 17-megawatt solar power plant, bordering an Akuo farm which produces organic crops and uses permaculture methods.

In countries further south, our 'Akuo oases' have decentralised solar systems which also desalinate seawater for irrigation purposes on agricultural land.

It is therefore possible to devise new, long-lasting models to suit the specific requirements of regions by working with local authorities.

Transition: a financial issue

Farmers are aware that sometimes they use harmful substances. They could act differently. It is difficult for them to adopt new practices without putting their business in danger. Agricultural transition is therefore at the same time an economic equation. An industrial shareholder has the means to finance this transition. What is the price

1. Former name of the DIE, *Direction de l'immobilier de l'État*.

to help farmers breathe new life into land for a few years so that it does not have to be farmed using pesticides and artificial fertilisers? Furthermore, INRA (National Institute of Agricultural Research) studies have shown that healthy soils produce greater yields and on smaller areas. The farm at Bec-Hallouin, featured in the film 'Demain', is an example of this. Right now, the issue is the ability to progress from an experimental phase using small areas to areas covering several hundred hectares.

Akuo Energy promised that it would be just an 'orchestrator of technologies' in order to help solve local problems. We went against this principle in the field of agriculture where we thought that we had to assume our responsibilities in order to speed up ecological transition. We have created agricultural companies whose purpose is to intervene throughout the chain, including accompanying farmers, distribution, implementation of short circuits, supplying organic products to school canteens, and so on.

In the energy field, we have created a crowd-funding platform, Akuocoop, which makes it possible for people to invest in local projects and to be part of the transition. The law allows this sort of scheme to pay its lenders 4% annual interest over a period of four years. Because renewable energies have become sustainably competitive, they therefore no longer present any risks, and can be sources of financial innovation. The range of possibilities is wide open!

Discussion



The road to an innovative ecosystem

Question: *You have the distinctive characteristic of associating digital, ecological and energy transitions as well as guiding your innovations towards uses. These sorts of qualities are unusual and might be very useful to researchers. Do you work with laboratories? How do you follow the progress of new technologies regarding renewable energies?*

Éric Scotto: Akuo's role is to produce energy using economically viable technologies. It is a small company which does not have the means to finance an R&D department. Our research principally consists of watching and listening to what goes on in the field in order to identify technological solutions adapted to local situations. It is really just a question of common sense and observation.

At the same time, we take part in the promotion of research workers. I am on the board of the World Alliance for Efficient Solutions founded by Bertrand Picard which is a collection of one thousand disruptive solutions whose aim is to change the planet. We encourage members of this group to meet each other, work together and make themselves known to the global financial community.

We also pool our feedback and make information about all our projects throughout the world accessible ('open source'). For example, farmers in New Caledonia can benefit from the expertise acquired by their counterparts in Réunion regarding the tricky question of adjusting the brightness in greenhouses with solar panels, without having to experience the same learning curve.

Securing investment in renewable energy

Q: *How do you finance an activity as capitalistic as yours?*

É. S.: It is true that our activity is very capitalistic because it is directly correlated with the assets we have. Today they amount to 2 billion Euros.

When we created Akuo Energy, we knew that five or six years later we would be faced with the same difficulty as was faced by Perfect Wind in 2005: there would be a large portfolio of building projects, but we would lack the cash. Our independence is very important to us, and we did not want to be floated on the stock exchange or to be bought out or to have to call on an investment fund. This is why we created a second axis which is not industrial but financial, and may help our growth. Industrialists in the nineteenth century did the same by creating banks when they were unable to find the money necessary for their investments.

In our profession, risks, such as development, tend to appear in the early stages. They are more marginal later on, once contracts have been signed. Therefore, it becomes easier to find investors. In 2008, we created a management company, designated as such, and raised funds to finance the investments in the upstream phase in particular. Since then, we have been constantly innovating in this sector. For example, we launched the first venture capital investment company entirely devoted to renewable energies.

We also managed to change the moratorium on the financing of solar energy to our advantage. After it was declared, we only had nine months to build some of our projects which were in our portfolio. Had we exceeded the time limit, we would no longer be able to sell our electricity at a high price. We decided to focus on ten solar energy plants, producing 85 megawatts the construction of which was feasible in nine months. This experience showed us how comfortable it was not to be dependent on investors during the construction period. It also transpired that on delivering a functioning power plant, we reduced their expectation of return on investment because the plant was operational. We continued this reasoning by raising money intended for mezzanine finance – in the knowledge that we shouldered the risk of the construction, and only asked investors for help afterwards. In this way, we created the first French ‘green’ bond. We are now on our fifth.

Our very last product, the Akuo Carbon Fund, a mezzanine debt fund, rewards the companies which have been the most virtuous according to their carbon footprint. A company can invest in this product. This product puts equity into a company project which has already been built, such as a wind turbine farm in Croatia. Apart from the interest he receives, the investor may improve his image by publicising this quantifiable, voluntary and concrete act of neutralising its CO2 emissions.

Q: *In France, is project financing still a constraint or do you now have a sufficient number of investors who are ready to follow you?*

É. S.: Financing is still a constraint. I try hard to show that the dynamic of which we are part will become increasingly important, that it does not present any risks and that the externalities which we generate are essential to the durability of our projects and of the company. Little by little we are managing to attract an increasing number of investors, however it is still a struggle, but it is easier today than when we started.

Q: *Is your shareholders’ profit similar to that in other industrial sectors, without having to make sacrifices? What about the return on equity?*

É. S.: Profitability on equity for a renewable energy project is linked to the geopolitical and financial context of the country in question, as well as the level of risk and the nature of the market. In France, no company would be sufficiently competitive to win a call for tenders if it promised its investors more than 5 % profitability. In Montenegro, where we have just built the country’s first wind turbine farm, the shareholders hope for a return greater than 9% or 10%. In Mali, I am trying hard to attract investors to accept a return of less than 10% by explaining to them that low-cost energy is advantageous to the country, and indirectly to the security of their investment.

Apart from project profitability, one must measure all the related advantages of projects. For example, a health insurance company will want to know more about the underlying impacts of our action on a local scale which help to structure and provide security for the future of an area – and therefore for the revenues the company will be able to make in the future. We receive no financial profit from the positive externalities to which we contribute. This is not to say that our approach is impartial because these externalities constitute a stable component of our economic model in the long-term.

Unfounded accusations surrounding renewable energies

Q: *Your calm talk is in sharp contrast to the serious ‘turbulence’ affecting the energy world. This includes a drastic fall in the purchase price of solar energy which has led to countless bankruptcies. The economic and financial balance of the provision of energy has been shaken by the intermittent nature of renewable energies. Wind power has been criticised for damaging the natural environment.*

É. S.: The emergence of a new sector inevitably unleashes made-up stories and sensationalism: people even claimed that wind turbines made cow’s milk turn sour! Contrary to a misconception, the fall in the purchasing price of energy has not resulted in bankruptcy, but its suddenness has made a significant number of companies unstable. Those which failed were new to this sector. The older companies whose projects were subject to direct financing and had a solid business plan survived. Therefore, the banks did not have any non-payments on the 1,000-megawatt plants which had been built prior to the fall in purchasing prices.

Ten years ago, when we invented a solar roof tile in Perpignan, each kilowatt-hour was sold for 50 centimes. This price was high because of the importance of necessary investments during this phase of the market launch. We had to allow for a new industry to establish itself and those involved to invest. It is a fact that in France, policies about solar energy, with a subsidised energy price, involved the production of less than 1,000 megawatts. I do not challenge the moratorium but I do contest the method used to impose it. The government knowingly waited for EDF (who at the time had the most permits) to build the largest number of plants possible before blowing the final whistle. Subsequently, prices fell drastically. The most recent calls for tender in mainland France were, on average, 7 centimes per kilowatt-hour, and even at this price, companies are able to make a profit !

In response to the claim that wind turbines disfigure nature, I would remind people that in France there are 230,000 high-voltage pylons and 14,500 water towers. Even though they are not aesthetic works of art, we have got used to them. In fact, we work with landscape architects to ensure the most harmonious installation possible of wind turbines. Perhaps mistakes were made in the beginning, but practices are improving.

Regardless, France does not need to be covered by wind turbines. What is important is the abundance and the synergy of the resources exploited. For example, wood biomass opens up very promising possibilities. It enables the production of electricity and heat, and helps industrialists to understand an essential element of their production costs, heat and steam. One has to understand this in order to limit the amount of carbon being released.

Q: *Since storage solutions are still in the early stages, it seems very unlikely that networks the size of France can do without diesel production, combustion turbines, combined-cycle stations, or even nuclear plants. Similarly, in order to help growth, developing countries will need to resort to nuclear energy or to stock massive quantities of CO2.*

É. S.: We can no longer look at networks in the same way that we did before the Internet revolution. Today, our weather station, our power plant and our batteries operate constantly in a network. This means that we can guarantee that EDF, in accordance with its specifications, will have a linear increase in production, then plateau off, and then decline. Because of storage, we can change an intermittent form of energy into a very predictable source of energy. It is a major advantage for EDF to be able to rely on millisecond adjustments in order to carry out frequency and power support, compared to a combustion turbine which requires fifteen minutes to increase in power before being able to provide the same support.

In the beginning, storage was very costly but its price has been a third less over the past five years. Due to storage, we have improved the comfort, management and security of the network, and as a result of the digital system, we have the luxury of being able to control consumption better. Our priority now is energy efficiency, in other words the energy economy or the ability of the network to offer demand response services rather than adding capacity all the time. Current tools exist which make this possible. Enel recently bought the leading American smart energy provider, EnerNOC for \$250 million.

When we started operating in energy storage six years ago, we used the lithium-ion standard battery used by large companies such as LG and Samsung, in order to bring viable solutions to our regions and our bankers. At the time these batteries were regulatory tools and not for nocturnal production. Today, in Indonesian villages,

we are installing equipment which is a mixture of solar energy, storage and a small diesel-fuelled emergency generator which usually already exists, but has been renovated. In the space of a year, 90 % is produced because of the solar and storage energy which is now less expensive than that of diesel production!

We should put to bed the myth that the network will develop in Africa and Asia as it has done in Europe. It is the opposite. Africa and Asia will have mini, decentralised networks scattered throughout their continents. Electricity will no longer be transported over hundreds of kilometres as it was in the past. Electrification in rural areas will change the situation in numerous fields such as health (due to the servicing of dispensaries) and education, and could help to stop the rural population exodus. As far as this is concerned, the key to success will be in granting loans at low interest rates which will mean that the price of electricity, energy and the financing of the transition will remain reasonable.

Finally, new solutions for storage are plentiful, beginning with pumped-storage hydroelectricity and the use of ashes from biomass power plants. We will therefore continue to progress in our ability to manage the network in a very precise way.

What energy mix for the future?

Q: *At a cost of 45 Euros per megawatt-hour, nuclear energy is still less expensive than ground-level photovoltaic energy (65 Euros per megawatt-hour), and less than photovoltaic panels on roofs which can cost as much as 150 or 200 Euros per megawatt-hour. ADEME (Agency for Environment and Energy Management) forecasts (banking on 100 % renewable energy by 2050) base their hypotheses on halving energy consumption in France, and state that it will be necessary to import electricity from time to time. Under these circumstances, is it morally correct to announce a transition towards 100% renewable energy?*

É. S.: I think that this estimate of the cost of nuclear energy at 45 Euros megawatt-hour is totally inaccurate, and I would like to know what exactly it includes. The reason today that France is attempting a complete energy revision is because it was unable to fund the dismantling of its power plants safely. It is clearly easier to keep operating them. I do not dispute the choice which France made with regard to nuclear energy, as it did so consciously and at a specific time in its history, and it has brought many advantages. Today it is not a question of opposing renewable energy with nuclear energy, but managing this transition in a context where nuclear power is no longer economically competitive. We have to work together, maybe even by using nuclear power in order to speed up the changeover, and favour the use of renewable energy rather than fossil energy sources.

ADEME suggests two possible scenarios: one is where France is 100 % dependent on renewable energy by 2050, and the other is where France is 50 % dependent. Maybe it is exaggerating, but it is undeniable that technologies are advancing at breakneck speed. These scenarios anticipate a change in behaviour. It is already noticeable that the young generation is not interested in cars, for example. The French Electricity Union is deceiving itself when it states that we are heading towards an energy mix composed in equal parts of nuclear and renewable energies for 2030 or 2035, in a context where French consumption will have doubled by then because of electrical mobility.

These internal squabbles are of little importance. Thirty years ago we were able to be self-sufficient thanks to nuclear energy. I hope that once again we can mobilise ourselves in order to assist in a new, more economical and long-lasting scenario for the country. I am convinced that a massive transition towards renewable energy is possible. It will all depend on our ability to innovate and change ourselves. In fact, Enedis, EDF, RTE (*Réseau de transport d'électricité*) and all the companies involved in energy are working towards this. For example, the solar-powered plant generating 24 megawatts installed by Akuo Energy on the Verrerie Plateau in the *département* of the Var is connected to an RTE control room. It is a success, and RTE have asked us for more orders.

The future of renewable energies in France, and our ability to increase their share or production depends on one sole factor: the decision to restructure our energy mix and close our nuclear power plants. If we do not do this, it will not be necessary to have more means of energy production in France. This is a political choice but it is becoming increasingly an economic one. This is why I am optimistic. The economic battle has already been won.

Q: *What sort of photovoltaic development do you anticipate in France, notably on rooftops?*

É. S.: In order for there to be more solar panels on rooftops, they have to be aesthetically pleasing. This is Elon Musk's opinion. He is the president of Tesla, and he launched photovoltaic roof tiles in the United States. About ten years ago, we fitted tiles to the roof of the Saint-Charles market in Perpignan which look like slate. We did get very much further than this stage because the industrialist to whom we gave the licence did not manufacture the product according to our specifications. It was probably too early in the process. We have just regained the licence to use these tiles. This solar tile was chosen by one of the largest companies in the world for the renovation of its headquarters, and it has a production of several megawatts. We have also launched a competition between the most well-known architects to find the most aesthetically pleasing solutions.

Akuo Energy is also developing floating solar energy for dams and reservoirs, with the aim of reaching a price similar to that of ground-level solar panels. We are working on projects like this with the Indonesian government and the parliament of Western Australia. There are multiple advantages to this solution: it uses a space where the surface area is not used; it avoids evaporation; and it ensures a cooling of the panels which enables greater energy production.

Q: *Has Germany won its energy transition bet?*

É. S.: Germany has shown courage. It has taken difficult decisions which have negatively impacted on a large number of well-established companies. I think that it is starting to win its bet. Its CO₂ emissions are not as significant as some people say. It is very advanced in offshore wind power and has eighty projects at sea for a price of 49.50 Euros per megawatt-hour according to the most recent calls for tender. This energy is particularly interesting in terms of load factors and the fact that it is not intermittent. German farmers are also specialists in biogas. Unlike France, Germany is marked by a culture of energy independence and decentralisation. As far as we are concerned, we preferred to rely on EDF's centralised service. I think it is time to invent a new model.

■ Presentation of the speaker ■

Éric Scotti: President and co-founder of Akuo Energy having been an Internet pioneer. Akuo Energy, the leading independent producer of renewable energy develops, finances, builds and operates power plants and also puts forward solutions to regions where the company has sites.



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