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Weathering Decarbonization | Episode 1
Robin Girmes, Founder & CEO, Enwex

This week, we kick off our new series *Weathering Decarbonization* with Robin Girmes, Founder & CEO of Enwex. David Greely sits down with Robin to discuss his work at Enwex to better measure and help companies manage the growing weather-related risks to our power supply and energy prices.

Robin Girmes (00s):
I see weather as a new asset class, new in terms of acceptance, not really as a product. We have talked about 30 years history, but I think it will be recognized as an asset class for hedging now. In my role here, I hope to introduce the standard, at least for exchange traded products.

Announcer (19s):
Welcome to SmarterMarkets, a weekly podcast featuring the icons and entrepreneurs of technology, commodities, and finance ranting on the inadequacies of our systems and riffing on ideas for how to solve them. Together we examine the questions: are we facing a crisis of information or a crisis of trust, and will building Smarter Markets be the antidote?
This episode is brought to you in part by Abaxx Exchange, bringing better price discovery and risk management tools to navigate today's commodities markets through centrally cleared, physically deliverable futures contracts in energy, environmental, battery materials, and precious metals markets. Smarter Markets are here.

David Greely (01m 08s):
Welcome to our new podcast series, Weathering Decarbonization on SmarterMarkets. I am Dave Greely, Chief Economist at Abaxx Technologies. Our guest today is Robin Girmes, Founder and CEO at Enwex. We will be discussing his work at Enwex to better measure and help companies manage the growing weather-related risks to our power supply and energy prices. Hello Robin. Welcome to SmarterMarkets.

Robin Girmes (01m 37s):
Hello David. Thank you very much.

David Greely (01m 39s):
Well thank you for joining us. Decarbonization efforts are moving us towards a more electrified energy system powered by lower carbon fuels and renewables. And on this podcast series we want to discuss how we are weathering that energy transition and the new challenges and risks it's creating Now, for example, the increased use of renewable power generation from wind and solar is making our power supply more exposed to the variability and wind and sunlight. And that's what I would like to talk with you about today really how do we measure and manage weather related risks to energy, supply and demand, including wind, solar, and with this winter temperature. But before we go there, I would like to just take a step back and ask you what got you interested in weather and energy and how did you get started in these markets?

Robin Girmes (02m 35s):
Thank you for the introduction and those questions. So actually I started very early to be interested in weather. Key was maybe to be to learn some sailing in my youth. So it was quite direct impact on your performance there. Reading the winds, understanding some stuff around that. Into the market, into the energy sector, I came after my studies of geography. It was indeed and I always wanted to go more to the severe weather part. It was more or less by accident coming into that business with the energy sector.

David Greely (03m 12s):
And how do you go from studying geography and being interested in sailing to being in the markets? What took you there?

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Robin Girmes (03m 22s):
Indeed, meteorologist is not a safe wording as a mature profession. So I was hired indeed as a meteorologist. I always was interested in the weather as named and I managed to also do my diploma thesis in a meteorological institute in a university in learning their languages like statistics and programming. From that point of view, I always kind of adopted to a methodologist besides for the physics, but had a kind of let's say comprehensive view then, which helped me out in the energy sector understanding the commercial aspect of buying and selling power, gas and all the other fields compared to what is weather providing as a fundamental for it for the pricing.

David Greely (04m 10s):
And when you first started in the energy markets as a meteorologist, what aspects of weather was your company most interested in you helping them understand?

Robin Girmes (04m 20s):
Yeah, indeed that was a bit different compared to now. So started in 2007 at a large German utility, which was quite entrepreneurial. It was the third of the meteorological team in those days I think it was with one other company, the largest in Europe, team of meteorologists. And in those days there was the first time for Germany that a really severe storm was able to provide 10 gigs of wind power and everybody was scared and upset about that. That's in comparison to 60, 70 gigs of maximum demand in Germany in the market. So such a share was unused and especially engineers but also partly traders tried to start understanding what is happening there with my risk with my balance sheet. And that was let's say the initial step when entering that market.

David Greely (05m 15s):
And how is the role of weather related risks in energy markets changed over your career?

Robin Girmes (05m 22s):
Massive. So sticking with Germany, but that's being representative for Europe as well. Sometimes with just short, sometimes with a bit more long term lag period. So in Germany they initially managed to introduce and install quite some wind power capacity. Some years later it was added by solar. Some years means the first really let's say significant impact of solar started around 2010, 2011. And that was then not yet the mixture we see now and that's up and downs in pricing, but especially the plant owners understood that they more and more turned to a kind of residual, yeah, that they do not drive the market anymore but have to work on those times when renewables wind and solar are not delivering. This is different from market to market in Europe. Yeah, so in the German market it's quite wind and solar driven. Other markets like France are more hydro driven added by some wind and so you can distinguish country by country which by the way is one of the most challenging and interesting parts of that job being meteorologists in the energy sector.

David Greely (06m 40s):
And so now we are in a situation where the variability in the wind and the solar and in the case of France and the hydro is forcing the rest of the system to adapt. Is that right? So like the natural gas has to come on or other sources and I guess that could be expensive if there is a big shortfall, is that right?

Robin Girmes (07m 01s):
Yeah, especially as they were not used to have any flexibility. So nuclear plants or lignite plants, they were used to one 24x7 really providing base load and all of a sudden they had to really wind address how fast they could react on changing weather conditions. So typically ramp up or down of solar with its negative print in the power plant production was a challenge and still is. So the flexibility is still lacking at least from the conventional fleet. And this is maybe one of the largest challenges in the current markets as well.

David Greely (07m 41s):
And you're the Founder and CEO of Enwex. So I wanted to ask you why did you start Enwex and what role do you see it playing in the market?

Robin Girmes (07m 49s):
Enwex is an index provider, index provider for, let's name it, weather derivatives, have 30 year track records, especially CME is providing them since nearly the very beginning. But from my point of view, they never represented trading volumes compared to the risks associated to weather. So the structure of these products was maybe not ideal. It was mainly thought as least with the CME products which I traded in those days at the German utility. They were structured to meet let's say gas market demands in America with HDDs

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CDD or these structures which were just copy pasted for Europe. But Europe is a bit different in that it's not continental climate. You have let's say a correlation of nearly 0.9 between those stations which were tradable London, Paris, Amsterdam, Essen, they are too similar so it doesn't really matter which one to take. It was not able to provide liquidity, location spreads everything, what is a kind of trading activity In the end it was purely some hedging activity.

Robin Girmes (09m 00s):
When we traded it in those days the only liquidity pool was here and there in auction, which we launched to do a kind of risk transfer from the power plant fleet. We tried on really proprietary trading as well, had to do that for US locations and even there it was more or less not possible. And since then we talk here about 2010, 2012, nothing has changed and that is not satisfying to me. I was always a bit fed up with that concept and always we're in discussions with exchanges also in the meantime and when after I left that utility in 2013. But concepts like from the NASDAQ, from EEX, from other exchanges, which were probably with their ideas of wind futures a bit too early in the market now it seems like a sweet point, let's say this way of how the markets get aware of that type of risk. They're weather related, they're volatile. And on the other side also the volume needed to mitigate in all of these installed capacities of wind of these extreme ramp ups in solar and sometimes as on this winter also with the non-reliability or planning possibility on temperatures. So you have multiple parameters which could go against your balance sheet and therefore you need a trading tool.

David Greely (10m 25s):
Well timing is everything and you said you are taking me back earlier in my career I remember the HDDs and CDs and very much aligned to the US natural gas market and how much gas would be needed for heating, how much for power generation, for air conditioning. Your indices are very carefully aligned to how power is traded. Why is that so important now and how did you build that into the design of your indices? How are they aligned to the way power is traded in Europe?

Robin Girmes (10m 59s):
I think I tried to do some lessons learned of at least of those lessons I learned in my trading career. And one lesson was mainly, hey, nobody understands that structure who is not originally out of the weather segment. Yeah, so if you want to discuss with a gas trader the timing of flipping from HDD to CDD in Europe, they were lost usually. And therefore I tried to leave out all that metrological, let's name it, needs, to really simplify structure to trader's thoughts. First step, do day-ahead settlement. Yeah, so usually it's a day-ahead settlement in most markets for gas or power. So you can't rely on observation data anymore as used with structures as we know so far. But they had forecast of weather parameters like temp, wind, or solar are usually with a very high reliability depending on the model you choose and therefore we have chosen the best model available from ECMWF, the European one.

Robin Girmes (12m 07s):
So second step, do countrywide or hub wide averages. Why, focusing on a single location. Sometimes absolutely not representing the demand region or having too many situations per year where it doesn't fit. Yeah, either for winds which is even more complicated but even for temperatures the most simple parameter out that weather. And as a third one try to do multiple of hours. Yeah, so everybody's trading multiple of hours in gas or power by doing monthly or seasonal strips, which you can't cascade. Cascading is important. Mitigation we have a position for a yearly contract to say, oh should this winter is getting colder, I need to continue buying or selling. You are able to do that in monthly strips, adding to your position, which so far was not that easy to do. Now it's way easier.

David Greely (12m 59s):
And you mentioned that you have indices for wind, for solar and also temperature in terms of how you measure those factors and build it into an index. How are these similar and how are they different?

Robin Girmes (13m 14s):
Yeah, they differ a bit country by country. So the easiest one is temperature. Yeah, temperature is driven by the share of population weight. Yeah. You have an area like a country for example, staying with Germany, and you have some provinces and the share of this province to the total population is the share in that index with that logic but not demand driven but supply driven. It's the same for wind and solar. So the share of installed capacity per province is taking a share of the countrywide mean. Having said that, of course this is differing from country to country. Yeah. Some are more concentrated, some more depending on the parameter. For example, in Germany again south having more solar installed capacity, wind being focusing on the northwest. So you have to distinguish here. So spatial distribution is different. On the other side it's partly as well how to handle those parameters.

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Robin Girmes (14m 14s):
It's not for temperature. Temperature is just linear in that index. Yeah, it's temperature is your index weight valuation, but you have to somehow translate the radiation to get a solar production with any coefficient. We took it linear here, and using the radiation output of the model multiplied by a linear coefficient. And this coefficient is different per country. It partly depends on the age of the installed capacity. Yeah, so you have for example in Germany, relatively old one on the average of the fleet. Same for Italy, partly for Spain and you have very young ones like Netherlands, like Poland with maybe from the technological point of view, better modules. Yeah, not aged that strong. So they usually have a bit higher coefficient. And to get to the correct coefficient we usually do back testing, we try around with coefficients, compare it to installed capacity and power production and find the sweet spot where mistakes are minimal.

David Greely (15m 23s):
Who are your clients for these indices and how are they using your weather indices to manage their weather related risks?

Robin Girmes (15m 32s):
It's a very broad coverage for different even different industries. Yeah of course the energy industry adhere distinguishing between commodity trading companies, big oil utilities. Of course some direct marketers, not yet the grid operators, they are not that commercially driven but otherwise from large to small, the utility side, the smaller ones starting to join as well. So it's quite a broad coverage. Then this is added by insurance companies especially. So risk takers and I would also name risk taking sides for those hedge funds being interested to participate in the market values. There are quite some around which also want to have risk, having risk appetite. We want also to address some other industries. So let's say weather dependent for example on temperature or preset these hours where agriculture, tourism, transport, you name it. But there is one thing on the energy side which is getting a bit in a crisis currently those so-called power purchase agreements, PPAs, because of their very bespoke but non flexible structure. And Enwex as well here is maybe a door opener to get them more flexible by standardization to mitigate them into a trading product which is used by quite some companies yet mainly bilateral and also becomes probably exchange traded product soon. So from that point of view, we here provides several types of solutions and one of them is also that power purchase agreements for green power.

David Greely (17m 20s):
And I would like to get into the power purchase agreement piece because it feels like what often happens in the early stages is somebody ends up holding a lot of the risk, right? Like either it's the purchaser and hey, if power prices go up, power prices go up or maybe the utility is under some sort of regulatory pressure or market pressure to try to keep prices stable so they are holding all the risk, who is holding the risk now when it comes to these weather related risks and obviously the weather derivatives are a way to try to move that risk to someone who is in a better position to hold it, whether it's an insurance company or a hedge fund. Where is the risk concentrated now?

Robin Girmes (18m 03s):
It's quite different. So partly it's state owned with subsidies still being in place in some countries and Germany still for quite a part of the wind fleet and solar as well. Even worse. Sometimes this risk is on the producing side, sometimes mitigated via direct marketers to the market. Sometimes it's on the consumer side and volatility just gone through all the pipeline down to the consumer. So it's a broad bundle of potential risk takers and therefore from my point of view we also have clearly two sides which could work on the market and so the market should be complete and this is maybe the difference to 10 years ago with earlier attempts to get wind or solar traded.

David Greely (18m 57s):
And how big are these risks to these companies, to the states, to the individual? I remember a lot of us heard when the natural gas got cut off to Europe, not weather related, but when that event happened, clearly it drove home for people that people need to be able to heat their homes, they need the lights to come on when they flip the switch. So how big are the risks that weather can pose to these companies and these countries?

Robin Girmes (19m 26s):
They are huge. So let's name an example maybe on the temperature side as it's maybe the easiest to understand. Just one utility representing goods share on the European or on the German market at least, but a large player there are risks of having one degree per day differing to normal translating into upper seven digit figures. So having a cold snap like the current one and being maybe not completely covered with gas can cost them three digit millions within a week. That's no problem at all. PPAs are tricky as well. You have often a fixed price level more or less in your books and something is happening like 2022 on the Russian war in Ukraine and gas prices tenfold and reside also power production by gas sometimes needed capture rates collapsed. So it has often also some passive effects

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on your balance sheets, which are tremendous. Yeah, if you have let's say 100 megawatts wind park and the PPA for 10 years, these are around about 10 I think if I calculate it right. So multiply this with a power price and we have tremendous valuation issues.

David Greely (20m 49s):
And coming to this winter, many of us in parts of North America and Europe are experiencing a fairly cold winter. I was just curious what are you seeing in terms of weather and the impacts that it's having?

Robin Girmes (21m 01s):
Yeah, we have relatively disturbed circulation this winter. Initially it had a hard job to come into play as a westerly, so didn't do so until end year. Then there were some weeks of at least upper atmosphere activity with westerlies. But this exactly was period where there were depletion of arctic cold down to the US to initially Europe and US now back to Europe probably again. So in some, most areas will not face a significantly colder winter than normal if you take the entire heating period from beginning October to March. But some of the periods in between are unused, were not used to it anymore. Yeah, like the last week on the US or also recent 10 days around biotech sea region and maybe one or two more cold shots to come dominantly probably or highest here on that for Europe.

David Greely (21m 58s):
And I think people have seen natural gas prices go up. I'm just curious, this isn't necessarily the main focus of yours, but what do you make of what's happening in the energy markets given the cold weather we have had?

Robin Girmes (22m 10s):
Yeah, they turn a bit nervous so it's going up and down and relatively fast after each other depending a bit on the weather forecast. And this is a sign for some sensitivity, some tightness potentially being worried about and this is true especially within code space locally in certain trading hubs as we have seen in the northeastern states in the US last week, but maybe as well on relatively fast depleting German gas storages and risks in the late season or maybe not that intense, but any small culture also to turn directly into risk due to the small amount of residual.

David Greely (22m 55s):
I think we see that there is more weather related risk or the amount of weather related risk has grown and then there is always trying to break it out into is there a part that you know with climate change, weather patterns are changing and weather itself may be becoming more extreme and more volatile. And then there is the other piece of, well are we more exposed to weather than we have been in the past because our energy system is using more solar and wind. How do you think about those two pieces? Maybe we could start with the variability of the weather itself and then our exposure to the variability because of how we're changing our energy system.

Robin Girmes (23m 42s):
On the variability of weather it's, we are in a warming environment but that doesn't rule out some events to turn out very cold. But in a warming environment usually you have more moisture being able to suck up by the air and therefore to deplete as strong rainfalls. But on the other side, circulation is slowing down on average and sometimes weather pattern are more persistent than we have seen 30 or 50 years ago. So the same pattern to repeat and repeat and repeat, you know, especially from summer pattern at least in Europe can cause issues. And on the other side, this second part of your question and I know it let's say from the theoretical point more as vulnerability. So we are more exposed to those potentially not too much changing extreme sides of the weather or deviations from normal, which is more important in the energy sector.

Robin Girmes (24m 41s):
But on the other side, vulnerability is, let's say if everybody lives at the coast of the sea level is rising, they are vulnerable. But on the energy sector it's on the one hand that huge production new build which is needed, everybody is changing to power is the key fuel and will be added by the heating sector and the mobility sector. Okay, mobility sector, having the chance to also provide storage, you can run around with their car being storage, that's a nice idea. But on the other side the need for power production is heavily increasing and more and more relying on the volatility driven by weather and that is of course an issue which you need to mitigate and therefore weather derivatives are a very good idea on that. Especially on those features which are not just a topic for one or two days but maybe a seasonal deviation, a too dry winter in Nordic, too dry conditions maybe in summer for southwest and central Europe which appeared several times in recent years has so many implications that it really makes sense to directly hedge the weather.

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David Greely (25m 56s):
And you mentioned precipitation and we have seen quite a few events in recent years where there's been extremely heavy violent rainfalls, flash flooding, that have cost a lot of property damage and lives. And we have been focused mainly in this conversation on the impact on the energy system and is it increasing the demand for energy or decreasing the supply. But I wanted to ask you, you know, when you think about other weather related risks, is that an area you're looking into, precipitation and how people might use these indices and weather derivatives to try to help ensure property, I guess would be one area?

Robin Girmes (26m 37s):
Yes, we are in discussions here with market participants of different markets, especially on the precipitation. Because here standardization, you have to be a bit more careful than for the pure energy related like wind or solar. That parameter precept is used and complicated by quite some different industries. So you have a freezing level, you have snow accumulation, you have melting period, you have loose lever effects, you have whatever going too much into detail is an issue here. So you either have to concentrate on the part ending runoff like rivers also and transport and power production of course, or you have to address it more to the tourism agriculture part, which is more the entire coverage of a country. We have quite some ideas here. We'll come up with preset indices as well probably within this year, but there were a bit more complicated therefore they're lagging the other parameters currently, which were easier to standardize or closer to energy markets where I come from.

David Greely (27m 40s):
And you mentioned as well that you began in Germany because that's where you come from, but I am curious like what geographic regions are you focused on now? Where are you currently expanding your coverage, and where are you looking to expand the coverage of your indices?

Robin Girmes (27m 56s):
Yeah, there's so many interesting countries around on different stage of introducing renewables as a key power source like Australia, like us, parts of US hubs like especially ERCOT. Eastern Europe is not represented too much yet. So we introduce Poland now, which is also very interesting market, but also in southeastern Europe things are growing. Asia, I hear more and more about some countries in Asia also really picking up in the installed capacities besides just Japan, Korea and China, also Vietnam, Cambodia, and so on. So yeah, we are trying and we succeed and really establishing indices here for those countries as well.

David Greely (28m 42s):
And you mentioned ERCOT, which for people who may not spend a lot of time in power markets is basically Texas, the Electric Reliability Council of Texas. Why was Texas interesting to you as kind of the first place in the US?

Robin Girmes (28m 56s):
Oh, because it's heavily penetrated by renewables as well to very much installed capacity of wind and solar and handled way more similar to European markets, for example, in contrast to California. California also is interesting, but ERCOT is a bit more similar to stuff we are used to from Germany, from Spain, from the UK, from those liquid trading markets in Europe.

David Greely (29m 21s):
And are you seeing a similar interest in the indices coming from that area from the participants?

Robin Girmes (29m 27s):
It's relatively fresh, the feedback from the market here, but it seems to be maybe similar to Germany, so on the top-level, absolutely yes. So in Europe, it's Germany ahead of the UK ahead of then let's say Netherlands, France, Spain, and ERCOT seems to be on Germany level yet.

David Greely (29m 48s):
Appreciate you being here for this conversation. Wanted to ask you one more question before I let you go and that's how do you see the weather markets, the weather derivative markets developing over the next, call it five years, and what role do you hope to see your indices play in helping those markets develop?

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Robin Girmes (30m 07s):
I think several markets need to rethink their view on weather, not just to think about it as risk, but also as opportunity of course, but let's say a real ability to hedge against the volatility. Yeah, we are always talking about deviations from normal in the energy sector and especially the weather type, which is presented and therefore weather derivatives are really the natural structure to handle and mitigate against these risks. On the one hand, for PPAs, on the other, maybe to reintroduce sigmoid functions on gas, again, those quasi linear functions of gas demand, which are easily representable with weather derivatives. And we have the change in the gas market from a kind of oligopoly to a more and more globally traded market and attracted by prices, driven by COVID payers either in Asia or Europe or so on. So mitigate with your positions with weather derives and there are so many use cases.

Robin Girmes (31m 09s):
For example, if you have too much installed capacity compared to your grid capabilities, you get curtailed. You don't earn money on that. There is cannibalization, cannibalization of too much volume out of weather and your prices are collapsing faster than the volume increase. Mitigate using the volume as a weather derivative as a hedge. Yeah, so use cases where look at, and that's just here for, for power and gas. There's so many industries around also facing those weather risks. So I see weather as a new asset class, new in terms of acceptance, not really as a product. We have talked about 30 years history, but I think it will be recognized as asset class for hedging now. In my role here, I hope to introduce the standard, at least for exchange traded products.

David Greely (32m 01s):
Thanks again to Robin Girmes, Founder and CEO at Enwex. We hope you enjoyed the episode. We will be back next week with another episode of Weathering Decarbonization. We hope you will join us.

Announcer (32m 15s):
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