

How Data Is Transforming the Energy Sector



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One German utility company has taken the lead in transitioning to “embedded, scaled and disrupted” AI.

A new energy industry is busy being born. Steadily, the sector is pivoting from a centralised and monopolistic system dependent on fossil fuels to a renewable, sustainable energy grid. (Whether this shift will be quick and decisive enough to have a meaningful impact on [climate change](#) is another matter - one of existential importance.)

One can hardly overestimate the level of disruption this prospect presents to the major industry players. It would end a long-standing business model with clear-cut producers and consumers of energy. Instead, those two categories would often overlap. For example, the global stock of electric vehicles is expected to reach [250 million by 2030](#). They will spend most of their life

cycle not on the road, but in parking lots or garages. During their downtime, they could serve as a vast energy bank for the grid to draw upon during times of peak demand. A new type of energy players may emerge: that of “prosumers”, both consuming and distributing energy.

At the same time, regulating an electrical grid increasingly composed of renewables has its share of difficulties, a chief one being the erratic availability of solar and wind power. Keeping the lights on will require careful distribution of resources across space and time. That is where data and AI come in: They can optimise production and distribution across a complex emerging network of prosumers in real time – a type of “energy internet” – according to the latest and most reliable data. As Karsten Wildberger, Chief Operating Officer and board member of E.ON, a major provider of energy solutions and critical infrastructure, pointed out: “The future energy world will be decarbonised. The question is how fast can it happen and how can this be orchestrated with digitalisation?”

For the energy industry, therefore, it is almost literally true that “data is the new oil”. In the future, competitive advantage will belong to companies with the best deployment of data and algorithms to operate effectively and efficiently in the global energy ecosystem, rather than to those who are able to dominate large markets through sheer size and strength. Getting there will require a major data- and technology-driven transformation for today’s energy companies – if they are to respond to this data revolution better than incumbents in other sectors that have been “Amazoned” by new technology players.

Our new case study, “[E.ON: Building a New AI-Powered Energy World](#)” ([PDF](#)), explores one company whose transition to a data-centric future is already well underway. The case provides lessons on how to successfully lead and manage the AI and data journey of an organisation both for energy sector companies and beyond.

E.ON: Past and present

Based in Essen, Germany, E.ON came into being as the result of a merger in the year 2000 between two companies controlled by the German state, VEBA and VIAG. As of 2019, E.ON has more than 70,000 employees and €41.48 billion in annual revenue.

In 2016, E.ON began its transition in earnest by spinning off the fossil fuel arm of the business into a separate company (Uniper) that was later purchased by Fortum, an energy supplier owned by the Finnish state. Through a 2018 swap deal with RWE, another German utility, E.ON completed its metamorphosis into an energy company focused on energy infrastructure for customers.

During this period, E.ON also made changes to its top team, onboarding a Chief Digital Officer and installing a digitalisation task force at the very heart of the global business. Juan Bernabé Moreno, formerly of Spanish telecom company Telefonica, joined in April 2016 as E.ON's first Chief Data Officer.

In our interviews for the case study, he told us, "I knew this was going to be a tough journey...but at the same time, the opportunity to drive impact was very appealing...When I joined E.ON, AI was a very abstract concept. My obsession was to make it tangible for everyone in the company, highlighting the benefits and the potential."

Data at the forefront

The data team began by developing use cases. It identified so-called "big ticket" projects with high visibility and potential for significant value creation, such as automating maintenance for wind turbines. Having thus created internal demand for its services, the team set its sights on scaling up. The board approved a transformational programme called Data.ON that the team devised based on two main pillars: data evangelisation and data readiness. After all, building a data-driven culture is key.

Evangelisation largely took place through events designed to promote data literacy in the organisation. For example, a "Data Visualisation Day" provided opportunities for E.ON staff to learn more about how to handle data. The data team also held hands-on demonstrations with various business units. By the end of 2019, more than 1000 employees had taken part in a data demo. Also, many more data evangelists were hired to spread the message: Between mid-2018 and the end of 2019, the data team went from ten members to 50.

Data readiness revolved around increasing E.ON's data maturity. Past attempts to leverage the company's rich data resources had fallen victim to the complex structure of the organisation, GDPR regulatory challenges and inconsistencies among E.ON's many markets. The data team formulated a

centralised data governance platform to organise protocols and ownership in a way that was both sustainable and scalable. Data quality processes were at the core, as avoiding the dreadful “garbage in, garbage out” challenge is key at many levels, including building trust in data and technology.

Making the case for this comprehensive data-driven project was not simple. E.ON’s data team had to develop clear KPIs and a process for assessing which AI projects to pursue. It settled on an approach focused on collaboration and value delivery at every stage. First, it created AI prototypes with offline data to demonstrate viable potential. The pathway from prototype to product was very transparent, with the relevant business units assenting and actively contributing step by step.

As Moreno told us, “[Business] experts know more than what you captured with the algorithm; also they are not used to using them. This is a micro change management issue. We tried to overcome this by building trust with the user and making sure they were always in control and not the algorithm.”

Supporting all this requires hiring AI and data talent – for which all companies nowadays compete. Would people choose to join the energy sector instead of the usual suspects, i.e. the internet behemoths? The answer relied largely on “purpose”: what people work for. As Wildberger emphasised, “We are on the cusp of the next energy transition and we wrote the [E.ON story](#) to give people a purpose.”

Renewable trading

An early area of AI application was the daily renewables trading markets through which energy companies resolve disparities between forecasted and actual production and demand. A series of algorithmic projects aimed at reducing the associated commercialisation risks, through improving predictions around intraday pricing trends, surplus or shortfalls in nationwide energy supply, etc.

Future growth

E.ON is striving towards what it calls “embedded, scaled and disruptive” AI. And the financial scheme that supports AI use cases reflects this broad-scale ambition. Initially, the data team was financed out of a centrally allocated budget. Now, the team has been integrated into the larger digital business

unit. With this move, AI was obligated to become self-sustaining, relying on its partners (i.e. other E.ON business units) for revenue in a relationship much like that of vendor and client. It needs to prove its business value in order to develop.

This innovative structure illustrates E.ON's commitment to doing things differently. Of course, whether it will fulfil its future-focused objectives remains to be seen. Johan Mörnstam, Senior VP at E.ON, told us, "The energy business is today clearly much more interesting than compared to ten years ago. I think that from an industry that was seen as old and very conservative, we are now doing things that are relevant for many people across industries."

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