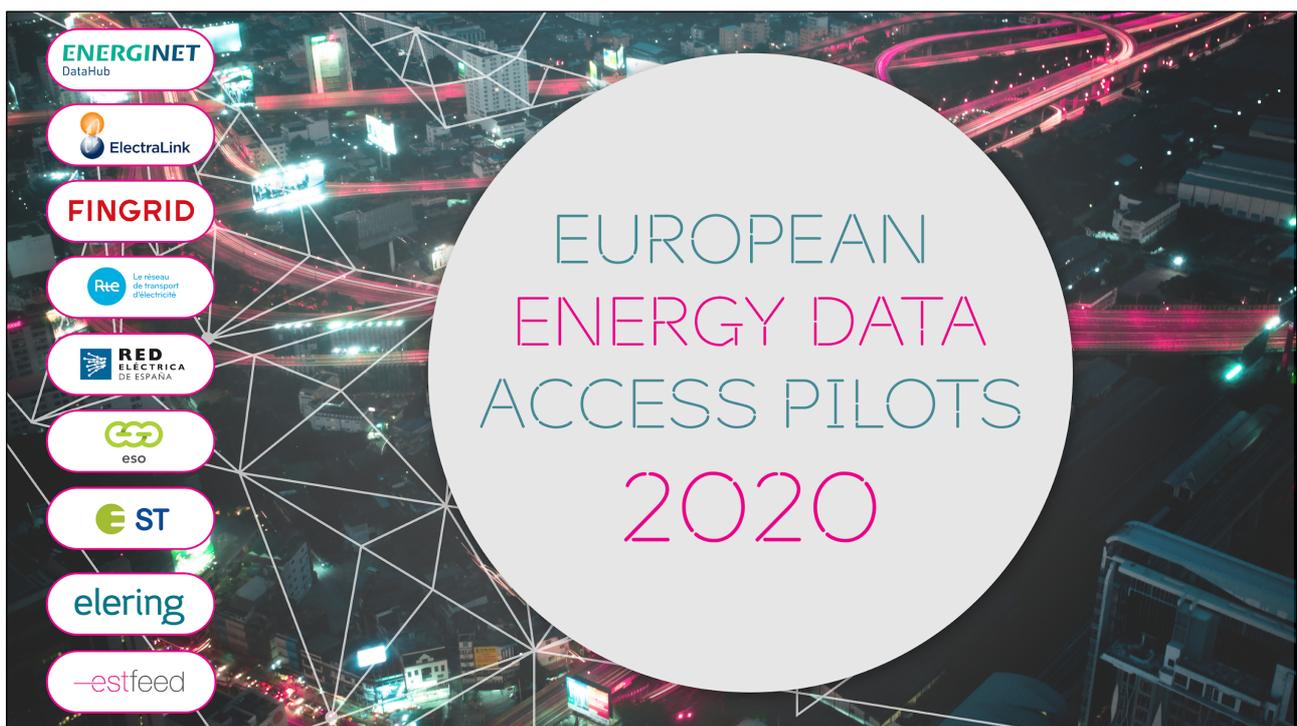

EUROPEAN ENERGY DATA ACCESS PILOTS 2020

Europe-wide pilots of innovative energy products and services that need access to cross-border metering data implemented during May 2020 to January 2021.

Final Report of the European Energy Data Access Pilots 2020
February 2021



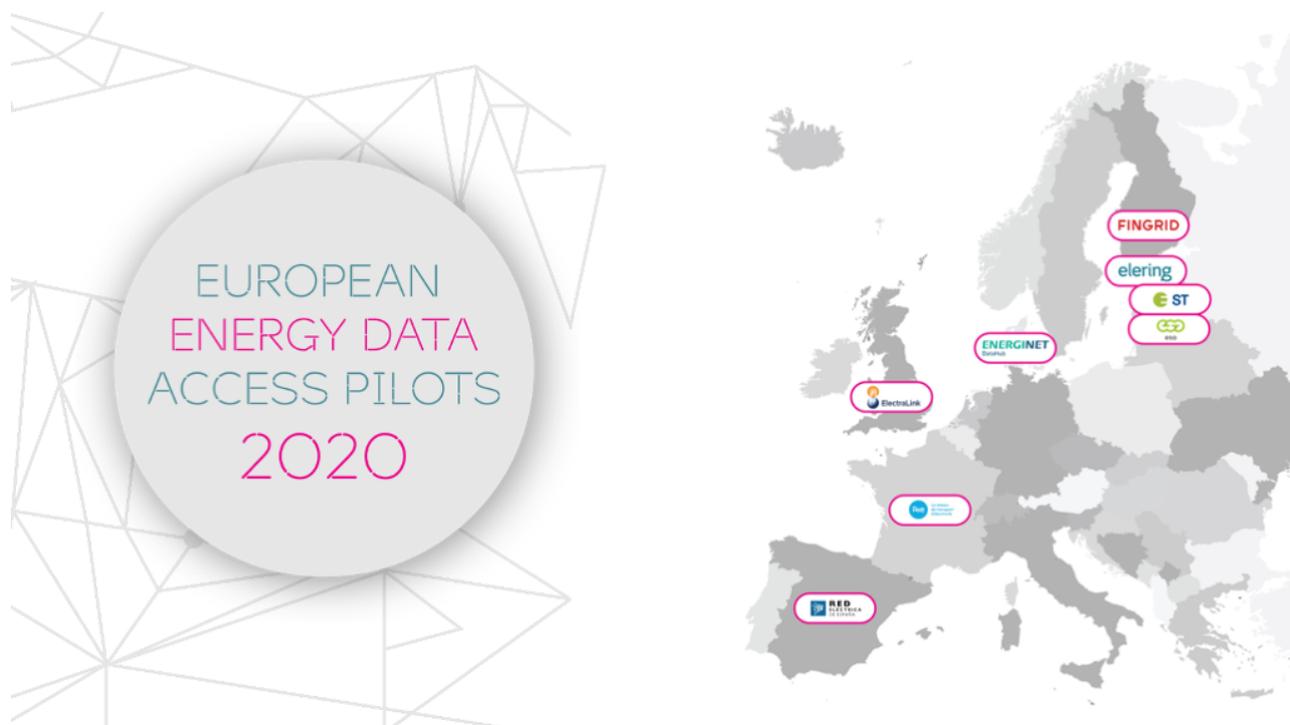
The programme was supported by European grid operators and operators of electricity data hubs who are collaborating for a secure pan-European data exchange in the energy sector.

Partners: Energinet (Denmark), Red Eléctrica de España (Spain), Réseau de Transport d'Électricité (France), Sadales tīkls (Latvia), Fingrid (Finland), ESO (Lithuania), ElectraLink (UK), Elering (Estonia).

Many of the Partners also contributed to the programme with sharing their mock metering data in the Pilots: Red Eléctrica de España (Spain), Sadales tīkls (Latvia), ESO (Lithuania), ElectraLink (UK), Elering (Estonia).

Contact:

Kaija Valdmaa, Product Manager of Estfeed at Elering AS
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“The aim of these pan-European pilots was to develop and test the Estfeed energy data exchange platform and energy services that want to use private metering data of residential and business customers from different countries to expand their services to these new markets,” said Kaija Valdmaa Product Manager of Estfeed.

EUROPEAN ENERGY DATA ACCESS PILOTS 2020

In the beginning of April 2020, with the mandate from leading European grid operators, Elering organised a Europe-wide competition, to showcase the value of energy data access via pilots of innovative energy products and services which need access to cross-border energy metering data to be implemented in 2020. Together with other European grid operators, Elering is looking to lower data access barriers and harmonise energy data access throughout Europe.

Elering is Europe’s leading developer of digital energy solutions that use consumers’ metering data. One of the solutions the company has developed is the Estfeed platform, which is based on the Estonian X-road data exchange layer. It enables energy service providers and developers to access consumer metering data based on consumer consent and therefore creates the infrastructure needed to digitally connect European energy markets.

As a Single Window intermediary, Estfeed connects data providers (e.g. data hubs) and data users (e.g. energy services), thus allowing energy services to access personalised data stored in the data hubs with the legal consent of the data owner (e.g. end consumer).

The winners of the European Energy Data Access Pilots 2020 were:

- **re.alto energy** – Increasing the Utility and Value of Digital Data Products.
- **FlexiDAO, RESpring** – RESpring – a new way of buying renewable energy.
- **WePower** – Data-driven energy source transparency for retail customers.
- **Elertis** – Digital renewable energy marketplace.
- **DEXMA, DEXMA hub** – Democratising energy data for organisations in Europe.
- **R8 Technologies** – Taking building technical management to the next generation.
- **Siemens Energy, e-ing3ni@** – ‘Person to person’ energy transactions across Europe through Blockchain.
- **Becour** – Helping companies source renewable energy and fight energy poverty.
- **Sunly** – ReFinder prosumer tool

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- **Critical Software** - n3rgy data – Exposing Smart Meter Data to Innovators
 - **Greenbird - Utilihive** – The Operating System for the Energy Cloud

Greenbird, Critical Software and Sunly did not complete the programme due to other business priorities. Due to these three spots opening up, Becour was able to join at the later stage.

“The Programme had two main goals. First, to understand what businesses and services need energy data and what is their pain, and second, to get input for developing secure and reliable energy data access for Europe together with other European grid operators,” commented Kaija Valdmaa. More information about the winners follows below.

THE EIGHT IMPLEMENTED PILOTS

The applicants were expected to submit proposals for a novel energy service, product or business model (either as a working solution or an idea) that utilise cross-border metering data from at least two countries and were to be implemented in 2020.

The purpose of these pilot projects was to demonstrate the value of data access across Europe and to show the innovation that can happen thanks to consent-based access to private metering data from both private consumers and enterprises, both within countries as well as internationally. Renaldas Radvila, Member of the Management Board at ESO (the Lithuanian DSO), says that real business cases demonstrate the need for grid operators to open up data. “Besides the formal criteria, we also paid attention that the pilots selected were diverse enough and that we would also be able to support them,” he adds.

In turn, successful applicants were granted access to the ‘Sandbox’ environment of Estfeed’s data exchange platform, where mock metering data from different countries was provided in cooperation with other European grid operators.

Altogether, 23 applications were received during the competition. 10 projects were selected, from which eight successfully completed the programme.

“Increasing the Utility and Value of Digital Data Products.” Jean-Pierre Hagen, Business Development Manager of re.alto



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

At **re.alto**, we have recently launched an API marketplace for the exchange of energy data and digital services across Europe. As our vision is aligned so closely to the goals of the pilot, we saw a lot of value in participating. The objectives of our project have been twofold:

1. Create a simple-to-use API which interacts with the Elering Estfeed system and publicise this on our platform.
2. Demonstrate energy data use-cases across Europe with re.alto partners and the Estfeed API.

In doing the above, we wanted to add value in several ways:

Firstly, we want to demonstrate that energy data can be easy to access and simple to integrate using modern technology. With that, we hope to reduce the entering barriers for companies that are looking to innovate with using these data streams.

Secondly, we want to help European companies showcase their use-cases for energy data using the Estfeed API. Not only is it important to have access to the data itself, it is equally important to have awareness of what the data can actually be used for and what value can be unlocked. Additionally, market parties often need access to several different data streams. For example, by combining metering data with forecasting services or electricity pricing information, these businesses can create new services for their clients. re.alto exists to help with the discovery and integration of these different data sources and services.

“Firstly, we want to demonstrate that energy data can be easy to access and simple to integrate using modern technology. With that, we hope to reduce the entering barriers for companies that are looking to innovate with using these data streams.” Jean-Pierre Hagen, Business Development Manager of re.alto

Finally, to act as a source of discussion and feedback. Throughout this pilot we have spoken to many companies about their data needs, specifically regarding metering data. Unlocking the value of metering data requires insight into what companies need, e.g.

recorded information, time-granularity, format and so on. Our hope is to consolidate our learnings and feed this back to decision makers and the wider industry.

What is the most important benefit of your solution to a regular energy consumer?

As a B2B-focused company, the main benefit we bring to end-energy-consumers is the fact that we make it easier for companies to create products and services that directly benefit their clients. For example, if a company wanted to create an energy monitoring app, or maybe an EV smart charging product, we help these companies with easy access to the data streams they need in order to make these apps work.

We also help the end consumer indirectly, by supporting other companies with their digitalisation efforts, which will ultimately help transition to a zero-carbon energy system. Basically, we empower others to help benefit the end consumer.

From your point of view, what are the main problems with data access in the energy sector today?

The main problems with energy data access in Europe are that access to data is not always possible, most fundamentally in areas of the sector which have not digitalised sufficiently. Even if access is possible, integration to various IT systems can be difficult and expensive. Regulations can be complex and difficult to navigate and the landscape is not consistent from country to country. Finally, the challenges around “Who owns the data?” and consent management keep arising throughout the sector. With metering data, that’s a given, but it is also a factor in renewables, e-mobility and so on.

“In an ideal world, energy data should be easy to access, simple to integrate, standardised in format, safe, secure, privacy-compliant and valued fairly.” Jean-Pierre Hagen, Business Development Manager of re.alto

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

In an ideal world, energy data should be easy to access, simple to integrate, standardised in format, safe, secure, privacy-compliant and valued fairly.

What were the main learning points and results from this programme to your company, to your team or to you personally?

One of the main learning points for us was discovering that there’s such a large variety of use-cases for metering data. We spoke to companies that use the data in grid analytics, prosumer benchmarking, building/energy community management services, guarantees of origin, invoice verification, customer profiling and, of course, energy monitoring and management apps. What is interesting is that each of these use-cases have different requirements in terms of data granularity, real-time communication, format and type of

information transmitted. It became apparent that metering data access, and also the type of metering data that is available, is still a real challenge for a lot of these companies. The key takeaway for us was that regulated smart meter rollouts are not always happening at a fast enough pace, or at a low enough cost, or with suitable technology/interfacing/access that would enable a majority of these products and services. I think it also highlights the need, at least at a European level, to take a more unified approach. Ultimately we believe that access to metering data should be simple, standardised and near-real-time.

In terms of results, we were super-excited to integrate our energy API marketplace into the Estfeed system. Our team achieved this by creating a microservice/adaptor which interfaced between our two systems. In doing so, we really simplified the journey for the end-data user and demonstrated that integrating smart meter data does not have to be difficult. Using our API platform, a business can turn this integration process into a 5-minute task. Finally, on top of this, we introduced some data post-processing, business logic and OpenAPI standardisation to make the metering data even easier to query and work with.

Did you achieve your initial goal?

Our initial goals were to:

1. Integrate with the Elering Estfeed system and create a simple API gateway for metering data access.
2. Demonstrate use-cases across as many countries as possible with realto partners and the Estfeed data stream.
3. Work closely with Elering, European TSOs/DSOs, and pilot cohorts to solve energy data pains.

I would say we achieved two out of three of the goals to the level we expected. We did manage to create a simple-to-use API layer on top of the Estfeed system and expose this via our marketplace and datahub. We also had a lot of interaction with companies across Europe that utilise metering data in their products and businesses. The learnings were consolidated and presented to the Energy Data Access Alliance in September, which was fantastic. What we would have liked to have done more of is demonstrate use-cases using the smart meter API and the data itself. Whilst there was a lot of interest from our partners to participate, the data needed to showcase their solutions either wasn't available or the resource was tight. In the end, we did manage to demonstrate a use-case around data trustworthiness which was really interesting.

How did the programme affect your company's future plans?

I would say that the pilot has strengthened our plans to continue addressing the barriers to energy data access. We share a common vision with Elering around data, digitalisation and the urgency to transit towards a sustainable energy system. We look forward to continuing to build upon this initiative in 2021!



The team of re.alto.

“RESpring – a new way of buying renewable energy.”
Simone Accornero, co-founder and CEO of Flexidao



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

RESpring collects green certificates (e.g. GOs, IRECs, etc.) and high-granularity renewable energy production and markets’ data, then gathers them into one dashboard. Managers are provided with greater transparency on the actual environmental impact and insights into performance and budget forecasts, which allows them to lower costs, meet goals, maintain budgets and maximise their renewable energy investments. Consumers can on-board their consumption points and procurement contracts to start monitoring their entire renewable energy portfolio (PPAs, green tariffs and unbundled certificates) in just a few clicks. Additionally, RESpring creates a digital trail of the data collected in the blockchain that allows tamper-proof data storage and complete availability for auditing and control.

“Most renewable energy products lack transparency and granularity. Even when consumers select renewable energy, they can neither choose from where their electricity comes from nor easily monitor it, which leads to bad practices.”
Simone Accornero, co-founder and CEO of Flexidao

Energy tariffs are not able to show the impact on local economies and real emission avoidance to consumers. With RESpring, it becomes possible, thus enabling a more transparent, sustainable and green future.

Tracking and matching electricity with hourly granularity allows RESpring to calculate the true CO2 emissions and avoidance of both generation and consumption. Hourly CO2 emissions and avoidance could become crucial to drive investment in countries with lower renewable energy production, since 1kwh of electricity produced in such countries generally avoids more CO2 emissions (e.g. the emissions avoided by the same PV plant are higher when built in Poland compared to Norway, due to the different characteristics of the two grids and the penetration of renewables).

What is the most important benefit of your solution to a regular energy consumer?

RESpring gives consumers access to more transparent data in their green energy procurement, which allows them to:

1. Lower the costs of energy data collection and reporting.
2. Prove their green energy achievements.
3. Make data-driven decisions to maximise their renewable energy investments.

The current certification system requires consumers to manually request, retrieve and handle energy certificates from multiple sources, which consumes time, energy and resources. RESpring automatically collects and cancels the energy certificates and unveils additional information, such as the type of renewable energy procured, the plant location and age and the CO2 avoidance tag. Having access to that data is essential for demonstrating that the company is really making the difference in terms of sourcing energy with low environmental impact. On top of that, it reduces the risk of being accused of green-washing and companies are facilitated in achieving their sustainability goals.

From your point of view, what are the main problems with data access in the energy sector today?

The inherent benefits of RESpring and its scalability are being hampered by the lack of access to TSO-certified settlement data. Currently, our software RESpring collects the data to be recorded on blockchain via API from the retailers. Retailers are finally offering the services enabled by RESpring to corporate consumers. Although this set-up is currently working in the market with our customers, it has certain limitations:

- The integration process with the retailer is usually lengthy and difficult because it needs to set up a service to share the relevant data to the software. On top of that, data always has different formats and availability, which increases the integration complexity.
- If the data recorded on the blockchain is provided by the retailer itself, the system lacks trust and decentralisation. The data should be provided by a third party acting as the 'data certifying authority'(i.e. the TSO).

In order to solve the last point, we are forced to cross-check the data provided by the Retailers with the national GO-issuing body registries. However, more than 60% of European GO registries (including France, Germany, Italy and Spain) do not have an interface for remote third-party data reading/writing.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

Service providers should have access to:

- an easy and agile (i.e. digital) system that allows data owners (producers or consumers) to approve the usage of their data in exchange for a service or payment.
- an easy and standardised interface for collecting/accessing data (structural and metering).

Metering devices should be able to encrypt and secure data at the source (i.e. Root-of-Trust) to prevent any risk of manipulation and vulnerabilities as is currently the case for IoT devices and TLS-based (Transport Layer Security) data exchanges. This would also ensure true data ownership for the device owner or user (depending on the country how it is managed).

Grid (or metering) operators should be in charge of maintaining the neutral IT infrastructure for granting equal access to data to all service providers and regularly monitor the hardware connection.

What were the main learning points and results from this programme to your company, to your team or to you personally?

- Confirmation that data access is strongly positioned on policymakers' agenda and that several industry players are pushing for it.
- Confirmation that relying on high-granularity settlement data is a potential alternative to installing behind-the-meter IoT metering devices.
- Confirmation that, although highly debated, a standardised and normalised digital access to private metering data is still far from being implemented in Europe.

Did you achieve your initial goal?

Initially we hoped to have access to data for Spain, Denmark and Estonia through Estfeed. In the end there was only mock data, which was useful to confirm the technical feasibility but it didn't help us progress further with our existing customers.

How did the programme affect your company's future plans?

We decided to abandon behind-the-meter IoT metering devices and bet on settlement from fiscal meters through data sharing platforms to feed data into our software.

Team members of Flexidao.



The team of Flexidao.

“Data-driven energy source transparency for retail customers.” Kaspar Kaarlep, Co-founder and CTO of WePower



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

Renewable energy is getting cheaper and decentralisation of energy generation creates opportunities and incentives to buy it directly from producers. As the average size of individual generation units is decreasing, it allows smaller companies to buy energy from multiple local generators in a single contract. This is where **WePower** comes into play. Our goal is to facilitate energy transactions of any size directly with producers and maximise the practical value of sustainable energy.

Most companies still use excel and email to procure and manage their energy. WePower Marketplace brings energy buyers better options and makes the whole process smoother and more convenient. At the core of this is a proper management of energy consumption data and ownership of such data, which we believe should always belong to each consumer.

While the energy system itself is changing, the way we purchase and trade energy has not changed. We believe that buying energy directly from producers should be easier than getting a standard contract renewal, as it is done today.

What is the most important benefit of your solution to a regular energy consumer?

Our goal is to support the emergence of energy democracies. Just as having cheap and fast internet has become a human right, regular energy consumers should be granted the best price and opportunity to quickly and, without a hassle, buy energy from their neighbour’s roof or the local wind farm at fair and transparent market value.

“While the energy system itself is changing, the way we purchase and trade energy has not changed. We believe that buying energy directly from producers should be easier than getting a standard contract renewal, as it is done today.” Kaspar Kaarlep, Co-founder and CTO of WePower

“Just as having cheap and fast internet has become a human right, regular energy consumers should be granted the best price and opportunity to quickly and, without a hassle, buy energy from their neighbour’s roof or the local wind farm at fair and transparent market value.” Kaspar Kaarlep, Co-founder and CTO of WePower

From your point of view, what are the main problems with data access in the energy sector today?

Lack of standardised access and governing rules. The customer’s choice is directly represented by their energy data. If the cost for getting access to that data is larger than the potential value of it, then such services should not be offered. It’s bizarre that renewable energy gets billions in investment and is a highly-politicised topic, yet standardised and clearly-regulated data access, which could actually allow people to vote for or against renewable energy, is still woefully underdeveloped and misunderstood in almost all markets where smart meters have been deployed. That is only possible when smart meters are being used and consumers are made the sole owners of their consumption data.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

Over the past years, there has been too much fuss and overcomplication of things around energy transition. We would like to see that Europe focuses on the fundamental value of clean local energy. We already have the GDPR in place: it is now time to work towards single access to data, with a bilateral agreement where the data is open to everyone if the consumer says it is OK for them to use it. Asking for, and granting the permission to use, the data should be made very easy.

What were the main learning points and results from this programme to your company, to your team or to you personally?

As we started our first pilot with Elering already in 2018, this programme has in a way evolved in the same way that our company has evolved. While in 2018 most of our business then was in Europe, now the majority is in Australia. WePower’s mission has always been to enable change towards a sustainable future and we are grateful to have partners like Elering that share the same values.

We believe that well-defined consumer data rights really are key to a faster energy transition. The two pilots that we had with Elering showed that their Estfeed system is

definitely good for the testing as well as the demonstration of energy data sharing. However, even with Elering's rather good solution, the process wasn't easy.

Also, the concerns due to legal issues, etc., remain and they slow down the wider adoption. The differences between countries and their approaches are rather significant. While each smaller hurdle on its own seems solvable, when combined it sure seems that the path to developing a secure and reliable energy data access platform that could be used by energy services throughout Europe will be longer than expected.

Did you achieve your initial goal?

We did indeed achieve our goals. In 2018, we aimed to test the mass tokenisation of energy data. In 2020, our goal was to evaluate the complexity and the cost of accessing data from Elering Estfeed, as well as the Estfeed system's fit with our platform.

Our Chief Information Security Officer put together three recommendations as to how the system could be improved further (technologically):

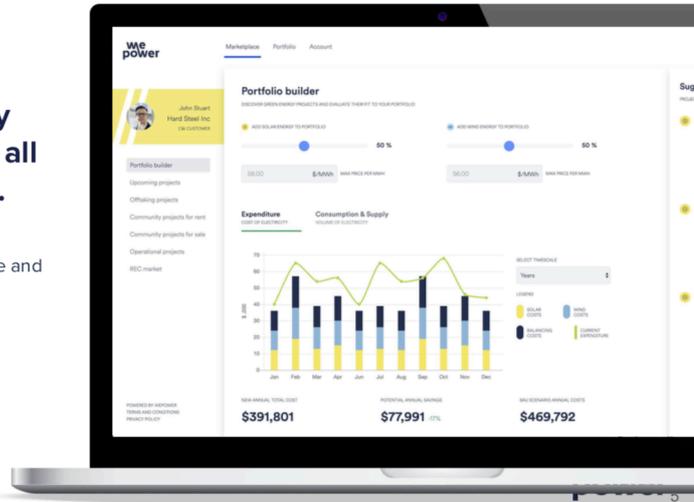
- Consider an interface that can share data as JSON, instead of XML, for easier integration into web apps.
- Consider offering OAuth & OpenID Connect for the consent mechanisms and, with this, also to provide federated logins as an additional feature (user does not need to have/manage multiple accounts).
- We acknowledge that source IP and destination IP filters provide good security but are costly and more cumbersome to realise with today's cloud hosting (getting fixed IP). If possible, please consider a security scheme that would allow flexible/dynamic source IPs for the clients.

How did the programme affect your company's future plans?

As we did our first and bigger pilot with Elering already in 2018, and since then, our company has evolved and matured and so we can definitely say that partnership with Elering has had an effect on our company's progress. It has been great to see several other companies that develop innovative energy products and services join the European Energy Data Access Pilots 2020 programme. It again proves that the energy data rights topic is increasingly important. However, the wider slow progress in the field has significantly held back other important developments in the industry. We are hopeful and determined to see faster changes in 2021 and the coming years.

Platform to facilitate energy transactions of any size for all energy market participants.

We provide the easiest way to discover, choose and sign source-transparent energy contracts with never-seen-before flexibility.



WePower platform to facilitate energy transactions of any size for all energy market participants.

“Digital renewable energy marketplace.” Leva Bružaitė, Head of Operations of Elertis



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

Elertis is building an open digital renewable energy marketplace, allowing diverse market players to buy and sell their energy directly to each other. The solution is based on a decentralised energy market concept that is currently being endorsed by the European Union. As the energy market is liberalising, Elertis aims to introduce an innovative solution that connects diverse market players, gives them more flexibility and empowers them by allowing them to choose their preferred price and set their own rules. Elertis also intends to incorporate a social design function, powered by behavioural science and artificial intelligence, to improve customer engagement, educate people about energy transition and sustainability and encourage conscious decision-making. After launching the marketplace, they also have a goal to introduce an aggregator model into the platform to help alleviate the grid pressure and to help DSOs balance the grid with the demand response management function.

“We intend to incorporate a social design function powered by behavioural science and artificial intelligence to improve customer engagement, educate people about energy transition and sustainability and encourage conscious decision-making.” Leva Bružaitė, Head of Operations of Elertis

Elertis aims to break the barrier of entering the market, since only large retail suppliers had means and capabilities to enter it. As the EU regulatory environment is becoming more favourable to small players, we are creating a solution for empowering various energy market players – from renewable energy developers to individual households operating as prosumers. Secondly, Elertis wants to overturn the belief that the energy system and market are too complex for consumers to understand and participate in, creating a stigma around the whole industry. Elertis believes that tackling such challenges can lead to significant added values, such as increased flexibility, raised awareness and a more open energy market.

What is the most important benefit of your solution to a regular energy consumer?

The key benefits that we aim to provide to both consumers and producers are more flexibility and greater freedom of choice. Our goal is to provide consumers with the means of using renewable energy more sustainably and saving on energy bills. Meanwhile, producers would benefit from a simplified process of selling their electricity to end consumers and having an option to set their own preferred price. The core objective of this platform is to empower diverse market players by providing an easy-to-use and transparent mechanism that can fairly balance their preferences and requirements.

“The core objective of Elertis is to empower diverse market players by providing an easy-to-use and transparent mechanism that can fairly balance their preferences and requirements.” Leva Bružaitė, Head of Operations of Elertis

From your point of view, what are the main problems with data access in the energy sector today?

“To develop any innovative solutions in the energy market, data standardisation across Europe is essential.” Leva Bružaitė, Head of Operations of Elertis

Firstly, energy data is difficult to access, as there are significant limitations imposed in terms of regulatory environment. This is one of the reasons why the energy market is currently difficult to enter for new competitors. Secondly, data is not standardised due to different types of smart meters, which is a challenge for integration within the energy markets – not only among countries but, in some cases, even within one country. Thus, in order to develop innovative cross-country solutions in the energy market, data standardisation across Europe is essential. Apart from that, data tends to be insufficient or incomplete and this is another challenge that makes it hard to work with. One of the reasons for that is a lack of consumers’ trust, as they tend to be afraid of insecure data storage or its leakage. Therefore, there is a major need for raising awareness among consumers as well, to make them feel more secure and understand the system better.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

The data would follow the same standards across Europe and would be available for businesses and organisations that require it to analyse and improve the operations in the energy market. For example, access to energy data has great potential in helping the

academic world and contributing to accelerated innovations in science that could also be applied to commercial settings. Moreover, every consumer would be able to manage their data themselves easily by just connecting online. In this way, they could see which parties can see their data and set preferences to whom to provide their data and to whom not to. We believe that Europe could be the leading example in data standardisation and access to the whole world.

What were the main learning points and results from this programme to your company, to your team or to you personally?

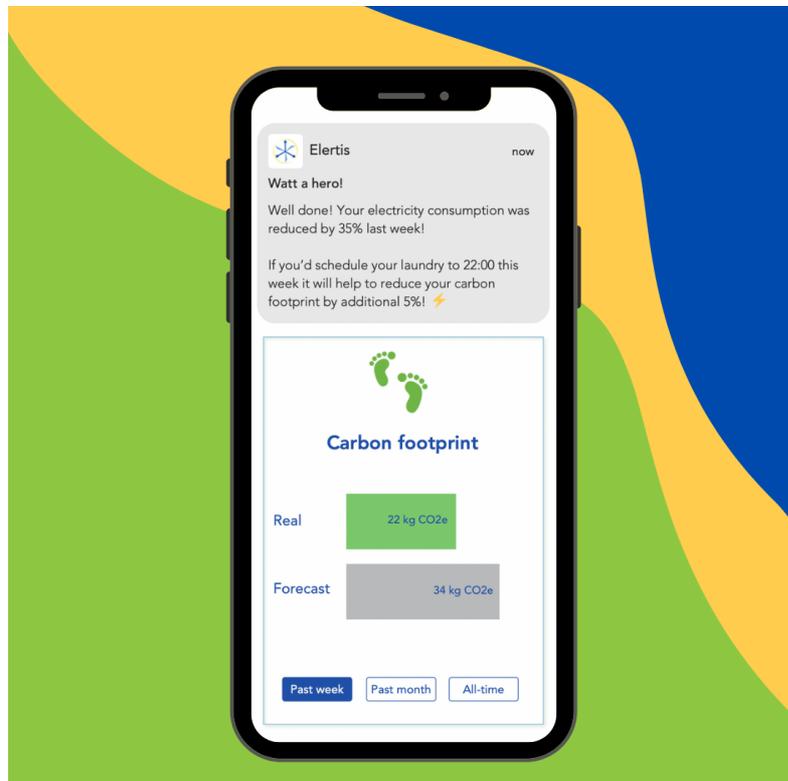
We saw a clearer situation throughout Europe regarding compliance with EU energy data regulations. We received contact information for European DSOs' representatives. We gained insight to how such a solution like Estfeed works from a technical perspective.

Did you achieve your initial goal?

Partially yes. We integrated an Estfeed system and used data in our application. Also, we gained insight to data format from EU data grid operators. However, from our perspective, we missed access to live data, which could have been very useful.

How did the programme affect your company's future plans?

Delays and unfulfilled Data Pilot project aims caused delays in our platform development, as we aimed to use it as a primary data source in our solution.



Open digital renewable energy marketplace by Elertis.

“Democratising energy data for organisations in Europe. Energy intelligence and AI powered energy savings tools for buildings.” Laura Martinez, R&D Manager and Product Marketing of DEXMA



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

DEXMA provides best-in-class energy intelligence solutions via a ‘software as a service’ (‘SaaS’) model for commercial and industrial buildings. Our cloud-based SaaS tool combines Big Data Analytics with Energy Efficiency and artificial intelligence to help businesses to ‘Detect’, ‘Analyse’ and ‘Optimise’ their energy consumption, become more sustainable and optimise project investments, as well as energy performance contracts. Our client network is composed of 150 partners (Utilities, Energy Services Companies and Integrators), creating a global network of 4,000 organisations (>90% in Europe) in sectors such as real estate, banking, retail, hotels or industry, reaching up to around 80,000 buildings worldwide. DEXMA solution offers a three-step journey:

1. **‘DEXMA Detect’** is a massive savings detection solution that determines customers’ greatest potentials for energy savings.
2. **‘DEXMA Analyse’** tracks these greatest savings potentials in real time together with the follow-up of the efficiency solutions and verification of the energy savings achieved.
3. **‘DEXMA Optimise’** is a 24/7 surveillance service that automatically discovers anomalies to boost the energy savings, notifying the consumers automatically.

In our pilot, first **‘DEXMA Detect’** can provide to commercial and tertiary energy consumers personalised energy efficiency retrofits based on an automatic consumption breakdown per appliance per building (virtual load disaggregation based on big data algorithms), as well as a detailed screening and characterisation of available energy saving technologies and budget estimations; all this without the need to deploy extra meters or sensors on customer premises.

Once the prospecting has been done, **‘DEXMA Analyse’** allows consumers to monitor, analyse and be aware of how their buildings are behaving. For example, cost analysis, associated carbon emissions and progress of energy efficiency projects that were

previously identified with 'DEXMA Detect' (such as PV panels, etc.). In the end, this increases their economic and energetic competitiveness.

Finally, 'DEXMA Optimise' combs through energy data automatically using artificial intelligence techniques and scans for possible anomalies, such as overconsumption, appliances working hours/performance, unexpected events, etc. That allows users to become more aware that their behaviour has a direct impact on their energy bill.

“DEXMA helps energy consumers to identify, scale and optimise their energy savings while they join a new and transparent energy market.”

Laura Martinez, R&D Manager and Product Marketing of DEXMA

What is the most important benefit of your solution to a regular energy consumer?

DEXMA helps energy consumers to identify, scale and optimise their energy savings while they join a new and transparent energy market where the consumer is the centre of attention. Europe has 23 million small and medium enterprises that could potentially be reached with DEXMA Solution. All of them could bring more value to their energy data while they become more efficient.

From your point of view, what are the main problems with data access in the energy sector today?

Despite the deadlines for high-resolution smart meters in Europe in 2020, that data is not 100% available for grid operators, neither for the end customer nor third parties. Despite the smart meters being installed at customer premises, they are not always available in the information backend of the grid operators.

Most of the time, IT backends are very complex systems with millions of readings and critical processes. In addition, they are based on legacy code, making them very difficult to update and upgrade. Therefore, monthly data (as well as hourly and quarterly smart meter data) on energy consumption, is available internally for DSOs/Utilities (as it is required for billing purposes), but neither always for third parties (like DEXMA) nor for regular energy consumers.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

As the world becomes increasingly digitalised and generates more energy data than ever, it is essential that all the energy market participants (TSOs, suppliers, networks operators, consumers or new energy service providers like DEXMA) count on a non-discriminatory and free-of-charge way to access this valuable data.

“In an ideal world, the energy market would be 100% customer-centred and transparent.” Laura Martinez, R&D Manager and Product Marketing of DEXMA

In an ideal world, access to energy data would require cooperation between market parties, where consumers understand the benefits and implications of data sharing. Therefore, the energy market would be 100% customer-centred and transparent. Besides, the data characteristics and format (granularity, response times, etc.) should be common at European or even global level to simplify the interactions among all energy market participants.

What were the main learning points and results from this programme to your company, to your team or to you personally?

It has been a great opportunity for DEXMA to learn how we might integrate our energy efficiency platform (Detect, Analyse & Optimise) with a unique data sharing platform where European smart meter data is available for third parties like us and also to data users like our customers.

Within our use case, we have learned together with our partners (European energy-related companies, such as utilities or energy services companies) the hidden potential of bringing energy efficiency closer to the energy consumers out of our current countries, becoming key players in European energy market unification.

It's been great to see how most of the EU countries are working in platforms for data sharing that can leverage the huge investment on smart meters made by the consumers. Thanks to these platforms, they will be free to decide if they rely on third parties (such as DEXMA) for the energy transition journey.

Did you achieve your initial goal?

Thanks to our participation on the Energy Data Access Pilots we have been able to perform a pilot with a utility in the Baltics. Our best-in-class energy intelligence solutions have been proven within 200 commercial buildings, providing:

- DEXMA Analyse; tracking of energy savings in real time, together with the follow-up of the implementation of efficiency solutions and verification of the energy savings achieved.
- DEXMA Optimise; automatic discovery of anomalies to boost the energy savings, 24/7 surveillance service that helps buildings to reduce their energy bill, notifying the consumers automatically.

Nevertheless, the smart meter data for this pilot has been added into the DEXMA platform using our own integrations, since the pilot environment was just ready for mock data and not for a real-life collaboration. Anyway, it's been a very good opportunity for our development team to know better how the datahub API works and how we could benefit from it in the future.

How did the programme affect your company's future plans?

DEXMA is more aware than ever about the importance of a secure and even access to meter data by consumers & energy services providers. Our platform must be ready for the future and look for distinctive features that allow us to offer our products when all the energy metering data is available on a European data sharing platform and energy consumers are eager to play a significant role on the energy markets. We really believe this scenario is going to be a reality soon!



Team of DEXMA.

“R8 Technologies take building technical management to the next generation.” Ahmet Köse, CIO of R8 Technologies



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

R8 Technologies takes building technical management to the next generation. R8 Technologies adds R8 Digital Operator – an autonomous and unified artificial intelligence (AI) – on top of a building’s existing automation system to increase HVAC system’s efficiency and indoor comfort by real-time control. The AI-based solution of Digital Operator is driven by Facility Managers to steer HVAC systems between energy consumption and indoor thermal comfort. Furthermore, Facility Managers have the power to distinguish their preferences most efficiently with analysed metering data access provided by the Energy Data Access Pilots 2020.

Facility Managers are usually not able to comprehend the causes of wasted energy, distinguish actionable insights and react to them on time, particularly when it comes to technical systems such as HVAC. The value R8 Digital Operator is showcasing with metering data access is exactly that; a transparent overview and interactive tool for Facility Managers. The overview consists of faults and inefficient operations related to HVAC, indoor climate index and energy consumption. The tool allows Facility Managers to shift the load of electricity and heating consumption with a few clicks, even in real-time, by also estimating the impact through metering data.

What is the most important benefit of your solution to a regular energy consumer?

R8 Digital Operator is compatible with existing Building Automation Systems that are developed to maximise the performance of HVAC. Reduced carbon footprint and energy consumption of the building will increase property value and sustainability while ensuring thermal comfort for occupants without any financial risk or hardware investment.

From your point of view, what are the main problems with data access in the energy sector today?

Accessing metering data should have been a high priority for Facility Managers because only metered data provides actual and meaningful insights. Besides that, energy consumption analysis towards HVAC can be adequately validated by reliable sub-

metering data. Furthermore, Facility Managers should govern real-time metering data access. That would allow us to shift the load of electricity more precisely and according to demand, meaning that more affordable pricing would be available in return.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

Connecting to reliable and cooperative third-party platforms could be convenient for everyone. For example, R8 Digital Operator is already adapted to market-based pricing and is gathered under one platform for many countries at present.

What were the main learning points and results from this programme to your company, to your team or to you personally?

The access to metering data project is a unique example to demonstrate that companies, regardless of sizes and locations, can benefit from the same information source and environment towards different purposes and goals. The cooperation should remain as a key to keep doors open between grid operators and service providers related to metering data. For example, we have a clear vision to cooperate in demand response (DR). Our partners will gain a competitive advantage by enabling the automated DR feature of R8 Digital Operator. We also appreciated the efforts by Elering and partners for organising this programme.

Did you achieve your initial goal?

Our main goal has been to aggregate real-time metering data with the purpose of transparent overview related to HVAC systems. We managed to complete the connection with Elering. We designed a building management tool to apply indoor climate preferences that directly impacts to energy consumption. Therefore, we consider that we achieved our initial goal, but we already set the goal for 2021 to use gained knowledge and develop solutions together with our clients.

How did the programme affect your company's future plans?

The pilot project was a feasibility study for us to validate our ideas behind scenes. Technological readiness of our product and strong support from Elering motivated us to focus on using metering data actively for commercial buildings all over Europe. Today, Facility Managers can steer HVAC systems between energy consumption and indoor comfort optimally by real-time control of R8 Digital Operator. In 2021, we believe that Facility Managers have the power to distinguish their preferences most efficiently with analysed metering data access.



Ahmet Köse, CIO of R8 Technologies.

“Person to person” energy transactions across Europe through Blockchain.” Maria Jazmín Nieto de Dios, Generation Division Sales Manager of Siemens Energy



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

Siemens Energy’s platform e-ing3ni@ is a blockchain platform to facilitate power grid transactions from person-to-person. It simulates the process of buying and selling energy (person-to-person) across Europe. It is aimed at empowering final consumers so they can choose and influence the energy generation and pricing on the market.

What is the most important benefit of your solution to a regular energy consumer?

In general, it is the shift in the energy market that the person is at the centre of our ecosystem. Any person can choose the type, origin and price of the energy they want to consume.

From your business point of view, what are the main problems with data access in the energy sector today?

The main problems are integration and access to consumers’ smart-meter data from different European countries and the fact that the data is not standardised.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

Data should be owned by end-users. We also believe in GDPR regulation. On the other hand, energy data treated as ‘Big Data’ can generate many improvements and help to optimise our energy system. A correct balance between benefits to the consumers and to the system will be key to implementing successful initiatives to all parties.

What were the main learning points and results from this programme to your company, to your team or to you personally?

It has been a challenging pilot but one which has been possible, thanks to the team at Elering and our team working together and solving difficulties, keeping its commitment though COVID and many obstacles. The key has been to believe in the project and in the

impact to society of this type of initiative that helps to decarbonise, digitalise and place the European consumers at the centre of the Energy System.

Did you achieve your initial goal?

Our initial goal of performing energy transactions across Europe was successfully achieved.

How did the programme affect your company's future plans?

This programme demonstrates the possibility of using a Blockchain Platform for buying and selling energy through blockchain internationally. Our platform is ready to extend its service to European countries and outside too.

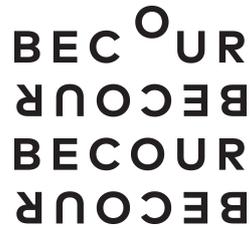
e-ing3ni@ **SIEMENS ENERGY**

First Energy Trading Blockchain Platform
Platform developed by Siemens Energy

Choose a producer Choose a time period Choose the best price

Siemens Energy's platform e-ing3ni@.

“Helping companies source renewable energy and fight energy poverty.” Hans Petter Killdal, CEO of Becour



What solution were you showcasing in the Pilot Programme and what value did your business bring to it?

‘REact’ is **Becour**’s online service that lets customers browse through a wide selection of power plants to find solutions that fit their company’s renewable energy targets. Through this platform, we aim to simplify the buying and documentation process for renewable energy buyers.

In the European Energy Data Access Pilots 2020, Becour showcases how a producer of renewable energy can manage a complex portfolio of renewable energy with guaranteed origin. By matching energy consumption and renewable energy production in geography and in time, we can help renewable energy producers develop renewable energy into a branded ingredient of high value for energy consumers.

What is the most important benefit of your solution to a regular energy consumer?

We believe it essential for energy users to be able to show that their action in sourcing renewable energy will result in the generation of more renewable energy. Through our transparent business philosophy, Becour is a trusted partner of renewable energy producers and energy users. Therefore, our clients are those who seek transparency, environmental credibility and positive impact on new renewable energy production. With us, they can make credible claims to the environmental attributes from the renewable energy they purchase.

From your point of view, what are the main problems with data access in the energy sector today?

The main challenge with data access in the energy sector today is easy access to high-quality electricity consumption data from many countries and across borders. A single point of access to high-quality electricity consumption data across Europe would not just make it easier for producers of renewable energy to provide credible and transparent claims to renewable energy consumers; it is also the key when engaging energy consumers in choosing renewable energy. Access to high-quality electricity consumption data would be an important contribution in a faster greening of European energy.

Manual management of complex portfolios of renewable energy with guaranteed origin is also challenging. For that, good digital tools are missing and needed, as well as access to electricity data through open APIs. The increasing number of small energy consumers

demanding peer-to-peer documentation of renewable energy origin leads to exponential growth in transactions and dataflow. To manage that, automatic data management routines and APIs are needed.

In an ideal world, how could access to energy data be managed in Europe or even worldwide?

For consumers, electricity is a low-interest product. However, renewable energy is an interesting product. The challenge is that renewable energy producers are not able to meet current consumer expectations regarding sourcing and documentation of renewable energy.

To maximise the value of renewable energy, the producers must be prepared to meet increasing customer expectations regarding transparency and impact. Customer expectations are coming from a very large number of energy users. This is a complex and challenging task that is still to be solved. The producers that can manage the complexity and meet the energy consumer expectations are the ones who will increase the value of their renewable energy assets the most.

What were the main learning points and results from this programme to your company, to your team or to you personally?

- Single point of access to electricity consumption data of high quality is key when engaging energy consumers in choosing renewable energy.
- Manual management of complex portfolios of renewable energy with guaranteed origin is challenging.
- Good digital tools are missing and needed.
- Access to electricity data through open APIs is needed.
- Single point of access to electricity data would provide a significant simplification.
- Solutions for simplified access to electricity consumption data of high quality is especially important.
- The increasing number of small energy consumers demanding peer to peer documentation of renewable origin leads to exponential growth in transactions.
- Automatic data management routines and APIs are needed.

Did you achieve your initial goal?

Partially. We were able to test, but the provided APIs and available datasets limited the wanted progress. We had to introduce a Java component based on the provided SDK to be able to connect within the available time. We would have preferred to connect directly from our NodeJS/JavaScript environment.

How did the programme affect your company's future plans?

- Increased learnings regarding energy data collection and data quality validation
- Importance of simplified access to data from a larger market area. Preferable to have one single point of access for all of Europe.



The team of Becour.

SUMMARY

EUROPEAN ENERGY DATA ACCESS PILOTS 2020

“For energy companies, access to metering data provides the foundation for innovative and smart solutions and new business models, which widens the alternatives offered to the Consumer and, through it, also better pricing.” Taavi Veskimägi, CEO of Elering, the Estonian TSO

In the beginning of April 2020, a group of leading European grid operators announced a Europe-wide competition to select pilots of innovative energy products and services that needed access to cross-border energy metering data. The purpose of these pilot projects was to demonstrate the value of data access across Europe and to show the innovation that can happen thanks to consent-based access to private metering data from both private consumers and enterprises, both within countries as well as internationally.

Access to energy metering data for services and innovators today is uneven and insecure. Secure access to metering data should be available to data owners (i.e. residential and business consumers) and, with their legal consent, also to energy service providers and innovators of energy services who want to use this private data to develop the energy market and provide additional services to consumers and other market participants (e.g. energy monitoring systems in buildings and homes, electricity package calculators, energy appliances that switch on and off according to green energy available in the grid, or the energy price).

The programme was announced to:

- Show that there is a clear need from businesses to access metering data of consumer, understand which businesses and services need energy data and what is their pain.
- Get input for developing a secure and reliable energy data access for Europe together with other leading European grid operators.

Elering provided:

- Estfeed Piloting Environment in AWS with mock metering data and test users.
- Consultation and technical support.

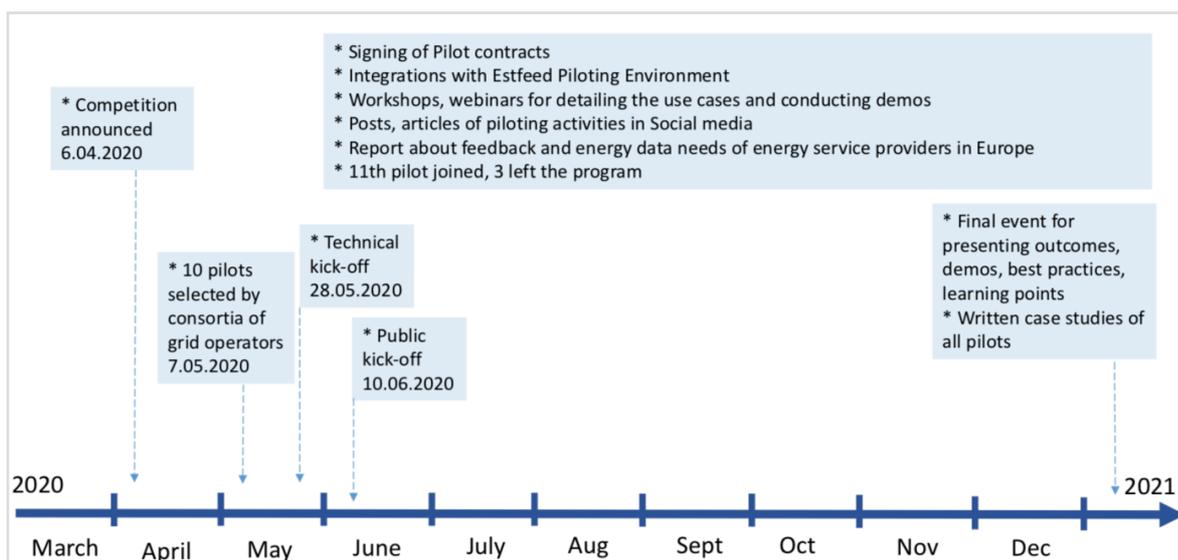
Pilots received the possibility to:

- Test the Estfeed platform in a secure piloting environment.
- Demonstrate their pilots on a European scale
- Collaborate with European DSOs and TSOs.

Altogether, 23 applications were submitted in April and May 2020. The winners were **Siemens, FlexiDAO, WePower, re.alto energy, Critical Software, Elertis, DEXMA, Sunly, Greenbird** and **R8 Technologies**. The winners were selected by an international committee of seven representatives of European grid operators. The 10 selected projects stood out by being orientated to market integration, increasing competition with new products and services and empowered the consumer in the energy market. They were also solving important market barriers and were successfully implemented in three-six months. “We appreciate all who participated in the European Energy Data Access Pilots 2020 competition. We are grateful to all the pilots. Together, let's keep working towards simple access to energy data in Europe! Only through facilitating the increase and spread of innovative energy products and services is it possible to achieve the ambitious climate goals and crucial energy transition in the EU!”, says Kaija Valdmaa, Product Manager of Estfeed.

Out of 10 winners, Greenbird, Critical Software and Sunly did not complete the programme due to other business priorities. Due to these three spots opening up, one pilot, Becour, was able to join at the later stage and fill one vacant spot. Altogether, eight pilots finished the pilot programme successfully.

ACTIVITIES AND TIMELINE OF THE PILOTING PROGRAMME 2020



The implementation of pilots began in the second part of May 2020. Given COVID-19, the kick-off was done virtually, through web meetings, at the end of May. During these meetings, the main agenda of the pilot projects, as well as the ideas and action plans of each of the pilots, technical integration process and work procedures was introduced.

PAN-EUROPEAN ENERGY DATA SOLUTION

The experience with the European Energy Data Access Piloting Program suggests that there is a need for a Pan-European energy data access solution. However, this solution might embody many platforms and standards of data formats and exchange which have to be interoperable and agreed on. The following characteristics are seen as essential for a Pan-European energy data access solution:

- Harmonised standard(s) of data formats, access and exchange.
- Security, trust, non-repudiation has to be ensured. This can be solved with proper authentication, Public Key Infrastructure and encryption tools and technologies but also proper principles, requirements, regulations and processes have to be in place.
- Authentication solution(s) for users of web services and service providers alike, who want to access the data through data access technologies.
- Identification of the metering points of the user for giving consents and having an overview of the data that can be shared.
- Consent management system(s) that allow for giving, synchronising and controlling consents for automated data exchange and data processing.
- Transparency of data usage/processing history for the end user and owner of the data to have control over who or what has accessed the users personal data when and why.
- Besides metering data, also other data types where needed, easy integration of additional data sources and information systems must be enabled.
- Cloud-based and cloud-agnostic solutions (capable of operating with any public cloud provider with minimal disruptions) that simplify integration and administration, and scaling of business.



"WE HAVE HAD AN EXCITING YEAR PILOTING ENERGY DATA ACCESS BUSINESS CASES FROM RENEWABLE ENERGY MARKETPLACES TO API PLATFORMS FOR SIMPLIFYING DATA ACCESS. HUGE THANKS TO ALL THE ACTIVE PILOTS AND PARTNERS! "

KAIJA VALDMAA
Product Manager of Estfeed
Elering

"The EU Data Pilots demonstrate that energy data is a key mechanism to solving the climate crisis and unlocking innovation in the energy sector. Regulated entities responsible for data should ensure secure, transparent and structured methods for data access so that innovators can innovate, but this must be done within a governance structure that ensures privacy and consumer control over the use of their personal data." Rosella Jones, ElectraLink, Head of Data Integration Services.



"THE EU DATA PILOTS DEMONSTRATE THAT ENERGY DATA IS A KEY MECHANISM TO SOLVING THE CLIMATE CRISIS AND UNLOCKING INNOVATION IN THE ENERGY SECTOR."

ROSELLA JONES
Head of Data Integration Services
ElectraLink