

Final report

1. Project details

Project title	Smart Grid in the green energy technology conversion
File no.	64020-1078
Name of the funding scheme	EUDP
Project managing company / institution	De Frie Energiselskaber
CVR number (central business register)	36125586
Project partners	De Frie Energiselskaber. Kile Kommunikation
Submission date	05 April 2022

2. Summary

Describe the objectives of the project, the obtained results and how they will be utilized in the future.

Smart Grid or Smart Energy as it is also called, is key to green energy technology conversion. However, the full deployment of Smart Grid remains. Several barriers have been identified - including low consumer awareness and regulatory barriers for new companies.

The purpose of the project is to:

- Increase knowledge of market opportunities and barriers for potential companies that can deliver Smart Grid solutions.
- Increase and mobilize consumer interest in Smart Grid.
- Increase understanding of Smart Grid opportunities in decision makers.

In a light and vibrant way, the project wished to communicate the new energy technology opportunities, the latest knowledge and the expectations for Smart Grid.

Through analysis based on quantitative and qualitative studies, we have created a unique 15-episode podcast which informs and stimulates interest in engaging in Smart Grid opportunities. The podcast series is supplemented by 15 articles, distributed via www.defrieenergisekskaber.dk. Two large surveys uncovering consumer-interest in and knowledge regarding smart grid and the smart energy system have been produced as part of the project. The results from these surveys have been processed and included as a background for the podcast and as part of the articles supplementing the podcast.

The result of the project has thus been a "collection" of knowledge about energy technology, communicated towards our target groups with the purpose of enabling a better exploitation of the investments already made in Smart Grid and to push for a better use of the potential of Smart Grid going forward.

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Smart Grid eller smart energi, som det også kaldes i dag, står centralt i grøn energiteknisk omstilling. Fuld nyttiggørelse af Smart Grid lader dog vente på sig. Flere barrierer er identificeret - herunder lavt forbrugerkendskab og regulatoriske barrierer for nye selskaber.

Projektets formål var at:

- Øge viden om markedsmuligheder og -barrierer for potentielle virksomheder, der kan levere Smart Grid-løsninger.
- Øge og mobilisere interessen for Smart Grid hos forbrugerne.
- Øge forståelse for Smart Grid-muligheder hos beslutningstagere.

Det har været projektets intention, på let og levende vis at formidle de nye energiteknologiske muligheder, seneste viden samt forventningerne til Smart Grid. Gennem analyser baseret på kvantitative og kvalitative undersøgelser har vi skabt en unik podcast med 15 episoder, som oplyser og stimulerer interessen for engagement i Smart Grid-muligheder. Podcast-serien er suppleret af 15 artikler, som er offentliggjort på www.delfrieenergiselskaber.dk.

Som en del af projektet har vi foretaget to store spørgeundersøgelser, som har afdækket forbrugernes viden om og interesse for smart grid og smart energi. Resultaterne af disse har været anvendt i både podcasten som baggrund og i de supplerende artikler.

Udbyttet af projektet har dermed været formidling af energiteknologisk viden til målgrupperne med det formål at få kapitaliseret på de investeringer, der allerede er foretaget i Smart Grid og få sat skub i udnyttelsen af Smart Grid-muligheder fremover.

3. Project objectives

- *What was the objective of the project?*

The main objective of the project was to develop a podcast-series which can be used to inform companies, decision makers and consumers who are interested in smart energy and a sustainable energy system about smart energy and its advantages. The goal was and is to raise awareness about this important topic.

We wished to shed a light on potentials and barriers when trying to change the energy system. We also wished to provide new insights on research projects on smart energy, the challenges that "regular people" trying to participate and contribute to the smart energy system are facing and into the many – often conflicting – interests of stakeholders in the smart energy system.

- *Which energy technology has been developed and demonstrated?*

As the project is a communication project we have not developed any new technology.

We have focused on explaining why a smart energy system is important and how it can be obtained. As a part of this we have had a focus on flexible energy use.

4. Project implementation

- *How did the project evolve?*

The project has evolved through 4 phases:

Phase 1: Conception of the idea

The idea of a podcast was conceived because we have experienced a knowledge gap among companies, decision makers and consumers regarding the smart energy system. More often than not the concept of a smart energy system is explained in ways that are very technical and thus hard to understand. We saw a need to communicate a complicated topic in a lighter way than what is usually the case. The format of a podcast was chosen because this type of media is on the rise, especially among people who are interested in climate, sustainability and energy. Even though the tech-area is a tough topic to disseminate towards a general public, we felt that doing it through the kind of sound universe a podcast can create was the right format to communicate these abstract concepts in a lighter way than through the usual articles.

Phase 2: Research

The project has been based on a heavy amount of research carried out as part of the project but also based on former projects and analysis' made by others. As part of the research phase, the consultancy company Epinion has conducted two large surveys asking more than 2000 consumers about their smart energy knowledge, habits and interest in the topic.

Analysing these surveys to be able to include them into the podcast and into the articles was also part of the research phase.

The research phase was mainly carried out as preparation for the interviews and the articles and evolved as planned.

Phase 3: Production and post-production

This phase consisted of booking and carrying out a large number of interviews, real-sound-recording, finding music, writing manuscripts, speak-recording and editing of the episodes.

The phase also consisted of writing the supplementary articles to be published on the website of De Frie Energiselskaber.

This phase is the one which has evolved the most throughout the project. We have adopted an agile approach to the concept – in part due to what we found out during the research phase and in part due to the Covid pandemic which has presented us with several obstacles, not being able to meet people face to face for a longer period of time and not being able to travel.

Rather than rigidly insisting on following the original outline of the episodes, we have chosen to adapt the episodes to be able to finish them within reasonable time – although belated. In this way we have managed to cover the topics outlined in the original concept, even though the interview-persons have changed and that the content appear in a different order than originally planned.

Phase 4: Distribution and Marketing

This phase consist of distributing the podcast series through LibSyn. The series main hosting site is www.defrieenergiskaber.dk, but we have also made the series available on several mainstream podcast channels such as Apple Podcast, Spotify and Podimo in order to reach as many listeners as possible.

The marketing of the series has mainly been done through the website, via social media and through the use of “ambassadors” of the series: Some participants have been active in sharing their own episodes and the members of De Frie Energiselskaber have been encouraged to share the series with their own followers. We have also contacted several media outlets with an interest in the topic of smart energy. However this has not yet brought us any results. We will continue to contact them in order to disseminate the podcast further.

- *Describe the risks associated with conducting the project.*

The main risk in this project was, that it might not be possible to get the exact interview-persons, that we were hoping for and/or that the interview-sources we were focusing on would refuse to participate in the podcast.

This actually happened a couple of times. We have, however, been able to find other sources which are just as qualified.

Another risk was lack of interest from the target group. This does not seem to be the case. The number of downloads is steadily growing even though our marketing efforts have not been fully rolled out yet. Thus, we expect the number of listeners to grow quite a bit in the coming year.

- *Did the project implementation develop as foreseen and according to milestones agreed upon?*

It has taken longer than expected to develop and finish the project.

The research phase was conducted as planned, but due to Covid-restrictions it was much harder than expected to carry out the interviews needed. Again, due to the restrictions, it has not been possible to carry out the planned travelling and we had to find other interview-persons to cover the stories, that we wished to cover in the podcast.

As we went along with our research and also as the interviews progressed, we adapted our concept-description and initial pitch to fit in with reality and what we learned from our interview-persons. Often they would refer to sources that were different to the ones we had planned interviewing – and often the suggested new sources turned out to be very interesting and able to shed a light on the topic in a very good way.

Due to this process – which we found both enlightening and helpful to the quality of the project – we decided to change the name of the podcast from “Smart Grid smartly explained” to “Searching for smart energy” as we felt, that this new title would be more adequate and cover the content better.

- *Did the project experience problems not expected?*

We did not expect the interviewing-phase to be as long as it turned out to be.

5. Project results

- *Was the original objective of the project obtained? If not, explain which obstacles that caused it and which changes that were made to project plan to mitigate the obstacles.*

The objective of the project was to produce a 15 episode podcast- and article-series as well as two

large surveys about smart energy with an aim of increasing knowledge of market opportunities and barriers for potential companies that can deliver Smart Grid solutions, increasing and mobilizing consumer interest in Smart Grid and increasing understanding of Smart Grid opportunities in decision makers.

All of those objectives have been met in the project. The distribution and marketing of the series is ongoing and will be continuing after the official ending of the project. Thus we expect the numbers of listeners to the podcast to increase in the coming year. Judged from the feedback on the project we have received from various target groups, the podcast has reached the target audience – although we wish for the audience number to grow.

As explained in 5) during the production and also during the research period it became increasingly clear to us, that we needed to cover the topics from our original concept-outline in a different manner, than what we initially thought. Thus, as a result of this, we changed our working-title on the project from “Smart Grid – smart forklaret” (Smart Grid smartly explained) to “Jagten på smart energi” (Searching for smart energy).

- *Describe the obtained technological results. Did the project produce results not expected?*

Technological development has not been part of this project.

- *Describe the obtained commercial results. Did the project produce results not expected?*

The project has not had a commercial focus as the episodes are distributed free of charge. If we interpret “commercial” in a loose sense, we could talk about downloads of the podcast.

We are tracking the number of unique downloads of the podcast through the LibSyn-software used to distribute the podcast. The podcast has mainly been downloaded in Denmark, but also in other Scandinavian countries as well as in the US, Spain and Germany. The “foreign” downloads are due to the fact that some of the interview sources are affiliated with these countries. These downloads mainly come from the company target group. The podcast has to this date been downloaded 357 times which is less than we aim for, but we can see that the numbers are steadily rising and we are confident that the number will rise significantly during this coming year.

The feedback we have received so far is that the podcast is well produced and that it achieves the goal of communicating this abstract and complicated topic in a way that makes it accessible to the listener – and thus we are quite confident, that our dissemination efforts will succeed.

- *Target group and added value for users: Who should the solutions/technologies be sold to (target group)? Describe for each solutions/technology if several.*

The project has several target groups. We have described the estimated added value for each of these groups. As our product is mainly knowledge and creation of awareness about smart energy, the term “sold” is here interpreted in a loose sense.

1) **Small, innovative companies** who are interested in developing a business based on smart energy solutions.

This type of company is often based on a strong idea, concept or product and often driven by an enthusiastic CEO. As the resources in these types of start-ups are often scarce, their focus will be on the product and selling the product, more than researching regulatory barriers and orienting them-

selves in the political landscape. The added value of the podcast for this group is an easily accessible introduction and overview of the political and organisation landscape they have ventured into. By telling the stories of other similar companies and sharing their experiences, the podcast also broadens the knowledge foundation of existing and potential businesses.

2) **Consumers** who are interested in smart energy solutions and sustainability.

An integrated part of the recommendations from the Government's Smart Grid Network in 2011, on which part of the podcast is based, was that the consumers should be activated in order to become part of the smart energy system. Our surveys along with other similar surveys on the topic have shown, that this activation has not yet taken place. It was also part of the recommendations, that the authorities should actively inform much more about smart energy.

As this has not yet happened, the podcast and the supplementary articles could be a contribution and thus an added value for its users.

3) **Decision makers.**

During the making of the podcast it has become increasingly clear to us, that decision making regarding a smart energy system must be heavily based on science – but also that the topic is very complex and hard to understand for many politicians who have a large number of policy areas to cover.

By making the podcast an easily accessible introduction to the many aspects of smart energy, it can provide insights for politicians who might be new to the topic and who find it difficult to see through the many layers of interest in this policy area.

Based on the feedback we have received on the project, we have been successful in providing an easily accessible introduction to a complex and at times even abstract theme.

- *Where and how have the project results been disseminated? Specify which conferences, journals, etc. where the project has been disseminated.*

The podcast is hosted and disseminated through www.defrieenergisekskaber.dk.

It is also available on Apple Podcast, Spotify and Podimo. The podcast has also been disseminated via Social Media (mainly LinkedIn and Instagram). We have pitched the podcast to Danish media EnergiWatch, Altinget, EnergySupply and SustainReport and we are hopeful, that they will help us disseminate further. The last part has, however, not happened yet.

6. Utilisation of project results

- *Describe how the obtained technological results will be utilised in the future and by whom.*
Not relevant for this project.
- *Describe how the obtained commercial results will be utilised in the future and by whom the results will be commercialised.*
Not relevant for this project.

- *Did the project so far lead to increased turnover, exports, employment and additional private investments? Do the project partners expect that the project results in increased turnover, exports, employment and additional private investments?*

We are hoping for the project to result in increased awareness of smart energy, but we are not expecting it to lead to any kind of commercial gain for ourselves.

- *Describe the competitive situation in the market you expect to enter.*
 - *Are there competing solutions on the market? Specify who the main competitors are and describe their solutions.*

There is a great number of podcasts out there but not many in Danish describing the field of smart energy. Some of the Danish utility companies have launched their own podcasts, but they are mainly focusing on their own business and are not aiming to create a comprehensive explanation regarding the smart energy system.

Energinet has also developed a 6 episode podcast series named “New Winds” (Nye vinde). The series is featured on their website and was published in 2020. The episodes are long – 45 minutes each – and are hosted by a well known tv-host, Nynne Bjerre Christensen.

- *Describe entry or sales barriers and how these are expected to be overcome.*

The main barrier is making the podcast known. We are striving to overcome this barrier by pitching it to media outlets such as EnergySupply, EnergiWatch, Altinget and Sustain Report.

- *How does the project results contribute to realise energy policy objectives?*

Raising awareness about smart energy among regular consumers were part of a report with 9 recommendations from the Governments Smart Grid Network, published in 2011. As this is still a policy objective, the podcast will contribute to this raising of awareness among regular consumers as well as the larger consumers – companies.

- *If Ph.D.'s have been part of the project, it must be described how the results from the project are used in teaching and other dissemination activities.*

Not relevant to this project.

7. Project conclusion and perspective

- *State the conclusions made in the project.*

1. The project has identified a number of barriers to obtaining a smart energy system.

This includes a number of regulatory barriers regarding taxes, market entrance, Government support for green solutions and data access.

Another main barrier is the sheer number of stakeholders involved and the fact that the commercial gain of entering the smart energy market is not immediately in sight. This makes it difficult for researchers to obtain funds for the part of their smart energy research which is not directly linked to growth and it also slows down the innovation of smaller companies because it is difficult for them to make a positive business case.

A third barrier is the fact that regular consumers do not have any financial incentives to pursue smart energy solutions. Our surveys have thus clearly shown that there is a strong wish to contribute to the green transition but also that the financial incentives to implement the good intentions are weak. It is also clear that the majority of regular consumers are not aware of the advantages of a smart energy-system. As a consequence, smaller innovative companies offering smart energy services are facing a significant barrier in terms of lack of consumer demand.

2. The project has also identified a number of opportunities:

Many stakeholders expect smart energy solutions, smart homes etc to be on the rise and that the development will take off within the near future.

Finally we have concluded, that a number of research projects have proven, that the smart energy technology needed is in place, and that flexible energy use can be implemented as soon as the regulatory framework and the financial incentives for the DSO's are in place.

Examples of these projects are EnergyLab Nordhavnen, Flexible Energy Denmark and Avedøre Green City. These projects have all been described in the podcast and in the articles.

- *What are the next steps for the developed technology?*

Not relevant to this project.

- *Put into perspective how the project results may influence future development*

A huge obstacle to development within the field of smart energy is, that the public demand for solutions has been very low.

It is our hope that the podcast may contribute to raising the awareness about the topic by making information about the benefits of a smart energy system a bit more understandable and accessible.

8. Appendices

- Add link to relevant documents, publications, home pages etc.

Home page of the project: <https://www.defrieenergisekskaber.dk/udgivelser/podcast/>

Each episode is accompanied by an article outlining the episodes and often adding supplementary perspectives.

Episodes:

1. **Groundhog Day**. Featuring former minister of Climate and Energy affairs Lykke Friis Rasmussen. <https://www.defrieenergisekskaber.dk/groundhog-day/>

2. **Quick wins in the energy system.** Featuring Professor at DTU, Jacob Østergaard. <https://www.defrieenergiskaber.dk/lavthaengende-frugter-i-energisystemet/>
3. **Nobody wants smart energy.** Featuring CEO of an SME in the electricity-sector, Anders Millgaard. <https://www.defrieenergiskaber.dk/ingen-gider-smart-energi/>
4. **A transgressive electricity-bill.** Featuring Professor at DTU Henrik Madsen. <https://www.defrieenergiskaber.dk/en-graenseoverskridende-elregning/>
5. **Is Erik exploiting the system?** Featuring chair of the board at Avedøre Green City Erik Christensen. <https://www.defrieenergiskaber.dk/er-erik-en-system-nasser/>
6. **People are supposed to live here.** Featuring project manager of Energy Lab Nordhavn, Christoffer Greissen. <https://www.defrieenergiskaber.dk/mennesker-skal-jo-bo-i-det/>
7. **Green wash and black money.** Featuring CEO of EC Power Bjarne Bogner. <https://www.defrieenergiskaber.dk/groen-vask-og-sort-pege/>
8. **The market is broken.** Featuring CEO and investor Martin Thorborg. <https://www.defrieenergiskaber.dk/markedet-er-i-stykker/>
9. **A smart home.** Featuring CEO and smart energy enthusiast Dennis Mannike Lauritzen. <https://www.defrieenergiskaber.dk/et-smart-hjem/>
10. **The energy system flipped upside down.** Featuring project manager at Flexible Energy Denmark Heidi Hyre-Fenneberg.
11. **Old monopolies – new era.** Featuring CEO at EWII Lars Bonderup Bjørn. <https://www.defrieenergiskaber.dk/gamle-monopoler-nye-tider/>
12. **The energy market of the future.** Featuring Vicepresident of market affairs at Energinet, Jeppe Danø. <https://www.defrieenergiskaber.dk/fremtidens-energimarked/>
13. **Talk of the Parliament.** Featuring chair of the Klima udvalget Rasmus Helveg Petersen and member of Parliament and president of the Tax udvalg Anne Paulin. <https://www.defrieenergiskaber.dk/det-sir-de-paa-borgen/>
14. **What happened to the green dream?** Featuring Vice-president at Dansk Energi Anders Stouge. <https://www.defrieenergiskaber.dk/hvor-er-alle-droemmene-du-droemte/>
15. **That's all folks.** What have we learned about the smart energy system from the 14 episodes. <https://www.defrieenergiskaber.dk/vi-afblaeser-jagten/>