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DELIVERABLE: D4.2

National/Regional launch events with national prosumers platforms

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Building Up Next-Generation Smart Energy Services Offer and Market Up-take Valorising Energy Efficiency and Flexibility at Demand-Side.

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Summary

The cooperation between market players in the framework of the BungEES project – both demand and supply side – is being facilitated by prosumers platforms either set up by the project or already existing and exploited by it. For example, Plenitude and Voltalis companies already have large portfolio of customers-consumers that are being transformed into actual prosumers. These platforms have been used for receiving feedback on solutions developed by the project and have been key in validating the project outcomes.

In the case of the other partners, they started with mapping the market actors at national level, including ESPCs, aggregators, DSOs, energy cooperatives, obliged parties under the Energy Efficiency Obligation Schemes implementing art 7 EED and eventually the final consumers. Identified market actors have been engaged in the work of the above-mentioned prosumers' platforms, surveys, and feedback campaigns throughout the project.

In Czechia, Portugal and Slovakia, such platforms did not exist, and the partners invited identified market players to cooperate with them and have set up national prosumers' platforms. In Germany, Fraunhofer has been exploiting already existing fora.

As expected by the project, the partners organized first engagement events. Voltalis and Plenitude in the form of surveys among their consumers/prosumers, Fraunhofer used existing event of an existing fora for engaging with the prosumers. Other partners organized own events, as detailed in this short summary of the deliverable.

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Slovakia

Launch meeting of the Platform for Smart Energy Services (PSES) – name decided by the stakeholders, Mr Laktiš of state agency Slovak Innovation and Energy Agency (SIES) welcomed the guests and explained PSES and its functioning. The platform is a join initiative of the project BungEES and GreenDeal4Buildings. It will focus on cooperation (excluding areas regulated by Articles 101-106 TFEU) of market participants on both the supply and demand side. The platform is expected to bring together people, assets, and data to create entirely new ways of designing, delivering and consuming smart energy services and relevant products. Relevant activities will, for example, include:

- Sharing data, know-how, best practices, innovative solutions, case studies, new business and financial models developed by international projects under EU programmes, such as the BungEES project: Developing the supply and commercialisation of a new generation of smart energy services capitalising on energy efficiency and demand-side flexibility;
- Training of experts for smart energy services and use of international projects, e.g. REPowerE(d)U project: Further education and qualification system to support the European Commission's measures to decarbonise flexibility, reduce gas consumption and smooth energy peaks;
- Standardisation of contractual arrangements between different actors;
- Networking to reach out to top experts and operators in the market;
- Market development and use of services that combine energy efficiency with other energy services, technologies, and non-energy benefits.

The platform will include:

- **Energy lab**, which will facilitate the design of new complex solutions;
- **Market Group**, which will test legislative conditions against the needs of market participants;
- **Education platform** that will focus on disseminating knowledge and skills related to planning, installing, maintaining, testing the smart energy systems in buildings.

Mr Kováčik, President of the Association of Construction Entrepreneurs of Slovakia (ZSPS), welcomed the guests and explained the history and the need for the implementation of the Green Deal for Buildings project, the activities of ZSPS, expressed the need for the renovation of buildings as the future of the construction industry. He stressed that the links between the Slovak and Czech Republic in the construction industry is very good, therefore it is necessary to solve problems together. Developments in the construction and energy sector have been very turbulent in recent years and there is a need to respond to EU directives which specify the need to have buildings, formerly NZEBs, energy positive. Community energy will also be a big challenge, and smart technologies are needed for this. The link between building and energy is obvious and it is the future, which is why PSES was created. At the same time, it is important to focus on education in secondary schools and universities.

Mr Lauko, Director of Association of Energy Services Providers of Slovakia (APES SK) - took over the patronage of PSES - explained the activities of APES, stressed that performance-based projects are the way to the future, it is necessary to expand the use of smart energy services, to pay attention to the quality of the indoor environment, it will be necessary to address the involvement of all buildings in energy communities, the provision of flexibility. APES is currently implementing the Fortesi project - focusing on the implementation of technical solution packages, innovative financing, the aim is to increase EE, influencing user behaviour. He expressed the need to bring sectors together, as in the current environment it is no longer possible to address energy and construction separately.

Mr. Karásek of SEVEn - Presented the topics of energy services and their development, development of SES business models, non-energy benefits of SES in the framework of the BungEES project, presented its consortium, deliverables, and timeline. Two partners are implementation carriers - Voltalis - French aggregator, at the same time one of the largest in the world in residential sector - 150 thousand households connected, short response time, sells its capacity on energy markets. The second firm – Plenitude, and Europe-wide operator, represented by its Spanish subsidiary. Plenitude applies everything that is created in the project to its business, which is unique for similar projects. The research partner is Germany's Fraunhofer. He presented the flexibility model of the family house that the project has developed. It addresses the involvement of, for example, electromobility and providing flexibility through electric vehicles and at the same time engaging in community energy. Issues to be resolved: energy management costs, installation costs, fees - who will pay them, who will own the installation? Electricity trading? Data sharing, who owns it?

Question to the plenary: should aggregation focus on residential and non-residential sector (schools, nurseries)?

The project also addresses flexibility setup, data transfer, flexibility management instructions in family homes. The morphology of energy services is questionable. The project therefore addresses the creation of business packages that companies will be able to use. These are e.g., packages for electromobility, energy and electricity storage, heat pumps, etc. They addressed whether it makes sense to focus only on electricity or to also address heat and cooling or gas.

Mr Karásek presented the Voltalis system. The flexibility system controls heating, water heating and cooling. They have not yet offered to purchase the equipment and operate it. They have tried to incorporate heat pumps, which are more complex in terms of providing flexibility. The aggregator can shut down the system for heating and hot water for a contracted period, while maintaining the comfort of the user, to trade off expensive electricity at a particular time while helping the grid and its stability and trimming peaks.

Plenitude offers a PV installation service and has about 50 installation companies contracted. They also offer provision of hot water supply, energy storage and battery storage and provide management of subsidy mechanisms.

Q: Mr Piontek (EIB ELENA) - the project also focuses on energy savings, energy communities? What should the one-stop-shop look like?

A: Mr Karásek: our goal is to integrate energy saving with RES and flexibility, it is not a goal to install PV on any house in any condition, this would lead to problems in winter when electricity will be expensive and in summer it will be almost free or in negative prices, so a combination of EE, energy saving. One stop shop - a comprehensive OSS that would provide A to Z energy has not been seen in the Czech Republic yet, it is really a complex issue. The project is focused on creating a package of services and business models so that companies are not just selling electricity but a whole package of services. Energy communities - the Czech Republic is running into legislative barriers, gradually every three quarters of a year legislation is being added, but they need to set the rules of the game and municipalities are the ones that are being stretched so far. The biggest gap is the development of energy communities in municipalities. They have future EC projects ready, but they are still waiting. A big boom can be expected when the rules are clear.

Mr Lauko - on SR in the heating sector it is useful to focus also on multi-family buildings within the flexibility, in combination with district heating. Also, non-residential buildings should be involved.

Mr Doktor of ViaEuropa Competence Centre (ViaEuropa) - the project has a focus given by the EC, so it will not focus on gas. So far it is focused on residential sector. In Slovakia these services are not so developed and the project should bring inspiration.

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Powerex (energy services provider) - What is the final product of the project? - Proposals for business models applicable to all EU countries, legal standards, one stop shop in the sense that the company would provide a comprehensive package of services on its own or in cooperation with partners. They will be publicly available.

Mr Doktor of ViaEuropa - at the same time trained professionals and experts are also needed for SES provision needs. This is what the REPowerE(d)U project is being implemented to do.

Mr Karásek of SEVEn - Non energy benefits - NEBs are additional or indirect benefits associated with the provision of energy services beyond direct energy savings. An example is a manufacturing hall, a green roof building was created, with indoor environmental management. The biggest benefit was that they didn't have to find workers, they didn't have a shortage of staff, recruiting people became very easy. Improved lighting reduces eye strain and better work productivity, better air conditioning reduces CO2 concentration, therefore work productivity, people think better. NEBs are becoming part of EPC projects as well.

What is the experience in Slovakia? Mr Lauko of APES - every renovation aimed at increasing EE automatically brings NEB. Important whether they were also part of the contract, whether they were required. This does not happen in Slovakia. The design and build method can bring about the design of NEBs in the project. There is no guarantee required for NEBs. There is no experience, there are no clear methodologies on how to measure the achievement of NEB. Several things we cannot measure, e.g., user comfort, how do people feel in the building, reduction in employee sickness, increased work efficiency? It is counted that with the implementation of austerity measures will come NEB.

Amicus (construction company) - expressed willingness to be part of the NEB research using their zonal control technology.

Mr Nemec of Union of Cities - Can any of this be taken into the preparation of EPC projects or would it make sense to press the Ministry of Finance to drop the condition that payback be evaluated solely on energy savings without operational savings. Mr Lauko of APES - NEB also includes savings on personnel and operations, these can be quantified but cannot be applied in EPC projects. Of course, there are business models where they can be included in some way.

Mr Doktor of ViaEuropa - the NEB could also include, e.g., the provision of social services (electric car transport to the doctor, etc.) by a company that provides energy services and operates an electric mobility system in the city.

EIB presentation made by Zuzana Kaparová - Head of EIB Representation in Slovakia and Andreas Piontek - EIB ELENA Programme Specialist.

Mr Kováčik of ZSPS - introduced the section of the programme aimed at EIB. Slovakia is significantly underinvested and underutilised, both in public and private investment. Slovakia's problem is that we have a problem to use up the euro funds for construction investments. Grant resources and national resources cannot be enough and private and repayable resources need to be involved. We can take inspiration from abroad and apply good examples of practice. The EIB can help to improve investment.

Mrs Kaparová of EIB - The EIB is made up of the European Investment Fund and the EIB .The shareholders are the Member States, it is an EU bank. It is the EU's climate bank; it is committed to compliance with the Paris Agreement. The EIB also operates outside Europe. Largest provider of funds internationally. In its history, it has lent over EUR 4.9 trillion. They lend to the public sector but also to the private sector (corporates, framework loans to banks who then lend to businesses). EIB provides low interest rates and long maturities. The most common products are direct loans, framework loans. ELENA programme - an initiative of the EC and the EIB. It finances project preparation and investment.

Programme of technical assistance provides support to developing projects that are relevant to the platforms' efforts: smart grids, RES in buildings, EV charging points, decarbonisation of buildings.

29 stakeholders took part in the meeting.

ANNEXES:

- Annex 1 – Invitation and Agenda;
- Annex 2 – Presentation of SEVEn on the project BungEES;
- Annex 3 – Presentation of EIB on financing opportunities and technical assistance ELENA;
- Annex 4 – Signed list of participants.

Portugal

The BungEES Portuguese Prosumers Platform Event took place on 25 October 2023 at the Arts and Entertainment Centre in Figueira da Foz – Portugal. ISR-University of Coimbra organized the event with the support of the municipality of Figueira da Foz. This event was organized in cooperation with two other sister LIFE projects, namely Own Your SECAP and REVERTER. This event included presentations, Q&A (Questions and Answers) sessions, debate sessions and round tables. The event had more than 100 participants being registered, but due to some last day cancelations and others not being able to attend all the event the number had a small reduction.

The BungEES project and its service model was presented to a vast audience of more than 80 people present from very different areas of expertise and institutions. The audience included people from the Portuguese-EU Climate Neutral and Smart Cities mission; Public institutions such as Portuguese Environment Agency (APA in Portuguese), National Entity for the Energetic Sector (ENSE), Portuguese Energy Agency (ADENE), Portugal 2030 Regional Fund Management Programme, National Directorate of Energy and Geology (DGEG), Professional Association of Engineers (OE), several representatives from municipalities (e.g. Cascais, Castelo Branco, Coimbra, Figueira da Foz, Guimarães, Ílhavo, Vagos, Tomar, etc.). Additionally, private associations, SMEs, ESCOs (e.g. Bright City, Cleanwatts, Coopérnico, Veolia Portugal, Contawatt, APESE-Portuguese ESCO Association, etc.), private citizens, consultants and other entrepreneurs also attended this event.

The diversity of the above-mentioned audience, allowed to disseminate the BungEES concept and business model to a broader audience which is extremely important in terms of dissemination objectives and awareness raising. The combination of the prosumers' platform launch event with other LIFE Projects event allowed BungEES to reach a higher number of stakeholders increasing the project outreach.

The BungEES presentation was followed by a Q&A (Question and Answers) session which revealed a significant interested from the audience, namely the ESCOs and some municipalities present which showed to be interested in the potential business opportunities of BungEES concept.

The main **objectives** of the meeting were:

- Present the BungEES concept and introduce the business model to the participants, namely to the most relevant stakeholders (ESCOs and other energy service providers);
- Increase ESCOs engagement in the BungEES project, by meeting them in a face-to-face environment. For this the networking the lunch break was very important;
- Collect feedback from ESCOs related to the energy services market in Portugal, namely to obtain additional insights concerning market barriers and technical constraints, knowledge on flexibility, business capacity and perspectives for the future.

The **event targeted** energy service companies, other prosumers (SMEs, large companies, and private end-users), and other companies that develop energy services (e.g., energy audits,

diagnostics, renewable energy systems installers, etc.). Public authorities also benefited from the learning the socio-economic benefits of the BungEES concept.

The BungEES presentation and Q&A section took a little more than 2 hours. Additionally, the organization of the event stimulated an informal networking session during the lunch time (around 90 minutes), were informal discussions were made between the BungEES team and ESCOs, municipalities (also quite interested in the BungEES service model) and other entities present including the environmental association ZERO. During the afternoon the ISR team participated in the round tables and debate sessions that included matters relevant or within the BungEES scope.

The **main results and lessons** learnt have been:

- These events are important to increase and create a stronger engagement with relevant stakeholders within the project scope;
- A large dissemination of the BungEES concept was achieved and some stakeholder outside the scope (or not considered until now, such as municipalities) revealed a significant interest in this concept specially within the future perspective of a large increase in electric vehicles, charging stations, energy storage, urgent replacement of gas and electrification of buildings;
- ESCOs mentioned that in fact flexibility is still a concept that needs to be further disseminated in Portugal, but BungEES is helping to change this;
- This event helped to increase the ESCOs engagement with the Portuguese BungEES project team which is crucial for future interaction within BungEES scope.

ANNEXES:

- Annex 5 – presentation of ISR on the BungEES project;
- Annex 6 – presentation of ISR on other initiatives;
- Annex 7 – signed presence list.

Germany

Participation in the EDL HUB Live Update took place on September 4, 2023.[1] The event was organized by DENEFF, the German business association for energy efficiency (Deutsche Unternehmensinitiative Energieeffizienz e.V.) with over 220 members from different industries that are concerned with energy efficiency. The DENEFF EDL_HUB was founded in November 2019 by the German Energy Efficiency Business Initiative (DENEFF), the leading energy efficiency association. In the DENEFF EDL_HUB, the most important pioneering companies in the energy services industry have come together to network and jointly contribute in the best possible way to achieving the energy transition goals and advancing decarbonization. It is the strong political voice and network of innovative energy service providers in Germany. Together, the participants of DENEFF EDL_HUB work on shaping suitable framework conditions, on better networking of the energy services industry and on developing innovative decarbonization solutions.

As a voice of businesses in energy efficiency, advocating for an ambitious and effective energy (efficiency) policy in Germany and Europe. As a leading energy transition network, DENEFF aims to

[1] https://deneff.org/deneff-veranstaltung/6-deneff-live-update/

drive innovation at the interface between markets and politics. Within DENEFF, the EDL HUB is specifically organized for energy service companies (ESCOs and related business models).[2]

The EDL HUB Live Updates is a series of regular, internal events that is exclusive for members. The event includes presentations of current topics and provides a platform for exchange among members. In the September event, the focus point on the agenda was the recent German policy initiative on heating (Wärmewende), as draft legislation had just been published at the time of the event. The discussion focused on what had been proposed by legislators, the DENEEF staff explained and discussed the implications for businesses and pointed to open questions in the process. ESCOs are highly concerned with the ambitious legislation because it is set to impose strict rules on the building sector, but the implementation and technical details of the proposal are unclear and subject to constant revision at the current stage.

Fraunhofer's presentation on the BungEES project was the final point on the agenda. The presentation had three elements:

- An introduction to BungEES, its background, key partners and expected outcome;
- The objectives of the project and a pitch for the business model, and Networking with EDL HUB members;
- The survey on energy service business models (XaaS) in WP 3.

The members of the EDL Hub are the target group of the survey and were encouraged to participate and give feedback on their experiences. The slides were kept short on purpose, as this was specifically requested by the DENEFF staff to match the format of the event series. The event lasted 1 hour (11:30 – 12:30). There were 20 participants from different companies in the energy and building sector, including SMEs and large energy providers. EDL HUB did not disclose names of the participants for GDPR purposes.

ANNEXES:

- Annex 8 – presentation of Fraunhofer on the BungEES project.

France

In France, Voltalis has prepared a survey among their consumers (to be prosumers). The survey has been prepared in cooperation with other partners who made their comments and suggestions to the survey.

The **objective** of the survey is to collect data, understanding, and feedback from existing end-users of the Voltalis solution, that means people having already subscribed to a flexibility / demand response solution. The feedback will be about demand response activity, but also more widely about interest for energy/environmental topics, digital services allowed by MyVoltalis (Voltalis mobile app for end-users) and other digital energy services.

The **target group** of the survey will be the following end-users from Voltalis users'database:

- Based in France
- Installed before end of winter 2022/2023 (to get their feedback on DR, which is activated during winter in France);
- If possible, using services of MyVoltalis app .

[2] https://www.edlhub.org/

To **maximize survey response rate**, survey will be sent between end-November and mid-December. Indeed, to talk about Voltalis and demand response (that is strongly associated with heating) to end-users and have their attention, it is more relevant to wait the heating season, generally starting under normal circumstances at the beginning of November.

- The survey will follow the following indicative timeline:
- End-November 2023: survey mailing;
- Mid-December 2023: analysis of survey results.

End-users will be contacted through an emailing campaign. To get **several tens of answers** – to allow statistical analysis, **Voltalis will include around 1500 – 2000 end-users in the mailing campaign** (by experience, such campaigns generally give around 5% of answers).

ANNEXES:

- Annex 9 – Invitation to the survey: starting screenshot in html email;
- Annex 10 – Survey‘s questions translated into English.

Spain

Similarly to France, Plenitude has prepared survey and also in this case the survey has been prepared in cooperation with other partners who made their comments and suggestions.

The **survey aims** at energy consumption habits, the knowledge that customers have about energy services such as photovoltaic, heat pumps, recharging points. It also presents a couple of new concepts for residential sector, such as the term prosumer and flexibility. In conclusion, the aim is to find out whether the customer would be interested in an idea such as "FlexiSmart Home", which aims to integrate various energy efficiency services with storage, self-consumption of locally generated electricity from renewables, charging points, heat pumps and smart thermostats. The aim of this survey is to find out about the characteristics of a **large group of customers in Spain** and so be able to focus the **development of the product** in an interesting way to promote electrification in Europe and energy management in an efficient way.

In this survey to be carried out in Spain, the following key points have been considered:

- Number of surveys: 10.000 active customers;
- Expected response: 2-3 %;
- Type of customer: Residential;
- Type of access tariff: 2.0TD;
- Geographical location: Spain;
- Survey duration: 3 weeks;
- Start of the surveys: in November (close to start of the heating season).

An action plan has been set up, in which the survey will be sent by email to 10.000 Plenitude customers. After the first communication, it will be sent again to customers who have not opened the email reminding them that they have a pending survey in which they can participate in a prize draw. This email will be resent one week later in case the customer has not opened the email.

In addition to this action plan, there will be a draw for 10 Amazon vouchers for all those who fill in the survey and leave their details, as the survey itself is anonymous.

The aim of these actions is to obtain as many responses as possible to make this survey as truthful as possible and to have as much data as possible to study.

As for the mailing that has been sent to customers to complete the survey and provide us with value on their knowledge, it is shown below:

ASUNTO: Participa en la encuesta y podrás conseguir una tarjeta de Amazon de 50€

CUERPO DEL EMAIL:

¡Hola (NOMBRE_CLIENTE)!

Desde Plenitude buscamos constantemente diferentes formas de optimizar el consumo de nuestros clientes. Esta premisa nos ha llevado a **participar en un proyecto europeo denominado BungEES** (https://eniplenitude.es/blog/actualidad/plenitude-forma-parte-del-proyecto-europeo-bungees/), en el que se persigue este mismo objetivo: la creación de ofertas de servicios energéticos que ayuden a nuestros clientes a ahorrar.

Para poder completarlo satisfactoriamente, **nos falta lo más importante, conocer tu opinión**. Para ello, hemos preparado la siguiente encuesta (no te llevará más de 10 minutos responderla). Por supuesto, tu participación es completamente voluntaria. Además, tus respuestas serán anónimas y se tratarán de acuerdo con nuestra **Política de Privacidad.**

Entre todas las personas que participen **sortearemos 10 bonos de Amazon por un valor de 50€ cada uno**.

¿Te animas a acompañarnos en este proyecto?

BOTÓN: QUIERO PARTICIPAR

Si quieres saber más información sobre el proyecto BungEES, puedes hacerlo pinchando **aquí.** (https://eniplenitude.es/blog/actualidad/plenitude-forma-parte-del-proyecto-europeo-bungees/)

Muchas gracias por tu opinión y por formar parte de la familia Plenitude.

Un saludo, “

ANNEXES:

- Annex 11 – The survey in Spanish version that Plenitude will send to their customers.

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Czechia

In the Czech Republic, the communication was initiated with the existing platforms to engage participants on both the demand and supply sides of the market. The discussions were held with the key members of National Association of Energy Services Providers (APES). APES was founded in October 2010 with the purpose of contributing to the sustainable development of energy services in the Czech market. Currently, it brings together 30 major companies in the energy services sector with a guarantee.

The meeting took place at the APES premises. In the first part of the meeting, the BungEES project and its activities were introduced. The project's goals and outputs, which will be beneficial for APES members, were presented. Additionally, examples of energy service models and the created energy service models, which are part of the project, were presented. Subsequently, a discussion on energy services was initiated. In the next part of the meeting, the issue of non-energy benefits (NEBs) was introduced, followed by a detailed discussion on this topic.

The presentation and discussion followed this **agenda**:

- Introduction of the BungEES project and its activities
- Business models (Energy Efficiency Service Model)
- Non-energy benefits (NEBs)

The event **was held on 17 August 2023**, the presentation of the BungEES project and the following discussion lasted 2 hours.

The following **participants** took part in the meeting:

Besides the participants from SEVEn (Jiří Karásek, Jan Pojar), the meeting was attended by 7 participants. The meeting was attended by APES management and APES council members. APES Council currently consists of three representatives of ESCO companies and two representatives of consulting companies.

- **Radim Kohoutek** (Executive Director of APES, Executive Director at DS Energy Consulting s.r.o., The company specializes in contracts related to the energy performance of buildings.)
- **Eva Ksiazczak** (PR and online marketing at ENESA a.s. The company is a part of the ČEZ ESCO group. ENESA a.s. is one of the most experienced providers of energy services and energy construction suppliers in the Czech Republic.)
- **Miroslav Marada** (Director for Strategy and Development at ENESA a.s., ENESA a.s. is an experienced and successful energy performance contracting (EPC) provider in the Czech Republic.)
- **Jaroslav Maroušek** (Chairman of the board at SEVEn, focuses on projects aimed at implementing specific energy-saving projects.)
- **Eduard Paulík** (Managing director at D-energy s.r.o., D-energy s.r.o. was established with the aim of providing comprehensive services in the field of energy savings.)
- **Libor Prouza** (Managing partner at LOYD GROUP, it is a Czech independent company of experienced managers, consultants, and technical experts. We specialize in technical consulting in the fields of energy and ICT.)
- **Martin Hvozda** (Manager of the Energy Services Division at ENETIQA a.s., ENETIQA is engaged in the distribution of thermal energy, combined production of electricity and heat with high efficiency, and energy production from waste.)

During the discussions with APES, important topics were discussed, which served as the basis for the preparation of this deliverable. Among the topics discussed were:

- Knowledge and awareness of non-energy benefits;
- Experience with NEBs; Specific use of NEBs;
- Examples of specific NEBs;
- Cooperation with clients; and
- Barriers and challenges.

Short summary of **the key topics discussed**:

1. *Complexity of individual packages from a production/delivery perspective*

The service model being developed within the BungEES project focuses on providing service packages that allow for the individual customization of service parameters. In projects undertaken by the Association of Energy Service Providers (APES), there is likely to be an emphasis on the utilization of comprehensive packages (ideally, all-inclusive). The aim is to provide the most comprehensive services possible, ensuring a wide range of energy-saving measures. Some APES projects are already operating in areas beyond just energy efficiency.

2. *Non-Energy Benefits, experiences, and discussions*

Some of the benefits of Energy Efficiency Services (EES) may not necessarily be considered non-energy benefits; for instance, the **reduction in CO2 emissions** can be regarded as part of the energy-related benefits. Therefore, it is worth considering whether benefits closely associated with energy-related gains should be viewed as distinct non-energy benefits.

3. *Practical Example - School Building Renovation*

In the Czech Republic, when addressing the renovation of school buildings, a situation often arises where the energy balance of the facility worsens due to the need to comply with current ventilation standards for school buildings, leading to increased energy consumption. Because the **existing building did not adequately address ventilation**, the increase in energy consumption ensures sufficient air exchange and indoor air quality improvement, even though it results in higher energy consumption.

A common benefit that contract initiators often overlook in the initial project phase is a **reduced need for personnel** due to higher automation of the building's energy system, resulting in lower operating and maintenance costs.

Another non-energy benefit of energy-saving measures, such as installing modern equipment, is **reduced equipment breakdowns** and **increased availability of spare parts**.

One of the non-energy benefits can be an **increase in safety**, which may be related, for example, to a **reduction in accidents within the building's operations**. The use of modern lighting can enhance the overall lighting comfort within the facility, prevent insufficient illumination of certain areas of the building, and potentially reduce the number of accidents. The question is how to quantify benefits of this nature and evaluate whether the measures had this benefit or not.

A similar issue arises with the enhancement of energy security. Implementing measures can lead to a **reduction in energy dependency** or an **increase in fuel diversification**, which can ensure uninterrupted operations during network outages or price spikes and potentially enhance competitiveness. Again, the problem lies in how to quantify these measures until a crisis occurs in which these benefits are utilized, making it difficult to assess them within the project procurement process.

4. Discussion on technical solutions to NEBs, control of NEBs, responses, and legislation

How will the distribution respond? Will they be interested or resist?

Distribution companies may have several reasons to resist the introduction of aggregator systems:

- **Control over the grid**: Distribution companies are responsible for the operation and management of electrical grids. The introduction of aggregators could potentially mean that some control over grid operations would be transferred to these systems, which could impact the traditional role of distribution companies.
- **Disruption of the traditional model**: The introduction of aggregators and decentralized energy may alter the traditional model of electricity supply, where distribution companies provide electricity one-way—from central sources to customers. Aggregators enable customers to participate more in the production and management of their energy.
- **Economic reasons**: The introduction of aggregators can have economic implications for distribution companies. For example, if aggregators take over certain functions, the revenue from grid operation for distribution companies may decrease.
- **Limiting investments**: Distribution companies may be interested in investing in their infrastructure and innovations and may not be willing to support the introduction of new technologies that could compete with their own investments.

The introduction of aggregators can be seen as an opportunity for innovation and modernization of the energy system, as well as a challenge to reevaluate traditional models and practices.

Centralized Remote Control

In the Czech Republic, a system of centralized remote control (CRC) is developing. This technology allows for the transmission of codes or signals that control the activation and deactivation of certain electrothermal appliances, such as boilers, electric heating, and the like. It is highly likely that when used in conjunction with an aggregator system, the CRC system will be controlled much more comprehensively and with greater reach. It can be said that the current CRC system, for the time being, performs part of the aggregator's tasks.

Aggregated Services Contract?

What will bind the customer to allow someone to control the shutdown of appliances?

- Customers should participate in the aggregator program on a voluntary basis. This means that they can voluntarily decide whether they want to integrate their appliances into the system or not.
- A predetermined period during which participating customers may temporarily reduce the consumption of certain appliances. Customers agree to limit their consumption during these times through the aggregator or system automation.
- The aggregator can offer customers flexibility in terms of consumption scheduling. Customers may have the option to set preferences for when and how their appliances can be controlled by the aggregator. For example, they can specify times when the aggregator should not affect the operation of certain devices.
- The aggregator can provide customers with notifications before it starts affecting the operation of their appliances. This allows customers to know when their consumption will be temporarily restricted and gives them the opportunity to intervene and cancel the restriction if desired.

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Overall, ensuring that the customer agrees to have their appliances controlled by the aggregator should be done on a voluntary basis, respecting each customer's individual preferences and privacy. In turn, customers will be motivated by the opportunity to achieve cost savings on their energy expenses. The aggregator will offer them lower electricity prices or financial incentives associated with using flexibility in their devices and appliances. Another motivation for the customer is the convenience associated with automation and the use of new modern technologies.

Technical Parameters for Appliance Shutdown

The technical parameters for shutting down customer appliances by the aggregator may vary depending on the specific system, application, and needs.

- The aggregator should establish a hierarchy of appliance priorities, meaning that certain appliances may be switched off before others if there is a need to reduce grid load.
- The duration and frequency of appliance shutdowns should be determined in a way that does not compromise customer comfort and appliance functionality.
- Data collection and modeling of customer consumption. The aggregator can work based on previous consumption and appliance behavior data. This can help predict when and how appliances will be used.
- The aggregator should transparently share information about how it affects the operation of appliances and inform customers about the reasons and plans for shutdowns. The aggregator should employ secure authentication and communication methods with appliances to prevent unauthorized access or interference.
- Customers should have the option to intervene and prevent the shutdown of their appliances if they so desire.

Measurement, Data Collection, and Prediction

The aggregator must monitor several key factors and parameters to efficiently respond to grid demands and optimize appliance operations. These factors help it understand the current state of the grid and energy utilization, enabling it to plan and implement appropriate measures.

- Monitor current energy consumption at various levels:
  - Overall;
  - Among individual customers or customer groups; and
  - For individual appliances.
- Monitor energy production from various sources;
- Monitor voltage and frequency of the electrical grid;
- Monitor available network capacity;
- Track demand in the energy market;
- Monitor current electricity prices;
- Monitor and evaluate historical energy consumption and production;
- Monitor and forecast weather conditions;
- Monitor the status of the energy grid, including faults, outages, repairs, etc.

Cogeneration Units in Large Buildings

In the Czech Republic, large buildings such as hospitals, shopping centers, and the like typically have backup energy sources in the form of cogeneration units. The use of these units could offer more interesting possibilities compared to residential homes.

For instance, hospitals often have cogeneration units solely as backup for emergency situations, but there is potential to utilize these units to meet the energy grid's needs. Cogeneration units

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can be controlled to rapidly respond to changes in electricity or heat demand. This provides flexibility in optimizing operations based on current requirements.

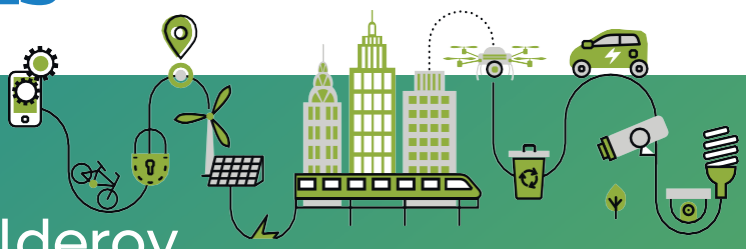
During peak demand periods, cogeneration units can generate electricity and heat directly at the point of consumption, reducing the burden on the distribution grid and minimizing the risk of voltage fluctuations.

Cogeneration units offer the potential to participate in energy flexibility not only for electricity but also for thermal energy.

ANNEXES:

- Annex 12 – Invitation and Agenda of the event;
- Annex 13 – Presentation of SEVEn on BungEES.

Annex 1



Pozvánka na deviate stretnutie

Okrúhleho stola stakeholderov projektu Zelená dohoda pre budovy a Platformy pre smart energetické služby (PSES)

Dátum	28. septembra 2023
Čas	10:00-12:00 (PSES), 12:00 – 17:00 (Okrúhly stôl)
Miesto konania	Hotel LOFT, Štefánikova 4, 81105 Bratislava
Registrácia	
Platforma	https://app.smartsheet.com/b/form/a11f68f9f9cf4a52b9a3dd619f2afb57
Okrúhly stôl	https://app.smartsheet.com/b/form/645f405250934fa69c14384122827951

PROGRAM

Zakladajúce stretnutie Platformy pre smart energetické služby (PSES)

10:00-10:20	Úvod k cieľom platformy, Pavol Kováčik, prezident, ZSPS, Marcel Lauko, predseda APES
10:20-11:00	Budovanie ponuky inteligentných energetických služieb novej generácie a rozšírenie trhu pre zhodnocovanie energetickej účinnosti a flexibility na strane dopytu, diskusia o NEBs a službách, Jiří Karásek, SEVEn
11:00-11:20	Technická pomoc EIB ELENA pre prípravu projektov smart sietí, elektro mobility, integrovaných obnoviteľných zdrojov energie v budovách, EIB
11:20-12:00	Rôzne a diskusia

Okrúhly stôl stakeholderov

12:00-13:00	*Občerstvenie pre účastníkov a networking*
13:00-13:15	**Otvorenie,** Pavol Kováčik, prezident, ZSPS

Plenárne zasadnutie – 1. časť: ELENA

13:15-14:00	Technická pomoc EIB ELENA pre prípravu projektov udržateľných energetických investícií: obnova budov, mestské osvetlenie, centrálne vykurovanie/chladenie, mestská doprava, smart siete, RES integrované v budovách, EIB
14:00-15:00	Diskusia k navrhnutým opatreniam, závery, Stanislav Laktiš, SIEA
Prestávka na kávu	

Plenárne zasadnutie – 2. časť: Príprava projektov udržateľných energetických investícií v rámci okrúhlych stolov

15:05-15:45	Diskusia k možným oblastiam projektov: obnova nebytových budov, mestské osvetlenie, centrálne vykurovanie/chladenie, mestská doprava, smart siete, RES integrované v budovách, moderovaná ZSPS
15:45-16:25	Príprava zásobníka projektov k realizácii v spolupráci stakeholderov za tech. podpory EIB a iných Európskych inštitúcií, Pavol Kováčik, prezident, ZSPS

Diskusia a záver

Viac informácií o projekte Zelená dohoda pre budovy na stránke www.greendeal4buildings.eu

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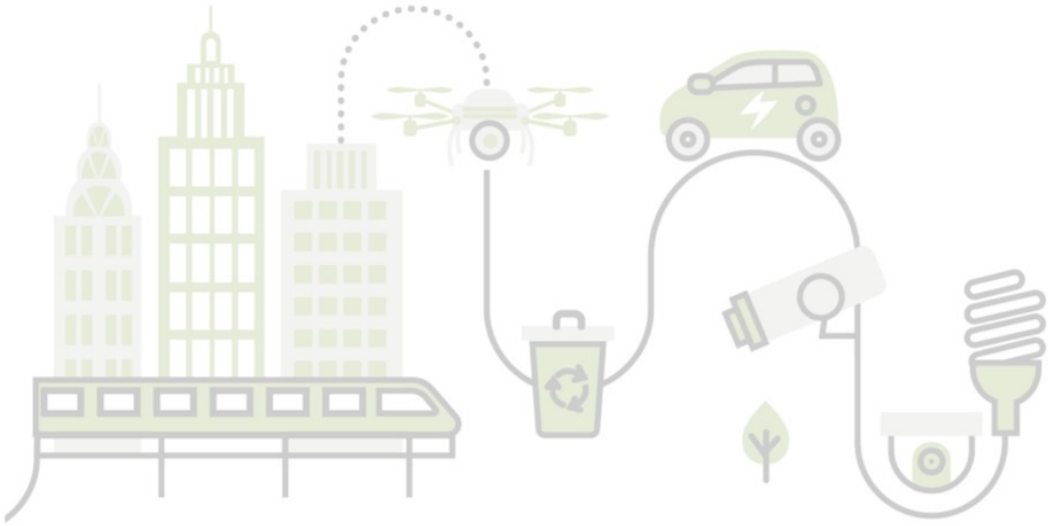
Annex 2

Chytré energetické služby využívající flexibilitu

BungEES

Jiří Karásek, senior konzultant
SEVEn, The Energy Efficiency Center



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Program

- ❑ 1) Úvod do projektu BungEES a jeho aktivit
- ❑ 2) Představení obchodních modelů

  Představení a diskuse
- ❑ 3) Neenergetické benefity (Non-Energy Benefits – NEBs)

  Představení a diskuse

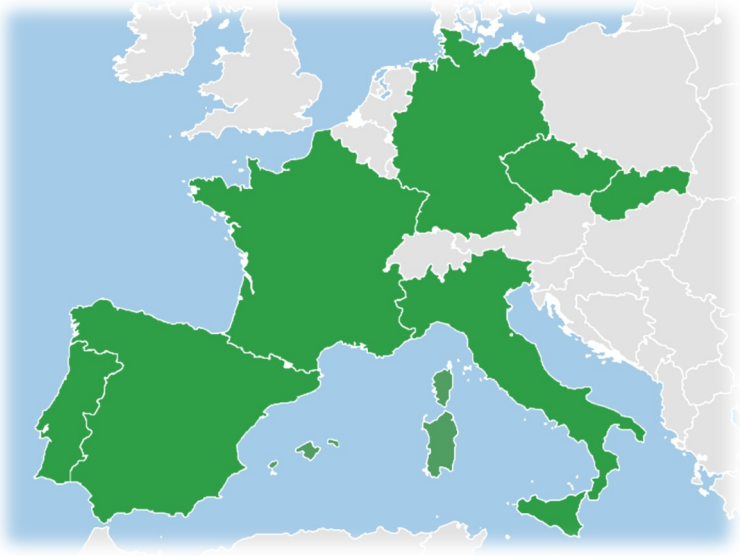
Cíle projektu BungEES

Cílem projektu je vyvinout **integrovaný balíček** („one-stop-shop“) **nových inteligentních služeb v oblasti energetické účinnosti** (EES),

a vyvinout **inovativní řešení financování a odměňování**

- Detailní **návrh inovovaného modelu inteligentní služby energetické účinnosti**
- **Katalog neenergetických služeb**
- **Validace** konceptu nových inteligentních služeb
- Monitorování dat z **25 pilotních projektů**
- Více než **120 poskytovatelů EES využívajících výsledky projektu**
- **Analýza** regulatorních faktorů a překážek na trhu
- Více než **1 milion konečných příjemců**
- **Vytvoření 6 platforem pro spotřebitele** v partnerských zemích projektu

Partneři projektu - 7 zemí



VIAEUROPA®

Voltalis

JOULE ASSETS

SEVEn THE ENERGY EFFICIENCY CENTER

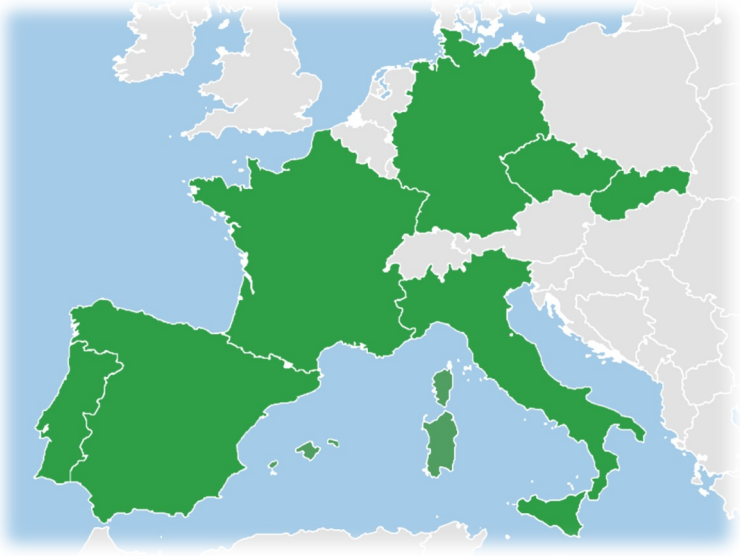
Fraunhofer

INSTITUTE OF SYSTEMS AND ROBOTICS UNIVERSITY OF COIMBRA

plenitude

ZSPS

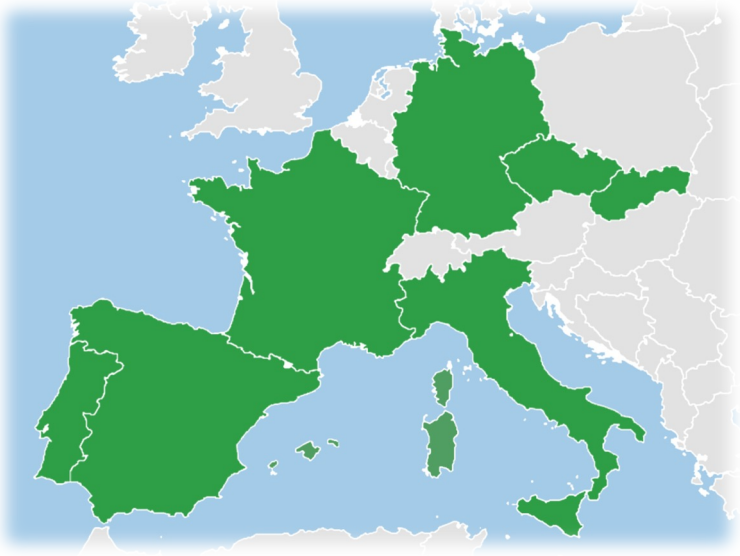
Partneři projektu - 7 zemí



Voltalis

- největší agregátor v reálném čase na světě
  - **+150 000** připojených domácností, komerčních budov a kanceláří
  - doba odezvy **< 2 vteřiny**
- Denně prodává svou kapacitu na straně poptávky energetickým společnostem a energetickým trhům.

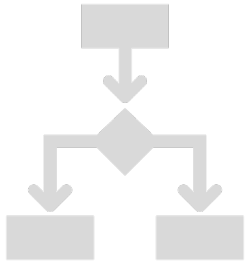
Partneři projektu - 7 zemí



plenitude

- Působí v **8 zemích**:
  - Itálie
  - Francie
  - Španělsko
  - Portugalsko
  - Velká Británie
  - Řecko
  - Norsko
  - Kazachstán
- **10 milionů** zákazníků

Očekávané výsledky projektu



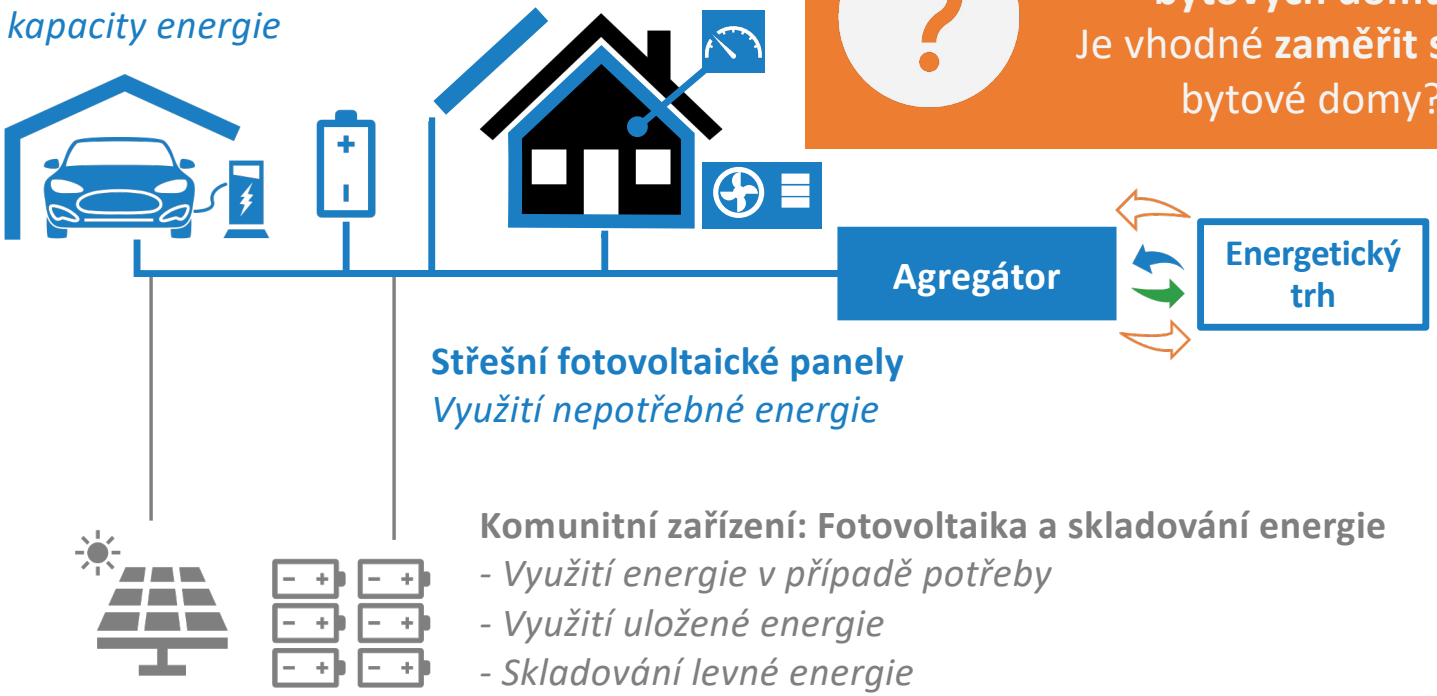
- **Model služeb Smart EES**
  - **Koncept** a model služby *3/2024*
  - **Prototyp**
  - **Koncept balíčků** a **detailní model** servisu *9/2024*
  - **Konečný koncept a model inteligentní služby EES** *9/2025*

- **Status Quo analýza neenergetických přínosů (Non-Energy Benefits - NEBs)**
  - Katalog neenergetických přínosů *9/2024*
- **Analýza regulatorních nedostatků a netechnických překážek** *3/2024*
- **Pokyny pro provádění** nových smluvních ujednání *9/2025*
- **Studie o vznikajících a na trhu osvědčených službách a obchodním modelu XaaS ve stavebnictví**
- **Soubor údajů shromážděných z průzkumů a rozhovorů** *11/2023*

Možnosti flexibility – Rodinný dům

Elektrické vozidlo
Využití uložené kapacity energie

Skladování energie
Využití uložené energie



Jaký je potenciál zapojení **bytových domů**?
Je vhodné **zaměřit se** i na bytové domy?

Střešní fotovoltaické panely
Využití nepotřebné energie

Komunitní zařízení: Fotovoltaika a skladování energie
- *Využití energie v případě potřeby*
- *Využití uložené energie*
- *Skladování levné energie*

Náklady
- Energetický Management
- Instalace / Servis
- Senzory, inteligentní měřiče
- Opatření En. efektivnosti
- EV, Skladování energie
- Poplatky za používání

Příjmů
- ilita
  - Načasování spotřeby
  - Využití skladování energie
  - Využití kapacity el. vozidla
- Úspory, platby za služby
- Obchodování s elektřinou
- Crowdfunding

Vztahy se zákazníky
- Poskytování služeb
- Dodávka zařízení
- Sdílení dat
- Partnerství

Možnosti flexibility – Využití a sp

Balíčky služby EES

Jaké jsou v současnosti **typické služby EES**?

Jaké **balíčky** lze k nabízeným službám přidat?

dat pro činnosti

ákladů

Zaměřit se **primárně na elektřinu** nebo **zahrnout i plyn a teplo**?

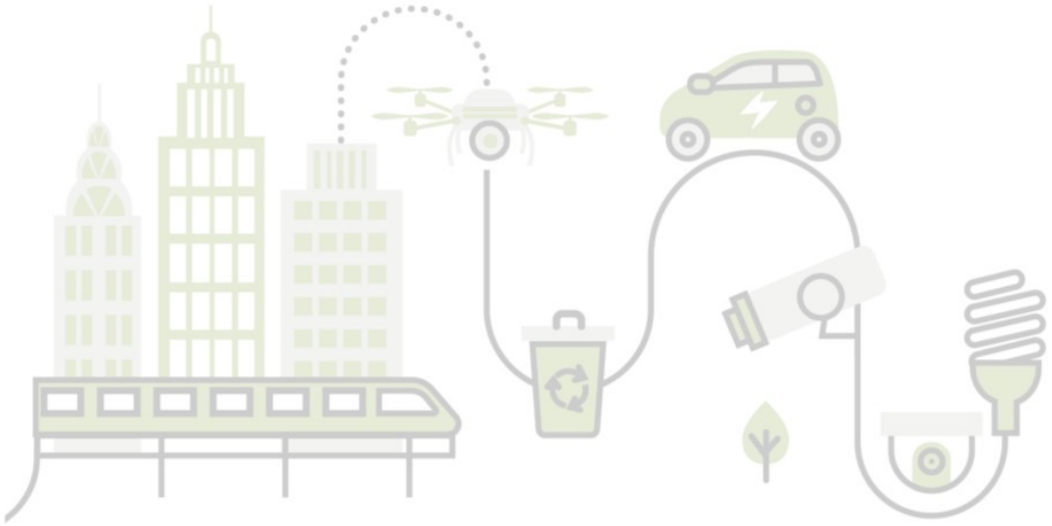
Kdo bude vlastníkem zařízení/technologií?

(balíčků) podle potřeb zákazníka

Slučování balíčků ▶ Více přínosů / lepší cena

Služby EES – modelové příklady

BungEES



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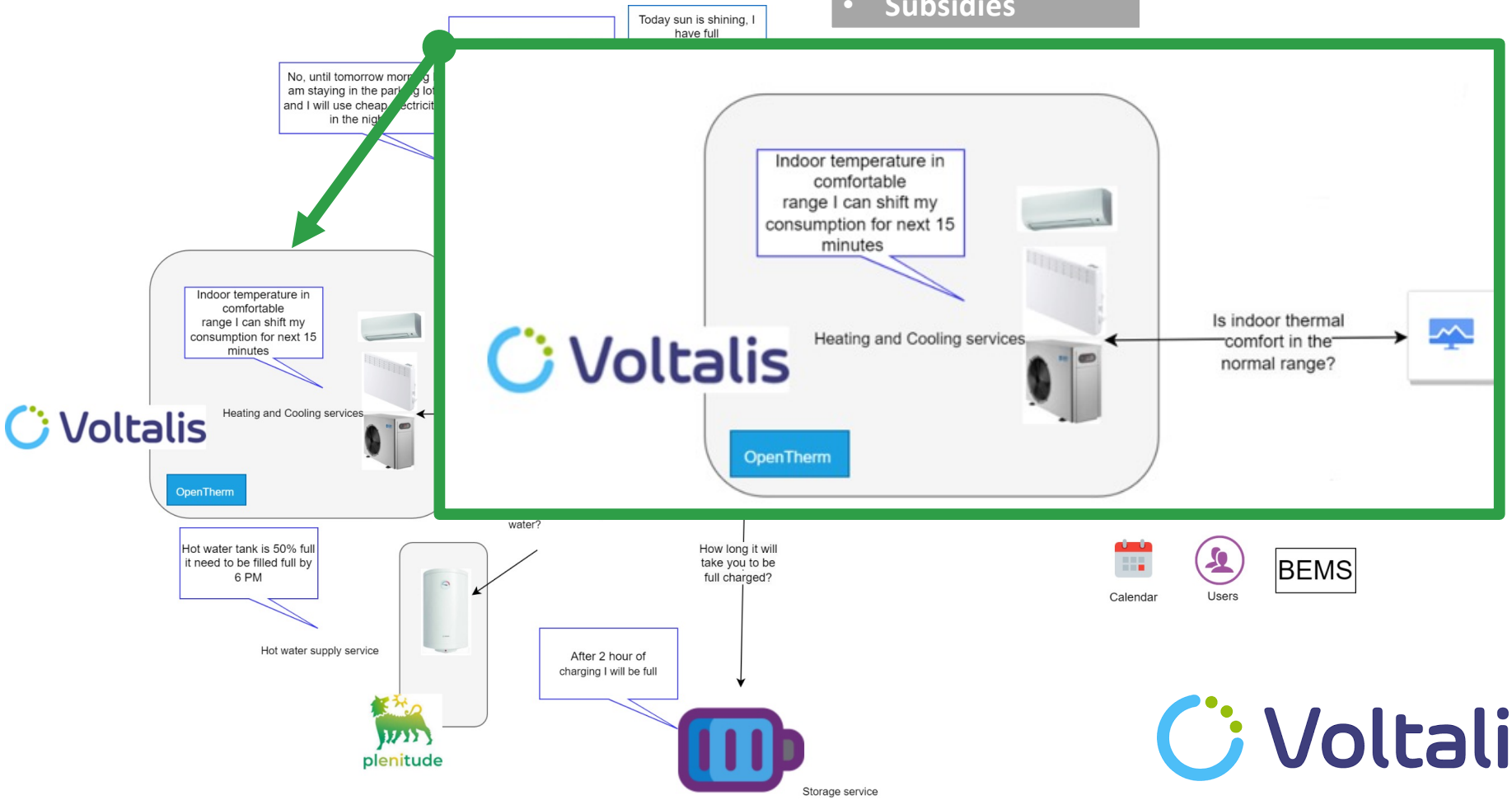
Voltalis: modelový příklad

- Financing
- One-off payment
- Subsidies



Voltalis

Plenitude: Fotovoltaika s bateriovým úložištěm

Návrh ceny za stanovenou konfiguraci

Cena bez dotace od **16.286,54 €** (včetně DPH)

Státní dotace

Výše státní dotace je omezena na maximálně 50 % způsobilých nákladů (**8.143,27 €**)

Celková cena zahrnuje vlastní zařízení s dodávkou komponent, instalaci, vyřízení povolení, administraci žádosti o dotaci a 15% DPH.

Technické specifikace

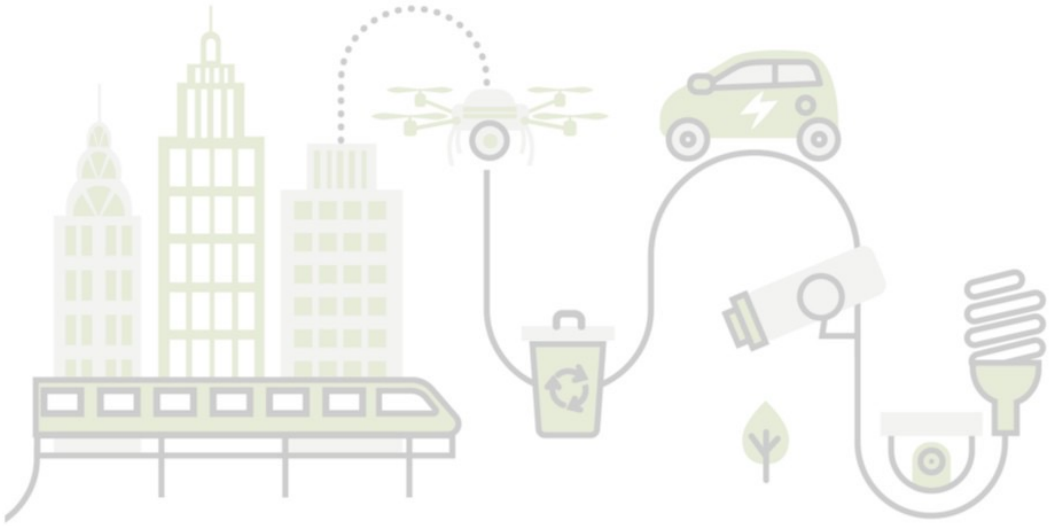
- Instalovaný výkon 5,5 kWp
- Výstupní napětí 400 V / 50 Hz / 3 fáze
- Panely 11 Modules Trina 500Wp nebo podobné
- Využitelná kapacita baterie 5,00 kWh
- Celková plocha panelů 36 m²
- Životnost systému až 30 let
- Záruka 5 let
  - Záruka výrobce na bateriový box 5 let
  - Záruka na baterii 10 let, > 6,000 nabíjecích cyklů
  - Záruka na panely 15 let
  - Záruka na panel 25 let při 85% výkonu

- Úspora nákladů na elektřinu: **1.462,27 €/rok**
- Doba návratnosti systému s dotacemi: **5,99 let**
- Doba návratnosti systému bez dotací: **9,59 roku**

Analýza neenergetický přínosů (NEB)

spojených se službami v oblasti energetické účinnosti v EU

BungEES



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Úvod do neenergetických přínosů (NEB)

NEB označují dodatečné nebo nepřímé přínosy, které jsou spojeny s poskytováním energetických služeb nad rámec přímých úspor energie.

- **Například:**
  - Energeticky úsporné osvětlení může zajistit lepší kvalitu osvětlení a snížit namáhání očí, což vede ke zvýšení produktivity a spokojenosti.
  - Podobně účinné klimatizační systémy mohou zlepšit kvalitu vzduchu v místnosti a snížit riziko dýchacích potíží.
  - Technologie obnovitelných zdrojů energie, jako jsou solární panely, mohou rovněž přinést výhody, jako je snížení emisí skleníkových plynů a zlepšení kvality místního ovzduší.

Úvod do neenergetických přínosů (NEB)

- **NEB je důležité vzít v úvahu při hodnocení možnosti energetických služeb**
  - Mohou pomoci odůvodnit investice do účinnějších a udržitelnějších systémů.
  - Ačkoli tyto přínosy není vždy snadné kvantifikovat nebo peněžně vyjádřit, mohou jednotlivcům, podnikům a společnosti přinést významnou hodnotu.
- **NEB mají mnoho podob a mohou se lišit v závislosti na konkrétním kontextu a poskytované energetické službě.**

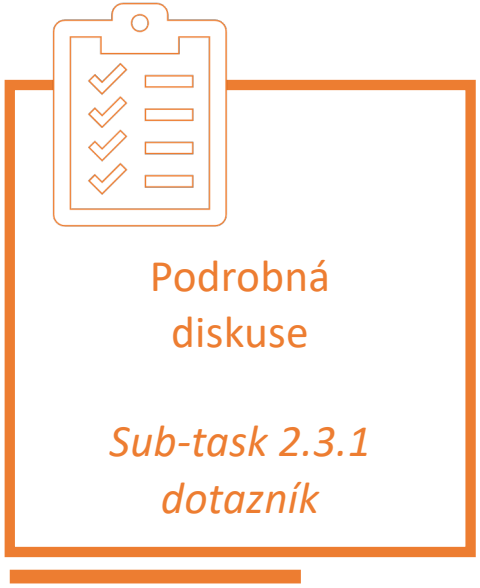
Zlepšení zdravotního stavu	Zvýšená produktivita
Přínosy pro životní prostředí	Zvýšená bezpečnost
Nové ekonomické příležitosti	Zlepšení vzdělávání

Základní otázky a tematické oblasti

Informace o respondentovi

1) **Znalost a povědomí o neenergetických přínosech (NEB)**
2) **Zkušenosti s NEB**
3) **Konkrétní využití NEB**
4) **Příklady konkrétních NEB**
5) **Spolupráce se zákazníky**
6) **Překážky a výzvy**

Doporučení a zpětná vazba



Děkuji
za Vaši pozornost!

SEVEn THE ENERGY EFFICIENCY CENTER, z. ú.

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Americká 17, 120 00 Praha 2, Czech Republic
phone: +420 224 252 115 / fax: +420 224 247 597

Pobočka / Regional branch:
Žižkova 12, 370 01 České Budějovice, Czech Republic
phone: +420 386 350 443 / fax: +420 386 350 370

E-mail: seven@svn.cz
Internet: www.svn.cz

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Annex 3

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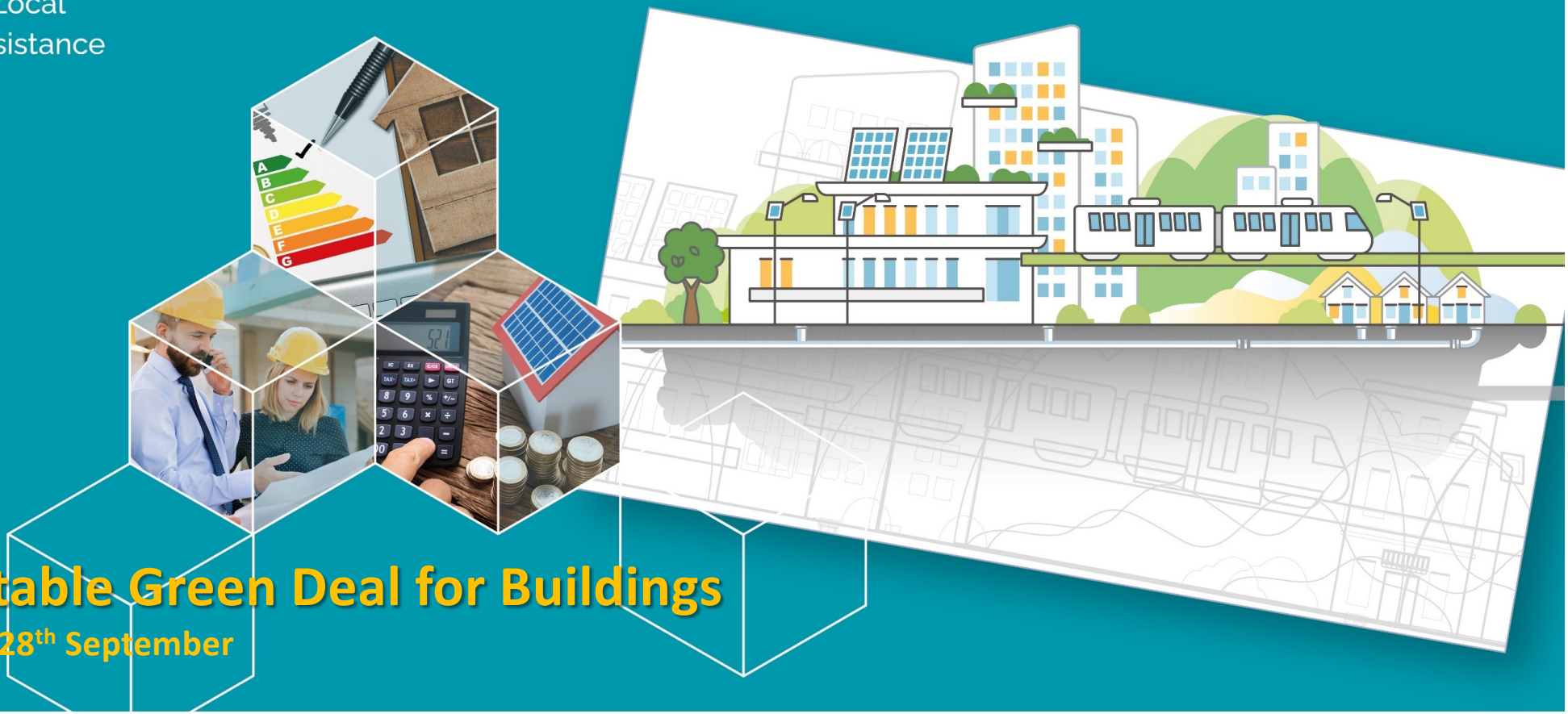
ENergy Assistance

Making investments happen



Roundtable Green Deal for Buildings

Bratislava, 28th September

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European Investment Advisory Hub
Europe's gateway to investment support

ELENA
European Local
ENergy Assistance

ELENA Model

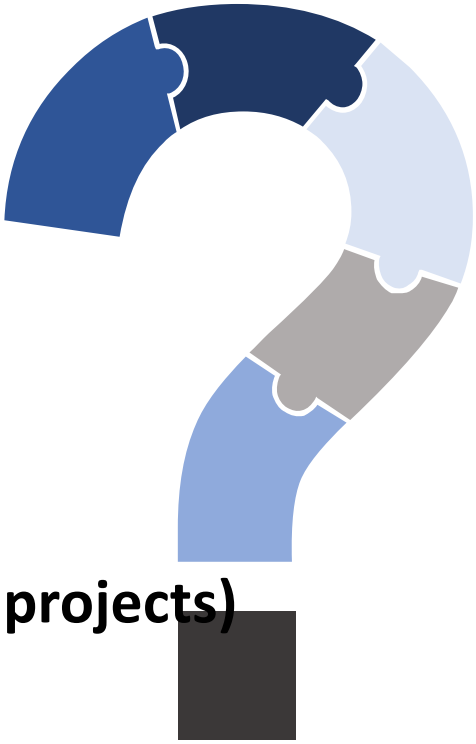
ELENA

Grants to enable investments!

- **Financing to prepare investments**

One Euro received shall result in:

- **20 Euro investment (sustainable energy projects)**
- **10 Euro investment (urban transport and residential projects)**



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ENergy Assistance

What investments can ELENA support?

SUSTAINABLE ENERGY PROJECTS

20x

Sustainable Energy

- Building renovation (public & private)
- Renewables in buildings:
  - Solar PV+WH
  - Biomass boilers
- Street lighting
- District/cooling heating networks

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Europe's gateway to investment support

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ENergy Assistance

What investments can ELENA support?

Residential

- Housing renovation (private & social)
- Integrated Renewables:
  - Solar PV
  - Solar WH
  - Biomass boilers
  - Heat pumps

RESIDENTIAL

10x

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What investments can ELENA support?

URBAN TRANSPORT

10x

Urban transport

- Improved public transport and mobility
- Electric buses
- Charging stations
- Alternative fuel vehicles
- IT for model shift

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ENergy Assistance

Eligible Beneficiaries – Who can apply?

Public sector

- Central government
- Government agencies
- Regional authorities
- Local authorities (municipalities)
- Public corporations
- Financial institutions

Private entities

- Energy agencies
- One-stop-shops
- Associations
  - Social housing
  - Home owners
  - Business/Industry
- Public/private entities
- Banks & financial intermediaries

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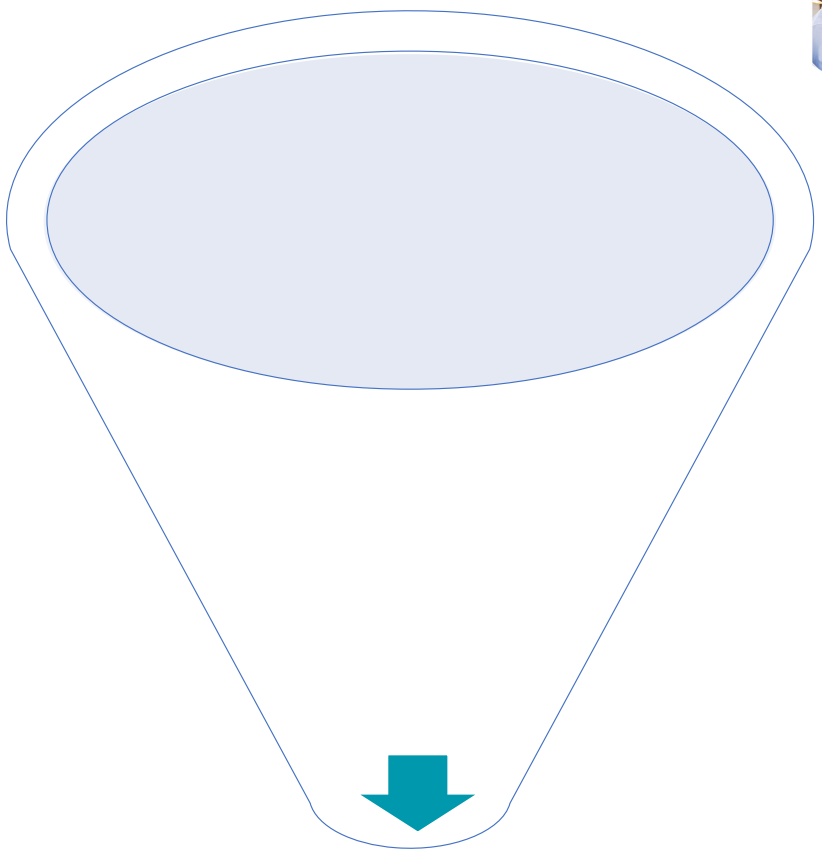
Investment Portfolio – Mix & Match

- Public buildings
- Street lighting
- District heating
- RES in buildings
- RES in Housing
- Housing
- Public transport
- EV charging points
- Electric buses
- Modal shift



- €100m
- €90m
- €80m
- €70m
- €60m
- €50m
- €40m
- €30m
- €20m
- €10m

ELENA

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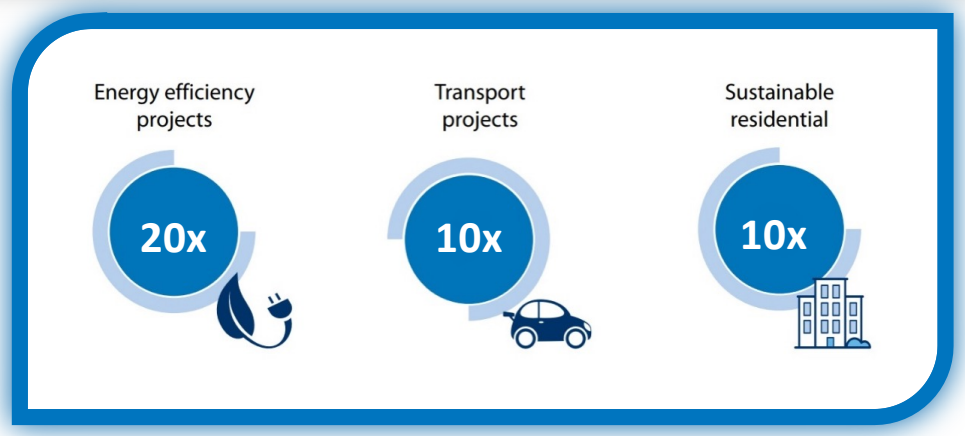
Leverage Factor

$$\text{LEVERAGE FACTOR} = \frac{\sum \text{Investments}}{\text{TA grant}}$$



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Project Development Services (PDS)

Internal staff

External experts

- Stakeholder engagement & co-ordination
- Promotion & marketing
- Feasibility & technical studies
- Energy audits
- Structuring, bundling & business plans
- Tendering procedures & documentation
- Legal/financial advisory
- Project management

Above are examples, lists not exhaustive

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Eligible Costs

Internal staff

- Costs of personnel clearly assigned to the project
- Salaries, social security charges and other statutory costs

External experts

- Feasibility, design and market studies
- Structuring of programmes, business plans, energy audits
- Legal/financial advisory
- Preparing of tendering procedures
- Bundling of smaller projects to form bankable packages

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ELENA Application Process – Interactive with the EIB

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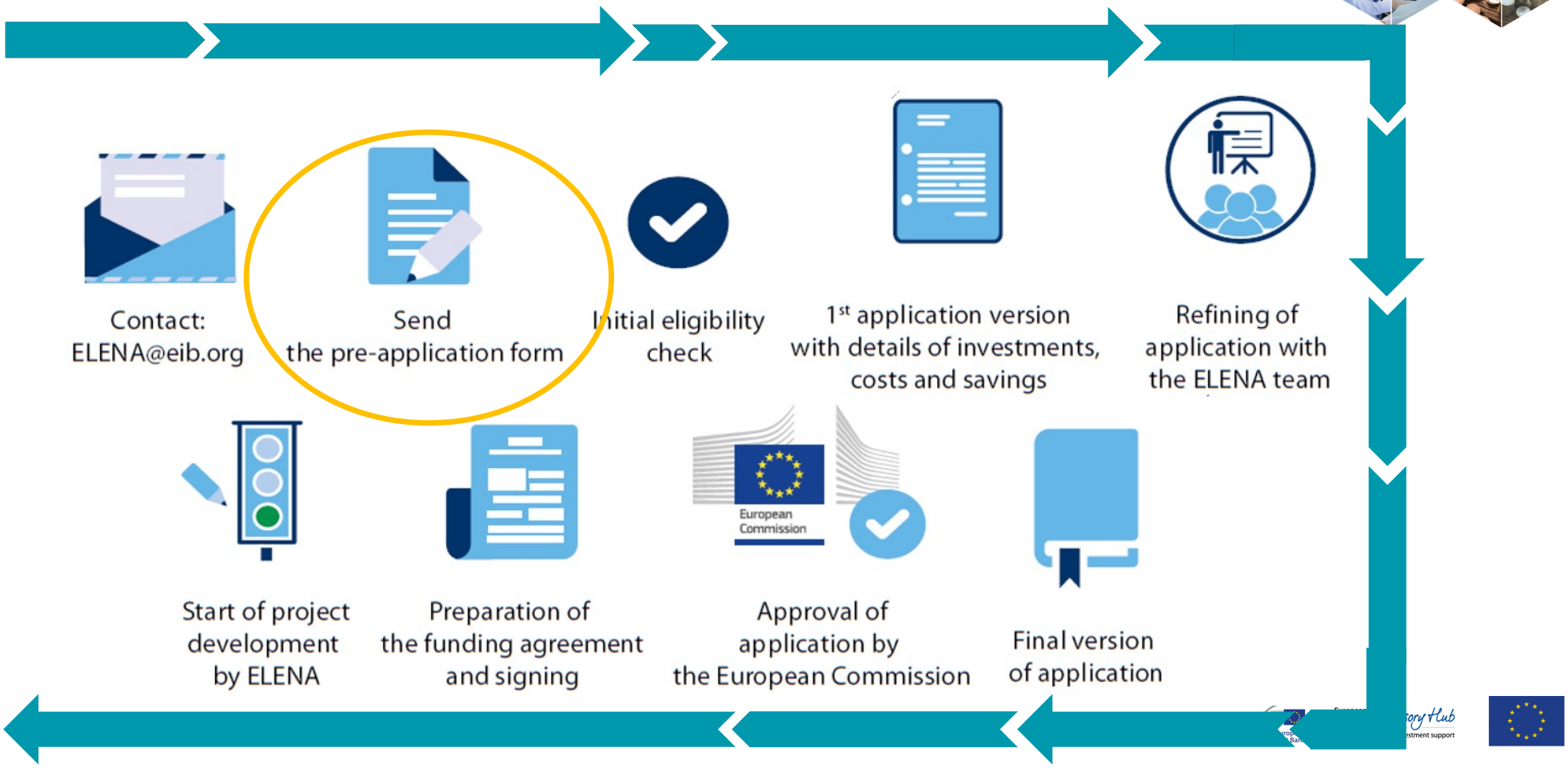

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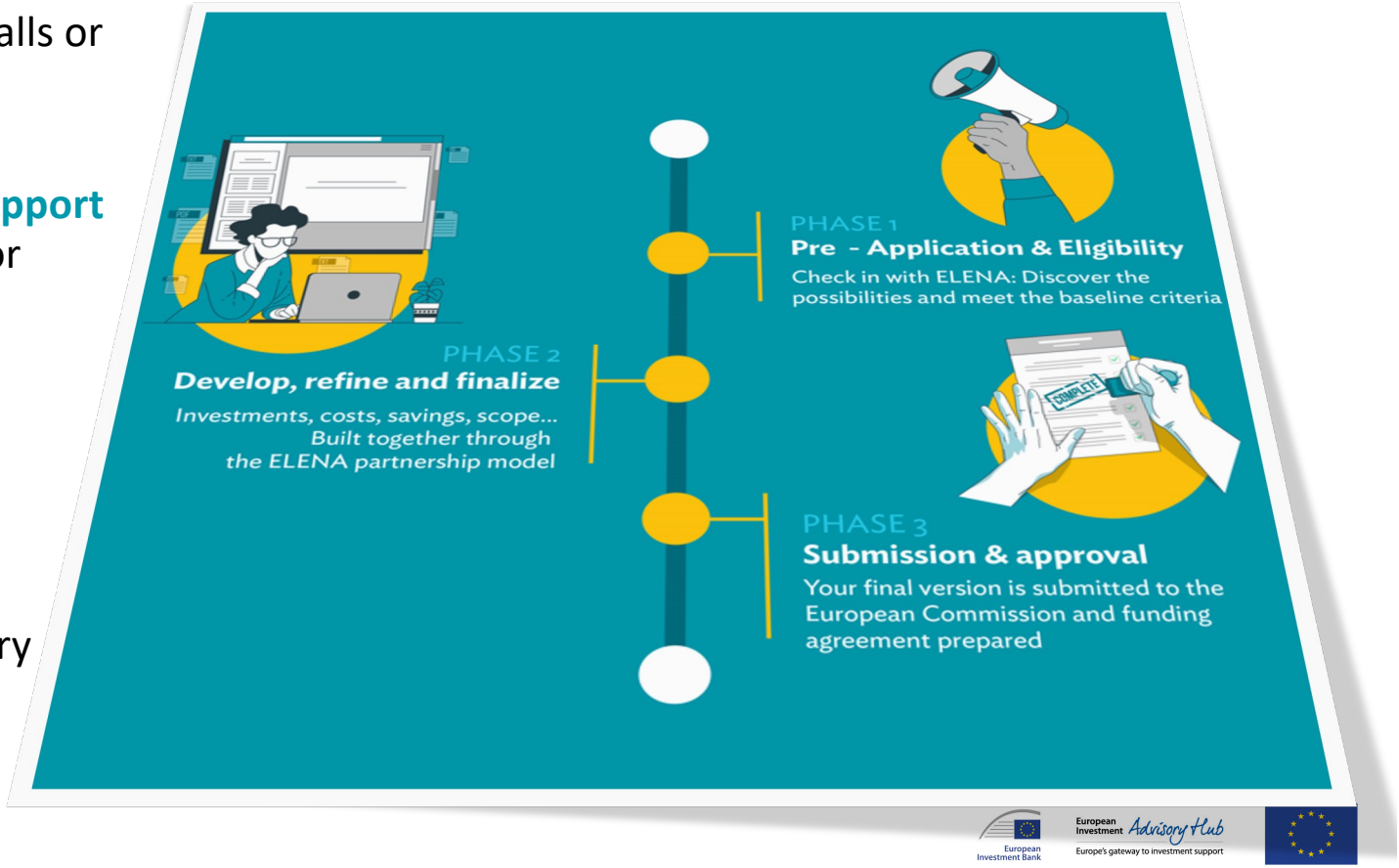
Application Process

- **First come, first served** basis - No calls or competitions
- Applicants will receive **direct EIB support** to prepare the ELENA application for Commission approval
- ELENA will fund up to **90%** of the investment preparation costs (with 10% provided by applicant)
- Eligible activities are those necessary to develop and mobilise finance for a clearly identified investment programme



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Pre-application (1/4)

1. Applicant's identification	
1.1 Organisation Name	*[organization legal name incl. legal form SA, PLC, Ltd, etc.]*
1.2 Address & Country	*[*organization's official registered address, no branch addresses permitted*]*
1.3 Main activities	*[brief description of the main roles of the applicant, mission]*
1.4 Legal Status	Please select Public or Private
1.5 Nature	Please select *If other:* Please select
1.6 Listed company	Please select If yes, percentage of publicly tradable shares: …..
1.7 NACE activity	*[*Use *the NACE Codes nomenclature* one activity 1-letter code + one 2-digit sub-activity Activity code | Sub-activity code

Privately held/Unlisted Corporate
Financial Institutions (incorporated and regulated)
Public Administrations, (sub-) sovereign, sovereign Executing Agencies
State-owned (100%) or partially State-owned Companies (50% or more) (directly or indirectly) or State controlled Companies (including Financial Institutions)
Partially State-owned Companies (the state owns less than 50%) and without State control
Foundation or equivalent (associations, "think tanks", NGOs, etc.)
Other

Corporate listed (free floating on a regulated stock exchange)
Fund Managers not regulated
Fund Managers regulated
Unregulated investment funds (any, including Pension Funds OR Equity Participation OR Other Instruments conferring voting rights to the EIB)
Regulated investment funds (any, including Pension Funds OR Equity Participation Funds OR Other Instruments conferring voting rights to the EIB)
Partnership
Development Financial Institutions, National Promotional Banks
Governmental of Intergovernmental Bodies/Organisations/Institutions
Securitisation Vehicle
Supranational/International Financial Institutions
Supranational/International/National Development Agencies
Charities
Trusts
Family Offices
Personal Asset Holding Vehicles/Personal Investment Companies

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Pre-application (2/4)

2. Investment Programme (IP)				
2.1 Location of the IP	Country level ☐	*[specify country(ies)]*		
	Region level ☐	*[specify region(s)]*		
	Municipal level ☐	*[specify municipality(ies)]*		
2.2 Sectors targeted	Public Buildings ☐		Building integrated Renewables ☐	
	Residential buildings ☐		District heating ☐	
	Street lighting ☐		Urban mobility ☐	
	Traffic lighting ☐		Smart Grids ☐	
	Others ☐			
	For others please specify ……			
2.3 Brief Description of the IP	*[Please briefly describe (0.5 pages) the investment program] Include any details that are known on the implementation plan and expected timeframe.*			

2.4 Expected investment components[2]

Sector	Potential Financing sources	Investment [m€]
Public Buildings	Choose an item	
Residential buildings		
Street lighting		
Traffic lighting		
Renewables		
District heating	Choose an item	
Urban mobility	Choose an item	
Smart Grids	Choose an item	
Total		

Choose an item
3rd party financing
Debt
Energy supplier obligations
Equity
ESCO/EPC
Grants/subsidies/tax rebates
Structural Funds

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Example: 2.3 Description of the Investment Programme (IP)

The Energy Agency aims to provide Project Development Services (PDS) for energy efficiency and renewable energy investments targeting the decarbonization of the public sector, namely:

- **Energy Efficiency in Public buildings**: the first axis relates to the renovation of existing public buildings owned by the central government and by the municipalites. These investments are mostly focused on the building envelope but in some cases investments in the building tehcnical systems (HVAC, lighting) are also expected to take place. Energy savings of 35% are estimated;
- **Building integrated renewables**: this axis foresees the instalation of solar panels for hot water production in public buildings with permanent hot water demand (e.g. hospitals) and the instalation of PV systems in the buildings rooftops energy producing is expected 50 000kWh/y;
- **Street lighting**: this axis relates to the renovation of the existing lighting technologies, replacing them by LEDs. About 5 000 lighting points are expected to be replaced, generating energy savings of, at least, 65%.
- **Urban mobility**: this axis includes two different investment componentes:
  - Electric Ferries: replacement of the existing ferries connecting the two islands, that still run on fuel oil, by electric ferries and the installation of charging stations on dock. These investments, on the replacement of the full fleet, are also expected to be complemented by the installation of building integrated PVs
  - Hydrogen buses: replacement of the older buses, running on diesel, by hydrogen buses. About 10 old diesel buses are estimated to be replaced by hydrogen buses and two or three hydrogen refueling stations are expected to be developed.

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Example: 2.3 Description of the Investment Programme (IP)

All the investments previously described are expected during the ELENA project lifetime (3 years).
The investments in street lighting and building integrated renewables are estimated to be tendered by the end of the first year (EUR 6 million), the investments on public buildings by the end of second year (additional EUR 10 million) and the investments on the transport related components are expected to be fully tendered by the month 30 of the project (additional EUR 20 million).

EXPECTED INVESTMENT COST:

- EE components is about **EUR 10m**
- STREET LIGHTING AND BUILDING INTEGRATED RENEWABLES components is about **EUR 6m**
- TRANSPORT components is about **EUR 20m**

BUILDING and EQUIPMENT for EE: The **building size** varies from **500m^2 to 2000m^2**
Heating:

- **8 buildings equipped with** gas **burners;**
- **3** with **oil burner** and
- **2 coal based**

Estimated costs of preliminary stage of the Investment Program is EUR **36m**.
Average cost of completion of planned scope of works calculated per average **1m^2** of the building is estimated at **EUR 400**

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Pre-application (3/4)

3. Project Development Services (PDS)	
3.1 Organizational setup	*[Please briefly describe the organizational setup of the PDS team]*
3.2 Justification	*[Please briefly describe why the ELENA grant is needed]*
3.3 Description of the PDS activities	*[Please briefly describe (0.5 pages) the PDS required for this operation] Include any details that are known on the main tasks that need to be carried out in order to implement the above described investment program*
3.4 Estimated PDS costs	

PDS Activity	Cost [k€]
Choose an item	
Choose an item	
Choose an item	
Choose an item	
Choose an item	
Choose an item	
Choose an item	
Choose an item	
Choose an item	
Total	

Choose an item
Energy Audits
Feasibility studies
Financial engineering
Marketing
Project management
Stakeholders and community(ies) engagement
Technical studies
Tenders process

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Example: 3.1 Organizational Setup

The **Energy Agency** will **be responsible for the project management** and will play a central role in the project implementation. Mandate contracts were already signed with the Ministry of Transport and with the Ministry of Finance (**owner of all central government buildings**) and conversations are advanced with the National Association of Municipalities for the **municipal buildings** and street lighting components. These agreements already include a **preliminary list of the assets to be included in the project scope**.

The **Management Team** will be constituted by **existing staff of the Agency (2)** that will be supported by **2 additional staff** member to be hired immediately after project start.

The **technical studies** will be developed by **external consultants**, to be hired after the project started, in accordance with the applicable **public procurment procedures**. **The work of the consultants will be maneged by the Management Team**.

Each one of the entities involved will appoint one staff member, that will be responsible to provide all the necessary tehcnical information (e.g. energy consumption, information on installed tehcnical systems, etc) to be provided both to the Management Team and to the consultants.

The project implementation will be supervised by a Supervision Board, that will include one member from the Agency, one member apointed by the Ministry of Transport, one Member apointed by the Ministry of Finance and one Member from the Municipalities Association.

The list of assets to be included in the project will be approved by the Agency, after proposal of the owner of the related assets and before the tendereing of the EE/RES projects, the formal approval of the asset owner will be requested.

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Example: 3.2 Justification

With this project, the Agency aims to **speed up the implementation of EE and RES projects**. The public sector faces a huge shortage of qualified staff to deal with the objectives set in the Energy and Climate Integrated Plans recently approved. Furthermore, the Agency has a limited number of staff to deal with all ongoing projects.

Therefore, **ELENA was indentified as an alternative to reinforce the technical capacity** of the Agency that will become resposnible to provide **the necessary support to the public entities to implement the projects that are aiming to support the achievement of the objectives defined.**

In addition, the project will also help to **absorb the existing funds available for the 2021-2027 period** (including RRP funds). Public sector entities frequently **report difficulties in being able to apply for the call published by the Managing Authority**, **resulting many times in delays in the approval of the projects and, in extreme cases, in the non-absortion in full of the funds available.**

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Example: 3.3 Description of the PDS Activities

The Project Development Services envisaged by the proposed project are:

- Energy audits and preliminary studies for RES integration in buildings
- Other technical, financial and economic studies to support project implementation required by the Managing Authorities
- Preparation and Review of project (loan/grant) applications before submission for funding/financing under the EU Funds (Cohesion, ERDF, RRP)
- Definition of baselines for street lighting projects and RES projects that are expected to by financed by ESCOs
- Guidance on public procurement procedures, completion of procedures on behalf of the Final Beneficiary
- Guidance and support with environmental assessments and permits stemming from the EU environmental legislation
- Advice of financial engineering and project management

These PDS activities will jointly contribute to developing and implementing sustainable and well-grounded projects by the owners of the assets included in this project. The PDS costs are estimated in EUR 1.2 million.

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Projects in most EU member states

- More than **157 projects** – (completed/ongoing)
- More than **EUR 278 m** grants disbursed
- More than **EUR 9.2 bn** of investment supported
- Average Leverage factor of **33**

Looking for MORE projects as budget is available

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Project in Slovakia

Energy Region Kosice (ENREKO)

Kosice

Beneficiary	Kosice Region - Košický samosprávny kraj (CS)
Project Development Budget	EUR 1.6m
ELENA Contribution	EUR 1.4m
Expected / realized investments	EUR 51.0m
Start Date	January 1, 2021
End Date	December 31, 2023

The investment programme consists of investments in deep energy efficiency refurbishment in 55 public buildings, 8 street lighting systems and small installation of renewable energies (PV) on public buildings. Support from the ELENA TA will substantially contribute to the creation of a legal, technical and financial framework which will enable the first cooperation between the participating municipalities within the Košice Region.

MORE INFORMATION

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Projects in other EU member states

A BETTER CLIMATE FOR PIASTÓW – A CITY OF SUSTAINABLE DEVELOPMENT 2030

Piastów

Beneficiary	The Municipality of Piastów
Project Development Budget	EUR 1.4m
ELENA Contribution	EUR 1.2m
Expected / realized investments	EUR 31.0m
Start Date	February 1, 2023
End Date	June 30, 2026

This ELENA project is targeting to provide PDS support to the Piastów City for the preparation of four investment programmes addressing: • Replacement of street lighting (~2000 luminaires) • Energy efficiency of around 22 public buildings • Expansion of the heating network based on geothermal energy • Development of power grids towards a smart grid. Estimated total investment up to EUR 31 million.

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Projects in other EU member states

MAZOVIAN RENOVATION WAVE PILOT - IMPROVEMENT OF EE AND INTEGRATION OF RES IN PUBLIC BUILDINGS IN THE MAZOVIAN VOIVODESHIP (MAZOVIA4EEWAVE)

Mazovian Voivodeship

Beneficiary	Mazowiecka Agencja Energetyczna Sp. z o.o. (MAE) / Mazovia Energy Agency
Project Development Budget	EUR 1.9m
ELENA Contribution	EUR 1.7m
Expected / realized investments	EUR 94.0m
Start Date	April 1, 2023
End Date	August 31, 2026

The ELENA PDS supports the Mazovia Energy Agency to provide deep energy efficiency renovations and installation of around 10 MW RES systems for heat and electricity generation in around 100 public buildings in the Mazovian Voivodeship, Poland.

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Projects in other EU member states

Klimaneutrale Verwaltung Styria (ELENAStyria)

Styrian state

Beneficiary	Energie Agentur Steiermark GmbH (EASt)
Project Development Budget	EUR 2.9m
ELENA Contribution	EUR 2.6m
Expected / realized investments	EUR 55.5m
Start Date	April 1, 2023
End Date	March 31, 2026

The ELENA facility supports the Energy Agency of Styria (EASt) in the implementation of the energy refurbishment of buildings, the integration of PV panels in buildings and the installation of electric vehicle charging points in the Federal State of Styria, Austria.

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Projects in other EU member states

Smart Central Bohemian Region (Smart CEBOREG)

Praha

Beneficiary	Central Bohemia Region
Project Development Budget	EUR 2.7m
ELENA Contribution	EUR 2.5m
Expected / realized investments	EUR 62.0m
Start Date	October 1, 2019
End Date	March 31, 2023

With the ELENA TA support, the CBR will perform a comprehensive renovation of around 170 public buildings, with the goal to increase operational efficiency, improve energy performance and reduce greenhouse gas emissions. The renovation of around 120 of these buildings should be performed by using EPC contracting. In addition, another 50 buildings are planned to be prepared for energy efficiency renovation to be performed through standard investments. The CBR will contract external service providers to assess the energy savings potential of all the buildings and prepare all the required technical and financial documentation for the grand application and as well as for the preparation of the publication of the tenders for the implementation.

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Projects in other EU member states

Energy, Business and Advisory Platform CMZRB (EB&A Platform CMZRB)

Prague

Beneficiary

Národní Rozvojová Banka

Project Development Budget	EUR 3.3m
ELENA Contribution	EUR 3.0m
Expected / realized investments	EUR 90.0m
Start Date	August 1, 2020
End Date	July 31, 2023

The ELENA TA will support CMZRB in the preparation of an investment programme which will be composed from different financial programmes under CMZRB responsibility for sectors such, investment programme for private non-residential sector and EPC investments in public buildings. The financing programmes are existing programmes such as ENERG and Energy savings for private buildings in non-residential sector or new programmes such the EPC Investment Platform for EPC investment in public sector.

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Summary

Minimum Investment	EUR 30m for the whole Investment Programme
Leverage Factor	10x / 20x
Application Process	Continuous
Grant	90% (EUR 1-3m)
Timeframe	3 / 4 years

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Making investments happen

Thank you

Contact EIB to see how ELENA can support your projects

ELENA@eib.org

Andreas Piontek
a.piontek@eib.org

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Annex 4

PREZENČNÁ LISTINA

Stretnutie: BungEES: Platforma pre smart energetické služby (PSES)
Dátum: 28.9.2023, 10:00 – 13:00
Miesto: Hotel LOFT, Štefánikova 4, 811 05 Bratislava

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9.	Hovorka Ivan	NeoEnergia s.r.o.	hovorka@neoenergia.sk	
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Súhlas s fotografovaním a videozáznamom:
Svojim podpisom súhlasíte s tým, aby Zväz stavebných podnikateľov Slovenska, Viedenská cesta 5, 851 01 Bratislava (ďalej „ZSPS") vyhotovil fotografie alebo videozáznam Vašej osoby. Ďalej súhlasíte s použitím vyhotovených fotografií a videozáznamu, či už v hmotnej alebo digitálnej (nehmotnej) podobe pre všetky propagačné materiály ZSPS ako v tlačenej podobe, tak v tej elektronickej (napr. webové stránky, sociálne siete). Ak s fotografovaním a videozáznamom nesúhlasíte, pripíšte prosím k svojmu podpisu slovo „NIE". Súhlas môžete kedykoľvek odvolať.

This project has received funding from the European Union's LIFE programme.

BungEES

PREZENČNÁ LISTINA

Stretnutie: BungEES: Platforma pre smart energetické služby (PSES)
Dátum: 28.9.2023, 10:00 – 13:00
Miesto: Hotel LOFT, Štefánikova 4, 811 05 Bratislava

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36. KURHAJCOVÁ KRISTÍNA

This project has received funding from the European Union's LIFE programme.

PREZENČNÁ LISTINA

Stretnutie: BungEES: Platforma pre smart energetické služby (PSES)
Dátum: 28.9.2023, 10:00 – 13:00
Miesto: Hotel LOFT, Štefánikova 4, 811 05 Bratislava

	Meno	Organizácia	E-mail	Podpis
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41.	JOZEF PUSKÁŠ	PSS	jpus@pss.sk	
42.	RUDOLF POJEZDALA			PRIPOJENÝ
43.				

účasť pripojených overil: .....

Súhlas s fotografovaním a videozáznamom:
Svojim podpisom súhlasíte s tým, aby Zväz stavebných podnikateľov Slovenska, Viedenská cesta 5, 851 01 Bratislava (ďalej „ZSPS") vyhotovil fotografie alebo videozáznam Vašej osoby. Ďalej súhlasíte s použitím vyhotovených fotografií a videozáznamu, či už v hmotnej alebo digitálnej (nehmotnej) podobe pre všetky propagačné materiály ZSPS ako v tlačenej podobe, tak v tej elektronickej (napr. webové stránky, sociálne siete). Ak s fotografovaním a videozáznamom nesúhlasíte, pripíšte prosím k svojmu podpisu slovo „NIE". Súhlas môžete kedykoľvek odvolať.

This project has received funding from the European Union's LIFE programme.

BungEES

Annex 5

Building up next-generation smart energy services offer and market-uptake valorising energy efficiency and flexibility at demand side –

Desenvolvimento de serviços energéticos inteligentes inovadores, que valorizem a eficiência energética e a flexibilidade do lado da procura, assim com a sua aceitação por parte do mercado

BungEES

INSTITUTO DE SISTEMAS E ROBÓTICA
UNIVERSIDADE DE COIMBRA

Co-funded by
The European Union

Evento: D4.2 Prosumers Platform Event
Local: CAE- Figueira da Foz - Portugal
Data: 25-Outubro-2023

Nuno Quaresma – nquaresma@isr.uc.pt

Consórcio BungEES - 7 países

BungEES

Voltalis

Um dos maiores agregadores em tempo real ao nível **mundial**, com cerca de 1 000 000 de aparelhos ligados em mais de 100 000 casas, edifícios comerciais e escritórios, tendo vendido diariamente a sua capacidade do lado da procura a empresas de serviços públicos e mercados energéticos.

Fraunhofer

Centro de investigação que analisa as origens científicas, económicas, sociais e políticas e as potencialidades do mercado. Os cientistas do instituto realizam cerca de 280 projetos de investigação e consultoria por ano.

plenitude

Empresa do setor energético com um crescimento consistente em Espanha, Itália, Portugal, etc.. Opera em 6 países onde tem cerca de 10 milhões de clientes e uma capacidade instalada de 2,3 GW.

SEVEn

Consultora na área do desenvolvimento empresarial e da utilização rentável da energia, tem um papel de liderança em vários projetos de apoio ao desenvolvimento do mercado das ESCO.

VIAEUROPA®

Centro de competências criado para apoiar e desenvolver atividades de aconselhamento de empresas, associações comerciais, associações patronais, a Comissão Europeia, o Parlamento Europeu e os governos dos Estados-Membros sobre questões de gestão e regulamentação

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O ISR promove I&D multidisciplinar avançada nos domínios de tecnologias avançadas de automatização industrial, sistemas de transporte inteligentes e sistemas inteligentes de energia.

JOULE ASSETS EUROPE

A **Joule Assets Europe fornece soluções de financiamento e apoio estratégico para ativos energéticos sustentáveis**, incluindo eficiência energética, energias renováveis distribuídas, armazenamento e medidas de controlo de edifícios.

ZSPS ZVÄZ STAVEBNÝCH PODNIKATEĽOV SLOVENSKA

A **ZSPS é um grupo de interesse independente, voluntário e apolítico de empresários/empresas de construção** especializados na realização de obras e serviços na área da engenharia civil, produção de materiais de construção, investigação, desenvolvimento e conceção de engenharia

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Objetivos do BungEES

O projeto visa **desenvolver um pacote integrado (one-stop-shop)** de serviços inovadores e inteligentes de eficiência energética

- Criação de um **modelo de negócio inovador** para serviços inteligentes de eficiência energética
- **Catalogar os serviços não energéticos e respetivos benefícios** através Validação do **novo conceito de serviço e do modelo de serviço**
- Realização de **25 projetos piloto** em edifícios nos países envolvidos
- **Milhares de prestadores de serviços de eficiência energética** irão utilizar os resultados obtidos
- **Análise dos agentes ("drivers") e barreiras** do mercado de serviços de energia
- **Mais de 1 Milhão** de pessoas irão beneficiar com o projeto na União Europeia
- **Criação de 6 plataformas de Prosumers (simultaneamente consumidores e produtores de energia)** nos países abrangidos pelo projeto

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Fatores-chave para o sucesso dos serviços inteligentes de energia

- Estes fatores-chave servem de base para o planeamento, implementação e gestão de medidas e programas de eficiência energética.

1) Tecnologias e sistemas de baixo custo e fácil utilização
2) Sistemas de gestão de energia
3) Monitorização e gestão de consumos
4) Aspetos financeiros
5) Regulamentos e políticas
6) Infraestruturas técnicas
7) Parcerias e ações de colaboração
8) Comportamentos e sensibilização das pessoas

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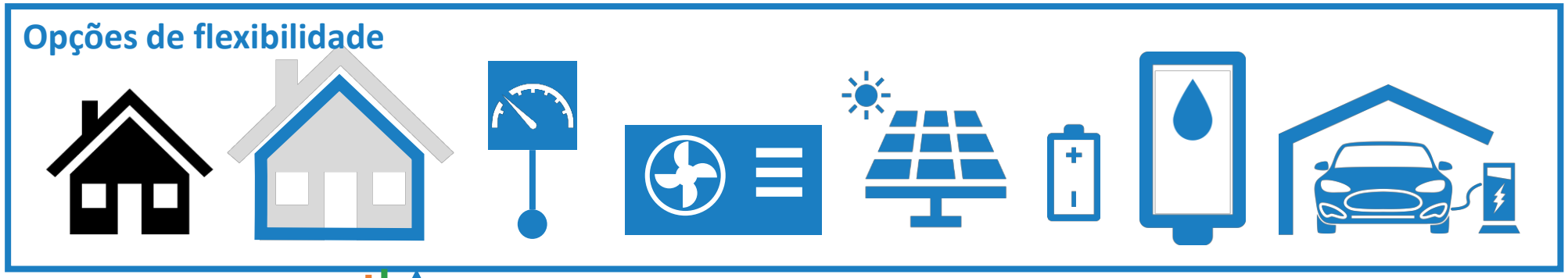
Conceito de Flexibilidade

Utilização e gestão do fluxo de dados/informação



Instruções

Transmissão de instruções de gestão da flexibilidade no local

POUPANÇA ECONÓMICA

FLEXIBILIDADE

Proporcionar flexibilidade para o mercado

DADOS

Informações sobre disponibilidade, capacidade, produção, dados SRI ..

DADOS - *Informação sobre as necessidades*

NECESSIDADE DE FLEXIBILIDADE

AGREGADOR

Mercado de Energia

FLEXIBILIDADE

DADOS - *Flexibilidade da capacidade instalada*

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Exemplos de modelos de negócio

BungEES

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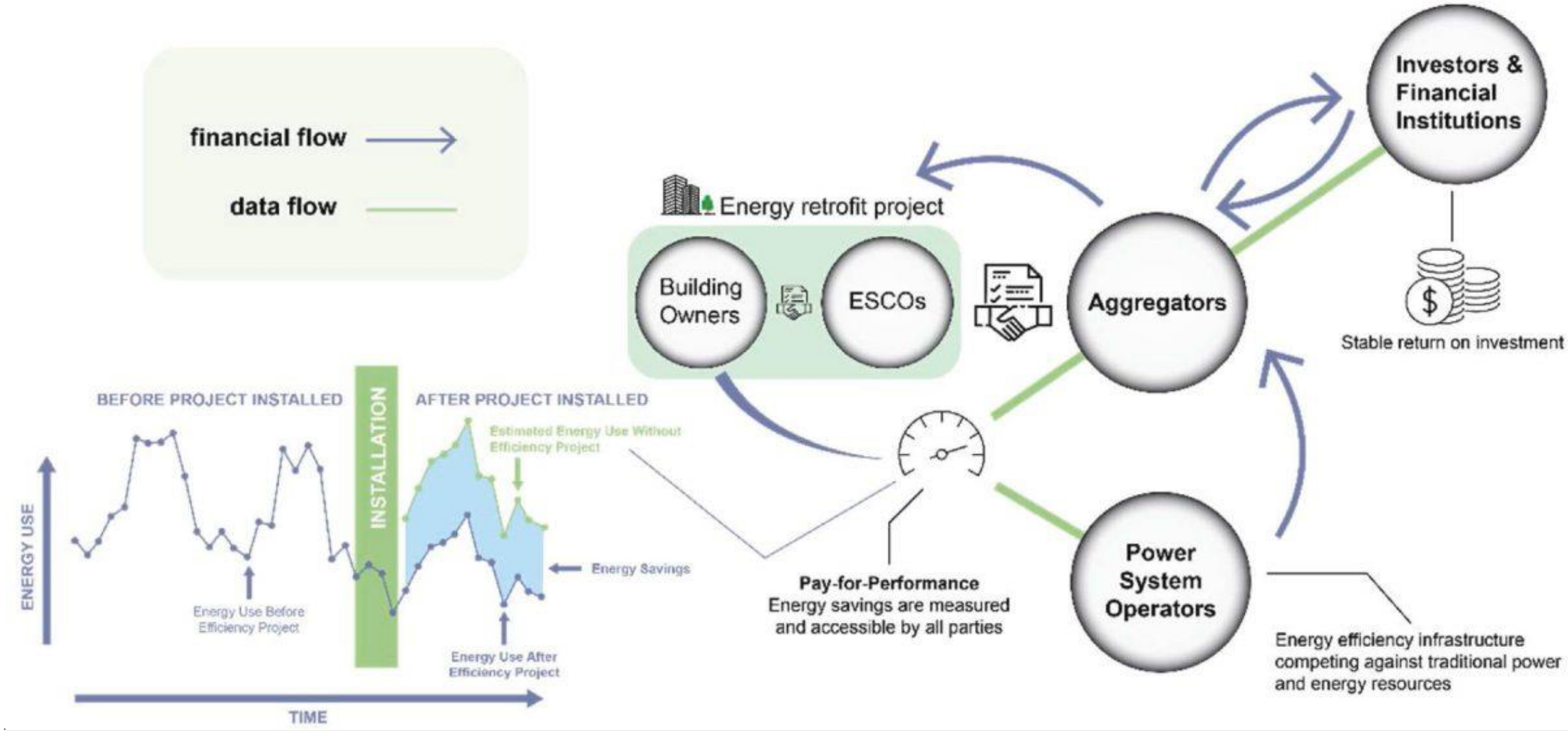
MODELO DE NEGÓCIO - PAY FOR PERFORMANCE



https://teeslab.unipi.gr/how-do-you-imagine-the-energy-efficiency-aggregator-business-model/

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Project 101077101 — LIFE21-CET-SMARTSERV-BungEES

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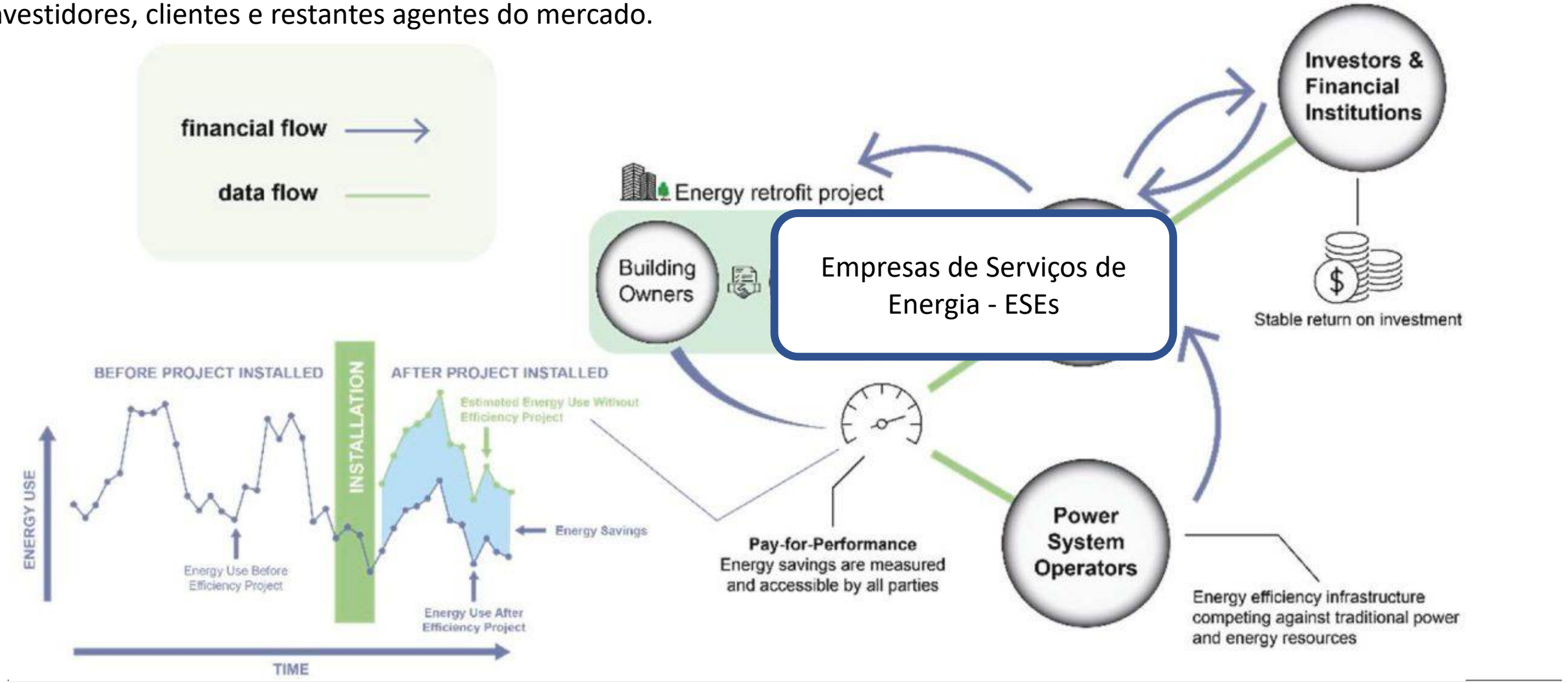
MODELO DE NEGÓCIO - PAY FOR PERFORMANCE

Em Portugal o papel de agregador não está inteiramente definido…as ESCOs tendem a assumir esse papel e fazem a ponte entre investidores, clientes e restantes agentes do mercado.



https://teeslab.unipi.gr/how-do-you-imagine-the-energy-efficiency-aggregator-business-model/

Funded by the European Union
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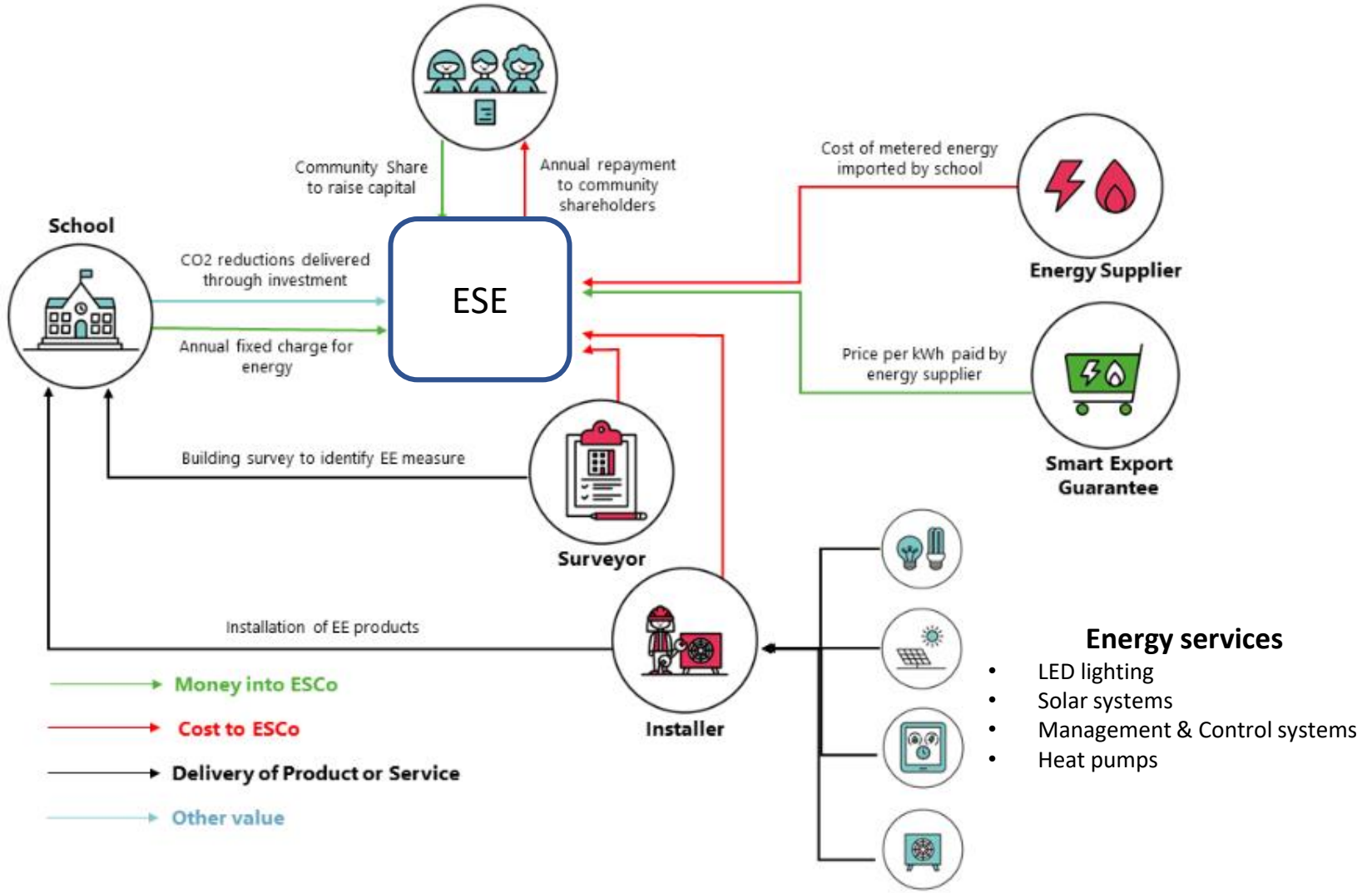
MODELO DE NEGÓCIO - COMUNIDADE DE ENERGIA



Energy services

- LED lighting
- Solar systems
- Management & Control systems
- Heat pumps

https://es.catapult.org.uk/case-study/green-fox-community-energy-delivering-zero-carbon-schools/

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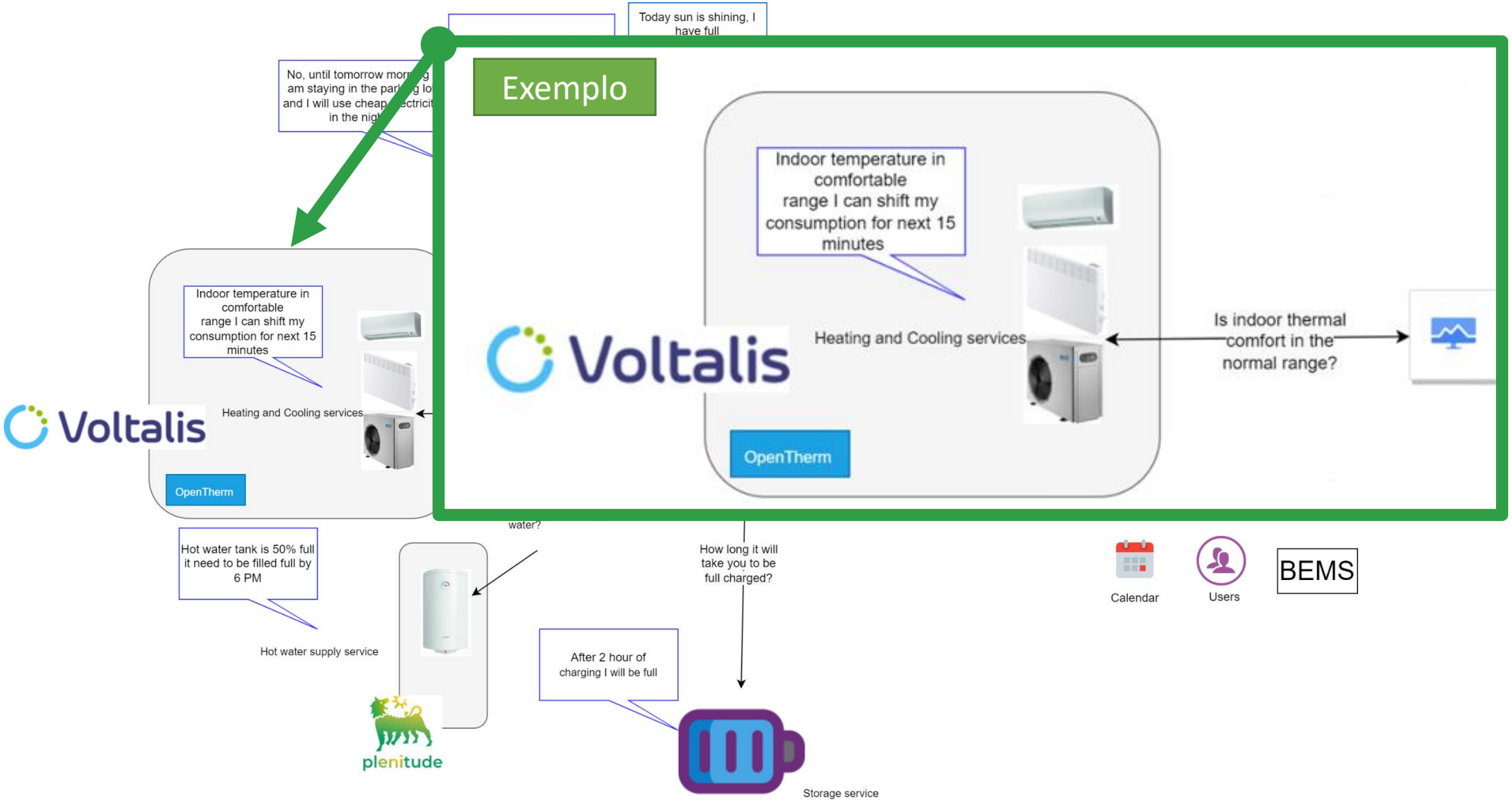
Project 101077101 — LIFE21-CET-SMARTSERV-BungEES

MODELO NEGÓCIO - FLEXIBLIDADE COMO FORMA DE GERAR RECEITAS



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Modelo de Negócio/Serviço BungEES

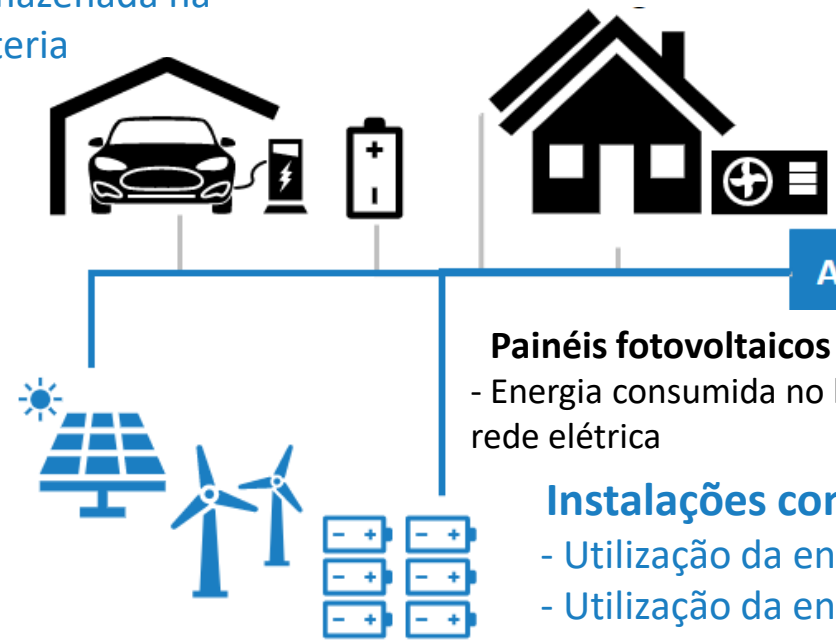
O modelo que está a ser desenvolvido no âmbito do projeto BungEES centra-se no fornecimento de pacotes de serviços que permitam a personalização individual dos parâmetros de serviço.

1- Gestão dos diversos serviços de energia de forma integrada

Veículo Elétrico
- Utilização da energia armazenada na bateria

Armazenamento de Energia
- Utilização de baterias para armazenar energia

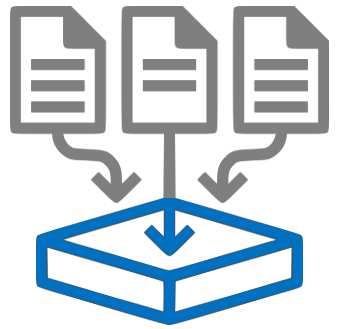
Setor Residencial
- Controlo e gestão de consumos
- Serviços de eficiência energética
- Bombas de calor



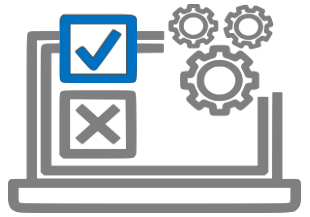
Painéis fotovoltaicos no telhado
- Energia consumida no local ou na rede elétrica

Instalações comunitárias, solar fotovoltaico, eólicas, etc.
- Utilização da energia quando necessária
- Utilização da energia armazenada em baterias
- Armazenamento de energia de baixo custo

2- Aquisição de dados - Para testar o modelo BungEES



3- Validação – Através da realização de projetos piloto



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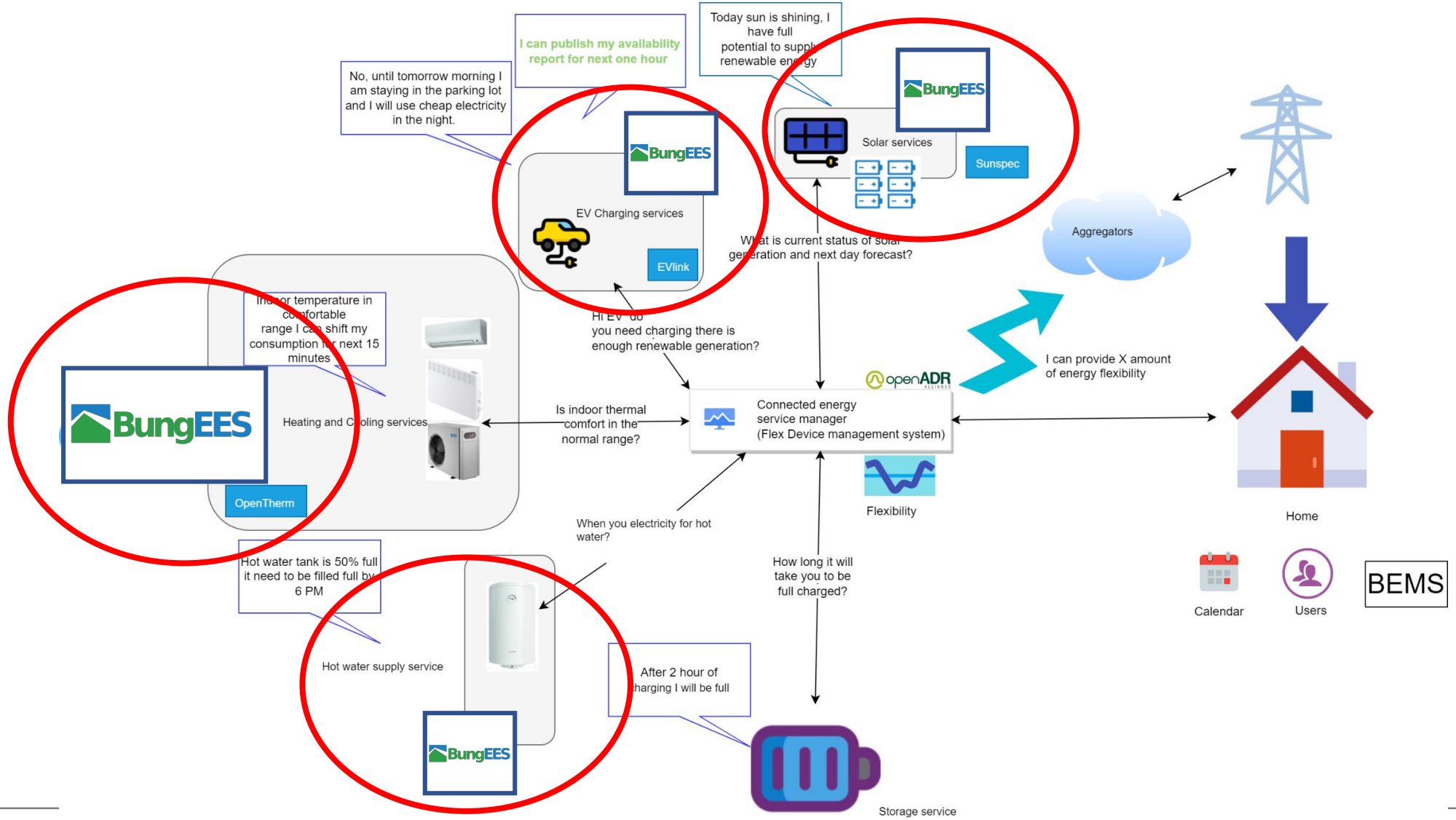
Modelo de Negócio/Serviço BungEES



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Exemplo de pacotes de serviços energéticos

Opções de conjugação

- *Recolha dos dados necessários à operação*
  - ❑ Diferentes requisitos em termos de estrutura de custos
  - ❑ Fluxos de receita/rendimento

Diferenças entre pacotes de serviços

❑ **Investimento**

Quem faz o investimento?

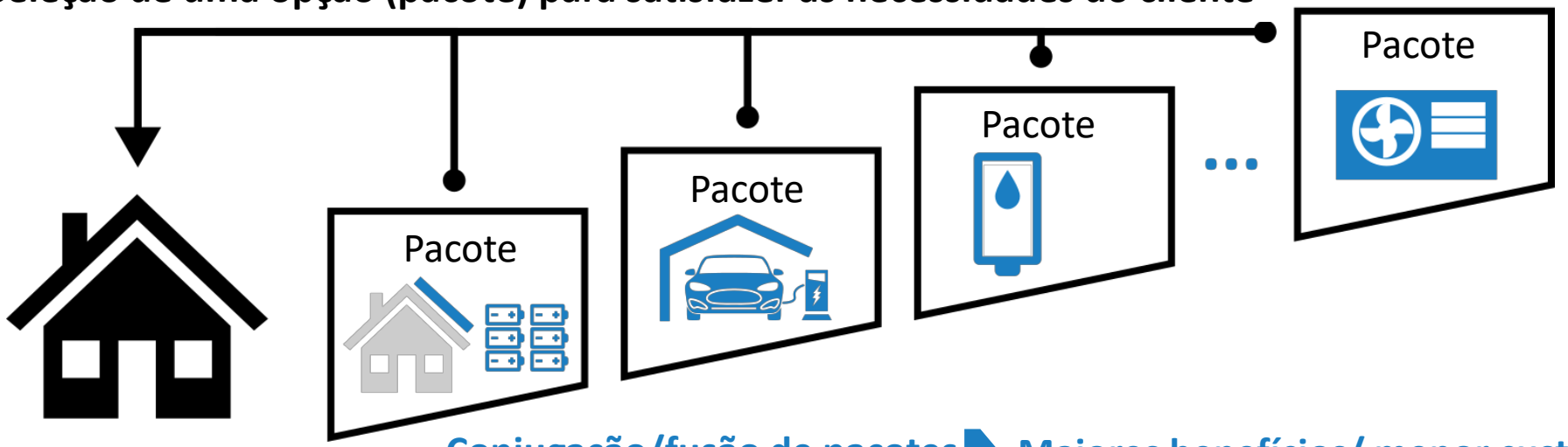
*Proprietários/senhorios/*ESCOs

❑ **Propriedade dos equipamentos**

Quem é o proprietário do equipamento/tecnologia?

*Proprietários/senhorios/*ESCOs

Seleção de uma opção (pacote) para satisfazer as necessidades do cliente



Conjugação/fusão de pacotes ➤ Maiores benefícios/ menor custo

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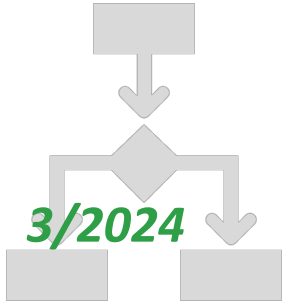
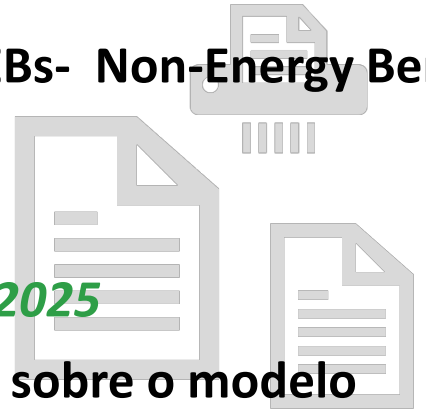
Resultados esperados

BungEES

- **Modelo inteligente de serviços de eficiência energética**
  - **Conceito** e modelo de serviço *3/2024*
  - **Prototype**
  - **Conceito e modelo de serviço final de forma integrada** *9/2025*



- **Análise da situação atual (Status Quo) dos benefícios não energéticos (NEBs- Non-Energy Benefits)**
  - Catálogo de serviços não energéticos *9/2024*
- **Análise das falhas regulamentares e barreiras não técnicas** *3/2024*
- **Criação de diretrizes para a aplicação de novas condições contratuais** *9/2025*
- **Relatório técnico sobre serviços emergentes e comprovados no mercado e sobre o modelo de negócio X-as-a-Service no sector dos edifícios** *3/2024*
- **Um conjunto de dados, recolhidos a partir dos inquéritos e das entrevistas efetuados junto de stakeholders relevantes em cada país.** *11/2023*



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BungEES

Partners

VIAEUROPA®

JOULE ASSETS

SEVEn THE ENERGY EFFICIENCY CENTER

Fraunhofer

INSTITUTE OF SYSTEMS AND ROBOTICS
UNIVERSITY OF COIMBRA

plenitude

ZSPS

Obrigado

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Annex 6

REVERTER

Eficiência e Pobreza Energética

Roteiros para renovação energética dos edifícios habitacionais no combate à pobreza energética

CÂMARA MUNICIPAL DE COIMBRA

1 2 9 0 UNIVERSIDADE D COIMBRA

ISR

Co-funded by the European Union

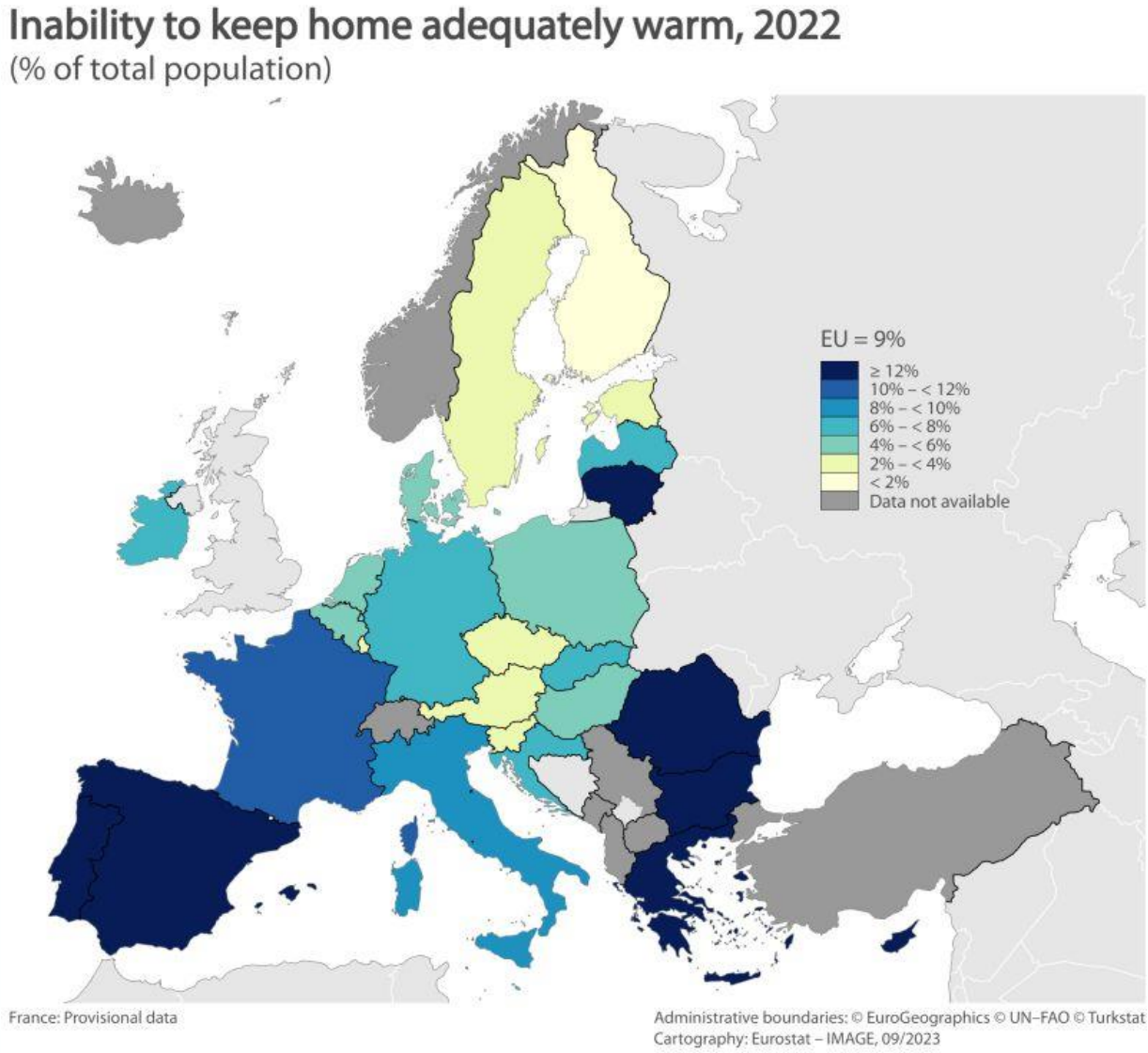
Paula Fonseca (ISR) || Inês Cunha (CMC)

Figueira da Foz || Outubro 2023

Pobreza Energética

Art. 2.º (49): "Pobreza energética" significa a falta de acesso de um agregado familiar a serviços energéticos essenciais que sustentem um nível de vida e de saúde decente, incluindo aquecimento, arrefecimento, iluminação e energia adequados para alimentar aparelhos, no contexto nacional relevante, na política social existente e noutras políticas pertinentes.

New EED – sept2023



REVERTER

eurostat

Enquadramento

Se é verdade que em Portugal sempre se passou frio no Inverno e calor no Verão, nunca o tema da pobreza energética mereceu tanto interesse por parte das políticas públicas sociais e de habitação em Portugal, na Europa e no mundo.

- A pobreza energética não é só matéria de interesse social, sendo também um pilar estratégico no qual importa intervir para o cumprimento das metas impostas pelos compromissos com a descarbonização da economia e a transição energética justa (EED, EPBD, CER, RePowerEU, Green Deal, RenovationWave, ...)

- A atual conjuntura que se vive na Europa, e no mundo, e a urgência de execução do Plano de Recuperação e de Resiliência, constituem uma oportunidade única para minimizar a pobreza energética, intervindo na raiz principal do problema**: a qualidade do edificado.**

REVERTER

October 2023 — EU Recommendation and guidance on energy poverty

September 2023 — revised Energy Efficiency Directive

2023 — EU Social Climate Fund, established by Regulation (EU/2023/955)

April 2022 — the Commission Energy Poverty and Vulnerable Consumers Coordination Group was established

December 2021 — proposal for a revision of the Energy Performance of Buildings Directive and of the hydrogen and gas markets decarbonisation package

13 October 2021 — Communication 'Tackling rising energy prices: a toolbox for action and support'

21 July 2021 — 'Fit for 55' package

2021 — Launch of the Energy Poverty Advisory Hub (EPAH)

14 October 2020 — Commission Recommendation on energy poverty

14 October 2020 — Communication on a 'Renovation Wave for Europe'

2019 — The draft NECPs require EU countries to describe their policies and measures addressing energy poverty

2018-2019 — adoption of the 'Clean energy for all Europeans package'

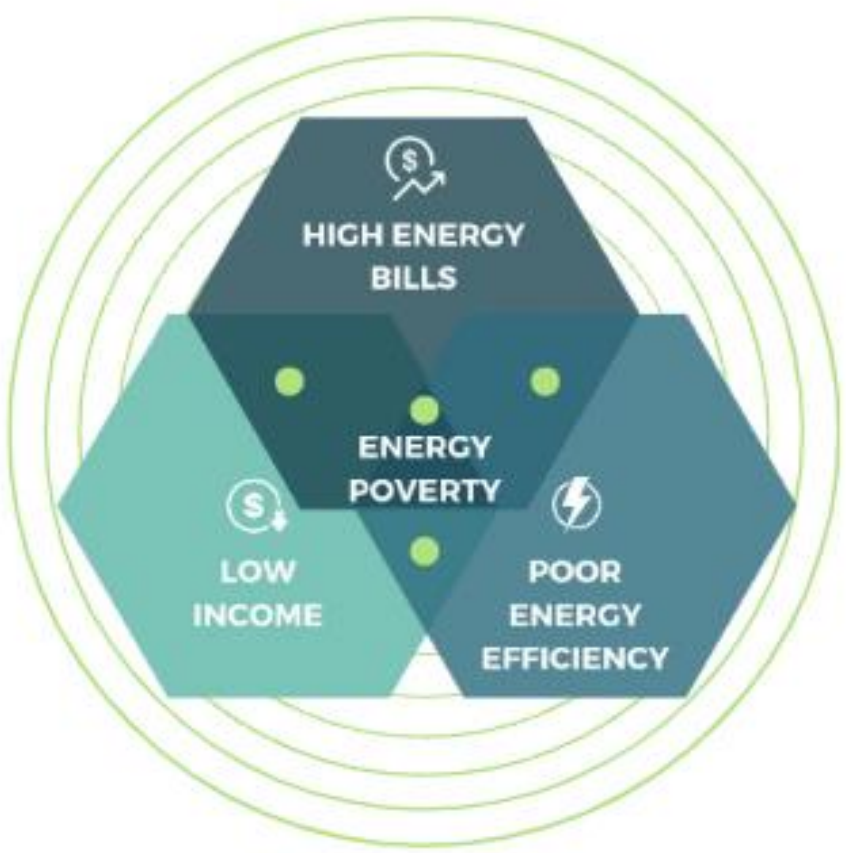
November 2017 — The European Pillar of Social Rights

December 2016 — Launch of the Energy Poverty Observatory (EPOV)

Hide 11 items

2009 — The concept of energy poverty was introduced by Directive (2009/72/EC)

Agregados familiares em situação de PE principais causas e fatores



- Desemprego
- Idosos
- Agregados familiares com crianças
- Pessoas com deficiência
- Pessoas com problemas de saúde
- Mulheres
- Minorias étnicas

REVERTER

Medidas para combater a pobreza energética

? Estratégia Nacional de Longo Prazo para o Combate à Pobreza Energética

Aumentar o desempenho energético das habitações /incentivar alterações dos padrões de consumo (ex. "Vale eficiência" e programa "Edifícios mais Sustentáveis")

Criar mecanismos de proteção ao consumidor sempre que este não consiga fazer face às despesas com a energia (planos de pagamento diferidos, proteção contra a desconexão, contadores pré-pagos)

Promover programas e/mecanismos de apoio à redução dos encargos com a energia (tarifa social, reduzir impostos na fatura, fundos para pagamentos em atraso, e subsídios nos meses mais frios)

Promover uma maior literacia energética

REVERTER

Principais eixos de atuação do REVERTER

- Análise e adaptação de técnicas de reabilitação energética;
- Demonstração da viabilidade económica de longo prazo de soluções de climatização eficientes;
- Promoção de novas tecnologias de construção mais sustentável;
- Criação de um balcão único que forneça informação, orientação e serviços de reabilitação a agregados familiares vulneráveis

REVERTER

Ação do REVERTER

01. Guiões para renovação energética dos edifícios habitacionais

- Habitação social
- Famílias mais vulneráveis
- **Casas com pior desempenho**

02. Coaches

- Formação
- Desenvolvimento de competências

03. Balcão Único de Energia

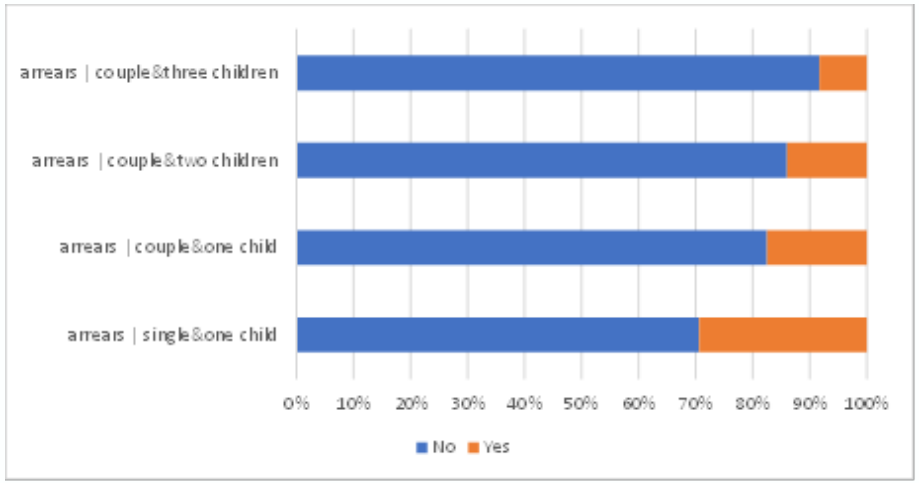
- Informação
- Simulação
- Aconselhamento

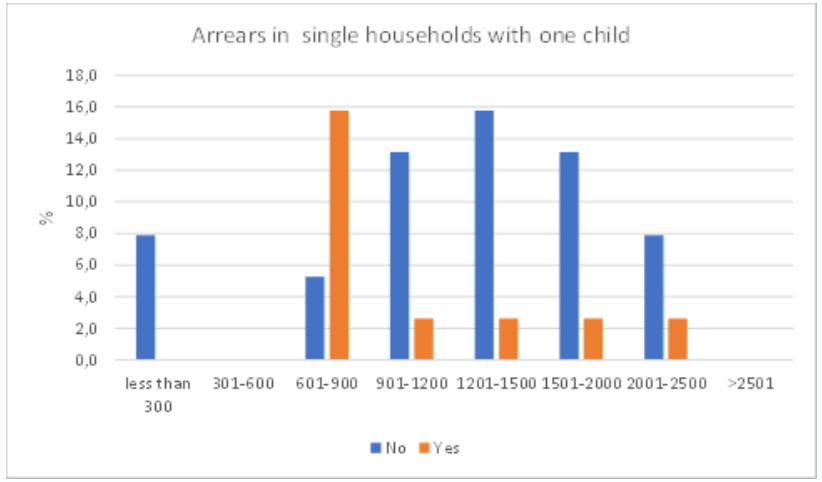
04. Embaixadores

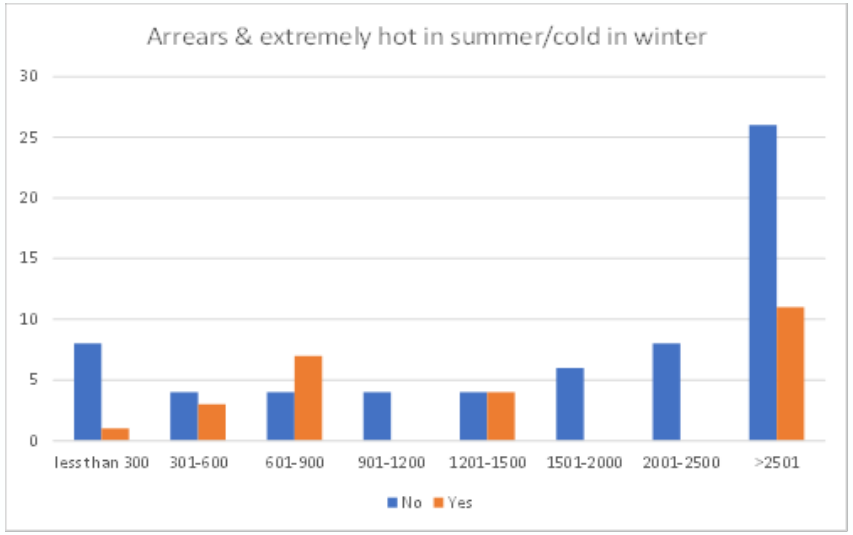
- Facilitadores das comunidades para as comunidades

REVERTER

Pagamento das contas de energia

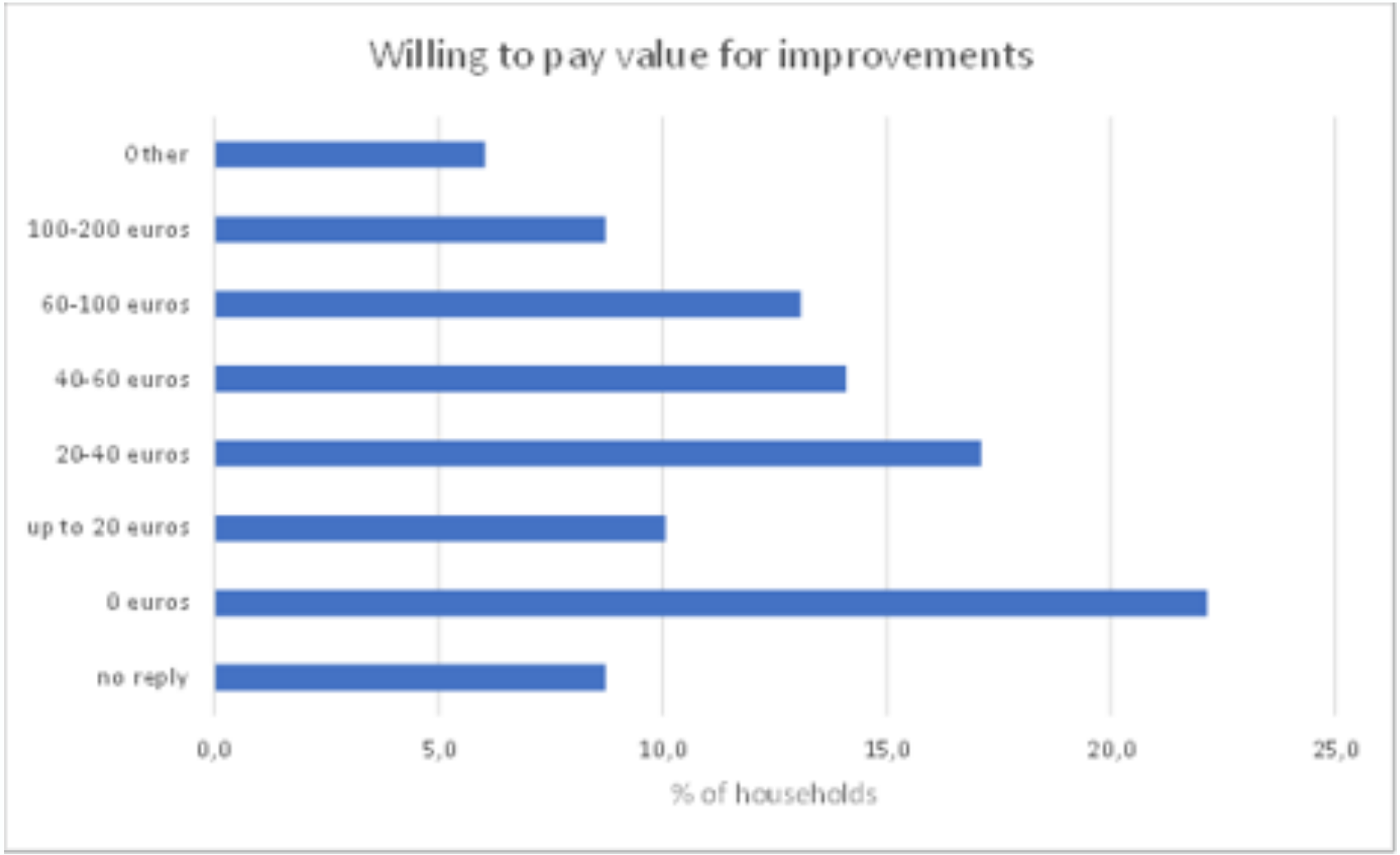






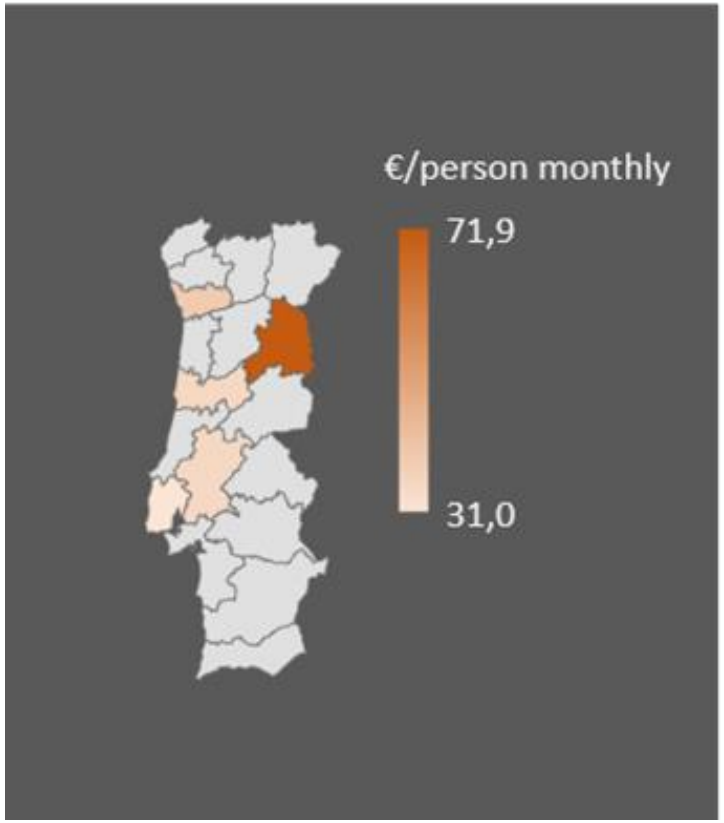
REVERTER

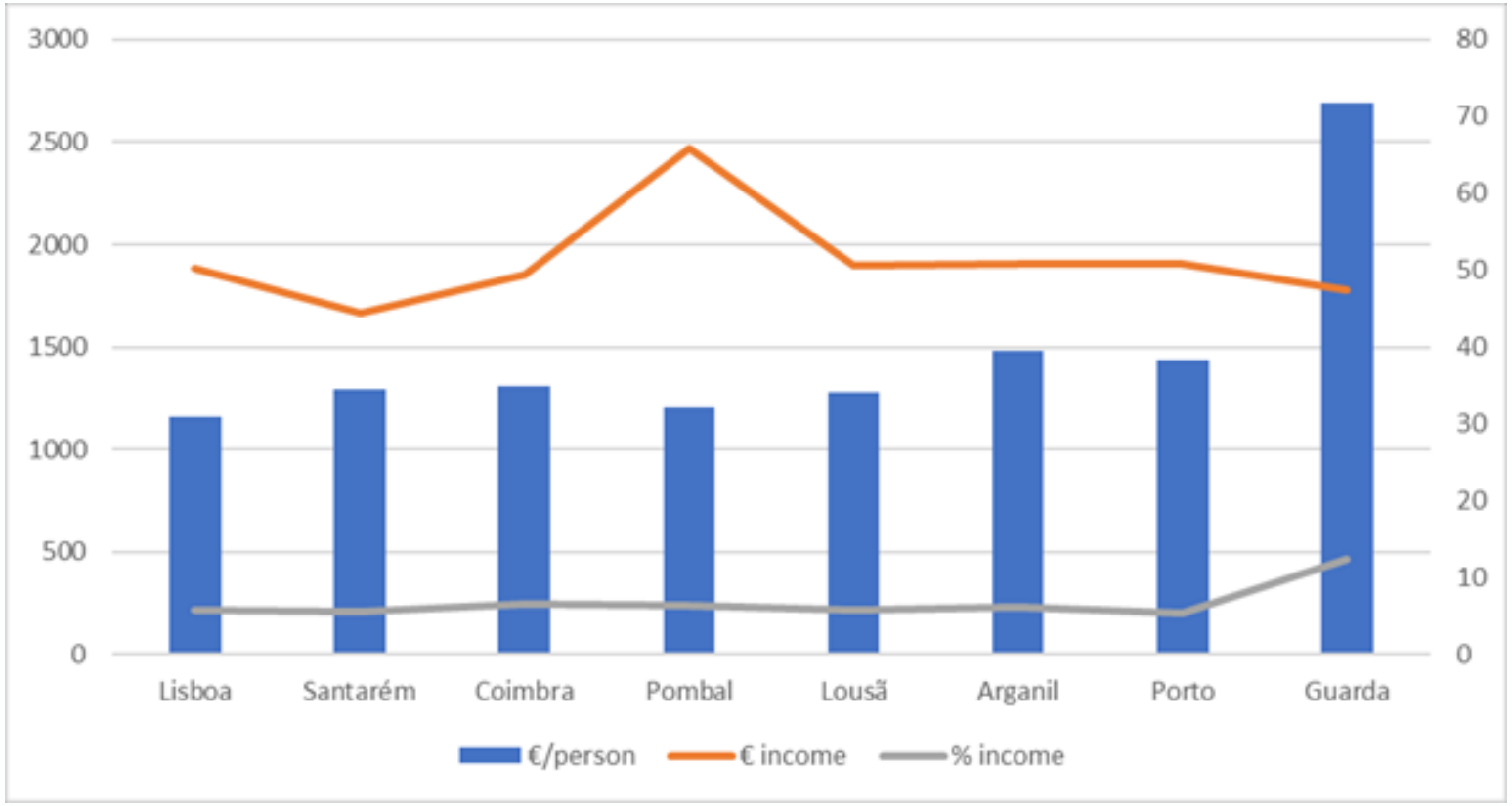
Disponibilidade para investir numa renovação energética (melhorar o conforto e reduzir a conta de energia)



REVERTER

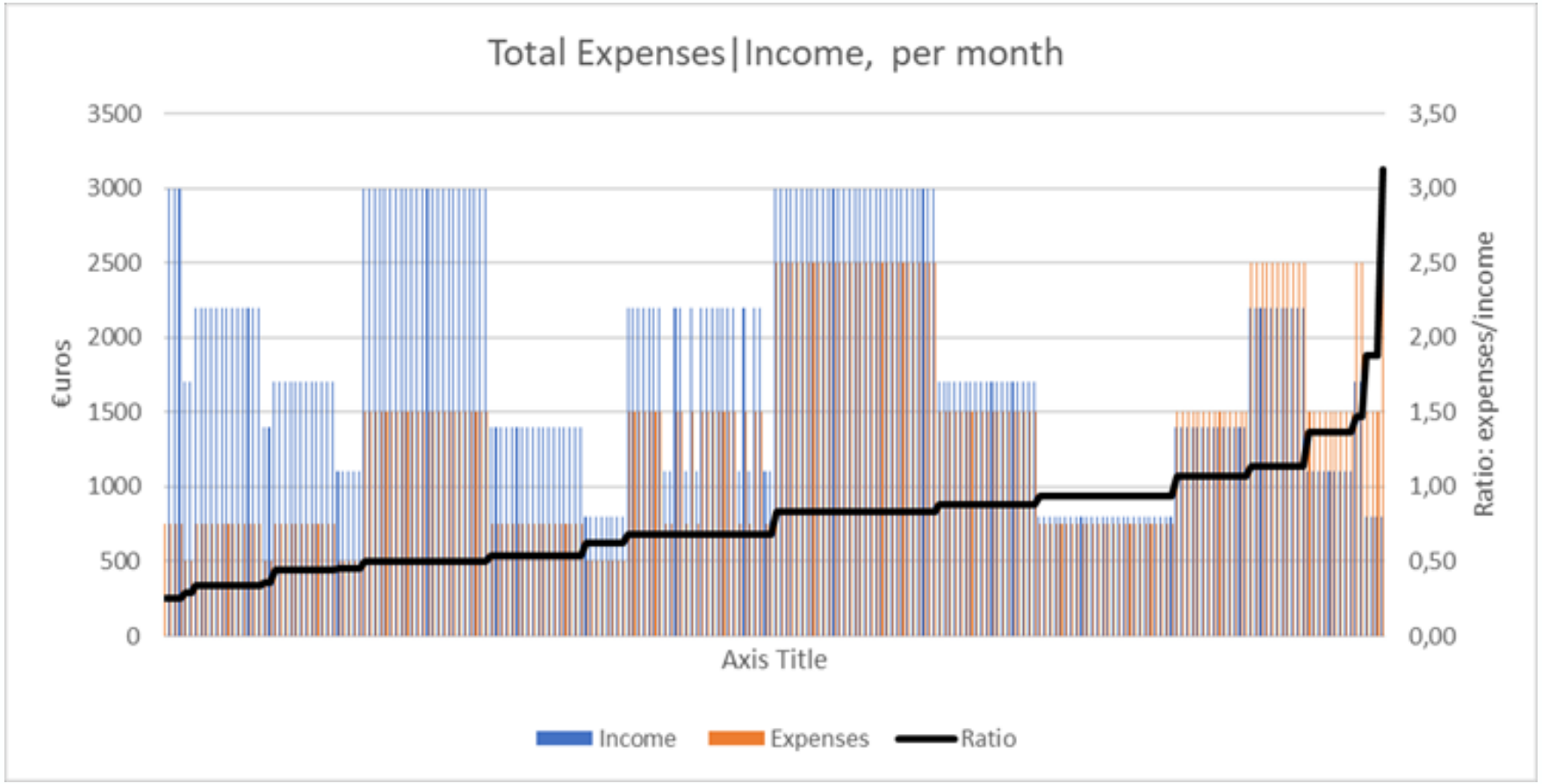
Indicador EP (social survey)





REVERTER

Indicador **Pobreza (total expenses/income)**



REVERTER

Guiões para renovação energética dos edifícios habitaciona

…numa lógica de *wise neighbourhoods e cidadania para a energia!*

REVERTER

O papel da autarquia

Experiência + posição privilegiada de contacto próximo com a população

autarquias

agentes prioritários de intervenção local

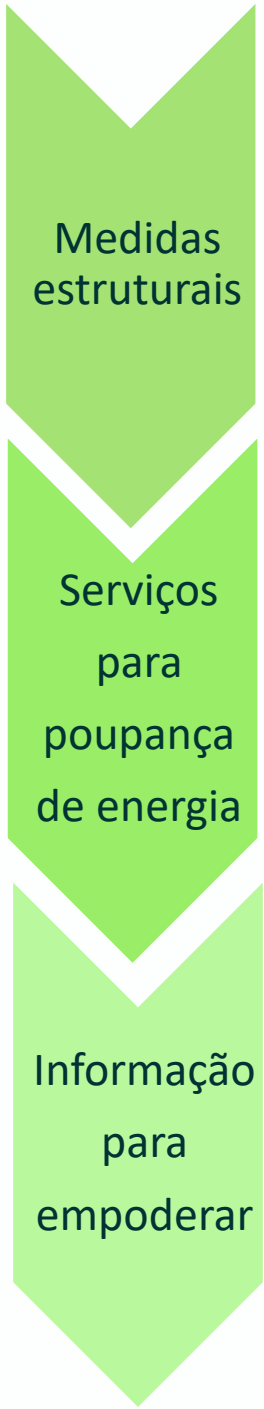
agentes facilitadores

Numa estratégia alargada de envolvimento dos cidadãos terá um papel muito significativo para assegurar a adoção em maior escala de soluções eficazes de reabilitação energética dos edifícios.

REVERTER

CM de Coimbra

- Desenvolver ações no sentido da melhoria da eficiência energética do seu parque habitacional e da melhoria das condições de habitabilidade dos seus ocupantes
- Aposta profunda e eficaz de reabilitação energética
- Desempenho energético melhorado, e de instalação de opções técnicas (tanto a nível de equipamentos mais eficientes como da produção de energia no local, de forma a minimizar as necessidades de energia acautelando padrões de conforto dos seus utilizadores)
- Políticas públicas municipais adaptadas às realidades locais e aos diversos protagonistas



REVERTER

PEE Coimbra 2023

CM de Coimbra apresentou, a 7 de dezembro de 2022, o Plano de Eficiência Energética (PEE) para 2023:

- Composto por 12 medidas, entre as quais, na área social, a medida "Auxiliar no c**ombate à pobreza energética do município**" sendo propostas duas ações: "Realização de auditorias a habitações referenciadas pelos Serviços de Ação Social" e "Realização de auditorias energéticas a habitações de munícipes identificados pelas Juntas/Uniões de Freguesia".
- Campanhas de comunicação e de sensibilização para diferentes públicos-alvo, enquanto agentes fulcrais para a redução do consumo energético

REVERTER

Digital OSS – Balcão Único

REVERTER
Balcão único para renovação energética dos edifícios

Centro de informação de eficiência energética em Portugal

REVERTER
Обновяване. Ефективност. Устойчивост.

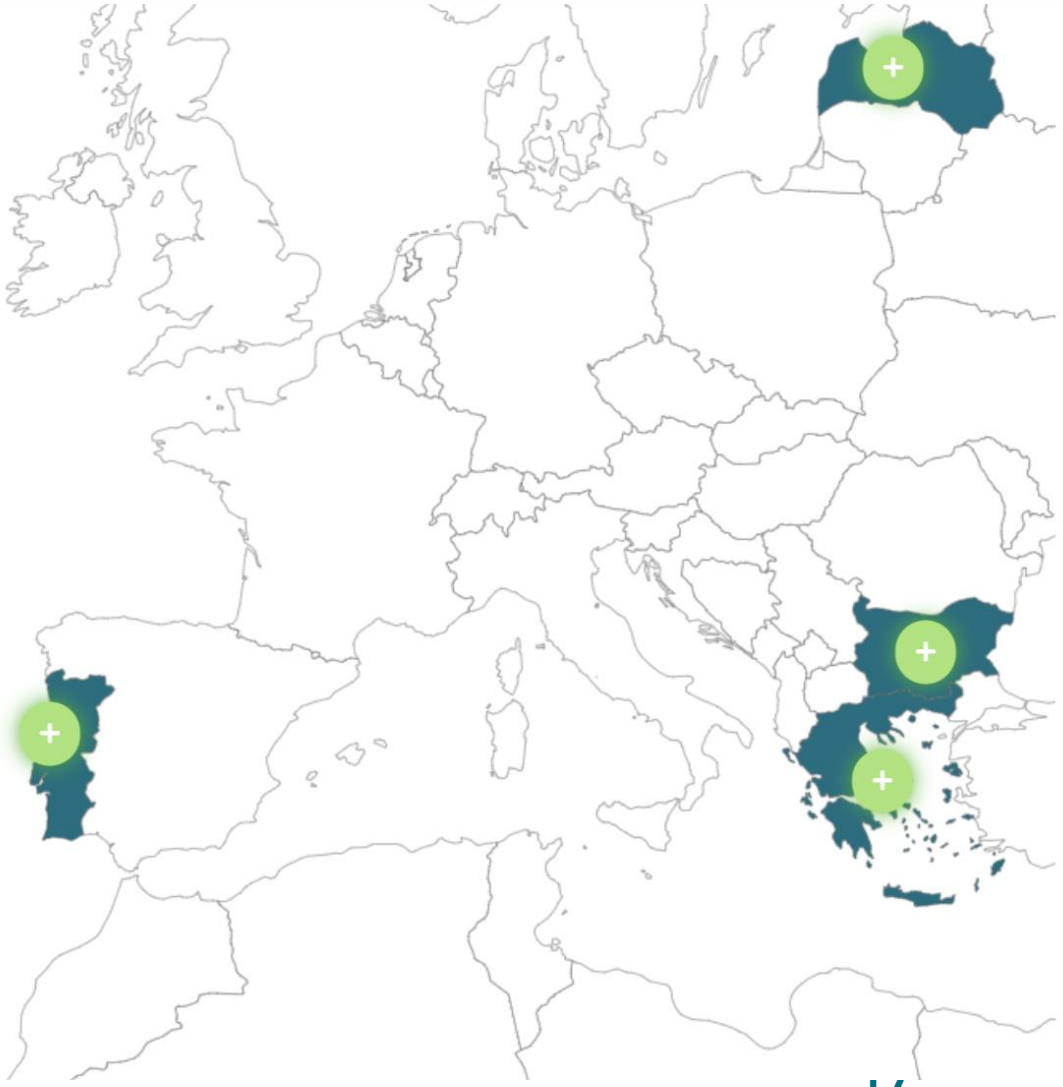
Centro de informações sobre eficiência energética na Bulgária

REVERTER
Ενεργειακή αναβάθμιση κατοικιών: όλες οι υπηρεσίες σε μία επίσκεψη

Centro de informações sobre eficiência energética na Grécia

REVERTER
Rīgas energoefektivitātes informācijas centrs

Centro de informações sobre eficiência energética na Letônia



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- Informação. Conhecimento. Experiência.

Apoio aos residentes em Coimbra

Consulta

Proporcionamos consultadoria online e presencial antes e durante as renovações.

Saber mais »

Campanhas de informação

Implementamos várias iniciativas para informar os cidadãos.

Saber mais »

Opções de apoio financeiro

Fornecemos informações e orientação sobre a candidatura aos programas de apoio disponíveis.

Saber mais »

Ferramentas, recursos e documentação

Providenciamos informações abrangentes sobre a documentação necessária para despoletar o processo.

Saber mais »

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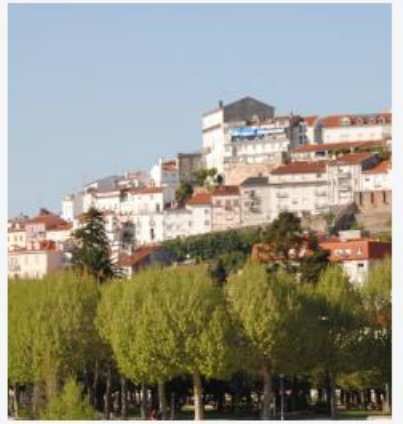
O RENOVAR.Coimbra é um "balcão único" capaz de fornecer informação, orientação e serviços de reabilitação energética a agregados familiares vulneráveis, apoiando a sua inscrição em programas de financiamento para a melhoria da eficiência energética, a melhoria das condições de salubridade e o conforto das habitações, de forma a aumentar o seu interesse pela reabilitação energética facultando o acesso a informação relevante de apoio à tomada de decisão desde as fases iniciais do processo.

Mais informação sobre RENOVAR.COIMBRA.pt



- O quê? Para quem? Porquê?

Renovação das habitações

Este balcão pretende orientar os agregados familiares, particularmente os que vivem em bairros sociais, sobre as formas de reduzir as suas faturas de energia e melhorar o conforto térmico das suas habitações:

- a encontrar soluções de financiamento para a renovação energética das habitações;
- oferecer informação e prestar esclarecimentos sobre o acesso a fontes de energia renováveis;
- a aceder a dicas para melhorar a sua qualidade de vida sem custos acrescidos;
- a reduzir os custos com energia para aquecimento e arrefecimento.

Renovação energética dos edifícios

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E-mail
renovar.coimbra@cm-coimbra.pt

Endereço
Praça 8 de Maio, 3000 300 Coimbra

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Sobre RENOVAR.Coimbra.pt

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Balcão Único de Energia REVERTER

Com o intuito de endereçar intervenções relacionadas com edifícios em bairros vulneráveis para mitigar a pobreza energética das famílias, o projeto REVERTER constitui este balcão único de energia em Coimbra para as questões energéticas da sua habitação.

O que é o RENOVAR.Coimbra

RENOVAR.Coimbra

O centro de informação sobre eficiência energética de Coimbra, RENOVAR.Coimbra, foi criado no âmbito do projeto Europeu REVERTER. Este balcão único é gerido pelo Município de Coimbra e pretende ser um ponto de apoio para todos os residentes do Município de Coimbra em situação de pobreza energética que pretendem fazer uma reabilitação energética à sua habitação.

O nosso alvo

Como é que podemos ajudar?

- Ponto de apoio
- Aconselhamento
- Documentação

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Serviços e informações úteis

Início / Serviços e informações úteis

Recursos, ferramentas e fontes de informação úteis sobre a renovação de edifícios

Reunimos várias ferramentas úteis, recursos e outras fontes de informação para que possa obter as informações mais completas sobre a eficiência energética e a renovação de edifícios.

Ferramentas e recursos úteis

Diferentes tipos de ferramentas e recursos relacionados com a eficiência energética à escala europeia e nacional.

Saber mais »

Informação detalhada sobre renovação

Informações detalhada sobre a renovação, desde a ideia até à sua implementação - documentos, conselhos, etc.

Saber mais »

Balcões únicos em Portugal

Recolhemos informações sobre todas as agências de balcão único e iniciativas semelhantes.

Saber mais »

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O que? A quem? Por que?

Não tem a certeza se a sua casa precisa de ser renovada?

Se não tem a certeza sobre o impacto de uma renovação energética da sua casa, tanto nos meses de Inverno como de Verão, o Instituto de Sistemas e Robótica da UC pode efetuar durante o projeto, uma análise termográfica para detetar a existência de patologias nas suas fachadas. Durante a termografia, o seu edifício será fotografado com uma câmara de infravermelhos, o que lhe permitirá visualizar os locais por onde se perde calor. Para usufruir deste serviço, deve agendar uma consulta com os nossos técnicos

Agendamento

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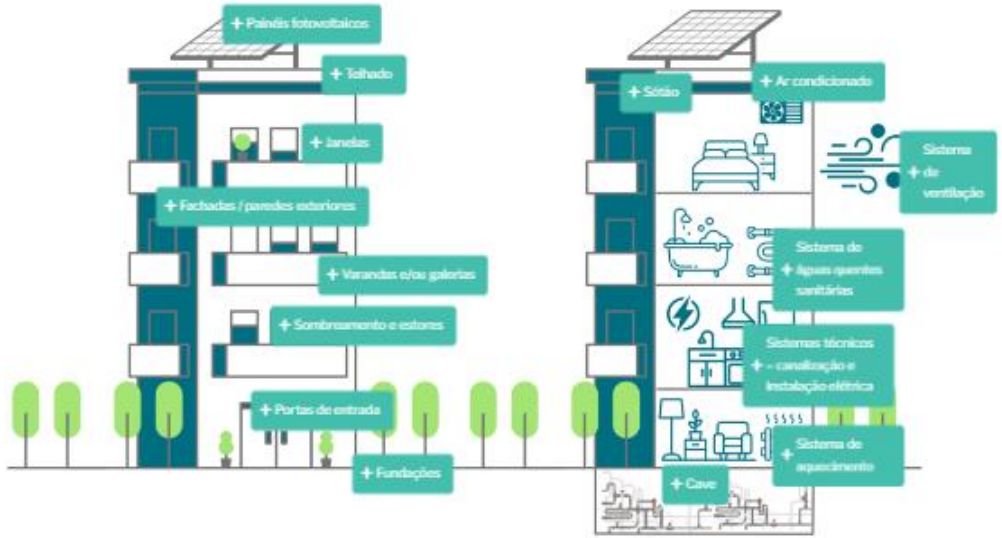
Renovação energética de edifícios habitacionais

Início / Renovação Energética dos Edifícios

O que afecta a eficiência energética de um edifício?

Renovação de edifícios de habitação

Os benefícios mais visíveis e tangíveis da renovação de edifícios de apartamentos são, evidentemente, uma fachada mais limpa e faturas de energia mais baixas, mas a renovação de edifícios ajuda a resolver muitos problemas técnicos. A renovação de um edifício não só reduz o consumo de energia, como também prolonga a sua vida útil e aumenta o valor da propriedade.

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Os embaixadores da energia têm um papel muito importante neste projeto
Qual é o papel dos embaixadores da energia?
O principal papel dos embaixadores da energia do projeto REVERTER consiste em prestar aconselhamento individualizado a representantes de agregados familiares vulneráveis, a fim de os ajudar a melhorar a eficiência energética da sua casa, bem como a sua qualidade de vida.
Participação na formação REVERTER
Esta formação pretende munir os embaixadores da energia com informação detalhada e completa sobre a eficiência energética e as soluções possíveis de ser implementadas numa habitação
Participação nas campanhas REVERTER
Participe nas ações de informação e eventos de comunicação do REVERTER onde encontrará partilha de informação, pode melhorar os seus conhecimentos e desenvolver as suas competências em matéria de renovações e eficiência energética.
Dar feedback
Fazer a ponte entre as comunidades mais vulneráveis e os responsáveis do projeto através do conhecimento adquirido nas comunidades


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Embaixadores da Energia do projeto REVERTER
Início / Embaixadores da energia REVERTER
Os embaixadores da energia são essenciais
Quem são os embaixadores da energia do REVERTER?
Os embaixadores da energia REVERTER são pessoas que, com base no princípio de voluntariado, aceitam participar na implementação do projeto a fim de adquirirem conhecimentos aprofundados sobre eficiência energética e transmiti-los aos representantes de agregados familiares desfavorecidos no município de Coimbra. São facilitadores para promover o envolvimento das populações e o intercâmbio de conhecimentos, desenvolvimento de competências e ações de combate à iliteracia energética, com vista a encontrar, localmente, estratégias de mitigação da pobreza energética.


Porquê tornar-se um embaixador da energia?
Quatro razões para ser um embaixador da energia REVERTER!
Embora os embaixadores da energia REVERTER participem numa base voluntária, o envolvimento com o projeto pode abrir novas oportunidades e proporcionar satisfação e recompensa!
Aprofundar os seus conhecimentos e ganhar novas experiências
O seu envolvimento como embaixador da energia vai-lhe permitir adquirir novas competências e aprofundar conhecimentos sobre energia.
Apoiar os agregados familiares vulneráveis
Os embaixadores da energia REVERTER vão ter um papel fundamental na sensibilização e comunicação com as comunidades vulneráveis.
Ganhe experiência num projeto internacional
Oportunidade de participar na implementação de um projeto internacional no âmbito das suas funções e competências. A equipa do consórcio internacional REVERTER fornecer-lhe-á uma carta de recomendação e um Certificado de Participação.
Novos contactos e oportunidades
A sua participação no projeto irá certamente permitir-lhe estabelecer novos contactos, e abrir novas oportunidades.


Um embaixador da energia é o rosto visível do projeto
O que esperamos do embaixador da energia REVERTER?
Para se tornar um embaixador da energia do projeto REVERTER, é necessário cumprir com os seguintes requisitos
Motivação
Os embaixadores da energia têm de ter uma forte motivação, ser voluntariosos e ter interesse sobre o tema da pobreza energética e estar recetivos à aprendizagem necessária, que é assegurada pelo REVERTER, de forma a serem impactantes nas comunidades em que vão actuar.
Honestidade
O papel dos embaixadores da energia é de grande importância para a implementação do projeto REVERTER. Agradecemos que tratem as informações a que vão ter acesso de boa fé.
Capacidade para abdicar do seu tempo livre em prol da Pobreza Energética
Compreendemos que irá implementar o papel de embaixador da energia no seu tempo livre, pelo que valorizaremos muito o tempo que dedicar ao projeto e a sua capacidade de avaliar objetivamente se quer e pode assumir este papel.


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Faça a sua pergunta sobre como melhorar a eficiência energética
Pode colocar-nos as suas questões e estas serão respondidas por especialistas na matéria assim que possível.
Nome
Telefone de contato
Email
Sua mensagem
Concordo com a Política de Privacidade
Enviar para

Obrigada!

pfonseca@isr.uc.pt

ines.cunha@cm-coimbra.pt

www.reverterhub.eu

renovar.coimbra.pt

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BungEES

INSTITUTO DE SISTEMAS E ROBÓTICA
UNIVERSIDADE DE COIMBRA

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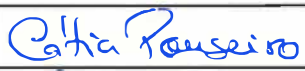
Cátia Rodrigues da Graça Pouseiro	Município de Tomar	catiapouseiro@cm-tomar.pt	
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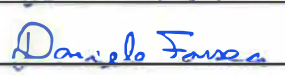
Daniela Margarida Lima Alves Fonseca	Núcleo Museológico do Mar	daniela.m.l.a.fonseca@gmail.com	
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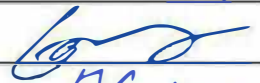
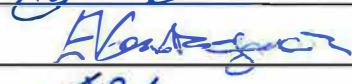
Emanuel Delgado	ENSE	Emanuelcdelgado@gmail.com	
Evandro Garcia	PhD Student	evandro.garcia@student.dem.uc.pt	
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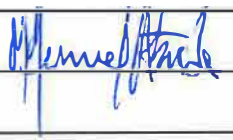
Maria Manuel Rainho Ataíde das Neves	CMFF	maria.manuel@cm-figfoz.pt	
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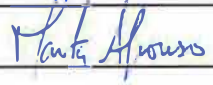
Marta Afonso	CMFF	marta.afonso@cm-figfoz.pt	
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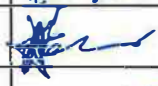
Nuno Filipe Barradas Franco	Município de Odemira	nfranco@cm-odemira.pt	
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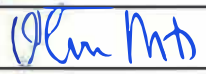
Olivia Matos	ELIS	Olivia.matos@elis.com	
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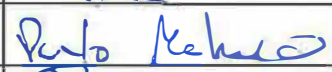
Paulo Miguel Ribeiro Machado	Guimarães	miguel.machado@cm-guimaraes.pt	
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Marco Tibério	Classe A+/Greenvolt		
Ana Bastos	CC Energia		

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BungEES

INSTITUTO DE SISTEMAS E ROBÓTICA
UNIVERSIDADE DE COIMBRA

Lista de participantes

Nome	Instituição/Empresa	Email	Assinatura / Rubrica
Jorge Almeida	APESE		
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Catarina Abrantes	Viola Portugal		
Carlos Patrício	Clean Watts		
Claudia Gaspar	E-REDES		
Carlos Ferreira	Perfil de Detalhe Lda		
Paulo Machado	Câmara Municipal Cascais		
José Dinis	Câmara Municipal Guimarães		
Alexandre Fernandes	ENSF		

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Annex 8

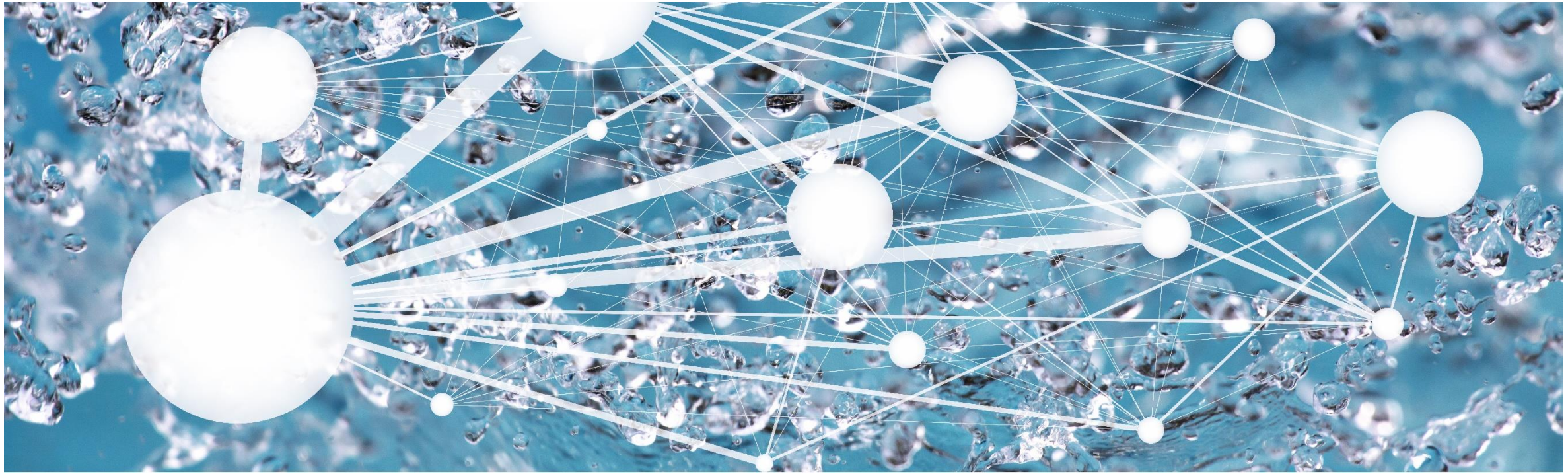
PROJEKT BUNGEES

BUILDING UP NEXT-GENERATION SMART ENERGY SERVICES OFFER

Anne Kesselring, Fraunhofer ISI, Karlsruhe

BungEES

Wir bitten um Ihren Input für eine Umfrage zu Service-basierten Geschäftsmodellen



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Fraunhofer ISI

BungEES – Integration of multiple energy services

1. BungEES Hintergrund

- Dezentralisierung und Digitalisierung
- Gebäude als komplexes, eigenes Energiesystem
- Bedarf und Möglichkeit für neue Dienstleistungen

2. Projektziele

- Geschäftsmodell für integriertes Dienstleistungspaket
- Umfeldanalyse für Umsetzung neuer Servicepakete im vernetzten Service
- Pilotprojekt zur Validierung mit Voltalis und Plenitude

3. Rolle der Umfrage

- Best Practise und Hemmnisse für **service-basierte Geschäftsmodelle** im Gebäudesektor
- Weiterentwicklung von Energiedienstleistungen mit **IKT und komplexer Datenanalyse**

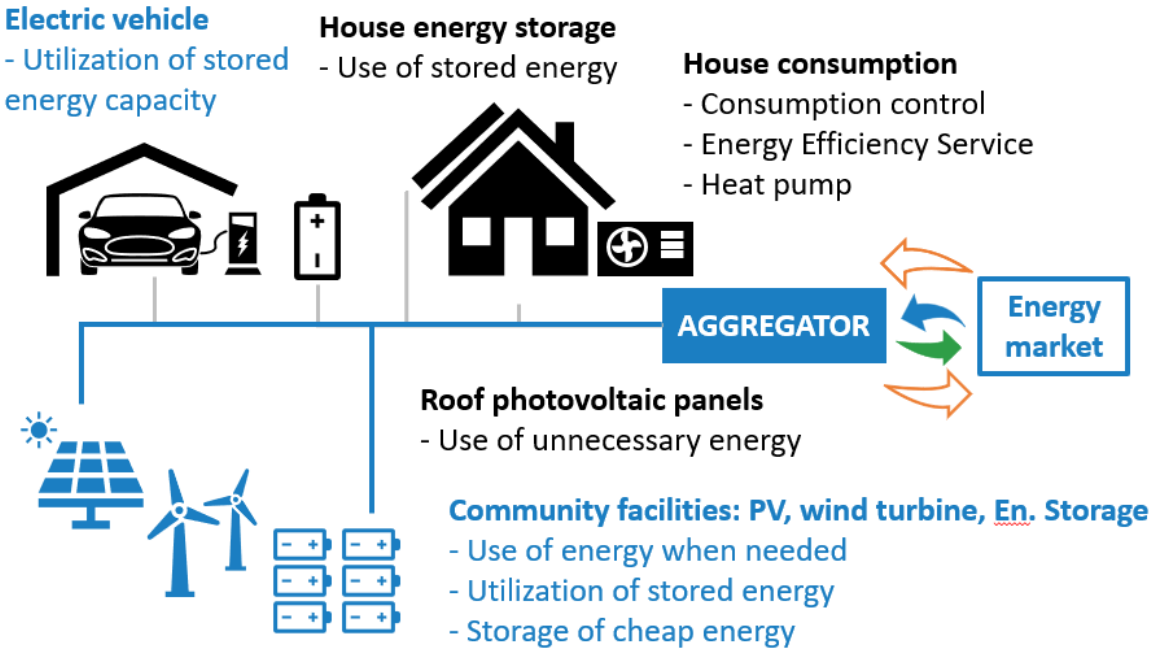

Abb1: Konzept für Einfamilienhaus

Project website: https://bungees.eu/

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Fraunhofer ISI

Umfrage zu Service-basierten Geschäftsmodellen (XaaS)

Verbindung zum EDL-Hub?

- **Direkt:** Beispiele und Erfahrungen aus ganz Europa
  - Welche Dienstleistungen sind zukünftig vielversprechend?
  - Wie kann man sie effizient kombinieren?
- **Indirekt:** Mitsprache für künftige Rahmenbedingungen
  - Welche regulatorischen Bedingungen müssen angepasst werden?
  - Wie kann die Marktreife und Verbreitung beschleunigt werden?
- **Teilnahme**: selbstständig via Link rechts oder semi-strukturiertes Interview

Hier geht's zur Umfrage
https://by4794.customervoice360.com/uc/team019/bc3d/

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Kontakt: Dr. Anne Kesselring, anne.kesselring@isi.fraunhofer.de,
Tel: +49 (0)721 6809-414 bzw. +49 (0) 171 8188 574

Annex 9

Voltalis

Aidez-nous à imaginer les nouveaux services à vous apporter !

Bonjour Madame / Monsieur *[NOM FAMILLE]*,

Chez Voltalis, nous continuons d'essayer de faire évoluer nos produits pour être au plus proche de vos besoins.

Afin de mieux comprendre vos motivations à devenir adhérent Voltalis et mieux imaginer nos nouveaux services à vous apporter, nous vous adressons ce court questionnaire (moins de 10 minutes).

Répondre au questionnaire

Les résultats de ce questionnaire sont anonymes et pourront être utilisés de manière agrégée pour les projets BungEES, projet d'innovation auquel participe Voltalis, co-financé par l'Union Européenne.

Bien cordialement,
L'équipe Voltalis

BungEES

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Annex 10

BungEES

BungEES Survey for end-users of Voltalis solution

Questions will be sent in French.

1. General questions

- What is your age?
  - < 20
  - 20 – 35
  - 35 – 50
  - 50 – 65
  - > 65
- What is your socio-economic status?
  - Student
  - Artisan, merchant
  - Employee
  - Manager
  - Executive
  - Worker
  - Retired
  - Inactive
  - Other:
- In which typology of housing do you live?
  - Individual house
  - Collective dwellings
- What is your average monthly electricity bill?
  - < 50€
  - 50 – 100 €
  - 100 – 150 €
  - 150 – 200 €
  - > 200 €

2. Sensibility to environmental issues and Demand response

- How do you rate your interest/sensitivity to environmental issues and energy transition?
  - Very strong sensitivity, it is a key argument for my decisions
  - Strong sensitivity, I take it into account for my decisions
  - Low sensitivity, I am aware of the topic, I try to combine with other factors for my decisions
  - No sentivity, I am not interested in and/or I do not take it into account
- Among the following actions, which one you already did / you plan to do / you do not plan to do:
  - Buy EV car
  - Install Heat Pump

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  - Install PV / battery
  - Other:
- Among the following benefits, which ones convinced you to install the Voltalis solution: *[I was not aware of / No impact in my decision / low impact in my decision / strong impact in my decision]*
  - Make energy savings
  - See/follow energy consumptions
  - Pilot his heating appliances, having a smart thermostat
  - Have an environmental behaviour (avoid CO2 emitting thermic power plants)
  - Have a solidarity behaviour (participate in power grid balancing, contribute in avoiding blackouts)
- What barrier/reticence/fear did you had before installation? *[Tick only if you had]*
  - Impact on comfort
  - Scam ("too many benefits to be free")
  - Distrust of the technology
  - Too complex

3. Impacts of demand response since Voltalis installation

- Since you installed Voltalis solution, did you see energy savings impact on your housing?
  - Yes, above 30%
  - Yes, between 15 and 30%
  - Yes, between 0 and 15%
  - Yes, but I did not measure it
  - No energy savings
- Since you installed Voltalis solution, did you feel comfort impact on your housing due to DR/Flexibility activities of Voltalis?
  - No
  - Yes
- Since you installed Voltalis solution and you have access to MyVoltalis app services, did you change your behaviour? *[Several ticks possible]*
  - No, I never go on MyVoltalis
  - No, I go on MyVoltalis but did not change anything in my behaviour
  - Yes, I regularly go on MyVoltalis to watch/monitor my energy consumptions and adapt some actions
  - Yes, I pilot more precisely/smartly my heating systems according to my needs / schedule my heating period in accordance with my routine
- What is your frequency of connection to MyVoltalis?
  - Several times a day
  - ~1 time a day
  - Several times a week
  - ~1 time a week
  - Several times a month

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  - ~1 time a month
  - Below 1 time a month / Never
- Which one of the following service of MyVoltalis do you use?
  - Global consumption visualization
  - Detailed consumption visualization (per use)
  - Consumption piloting with budget target
  - Pilot electric radiators in real time
  - Schedule heating periods in accordance with my routine
  - Energy advices
  - Other:

4. Integration of demand response with other energy apps

- How many mobile/desktops apps do you have in parallel for energy issues?
  - 0
  - 1
  - 2
  - 3
  - 4
  - 5
  - 5+
- What are these mobile/desktops apps? *[To tick]*
  - Energy supplier
  - Autoconsumption/PV app
  - EV charging app
  - MyVoltalis app
  - Other:
- Having several energy applications is a limit/barrier to encourage you to change your energy behaviour?
  - Yes
  - No
- What new functionality should propose the MyVoltalis App?
  - *Free answer*

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Annex 11

ENCUESTA FLEXISMART HOME

Declaración de privacidad de datos

Estimado participante, ha sido elegido para participar en una encuesta de nuestro proyecto europeo llamado "BungEEs". Este proyecto trata sobre la gestión y creación de servicios de energía inteligente de próxima generación que combinan la comercialización y la valoración de los múltiples beneficios de la eficiencia energética y la flexibilidad de respuesta a la demanda. El objetivo es identificar nuevos servicios energéticos que integren la eficiencia energética, la respuesta a la demanda, la movilidad eléctrica, el almacenamiento de energía, etc.

La participación en la encuesta es voluntaria. Puede interrumpir la participación en la encuesta en cualquier momento y continuarla o cancelarla más tarde. Se estima que la encuesta dure alrededor de 10 minutos y se haran algunas preguntas sobre el consumo de energía en su vivienda y sobre su conocimiento sobre la flexibilidad.

El procesamiento de datos personales llevado a cabo por la empresa cumple con la política de privacidad europea, con la supervisión de la autoridad nacional de supervisión (CNPD - Comisión Nacional de Protección de Datos). De conformidad con el art. 15 del RGPD, la empresa reconoce plenamente el "derecho de acceso" de los interesados a cualquier dato personal y no restringe dicho acceso, excepto según lo dispuesto por la ley. La compañía también reconoce todos los demás derechos otorgados a las personas en virtud de la legislación de protección de datos personales y se compromete a cumplir con las solicitudes de aquellos que desean ejercer dichos derechos.
En la medida en que sus datos sean personales, tiene derecho a los derechos de los interesados de acuerdo con el RGPD de la UE, incluido el derecho a la información, corrección, revocación o bloqueo / eliminación de sus datos, así como el derecho a presentar una queja ante la autoridad supervisora. Se cumplen los requisitos técnicos y organizativos de conformidad con los art. 25 y 32 del RGPD UE para la protección de datos personales. El nombre y el correo electrónico del encuestado son opcionales, no se utilizarán para ningún propósito comercial y solo se utilizarán si es necesario para aclarar cualquier duda sobre sus respuestas dentro de la encuesta.

ENCUESTA

SECCIÓN SOCIODEMOGRÁFICA

S1 Usted es…?
1.Hombre
2.Mujer

S2 ¿Podría decirme su edad?
|_|_| (Range from 1 to 99 – recode in standard age ranges)

¿Es usted él/la cabeza de familia?
1.Si
2.No

S3 ¿Cuántas personas viven en su hogar, incluido usted? Al responder tenga en cuenta el número de personas que conviven en su hogar.

1. 1 persona
2. 2 personas
3. 3 personas
4. 4 personas
5. 5 personas
6. 6 personas
7. 7 personas
8. 8 o más personas

S4 ¿Dónde vive usted?

1. La Coruña
2. Álava
3. Albacete
4. Alicante
5. Almería
6. Asturias
7. Ávila
8. Badajoz
9. Baleares
10. Barcelona
11. Burgos
12. Caceres
13. Cádiz
14. Cantabria
15. Castellón
16. Ciudad Real
17. Córdoba
18. Cuenca
19. Gerona

20. Granada
21. Guadalajara
22. Guipúzcoa
23. Huelva
24. Huesca
25. Jaén
26. La Rioja
27. León
28. Lérida
29. Lugo
30. Madrid
31. Málaga
32. Murcia
33. Navarra
34. Orense
35. Palencia
36. Pontevedra
37. Salamanca
38. Segovia
39. Sevilla
40. Soria
41. Tarragona
42. Teruel
43. Toledo
44. Valencia
45. Valladolid
46. Vizcaya
47. Zamora
48. Zaragoza
49. Las Palmas
50. Santa Cruz de Tenerife

S5. Y usted vive en...?

1. En el centro de la ciudad o distrito central.
2. En una ciudad, pero no en el centro de la ciudad o distrito central.
3. En las afueras, en una ciudad pequeña o pueblo cercano que forme parte de una ciudad más grande.
4. En una ciudad pequeña o pueblo que no forma parte de una ciudad más grande.
5. En una zona rural.
6. Otros

MAIN QUESTIONNAIRE CUESTIONARIO PRINCIPAL

Q1. ¿Cómo valoras el confort en tu vivienda, en términos de tener una buena temperatura? Por favor, exprese su opinión utilizando una escala de 0 a 10, donde 0 significa "nada cómodo" y 10 significa "completamente cómodo". (single answer)

1. 10 = completamente cómodo
2. 9
3. 8
4. 7
5. 6
6. 5
7. 4
8. 3
9. 2
10. 1
11. 0 = nada cómodo

Q2. En el sector energético, dependiendo de las tarifas eléctricas, hay ciertos períodos de precios en los que, por ejemplo, el período valle (nocturno) tiene un precio más bajo. Esto se conoce como una tarifa de varios períodos. ¿Estabas familiarizado con este concepto antes? (single answer)

1. Sí, estaba muy familiarizado con el concepto.
2. Sí, estaba bastante familiarizado con el concepto.
3. Había oído hablar de él antes, pero no estaba familiarizado con el concepto.
4. Nunca había oído hablar de eso antes.

Q3. En el sector energético y debido a la promoción de las energías renovables, se ha desarrollado el concepto de prosumidor. Un prosumidor es un consumidor que puede producir energía a partir de una instalación de energía renovable (por ejemplo, un sistema fotovoltaico) y alimentarla a la red; Por lo tanto, es a la vez un consumidor y un productor de energía, de ahí el término "prosumidor". ¿Estabas familiarizado con este concepto antes? (single answer)

1. Sí, ya estaba muy familiarizado con el concepto.
2. Sí, ya estaba bastante familiarizado con el concepto.
3. Había oído hablar de él antes, pero no estaba familiarizado con el concepto.
4. Nunca había oído hablar de eso antes.

Q4. En el sector energético actual, ha surgido un nuevo concepto, conocido como "flexibilidad", puede entenderse como la capacidad de modificar la producción o el consumo de diferentes recursos energéticos distribuidos en respuesta a diferentes señales como: el precio de mercado de la electricidad,un programa establecido, , compromisos asumidos como puede ser la participación en una subasta de capacidad, o decisiones de agregación por parte de un tercero. ¿Estabas familiarizado con este concepto antes? (single answer)

1. Sí, estoy muy familiarizado con el concepto.
2. Sí, ya estaba bastante familiarizado con el concepto.
3. Había oído hablar de él antes, pero no estaba familiarizado con el concepto.
4. Nunca había oído hablar de eso antes.

(display)

Le rogamos que lea atentamente la siguiente propuesta, sobre la que nos interesaria conocer su opinión.

(display the concept, including the image)

"FLEXISMART HOME"

La última crisis energética hizo que la gente se diera cuenta de lo importante que puede ser la eficiencia energética, tanto desde el punto de vista medioambiental como económico.

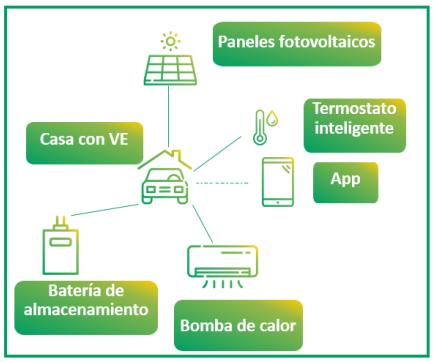
Esa es la razón por la que se está desarrollando "FlexiSmart Home", una solución que permite a los consumidores maximizar la eficiencia energética, gracias a la identificación, aplicación y mantenimiento de medidas que conducen al ahorro de energía y a la reducción de los costes operativos.

Con "FlexiSmart Home" puede beneficiarse de la flexibilidad energética, ya que:

- Consumirá energia cuando esta sea barata.
- Almacenará el exceso de energía producida por fuentes renovables (ej. sistemas fotovoltaicos) para su empleo posterior.
- Venderá exceso de energía producido por sus fuentes renovables (ej. sistema fotovoltaico).

Además, "FlexiSmart Home" ofrece diferentes paquetes basados en las necesidades individuales como pueden ser:

- Sistemas fotovoltaicos
- Baterías de almacenamiento
- Sistemas de carga para vehículos eléctricos
- Bombas de calor
- Termostatos inteligentes



Esto puede ser de forma individual o combinados en una única solución, pudiendo ser fácilmente monitorizado a través de la aplicación.

"FlexiSmart Home": aumenta la eficiencia energética en su vivienda.

CT1. Según usted, en general, ¿qué tan interesante es esta solución? (single answer)

1. Muy interesante
2. Bastante interesante
3. NeutralNo es tan interesante
4. Nada interesante

CT2. Pensando en sus necesidades actuales y futuras, ¿cuánto se encuentra esta solución alineada con sus necesidades? (single answer)

1. Muy alineado
2. Bastante alineado
3. NeutralNo tan alineado
4. Nada alineado

CT3. Según usted, ¿cuánto es esta solución de clara y fácil de entender? (single answer)

1. Muy clara
2. Bastante clara
3. Neutral
4. No tan clara
5. Nada clara

(if code 4 or 5 at CT3)
CT4. ¿Qué no está claro en esta solución? (open question)

CT5. ¿Qué te gusta de esta solución? (open question)

CT6. ¿Qué es lo que no te gusta de esta solución? (open question)

CT7. ¿Estarías dispuesto a adoptar esta solución tu actual vivienda? (single answer)

1. Definitivamente sí
2. Probablemente sí
3. Tal vez sí, tal vez no
4. Probablemente no
5. Definitivamente no

Q5. En los últimos años, ¿ha firmado algún contrato único para más de un servicio relacionado con la energía, como la compra de una instalación de autoconsumo, bombas de calor, puntos de recarga, etc.? (single answer)

1. Sí, tengo un contrato para múltiples servicios de energía.
2. No, pero me gustaría tener un contrato para múltiples servicios energéticos.
3. No, prefiero tener un contrato específico para cada servicio
4. No sé

Q6. Algunos consumidores afirman que tener múltiples servicios energéticos en un solo contrato (por ejemplo, contrato de electricidad / gas junto con instalación de autoconsumo, bomba de calor, etc.) puede tener varias ventajas diferentes. Por favor, clasifique las siguientes ventajas, de las más relevantes a las menos relevantes. (Ranking)

1. **Ahorro de costes:** Múltiples paquetes de servicios energéticos tienen las ventajas de ahorrar al combinar varios servicios,poder ofrecer precios y descuentos más competitivos. Los clientes pueden beneficiarse de la reducción de los costos de energía.

2. **Soluciones integradas:** Los paquetes de servicios energéticos incluyen soluciones integradas que combinan diferentes tecnologías energéticas. Esta integración mejora la eficiencia energética, promueve la adopción de energías renovables y ofrece un enfoque holístico de la gestión de la energía.

3. **Personalización del servicio:** Estos paquetes se pueden adaptar a las necesidades específicas del consumidor, ya que se ofrecen varias opciones de paquetes.

4. **Asociaciones a largo plazo:** Los paquetes de servicios energéticos implican acuerdos a largo plazo entre consumidores y proveedores. Estos acuerdos fomentan la optimización del uso de energía, el mantenimiento continuo y la provisión de mejoras.

5. **Comodidad y eficiencia:** Con un paquete de múltiples servicios energéticos, los consumidores pueden optimizar su gestión energética. Tienen un único punto de contacto para atención al cliente, facturación y consultas de servicio. Simplificación del proceso.

CLASSIFICATION SECTION SECCIÓN DE CLASIFICACIÓN (spanish)

S21. A continuación, se muestra una lista de algunas de las cosas que las personas hacen en su vida diaria que influyen en cuanto son conscientes sobre el medio ambiente. ¿Cuál de estos haces regularmente (aleatorizado)? (multiple answer)

1. Dejar el cargador de su teléfono en el enchufe cuando no lo esta utilizando.
2. Dejar la calefacción encendida cuando sale durante varias horas.
3. Utilizar aparatos eléctricos con moderación.
4. Dejar la luz de espera del televisor encendida cuando haya terminado de ver la televisión.
5. Apagar siempre la luz cuando sale de una habitación.
6. Cargar completamente la lavadora o el lavavajillas.
7. Limitar el uso de calefacción en invierno o aire acondicionado en verano.
8. Controlar el uso de energía.
9. Poner la lavadora en programas de baja temperatura.
10. Utilizar aparatos eléctricos en los momentos en que sean más barata la energía.
11. Ninguno de estos (single code)

S22. A continuación se muestra una lista de algunas declaraciones que las personas entrevistadas antes que usted han hecho con respecto a ciertos comportamientos. Seleccione todas las afirmaciones con las que esté de acuerdo. (multiple answer)

1. Es importante que una empresa se comporte de manera sostenible para reducir su impacto en el planeta y aumentar el bienestar social y económico de las personas.
2. Hago un esfuerzo decidido para reducir la energía que utilizo.
3. No vale la pena que me comporte de una manera respetuosa con el medio ambiente si otros no hacen lo mismo.
4. Estaría dispuesto a pagar más por productos respetuosos con el medio ambiente.

5. Los efectos del cambio climático están demasiado lejos en el futuro para que yo me preocupe.
6. Solo vale la pena comportarse de una manera respetuosa con el medio ambiente si me ahorra dinero.
7. Viajo de una manera respetuosa con el medio ambiente siempre que sea posible, utilizando medios de transporte sostenibles (por ejemplo: transporte público, coches híbridos, caminar, andar en bicicleta, evitar los aviones...).
8. A menudo discuto temas ambientales con otras personas.
9. Hago investigación sobre las prácticas ambientales de las empresas.
10. Estoy demasiado ocupado para hacer que mi estilo de vida sea tan respetuoso con el medio ambiente como me gustaría.

S23. ¿La vivienda donde vive su familia es de su propiedad o alquilada? (single answer)

1. Propiedad
2. Alquilada

S6. ¿Es tu vivienda principal actual... (single answer)

1. Individual (separado de los demás)
2. Pareado (unido a otros/terraza)
3. Edificio con 2-4 viviendas
4. Edificio con 5-9 viviendas
5. Edificio con 10 o más viviendas

S7. ¿Cuánto paga aproximadamente por año en su factura de electricidad en su vivienda? Puede darnos una cantidad aproximada. Si no lo sabe, por favor revise su factura. (single answer)

1. Hasta 60 €
2. 61-150 €
3. 151-200 €
4. 201-250 €
5. 251-300 €
6. 301-350 €
7. 351-450 €
8. 451-500 €
9. 501-600 €
10. 601-1.000 €
11. 1.001-1.500 €
12. Más de 1.500 €
13. No lo sé / No dice

S7bis. ¿Cuánto paga aproximadamente al año en la factura de gas?

Esto se refiere a su vivienda principal. Puede darnos una cantidad aproximada, si no conoce la respuesta, por favor consulte la última factura.

1. Hasta 60 €

2. 61-150 €
3. 151-200 €
4. 201-250 €
5. 251-300 €
6. 301-350 €
7. 351-450 €
8. 451-500 €
9. 501-600 €
10. 601-750 €
11. 751-850 €
12. 851-950 €
13. 951-1.100 €
14. 1.101-1.200 €
15. 1.201-1.300 €
16. 1.301-1.500 €
17. Más de 1.500 €
18. No sé / No dice
19. No dispongo de factura de gas/No tengo gas

S8. ¿Qué tipo de equipo de energía utiliza para calentar su vivienda?
(Se permiten múltiples respuestas) (multiple answer)

12. Caldera de gas natural
13. Calefacción de gas propano/butano
14. Calentador de gas
15. Caldera de combustible fósil
16. Calentador eléctrico
17. Caldera/quemador de pellets
18. Energía geotérmica
19. Bomba de calor
20. Aire acondicionado reversible
21. Calefacción móvil/estufas de leña
22. Paneles solares térmicos
23. Quemador de madera de biomasa
24. Suelo radiante
25. Calefacción urbana

S9. ¿Qué tipo de equipo energético utiliza para producir agua caliente en su vivienda? (Se permiten múltiples respuestas) (multiple answer)

1. Calentadores/calderas de gas
2. Acumuladores de gas
3. Calentadores de agua eléctricos
4. Bombas de calor ACS

5. Paneles solares térmicos
6. Caldera de gas natural
7. Caldera de gas propano/butano
8. Calentadores de agua instantáneos a gas
9. Calentadores de agua eléctricos instantáneos

S10. ¿Tiene o utiliza un garaje (ya sea propio o alquilado)? (single answer)
1. Sí
2. No

(if code 1 at S10)
S11. ¿Tiene un sistema de carga de coches eléctricos en este garaje? (single answer)
1. Sí
2. No

(If code 2 at S11)
S12. ¿Y podría instalar un sistema de carga de automóviles eléctricos en este garaje en el futuro? (single answer)
1. Sí
2. No
3. No lo sé

(If code 1 at S12)
S13. ¿Estarías dispuesto a instalar un sistema de carga de coches eléctricos en este garaje en los próximos 2 años? (single answer)
1. Sí
2. No

S14. ¿Tiene paneles solares en el tejado de su vivienda? (single answer)
1. Sí
2. No

(If code 2 at S14)
S15. ¿Y podría instalar paneles solares en su tejado en el futuro? (single answer)
1. Sí
2. No
3. No lo sé

(If code 1 at S15)
S16. ¿Estaría dispuesto a instalar paneles solares en su tejado en los próximos 2 años? (single answer)
1. Sí
2. No

S17. ¿Tiene una bomba de calor en su vivienda? (single answer)
1. Sí
2. No

(If code 2 at S17)

S18. ¿Y podría potencialmente instalar una bomba de calor en el futuro? (single answer)

1. Sí
2. No
3. No lo sé

(If code 1 at S18)

S19. ¿Estarías dispuesto a instalar una bomba de calor en tu vivienda en los próximos 2 años? (single answer)

1. Sí
2. No

S20. Teniendo en cuenta la calefacción de los espacios de su vivienda, ¿utiliza algún tipo de termostato inteligente para regular la temperatura y obtener las mejores condiciones de confort con un menor consumo de energía? (single answer)

1. Utilizo un termostato inteligente
2. No uso un termostato inteligente, pero tengo la intención de instalarlo en los próximos 2 años
3. No uso un termostato inteligente y no tengo la intención de instalarlo en los próximos 2 años
4. No sé

S24 Cuál es tu nivel de cualificación de estudios?

1. Título de postgrado
2. Graduado universitario
3. Bachillerato
4. Enseñanza Secundaria Obligatoria
5. Enseñanza primaria
6. Sin enseñanza
7. Prefiere no responder

S25. ¿Cuál es su profesión? Seleccione la opción que más se ajuste a su ocupación.

1. Ejecutivo/Administrativo/Gestión: jefes ejecutivos, funcionarios, administradores de alto nivel, directores generales, supervisores, directores, etc.
2. Profesionales/Titulación superior: profesionales (ingenieros, médicos, dentistas, abogados, científicos, profesores, marketing, investigación de mercados, publicidad, programadores informáticos, analistas de sistemas, artistas, escritores, actores, músicos, enfermeros, terapeutas, deportistas, etc.).
3. Propietario de tienda o negocio pequeño o grande: propietarios, socios comerciales, tenderos
4. Propietarios o gestores de explotaciones grandes o medianas

5. Propietarios/gestores de pequeñas explotaciones
6. Técnicos, administrativos de nivel medio/menor: técnicos, administrativos de nivel menor, supervisores/gerentes de nivel medio (asistentes jurídicos, técnicos de laboratorio, auxiliares de enfermería, supervisores generales de oficina, etc.)
7. Oficinistas [no supervisores]: oficinistas y empleados de oficina en general: secretarias, auxiliares administrativos, recepcionistas, empleados de nóminas, contables, cajeros de banco, ayudantes de profesor, operadores informáticos, operadores de máquinas de oficina, empleados de hotel, empleados de biblioteca, etc.
8. Comerciales, representantes de ventas.
9. Mano de obra cualificada: oficios de la construcción, electricistas, carpinteros, fontaneros, trabajadores manuales cualificados, operadores de maquinaria metálica, artesanos, producción de precisión, mecánica y reparaciones, montadores, inspectores, conductores de vehículos de motor como chóferes, taxistas...
10. Otra mano de obra: obreros de la construcción, trabajadores agrícolas, mensajeros, porteros, trabajadores de fábricas.
11. Trabajadores de servicios y protección: policías, detectives, bomberos, guardias, agentes del orden, servicio militar, trabajadores de guarderías, peluqueros, camareros, camareras, cocineros, amas de casa, ocupaciones del hogar privado, auxiliares sanitarios, todos los demás trabajadores de servicios.
12. Otra ocupación
13. Prefiere no responder

La encuesta ha finalizado. Gracias por su cooperación y participación.

Si quiere participar en el concurso, por favor pinche en el siguiente enlace:

Socios del proyecto BungEES:

VIAEUROPA® Voltalis plenitude Fraunhofer SEVEn ISR - University of Coimbra JOULE ASSETS EUROPE ZVÄZ STAVEBNÝCH PODNIKATEĽOV SLOVENSKA IZSPS

Annex 12

Project coordinator:
ViaEuropa Competence Centre s.r.o.
Lazaretská 23, 811 09 Bratislava, Slovakia
+421 911 421 844 doktor@viaeuropa.sk

Vážená paní/pane:

Pozvánka na BungEES: Představení projektu a diskuse

Datum: ***17. srpna 2023***
Místo konání ***Praha,*** *(v prostorách jednání představenstva APES)*

Dovolujeme si Vás pozvat na setkání, které se koná s cílem diskutovat o neenergetických benefitech souvisejících s poskytováním služeb energetické efektivity. Během setkání Vám bude představen projekt BungEES, jeho cíle a výstupy, které Vám budou po skončení projektu k dispozici.

Cílem projektu BungEES je vyvinout integrovaný balíček nových inteligentních služeb v oblasti energetické účinnosti, který bude mimo jiné zahrnovat služby v oblastech energetické efektivnosti, distribuce výroby, odezvy na energetickou poptávku, e-mobilitu, ukládání energie a další.

S přátelským pozdravem,

SEVEn

Agenda:

1) Představení projektu a jeho aktivit

2) Business modely
Představení a diskuse

3) Neenergetické benefity (Non-Energy Benefits – NEBs)
Představení a diskuse

Partneři projektu BungEES:

Co-funded by the European Union

Annex 13

Chytré energetické služby využívající flexibilitu

BungEES

Setkání: **BungEES: Představení projektu a diskuse**
Místo: **Praha**
Datum: **17. srpna 2023**

Co-funded by
The European Union

Program

- ❑ 1) Úvod do projektu BungEES a jeho aktivit
- ❑ 2) Představení obchodních modelů

  Představení a diskuse
- ❑ 3) Neenergetické benefity (Non-Energy Benefits – NEBs)

  Představení a diskuse

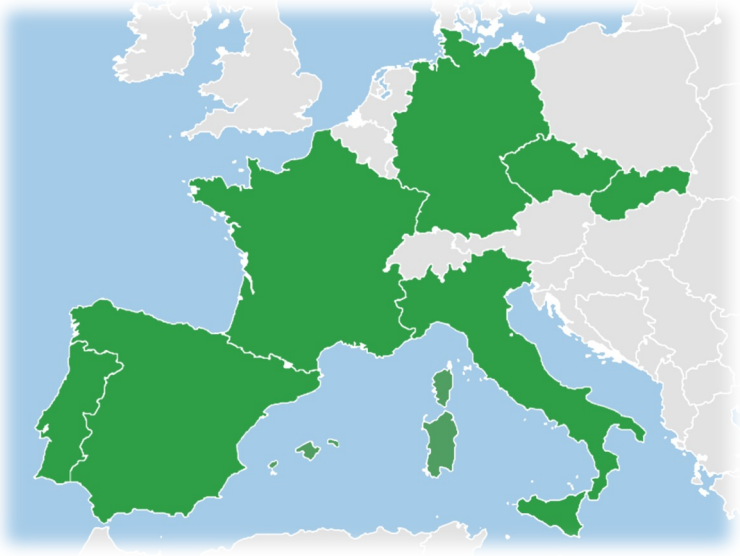
Cíle projektu BungEES

Cílem projektu je vyvinout **integrovaný balíček** („one-stop-shop“) **nových inteligentních služeb v oblasti energetické účinnosti** (EES),

a vyvinout **inovativní řešení financování a odměňování**

- Detailní **návrh inovovaného modelu inteligentní služby energetické účinnosti**
- **Katalog neenergetických služeb**
- **Validace** konceptu nových inteligentních služeb
- Monitorování dat z **25 pilotních projektů**
- Více než **120 poskytovatelů EES využívajících výsledky projektu**
- **Analýza** regulatorních faktorů a překážek na trhu
- Více než **1 milion konečných příjemců**
- **Vytvoření 6 platforem pro spotřebitele** v partnerských zemích projektu

Partneři projektu - 7 zemí



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Voltalis

JOULE ASSETS

SEVEn THE ENERGY EFFICIENCY CENTER

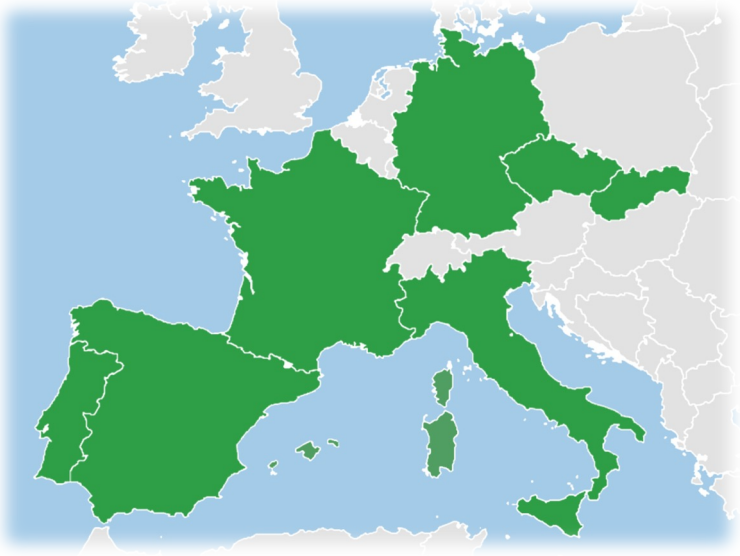
Fraunhofer

INSTITUTE OF SYSTEMS AND ROBOTICS UNIVERSITY OF COIMBRA

plenitude

ZSPS

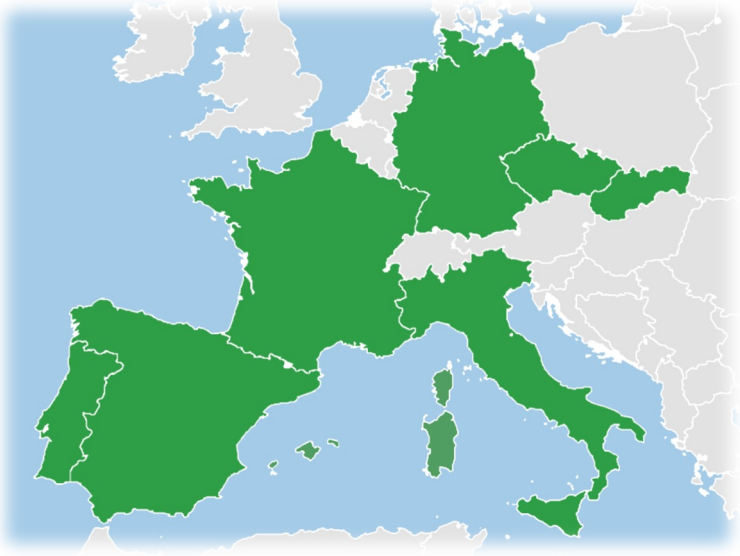
Partneři projektu - 7 zemí



Voltalis

- největší agregátor v reálném čase na světě
  - **+150 000** připojených domácností, komerčních budov a kanceláří
  - doba odezvy **< 2 vteřiny**
- Denně prodává svou kapacitu na straně poptávky energetickým společnostem a energetickým trhům.

Partneři projektu - 7 zemí

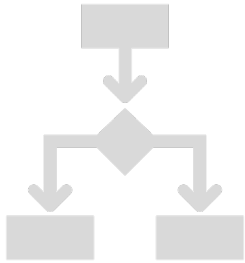


plenitude

- Působí v **8 zemích**:
  - Itálie
  - Francie
  - Španělsko
  - Portugalsko
  - Velká Británie
  - Řecko
  - Norsko
  - Kazachstán

- **10 milionů** zákazníků
- Instalovaná kapacita **2,5 GW**

Očekávané výsledky projektu



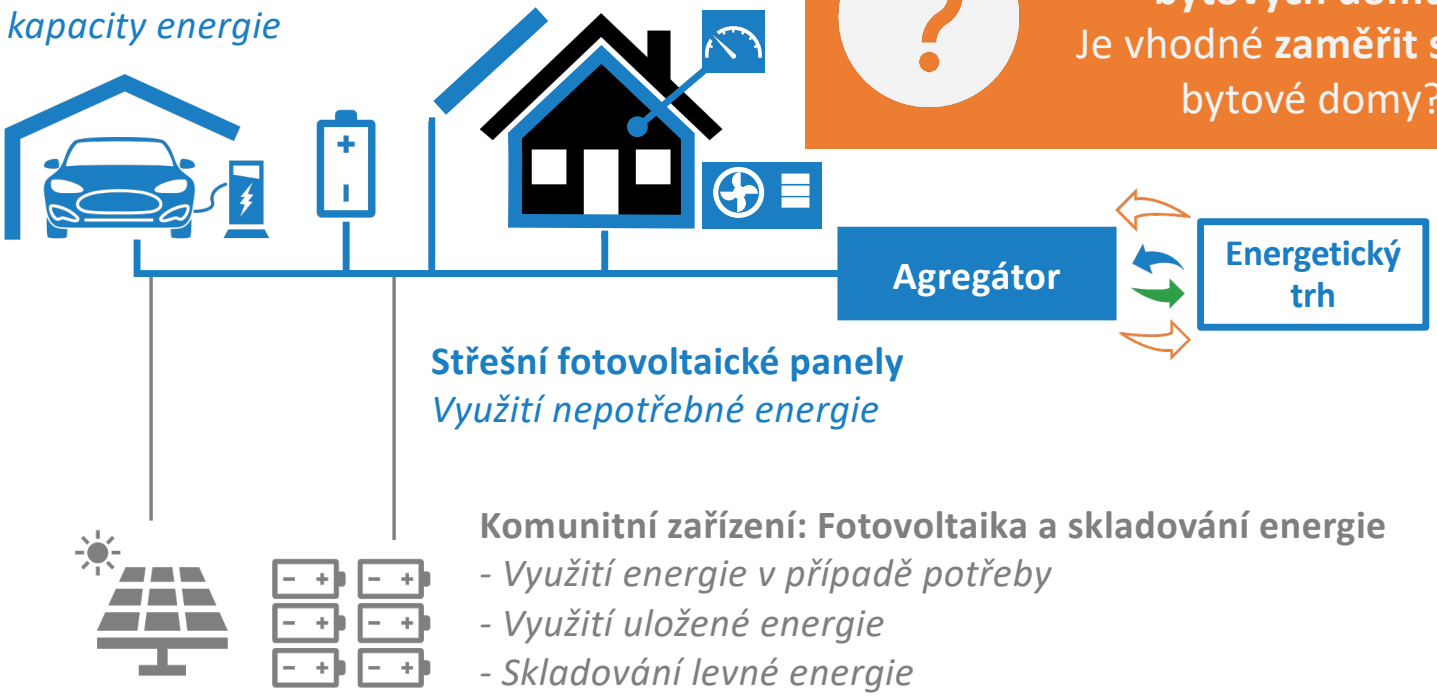
- **Model služeb Smart EES**
  - **Koncept** a model služby *3/2024*
  - **Prototyp**
  - **Koncept balíčků** a **detailní model** servisu *9/2024*
  - **Konečný koncept a model inteligentní služby EES** *9/2025*

- **Status Quo analýza neenergetických přínosů (Non-Energy Benefits - NEBs)**
  - Katalog neenergetických přínosů *9/2024*
- **Analýza regulačních nedostatků a netechnických překážek** *3/2024*
- **Pokyny pro provádění** nových smluvních ujednání *9/2025*
- **Studie o vznikajících a na trhu osvědčených službách a obchodním modelu XaaS ve stavebnictví**
- **Soubor údajů shromážděných z průzkumů a rozhovorů** *11/2023*

Možnosti flexibility – Rodinný dům

Elektrické vozidlo
Využití uložené kapacity energie

Skladování energie
Využití uložené energie



Jaký je potenciál zapojení **bytových domů**?
Je vhodné **zaměřit se** i na bytové domy?

Střešní fotovoltaické panely
Využití nepotřebné energie

Komunitní zařízení: Fotovoltaika a skladování energie
- *Využití energie v případě potřeby*
- *Využití uložené energie*
- *Skladování levné energie*

Náklady
- Energetický Management
- Instalace / Servis
- Senzory, inteligentní měřiče
- Opatření En. efektivnosti
- EV, Skladování energie
- Poplatky za používání

Příjmů
- ilita
  - Načasování spotřeby
  - Využití skladování energie
  - Využití kapacity el. vozidla
- Úspory, platby za služby
- Obchodování s elektřinou
- Crowdfunding

Vztahy se zákazníky
- Poskytování služeb
- Dodávka zařízení
- Sdílení dat
- Partnerství

Možnosti flexibility – Využití a sp

Balíčky služby EES

Jaké jsou v současnosti **typické služby EES**?

Jaké **balíčky** lze k nabízeným službám přidat?

dat pro činnosti

ákladů

Zaměřit se **primárně na elektřinu** nebo **zahrnout i plyn a teplo**?

Kdo bude vlastníkem zařízení/technologií?

(balíčků) podle potřeb zákazníka

Slučování balíčků ▶ Více přínosů / lepší cena

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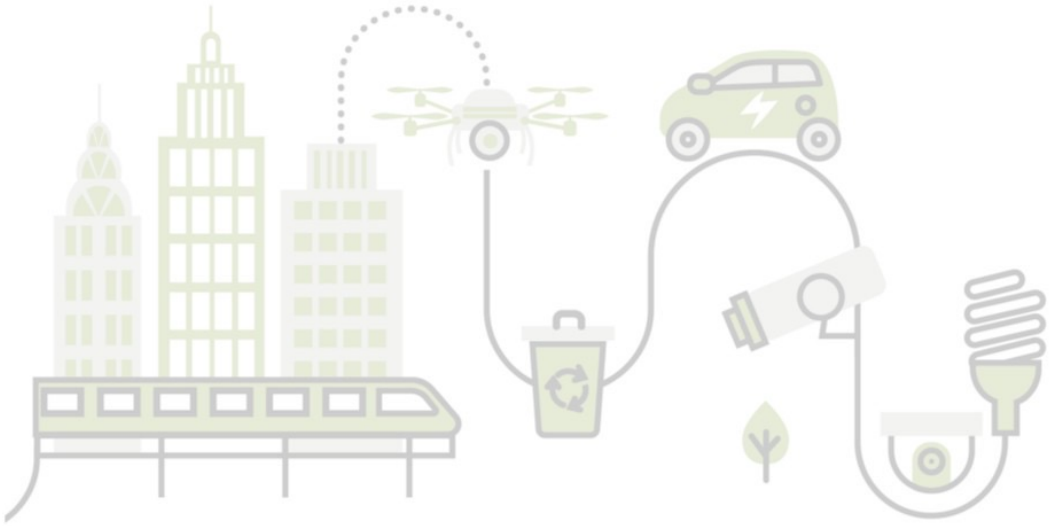
Služby EES – modelové příklady

BungEES



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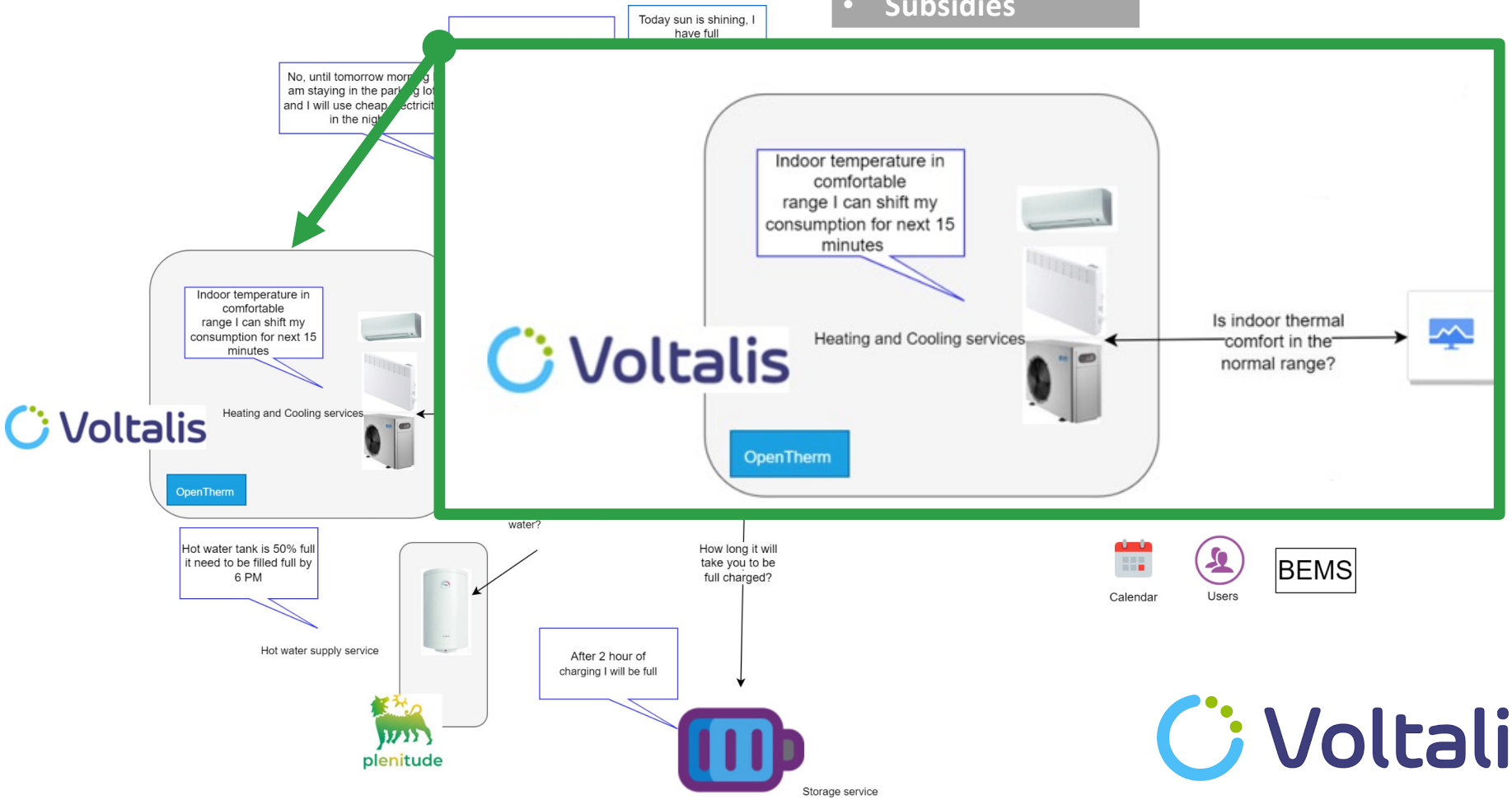
Voltalis: modelový příklad

- Financing
- One-off payment
- Subsidies



Voltalis

Plenitude: Fotovoltaika s bateriovým úložištěm

Návrh ceny za stanovenou konfiguraci

Cena bez dotace od **16.286,54 €** (včetně DPH)

Státní dotace

Výše státní dotace je omezena na maximálně 50 % způsobilých nákladů (**8.143,27 €**)

Celková cena zahrnuje vlastní zařízení s dodávkou komponent, instalaci, vyřízení povolení, administraci žádosti o dotaci a 15% DPH.

Technické specifikace

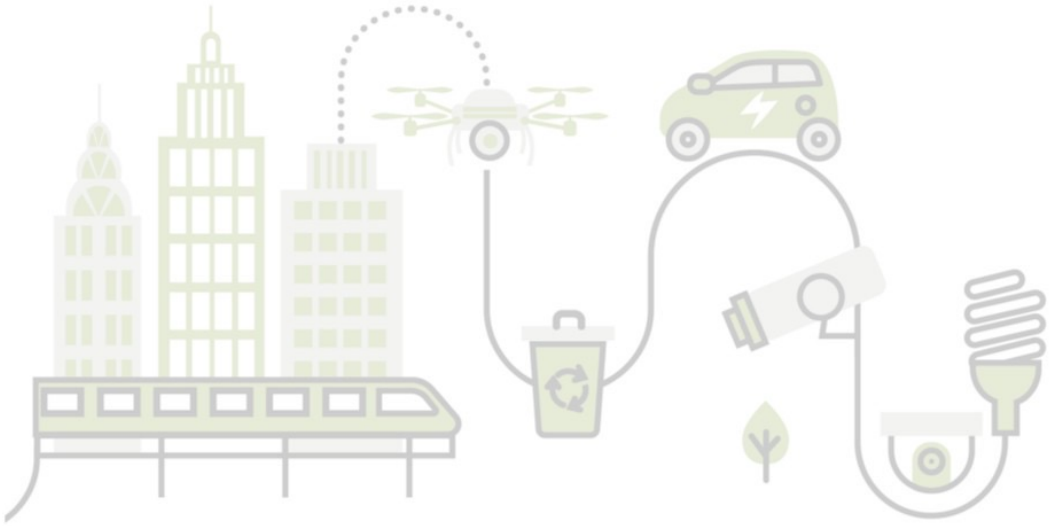
- Instalovaný výkon 5,5 kWp
- Výstupní napětí 400 V / 50 Hz / 3 fáze
- Panely 11 Modules Trina 500Wp nebo podobné
- Využitelná kapacita baterie 5,00 kWh
- Celková plocha panelů 36 m²
- Životnost systému až 30 let
- Záruka 5 let
  - Záruka výrobce na bateriový box 5 let
  - Záruka na baterii 10 let, > 6,000 nabíjecích cyklů
  - Záruka na panely 15 let
  - Záruka na panel 25 let při 85% výkonu

- Úspora nákladů na elektřinu: **1.462,27 €/rok**
- Doba návratnosti systému s dotacemi: **5,99 let**
- Doba návratnosti systému bez dotací: **9,59 roku**

Analýza neenergetický přínosů (NEB)

spojených se službami v oblasti energetické účinnosti v EU

BungEES



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Úvod do neenergetických přínosů (NEB)

NEB označují dodatečné nebo nepřímé přínosy, které jsou spojeny s poskytováním energetických služeb nad rámec přímých úspor energie.

- **Například:**
  - Energeticky úsporné osvětlení může zajistit lepší kvalitu osvětlení a snížit namáhání očí, což vede ke zvýšení produktivity a spokojenosti.
  - Podobně účinné klimatizační systémy mohou zlepšit kvalitu vzduchu v místnosti a snížit riziko dýchacích potíží.
  - Technologie obnovitelných zdrojů energie, jako jsou solární panely, mohou rovněž přinést výhody, jako je snížení emisí skleníkových plynů a zlepšení kvality místního ovzduší.

Úvod do neenergetických přínosů (NEB)

- **NEB je důležité vzít v úvahu při hodnocení možnosti energetických služeb**
  - Mohou pomoci odůvodnit investice do účinnějších a udržitelnějších systémů.
  - Ačkoli tyto přínosy není vždy snadné kvantifikovat nebo peněžně vyjádřit, mohou jednotlivcům, podnikům a společnosti přinést významnou hodnotu.
- **NEB mají mnoho podob a mohou se lišit v závislosti na konkrétním kontextu a poskytované energetické službě.**

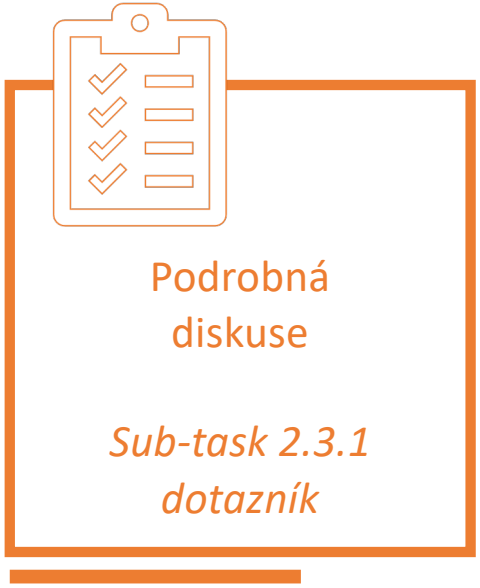
Zlepšení zdravotního stavu	Zvýšená produktivita
Přínosy pro životní prostředí	Zvýšená bezpečnost
Nové ekonomické příležitosti	Zlepšení vzdělávání

Základní otázky a tematické oblasti

Informace o respondentovi

1) **Znalost a povědomí o neenergetických přínosech (NEB)**
2) **Zkušenosti s NEB**
3) **Konkrétní využití NEB**
4) **Příklady konkrétních NEB**
5) **Spolupráce se zákazníky**
6) **Překážky a výzvy**

Doporučení a zpětná vazba



Děkuji
za Vaši pozornost!

SEVEn THE ENERGY EFFICIENCY CENTER, z. ú.

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Contributors:
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