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**New business models for innovative energy services bundles for residential consumers**

**Deliverable D8.7**

**Final Stakeholders’ vision document and outcomes of Workshops**

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## Deliverable D8.7

### Final Stakeholders' vision document and outcomes of Workshops

Final Stakeholders' vision document and outcomes of Workshops

<b>Deliverable number</b>	D8.7
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## ABBREVIATIONS

Abbreviation	Name
EPC	Energy Performance Contracts
ESCO	Energy service companies
AI	Artificial Intelligence

## EXECUTIVE SUMMARY

D8.7 “Final Stakeholders’ Vision Document and Outcomes of Workshops” aims to present the outcomes of the stakeholder engagement activities and the results of the events/workshops organised by the consortium in the latest 18 Months, since M25 covering the period June 2022 until November 2023.

Within this document, we start in “Chapter 2” by presenting how the stakeholders’ engagement strategy has been developed in frESCO and how many stakeholders have registered in the project’s platform.

In “chapter 2.1”, we are diving into more details and presenting the stakeholders' events, specifically focusing on the 4 workshops organised by frESCO (2.1.1 to 2.1.3), its final event (organised in M42 – 2.1.4), and feedback collected by the stakeholders. In these paragraphs, we aim to give a full overview of what was presented during the event and the main takeaway messages and feedback collected by the participants.

In the “conclusions” chapter the activities developed in the last 18 months are summarised, along with comments of the results achieved from communication and dissemination perspectives and depicts their meaning in terms of C&D goals and targets for frESCO.

## 1 INTRODUCTION AND OBJECTIVES

D8.7 titled "Final Stakeholders' Vision Document and Outcomes of Workshops" is an update of first version of the document (D8.6) submitted in M24.

The present document (D8,7) encapsulates the pivotal insights and achievements garnered over a period of 18 Months by the dedicated consortium of 14 partners. The frESCO project, standing for "New business models for innovative energy services bundles for residential consumers," is an innovative initiative funded under the H2020-EU.3.3.1 program by the European Union and aimed at revolutionizing energy service models in residential settings.

This document, distinct from managerial aspects, is dedicated to presenting the comprehensive engagement and collaboration with stakeholders, and the outcomes of the workshops and events conducted throughout the project's timeline. It serves to maximize the dissemination impact of the project's activities, emphasizing both measurable and non-measurable results obtained from these collaborative efforts.

### Objectives

The objectives outlined in this document are twofold:

1. **Stakeholder Engagement and Workshop Outcomes:** The first objective is to provide a detailed account of the stakeholder engagement strategies developed and implemented throughout the frESCO project. This includes a summary of the workshops organised in the last 18 Months (M25-M42), highlighting the involvement and contributions of various stakeholders, the feedback received, and the overall impact of these engagements on the project's trajectory.
2. **Insights and Key Takeaways:** The second objective is to depict the key insights and takeaways from these engagements. This section offers a comprehensive overview of the discussions, presentations, and feedback collected during the events, providing a clear picture of the stakeholders' perspectives, expectations, and responses to the project's initiatives.

The document is structured to reflect these objectives, ensuring a clear and concise presentation of the frESCO project's stakeholder engagement activities and the outcomes of its workshops. By doing so, it aims to shed light on the significant progress made in developing

and promoting innovative energy service bundles for residential consumers and underscore stakeholder collaboration's crucial role in achieving sustainable energy solutions.

## 2 STAKEHOLDERS ENGAGEMENT

Since the beginning of the project the consortium has been active in trying to get stakeholders on board with the frESCO project, and specific actions have been put in place, such as:

- Creation of a stakeholders subscription on the frESCO website (see **Figure 1**)
- *Ad hoc* communication campaigns (such as **Figure 3**)
- Sending ad hoc communication to stakeholders
- Inviting stakeholders to events
- Creation of ad hoc survey for stakeholders.

The first step was the creation of a dedicated webpage in the frESCO website, where all stakeholders could voluntarily subscribe as frESCO stakeholders, and agreeing to receive frESCO communications.



**Figure 1** Banner for the subscription



## Follow Us

Name and Surname \*

Institution / Company \*

Country \*

Type of Institution \*

Email \*

I have read and accepted [Privacy Policy](#) \*

Yes

**Figure 2 Subscription format**

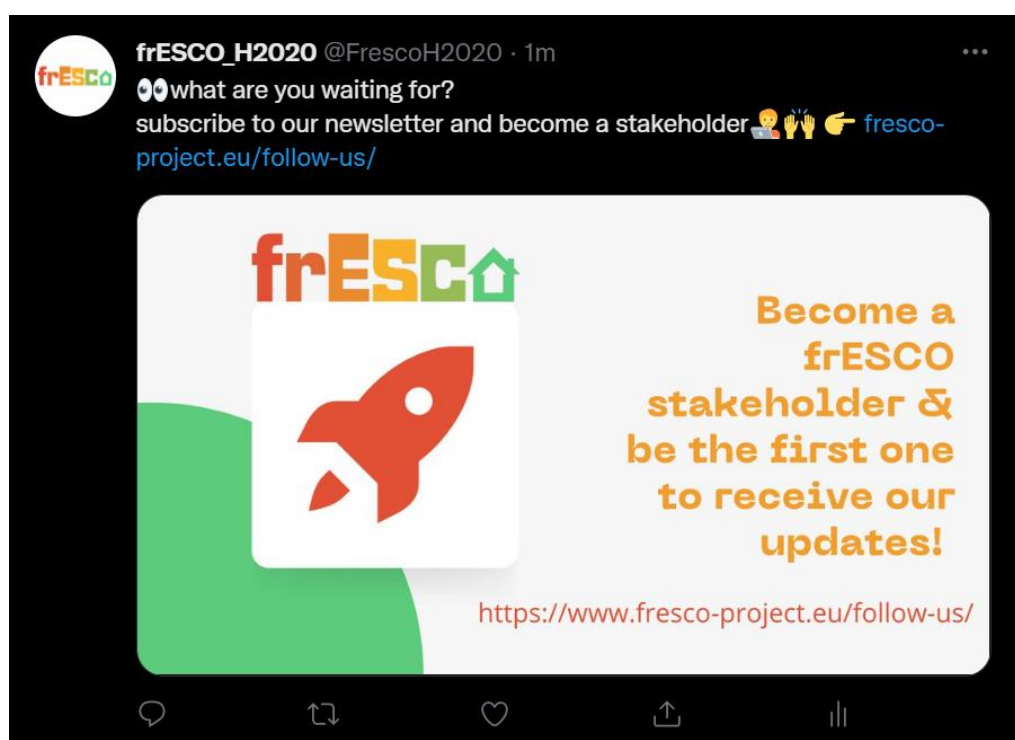
In the last 18 months of the project, the subscription of the stakeholders increased by 30 people (in M24) to 55 people registered in M42.

The registration is done through the [project website](#). The registered people get frESCO's newsletter, invitations to the dissemination events and surveys.

The same contents are also published online on the frESCO's website and social media profiles ([Twitter \(recently re-named as X\)](#), [LinkedIn](#)), thus, to reach a broader audience.

Nevertheless, all partners were invited to spread the news and personally invite their stakeholders and contacts to follow the project and subscribe to frESCO's channels.

The actions have been boosted with targeted communication campaigns on social media, taking advantage of the high number of followers. In **Figure 3** we present a typical message published online to attract stakeholders to register to the form.



**Figure 3 Social media campaign to boost subscriptions.**

In the last 18 months, the registered people received the latest project’s updates through the publication of 4project newsletters (published in April 2022, September 2022, January 2023, June 2023)

## 2.1 Workshops and events organised by frESCO in the last 18 months (M25-M42)

**Table 1. list of dissemination events**

#	Type of event	Event Title	Date	Place
1	Online Workshop	NEXT GENERATION EPC	23 January 2023	Online
2	Workshop	frESCO end-user workshop	22 June 2023	Madrid, Spain
3	Online Workshop	New business models for innovative energy services bundles for residential consumers	30 October 2023	Online
4	Final Event	frESCO final Event	29 November 2023	Paris, France
5	Online webinar	Smart Energy Services	25 April 2023	Online

6	Cluster Workshop	NextGenEPCs Cluster – Sustainable Places	September 2023	Nice, France
7	Event	BEYOND Final Event	28 November 2023	Paris, France

As highlighted in green in **Table 1**, events in lines from n.1 to 4 have been organised, lead, and coordinated by frESCO in the last 18 months. Among those four workshops, several calls with sister projects have been organised in 2022 and 2023. These activities are part of the C&D strategy put in place by RINA-C in frESCO’s project, thus building strong relationships among sister projects and external stakeholders. In addition, frESCO project took part, in the last 18 months, in three workshops organised by sister projects (highlighted in red in **Table 1**) as opportunities to exchange vision and results with other similar initiatives.

An in-depth analysis of frESCO workshop and events can be found in the following paragraphs.

### 2.1.1 Next Generation EPC Workshop

The “Next Generation EPC” online seminar is an event organised by frESCO, in which BEYOND, D2EPC, SMARTLIVINGEPC, and SMARTSPIN participated as sister projects. The workshop was moderated by Serena Scotton, Project Manager at RINA Consulting. The panel was composed by Juan Antonio Aranda Uson, Project Manager at Fundación CIRCE and frESCO project coordinator, who gave a general presentation and overview of the project; Magda Foti, Head of Energy Systems Analysis & Digitalization Unit at Ubitech, provided a technical presentation of the frESCO Project; Paris A. Fokaides, Senior Researcher, Scientific and Technical Manager representative of SmartLivingEPC Project; Julia Kantorovitch, Senior Researcher (PhD, Tech.) at VTT – Technical Research Centre of Finland, Smart cities and Intelligent buildings business area representative of BEYOND Project; Luciano De Tommasi, Senior Research Engineer and Team Leader of “Smart Energy Services and Regulatory Innovation” representative of SMARTSPIN Project and Stavros Koltsios, Research Associate at CERTH/ITI representative of D<sup>2</sup>EPC Project. Next Generation EPC Workshop highlighted the progressive approach to Energy Performance Contracting (EPC). This event highlighted the innovative aspects of each project, with a special focus on the development and integration of AI and analytics in energy service provision. We delved into the challenges and identified success factors essential for the effective utilization and market acceptance of AI technologies in the energy sector. The workshop fostered an engaging dialogue with stakeholders,

addressing their curiosity and concerns about EPC. The participation and interaction among the various projects and stakeholders underscored a growing interest in innovative energy solutions while also acknowledging and addressing any reluctance to adopt EPC methodologies.

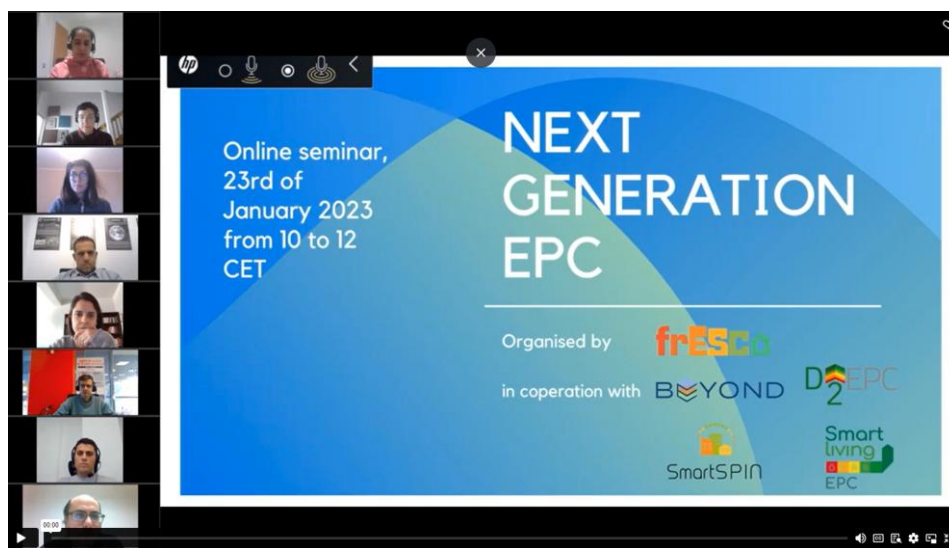


Figure 4 picture of the "Next Generation EPC" online webinar with sister projects



Figure 5 picture of the frESCO presentation at the joint online event

### 2.1.2 frESCO end-user workshop

frESCO end-user workshop that was held in June 2023 in the Madrid demo site by Daniel S., Tania Castro Molina, Paula Hernamperez Manso, Victor Serna, Alejandro Martín Crespo, Roberto Lázaro, Juan Antonio Aranda, Magda Foti, Costas Mylonas. The ESCO tool interface was shown to the energy manager, and the user interface was shown to the attendants. The partners involved in the workshop were Fundación CIRCE, La Corriente, CARTIF, UBITECH, COMSA Corporación.

### 2.1.3 New business models for innovative energy services bundles for residential consumers

On the 30<sup>th</sup> of October 2023, a forward-looking workshop was held, focusing on the evolving landscape of the residential energy services market. This event, marked by insightful discussions, aimed to shed light on the future direction of energy service markets under the influence of technological advancements, artificial intelligence, and big data. The workshop began with a welcome message by Juan Aranda from the project (Fundación CIRCE) project coordinator of frESCO. Andrea Kollmann from Energieinstitut an der Johannes Kepler University Linz introduced the first segment, discussing the key factors expected to influence the EU's Energy Service Market by 2030. The conversation revolved around the current market scenario, anticipated trends, and the impact of the Energy Transition. The focus then shifted to the "Digital Revolution in Energy: Role of Big Data," introduced by Giorgos Papadopoulos from Suite5. This section delved into the current state of big data in energy services, exploring its potential to optimise energy consumption, enable predictive maintenance, and harmonise with renewable sources.

Juan Aranda provided insights about "Technology & Business Innovations Shaping the Energy Services Market." The discussion highlighted groundbreaking developments in energy storage, smart grids, IoT for energy, and predictions on how these innovations will redefine energy services, including AI-driven demand forecasting, energy trading, and enhancing customer experience. Giannis Georgopoulos from Motor Oil Hellas led the last section of the workshop, focusing on "Adapting Business Models for Future Energy Market." This critical discussion centred on the impacts of future energy scenarios on existing business models and the

necessity for adaptability and strategic flexibility. The workshop concluded with Andrea Kollmann summarising the key takeaways and highlights, encapsulating the essence of the discussions and pointing towards a future where technology, data, and innovation converge to reshape the energy services landscape.

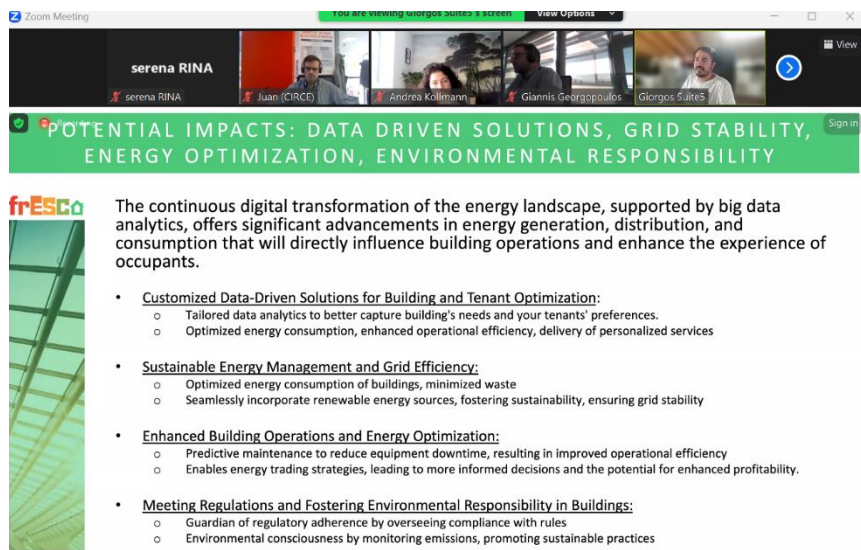


Figure 6 pic of the “New business models for innovative energy services bundles for residential consumers” event

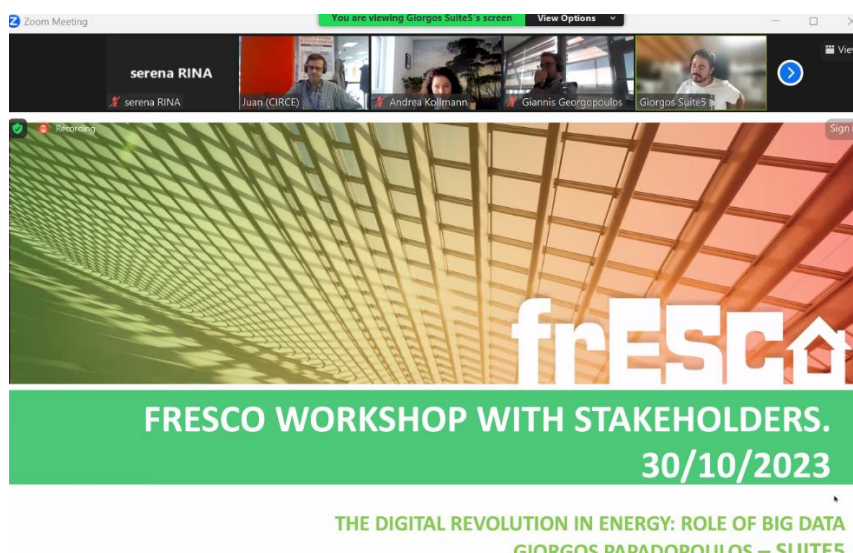


Figure 7 pic of the “New business models for innovative energy services bundles for residential consumers” event

#### 2.1.4 Final event description

The final event of the frESCO Project marked a significant culmination of efforts and achievements for the project. Hosted during ENLIT Europe 2023 in the EU Project Zone, the frESCO stand emerged as a bustling hub of activity, fostering engaging interactions and idea exchanges with visitors and fellow projects. The Final Event held on 29th November was a celebration of frESCO's journey and a platform for insightful discussions and knowledge sharing. The event commenced with an illuminating overview by project coordinator Juan Antonio Aranda from Fundación CIRCE, who elucidated the ambitious goals and notable accomplishments of the frESCO project. This set the stage for a series of sessions that delved into various aspects of the project.

The first session, titled "End-to-End Energy Solutions: Bridging Big Data and User-Centric Energy Applications for ESCOs, Aggregators, and Prosumers", held by Speakers Giorgos Papadopoulos, Suite5 and Costas Mylonas, UBITECH, has delved into innovative energy solutions proposed by frESCO project and the results obtained during the lifetime of the project.

Further, Daniel Sánchez from COMSA led a comprehensive session on the testing and validation of frESCO's solutions across demonstration sites. This included insights into the current status of residential buildings and smart refurbishment activities.

The impact assessment of frESCO's demonstration activities was another focal point presented by Juan Aranda. His session shed light on the main results, lessons learned, and the overall impact of the project's initiatives.

The event also featured a vibrant Sister Project session, hosting representatives from the BEYOND Project represented by Tasos Tsitsanis, PHOENIX project represented by Juan Sánchez, and TradeRES represented by Nikolaos Chrysanthopoulos. The discussion centered around the latest technological and business breakthroughs, with a special focus on the application of AI in energy services for buildings. This session was notable for its rich exchange

of perspectives, discussions on the pros and cons of AI applications, and insights into stakeholder and citizen responses to technological advancements.

In summary, the frESCO final event at ENLIT Europe was a testament to the project's significant strides in fostering sustainable energy communities. The insights, discussions, and connections made during the event are poised to have a lasting impact on the future trajectory of sustainable energy practices.



Figure 8 picture of the frESCO final event

## 2.2 Clusters and initiatives with sister projects

During the project's lifetime, frESCO dissemination leader (RINA-C) participated in several calls with sister projects with similar goals, such as EPC and supporting building in green energy transition.

During the meetings, frESCO project had the opportunity to present its goals, objectives, and consortium to **36 EU projects**, and it was a great opportunity to identify sister projects with which organize common events and share C&D strategies.



The dissemination leaders from each project were attending the calls, therefore it was a good chance to share know-how, experiences from professionals, and share tips on how to improve C&D strategies and join forces.

In these meeting the following 36 EU projects took part:

SENSEI, NOVICE, LAUNCH, TRIPL-A, RENONBILL, AMBIENCE, X-TENDO, U-CERT, QUEST, EN-TRACK, SMART-SPIN, ECREW, SMARTEPC, BEYOND, D2EPC, SMART LIVING EPC, TRADERES, PHOENIX, INEEXS, BD4NRG, I-ENERGY, BIGG, INTERCONNECT, BUNGEEES, ENERGATE, AUDIT2MEASURE, V2MARKET, NEON, BRIGHT, NUDGE, PROBONO, EAAS, MATRYCS, IFLEX, EU-MORE.

Find in **Annex 1** some more details about each project.

It is important to note that thanks to these calls, frESCO strengthened relationships and has organized some events with some of them.



Figure 9 one banner of the many cluster initiatives we participated in

### 3 CONCLUSIONS

This document, encompassing the "Final Stakeholders' Vision Document and Outcomes of Workshops," effectively summarizes the culmination of efforts and insights gathered throughout the frESCO project's duration of 42 months. Initiated in June 2020, the project, led

by a consortium of 14 partners, has made significant strides in engaging stakeholders and organizing workshops that have contributed immensely to the project's objectives and overall success.

The frESCO project has successfully achieved and, in many instances, surpassed its initial targets regarding stakeholder engagement and dissemination of innovative energy service models. The project witnessed a remarkable increase in stakeholder engagement, which exceeded expectations by a notable margin. This active participation was instrumental in refining the project's deliverables and ensuring they were attuned to the needs and expectations of the end-users.

Throughout the workshops and engagement activities, there emerged a clear consensus on the effectiveness of the frESCO project's approach in fostering innovative solutions for energy services in residential settings. The discussions and feedback received during these events have been pivotal in shaping the project's direction and outcomes.

The outcomes of these workshops and stakeholder engagements are multifold:

1. **Enhanced Understanding of Stakeholder Needs:** The project successfully gathered diverse perspectives, leading to a deeper understanding of the stakeholders' requirements and preferences. This has been instrumental in tailoring the project's initiatives to better suit the target audience.
2. **Valuable Feedback on Project Deliverables:** The interactions and discussions during the workshops have provided invaluable feedback on various aspects of the project, including the Big Data Management Platform, integrated energy service bundles, and other key components. This feedback has been crucial in refining these deliverables to align with market readiness and stakeholder expectations.
3. **Recognition of Challenges and Potential Solutions:** The dialogue with stakeholders highlighted several challenges in implementing innovative energy services, particularly in the residential sector. These challenges include the diversity of building types and the variance in smart readiness and legacy equipment. The project's findings demonstrate that while solutions can be adapted to different environments, the outcomes vary significantly based on the specific context.

4. **Insights into User Engagement and Market Replication:** The project's experiences and results offer valuable insights into user engagement strategies and the potential for replicating frESCO's solutions across Europe. The project identifies the key factors that influence user engagement and the challenges in standardizing solutions across diverse settings.

In conclusion, the frESCO project has not only demonstrated the technical and economic feasibility of its innovative energy service models but has also highlighted the crucial role of stakeholder engagement and workshops in achieving these results. The project stands as a testament to the effectiveness of data-driven solutions in involving residential sectors in the EU's decarbonization goals. The insights gained from this project are expected to significantly contribute to shaping the future of sustainable energy services in residential buildings, aligning with the EU's broader objectives for 2030 and beyond.

## 4 ANNEX 1 – SISTERS PROJECTS DESCRIPTION

Presentation of the 36 EU projects participating in the C&D calls with sister projects presented in paragraph 2.2.



**SENSEI** enables energy efficiency to be rewarded as an energy resource and a new grid service while turning the energy efficiency retrofit project's value into an investable asset for private financing. The project combines pay-for-performance (P4P) arrangements with the Energy Performance Contracting (EPC) model and engages in negotiation games with preliminary stakeholders. This offers the possibility for stakeholders to shape the SENSEI business models according to their needs. In making buildings more energy-efficient and attractive for third-party investors, SENSEI is fostering the business community to contribute to the EU climate goals while avoiding the construction of new power plants and reducing grid infrastructure costs.



**NOVICE** will develop and demonstrate a new business model in building renovation to better monetize energy efficiency by consolidating services and subsequent revenue streams from both energy savings and demand response.



**LAUNCH** aims to accelerate deal closure and pipeline growth for Sustainable Energy Assets through standardised material. This includes investor-grade Energy Performance Contracts, standardised risk assessment protocols for investors, a roadmap for project developers to access growth capital, and market-tested value propositions for project developers' end-clients.



**TRIPLE-A** to assist financial institutions and project developers increase their deployment of capital in energy efficiency, making investments more transparent predictable and attractive.



**RenOnBill** aims to scale up investments towards deep energy renovations of residential buildings by promoting the development and implementation of on-bill schemes, based on the cooperation between energy utilities and financial institutions.



**AmBIENce** – Actively Managed Buildings with Energy Performance Contracting – is an H2020 project that aims to extend the concept of energy performance contracting for active building and making the model available and attractive to a wider range of building typologies.



**X-tendo** and its toolbox introduce ten features of the next generation of energy performance certificates, to provide public authorities with improved compliance, reliability, usability and convergence of next-generation energy performance assessment and certification.



**U-CERT** is a Horizon 2020 project (September 2019 – August 2022) with the main aim to introduce the next generation of user-centered Energy Performance Assessment and Certification Scheme to value buildings in a holistic and cost-effective manner.



The main goal of **QUEST** is to promote investments in Sustainability and Energy Efficiency by identifying and empirically risk-grading factors that influence energetic performance of buildings, making it more profitable to invest in sustainable buildings.



The **EN-TRACK** platform will facilitate increased energy efficiency investments in the European building stock by enabling massive gathering of data of energy and cost savings from energy efficiency investments. Building on previous and parallel efforts in this area, EN-

TRACK will be fully interoperable with other databases and tools such as the De-risking Energy Efficiency Platform (DEEP) and eQuad.



## SmartSPIN

**SmartSPIN** integrates energy smart services with other non-energy services along with advanced technologies. Thus creating clear value and benefits for all parties involved in a fair and transparent environment. Moreover, SmartSPIN contributes to maximising energy savings, and reducing greenhouse gas emissions and triggering business investments. To maximise impact and market uptake, SmartSPIN provides training for all actors in the value chain on the key features of the novel business model.



**eCREW** coordinates and supports the roll-out of an innovative scheme of household cooperation in energy management, addressing Community Renewable Energy Webs (CREWs), in which households jointly exploit household-level electricity generation and battery storage capacities and optimise energy efficiency and expenditures. Key purpose of CREWs is to support the transition of passive consumers to active participants in the local energy system through informed decisions and collective actions.



**D^2EPC** aims to set the grounds for the next generation of dynamic Energy Performance Certificates (EPCs) for buildings. The proposed framework sets its foundations on the smart-readiness level of the buildings and the corresponding data collection infrastructure and management systems. Operational data feed it and adopts the 'digital twin' concept to advance Building Information Modelling, calculate a novel set of energy, environmental, financial and human comfort/ wellbeing indicators, and through them the EPC classification of the building in question.



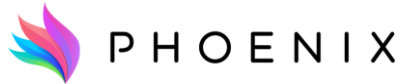
**BEYOND** project is a reference big data platform implementation and AI analytics toolkit toward innovative data sharing-driven energy service ecosystems for the building sector and beyond.



**SmartLivingEPC** project aims to deliver a certificate which will be issued with the use of digitized tools and retrieve the necessary assessment information for the building shell and building systems from BIM literacy, including enriched energy and sustainability related information for the as designed and the actual performance of the building. The new certification scheme will also expand its scope, covering aspects related to water consumption, as well as noise pollution and acoustics. SmartLivingEPC certificate will be fully compatible with digital logbooks, as well as with building renovation passports in order to allow the integration of the building energy performance information in digital databases. A special aspect of SmartLivingEPC will be its application in building complexes, with the aim of energy certification at the neighbourhood scale.



**TradeRES** objective is to develop and test an innovative electricity market design that can meet society's needs in a near 100% renewable power system.



The aspiration of **PHOENIX** project is to change the role of buildings from unorganized energy consumers to active agents orchestrating and optimising their energy consumption, production and storage, with the goal of increasing energy performance, maximizing occupants' benefit, and facilitating grid operation.



The core concept of the **InEEExS** is the deployment of integrated energy services across sectors and carriers, and the tokenization of energy saving data in a public blockchain to facilitate cooperation among market segments and actors. InEEExS improves the implementation of Energy Efficiency Directive (EED) Art7 and supports Obligated Parties to provide integrated service offers that enable energy savings, system efficiency and include non-energy benefits



**BD4NRG** aims to enable an incremental decentralized energy data-driven ecosystem and a collaborative data sovereignty driven ecosystem. The goal is to unlock and exploit the economic potential of big data and give to Energy Sector stakeholders, the opportunity to improve their business operational performance.





**I-ENERGY** is an EU-funded H2020 innovation project around Artificial Intelligence (AI) for Next Generation Energy aiming at reshaping the energy sector value chain towards better business and operational performance, increased environmental sustainability, and the creation of a stronger social fabric propagating high social value among citizens



The **BIGG** project aims at demonstrating the application of big data technologies and data analytic techniques for the complete buildings life-cycle of more than 4000 buildings in 6 large-scale pilot test-beds.

## interconnect

**InterConnect** intends to contribute to the democratization of efficient energy management through a flexible and interoperable ecosystem where flexibility on the demand side can be firmly integrated with practical benefits for the end users.



**ENERGATE** aims to facilitate the creation of an effective, ICT-enabled, energy efficiency marketplace bringing together energy services and sustainable finance to accelerate the renovation rate of buildings by increasing the chances for projects to be financed.



The main aim of the **AUDIT-TO-MEASURE** (Leading businesses towards climate neutrality by speeding up the uptake of energy efficiency measures from the energy audits) project is to support companies in the uptake of audits measures necessary to reduce the energy consumption supporting their energy transition.



**V2MARKET** aims to Tackle financial barriers facilitating access to new financial resources: EPC and servitisation schemes. Test V2G and V2B technology. Create contractual arrangements for the emerging aggregator business model and assemble all the actors across the value chain.



The **NEON** project will exploit building energy efficiency, renewable energy generation and storage, and demand flexibility to increase energy savings, reduce CO2 emissions, and provide cost savings across sectors.



**BRIGHT project** aims to maximise the potential of DR at the consumer level, harnessing the potential of blockchain technology to deliver data-driven cross-stakeholder and cross-domain energy fingerprinting services



Nudging consumers  
towards energy efficiency  
through behavioural science

**NUDGE** aims to systematically assess and unleash the potential of behavioural interventions towards achieving higher energy efficiency; and to pave the way to the generalized use of behavioural interventions as a worthy addition to the policy-making toolbox.



**EaaS** aims to develop and deploy the servitisation or pay-per-use model and a financial structure to enable the transition and accelerate the market adoption of energy efficient solutions by SMEs in Belgium, the Netherlands and Spain



MATRYCS

**MATRYCS** is an EU-funded project that focuses on seven objectives, divided into three categories: Scientific, Technological and Business. Francesco explains that the main goal of the projects “is to use machine learning, data and artificial intelligence to understand how to save energy in a building”



**Smart EPC** aims to integrate energy efficiency services with other energy services and non-energy benefits, whilst focusing on energy performance contracting and the creation of new revenue streams for local authorities.