



MARKET ENABLING INTERFACE TO UNLOCK FLEXIBILITY SOLUTIONS FOR COST-EFFECTIVE MANAGEMENT OF SMARTER DISTRIBUTION GRIDS

Deliverable: D11.5 Guidelines on social awareness



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Abbreviations and Acronyms

DSO	Distribution System Operator
TSO	Transmission System Operator
FSP	Flexibility Service Provider
HEMS	Home Energy Management System
RES	Renewable Energy Sources
UMEI	Universal Market Enabling Interface
LV	Low Voltage
MV	Medium Voltage
HV	High Voltage
PV	Photovoltaic
EV	Electric Vehicle
BESS	Battery Energy Storage System
EC	European Commission
EU	European Union
KPI	Key Performance Indicator
MS	Milestone
WP	Work Package

Table 1. Abbreviations and Acronyms

1 Executive Summary

This deliverable is framed in the context of the EUniversal project which aims to enable the transformation of the electricity grid by overcoming existing limitations in the use of flexibility by Distribution System Operators (DSOs). In order to address these, one objective is the implementation and integration of a Universal Market Enabling Interface (UMEI) to ensure system interoperability to facilitate access to multiple flexibility market platforms and thus access to distributed flexibility. Based on this transformative concept, grids will become capable of accommodating future scenarios through the active use of grid services, fostering innovative market mechanisms, and bring additional value to society. As such, the project's main goal is to enhance flexibility use in distribution grids which will need to operate in an overall context of 50% electricity generation from renewable sources in 2030. This ambitious transition towards fossil-free energy systems by increasing shares of renewable energy sources, such as solar and wind, introduces new challenges in terms of flexibility, storage, and energy transmission. Consumers play a crucial role in achieving this energy transition, as consumer flexibility is required to accommodate variable generation and peak loads. This implies that consumers become more flexible in their energy use and adopt technologies that facilitate greater reliance on renewable energy sources¹.

This report follows up on the work carried out in three locations across Europe where the UMEI has been tested by EUniversal i.e., Portugal, Germany and Poland, examining its use for market-based flexibility procurement in various use cases. Specifically, it focuses on the consumer engagement strategies and processes carried out in each pilot to assess main engagement barriers and opportunities faced, to identify potential areas of improvement and analyse the role of social awareness for consumer engagement success, as well as to foster knowledge exchange and dissemination for future energy projects.

The deliverable named *D11.5 Guidelines on social awareness* is part of *Work Package 11 Dissemination & Communication* led by E-REDES and it is framed within Task 11.4 Social awareness and acceptance. Four main chapters follow this executive summary (Chapter 1) and the Introduction (Chapter 2. Social awareness and acceptance of new energy systems and technologies):

Chapter 3. Consumers within energy flexibility policy frameworks. EUniversal pilots

This chapter explores the policy context regarding energy flexibility that the three pilots had to be carried out within, in order to understand the current changing scenarios that surrounded the engagement strategies applied by each of them. A brief summary of the different frameworks is presented as follows.

Country	Energy Flexibility Policy	Consumer Participation Level	Barriers
Portugal	Portuguese National Electric System (SEN) starts to consider using flexibility services and the active participation of consumers	Increasing, as the role they can play within the SEN encourages consumers to act individually, collectively or through energy communities, moving from passive consumers to active agents who produce electricity for self-consumption or sale surpluses, store and offer flexibility services and aggregate production.	Economic barriers for investing in renewable technologies and intermittent energy sources.

¹ [The Consumer's Role in Flexible Energy Systems: An Interdisciplinary Approach to Changing Consumers' Behavior | IEEE Journals & Magazine | IEEE Xplore](#)

Germany	Some attempts to change the policy context but currently, the German regulation impedes the usage of demand-side response and the flexibility markets as an additional measure to the existing regulated solutions	Consumers are encouraged to participate in the energy market by selling surplus energy back to the grid and by using demand-side management technologies, but flexibility markets are not yet implemented.	Grid congestion issues, complex regulations, and the need for further digitalization of the energy sector.
Poland	Poland has introduced the "Energy Law" emphasizing market liberalization and competitive energy markets. Prosumer initiatives, such as the "Prosumer Law," promote renewable energy generation and consumption at the consumer level.	Growing, with prosumers actively participating in demand response and distributed energy resources.	Regulatory challenges, limited grid infrastructure, and slow adoption of energy storage solutions.

While these barriers exist, each of these countries is actively working on overcoming them through various policy initiatives and technology advancements to promote consumer participation in energy flexibility markets.

Chapter 4. Context narrative for consumer engagement in EUniversal pilot demonstrators

This chapter describes the context narrative of the three EUniversal pilots (Portuguese, German and Polish), including grid and other requirements for each of the sites in terms of engagement success. In summary, these are the main grid characteristics of the demo sites:

Topic	Portuguese DEMO	German DEMO	Polish DEMO
Voltage level	MV, LV	LV	HV, MV, LV
Location	Rural, urban, mixed	Rural, small towns	Rural, suburban, small towns
Grid topology	Radial	Radial	Meshed/Radial
Grid users	Residential consumers SME DER: wind farms, PV producers	Residential consumers	Residential prosumers SME DER: wind, solar and biogas generation
Flexibility Providers	Residential consumers (PVs, water heater and batteries, washing machines) SME (commercial consumers) Water treatment plants, Landfill, Wind Farms	Residential consumers (PVs, BESS, heat pumps, EVs)	ENERGA (as energy storage owner) Biogas power plant Wind farm
Flexibility technologies	PV systems (LV clients) Batteries (LV clients) Water heater (LV clients) Washing Machine (LV clients) MV Clients' installed flexible load (pumps, HVAC, etc)"	Electric Vehicles PV systems Batteries Heat Pump Heat Storages	Li-Ion batteries Microgrids Dynamic line rating (DLR) Active power control of RES

Smart grid infrastructure	Smart meters at LV and MV Customers HEMS in all LV customers	Insufficient coverage. Alternative: HEMS at participating customers 3-phase power measurements at different grid locations	Smart meters at customers' premises balancing meters at substations remote controlled switches SCADA
Time frame	Day ahead	Day ahead, intraday	Voltage control – real-time operation
Market mechanisms	Flexibility markets	Flexibility market	Flexibility market Bilateral contract

Chapter 5. Consumer engagement strategies implemented by EUNIVERSAL pilots

Chapter 5 summarises the consumer acquisition and engagement approaches followed by each pilot demonstrator following up on D7.1/2; D8.1/2; D9.1/2 which report the set up and test scenarios of the flexibility value chains for the three demonstrators.

Each pilot implemented its own strategy based on the energy sector context, available resources and potential techno-socio-economic characteristics in their area. The three engagement strategies' overall characteristics analysed by this deliverable are summarised in the following table:

Demo	Strategy	DEMO sites	Consumers engaged per grid type
Portugal	Own stakeholder engagement strategy based on experience from H2020 Integrid project.	<ol style="list-style-type: none"> 1. Valverde 2. Mafra 3. Caldas da Rainha 4. Alcochete 	<ul style="list-style-type: none"> • LV consumers: 44 • MV consumers: 12 • MV producers: 5 • HV participants: 0 • Market platforms: 2 • Flexibility Aggregator: 1
Germany	Own stakeholder engagement strategy based on EUniversal pilot characteristics	<ol style="list-style-type: none"> 1. Brandenburg 2. West Saxony 3. South Saxony 	<ul style="list-style-type: none"> • LV consumers: 5² • MV consumers: 0 • MV producers: 0 • HV participants: 0 • Market platforms: 1 • Flexibility Aggregator: 1
Poland	Own stakeholder engagement strategy based on EUniversal pilot characteristics	<ol style="list-style-type: none"> 1. Plock 2. Kalisz 3. Gdansk 	<ul style="list-style-type: none"> • LV consumers: 5 • MV consumers: 3 • MV producers: 2 • HV participants: 4 • Market platforms: 1 • Flexibility Aggregator: 0

Chapter 6. Engagement challenges and opportunities faced by EUniversal pilots.

In this chapter, an analysis of the issues faced by each pilot in engaging customers as well as the mitigation measures implemented has been described. Based on the challenges faced, a set of policy, EU projects and economic recommendations have been proposed. A summary of common challenges and opportunities is shown below:

² 17 LV consumers engaged but only 5 were compatible with the HEMS

Portugal	Germany	Poland
Operational: <ul style="list-style-type: none"> • Low customer participation. • Stakeholder availability • Stakeholder knowledge level Regulatory: <ul style="list-style-type: none"> • Lack of incentives • Due to GDPR constraints, the process of getting the official consent from the clients is complex. Socioeconomic context: <ul style="list-style-type: none"> • Due to high inflation and higher energy prices, some companies decided not to participate. • Lack of incentives • COVID 19 Restrictions 	Operational: <ul style="list-style-type: none"> • Low customer participation. • Stakeholder time constraints • Scepticism among consumers about the new concepts of flexibility. • Consumers want to have their own devices and as much independence as possible from being “controlled”. • Customer solutions outside “normal” DSO business • Missing standard interfaces connecting to HEMS Regulatory: <ul style="list-style-type: none"> • Lack of incentives • GDPR constraints • General dissatisfaction with (German) energy policy Socioeconomic context: <ul style="list-style-type: none"> • Due to the energy crisis derived from the war in Ukraine, people are more cautious and reticent to change than before. • COVID 19 Restrictions 	Operational: <ul style="list-style-type: none"> • Low customer participation. • Very low level of knowledge among the recipients. Meetings should be prepared for people with no knowledge of the changes taking place in the energy market. • Time constraints Regulatory: <ul style="list-style-type: none"> • Lack of incentives • GDPR constraints Socioeconomic context: <ul style="list-style-type: none"> • COVID 19 Restrictions

Each of these challenges have been further explored within Chapter 6 and a set of policy, EU projects, economic, recommendations on how consumer engagement could be more efficiently implemented within EU projects have been provided. A list of these recommendations is presented as follows:

Scope	Recommendation
Policy	<ul style="list-style-type: none"> • Consideration of regulatory sandboxes • Guidelines for GDPR management in EU projects: BRIDGE regulations WG
EU Projects	<ul style="list-style-type: none"> • Engagement requirements in EU proposals • Consortium partners to have access to customer and legal advice in technology implementation • Simplifying engagement for customers participation • Partnerships for engagement
Economic	<ul style="list-style-type: none"> • Incentives • Monetary evaluation of customer engagement activities

Chapter 7. Social awareness guidelines and effective consumer engagement in EU energy projects

Finally, this chapter explores the drivers and motivations as well as the enablers and barriers of implementing engagement action in energy projects through EUniversal’s collaboration with the BRIDGE initiative, including a step-by-step guideline to build social awareness and effective consumer engagement strategy for these types of projects.

2 Introduction. Social awareness and acceptance of new energy systems and technologies

Consumer engagement and awareness are crucial to achieve social acceptance of new energy systems and technologies.

The European Union (EU) is aiming at transforming the energy system towards a sustainable, low-carbon and climate-friendly economy. The scope is to increase the energy share of electricity production in distribution grids to around 50% of renewable energy sources (RES) until 2030 while guaranteeing the security of supply and avoiding unnecessary network investments. For this purpose, generation and consumption of prosumers and consumers across all grid levels will make them active participants in the energy system. To enable this user centric transformation, distribution grid operators will face new challenges in the ways they operate the electric network. In order to be able to safely host more renewable energy sources (RES) and to integrate new types of load patterns (such as electric vehicles and heat pumps) and consumer behaviour (e.g., with the advent of energy communities or the introduction of dynamic electricity pricing), while not oversizing the network, they will need to rely more on flexibility and smart-grid solutions. This is why flexibility in the grid has been identified as a key enabler towards a more sustainable, low-carbon and climate-friendly electricity system.

Demand response systems require consumers to respond predictably to price signals, accept home automation, and engage in predetermined activities that help them to respond efficiently. However, due to various impediments, consumer engagement in this type of projects and initiatives might fall short of these goals. For example, due to having partial knowledge of the potential advantages of this technology or because the majority of consumers consider electricity as a mere routine purchase with no space for action or responsibility from their side. These aspects often lead consumers not to engage in this type of projects and initiatives, either by not enrolling at all, by only offering limited responses, or by stopping responding or withdrawing from the project.

Hence, in addition to the technical aspects, it is necessary to ensure customers' awareness and acceptance to successfully deploy these technology solutions. Technologies that are technically and economically feasible in a specific context may not be successfully adopted due to social opposition, lack of awareness of the technology and its implications, etc. However, engaging consumers in demand response remains a challenge, due to barrier factors for engagement such as underestimate profiling of end users, lack of budget for engagement strategies, unmotivated users, or misunderstandings between projects and users (Bridge, 2022).

According to the Climate Policy info hub³, five elements are thought to determine the level of acceptance: awareness of climate change; fairness of the decision-making process; the overall evaluation of costs, risks, and benefits; the local context; and trust in decision-makers.

Awareness of climate change and knowledge of the new energy systems and technologies

Social acceptance is influenced by the awareness of climate change and its effects, as well as by the knowledge of the new energy systems and technologies in question. The adoption of new energy

³ Erwin Hofman (2015): "Social Acceptance of Renewable Energy". Climate Policy Info Hub, 18 February 2015. Online available at: <http://climatepolicyinfohub.eu/social-acceptance-renewable-energy>

systems and technologies and the willingness to tackle climate change are often boosted by increased understanding and awareness of these systems and technologies.

For new energy systems and technologies, timely, comprehensive and information must be provided in order to raise awareness on its costs, risks and benefits. Experience shows that potentially useful systems and technologies will not be widely adopted if the public is unfamiliar with them.

Fairness

When decision-making procedures are open and transparent, the public and stakeholders have a say in the decisions, and these inputs are taken into account by the decision-makers, this is considered to be fair. Within this context, raising awareness is essential to ensuring that all stakeholders have the chance to participate in a fair process. In addition, joint ownership or community co-ownership of projects also increases social acceptance, according to numerous research.

Five principles should be respected to safeguard procedural justice in energy projects: openness (sharing all relevant information), inclusiveness (interacting with all stakeholders), responsiveness (listening to the community and stakeholder concerns), accountability (ongoing process of monitoring, evaluation, and participation), and flexibility (preparing for local requests and being open to amendments).

Assessment of costs, risks, and benefits

Social acceptance of new energy systems and technologies will also depend on the assessment of the costs, benefits and potential risks. This evaluation is essentially subjective since the general public frequently lacks sufficient knowledge about these systems and technologies. Therefore, this evaluation is either a reflection of their degree of awareness or it is based on an evaluation performed by another party, such as the project developer, the government, or an interest group.

Local context

Although the general public has a favourable opinion towards new energy technologies, individual projects frequently encounter neighbourhood opposition and resistance to change, out of personal fear of loss of quality of life. Within this context, both the rational and emotional sides of the local debate should be identified, discussed, and dealt with.

Trust: a cross-cutting issue

The acceptance of new energy systems and technologies is influenced by the public's confidence in decision-makers and other stakeholders, on the perception of their organisational competence and integrity. The concept of trust can be considered as a crosscutting issue, as it influences the other four factors mentioned above, and is in turn also influenced by them.

Based on these parameters, the aim of this deliverable is thus to analyse the engagement strategies tested in EUniversal pilots to detect the main engagement opportunities and barriers in order to identify potential areas of improvement as well as provide recommendations that could be implemented by these types of projects in the future.

3 Consumers within energy flexibility policy frameworks. EUniversal pilots

Consumers are increasingly at the forefront of the European energy flexibility policy frameworks, reflecting a broader shift towards a more sustainable and consumer-centric energy system. The European Union has recognised the pivotal role that consumers play in achieving its energy and climate goals, and as a result, several key aspects demonstrate the consideration of consumers within these frameworks.

First and foremost, European energy flexibility policies aim to empower consumers by promoting their active participation in the energy market. This is achieved through measures such as the European Clean Energy for All Europeans package⁴, which includes directives and regulations that encourage demand-side management, self-generation of electricity, and energy communities.

Moreover, the European Union has made strides in enhancing energy data transparency, providing consumers with access to real-time information about their energy consumption. This empowers consumers to make informed choices about when and how they use electricity, allowing them to align their consumption patterns with periods of lower energy prices or higher renewable energy generation.

The new European energy flexibility policy framework represents a significant shift in the way consumers are being considered in the EU energy landscape, enhancing their role in the energy market, fostering a more sustainable and efficient energy system. There are several key aspects to this approach:

1. **Prosumer Empowerment:** Recognizes that consumers are not just passive users of energy but can also be producers, or "prosumers," through distributed energy resources like solar panels and home batteries.
2. **Demand Response:** Promotes demand response mechanisms, allowing consumers to adjust their energy usage patterns based on market signals or grid conditions. This provides economic incentives for consumers to reduce their energy consumption during peak times, relieving stress on the grid and reducing energy costs.
3. **Consumer Data Access:** Considering the importance of data in making informed decisions, promoting access to real-time energy consumption data for consumers. This empowers them to optimise their energy usage, choose energy-efficient appliances, and engage with energy-saving technologies and services.
4. **Energy Communities:** Encourages the formation of energy communities where consumers can collectively manage and share energy resources. These communities allow consumers to pool resources, invest in renewable energy projects, and collectively benefit from energy trading and savings.
5. **Market Integration:** Greater integration of energy markets, enabling consumers to access a wider range of energy services and products. This promotes competition and innovation in the energy sector, leading to better prices and more options for consumers.
6. **Environmental Considerations:** Sustainability is a central theme within the policy framework. It encourages consumers to adopt energy-efficient practices and technologies while fostering the transition to renewable energy sources. In doing so, it aligns with broader European goals of reducing greenhouse gas emissions and combatting climate change.
7. **Consumer Protection:** Addressing consumer protection concerns, ensuring that consumers are treated fairly and transparently in their interactions with energy providers. It establishes rules to prevent discriminatory practices and safeguards consumer interests.

⁴ [Clean energy for all Europeans package \(europa.eu\)](https://european-council.europa.eu/media/e300042f-323d-47e1-9907-fc916934cc9c/en/attachment_data/data/eu_energy_2019_en.pdf)

8. **Energy Efficiency:** Placing a strong emphasis on energy efficiency, incentivizing consumers to adopt energy-efficient technologies, retrofit buildings, and reduce waste. This not only reduces energy bills for consumers but also decreases overall energy consumption.

Overall, the European energy flexibility policy frameworks are designed to transition from a centralized, supply-driven energy system to a more decentralized, consumer-centric one. By empowering consumers, enhancing data transparency, and ensuring inclusivity, these policies aim to create a sustainable, flexible, and resilient energy system that benefits both individuals and society as a whole. This transformation reflects the EU's commitment to sustainability and its recognition that consumers are key actors in achieving energy and climate objectives.

3.1 Policy context in Portugal

To achieve carbon neutrality, the reduction of greenhouse gas (GHG) emissions was established for Portugal by between 85 % and 90 % by 2050 compared to 2005. The emission reduction path was set at between 45 % and 55 % by 2030, and between 65 % and 75 % by 2040, compared to the figures recorded in 2005.

In this framework of profound change, it is important to adapt the legal regime of the Portuguese National Electric System (SEN) to the needs and challenges posed by these strategic instruments, which will guide our country's energy policy in the coming years. It was also important to ensure the transposition of European Directives that promote energy use from renewable sources.

It is in this context that it is important to ensure the paradigm shift of the SEN, which necessarily must evolve from a centralized generation-based system to a decentralized model that fits local generation, self-consumption solutions, energy communities, active management of smart grids and ensures the active participation of consumers in markets.

To this end, Portugal introduced some changes to the legal regime of the SEN, from which two axes are of special interest to the EUniversal Project:

1. Network planning using flexibility services.
2. Active participation of consumers, in production and in markets.

The second axis focuses on consumers and the role they can play within the SEN, acting individually, collectively or through energy communities, providing that they can move from mere passive consumers to active agents who produce electricity for self-consumption or sale surpluses, store and offer flexibility services and aggregate production.

To this end, this new SEN legal regime ensures, through the creation of the aggregator role, the removal of barriers to participation in electricity markets.

In this context, the obligation to provide supply contracts at dynamic prices is considered, allowing the adjustment of the consumption profile at the differentiated price between periods, promoting the provision of flexibility services.

Aware of the need for customers to evolve towards a more participatory market, together with the need for more rational use of resources, both physical and financial, the Portuguese DSO E-Redes has already started a proactive path in the study of investment solutions in networks where the flexibility component is already seen as a solution for mitigating constraints in the HV and MV network.

A review of the SEN was out for public consultation⁵ during the EUniversal project duration where E-REDES provided feedback based on their professional experience and some lessons learned from EUniversal project.

3.2 Policy context in Germany

According to the European Clean Energy Package and the German Federal Climate Change Act, a CO₂ reduction of 65% until 2030 - compared to 1990 levels - is envisaged. The German pilot aimed at

⁵ [ERSE - Encerramento](#)

testing the efficiency and effectiveness of smart grid solutions as well as the implementation of a flexibility market for the LV and MV grid to examine a potential link to the cost based and mandatory Redispatch 2.0 in HV. To do so, the implementation will be framed by the schedule-based congestion management leaned on Redispatch 2.0, which was recently set active in October 2021. Redispatch is used to mitigate congestion in the power flow of the grid. For this purpose, electricity generation is temporarily adjusted if assets in the power system are congested: Electricity feed-in is reduced on one side and increased on the other. This procedure simultaneously covers the energy demand and maintains the security of supply. The main intention is to optimize the total costs and thus reduce network charges of the system, as well as secure a reliable operation of the system with a higher share of RES. This means that DSOs are now also involved in the Redispatch process. An iterative process is set up for the exchange of data between the different system operators, which enables an accurate prediction of the needed power adjustment. In EUniversal, the German demonstration aims to stay close to this iteration process, to test a long-term use of flexibility potentials directly for the Redispatch process or in a complementary way.

Although there are some attempts to change the policy context⁶, currently, the German regulation does not foster the usage of demand-side response and the implementation of flexibility markets as an additional measure to the existing regulated solutions. There are several arguments for this, among them the potential risk of strategic bidding as well as the logistical challenge for system operators when coordinating the increased number of assets. However, adding local flexibility markets for DSOs as an official measure to the German energy system - as demanded by European legislation (Art. 32 Electricity Directive) - also bears the huge potential to prevent additional costs and time delay due to grid investments, to use existing resources efficiently and effectively and even to solve grid problems locally through smart up/down regulation of local or regional assets. Certainly, the realisation would require an adaption of the German regulatory framework as well as adjustments of the grid tariff and tax schemes to incentivize the participation of flexibility providers for grid management. A detailed evaluation of the required adaptations has been elaborated by a forum of experts and presented to the German Ministry for Economic Affairs and Climate Action in June 2021. The German Demo will test the different scenarios to evaluate the effective benefits in terms of resources and costs.

As neither the smart meter rollout in Germany is far advanced, nor is there any active regulation in Germany on the use of demand side flexibilities in the low voltage grid, which the field tests could follow, it was of great importance to recruit volunteers for the testing.

3.3 Policy context in Poland

Currently, there are no markets for flexible services in Poland because they require the preparation of legal regulations, verification, and building of business models, and an increase in investment outlays. Poland is currently facing major challenges related to energy transformation. These challenges are related to the dynamic growth of renewable energy sources (RES), ensuring the security of power supply during peak periods as well as the necessity of deep modernization of the power system.

To improve the flexibility of the power system in Poland, there are currently public consultations open on amendments to the Energy Law and the Renewable Energy Sources Act⁷. The draft act introduces a legal framework to introduce a flexible system that reacts to changes in the system, both on the technical level and in the behaviour of users of this system while maintaining stable network operation and maintaining quality parameters and reliability of supplies.

The purpose of the recommended solution is to provide a legal basis for electricity system operators in terms of the possibility of using flexibility services provided by distribution system users. The evolution of the power system towards decentralisation of generation and market activation of system

⁶ [Bundesnetzagentur - Press - Bundesnetzagentur commences determination proceedings on integration of controllable consumer devices into the electricity network](#)

⁷ [Amendment to the Polish Energy Law 2023](#)

users means that the DSO should use this new energy potential. Cooperation in this area will take the form of a service provided by users to DSOs, referred to as the flexibility service.

The proposals presented in the amendment include introducing definitions of concepts appearing in European Union law, such as introducing flexibility services including incentives to customers and other engagement and regulatory schemes.

Summing up, even though significant progress has been made in the development of renewable energy-based sources in recent years in Poland, it is the Polish electricity system that continues to be based on centrally managed coal-fired power plants. In addition, transmission and distribution grids are ageing and investment is limited. Demand-side elasticity and small-scale energy storage are not yet developed. There are **no regulations in Poland that would allow the introduction of a system of incentives for customers who could potentially provide flexibility services**. There is also no market platform for the provision of flexibility services by clients to DSOs and TSOs, apart from the balancing market. Policy makers are currently at the stage of reviewing the options and arrangements that will prepare the provisions and regulatory framework that will enable the implementation of the market directive. The above results in low overall flexibility of the power system, and the only chance to increase the efficiency of the national power system without incurring huge capital expenditures is to properly design an appropriate regulatory framework for flexibility services are currently at the stage of reviewing the options and arrangements that will prepare the provisions and regulatory framework that will enable the implementation of the market directive. The above results in low overall flexibility of the power system, and the only chance to increase the efficiency of the national power system without incurring huge capital expenditures is to properly design an appropriate regulatory framework for flexibility services.

As it has been stated throughout the project, EUniversal pilots were implemented in a changing policy and regulatory environment which made customer engagement a challenging process.

4 Context narrative for consumer engagement in EUniversal pilot demonstrators

EUniversal approach entails different actors, high heterogeneous data sources, dimensions, backgrounds, goals, and multifunctional effects for the energy system ecosystem. The main aim is to generate an integrated approach to bring forward a universal, adaptable, and modular solution to interlink active system management with electricity markets and the provision of flexibility services. Three heterogeneous groups of pilot demonstrators in three different countries (**Portugal, Germany, Poland**) have been selected to cover a broad range of **distribution grid typologies and to test the solutions in distinct regulatory environments**, in **alignment with national plans** for the energy transition in 2030.

EUniversal has therefore selected these pilot sites with different consumer types framed in various geographic levels and contexts as central approach for **understanding the drivers and barriers of consumer participation** in demand response systems.

In this section, we introduce the general characteristics of the three EUniversal pilots prior to present the consumer engagement strategies conducted in each of them (section 5).

Main characteristics of EUniversal pilots

In the table below we provide the main characteristics of EUNIVERSAL pilots including the following specifications:

- Voltage level
- Location
- Grid typology
- Grid users
- Flexibility providers
- Flexibility technologies
- Smart grid infrastructure
- Time frame
- Market mechanisms

Topic	Portuguese DEMO	German DEMO	Polish DEMO
Voltage level	MV, LV	LV	HV, MV, LV
Location	Rural, urban, mixed	Rural, small towns	Rural, suburban, small towns
Grid topology	Radial	Radial	Meshed/Radial
Grid users	Residential consumers SME DER: wind farms, PV producers	Residential consumers	Residential prosumers SME DER: wind, solar and biogas generation
Flexibility Providers	Residential consumers (PVs, water heater and batteries, washing machines) SME (commercial consumers) Water treatment plants, Landfill, Wind Farms	Residential consumers (PVs, BESS, heat pumps, EVs)	ENERGA (as energy storage owner) Biogas power plant Wind farm

Flexibility technologies	PV systems (LV clients) Batteries (LV clients) Water heater (LV clients) Washing Machine (LV clients) MV Clients' installed flexible load (pumps, HVAC, etc)"	Electric Vehicles PV systems Batteries Heat Pump Heat Storages	Li-Ion batteries Microgrids Dynamic line rating (DLR) Active power control of RES
Smart grid infrastructure	Smart meters at LV and MV Customers HEMS in all LV customers	Insufficient coverage. Alternative: HEMS at participating customers 3-phase power measurements at different grid locations	Smart meters at customers' premises balancing meters at substations remote controlled switches SCADA
Time frame	Day ahead	Day ahead, intraday	Voltage control – real-time operation
Market mechanisms	Flexibility markets	Flexibility market	Flexibility market Bilateral contract

Table 2. Main characteristics of EUNIVERSAL pilots

The next table presents a summary of the three DEMOs in terms of dimension, the number of testing pilots each DEMO has, the Business Use Cases (BUCs) defined under WP2 for each DEMO, and the number of participants engaged or under engagement in each voltage level for each DEMO.

Topic	PT DEMO		DE DEMO		PL DEMO	
	Target	Engaged	Target	Engaged	Target	Engaged
DEMO pilots	4		3		3	
Business Use Cases	4		2		4	
Customer Engagement						
LV consumers⁸	275	28	As many as possible	17* / 5**	No target	5
MV consumers	20	12	0	0	No target	3
MV producers	0	5	0	0	No target	2
HV participants	0	0	0	0	No target	4
Market platforms	2	2	1	1	No target	1
Flexibility Aggregator	1	1	1	1	No target	0

Table 3. Summary of participation numbers for each pilot

4.1 Portuguese demonstrator

The Portuguese demo tested the provision of market-based flexibilities over the UMEI, integrating **tools for consumer and prosumer provision of flexibility for an improved and smarter distribution grid operation**. This was done while achieving enhanced observability by establishing the estimation and forecast of the grid state from the chosen LV Grid. This helped to aggregate and

⁸ *Customer that wanted to participate; ** of which compatible with the HEMS

predict the flexibility potential in the LV Grid. In addition, the PT DEMO also foresaw using flexibility from the LV grid to support the LV/MV connection point and, therefore, to the MV Grid.

The Portuguese DEMO is constituted by 4 pilot sites in the grid operated by E-REDES, located in different parts of Portugal. These **sites complement each other in the scope of the tools and services to be tested**, such as smart grid functionalities, congestion management, resiliency, demand-side response, flexibility mapping, amongst others, and an effective means to demonstrate the universality of the UMEI concept.

Grid selection criteria

The selected grids were located in different regions of the country, ensuring a wide set of scenarios and contexts.

- **Valverde** (rural). A small village located in a suburban area of Évora district. Valverde is a small rural village, with a population of 450 inhabitants, in the countryside of Évora, the first Portuguese smart city in the National Project InovGrid⁹, all connected to the LV grid. Valverde was also the chosen location for the Horizon 2020 SENSIBLE and InteGrid projects, because already had flexibility assets in place such as storage systems, 18 customers with PV panels installed, fully implemented GPRS smart meter system.
- **Mafra** (urban) is a Portuguese municipality situated about 30 minutes north of the Lisbon metropolitan area. Mafra MV substation is fed by 3 HV overhead lines and 2 HV/MV transformers of 10 MVA each. It has 10 MV feeders which feed a total installed capacity of about 80 MVA. This demonstrator will count on the participation of MV consumers and producers. No LV demonstrations will be held in Mafra.
- In **Caldas da Rainha** (urban), with two interconnected MV feeders that are fed by the CALDAS DA RAINHA Substation (60/30kV) and SANTO ONOFRE (60/30V) Substation were studied.
- **Alcochete** (urban). Near Lisbon, Tejo River south bank. Alcochete is an urban area, on the south bank of the Tejo River in the Metropolitan area of Lisbon. This demonstrator includes the areas of Samouco and São Francisco, both urban areas in Alcochete. This area features neighbourhoods of houses and apartments, providing a good diversity of customers with different energy consumption patterns (LV).



Figure 1. PT Demo locations

The project demo areas are the same as the ones where the former **H2020 Integrid project**¹⁰ took place. This approach has had multiple advantages, such as:

1. It reduced the effort and cost of enrolling new participants, particularly under COVID-19 constraints.
2. It optimized the use of former investment made in hardware at LV consumers' premises, including appliances and the Home Energy Management System (HEMS).
3. All LV participants were already served with smart meters.
4. The network topology and historical data were already known.

⁹ [Inovgrid | edp.com](https://inovgrid.edp.com)

¹⁰ [Demonstration of INTElligent grid technologies for renewables INTEgration and INTERactive consumer participation | InteGrid | Project | Fact sheet | H2020 | CORDIS | European Commission \(europa.eu\)](#)

Nevertheless, some areas of the Integrid project did not include MV customers (Caldas da Rainha and Alcochete). To test some new BUC, there was the need to invite some MV consumers in those areas where the participants in the Integrid project were limited to LV consumers. All MV customer invitations were carried out directly through E-REDES' "Customer service department," specifically through MV customer managers.

For more information about the technical aspects of the Portuguese pilot, please see deliverables D7.1 to D7.4.

4.2 German demonstrator

The German demonstrator has developed solutions to enable the integration of renewables into the energy system on a large scale. The aim is to enable grid customers to participate in flexibility markets and to provide DSOs with flexibility for their active system management. A win-win situation for both the grid operator and the customers.

The German DEMO took place in LV grids operated by the German DSO Mitnetz Strom (MNS - E.ON linked third party). The supply area of MNS is located in the East of Germany and includes parts of Brandenburg, Saxony-Anhalt, Saxony and Thuringia.

The region is home to 2.3 million inhabitants in an area of 30,804 km². The length of the grid is about 6,000 km in HV, about 24,000 km in MV and about 44,000 km in LV Level. MNS operates and maintains about 17,000 substations with an installed capacity of more than 5,000 MVA. Therefore, the grid provides a broad variety of scenarios and can demonstrate the novel use cases defined in WP2.

Grid selection criteria

As neither the smart meter rollout in Germany is far advanced, nor is there any active regulation in Germany on the use of flexibilities in the low voltage grid, which the field tests could follow, it was of great importance to recruit volunteers for the testing.

The demonstration focused on grid sections with a relevant infeed of **RES and new customers** (e.g., storage and heat pump users). Various criteria were considered for the selection such as the number and type of flexible devices in the network, measured congestion/voltage problems in the past, differences in size and topology of the grid.

As a first step in preparing the field test, was to consider the largest possible number and variety of flexible applications to enable different scenarios for the field test. To take regional diversity into account and to compensate for a regional lack of interest, three pilot regions were ultimately selected in the grid regions of Brandenburg, West Saxony, and South Saxony, in the area of operation of MNS. The following table characterises the selected pilot regions: Brandenburg, West Saxony and South Saxony.

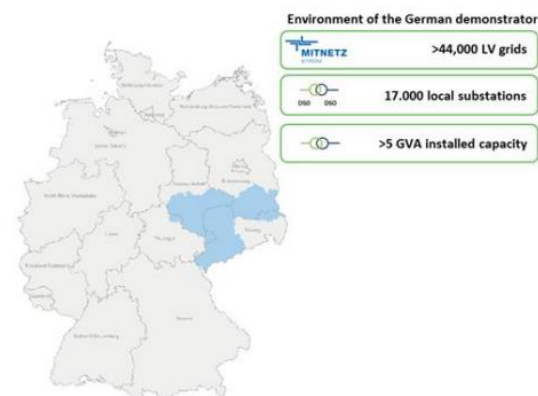


Figure 2. DE demonstrator area and grid type

Identifier	MLq0094	MFn4420	MIi0809
Grid Region	Brandenburg	West Saxony	South Saxony
Town where the LV grid is located	Falkenberg/Elster	Brandis	Frankenberg
Number of connected meters	400	300	400

Number of customers with flexible devices	50	44	192
Specifics	<ul style="list-style-type: none"> • Mostly single-family houses • Partly use night storage heaters (historically grown) • MNS site in town 	<ul style="list-style-type: none"> • Residential area with single family houses since 1990/2000 • Radial grid structure 	<ul style="list-style-type: none"> • Mixture of larger apartment buildings and single-family houses • No oil or gas heating allowed due to water protection rules • High spatial density of installed power

Table 4. DE demonstrator selected pilot regions.

For more information about the technical aspects of the German pilot, please see deliverables D8.1 to D8.3.

4.3 Polish demonstrator

The Polish demonstration was conducted in all voltage levels of the Polish DSO ENERGA-Operator. Energa supplies electricity to $\frac{1}{4}$ of the area of Poland, in the northern and central parts of the country.



It distributes electricity to more than 3.2 million customers. It operates 193.000 km of power lines across all voltages to deliver approx. 6.2 TWh in the first quarter of 2023. Energa Operator is a distribution system operator (DSO). Following the requirements of its distribution license, the company is responsible for the development, operation and upgrading of transmission infrastructure and the delivery of electricity to connected recipients meeting predefined quality criteria.

Figure 3. PL demo sites

Grid selection criteria

The Polish demonstrator focuses mainly on MV and LV infrastructure, more specifically an MV switchgear in the Władysławowo substation, which includes the following energy sources:

- Windfarms (2 sources)
- Energy consumers (4 sources)
- Biogas plant
- Energy storage

As part of the project, three MV/LV substations were selected to be modernized and adapted to the requirements of the FlexStation. The scope of modernisation and function related to flexibility is described in Deliverable D9.1. The substations are located on the territory of three Branches: Płock, Kalisz and Gdańsk. The substation in the Płock Branch is an indoor substation, while the other two are overhead substations. When selecting the substation, the network saturation with PV micro-sources and the number of consumers connected to the grid were considered. In addition, the possibility of increasing new generation potential was also considered, as well as customer reports regarding technical problems with delivering the produced energy to the ENERGA-Operator's network.

Identifier	T761725	T21198	T-9635
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Grid Region	Plock	Kalisz	Gdansk
Town where the LV grid is located	Mlawa	Czajków	Linia
Number of connected meters	98	42	114
Number of customers with flexible devices	59	13	11
Specifics	<ul style="list-style-type: none"> • Mostly single-family houses • Estate of terraced houses equipped with PV and heat pumps 	<ul style="list-style-type: none"> • Rural area • Radial grid structure 	<ul style="list-style-type: none"> • Rural area • Radial grid structure

Table 5. Summary of selected low-voltage grids

One of the functionalities of a Flexible Substation is monitoring and control of the client's inverters operation which is possible with the use of the communication interface, present at each inverter. Today, manufacturers use different solutions for these interfaces, both physically and logically, however, generally, it is possible to perform a remote switch off/on of the inverter, monitor electrical parameters (voltage, current, power), or change its parameters setting.

For more information about the technical aspects of the Polish pilot, please see deliverables D9.1 to D9.4.

5 Consumer engagement strategies implemented by EUNIVERSAL pilots

A specificity of the EUniversal project was to have the participation process of consumers divided in two phases: The customer acquisition phase and the customer engagement phase.

The customer acquisition process focused on inviting and getting the interest and confirmation of as many customers as possible for each pilot, as well as assessing their devices for technical compatibility, making sure these were fit for the testing phase.

The customer engagement process focused on informing, getting GDPR requirements ready and following up with customers on the developments of the testing.

One of the main conclusions to be considered in the EUniversal project was the considerable gap between the customers that might have shown interest and the suitability of their devices to join the project, especially in the German pilot, as indicated in the previous section.

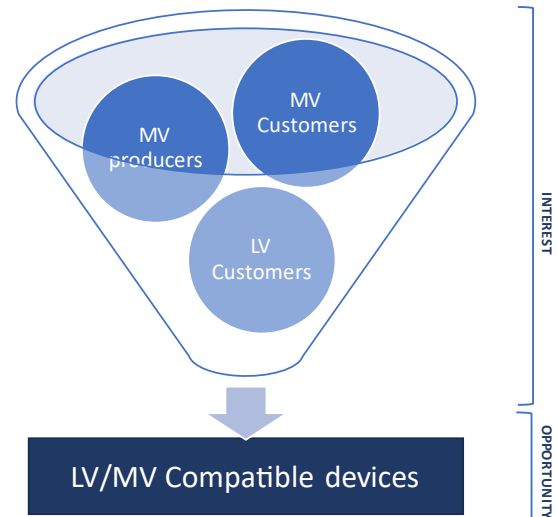


Figure. EUniversal project "funnel" acquisition/engagement effect

5.1 Consumer engagement in the Portuguese pilot

LV consumers

To enrol participants, a micro-contact-centre was outsourced to an external company. The first contacts were done by telephone. The ones which couldn't be reached were sent an email. The few ones not answering were visited by E-REDES.

The micro-contact-centre kept an open line with the LV participants to answer any question they had or solve any problem they encountered during the period of the demo.

All the LV customers had previously participated in the H2020 Sensible Project and the H2020 Integrid Project, so they already had installed equipment (Smart Appliances, EV charging, PV Panels, Storage, all of them controlled by a HEMS). The equipment attribution was separated into different bundles, or combinations. The criteria for attributing this equipment were based on different weighted factors like average consumption of the household, suitability for HEMS installation (assuring a good signal between wi-fi router and smart meter location), number and types of electric appliances in the house. Thus, only a certain range of location were suitable to perform this grid-based demonstration.

MV participants

The MV participants group included MV consumers and producers (Wind Farms). Contrary to what was done with the LV client's engagement, new demonstration participants had to be enrolled to test the coordinated mobilization of LV and MV flexibility.

The following process was put in place:

1. Identify MV feeders to each the Secondary Substation with enrolled LV clients (from Integrid project) are connected to.

2. List the MV consumers connected to the identified MV feeders and access their impact in the feeder Load Diagram.
3. Make a short list of the potential MV flexible assets.
4. Invite MV flexible assets from the short list. These invitations were done directly through EREDES 'Customer service department', specifically through MV customer managers.
5. Formalize participation.
6. Fill out a form with detailed information regarding each MV installation's assets and operation.

- **MV consumers**

MV consumers' load profile and flexibility availability are related, dependent, and constrained by the sector of activity. These are the activity sectors of the enrolled MV consumers:

- Food industry: meat production and processing.
- Water Plant: Pumping stations, water treatment facilities.
- Waste Management and Treatment.

MV consumer's installation was directly connected to the MV grid. Preferably, metering was done in the MV side, but in older installations, was done on the LV side. No equipment was installed in the MV client's premises so, to access the load diagrams and flexibility delivered, the demonstrator relied on the existing smart metering infrastructure.

- **MV generators**

Regarding the type of MV generators that were accepted to participate in the PT demo, there were 3 Wind Farms, 1 Photovoltaic, 1 Biogas.

Presentations, surveys and other resources used for customer engagement are included in Annex I. Engagement resources used by Euniversal pilots.

To conclude, it is important to highlight that setting-up a demonstration under COVID-19 restrictions has been a challenge. Nevertheless, a fair number of prosumers accepted the invitation to participate, allowing the prospect of a successful demonstration of the UMEI concept in the management of market driven flexibility services for a LV and MV grid.

5.2 Consumer engagement in the German pilot

For the demonstration of the flexibility market, the acquisition of voluntary customers out of the selected grid areas was a central aspect. To participate in the field test, grid customers had to meet two conditions:

1. The existence of flexible or steerable applications such as batteries, heat pumps, heat storage, electric vehicle (EV) chargers, PV converters
2. The willingness to participate actively in the local flexibility market as a test user.

For this purpose, the customers should have as few restrictions as possible as well as easy access to information. With this purpose, the following activities were organised:

- Information events and talks were held with the mayors and offices in the pilot regions to discuss the organization of citizen events and to request support.
- An information video¹¹ was created to explain the project goals in an easily understandable manner.

¹¹ [UMEI video description](#)

- Every owner of flexible appliances in the designated low-voltage networks, in total more than 500 people, received a postal invitation to the events.
- Additionally, several articles in local newspapers and on the town, websites were published to increase the reach and awareness of the project.
- A citizen's event was hosted in each of the pilot regions, describing the EUniversal project content and encouraging the participation of flexibility owners.
- In addition, digital meetings were organised as an alternative contact channel due to the tense COVID situation in the area of the demonstrator at the end of the year 2021.

The interested volunteers were able to register via a separately set up mailbox for the German Demo of EUniversal and receive a contract to participate in the field test. The MNS legal department was included in the contract development to ensure compliance with current European GDPR and data sensitivity standards.

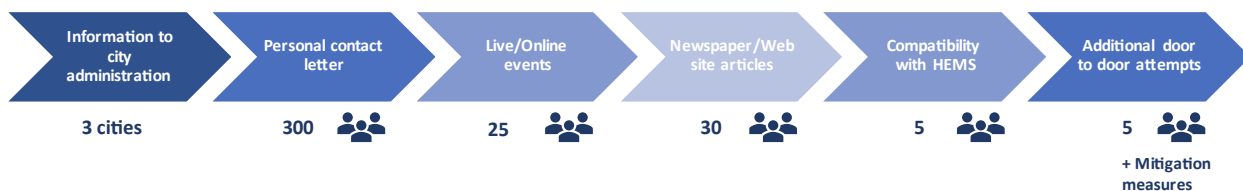


Figure 4. DE pilot approach to customer engagement

In total, 17 interested customers out of the three selected LV grids who had received project contract wanted to join the testing. However, the lack of compatibility, especially of the older inverter models and heat pumps with the HEMS, significantly reduced the number.

5.3 Consumer engagement in the Polish pilot

To be able to test this functionality, the consent of the customer (owner of the inverter) is required to install the communication device and participate in the tests. To this end, we have taken many information activities:

- Dec 2021: Meeting with the mayor of the city of Mława where an action plan for acquiring recipients to participate in the project was agreed upon and several informative articles were published in local newspapers¹²¹³¹⁴¹⁵¹⁶¹⁷¹⁸
- March 2022: Meeting with Mława residents powered by the FlexStation area and attended by the mayor of Mława and the vice-president of the Management Board of Energa-Operator. An



Figure 5. Meeting in Mława

¹² <https://www.mlawa.pl/artykul/nawatorski-projekt-badawczy-w-mlawie-z-udzialem-mieszkancow>

¹³ <https://inzynieria.com/energetyka/odnawialne-zrodla-energii/wiadomosci/63505,miedzynarodowe-energetyczne-projekty-innowacyjne-w-mlawie>

¹⁴ <https://ecieplo.pl/oze/nawatorski-projekt-badawczy-w-mlawie-z-udzialem-mieszkancow/>

¹⁵ <https://www.wnp.pl/energetyka/energa-operator-rusza-z-nawatorskim-projektem-waznym-dla-prosumenckiej-rewolucji.532528.html>

¹⁶ <https://www.elektro.info.pl/artykul/najnowsze/175891,mieszkancy-mlawy-biora-udzial-w-projekcie-badawczym-energi>

¹⁷ <https://energiapress.pl/news/3047/nawatorski-projekt-badawczy-z-udzialem-mieszkancow>

¹⁸ <https://ciechanow.cozadzien.pl/region/mlawa-znalazla-sie-wsrod-miast-europy-gdzie-testuja-transformacje-rynku-energii/6615>

invitation to a meeting with residents in Mława was prepared in the form of a leaflet and disseminated through available media¹⁹²⁰²¹²²²³.

- March 2022: Communication in the media²⁴ after the meeting with the participants of the meeting²⁵.
- May 2022: Meanwhile, organization of the Children's Day Festival in Mława in a local primary school combined with the organization of a stand where the EUniversal project was presented. Communication of the Children's Day Festival event in the media²⁶²⁷²⁸.
- June 2022: Meeting with the residents of Mława to explain the tasks of cooperation in the project and arrange the installation of photovoltaic control devices. The meetings took place in the homes of people who expressed their willingness to participate in the projects. Cooperation agreements were signed with residents.
- October 2022: Installation of control devices on the test participant's infrastructure²⁹.
- On December 3, 2021, a meeting of the director of the Płock Branch with the mayor of the city of Mława took place. The meeting was internal and support and help for further activities was agreed. A series of articles on the construction of an innovative flexibility service station have been prepared³⁰³¹³².

Presentations, surveys and other resources used for customer engagement are included in Annex I. Engagement resources used by Euniversal pilots.

As a result of the actions taken, the consent a 10% of recipients (5) with PV sources powered by the FlexStations was obtained, sufficient to conduct tests. An on-site inspection of the customers was carried out and in October 2022 the PV controllers were installed.

5.4 Compared characteristics of EUniversal pilots' engagement strategies

EU projects in demand response often include a variety of demonstrators which cover a diversity of scenarios for the technologies being developed. These can be explored and followed up through initiatives like BRIDGE³³ which provide a structured view of cross-cutting issues which are encountered in the demonstration projects and may constitute an obstacle to innovation. BRIDGE fosters continuous knowledge sharing amongst projects allowing them to deliver conclusions and recommendations about the future exploitation of the project results, with a single voice, through four

¹⁹ <https://enspirion.pl/energa-operator-rozpoczyna-wspolprace-z-mieszkancami-mlawy-w-ramach-projektow-euniversal-oraz-onenet/>

²⁰ <https://codziennikmlawski.pl/2022/03/18/wazne-dla-mieszkancow-podmiejskiej-powstanie-innowacyjna-stacja-transformatorowa/>

²¹ <https://energa-operator.pl/aktualnosci/733773/energa-operator-rozpoczyna-wspolprace-z-mieszkancami-mlawy-w-ramach-projektow-euniversal-oraz-onenet>

²² <https://www.mlawa.pl/artykul/wazny-projekt-energi-realizowany-w-mlawie>

²³ <https://e-elektryczna.pl/informacje-z-branzy/informacje-ze-spolek-12/>

²⁴ <https://mlawa.naszemiasto.pl>

²⁵ <https://www.smart-grids.pl/technologie/3959-m%C5%82awa-chce-wzi%C4%85%C4%87-udzia%C5%82-w-projektach-euniversal-oraz-onenet.html>

²⁶ <https://www.mlawa.pl/artykul/bezpieczna-kraina-energa-operator-juz-2-czerwca-w-mlawie>

²⁷ [bezpieczna kraina mława - Google Search](#)

²⁸ [Galerie zdjęć | Bezpieczna Kraina Energa-Operator](#)

²⁹ [Energa-Operator przetestuje nowe transformatory dla fotowoltaiki \(wnp.pl\)](#)

³⁰ [Inteligentna stacja do świadczenia usług elastyczności - energiapress.pl](#)

³¹ [Innowacje energetyczne w Mławie na Mazowszu - Inżynieria.com \(inzynieria.com\)](#)

³² [Energa sprawdzi, jak lepiej obsługiwać mikroinstalacje - Gramwielone.pl](#)

³³ [Home | Bridge \(europa.eu\)](#)

different Working Groups: Business models, Data management, Regulations and Consumer and Citizen Engagement.

The Consumer and Citizen Engagement Working Group serves a central point for the different methodologies of engagement implemented by European R&I smart grid energy projects. EUniversal has been actively participating in the BRIDGE initiative and based on the results of a survey managed by BRIDGE, citizen engagement strategies in each of the EUniversal pilots are summarized in the table below (Table 7). For more details about the questionnaire see Annex II (BRIDGE Survey, 2022).

Engagement survey Qs / Pilots	Portugal	Germany	Poland
Type of strategy	<ul style="list-style-type: none"> • First Assessment: Contact H2020 Integrid participants • GDPR: Ensure data protection compliance • Customer official consent procurement <ul style="list-style-type: none"> - MV customers - LV customer • Continuous monitoring (LV via contact centre and MV via client management department) 	<ul style="list-style-type: none"> • Informative letter to residents • Equipping cable distribution cabinets and local grid stations with sensors • Installation of a home energy management system and integration of flexible applications • Indication of flexibility of applications via an app or website • Test of the effectiveness of the local flexibility market under different scenarios 	<ul style="list-style-type: none"> • Mayors contacted • Letter with event invite sent to stakeholders • Creation of a customer engagement video • Newspaper articles • Town hall meeting (face to face) • Online events for those who couldn't attend face to face meetings
Own strategy or existing	Strategy based on H2020 Integrid project	Own strategy	Own strategy
Main elements of the strategy	<ul style="list-style-type: none"> • Carrying it out over real MV and LV grids of the Portuguese DSO E-Redes • Ensuring a wide set of scenarios and contexts 	<ul style="list-style-type: none"> • Identify the potential target users • Contact them directly through personal letters • The description of the positive outcomes and benefits for target users were key to get their participation in the project 	<ul style="list-style-type: none"> • Establishing the action plan for engaging participants to the project test along with the town hall of the pilot city selected (Mlawka)
Implementation to different TG	Continuous monitoring of: <ul style="list-style-type: none"> • LV via E-REDES contact center. • MV via E-REDES client management department. • MV producer via E-REDES client management department. 	<ul style="list-style-type: none"> • LV prosumers contacted by email regularly to provide them an update about the field test. • In addition, a meeting during final testing period will be also organized online. 	<ul style="list-style-type: none"> • LV customers will be contacted by e-mail and telephone. • Additional meetings arranged to inform stakeholders about the pilot needs

Implementation time/period (months)	22 months, January 2022 to October 2023 divided in the following phases: <ul style="list-style-type: none"> • 2022 - Field test design/preparation • 2023 - Field test implementation 	18 months with three steps: <ul style="list-style-type: none"> • August 2021 with information of mayor, • end of 2021/beginning 2022 with customer acquisition attempts, • March 2023 mitigation measure of contacting additional employees. 	14 months: <ul style="list-style-type: none"> • December 2021 to January 2023.
Success factors, Measuring plan	<ul style="list-style-type: none"> • LV consumers: The clients had already enrolled in previous projects and were already alert to these thematic. • MV Consumers: For some, to participate in a sustainability driven project it was their main driver to enroll. Other were interested in defining which load could be flexible and monetized. • MV Producers: Experts from the project (grid planning and operations) were involved in the enrollment meetings 	Due to low participation, it is difficult to determine success factors. All in all, the conducted presence events with the mayors have provided for good discussions and interest. However, at the time of the demo, there were no standard interfaces to HEMS, which then led to most technical and engagement difficulties.	In the case of the Polish demo, the main success factors have been a well-prepared information meeting for potential test participants. The meeting was attended by high level representatives of both the town hall and the project. For signing the declaration, participants of attractive gadgets and contact with people from the EUniversal project team. Thanks to this, the relationship and trust were increased.

Table 6. Summary of EUniversal pilots' strategies of engagement characteristics. BRIDGE survey 2022

6 Engagement challenges and opportunities faced by EUniversal pilots

The previous chapter outlined the main characteristics of the engagement strategies implemented by EUniversal pilots. Given the context specific issues that have impacted the EUniversal pilots' stakeholder engagement strategies (the energy crisis, COVID 19 restrictions, GDPR application, stakeholders' knowledge or time availability or regulation constraints), an online workshop with EUniversal pilot coordinators to further discuss and share final reflections on the challenges faced, and the potential solutions that might be proposed as recommendations for future projects implementation in terms of effective stakeholder engagement.

The workshop was organised was organised in September 2023, after the pilots were fully implemented, within the scope of *T11.4 Social awareness and acceptance*. In addition to EUniversal pilot coordinators, representatives from VITO *T10.4 Exploitation and roadmap* and VLERICK, coordinators of *D1.3 Regulatory recommendations for flexibility options and markets* which had also a focus on customer engagement barriers and opportunities. The workshop was organised by ZABALA around a Miro Board with the objective to discuss the strategies implemented and the barriers and challenges faced by each pilot as well as lessons learned and possible solutions for future engagement approaches for pilot implementation in EU projects. This exercise contributed to the drafting of recommendations, included both in this deliverable and in the final *D10.5 Exploitation and roadmap*.

6.1 Main challenges and mitigation measures implemented in each pilot

The workshop results have been compiled in the following table describing the barriers identified by each EUniversal pilot as well as the mitigation measures implemented, and the main impacts identified:

Portugal	Germany	Poland
<p>Operational:</p> <ul style="list-style-type: none"> Low customer participation. Stakeholder availability Stakeholder knowledge level <p>Regulatory:</p> <ul style="list-style-type: none"> Lack of incentives Due to GDPR constraints, the process of getting the official consent from the clients is complex. <p>Socioeconomic context:</p> <ul style="list-style-type: none"> Due to high inflation and higher energy prices, some companies decided not to participate. Lack of incentives COVID 19 Restrictions 	<p>Operational:</p> <ul style="list-style-type: none"> Low customer participation. Stakeholder time constraints Scepticism among consumers about the new concepts of flexibility. Consumers want to have their own devices and as much independence as possible (no external control). Customer solutions outside "normal" DSO business Missing standard interfaces connecting to HEMS <p>Regulatory:</p> <ul style="list-style-type: none"> Lack of incentives GDPR constraints General dissatisfaction with (German) energy policy <p>Socioeconomic context:</p> <ul style="list-style-type: none"> Due to the energy crisis derived from the war in Ukraine, people were more cautious and prioritised independence over flexibility. COVID 19 Restrictions 	<p>Operational:</p> <ul style="list-style-type: none"> Low customer participation. Very low level of knowledge among the recipients. <p>Meetings should be prepared for people with no knowledge of the changes taking place in the energy market.</p> <ul style="list-style-type: none"> Time constraints <p>Regulatory:</p> <ul style="list-style-type: none"> Lack of incentives GDPR constraints <p>Socioeconomic context:</p> <ul style="list-style-type: none"> COVID 19 Restrictions

Mitigation measures implemented		
Portugal	Germany	Poland
<ul style="list-style-type: none"> • A script was prepared that evolved for a contact centre 10 minutes phone call to solve GDPR issues. • Analytics from call were prepared to design a more specific acquisition process. • Since the beginning of the project, the Portuguese demo planned for an engagement strategy that involved more consumers than required by the project for the effective implementation of the project. • Therefore, no major mitigation measures needed to be applied, as the final number of customers engaged was sufficient to conduct the testing. 	<ul style="list-style-type: none"> • Focus on multiple grid regions with the same use case. • Personal letters were sent to neighbours in the pilot area. • Newspapers calls were prepared. • Town Hall meetings were organised. • Door-to-door visits with information about the project and foreseen testing. • When the numbers of participants were low, MITNETZ contacted employees of the own company for conducting additional testing 	<ul style="list-style-type: none"> • The Polish pilot invited local media and representatives of the Mława city hall to participate in an additional informative session. • An information campaign was carried out before the meeting (e.g., information on the radio, leaflets). • In addition, contact with participants who had declared their willingness to participate in the tests was maintained during the piloting phase.
Main Impacts at project level		
<ul style="list-style-type: none"> • Low participation numbers that affect the quality of results as it has already been stated in previous deliverables. • During the EUniversal pilot implementation, the DSO performed tasks that in a real environment would be tasks of the FSPs due to local scope as customer engagement. Therefore, EUniversal partly developed or tested a customer solution that cannot be used after the project: There was DSO support to customers to assist with HEMS during the project lifetime, but afterwards this task won't be part of the DSO business anymore. The DSO role in use cases ends, also for unbundling reasons, with market demand bids. This makes it a recommendation for a DSO figure need to help with customers during the deployment of flexibility approaches in the energy sector. 		

Table 7. Main engagement challenges and mitigation measures in EUniversal pilots

As shown above, the three pilots faced similar challenges and had to adjust their engagement strategies to be able to engage with a number of customers relevant to the testing to be carried out. A compilation and description of each of these challenges and potential reasons to better understand them is presented as follows:

COVID- 19 Impact: As shared by other projects, the pandemic has impacted a lot of engagement processes (BRIDGE survey, 2022) since an already difficult task to perform and keep alive such as engaging participants outside projects, became extremely difficult. By the time projects started to figure out how to organise online events, webinars, workshops etc. a lot of opportunities were missed.

Energy crisis and mistrust on the energy sector: the recent energy crisis combined with all the energy management changes that are happening in all member states in order to embark the energy transition towards zero emissions make it difficult for customers to distinguish between options that are beneficial or not, and its consequences. In addition, constantly rising energy prices and grid fees are not helping to maintain or boost publics' trust around this topic.

GDPR management: Designed to harmonise data privacy laws throughout Europe, to protect and empower EU citizens' data privacy and to reshape the way organisations across the region – both public and private – approach data privacy, the new European Data Protection Regulation (GDPR), has posed considerable challenges of compliance across the sector. Other EU funded projects such as

DEFeND³⁴ aim to empower organisations in different sectors, especially the energy sector, to assess the compliance status, plan the achievement of the GDPR compliance and increase their maturity in different aspects of GDPR. But for the EUniversal pilot it meant a self-learning pathway which contributed to delay and impact the customer engagement process.

Lack of financial incentives: In general, in EU projects, economic incentives are a topic that is raised quite a lot by stakeholders asked to participate in these projects. Although projects make an effort to find alternative ways in which they could engage with customers and citizens, without a recognisable clear and long-term financial incentive, only a few people were willing to sacrifice time to participate in the project and allow their premises to be externally controlled. This issue is connected to the “lack of interest/knowledge” one, as it is difficult to offer non-economic incentives to participants when they feel so disconnected to the topic.

Lack of interest/knowledge in energy/technology topics: The current geopolitical situation has made people aware of the importance of a secure energy supply. However, very few consumers are interested in the technical details. Energy remains a very distant and unappealing topic from the public. Most of the contacted people did not respond to the enquiries despite personalised (letters) or advertisement (newspapers) efforts were made.

DSO experience and resources for customer engagement: Besides metering services and connection requests. DSOs have limited contact with end customers and usually do not advertise for private customers. This generates a disconnection between the DSO's and consumers which contributes to the lack of knowledge/interest mentioned before.

Compatibility of energy system devices: Specifically in the German demo, there were energy management systems already in place. Citizens with energy technology knowledge had their own HEMS set-up already in place to increase the degree of self-sufficiency with their own PV and storage or to connect smart home applications. This reduced the benefits offered by EUniversal HEMS as they already were using a beneficial system for them. Furthermore, some devices were not compatible to be used for the EUniversal project purpose (specially devices built before 2015). Although this issue is expected to be overcome in the medium term, for EUniversal implementation, it impacted the German demo in particular.

Large number of devices, manufacturers, and interfaces: Specifically in the German demo as well, since the DSO does not have the data of the device types, the compatibility had to be checked after customers declared interest. Furthermore, as there are no standard interfaces for communication with HEMS so far, most of the devices of interested persons had to be excluded. In addition, there were difficulties in finding service providers in the field, as craft enterprises usually specialise in a few manufacturers of inverters. This meant that an individual set-up was necessary for each customer.

Resources for stakeholder engagement: Resources are crucial for the success of customer engagement in local pilot projects for energy flexibility. Adequate funding, skilled personnel, and technological infrastructure are essential to effectively implement and manage these initiatives. Having the necessary resources allows for the development of user-friendly platforms, customer education campaigns, and efficient communication channels. It also enables the handling of data and analytics, which are vital for tailored customer engagement strategies. Additionally, sufficient resources can support ongoing monitoring, evaluation, and adjustments as needed, ensuring that the energy flexibility projects meet their goals and provide a positive experience for customers.

³⁴ [Data Governance for Supporting GDPR | DEFeND | Project | Fact sheet | H2020 | CORDIS | European Commission \(europa.eu\)](#)

6.2 Recommendations from EUniversal pilots regarding consumer engagement in energy projects

After the implementation of the mitigation measures, all pilots acquired sufficient consumer engagement to carry out the respective pilots. However, a reflection on the challenges reported above was considered to be useful both for the EUniversal consortium but also for projects to come. Out of this reflection, a set of recommendations were proposed, including policy, economic and EU project aspects:

Policy

Consideration of regulatory sandboxes.

As it was already analysed in the EUniversal *D10.3. Regulatory recommendations for flexibility options and markets*, sandboxes have the capacity to speed up innovation, if these are well coordinated. This may also affect consumer engagement as matching flexibility products to suitable flexibility instruments is, indeed, crucial to ensure that customer reactions are effectively triggered in the desired direction. Economic signals have been shown to have a critical role in this regard, although customer engagement can be influenced by other factors, such as comfort and personal preference, or societal and ecological awareness. Focusing specifically on demand side customers, another crucial but underexplored issue concerns the assessment of customer engagement in contexts where more than one flexibility instrument is in place³⁵. Therefore, while further developments are being made in literature, regulators can use regulatory sandboxes to test various implementation options in practice. Regulatory sandboxes could also ease GDPR constraints.

Guidelines for GDPR management in EU projects: BRIDGE regulations WG.

Although there are projects such as such as DEFEND³⁶ already working on helping organisations to deal with GDPR issues, perhaps a more specific guide tailored to EU energy projects in which past project examples as well as step by step pathways are presented to help projects navigate through GDPR constraints in each MS would be helpful. After participating in BRIDGE as an active member, the EUnivesal consortium, and specifically pilot partners consider that this would be a good resource to be developed by the BRIDGE Regulations WG.

EU Projects

Engagement requirements in EU proposals.

Stakeholder engagement is a pre-requisite that has been included transversally in a wide range of EU funding calls. Although this approach clearly seeks an increase of participatory processes in EU projects, sometimes, projects don't allocate enough time or resources, which leaves them with limited time to design, plan and implement these approaches. In fact, many projects end up investing a huge, unexpected effort in trying to engage stakeholders. This scenario could be avoided or at least mitigated if projects that are meant to engage stakeholders would be required to allocate specific tasks or WPs to plan for and carry out stakeholder engagement related activities. These tasks or WPs should include a potential structure that empowers consortiums to carry out a preliminary analysis on how they will approach these stakeholders, including: stakeholder mapping, target groups with specific roles, definition of benefits to stakeholders, engagement plan (concrete activities) and progress evaluation indicators. These plans should increase its complexity as the project TRL develops.

³⁵ Abdelmotteleb, I., Fumagalli, E. & Gibescu, M., 2021. Assessing customer engagement in electricity distribution-level flexibility product provision: The Norwegian case. *Sustainable Energy, Grids and Networks*, Volume 29, 00564. <https://doi.org/10.1016/j.segan.2021.100564>

³⁶ [Data Governance for Supporting GDPR | DEFEND | Project | Fact sheet | H2020 | CORDIS | European Commission \(europa.eu\)](https://european-commission.europa.eu/Data-Governance-for-Supporting-GDPR-DEFEND-Project-Fact-sheet-H2020-CORDIS)

Consortium partners to have access to customer and legal advice in technology implementation.

Legal and regulatory constraints, as it has been stated earlier and in different analysis performed by EUniversal, can be a very limiting factor for EU projects to progress smoothly. A platform, network, database or access to EU regulatory legal professionals in this sense might facilitate projects' solving these types of obstacles. Again, the BRIDGE Regulations WG would be a good central point for this. However, more structured resources should be allocated to the initiative if it aims to become a central advisory point.

Simplifying engagement for customers participation

In the energy sector where everything is becoming more complex, it is important not to make things unnecessarily difficult for customers. Many customers and citizens outside the energy business don't know the difference between FSP, DSO or retailer. Nevertheless, they should be given the opportunity to easily participate in pilots to increase their readiness for new processes in the energy sector. Furthermore, not all customers that may be interested in participating in engagement activities want to have the same level of involvement. Suitability for the customers who want to be less involved should be as important as the early adopters and enthusiasts. For this to succeed simple incentives might be used (i.e., fixed amounts for participation or price limits that are provided through funding or regulatory sandboxes).

Partnerships for engagement.

EU projects often approach similar stakeholder groups which can provoke stakeholder burn out. This is less common in local pilots although when talking about energy customers, these might have been called to participate in several marketing or local energy testing initiative which makes them less interested in participating in an EU project that will potentially have low or none impact in their day to day lives in the short term. Creating EU level partnerships for engagement where national/local projects might put their stakeholder approaches in common and try to join efforts to test new innovative customer dependent technologies might be an option to avoid stakeholders from burning out but also, to get higher level of commitment from participants.

Economic

Incentives.

Economic incentives have proved to be key in some energy projects. Particularly, when the innovation/technological aspect is too high and the implementation level too low (low TRLs). As an example, from EUniversal, the Portuguese pilot coordinated by e-REDES, relied on the consumers engaged in a previous project named InterGrid H2020³⁷. These stakeholders were offered home appliances and other economic incentives to participate in EU projects led by e-REDES during a couple of years. Customers were easily engaged for InterGrid, which demonstration phase came first. However, by the time EUniversal pilots were about to be set up, these customers were not interested anymore and considered that the incentives received for participating in the first project were not enough to be engaged to participate in upcoming projects such as EUniversal. Of course, this challenge is related to the disconnection between the energy topic, and customers mistrust and dissatisfaction discussed earlier. But in any case, incentives should be an option to be discussed and managed effectively by EU projects.

Monetary evaluation of customer engagement activities.

³⁷ [Demonstration of INTElligent grid technologies for renewables INTEgration and INTERactive consumer participation | InteGrid | Project | Fact sheet | H2020 | CORDIS | European Commission \(europa.eu\)](#)

Assigning a monetary value to customer engagement activities in energy flexibility projects may offer several significant benefits, emphasizing the importance of involving customers in the development of new flexibility solutions. Incorporating a monetary perspective in customer engagement activities can help to plan for the development of new energy flexibility solutions. This approach not only strengthens the business case for such engagement but also promotes a more customer-centric and financially sustainable approach to energy projects. It can help by:

- Quantifying ROI: Shows how customer participation can lead to cost savings, revenue generation, and a strong business case.
- Cutting Costs: Highlights cost-saving opportunities by reducing peak demand and optimizing operations.
- Boosting Competitiveness: Sets projects apart in a competitive market, attracting customers and partners interested in cost-effective energy solutions.
- Mitigating Risks: Demonstrates how customer involvement can reduce operational risks and insurance costs.

This approach can lead to optimized resource allocation, identifying cost-effective methods to involve stakeholders while mitigating unnecessary expenses. Moreover, such analyses can help build stronger relationships with stakeholders, leading to smoother project implementation, reduced risks, and improved public perception. Ultimately, these proactive efforts contribute to more successful and sustainable energy flexibility projects, ensuring that the benefits of a flexible energy system are maximized while minimizing inefficiencies.

7 Social awareness guidelines and effective consumer engagement in EU energy projects

Considering the customer engagement approaches analysis carried out in the previous sections and provided that to increase flexibility in electricity consumption demand response programmes' success depends on a sufficient level of consumer participation, it is important to understand which the factors that can motivate participation. Individuals' beliefs that their participation will yield benefits (both personal and environmental), and has low costs and risks, seems to be an important factor underlying their participation, which corresponds to recent research on demand response more generally.

In this section EUniversal has explored existing good practices within smart grid energy EU projects in terms of consumer engagement approaches through the BRIDGE initiative. EUniversal has actively participated in the Consumer and Citizen engagement Working Group of the BRIDGE initiative where it has closely collaborated with other projects to exchange best approaches to consumer engagement. These learnings, combined with EUniversal's stakeholders engagement experience have been included in the following guideline for future EU projects to consider when implementing customer engagement strategies and plans.

7.1 Drivers and barriers

Drivers and motivators

Based on a systematic review of international demand response trials, programmes and surveys, a recent study³⁸ identified a wide range of motivations for residential consumers to participate in demand response. They identified the following motivations:

- **Financial motivations:** these were, together with environmental benefits, the most common motivations identified. According to this systematic review financial benefits were given the highest importance. According to one of the reviewed studies, consumers were primarily interested in benefiting from reductions to their bills by going on lower tariffs rather than receiving rewards or incentives.
- **Environmental benefits:** these were together with financial benefits the most common motivations identified.
- **Free or reduced cost of technology** (e.g., household appliances).
- **Increased control over energy use and bills:** including through access to additional information.
- **Fun or interest:** thinking participation in demand response might be fun or interesting.
- **Social motivations:** they included pride discussing participation with neighbours or being encouraged by children to be more environmentally friendly or helping to increase electricity system reliability.
- **Local focus:** if demand response has a local focus this can act as an additional motivation. This could be related to the desire of citizens to create a sense of community.
- **Challenge:** participants might also enjoy the challenge of responding to dynamic pricing and treat it like a game or project.

³⁸ Parrish B, Heptonstall P, Gross R, Sovacool BK. A systematic review of motivations, enablers and barriers for consumer engagement with residential demand response. Energy Policy 2020; 138:111221. <https://doi.org/10.1016/j.enpol.2019.111221>

Enablers and barriers

The same study identified a collection of enablers and barriers facing demand response, grouping them in three categories: familiarity and trust, perceived risk and perceived control, and complexity and effort.

Familiarity and trust

According to the study mistrust can be a barrier. Mistrust can arise before or after enrolment and is often linked either to technology or technical issues or to a lack of clarity around what demand response involves and who it benefits. The following can contribute to or be linked to mistrust:

- Concerns around privacy and autonomy connected to direct load control.
- Consumers' ideas of why energy companies pursue demand response.
- Unfamiliarity: for example, unfamiliarity with the concept of demand response can contribute to mistrust of energy company motivations. This could be related to a lack of knowledge and the necessity for education in energy related topics.

As per the research, trust may be promoted by measures that enhance transparency around demand response in general and, where relevant, direct load control.

Perceived risk and perceived control

In their overview of demand response, it was found that perceived risk may be associated with different features of time varying pricing or rebates for demand response. They found that technologies that enable responses to time varying pricing may help to address the financial risk of time varying pricing but can themselves be perceived as risky due to loss of control. Higher price levels and less predictable pricing may increase perceived risk associated with time varying pricing.

Complexity and effort

Finally, they found in their review that the level of complexity and effort associated with demand response can affect consumer engagement before and after enrolment. They indicate that this may be linked to the predictability of pricing schedules, and that the effort of responding can be reduced by enabling technologies but the evidence on neither of these factors is straightforward.

As discussed in previous sections EUniversal identified and faced some of these issues while implementing consumer engagement strategies in each pilot. Based on this experience, the above study and EUniversal's collaboration with other projects through BRIDGE³⁹, this deliverable has compiled the main drivers and barriers for citizen and consumer engagement that any EU energy project should consider in advance to implementing their engagement plans:

Drivers	Barriers
Technology drivers: <ul style="list-style-type: none"> • Changing energy landscape: decarbonization, decentralization, digitalization, increasing share of renewables and increasing supply and demand side flexibility needs • Decreasing cost and increasing technological learning of distributed energy resources • DR can avoid risks of price fluctuations and shortages and improve reliability and efficiency of power supply. • Demand response is an important flexibility tool for both consumers and grid operators. 	Technology barriers: <ul style="list-style-type: none"> • Lack of standardised technical devices as well knowledge and expertise on demand response product and services as well as associated costs of engaging consumers. • Demand response is influenced/affected by several factors such as interactions with markets, weather conditions, and other flexibility providers. • Data security, cybersecurity, complexity and (perceived) privacy issues • Accurate estimation of customer baseline consumption is tricky.

³⁹ [Exploration of citizen engagement methodologies in European R&I projects 3.0 - Publications Office of the EU \(europa.eu\)](https://european-council.europa.eu/media/en/press-communications/infographic/Pages/infographic-Exploration-of-citizen-engagement-methodologies-in-European-R&I-projects-3.0-2020-05-14.aspx)

<ul style="list-style-type: none"> • Novel energy exchange possibilities through blockchain based peer to peer trading as well as emergence of new entrants such as aggregators and virtual power plants. • The availability of advanced metering infrastructures and level playing fields for software-based solutions from aggregators/virtual power plants/ virtual energy communities • Increasing awareness among consumers/prosumers and provide apps to give insight to customers consumptions as well as high penetration of smart meters (70 %, JRC) for European electricity consumers. • Cross-domain connections between energy and: (urban) farming and food production, mobility and logistics, health and environmental design may bring additional opportunities for DR products and services. • The possibility to monitor both mobile applications/apps both ecological and monetary returns. • Abundance of decentralized flexibility with quick response capability. 	<ul style="list-style-type: none"> • The automated system to manage demand side resources may hinder comfort and require behavioural change. • Difficulties in estimating balancing power provided by a cluster of residential consumers and its deviation from expected balancing power due to uncertainty and diversity of consumers. • Establishing reliable control strategies and market frameworks considering consumer needs and expectations could be challenging. • Uncertainty in demand responsiveness, the interaction between end users, demand and appliances result in non-linear and dynamic relations with energy prices. • Mistrust can arise before or after engagement due to technical issues or lack of clarity. • The traditional demographic based consumer segmentation does not give enough insights into the needs and behaviour of different target group. • User experience associated with the level of complexity and effort associated with demand response can affect consumer engagement before and after enrolment. • Home/building/community energy management solutions are still maturing both technically and commercially. • Access to ancillary services in practice is not always practical.
<p>Socio-economic drivers:</p> <ul style="list-style-type: none"> • Increasing climate awareness and willingness to participate in energy communities/DR programs. • Possibilities to reduce energy costs and additional revenue streams. • Desires of citizens/consumers to tackle climate change related issues, to have more control/ independence on the energy system, and the sense of community. • Non-financial and pro-social impulses in consumer decision making. • Different energy communities (local, virtual, hybrid, multi-energy) drive community-based demand response programs • Financial motivations, environmental benefits, free or reduced cost of technology, fun or interest, social motivation, local focus, and challenge may motivate consumer to participate in DR programs. • Balancing and ancillary services, strategic reserves and capacity markets are also opening for consumer engagement. 	<p>Socio-economic barriers:</p> <ul style="list-style-type: none"> • Trust, acceptance, and reliability issues may hinder consumer/citizen engagement in demand response as well as peer to peer trading. • If the users' needs are not/insufficiently fulfilled by the DR solutions, a continuous flow of information will not be enough to keep them engaged in demand response. • If DR products and services are not co-created with consumers considering the values of local community and individual consumers but imposed, there could be consumer resistance to its adoption. • Lack of effective communication with enrolled customers. • Economic incentives do not reflect tangible and non-tangible costs and potential financial savings may not outweigh effort, time, convenience, and comfort. • Allocation of costs and benefits as well as co-ordination and split incentives issues of community-based DR programs and transaction costs associated with making contracts and remuneration. • Competition with aggregators and energy service companies for mostly volunteers driven community-based DR programs.

	<ul style="list-style-type: none"> • Lack of knowledge on potential revenue streams, business models as well as value stacking possibilities • In some cases, high upfront costs, and lack of relevant technical expertise hinder adoption of smart meters and advance metering infrastructures which prohibit consumer/citizen engagement. • Benefits of DR to energy communities are mostly assumptions as they are not validated in practice yet.
Institutional drivers: <ul style="list-style-type: none"> • Ambitious carbon and energy policy objectives. • Changing roles and responsibilities of consumers as prosumers and prosumagers • Availability of intermediaries such as aggregators to participate in competitive markets. • Transforming utility business models: retailing of energy to broader consumer-centric energy services • Promotion of fair, just and inclusive energy transition by EU • Inclusive and decentralized governance models of new transition that explicitly involve a network of agents and a set of institutions (the quadruple helix) <p>Citizen engagement as tool to solve power imbalances in participation processes</p>	Institutional barriers: <ul style="list-style-type: none"> • Centralized design and regulation of present energy system <p>Need of intermediaries such as aggregators to participate in competitive markets.</p>

7.2 A proposal for designing a social awareness and stakeholder engagement strategy

Within the BRIDGE initiative several plans, guides and methodologies have been developed in order to set the main steps for an awareness raising and citizen engagement processes. However, no solution fits all. This section drafts a high-level methodology, based on best use cases from BRIDGE and other EU projects and initiatives that could be applied to any energy project, specifically in demand response systems, summarising the main steps to be taken in order to plan for a successful customer engagement approach.

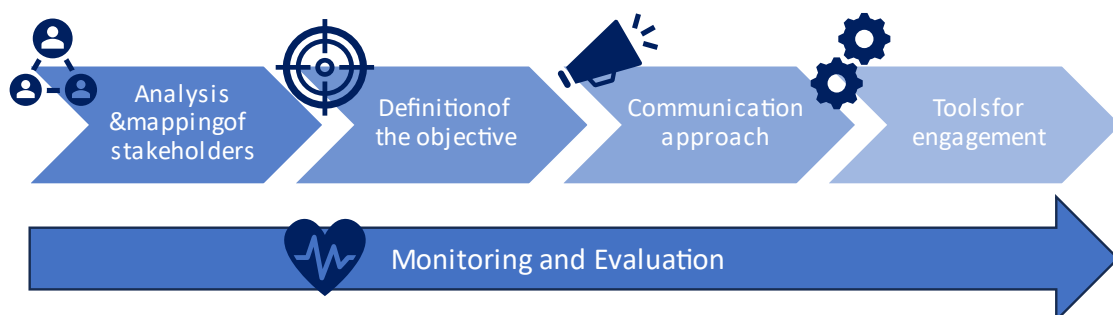


Figure 6. Social awareness and stakeholder engagement planning



7.2.1 Identification and mapping of stakeholders

Stakeholder identification and mapping is a crucial step to understand and address the various stakeholders that will be involved during the project lifetime and beyond. Through this process, the project aims to identify and analyse the key actors who may impact or be impacted by the project: by understanding their roles, interests, and needs, we can establish effective communication, foster strong collaborations, and make informed decisions that promote the success and sustainability of the project.

Specifically for demand response projects we will need to:

- **Pre identify:** Define the type of consumers or prosumers to be selected, including all the characteristics needed for project success. And who can we collaborate with to effectively reach these stakeholders? (i.e., Local community groups, mayors or related public bodies, energy distributors etc.).
- **Characterize:** Define potential stakeholders' interest and motivations to participate (ask). In addition, ensure compatibility of the grid/systems to be tested (any other technological characteristic that may limit the stakeholders our project can count on).
- **Map:** To develop the map, the following questions have been posed:
 - Have all stakeholders related to the project been identified?
 - Who are the stakeholders who have the most influence on the project?
 - Who are the stakeholders that will be more affected by the project?
 - Which are the motivations and interests of the stakeholders concerning the project?



7.2.2 Definition of the objective

Participation of key stakeholders in energy projects is essential to ensure the right level of awareness on the "importance of flexibility markets in demand-response energy systems as we approach decarbonisation and clean energy scenarios through energy transition approaches". The objective therefore is to inform, consult, involve, and collaborate with key stakeholders within the project pilots included in the project as well as external ones to ensure that project results meet and respond to real needs and challenges.

Defining a specific objective for the project engagement approach will help create purpose. There are two broad categories of purpose: strategy and operations. That is, stakeholder engagement takes place to develop or improve strategy or to help identify and address operational issues. Building trust-based relationships is inherent to both strategic and operational stakeholder engagement. The purpose may be associated with ongoing activities, such as aiming to ensure that the organisation has a good understanding of stakeholder views or to foster positive stakeholder relationships, or it may be associated with a specific project or need, such as to inform a materiality-determination process. Those initiating the stakeholder engagement should involve stakeholders in defining the purpose of the engagement. During the engagement, the purpose should be reviewed and adjusted based on the input received from stakeholders.

There might be many objectives, including but not limited to:

1. Identifying stakeholder priorities to better tailor project activities and the communication channels with them.
2. Identifying potential constraints and conflicts that could affect project effectiveness.
3. Integrating knowledge from stakeholders to offer better quality research results.
4. Providing feedback and monitoring mechanism to ensure the project is achieving its intended results.

5. Empowering end-users.
6. Raising awareness.

The SCOPE of the engagement shall be defined by determining:

1. The subject matter the engagement will address.
2. The parts of the organisation (e.g., regions, divisions, etc.) and associated activities, products and services the engagement will address.
3. The time frame the engagement will address.



7.2.3 Communication approach

Communication is key in order to raise interest among stakeholders and build a long-lasting relationship.

A clear communication strategy must be developed since the beginning of the engagement and raising awareness process: local authorities and/or private entities implementing or managing energy regulations must define the most adequate ways to communicate with citizens.

An important issue to consider in terms of communication with local communities is the figure of a contact person. This person needs to build a relationship based on trust with the members of the community by giving them accurate information and being available to solve their doubts and concerns. This person can be a worker of the local administrations, or the companies implementing the project or can be specifically hired for this purpose. It is advisable, in the case of very close communities, to select someone from the community who can play this role after receiving some training.

The communication with local communities has to start at least one month before any activity or methodology is implemented. Reminders will be sent to all the participant the week before any activity. Depending on the number of participants, age and digital literacy, the reminder will be sent by email or phone calls will be made.

The communication strategy will be built up on the stakeholder analysis and mapping made in the previous steps of this process: understanding of the stakeholders is needed in order to define the messages, the messengers and the channels.

1. **Elaborate the message:** the message should offer information about the project, but it should be clear enough, in plain language, so that all citizens can understand it. Focus on the impact that the project will have in the community rather than in technical aspects, and highlighted the aspects that are priorities for the community.
2. **Choose the messenger:** the correct messenger can be as important as the message itself. It is always a good option to count on the participation or informal leader or “community champions”: people who are especially active and respective within the community to transmit the message to the rest of the individuals, although everyone should have the right to participate directly through different means.
3. **Choose the communication channel:** the most effective channel will be the one that is already used by the stakeholders, so they do not have to do any extra effort to get in touch with the project. It is important to ask stakeholders which channel is more convenient for them. The communication can be done by using posters, calling by phone, sending emails or even posting in social media channels.
4. **Contacting local media** is also very recommendable, as it will help to raise awareness on the initiative and will give recognition to the local communities’ participation.
5. **Set a calendar with the project milestones that should be communicated:** communication is a live process, and it should be constant in order to build a relation based

on trust. Therefore, designing a calendar with the main milestones of the project will help identifying content to communicate to the community.

6. **Maintain the relationship with stakeholders after the engagement effort:** it is important to create continuous occasions for bi-directional communication: information about the project, questionnaires, etc. But always avoiding spamming the citizens: the frequency of communications must be decided in accordance with their availability and interest.



7.2.4 Tools for engagement

There are many different methods and tools to engage citizens and raise awareness. The following methods are just the most common ones, and the ones that were found to be more useful for energy projects. These tools will need to be adapted to the needs, knowledge, and willingness of stakeholders to participate in the activities proposed and used as appropriate to effectively deliver on project results.

- **Workshops:** it is a discussion or practical working session about a specific topic in which attendees share information, knowledge, and experiences. Workshops are one of the most used methodologies for citizen engagement and raising awareness as it enables direct contact and sharing among stakeholders. A workshop has to be tailored made for each occasion, taking into account both the needed participants and the topic. It is always better to start with
- **Focus groups:** this is a technique belonging to marketing but can be useful to test the citizen acceptance of specific solutions or measures within the project. A small group of people (less than 10) gather in order to discuss about a certain solution or product. The discussion is focused on the preferences of the attendees towards a certain product or service.
- **Interviews:** It can refer to groups that meet with a periodic frequency to discuss about a certain topic or to individual interviews to discuss or investigate deeper in a certain topic. Interviews can take the format of Forums, online meetings, recordings etc.
- **Online engagement tools:** Organising knowledge exchange or discussion webinars or working sessions using online engagement tools can be very useful to collect different social groups or people's perspectives at once. Online tools can go from collaborative boards (Miro, Microsoft Whiteboard etc.) to collaborating directly in working documents such as Excel Files, Word Documents or Power Point Boards. Collaborative Boards allow to address many different objectives such as brainstorming, project management, SWOT analysis etc.
- **Web-based engagement:** the use of social media (Facebook, twitter) can also be useful for raising awareness, depending on the profile of the community.



7.2.5 Monitoring and evaluation

Continuous monitoring and evaluation enable participants of the engagement process to assess until what extent they are achieving the objectives of the activity and change or correct any aspects that is not working or is not giving the expected results. Monitoring and evaluation is also a way to encourage further engagement and participation, highlighting the success of the project and offering reasons to continue.

The monitoring and evaluation process has to assess:

- The engagement and raising awareness process itself.
- The results of the process.
- The impact of the process.

The most useful way to make sure that monitoring and evaluation is being implemented in a useful way is to establish specific engagement indicators. Some examples of engagement indicators are as follows, according to the work performed by the BRIDGE Indicators Subgroup, and published on the 2023 BRIDGE Consumer and Citizen Engagement Working Group report that EUniversal contributed to, based on the following parameters:

- Valid and meaningful (reflect the phenomenon and appropriate to users' needs).
- Sensitive and specific (varying according to changes in the phenomenon and measuring the phenomenon exclusively).
- Grounded in research.
- Methodologically sound.
- Easily interpretable
- Consistent over time
- Timely (minimal time lag between collection and further use)

The stages of engagement for determining the indicators of engagements were identified as:

1. **Identification:** of the right challenge/problem at hand, and of the stakeholders involved.
2. **Preparation:** establishing a team, developing a vision, raising awareness, including onboarding and recruitment.
3. **Design / Development:** of products, services, experiences, interventions, solutions, etc. Includes (regular) evaluation of the designs.
4. **Implementation:** arrange resources, a business plan, marketing plan and sales plan. Create a customer base. Implement the design in practice. Evaluate the product/ service/ experience/ intervention/ solution.
5. **Exploitation:** concerns tasks such as operation & maintenance, keeping engagement high, scaling up or expansion, replication, and commercialisation. It also includes regular evaluations.

The specific list of indicators for each stage of engagement can be found in the Annex I of the BRIDGE 2023 Consumer and Citizen Engagement report⁴⁰. These indicators should be selected and adapted to each project' needs.

The local authorities or companies promoting the engagement process can implement different methods for the monitoring and evaluation too, but always taking into account that the engaged community has to co-lead this process to make sure that both sides achieve their expected results. Surveys, interviews, or other kind of interactions could be used to monitor the engagement process.

⁴⁰ [Exploration of citizen engagement methodologies in European R&I projects 3.0](https://european-citizen-engagement.europa.eu/publications/Exploration%20of%20citizen%20engagement%20methodologies%20in%20European%20R&I%20projects%203.0) - Publications Office of the EU ([europa.eu](https://european-citizen-engagement.europa.eu))

8 Conclusions

As stated throughout the document and based on existing research, engaging consumers in energy flexibility projects is crucial for several reasons. Firstly, consumers play a pivotal role in the transition to a more sustainable and resilient energy system. Their active participation in demand response, load shifting, and distributed energy resources can significantly enhance grid stability and reduce peak demand. Secondly, involving consumers fosters a sense of ownership and empowerment, making them more likely to adopt energy-efficient practices and technologies. This, in turn, can lead to reduced energy costs and a lower environmental impact. Finally, consumer engagement provides valuable feedback and insights for policymakers and industry stakeholders, ensuring that energy flexibility solutions are tailored to meet real-world needs and preferences.

However, engaging consumers for energy flexibility projects in the absence of well-defined regulations and policies is a complex endeavour. As experienced by EUniversal, the uncertainty, risks, and lack of economic incentives, combined with coordination challenges, data privacy concerns, and limited awareness, make it a challenging task. Clear and supportive regulatory frameworks are essential to provide the necessary guidance, incentives, and safeguards that can encourage consumers to actively participate in energy flexibility initiatives and contribute to a more sustainable and resilient energy system. Another interesting reflection along these lines that supports the work conducted by *D10.3 Regulatory recommendations for flexibility options and markets*, is that regulatory sandboxes could bring innovative use cases and inspire new regulation, which is something to be further analysed and considered.

The learnings from the EUniversal customer awareness raising and engagement approach has shown that, on one hand, these processes require human and economic resources that should be thoroughly considered, planned, and budgeted at project design stages. This would help reduce potential engagement issues and challenges related to unexpected operational, technological and policy related aspects. On the other hand, counting on well structured and planned resources may also help mitigate issues and challenges related to external impacts such as the COVID-19 pandemic or the energy crisis in this case. Therefore, it is important that projects already plan for their stakeholder engagement strategy at proposal level by pre-identifying potential stakeholders, defining clear objectives, establishing communication channels, and describing the monitoring and evaluation process to be followed.

Therefore, engaging customers in energy flexibility pilots within the current policy and economic context is not without its challenges. Unclear regulations, financial barriers, and the need for technological investments can discourage customer participation. However, these pilots also present an opportunity to address these challenges head-on and learn from various projects. By doing so, we can develop more informed policies and economic models that incentivise and facilitate customer involvement in energy flexibility. As we accumulate knowledge and experiences from these projects, the potential for increased customer engagement in this critical energy topic becomes increasingly promising, ultimately contributing to a more sustainable and resilient energy system.

Annex I. Engagement resources used by EUniversal pilots

1. EUNIVERSAL PROJECT PRESENTATION FOR LOCAL STAKEHOLDERS (PORTUGUESE)



1



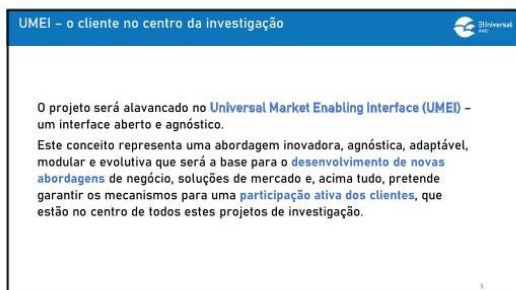
2



3



4



5



6

Flexibilidade – uma gestão conjunta, benefícios para todos

A flexibilidade dos recursos distribuídos na rede elétrica consiste na utilização do potencial de armazenamento/produção ou deslocação de períodos de consumo de um cliente em sintonia com a empresa distribuidora de energia, no sentido de reduzir ou evitar constrangimentos na rede elétrica.

Esta disponibilidade em alguns períodos do dia por parte do consumidor/produzidor terá, no futuro, um valor de compensação monetária, com enquadramento a definir pelo regulador (Entidade Reguladora do Setor Energético).

A flexibilidade na rede de distribuição de energia elétrica foi já identificada como um **fator chave em sistemas de energia sustentáveis**, onde os clientes são efetivamente os principais agentes - uma das prioridades da União Europeia.

7

Mercado de flexibilidade – otimizar custos, maximizar benefícios

A Comissão Europeia tem vindo a promover o surgimento de novos agentes no setor elétrico, nomeadamente plataformas de mercado e agregadores.

O objetivo é que a gestão da flexibilidade dos clientes e respetiva remuneração seja efetuada em mercado concorrencial, otimizando o custo total e maximizando o benefício ao consumidor/produzidor.

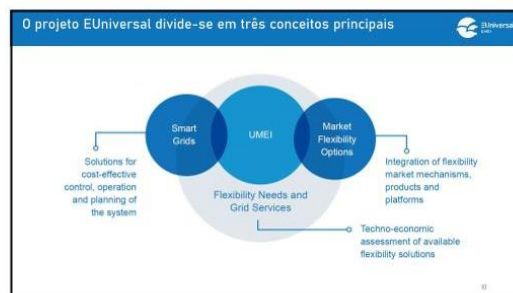
Esta é a abordagem específica que está na base do projeto EUniversal, que se foca no mercado e nos clientes e que aborda a mudança de paradigma na operação da rede de forma a superar efetivamente os desafios colocados pela transição energética de uma forma económica e inclusiva.

O projeto EUniversal irá demonstrar o funcionamento da gestão de flexibilidade em regime de mercado, potenciando que, a médio prazo, sejam apresentadas, pelo Regulador, soluções de remuneração que permitam aos clientes beneficiarem financeiramente com a disponibilidade para colaborar naquele regime.

8



9



10

Identificação dos serviços de recurso a flexibilidade por parte do distribuidor

Gestão de congestionamentos	• Preditiva (day-ahead)
Controlo da tensão	• Preditiva (day-ahead)
Planeamento operacional de manutenção programada	• Controlo da tensão • Gestão do congestionamentos
Planeamento a longo prazo	• Deferimento de investimento para necessidades sazonais
Intervenção em eventos de extrema gravidade	• Funcionamento em ilha • Controlo de carga em situação de emergência • Capacidade de geração em Backup

11

Foco nas novas soluções de mercado que possibilitem o uso da flexibilidade dos clientes pelo distribuidor, com previsão da respetiva retribuição financeira

- Identificação dos **mecanismos de mercado** possíveis
- Foco na ativação de flexibilidade via **plataformas de mercado**
- Desenho de uma metodologia para **tarifas dinâmicas na rede de distribuição**
- Análise do impacto da possibilidade de serviços **peer-to-peer numa perspetiva de mercado**
- Análise global numa perspetiva **multi-stakeholder**

12

Novas Ferramentas ao serviço do distribuidor

Serão desenvolvidas e integradas ferramentas para uso do distribuidor (E-REDES) para uso ótimo do potencial de flexibilidade oferecido pelos clientes.

- Aumento da observabilidade da rede**
 - Estimador de Estados para Baixa Tensão (data-driven)
 - Ferramenta para mapeamento de fases na baixa tensão
 - Transito de Potências Ótimo para Média Tensão (OPT)
- Aplicações preditivas**
 - Previsão de necessidade de flexibilidade na Média Tensão
 - Ferramentas de previsão de carga e consumo a médio prazo
- Controlo coordenado entre Baixa e Média Tensão**
 - Segmentação de redes de Média e Baixa Tensão
 - Controlo de Tensão (Data-driven - DdVC)
 - Ferramenta de otimização de reconfiguração de redes (NRO)
- Aumento da resiliência da rede, aumentando a capacidade de resposta a eventos imprevistos**
 - Ferramenta de apoio à decisão para controlo corretivo da rede
 - Operação dinâmica de rede em modo isolado

13

Euniversal é coordenado pela E-REDES, inclui 19 parceiros e terminará em julho de 2023

Distribuidor E-REDES, Energa, E.ON

Plataforma mercado /agregador N-DES, centrica

IGD E.ON Energy Research Center, E.ON Energy Research Center, E.ON Energy Research Center

Associação E-DSO, E-DSO

Fornecedor E.ON Energy Research Center, E.ON Energy Research Center

Consultoria E.ON Energy Research Center, E.ON Energy Research Center

14

O projeto tem três demonstradores na Europa

1 Demo Projects

Germany, Poland, Portugal

15

São 4 os concelhos previstos para a demonstração em Portugal

Caldeas da Rainha Clientes BT e MT
Valverde Consumidores BT e MT + Produtores MT

Mafra Consumidores + Produtores MT
Alcochete Clientes BT e MT

A demonstração em cada uma destas zonas depende de um número mínimo de clientes envolvidos ativamente no projeto.

16

Ativação de flexibilidade: como?

O cliente autorizará a E-REDES e parceiros a ter acesso aos seus dados de consumo/produção para efeitos do projeto.

A flexibilidade (consumo/produção) será agregada na plataforma da Centrica, de acordo com a disponibilidade de cada cliente. O histórico de consumo/produção de cada cliente, permitirá efetuar a melhor previsão possível do período em que este possa estar disponível. O cliente deverá indicar o valor (e sinal) de flexibilidade que pretende disponibilizar em cada período e o respetivo intervalo de duração.

Esta flexibilidade será transacionada no mercado, sendo emparelhada com as necessidades do operador de rede.

A demonstração incluirá a posterior ativação de flexibilidade (consumo ou produção). A comunicação da flexibilidade a ativar será feita por mensagem/contacto, no dia anterior.

O projeto não requer instalação de equipamentos. A validação da flexibilidade é feita através do diagrama de cargas (através do contador atualmente instalado).

17

Ativação de flexibilidade: quando?

A ativação dos recursos flexíveis será efetuada no período de testes, previsto ser realizado no ano de 2022, a partir do segundo trimestre.

O detalhe dos testes a realizar será enviado aos clientes assim que esteja definido. Incluirá o período (manhã/tarde) e a duração prevista.

A decisão de participar em cada momento será sempre do cliente.

18

Benefícios para os clientes

- Conhecimento da forma de funcionamento e preparação para um futuro mercado de flexibilidade que lhes possibilite retorno financeiro
- Relatório com os ganhos potenciais estimados da participação do cliente neste tipo de mercado
- Certificado de participação

19

Disseminação

A participação dos consumidores/produtores será amplamente divulgada nos canais de comunicação do projeto (website, Twitter, LinkedIn, Instagram), bem como nos canais corporativos da E-REDES.

Essa divulgação será também fomentada junto das autarquias envolvidas – Caldas da Rainha, Mafra, Alcochete e Évora, pelo que a colaboração dos participantes é fundamental para a criação de conteúdos de disseminação (texto, imagem, vídeo, etc.).

Serão ainda efetuadas referências à respetiva participação nas notas de imprensa disseminadas localmente pelo projeto, promovendo assim a notoriedade e posicionamento dos seus participantes no âmbito do tema da transição energética.

20



CONTACTOS
Gestor do cliente:
Gestor do projeto: carlospedro.marques@e-redes.pt

universal.eu
[universal_umei](https://twitter.com/universal_umei)
[universalproject-h2020](https://www.linkedin.com/company/universalproject-h2020)
[universal_umei](https://www.instagram.com/universal_umei)

Universal UMEI has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101019719.

21

2. MV CONSUMERS AND PRODUCERS QUESTIONNAIRES (PORTUGUESE)



EUniversal - Clientes MT

Questionário - Clientes MT (PTC)

* Required

1. CPE da instalação

Enter your answer

2. Potência Contratada (kVA) *

Enter your answer

3. Responsável da Instalação (Nome) *

Enter your answer

4. Responsável da Instalação (E-mail) *

Enter your answer

5. Responsável da Instalação (Telemóvel) *

Enter your answer

6. Potência Instalada (kVA)

Enter your answer

7. Período(s) de Indisponibilidade para testes

Indicação dos períodos do ano em que a instalação se encontra indisponível para testes (Manutenção Programada, Processo Crítico, etc)

Enter your answer

8. Período do dia preferencial para realização de testes de activação de flexibilidade

Enter your answer

9. Ativos Flexíveis

- ☐ Unidades de Armazenamento de energia (Baterias)
- ☐ Frigoríficos e Arcas Congeladoras
- ☐ Sistemas de AVAC
- ☐ Carga Industrial Variada (com consumo horário flexível)
- ☐ Soluções de Autoconsumo
- ☐ Produção Distribuída - PV
- ☐ Produção Distribuída - Cogeração
- ☐ Carregamento de Veículos Elétricos
- ☐ Sistemas de Iluminação
- ☐ Sistemas de Rega

☐ Sistemas de Bombagem

☐ Other

Enter your answer

10. Potência dos ativos flexíveis (kW)

Unidades de Armazenamento de energia (Baterias) - Se Aplicável

Enter your answer

16. Potência dos ativos flexíveis (kW)

Carga Industrial Variada (com consumo horário flexível) - Se Aplicável

Enter your answer

11. Marca e Modelo

Unidades de Armazenamento de energia (Baterias) - Se Aplicável

Enter your answer

17. Marca e Modelo

Carga Industrial Variada (com consumo horário flexível) - Se Aplicável

Enter your answer

12. Potência dos ativos flexíveis (kW)

Frigoríficos e Arcas Congeladoras - Se Aplicável

Enter your answer

18. Potência dos ativos flexíveis (kW)

Produção Distribuída - PV - Se Aplicável

Enter your answer

13. Marca e Modelo

Frigoríficos e Arcas Congeladoras - Se Aplicável

Enter your answer

19. Marca e Modelo

Produção Distribuída - PV - Se Aplicável

Enter your answer

14. Potência dos ativos flexíveis (kW)

Sistemas de AVAC - Se Aplicável

Enter your answer

20. Potência dos ativos flexíveis (kW)

Produção Distribuída - Cogeração - Se Aplicável

Enter your answer

15. Marca e Modelo

Sistemas de AVAC - Se Aplicável

21. Marca e Modelo

Produção Distribuída - Cogeração - Se Aplicável

Enter your answer

22. Potência dos ativos flexíveis (kW)

Carregamento de Veículos Elétricos - Se Aplicável

Enter your answer

23. Marca e Modelo

Carregamento de Veículos Elétricos - Se Aplicável

Enter your answer

24. Potência dos ativos flexíveis (kW)

Sistemas de Iluminação - Se Aplicável

Enter your answer

25. Marca e Modelo

Sistemas de Iluminação - Se Aplicável

Enter your answer

26. Potência dos ativos flexíveis (kW)

Sistemas de Bombagem - Se Aplicável

Enter your answer

27. Marca e Modelo

Sistemas de Bombagem - Se Aplicável

Enter your answer

28. Potência dos ativos flexíveis (kW)

Sistemas de Rega - Se Aplicável

Enter your answer

29. Marca e Modelo

Sistemas de Rega - Se Aplicável

Enter your answer

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3. POLISH PILOT CUSTOMER PARTICIPATION CONTRACT TEMPLATES



Projekt finansowany ze środków programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji "Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 864334

1. Formularz przystąpienia do projektu EUniversal

Tytuł projektu badawczego:

EUniversal – Demonstracja obserwowalności sieci i przyszłych rozwiązań wspierających zarządzanie usługami elastyczności sieci z wykorzystaniem interfejsu UMEI.

Projekt EUniversal ma na celu opracowanie i demonstrację zintegrowanych rozwiązań elastyczności sieci, które pozwolą systemowi dystrybucyjnemu funkcjonować w bezpieczny i stabilny sposób, ze szczególnym uwzględnieniem obszarów z dużą kumulacją mikroinstalacji, zarówno wśród odbiorców komunalnych jak i przemysłowych.

Prosimy o zgodę na przetwarzanie danych osobowych w celach badawczych związanych z projektem EUniversal. Dane osobowe będą zbierane przez konsorcjum projektowe EUniversal.

Podpisując niniejszą deklarację, niniejszym potwierdzam, że:

- ☐ Uczestniczę dobrowolnie w tym projekcie i nie oczekuję żadnych korzyści materialnych ani płatności za mój udział. Rozumiem, że nie muszę brać udziału w projekcie i mogę w każdej chwili przerwać swój udział bez podawania powodu.
- ☐ Rozumiem, że udział w projekcie obejmuje udostępnienie danych o zużyciu energii elektrycznej z liczników energii elektrycznej.
- ☐ Rozumiem, że udział w projekcie obejmuje zgodę na instalację urządzeń do komunikacji z inwerterem źródła PV
- ☐ Rozumiem, że udział w projekcie obejmuje zgodę na czasowe ograniczanie produkcji z instalacji PV lub wymuszenie zaprzestania generacji. Zgoda ta dotyczy maksymalnie 5 godzin czasu trwania ograniczenia lub wymuszenia zaprzestania generacji przez czas trwania projektu.

W związku z powyższymi punktami:

- ☐ Potwierdzam, że otrzymałem wszystkie wymagane informacje dotyczące przetwarzania danych osobowych.
- ☐ Rozumiem, że wszelkie podane przeze mnie informacje umożliwiające identyfikację zostaną usunięte.
- ☐ Przeczytałem i zrozumiałem arkusz informacyjny i byłem w stanie zadać pytania dotyczące projektu, a na moje pytania udzielono mi satysfakcjonującej odpowiedzi.
- ☐ Rozumiem, że w przypadku jakichkolwiek pytań, które mogę mieć w przyszłości, mogę skontaktować się z odpowiednim badaczem/badaczami.

Podpisując ten dokument, mam świadomość że udział w projekcie wiąże się z:

- ☐ Przetwarzaniem danych osobowych obejmujących zużycie energii elektrycznej.
- ☐ Publikacją wyników badań (bez informacji umożliwiających identyfikację osoby przez osoby niepowiązane z realizacją projektu). Dane będą publikowane na: stronach internetowych, planach szkoleniowych, wytycznych, repozytoriach internetowych, warsztatach, konferencjach, business case, broszurach, e-newsletterach, wydarzeniach publicznych i czasopiśmie naukowych.
- ☐ Ponownie wykorzystanie danych w naszych badaniach po zakończeniu badań w projekcie EUniversal tak długo, jak to konieczne, po uzyskaniu Twojej zgody.
- ☐ Ujawnienie danych osobowych partnerom z konsorcjum projektu EUniversal. Partnerzy naukowcy mają ten sam cel i podlegają tym samym zasadom poufności. Jeśli ujawnimy Twoje dane poza konsorcjum lub podmiotom tego badania, otrzymasz powiadomienie.



Projekt finansowany ze środków programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji "Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 864334

- ☐ Zachowanie moich danych kontaktowych i możliwość skontaktowania się ze mną w sprawie przyszłych działań badawczych.

Dane będą przechowywane w bezpieczny sposób, a my wykorzystamy je wyłącznie w celu realizacji projektu badawczo-rozwojowego EUniversal.

Zawsze masz prawo odwołać swoją zgodę. Jeśli chcesz odwołać swoją zgodę później, możesz wysłać wiadomość e-mail na adres: innowacieop@energa.pl

Twoje dane

- Wyrażam zgodę/nie wyrażam zgody* na udział w projekcie, co wiąże się z przetwarzaniem przez konsorcjum projektowe EUniversal moich danych zgodnie z powyższym celem i informacją.

dla klienta indywidualnego / osoby prowadzącej jednoosobową działalność gospodarczą*

(imię i nazwisko).....
(ulica).....(nr domu/ mieszkania).....
(kod pocztowy).....(miejscowość).....
(numer kontaktowy tel.)**.....
(adres e-mail)**.....

- Wyrażam zgodę / nie wyrażam zgody * na nagrywanie audio/video, kwestionariusze, ankiety, które zostaną wypełnione przeze mnie lub rachmistrza.
- Wyrażam zgodę / nie wyrażam zgody * cytowanie w wynikach badań informacji pozyskanych z mojego gospodarstwa domowego w ramach projektu EUniversal.
- Wyrażam zgodę / nie wyrażam zgody * na cytowanie moich opinii, spostrzeżeń i sugestii dot. udziału w projekcie EUniversal.

*niewłaściwe skreślić

.....
Miejsce i data Podpis

**pole nie obowiązkowe

2. Załącznik informacyjny

Obowiązek informacyjny dla osoby przystępującej do udziału w projekcie

Zgodnie z art. 13 ust. 1 i ust. 2 Rozporządzenia Parlamentu Europejskiego i Rady (UE) 2016/679 z dnia 27 kwietnia 2016 r. w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i w sprawie swobodnego przepływu takich danych oraz uchylenia dyrektywy 95/46/WE (zwane dalej RODO) uprzejmie informujemy, że:

- 1) Administratorem Twoich danych osobowych (ADO) jest każdy z uczestników konsorcjum projektowego EUniversal na zasadzie współadministracji:
 - a) Lider projektu – E-REDES - Distribuição de Eletricidade, S.A., Rua Camilo Castelo Branco 43, Lisboa 1050 044, Portugal,
 - b) Partner zagraniczny – Zabala Innovation Consulting, S.A., Paseo Santxiki 3 Bis, Mutilva Alta Navarra 31192, Spain,
 - c) Lider polskiego obszaru demonstracyjnego - ENERGA-OPERATOR SA (EOP), ul. Marynarki Polskiej 130, 80-557 Gdańsk,
 - d) Partner krajowy - Instytut Energetyki Instytut Badawczy Oddział Gdańsk (IEN), ul. M. Reja 27, 80-870 Gdańsk
- 2) Z inspektorem ochrony danych możesz się skontaktować pod adresem e-mail
 - a) dpo@e-redes.pt
 - b) faristegui@zabala.es
 - c) iod@energa-operator.pl
 - d) odo@ien.com.pl
- 3) Dane osób są przetwarzane w celu realizacji projektu EUniversal w tym głównie:
 - a) opracowania rozwiązań zapewniających prawidłowe parametry pracy sieci elektroenergetycznej w warunkach znacznego wzrostu poziomu generacji rozproszonej,
 - b) publikacji wyników zawierających dane opisowe o charakterystyce miejsca zamieszkania, zużyciu energii w gospodarstwie domowym, informacje motywacyjne i opinie na temat zużycia energii,
 - c) publikacji wyników badań na stronach internetowych, planach szkoleniowych, wytycznych, repozytoriach internetowych, warsztatach, konferencjach, business case, broszurach, e-newsletterach, wydarzeniach publicznych i czasopiśmie naukowych.
- 4) Dane osób są przetwarzane na podstawie: zgody na udział w projekcie (art. 6 ust. 1 lit. a rozp. UE 2016/679) a także w danym przypadku w realizacji uzasadnionych interesów ADO, tj. w szczególności ustalenie, dochodzenie i obrona roszczeń wynikających z przepisów prawa, prowadzenie czynności archiwizacji dokumentów oraz raportowania (art. 6 ust. 1 lit. f rozp. UE 2016/679).

Zgoda może być w każdym momencie wycofana poprzez kontakt z adresem e-mail: innowacjeop@energa.pl lub z jakimkolwiek inspektorem ochrony danych wskazanych z pkt 2.

W projekcie EUniversal będziemy przetwarzać na podstawie zgody tylko i wyłącznie dane osobowe niezbędne do realizacji projektu, jak np. imię i nazwisko, adres zamieszkania, dane pomiarowe. Ponadto, będziemy przetwarzać dane dodatkowe jak numer telefonu, e-mail, wizerunek i wypowiedzi o ile wyrażysz na nie dalsze zgody.

- 5) Podanie danych jest dobrowolne, ale niezbędne w celu udziału w projekcie EUniversal.
- 6) Odbiorcą danych osobowych mogą zostać podmioty świadczące usługi pomocnicze dla projektu EUniversal, a w szczególności:
 - a) podmioty dostarczające korespondencję, firmy kurierskie,
 - b) podmioty wykonujące usługi niszczenia dokumentacji,
 - c) podmioty świadczące usługi doradztwa prawnego oraz w zakresie spraw sądowych,
 - d) podmioty świadczące usługi informatyczne w zakresie systemów przetwarzających Pani/Pan dane osobowe.

ADO może powierzyć Twoje dane dostawcom usług lub produktów działającym na jego rzecz na podstawie umowy powierzenia przetwarzania danych osobowych, wymagając od takich podmiotów wykonywania czynności na udokumentowane polecenia ADO, pod warunkiem zachowania poufności i zapewnienia ochrony prywatności oraz bezpieczeństwa Twoich danych osobowych.

- 7) ADO może przekazać dane organom i podmiotom publicznym uprawnionym do uzyskania danych osobowych na podstawie obowiązujących przepisów prawa, np. sądy, organy ścigania lub instytucje państwowe.
- 8) Dane osobowe osób będą przechowywane przez okres trwania projektu oraz po jego zakończeniu przez okres 5 lat, do celów archiwizacyjnych przez okres określony przepisami prawa lub wymogami projektu w tym zakresie, po tym czasie Twoje dane zostaną usunięte.
- 9) Informujemy, że w uzasadnionych przypadkach masz prawo do:
 - a) dostępu do swoich danych osobowych i żądania ich kopii,
 - b) do sprostowania swoich danych osobowych,
 - c) żądania ograniczenia przetwarzania swoich danych, w granicach prawa
 - d) przenoszenia danych,
 - e) usunięcia danych, jeżeli nie jest realizowany żaden inny cel przetwarzania, np. zakończono przechowywanie dokumentacji w okresie wynikającym z przepisów prawa.

W stosunku do danych przetwarzanych na podstawie prawnie uzasadnionych interesów realizowanych przez administratora przysługuje Ci prawo złożenia sprzeciwu wobec przetwarzania danych osobowych.

Z uprawnień możesz skorzystać kontaktując się pisemnie lub mailowo z ADO (pkt 1) lub z IOD (pkt 2).

Masz prawo w dowolnym momencie wycofać swoją zgodę na przetwarzanie danych osobowych. Wycofanie zgody nie wpływa na zgodność z prawem przetwarzania Twoimi danymi, którego dokonano przed wycofaniem zgody.

- 10) Stosownie do uzgodnień poczynionych przez współadministratorów, każdy z nich odpowiada za prawidłowe zebranie i dalsze przetwarzanie zebranych przez siebie danych albo danych udostępnionych przez innego współadministratora w ramach projektu EUniversal w zakresie własnej odpowiedzialności. Przysługujące Pani/Panu prawa w związku z przetwarzaniem danych może Pani/Pan wykonywać w stosunku do każdego ADO.
- 11) Informujemy o prawie wniesienia skargi do prezesa Urzędu Ochrony Danych Osobowych, gdy uzna Pani/Pan, iż przetwarzanie danych osobowych jest niezgodne z prawem. Skargę można złożyć do Urzędu Ochrony Danych Osobowych, ul. Stawki 2, 00-193 Warszawa.

W celu uzyskania dalszych wyjaśnień lub złożenia reklamacji zachęcamy do kontaktu. Dołożymy wszelkich starań, aby rozpatrzyć Twoją reklamację i udzielić wyczerpującej odpowiedzi.

Zapoznałem/am się
(imię i nazwisko)

Miejsce i data.....

Podpis.....

4. INFORMATIVE MEETING WITH RESIDENTS OF MLAWA. MEETING AGENDA and REGISTRATION INFORMATION



/

Szanowni Państwo,

ENERGA-OPERATOR SA

Zaprasza na spotkanie z partnerami międzynarodowych projektów badawczo-rozwojowych

EUniversal i OneNet

w dniu 21 marca 2022 r. godz. 17.00

w miejskim Domu Kultury w Mławie, ul. Stary Rynek 13,

Agenda spotkania:

- 16.30 -17.00 - RECEPCJA - przybycie zaproszonych gości
- 17.10 – przywitanie zgromadzonych gości oraz mieszkańców
- 17.15 – oddanie głosu Burmistrzowi Miasta Mława – P. Sławomirowi Kowalewskiemu
- 17.20 – przemówienie P. Wiesława Jasińskiego V-ce Prezesa ENERGA-OPERATOR SA
- 17.25 – przemówienie P. Tomasza Lesiewicza – Prezes ENSPRION Sp. z o.o.
- 17.30 – przemówienie P. Michała Magdziarza – Dyrektora Generalnego Oddziału ENERGA-OPERATOR SA w Płocku
- 17.35 – przemówienie
- 17.40-17.55 – prezentacja projektu EUniversal i OneNet przedstawi P. Sławomir Noske – Kierownik Biura Projektów i Innowacji w ENERGA-OPERATOR SA,
- 17.55 – omówienie zasad współpracy z mieszkańcami na podstawie listu intencyjnego projektu OneNet oraz zgody uczestnictwa w projekcie EUniversal – zasady przedstawi P. Grzegorz Waldoch – Dyrektor Biura DSR Enspirion Sp. z o.o.
- 18.10 – zakończenie i zaproszenie mieszkańców na poczęstunek oraz do zadawania pytań do ekspertów i gości
- 18.15- 19.00 – zbieranie podpisów, czas na wywiady, rozmowy kulturalne.

Projekt EUniversal:



Projekt finansowany ze środków programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji "Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 864334

Partnerzy projektu Euniversal w Polsce:



Projekt OneNet:



Projekt finansowany ze środków programu ramowego Unii Europejskiej w zakresie badań naukowych i innowacji "Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 957739

Partnerzy projektu OneNet w Polsce:





Szanowni Państwo,

ENERGA-OPERATOR SA wraz z firmą Enspirion, Instytutem Energetyki oraz innymi europejskimi partnerami zapraszają Państwa do udziału w dwóch projektach badawczo-rozwojowych, realizowanych m.in. w Mławie przy ul. Podmiejskiej:

- **Euniversal** (<https://euniversal.eu/>)
- **OneNet** (<https://onenet-project.eu/>).

Dzięki nim będą mogli Państwo zarabiać na elastycznym korzystaniu z energii elektrycznej.

Z udziałem w projekcie przewidywane jest wynagrodzenie.

W Mławie, na osiedlu przy ul. Podmiejskiej, ENERGA-OPERATOR SA otwiera obszar demonstracyjny, na którym, w ramach prowadzonych badań zamontowana zostanie innowacyjna stacja transformatorowa oraz niezbędna automatyka. Dzięki tym rozwiązaniom poprawią się warunki produkcji energii z mikroinstalacji, a dodatkowo uzyskają Państwo możliwość sprzedaży usługi redukcji zużycia energii za pośrednictwem dedykowanej, internetowej platformy zakupowej.

21 marca o godzinie 17.00
w Miejskim Domu Kultury w Mławie, ul. Stary Rynek 13,
dla mieszkańców ul. Podmiejskiej,
odbędzie się spotkanie informacyjne, na które serdecznie zapraszamy.

Podczas spotkania opowiemy więcej o projektach i odpowiemy na Państwa pytania.

Do Państwa dyspozycji są również pracownicy z Enspirion, z którymi można się kontaktować:

- telefonicznie: 588 881 771
- lub mailowo: dsr@enspirion.pl



INFORMACJE O PROJEKTACH

Dzięki unijnym środkom na badania, rozwój i innowacyjne projekty spółki energetyczne mogą wyeliminować zagrożenia w pracy infrastruktury energetycznej (jak np. przeciążenia czy problemy napięciowe). Jednym z takich kierunków są usługi podnoszące elastyczność sieci elektroenergetycznej i współpraca z klientami w zakresie odpłatnego świadczenia usług na rzecz spółek energetycznych.

Rolą uczestników projektów będzie zmniejszenia konsumpcji bądź zwiększenia produkcji energii w sytuacjach występowania ograniczeń w sieci elektroenergetycznej, po wcześniejszym uzgodnieniu indywidualnych zasad współpracy.

Wyniki uzyskane w projektach będą również wykorzystane na potrzeby bilansowania krajowego systemu elektroenergetycznego przez Operatora Systemu Przesyłowego, którego rolę pełni Polskie Sieci Elektroenergetyczne SA.

Państwa udział w projektach będzie nieocenionym wkładem w tworzeniu nowoczesnego rynku energii elektrycznej opartego o odnawialne źródła energii, bardziej przyjaznego dla odbiorcy.

Zespół projektowy
ENERGA-OPERATOR SA

Projekt EUniversal:



Projekt finansowany ze środków program ramowego Unii Europejskiej w zakresie badań naukowych i innowacji "Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 864334

Partnerzy projektu Euniversal w Polsce:



Projekt OneNet:

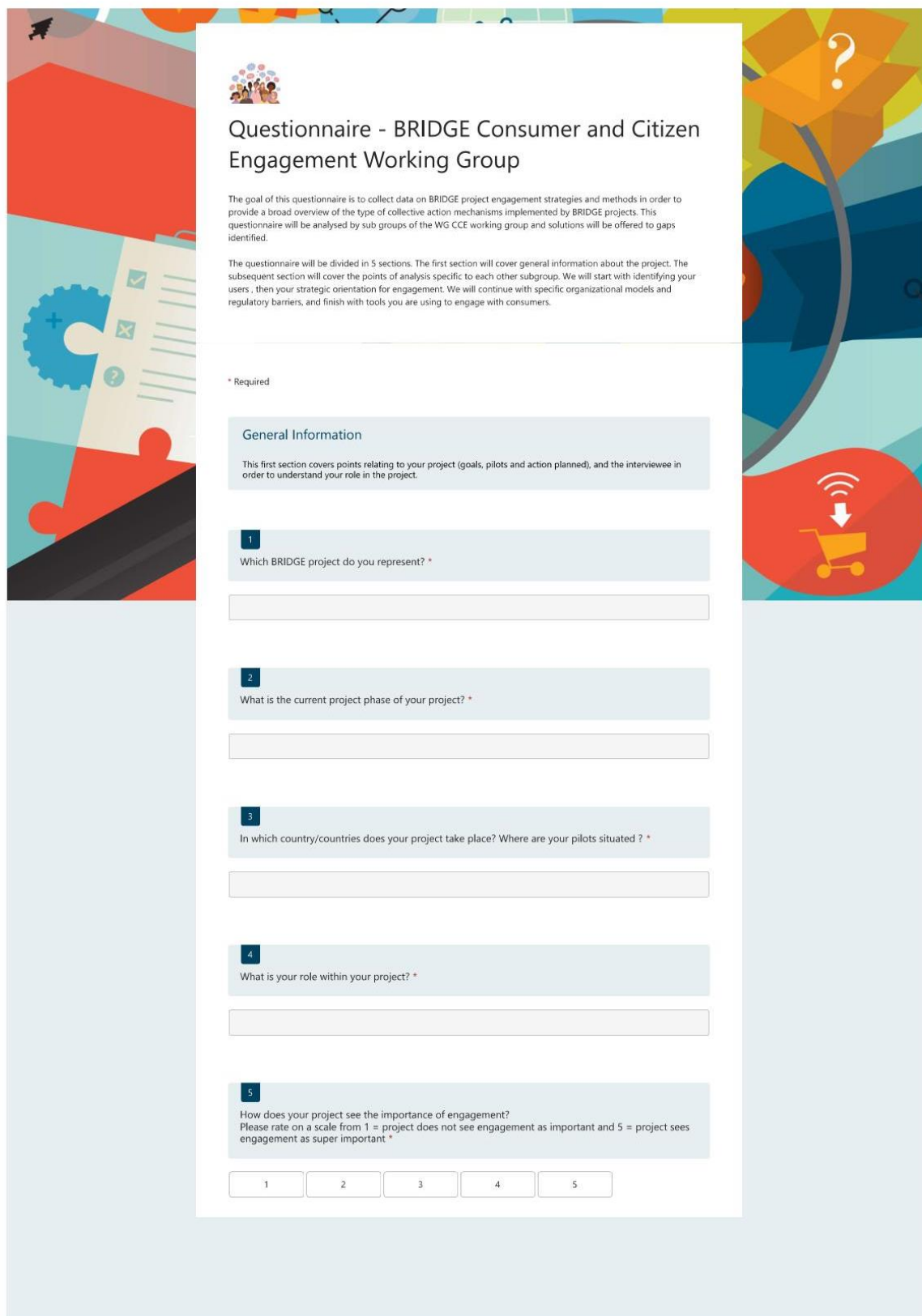



Projekt finansowany ze środków program ramowego Unii Europejskiej w zakresie badań naukowych i innowacji "Horyzont 2020" na podstawie umowy o udzielenie dotacji nr 957739

Partnerzy projektu OneNet w Polsce:



Annex II BRIDGE Survey. Strategies of Engagement questionnaire





Questionnaire - BRIDGE Consumer and Citizen Engagement Working Group

The goal of this questionnaire is to collect data on BRIDGE project engagement strategies and methods in order to provide a broad overview of the type of collective action mechanisms implemented by BRIDGE projects. This questionnaire will be analysed by sub groups of the WG CCE working group and solutions will be offered to gaps identified.

The questionnaire will be divided in 5 sections. The first section will cover general information about the project. The subsequent section will cover the points of analysis specific to each other subgroup. We will start with identifying your users, then your strategic orientation for engagement. We will continue with specific organizational models and regulatory barriers, and finish with tools you are using to engage with consumers.

* Required

General Information

This first section covers points relating to your project (goals, pilots and action planned), and the interviewee in order to understand your role in the project.

- 1
Which BRIDGE project do you represent? *
- 2
What is the current project phase of your project? *
- 3
In which country/countries does your project take place? Where are your pilots situated? *
- 4
What is your role within your project? *
- 5
How does your project see the importance of engagement?
Please rate on a scale from 1 = project does not see engagement as important and 5 = project sees engagement as super important *

1 2 3 4 5

6

What are the high level goals of your project ? How do consumers fit into those ? *

7

Do you produce specific tools to engage with consumers ? *

☐ Yes☐ No

8

Do you plan on involving non professional actors in your pilots ? *

☐ Yes☐ No☐ Maybe

9

Which TRL is your project targeting ? *

☐ TRL 1☐ TRL 2☐ TRL 3☐ TRL 4☐ TRL 5☐ TRL 6☐ TRL 7☐ TRL 8☐ TRL 9

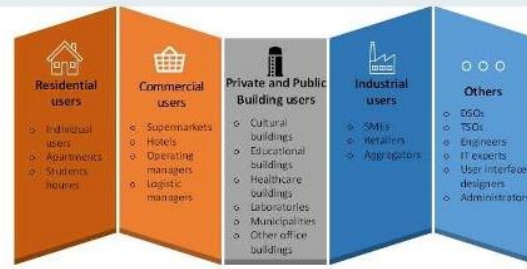
10

Can we contact you again if we have follow-up questions? If yes, thank you! Could you please leave your e-mail address below? *

☐ Yes☐ No☐ Other

User Types

Users types can be defined as different groups of users that share motivations, interests, needs, and behaviour patterns related to a specific technology, where each user type will react differently to engagement strategies. We have defined five energy user groups that share similarities, as shown in the figure below. Users to be engaged can have various roles, such as energy consumers, prosumers, Electric Vehicle users/owners, system operators, system developers, and service providers. Moreover, distinction between private roles and professional roles is important.



11

Which are the user types involved in your project?

Please indicate what role each user type is expected to have in your project (Options per row: Key user; Important user; User; Business partner; Not involved; Do not know yet)

	Key User	Important user	User
Individual users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Families in apartments/houses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student houses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Senior citizens	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local initiatives (e.g. energy communities, citizens, cooperatives)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operating/Logistic managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educational building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Healthcare building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laboratories building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Municipalities building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other office building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Small and Medium Enterprises (SMEs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retailers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
User interface designers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distribution System Operators (DSOs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transmission System Operators (TSOs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information Technology experts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aggregators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12

Are there any other user types in your project that are not listed in the matrix above? Please briefly list the missing user types and specify their role in the project (key user, important user, user, business partner, not involved)

13

What is the engagement status per each user type for your project?

	Engaged in project	Project plans to engage this user type	Project would love to engage this user type	Project sees no need to engage this user type
Individual users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Families in apartments/houses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Student houses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Senior citizens	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local initiatives (e.g. energy communities, citizens, cooperatives)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operating/Logistic managers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educational building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Healthcare building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laboratories building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Municipalities building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other office building users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Small and Medium Enterprises (SMEs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Retailers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
User interface designers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distribution System Operators (DSOs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transmission System Operators (TSOs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information Technology experts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aggregators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14

If there are any other user types present in your project (which are not in the matrix above), could you please briefly specify the engagement status for those user types?
 (Options for status: 1. Engaged in project; 2. Plan to engage; 3. Would love to engage; 4. No need to engage; 5. I do not know yet)

15

Which type of collective engagement models / organisations are you using in your project ? *

- ☐ Jointly Acting / Collection self consumption
- ☐ Energy Communities
- ☐ Collective Purchasing
- ☐ Energy sharing
- ☐ Virtual power plant
- ☐ Transactive Energy Trading
- ☐ Other

16

What are your project's drivers (motivations) to engage the users? What does your project plan to achieve by engaging the users? (please describe shortly) *

Strategies of Engagement

Now that we have clarified your user types and targets, we are looking to better understand the strategies and methods that you are implementing to reach out to those consumers. Our goal is to go in-depth into methods for engagement, and how you measure success.

17

What kind of citizen and consumer engagement strategies do you use in your BRIDGE project and for which user group? An overview of the user groups was provided above. You can select multiple user groups per strategy.

	Residential Users	Commercial users	Private & Public Building Users	'Others' user group
Interviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Newsletters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Questionnaires / Survey	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excursion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Webinars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Additional services or so sort of rewards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18

Do you use specific strategies of organizing and actively engaging your consumers? (describe shortly) *

19

Are you using specific strategies for specific user types in your BRIDGE project(s)? Which ones? *

20

What is the duration of the engagement process in your BRIDGE project(s)? *

21

What are the biggest problems/challenges in citizen and consumer engagement strategies and implementation in your project? *

- ☐ No problems at all
- ☐ No strategy in place in the moment
- ☐ Engagement or strategies are not working
- ☐ Stakeholders are not interested in engagement
- ☐ ROI of engagement strategies
- ☐ Legal or regulatory issues
- ☐ Internal restrictions
- ☐ Restriction due to the COVID pandemic
- ☐ Reaching a group that could be valuable - but was not of initial scope in the AF
- ☐ Keeping participants engaged and active throughout the project
- ☐ Language of communication and risk of technical terminology not explained
- ☐ No explanations to stakeholders without technical background
- ☐ Missing long-term commitment
- ☐ Delayed engagement due to recruitment issues
- ☐ Not sure

22

Are there other relevant problems in citizen engagement strategies and implementation in your project that are not listed above? Explain shortly

23

How does your project plan to deal with low engagement over time? describe shortly *

24

How did citizen and customer engagement activities change the vision or the expected outcomes or the project plan in your running project? *

- ☐ Engagement didn't change the project vision/ expected outcome/plan at all
- ☐ Engagement changed the development process of the product/platform/etc.
- ☐ Engagement changed the end product/result of the project
- ☐ Engagement changed the focus on customers/ citizens to be addressed
- ☐ Engagement changed the engagement strategies used
- ☐ The project is not in a project phase to be able to answer this question
- ☐ Other

25

Indicators of engagement can be distinguished as followed:

A. Indicators of engagement looking at what influences engagement (e.g. incentives participants receive, relationship to the customers/users, feedback options)

B. Indicators of Engagement looking at the activities of engagement (e.g. Workshops, questionnaires, newsletters, etc.),

C. Indicators of engagement looking at the results/effects of engagement (e.g. key performance indicators).

These indicators can be measured at different stages of the project. Which of the following indicators of engagement do you apply in your project(s) and in which stage do you apply them? It does not matter if you officially defined these indicators as project outputs, or just informally collect them for your information.

	Before project officially starts	Early Phase (project started, but mainly desktop research)	Core-phase (implementation/first results)	End phase
Social cohesion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participants' satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transparent feedback options (e.g. person dedicated to respond to feedback)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participants profiles (e.g. sociodemographics, technical affinity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility level of project Incentives participants receive (e.g. free devices/installation of devices)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Measures to empower participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shared vision of the goals which should be reached by users/consumers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of key personnel (e.g. competencies, time investment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Measures of communication with participants (e.g. number of workshops, number of newsletters, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Measures of communication with the public (e.g. number of homepage visits, number of retweets, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Measurement of quality of communication with participants (e.g. open, inclusive)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of decision making (e.g. transparent, inclusive, democratic)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount of energy savings/produced energy, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number and quality of responses from participants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26

Does your project use any other indicators for engagement that are not listed in the above matrix? Please specify them below and specify in which stage you use them.

27

Did the indicators you intend to use change because of the corona situation? *

- ☐ No, they didn't
- ☐ Yes they did, I reduced the numbers or ratio of the indicators of engagement
- ☐ Yes they did, I could not apply certain indicators of engagement
- ☐ Yes they did, I had to agree on new indicators (please indicate below)
- ☐ Other

28

If you created any new indicators due to the COVID-19 situation, please list below:

29

Did the indicators change because of the corona-situation? If so, how did they change?

30

Could you name briefly other indicators of engagement which could be reasonable to apply in your project, but are not assessed?

31

How successfully did the indicators that you used in your project worked out?

	Worked out very badly	Worked out badly	Worked
Social cohesion	<input type="radio"/>	<input type="radio"/>	
Participants' satisfaction	<input type="radio"/>	<input type="radio"/>	
Transparent feedback options (e.g. person dedicated to respond to feedback)	<input type="radio"/>	<input type="radio"/>	
Participants profiles (e.g. sociodemographics, technical affinity)	<input type="radio"/>	<input type="radio"/>	
Flexibility level of project Incentives participants receive (e.g. free devices/installation of devices)	<input type="radio"/>	<input type="radio"/>	
Measures to empower participants	<input type="radio"/>	<input type="radio"/>	
Shared vision of the goals which should be reached by users/consumers	<input type="radio"/>	<input type="radio"/>	
Financial resources	<input type="radio"/>	<input type="radio"/>	
Quality of key personnel (e.g. competencies, time investment)	<input type="radio"/>	<input type="radio"/>	
Measures of communication with participants (e.g. number of workshops, number of newsletters, etc.)	<input type="radio"/>	<input type="radio"/>	
Measures of communication with the public (e.g. number of homepage visits, number of retweets, etc.)	<input type="radio"/>	<input type="radio"/>	
Measurement of quality of communication with participants (e.g. open, inclusive)	<input type="radio"/>	<input type="radio"/>	
Quality of decision making (e.g. transparent, inclusive, democratic)	<input type="radio"/>	<input type="radio"/>	
Number of participants	<input type="radio"/>	<input type="radio"/>	
Amount of energy savings/produced energy, etc.	<input type="radio"/>	<input type="radio"/>	
Number and quality of responses from participants	<input type="radio"/>	<input type="radio"/>	

32

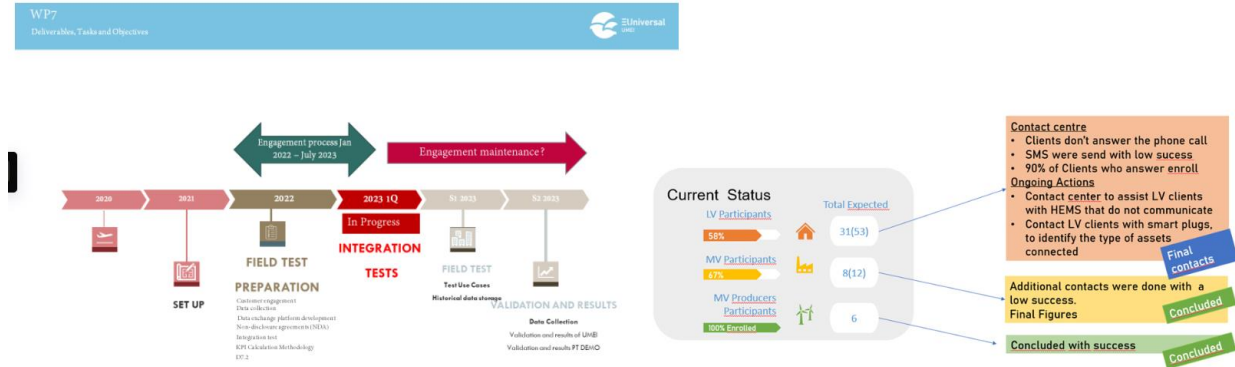
Are there other indicators of engagement that did not work out in your project or in previous projects and why?

33

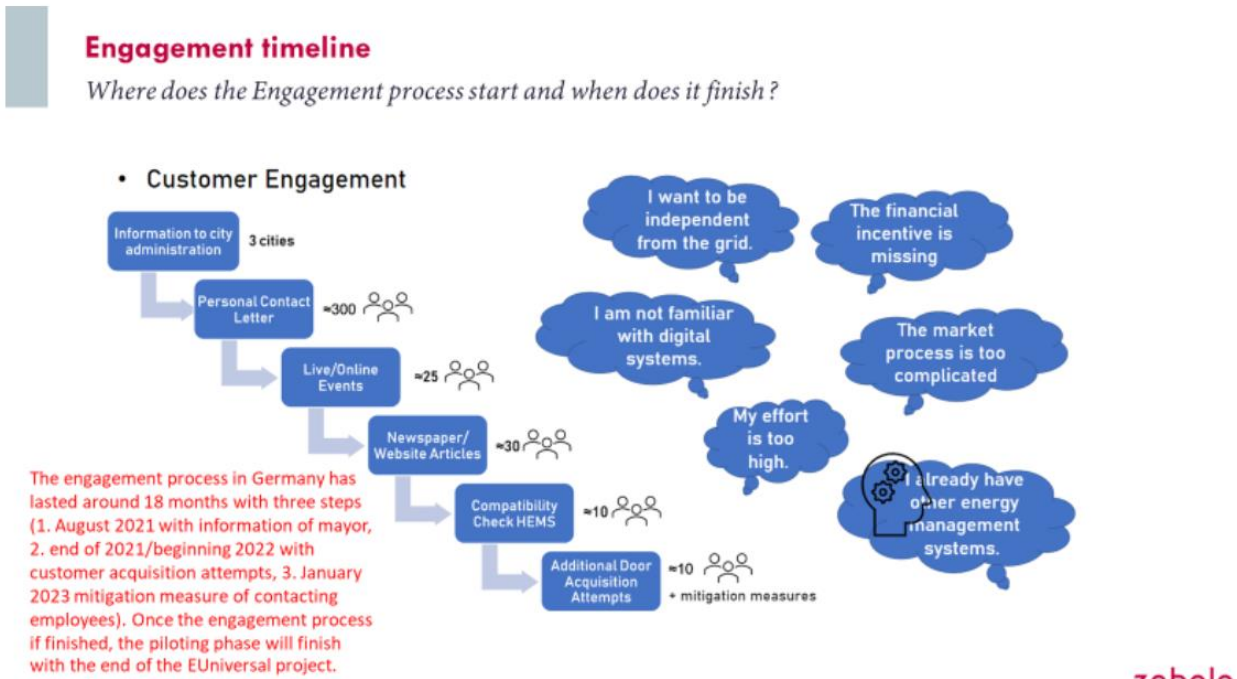
Are there any indicators of engagement that worked out well in your project or in previous projects and why?

Annex III Workshop. EUniversal Stakeholder engagement analysis

PORTUGUESE PILOT ENGAGEMENT STATUS



GERMAN PILOT ENGAGEMENT STATUS



Potential solutions / mitigation strategies

Elevator Pitch

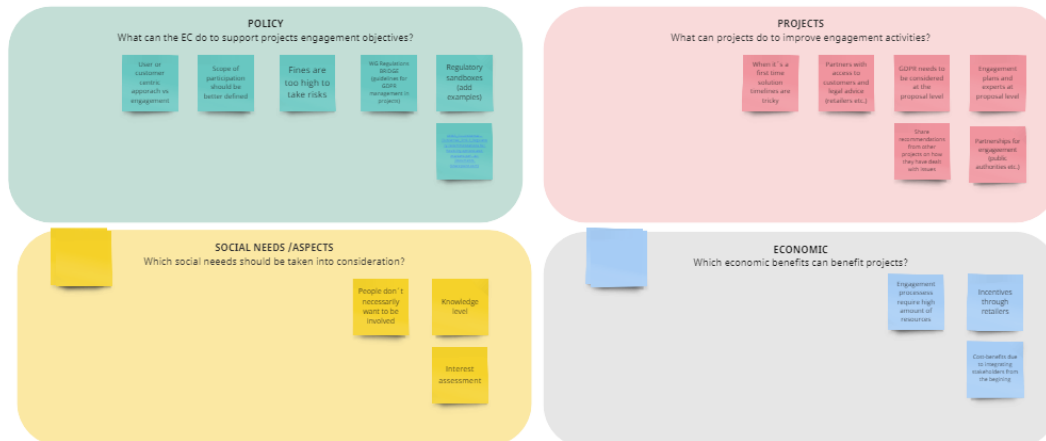
The purpose of this exercise is to identify the main issues that, in your own experience, have impacted customer engagement



Potential policy / economic / social recommendations to the EC / projects

Elevator Pitch

The purpose of this exercise is to identify potential recommendations that may help future projects with engagement issues



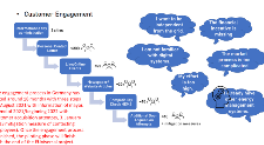
MIRO BOARD USED FOR WORKSHOP



PORTUGAL

Engagement timeline

What does the Engagement process entail and what does it look like?



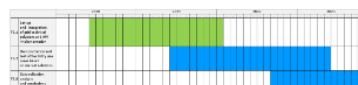
GERMANY

	roble
1	0.98
2	0.97
3	0.96
4	0.95
5	0.94
6	0.93
7	0.92
8	0.91
9	0.90
10	0.89
11	0.88
12	0.87
13	0.86
14	0.85
15	0.84
16	0.83
17	0.82
18	0.81
19	0.80
20	0.79
21	0.78
22	0.77
23	0.76
24	0.75
25	0.74
26	0.73
27	0.72
28	0.71
29	0.70
30	0.69
31	0.68
32	0.67
33	0.66
34	0.65
35	0.64
36	0.63
37	0.62
38	0.61
39	0.60
40	0.59
41	0.58
42	0.57
43	0.56
44	0.55
45	0.54
46	0.53
47	0.52
48	0.51
49	0.50
50	0.49
51	0.48
52	0.47
53	0.46
54	0.45
55	0.44
56	0.43
57	0.42
58	0.41
59	0.40
60	0.39
61	0.38
62	0.37
63	0.36
64	0.35
65	0.34
66	0.33
67	0.32
68	0.31
69	0.30
70	0.29
71	0.28
72	0.27
73	0.26
74	0.25
75	0.24
76	0.23
77	0.22
78	0.21
79	0.20
80	0.19
81	0.18
82	0.17
83	0.16
84	0.15
85	0.14
86	0.13
87	0.12
88	0.11
89	0.10
90	0.09
91	0.08
92	0.07
93	0.06
94	0.05
95	0.04
96	0.03
97	0.02
98	0.01
99	0.00
100	0.00

POLAND

Engagement timeline

Where does the Engagement process start and when does it finish?



The supplier provides links to download a customer's *Product Catalog* for free and *Order Form* and *Price List* for a fee. [Click a link now.](#)

zobola

Universal stakeholder engagement analysis workshop

Main issues identified

The purpose of this exercise is to identify the main issues that, in your own experience, have impacted customer engagement. Please describe how the pre-identified issues impacted your engagement approaches.



The diagram illustrates the experimental design flow. It starts with a 'Pre-identification screen' on the left, which leads into 'Phase 1' and 'Phase 2'. 'Phase 1' consists of a 'Pre-identification' section (with a 2x2 grid of green squares) and an 'Identification' section (with a 2x4 grid of green squares). 'Phase 2' also consists of a 'Pre-identification' section (with a 2x2 grid of green squares) and an 'Identification' section (with a 2x4 grid of green squares). The 'Identification' sections lead to 'Report 1' and 'Report 2' on the right. 'Report 1' shows a 2x2 grid of green squares, and 'Report 2' shows a 2x2 grid of green squares. The 'Identification' sections also include a 'Feedback' section with a 2x4 grid of green squares.

EUNIVERSAL contributions to new regulatory frameworks

The diagram illustrates the relationship between different levels of project detail. It consists of three vertical panels, each with a dark header and a light gray body. The panels are labeled 'Project', 'Summary', and 'Detail' from left to right. Each panel contains yellow sticky notes with text. The 'Project' panel has three notes, the 'Summary' panel has two, and the 'Detail' panel has one large note. The notes in the 'Project' panel are: 'Project: 1. Project Overview', 'Project: 2. Project Goals', and 'Project: 3. Project Scope'. The notes in the 'Summary' panel are: 'Summary: 1. Project Overview' and 'Summary: 2. Project Goals'. The note in the 'Detail' panel is: 'Detail: 1. Project Overview'. The notes in the 'Project' panel are positioned higher than the notes in the 'Summary' panel, which are positioned higher than the note in the 'Detail' panel. This visualizes the concept that a project is more detailed than a summary, which is more detailed than a detail.

Potential solutions / mitigation strategies

The purpose of this exercise is to identify the main issues that, in your own experience, have impacted customer engagement

The diagram illustrates the relationship between a 'Private' workspace and a 'Project' workspace. The 'Private' workspace is divided into three sections: 'My Projects' (3 green blocks), 'My Book' (4 blue blocks, with one labeled 'My Book' and another 'My Book' with a red 'X'), and 'My Files' (5 yellow blocks). The 'Project' workspace contains a grid of colored blocks: 2 green, 2 blue, 2 yellow, and 2 red blocks.

Potential policy / economic / social recommendations to the EC / projects

The purpose of this exercise is to identify potential recommendations that may help future projects with engagement issues.



QUESTIONNAIRE to EUniversal stakeholders. What would you like to know?

The image shows three vertical panels representing the stages of a project. The first panel, labeled 'Planning', has a yellow sticky note with the text 'Project Plan' and 'Timeline'. The second panel, labeled 'Summary', has a yellow sticky note with the text 'Project Summary' and 'Key Findings'. The third panel, labeled 'Follow-up', is empty.





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