6th *Overview of DE-RISK*

DE-RISK

NEWSLETTER

Executive Summary

After three years of collaborative research, pilot implementation, and policy development, **DE-RISK** reaches its conclusion - marking a major step toward Europe's transition to a **clean, decentralized, and citizen-empowered energy system.**

The project has successfully demonstrated how **Local Flexibility Markets (LFMs)** can optimize renewable energy use, improve grid stability, and enable consumers to become active participants in the energy transition. From **advanced digital twin technologies to innovative business models and financial schemes**, DE-RISK has built an integrated framework that connects technology, regulation, and community engagement.

Through pilot sites in Türkiye and Spain, DE-RISK validated technical solutions, tested market concepts, and gathered real-world evidence on how digital tools, behavioral insights, and supportive policies can unlock the untapped potential of local flexibility.

Project Achievements and Impact

DE-RISK has redefined how flexibility is understood and implemented in residential contexts. By combining technical, social, and economic dimensions, the project established a scalable model for **flexibility-driven energy communities.**

Key achievements include:

- **Operational demonstration** of flexibility services through digital twins and IoT-enabled control systems.
- **Development of a WebApp** that allows households to monitor, manage, and optimize their consumption patterns.
- **Consumer behavior research** across five European countries, identifying the main factors influencing participation in LFMs.
- **Policy and regulatory roadmap** for the harmonized adoption of flexibility markets in the EU.
- **Business model design** for long-term market sustainability and value creation across stakeholders.
- **Innovative financial mechanisms,** including a successful crowdlending campaign that demonstrated community-based funding for renewable assets.

Together, these outcomes form a foundation for future replication, ensuring that flexibility becomes a central pillar of Europe's clean energy transition.

The project has received funding from the European Union's Horizon EUROPE Programme under grant agreement No. 101075515

Insights from the Pilots

Turkish Pilot – Energy Cooperative with Residential Buildings in Kepez

The Turkish case, implemented in **Kepez**, showcased how digital technologies and community engagement can advance flexibility even in early-stage market conditions.

Eighteen households participated in a local pilot where **IoT devices and automated control systems** were installed to manage heating, cooling, and water-heating loads. The **WebApp** enabled users to visualize consumption and test demand-response scenarios.

A User Engagement Workshop, organized in collaboration with **UEDAŞ and Troya Environmental Association**, brought together residents, municipal officials, and local producers to discuss the benefits of flexibility and renewable integration.

Key outcomes included:

- Reliable operation of IoT and control stacks for load shifting and peak reduction.
- Increased user interest after WebApp deployment and continuous support.
- Identification of regulatory gaps - such as missing definitions for flexibility services, and initial investment costs such as IoT and control stack installation - that currently restrict scalability in Türkiye.
- Importantly, the publication of the Aggregator Regulation (December 2024) provides a first policy step for enabling licensed aggregators and marks a promising start for future energy community development in the country.

Spanish Pilot – Murcia Collective PV Community

In Murcia, the pilot explored collective self-consumption and flexibility optimization in a real residential environment.

Eighteen households shared a 10 kW photovoltaic installation, connected through APIs and integrated with IoT devices to monitor consumption and control HVAC and DHW systems.

Two main scenarios were tested:

1. Maximizing renewable use by synchronizing consumption with PV generation, achieving an estimated 5% improvement in self-consumption.
2. Reducing energy costs through load shifting, resulting in up to 10% savings on electricity bills.

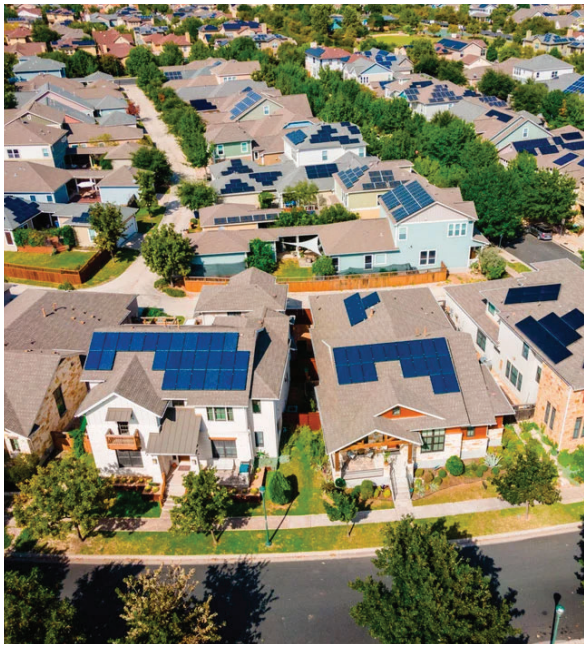
A hands-on Engagement Workshop in July 2025 allowed users to experience flexibility management directly. Many participants expressed willingness to continue under new initiatives like the DIGITISE Project, confirming the Murcia pilot's role as a living laboratory for energy flexibility.

Spanish Pilot – Joven Futura Neighborhood

The Joven Futura case represented a community-scale demonstration of crowdlending and citizen trust as enablers of flexibility investments.

A total investment of €6,500 financed a 5 kWp solar installation equipped with monitoring, control, and gateway devices. The campaign offered a 5% return, reached full funding within one week, and achieved payback in one year — a remarkable success that validated the potential of local, trust-based financing.

Residents actively participated in workshops and used the Energy Consumption App to track key performance indicators, demonstrating how community-driven approaches can accelerate renewable adoption and strengthen engagement at neighborhood level.



Spanish Pilot – The La Balma

The La Balma housing cooperative participated in DE-RISK with its residential energy community, featuring over 17kWp and 11 kWh of energy storage shared among common areas and the residences within the building. Despite being introduced late in the project, half of the 20 "coexistence units" (as their residences are called) enthusiastically joined to better understand their community and energy-related concepts. IoT development through DE-RISK helped implement monitoring of common areas (washing room, lights, and a building-public space) as well as specific consumption points within households, including the kitchen and electricity outlets.

Through the VisualiCE WebApp developed in the project and the energy workshop held by R2M in July 2025, La Balma residents reported an increase in their general knowledge, their consumption, and how understanding renewable energy can influence daily consumption patterns and lead to cost reduction. The general consensus among pilot participants was that the visualization tools helped achieve tangible objectives, resulting in an increase in renewable energy consumption within weeks of active participation. Being in a highly collaborative environment, La Balma demonstrates increased acceptance and understanding of energy projects in contexts with prior social cohesion.

Galway (NUIG-Ireland)

Institutional buildings offer huge flexibility potential (61.5 t CO2 savings/year).

At the University of Galway, the Áras de Brún building served as a testbed for institutional flexibility. The academic building was retrofitted with heat pumps, smart thermostatic radiator valves, and motion/temperature sensors across 40 rooms. A secure IoT architecture was developed with strong cybersecurity safeguards after attempted attacks. The pilot tested occupancy-based heating controls, where unused rooms automatically reduced setpoints while maintaining comfort. Commissioning challenges revealed the complexity of integrating smart TRVs, but once operational, the system demonstrated the potential to shift 25–50% of the building's 250 kW heating load for up to two hours. The pilot highlights the opportunities and governance challenges of bringing demand response into large institutional settings.

Key Technological Innovations

At the heart of DE-RISK lies the Digital Twin Platform for Residential Flexibility Management, a breakthrough technology developed by QUE Technologies.

The platform connects real-time consumption, generation, weather, and pricing data to create a digital replica of each household, enabling simulation and forecasting of flexibility potential. Tested across 20 households in pilot sites, the system successfully demonstrated measurable outcomes:

- Flexibility potential: 9.12 kWh/month
- Activated flexibility: 3.44 kWh/month
- Average energy savings: 19.3%
- Payback period: 5.4 years

By bridging households and local markets, the platform proves that digitalization can translate directly into tangible social, environmental, and economic benefits.

Complementing the platform, the WebApp developed by R2M Solution provides an interactive environment for users to monitor their energy balance, community performance, and cost savings — reinforcing user awareness and engagement across all pilot regions.

Consumer Behaviour and Engagement

Understanding consumer attitudes was essential for designing realistic participation models. The NOVA IMS team conducted large-scale quantitative and qualitative research in five countries, identifying what drives or hinders household involvement in flexibility markets.

Findings highlight that:

- **Trust, perceived control, and transparency** are key motivators for user engagement.
- **Financial incentives** and visible community benefits increase willingness to participate.
- **Simplified digital tools** and ongoing support are critical for sustained behavior change.

The study concludes that **technology alone is not enough** - behavioral insight and citizen-centric design are indispensable to make flexibility work at scale.

Business Models and Policy Recommendations

The DE-RISK framework introduces **multi-sided business models** that connect utilities, aggregators, communities, and consumers through shared value streams. The proposed **DE-RISK Service Package for LFMs** functions as an **"as-a-Service" model**, offering end-to-end support for initiation, planning, operation, and user engagement.

Policy recommendations, developed by **SEA SOFENA**, call for:

- Clear regulatory definitions for energy communities and aggregators.
- Non-discriminatory access to local flexibility markets.
- Standardized smart metering and data-sharing protocols.
- Targeted funding for renewable energy communities (RECs and CECs).

Together, these measures aim to harmonize Europe's regulatory landscape and unlock the full socio-economic value of decentralized flexibility

DeRisk project was part of EUSEW 2025

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How can energy communities help shape tomorrow's electricity markets?

At EUSEW 2025 — the EU's flagship event for renewables and energy efficiency — DE-RISK took part in a policy session exploring the potential of Local Flexibility Markets to deliver cleaner, fairer, and more secure energy systems.

Representing SEA SOFENA, Nadya Nikolova Deme presented the DE-RISK policy roadmap and shared key recommendations to support flexible, community-driven energy models across Europe.

The event took part on 11 June 2025 | 16:30-18:00 CEST, at EUSEW Policy Conference, Charlemagne Building (Brussels) & Online
The title of the session was: "Energy communities' potential for the future of electricity markets: robust and green energy for all"

Learn more about DE-RISK: https://deriskproject.eu

Innovative Financial Schemes and Crowdlending Results

Led by **Ecrowd**, DE-RISK explored innovative financing instruments that democratize investment in renewable assets.

Traditional mechanisms — such as green loans, leasing, and on-bill recovery — were combined with **crowdfunding and crowdlending** models to empower citizens to co-finance flexibility infrastructure.

The **Murcia crowdlending campaign** funded the installation of new hardware for the pilot site, showcasing how **local investors can directly support energy transition projects**. The resulting Green Paper "Financing Local Flexibility Markets" summarizes practical approaches for scaling community-based financing across Europe.

These experiences demonstrate that sustainable energy transformation is not only technological — it is **financially and socially participatory.**

DE-RISK Final Conference (Brussels and Online)

Held on 17 September 2025, the DE-RISK Final Conference brought together project partners, public authorities, SMEs, universities, and energy-sector stakeholders both in person and virtually. Participants delved into results around the **Digital Twins platform, consumer behaviour insights,** the **WebApp, policy roadmap, financial schemes,** and **business models.** Case studies from Spain, Türkiye, and Ireland were presented, while complementary projects (e.g. DECODIT, REEFLEX, RESCHOOL, COMMUNITAS) also contributed their perspectives. The event closed with a roundtable on the future of Local Flexibility Markets and the imperative of stakeholder collaboration.

6th General Assembly of DE-RISK in Brussels

On 17 September 2025, the DE-RISK consortium convened in Brussels for its **6th** and **final General Assembly,** just ahead of the project wrap-up. The meeting focused on closing tasks, reviewing outcomes across pilot sites, and aligning final steps and responsibilities for the concluding two-week period. Consortium members re-examined the project's achievements and how each component contributed to advancing flexibility markets across Europe.

Legacy and Future Outlook

DE-RISK concludes with a clear message: the future of Europe's energy lies in **local collaboration, digital innovation, and inclusive market design.**

By combining cutting-edge research with real-world testing, the project has created a **blueprint for replicable, citizen-driven flexibility ecosystems.** The tools, models, and insights developed under DE-RISK will continue to guide policymakers, communities, and industry partners in designing the next generation of local energy systems.

From the neighborhoods of **Murcia and Kepez** to the **EU policy level,** DE-RISK has shown that **flexibility is not only about managing electricity — it is about empowering people.**

Acknowledgements

The DE-RISK consortium extends its gratitude to all partners, local authorities, participants, and **the European Union's Horizon Europe Programme** (Grant Agreement No. 101075515) for their collaboration and support throughout the project.

Latest News from DE-RISK

New Report: Policy and Regulatory Recommendations for Local Flexibility Markets

To accelerate the adoption of Local Flexibility Markets (LFMs) and support Europe's renewable energy transition, DE-RISK explores financial mechanisms that remove funding barriers, democratize market access, and encourage community participation. By combining traditional financing tools with innovative approaches, these mechanisms enable scalable investments in LFMs and energy-efficient solutions.

New Green Paper: Financing Local Flexibility Markets

The DE-RISK project has published its Green Paper on Financing Local Flexibility Markets (LFMs), a strategic document exploring how communities, investors, and policymakers can mobilize resources for the energy transition.

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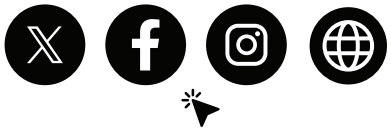

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