

# NEWSLETTER



## Executive Summary

**DE-RISK** continues to make significant strides in shaping **cleaner, more flexible energy systems** that benefit all stakeholders. Over the past period, a major focus has been analyzing the policies and regulations that influence Local Flexibility Market (LFM) development, providing **practical recommendations** to streamline market growth. We have also mapped out the key stakeholders—**energy providers, consumers, businesses, and policymakers**—to understand how they can collaborate effectively and accelerate **market adoption**. Additionally, we have examined the full range of LFM services, from improving **grid efficiency** to ensuring a **reliable supply of renewable energy**. Another critical area of research has been exploring **financing solutions**, identifying ways to make **green energy investments** more **accessible and attractive**.

Beyond research, we have been testing these concepts in **real-world settings**. By analyzing existing **energy infrastructures** and deploying **virtual models**, we have gained valuable insights into how **smart technologies** can work together within LFMs. Now, we are

moving towards **implementation**, gathering **real-time data** to refine our strategies and enhance **market effectiveness**.

A core element of our progress has been fostering **active user participation** in the energy transition. In December, we hosted a **User Engagement Workshop** in Çanakkale, Türkiye bringing together **local stakeholders** to discuss practical approaches for advancing LFMs. The event provided a platform for open dialogue, where participants exchanged ideas on **sustainable business models, financing mechanisms**, and the role of LFMs in supporting **renewable energy integration**. Insights from **local government officials, researchers, and industry leaders** highlighted the importance of **community-driven energy solutions** and **collaborative decision-making**.

With continued research, pilot projects, and stakeholder engagement, DE-RISK remains committed to delivering an energy system that is not only cleaner and more adaptable but also built around the needs and participation of its users.



## Insights from Recent DE-RISK Research

### • Unlocking the Potential of Local Flexibility Markets

To accelerate the adoption of **Local Flexibility Markets (LFMs)** as a key part of **Europe's energy transition**, **DE-RISK** is focusing on **simplifying access** and **ensuring fairness** for all participants. This research aims to create clear, practical rules that allow new players, like **independent aggregators**, to join the market with ease. By addressing challenges such as **unfair competition** and **potential penalties**, it paves the way for a more inclusive and reliable energy system. The result? A framework that fosters **innovation**, supports **collaboration**, and builds **trust** across the energy market.

#### The Role and Promise of Local Flexibility Markets

LFMs are designed to maintain the delicate balance between electricity supply and demand at a local level. By enabling participants—such as **households, businesses, and communities**—to provide services like **demand response, energy storage, and distributed generation**, LFMs contribute to a more flexible and resilient energy system. These markets allow participants to either **sell their excess energy** or **reduce consumption during peak times**, creating a dual benefit: **stabilizing the grid** and **minimizing the need** for expensive infrastructure investments.

The demand for LFMs is fueled by the increasing adoption of renewable energy sources, the decentralization of energy systems, and the growing need for clean energy solutions. These markets also provide significant financial opportunities for participants, such as **homeowners with rooftop solar panels** or **businesses with energy storage systems**, enabling them to generate income while supporting sustainability. Advanced market models now integrate wholesale and local markets, fostering collaboration between **transmission system operators (TSOs)**, **distribution system operators (DSOs)**, and **distributed energy resource (DER) owners**.

#### Analyzing LFMs Through the PESTLE Framework

We applied the **PESTLE framework** to examine the **external factors influencing LFM development**, providing an EU-wide perspective on market maturity, risks, and opportunities.

**Political Factors:** LFMs are driven by **climate targets** and **decarbonization policies**, but **energy security concerns**, heightened by the war in Ukraine, remain a challenge—particularly in **Bulgaria, Greece, and Türkiye**, which were heavily reliant on Russian gas imports. The shift toward **liquefied natural gas (LNG) imports** has created a favorable political climate for LFM growth.

**Economic Factors:** **High energy prices and inflation** hinder LFM investments, especially in **Spain, Greece, and Romania**, where energy sector funding is limited. Meanwhile, **France**, with its **nuclear power infrastructure**, remains insulated from price shocks but faces **challenges in decentralization**. **Norway and the UK**, with mature flexibility markets, highlight the benefits of **stable economies** and **hydroelectric resources**.



**Social Factors:** *Public awareness of climate change* and *energy literacy* are high across Europe, creating a supportive environment for LFM. However, socio-economic *disparities* and *low trust* in institutions, particularly in *Greece, Türkiye, and Romania*, pose barriers. *Community engagement* is a strength in *Greece*, while *Spain and Portugal* see growing *citizen participation* in energy projects.

**Technological Factors:** *Smart grids and energy storage* are crucial for LFM success. *Ireland and the Netherlands* focus on *wind energy*, while *Türkiye, Spain, and Greece* rely on a *mix of wind and solar*. However, *electric vehicle (EV) infrastructure* remains *underdeveloped* across most regions, with *Norway* leading in adoption.

**Legal Factors:** *Regulatory frameworks* vary significantly. Countries like *Italy and Spain* support *smart grids and demand response programs*, while *GDPR* ensures data protection for LFM participants. However, harmonizing regulations across Europe remains a major challenge.

**Environmental Factors:** *Climate change* drives LFM adoption, with renewable energy potential, extreme weather events, and seasonal variability increasing the need for flexibility solutions. *France, Greece, and Türkiye* face *hydropower challenges due to droughts*, highlighting the importance of *innovative grid stability solutions*.

This comprehensive analysis ensured that LFMs are *not only innovative but also adaptable to the unique conditions of each country*, supporting a resilient and sustainable energy transition.

## Challenges in Scaling Local Flexibility Markets

Despite their *transformative potential*, *Local Flexibility Markets (LFMs)* face several challenges that must be addressed to unlock their full capabilities. One major hurdle is *technical integration*, as managing *decentralized energy resources* effectively requires seamless coordination. *Data management* is another critical issue, demanding real-time data sharing while ensuring privacy and security. *Regulatory complexity* further complicates market growth, with fragmented policies across Europe hindering the development of a *consistent framework*. Additionally, the *absence of sustainable business models* creates *uncertainty for prosumers, aggregators, and grid operators*, making it essential to establish financial structures that ensure long-term viability.

*Market design* remains another pressing challenge, as *effective pricing mechanisms* are needed to align LFMs with existing energy markets. Finally, *customer engagement* plays a crucial role in the success of LFMs, requiring *targeted education and communication campaigns* to raise awareness and participation. Overcoming these barriers will allow LFMs to serve as a *cornerstone of Europe's decentralized, renewable energy system*, delivering economic, environmental, and societal benefits while ensuring a more resilient and flexible grid.





## Exploring the Regulatory Landscape of Local Flexibility Markets



### • Addressing Regulatory Barriers for LFM in Europe

While Local Flexibility Markets (LFMs) are key to Europe's clean energy transition, regulatory inconsistencies pose significant challenges. **Fragmented frameworks, data-sharing limitations, and bureaucratic barriers** make it difficult for smaller players—such as aggregators, prosumers, and local communities—to participate effectively. Many countries lack interoperable systems for real-time data exchange, and external factors like **rising energy prices and inflation** have further strained investment conditions.

DE-RISK research highlights **three levels of regulatory** readiness across Europe. **France, Ireland, and the Netherlands** are at the forefront with strong regulatory structures and advanced technological infrastructure, though centralization in France's energy system limits local flexibility. **Spain, Greece, and Türkiye** demonstrate growing potential, driven by high renewable energy adoption, but socio-economic inequalities and institutional mistrust hinder broader market development. **Bulgaria and Romania** face the greatest challenges, including outdated infrastructure and limited financial support, slowing their transition to flexibility markets.

To address these issues, harmonizing regulations, expanding financial incentives, and fostering innovation in smart grids, blockchain, and EV infrastructure are crucial. Standardized frameworks can **simplify operations and encourage cross-border collaboration**, while education campaigns can **raise awareness and empower consumers** to actively participate in flexibility markets. Additionally, DE-RISK research explores **emerging energy services** that can adapt to different regulatory and social environments, ensuring LFMs are scalable, inclusive, and a key enabler of Europe's decentralized energy future.

## Smart Energy Services: Enhancing Flexibility in LFM

Smart energy services play a vital role in optimizing Local Flexibility Markets (LFMs), ensuring efficient energy management and grid stability. These services enable greater flexibility by integrating **energy supply and performance solutions**, such as **Energy Supply Contracting (ESC) and Energy Performance Contracting (EPC)**, which provide cost-effective energy delivery while supporting renewable energy adoption. Additionally, innovative market models, including **Peer-to-Peer (P2P) energy trading and blockchain-based smart contracts**, allow consumers to actively participate in decentralized energy exchanges.

To further enhance efficiency, **optimization tools** like **time-of-use tariffs, predictive building management using AI and IoT, and peak shaving strategies** help balance energy demand and reduce grid congestion. **Energy management systems**, such as energy audits and tailored optimization solutions, empower households, businesses, and communities to lower costs and improve sustainability.

## Overcoming Barriers to Adoption

Despite their potential, smart energy services face several adoption challenges. **Regulatory inconsistencies** and **a lack of standardization** across Europe make deployment difficult, while insufficient smart grid infrastructure, advanced metering, and EV charging networks limit scalability. **High upfront investment costs** and **limited financial incentives** further slow down market adoption, and **low consumer awareness and trust in new technologies** remain significant obstacles.

However, these services offer immense benefits, including **localized flexibility, improved grid stability, and greater consumer empowerment**, making it crucial to address these barriers.

## Advancing Smart Energy Services in LFM

To unlock the full potential of smart energy services, harmonizing regulations, fostering technological innovation, and creating market incentives are essential. Aligning policies at both EU and national levels will streamline deployment and encourage cross-border collaboration. Expanding **investments in smart grids, IoT, and blockchain** will modernize energy infrastructure and enhance efficiency. Additionally, introducing **financial mechanisms such as subsidies and Pay-for-Performance (P4P) models** will encourage investment and participation. Finally, **raising public awareness** through education and outreach efforts can empower consumers, making LFMs more inclusive and accessible.

By addressing these challenges, smart energy services can drive **a more flexible, efficient, and sustainable energy system**, ensuring that LFMs reach their full potential in supporting Europe's renewable energy transition.



# Financing the Future of Local Flexibility Markets: DE-RISK's Insights

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.

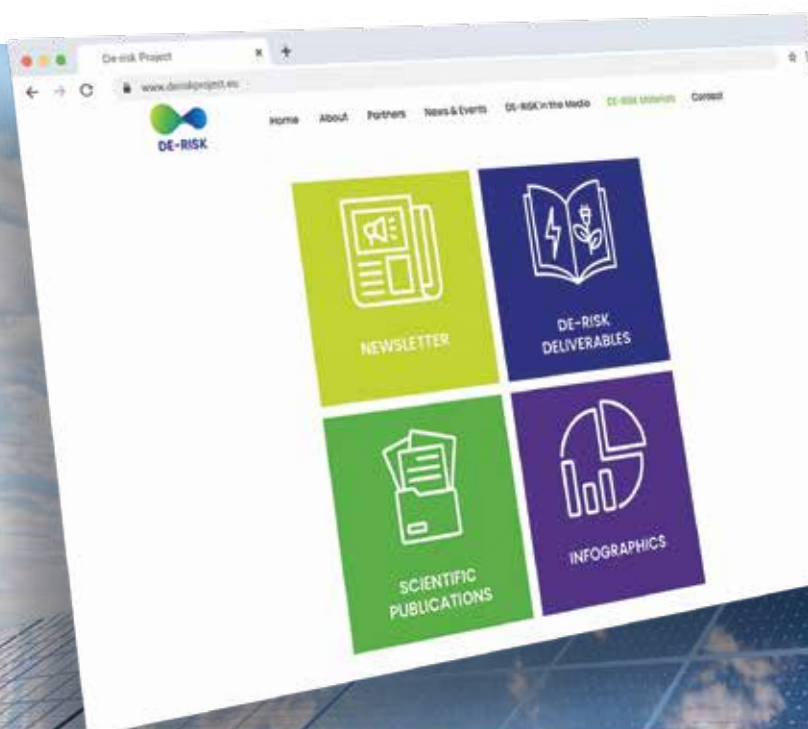
## • Why Financing Matters for LFMs

Investing in smart devices, renewable energy installations, and storage systems is essential for ensuring the flexibility and resilience of Local Flexibility Markets (LFMs). However, securing financing remains a major challenge, particularly for small-scale investors like energy communities and residential buildings, despite relatively modest project costs (€15,000–€50,000).

**Traditional options** such as green loans, leasing, and on-bill recovery provide accessible financing, while public subsidies and tax reductions offer strong incentives but often come with bureaucratic hurdles. **Emerging solutions** like crowdfunding, crowdlending, and energy-saving certificates are helping to democratize access and encourage wider participation. Additionally, **public-private partnerships (PPPs), tax-linked repayment models, and blockchain-based platforms** are expanding opportunities for investment and scalability.

To overcome financial barriers, DE-RISK advocates for streamlining subsidy processes, expanding innovative financing mechanisms, fostering partnerships between key stakeholders, and incentivizing green investments through grants and low-interest loans. These efforts aim to improve LFM accessibility, inclusivity, and effectiveness in supporting Europe's renewable energy transition.

Discover more insights by exploring our project deliverables on our **website!** 





## Latest News from DE-RISK

### • Highlights from the First User Engagement Workshop of DE-RISK in Çanakkale, Türkiye

On December 17, we hosted a **User Engagement Workshop** in Çanakkale, in collaboration with our partners Troya Environmental Association and UEDAŞ. The event focused on **advancing energy management flexibility** and **integrating renewable energy systems** through the development of Local Flexibility Markets (LFMs).

The workshop gathered a diverse group of stakeholders, including policymakers, academics, business leaders, and community representatives. Discussions revolved around critical topics such as **creating sustainable business models, exploring innovative financing mechanisms, and fostering networking opportunities** to drive LFM adoption.

Highlights of the event included presentations from prominent speakers:

- **Aysun Kavcar**, Head of Climate Change and Zero Waste at Çanakkale Municipality, shared the city's Climate Action Plan and its role in advancing local sustainability.
- **Tugay Aktaş**, Senior Chemist at ENV Environmental Company, presented ongoing projects contributing to environmental sustainability.
- **Dr. Onur Sinan Türkmen**, Lecturer at Çanakkale Onsekiz Mart University and founder of Marghet Biotechnology, discussed the vital role of renewable energy systems in agricultural practices and their potential to boost rural development.

The workshop provided a vibrant platform for participants to exchange ideas, share experiences, and collaborate on enhancing the future of energy systems.



## What's Next for DE-RISK?

As DE-RISK continues to advance the development of Local Flexibility Markets (LFMs), our focus remains on **bridging gaps, empowering communities, and accelerating Europe's energy transition**. By integrating diverse financing mechanisms—both traditional and innovative—we aim to **simplify funding processes, foster collaboration, and unlock the full potential of LFMs**. Through ongoing research, pilot projects, and stakeholder engagement, we are committed to building a **sustainable, decentralized energy system** that benefits all stakeholders while supporting the EU's renewable energy goals.



## Upcoming Events

To further drive discussions and strengthen collaboration, we are hosting a series of **User Engagement Workshops** and **Regulatory Workshops** in the coming months. These events will provide key stakeholders with insights into LFM adoption, policy advancements, and financing mechanisms while offering interactive discussions and networking opportunities.

Our User Engagement Workshops will focus on empowering local communities, businesses, and municipalities to actively participate in flexibility markets, while our Regulatory Workshops will bring together policymakers, industry experts, and researchers to explore strategies for harmonizing LFM regulations across Europe.

**Stay tuned for event dates and details—join us in shaping the future of energy flexibility and sustainability!**





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**4th** *Overview of DE-RISK*

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**DE-RISK**



The project has received funding from  
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