FRAUNHOFER TWIN TRANSITION SERIES – IMPULSE

»Unleashing Energy Data: How the EU Data and Governance Acts Will Reshape the Energy Sector«

In a nutshell:

- The DA and DGA mark a new phase for accessing, sharing and governing energy data.
- User rights to device-generated data, along with mechanisms for neutral intermediation and data altruism, can drive innovation if interoperability and governance are addressed.
- Data models, semantics, and standardized APIs are essential to reduce access costs and enable scalable use cases such as flexibility, smart charging, or building efficiency.
- Successfully implementing the DA and DGA will require shifts in business models for OEMs, operational readiness from operators, and effective governance to establish a Common European Energy Data Space.

The Data Act (DA) and Data Governance Act (DGA) redefine how data from connected devices is accessed, shared, and monetized in Europe. By granting data user rights to asset operators, these regulations aim to unlock the digital services markets, reinforce user rights, and drive innovation rooted in industrial data – essentially reshaping the energy sector. Here, millions of decentralized assets – such as home energy management systems, wind parks, and electric vehicles – generate system-relevant data that must be leveraged effectively.

As Martin Braun (Fraunhofer Institute for Energy Economics and Energy System Technology IEE) emphasized, the transformation of the energy sector depends on digitalization and automation. Coordinating millions of assets and orchestrating supply and demand across households, grids, and markets requires more than infrastructure – it needs access to high-quality, interoperable data.

The 10th edition of the Fraunhofer Twin Transition Series explored this paradigm shift, highlighting both the innovation potential and the risks of this new legal framework. A central takeaway is clear: system coordination relies on well-structured data ecosystems that create tangible value. Research and innovation (R&I) are therefore indispensable for developing the tools and models needed to turn raw data into actionable insights.

What the DA and DGA change

Translating this vision into practice is complex. As Nicholas Martin (Fraunhofer Institute for Systems and Innovation Research ISI) explained, the DA directly addresses manufacturer-held data silos. It grants users, households and companies the right to access and share device-generated data with third parties in exchange for fair compensation, while preventing its use in directly competing products and services. From 2026 onward, connected devices will also need to be designed for easy and secure access.

The DGA complements this framework by creating new institutional mechanisms: neutral Data Intermediary Services to support commercial data exchanges, and Data Altruism Organizations to facilitate public interest sharing. Yet, legal compliance alone does not ensure usability, as systematic data sharing remains limited. Overcoming this bottleneck requires more than regulation: semantics, interoperability, and research-driven standards are critical to reducing integration costs and uncertainties, and to making the promise of the DA and DGA a practical reality. But technical solutions alone will not suffice. To make data sharing work at scale, economic incentives must be aligned with legal rights.

Why incentives matter

»We need to understand how data can become monetizable: who has the right to share which data? At the same time, we should make sure that this right to monetize is to an extent exclusive. Why? Because if you believe that everybody can just share the data generated by a device, why would you make that data usable and accessible for different purposes?«
Damian Boeselager, Member of the European Parliament

Damian Boeselager (MEP, Shadow Rapporteur for the EU Data Act) highlighted: without clear distinctions in who controls and who can monetize device-generated data, companies have little motivation to invest in making such data accessible and useful. To address this, he stressed the importance of drawing a clear line between purchase contracts and operation contracts, ensuring that users, not just manufacturers, gain meaningful control over the data their devices generate. Exclusivity plays a decisive role here. If monetization rights are too widely distributed, the incentive to invest in usable data ecosystems diminishes. By contrast, granting users well-defined rights, while ensuring fair compensation for manufacturers, creates the economic foundation for standardized data products, exchanges, and markets. For Europe, aligning legal rights with economic incentives is not just a technicality; it is essential for building a competitive industrial data economy. Only with robust incentives in place can Europe hope to secure its role in global data-driven innovation.

New opportunities in practice

Volker Berkhout (Fraunhofer Institute for Energy Economics and Energy System Technology IEE) highlighted three concrete use cases that the DA and DGA could unlock: i) Home Energy Management Systems: Devices tracking appliance use, PV feed-in, and high-resolution loads could, under the DA, be aggregated with user consent—including via *data altruism*—to improve load profiles and thus forecasting and planning for DSOs and TSOs; ii) Wind farm operations and maintenance: Historically dependent on OEM-controlled data, plant operators would gain rights to turbine data, enabling them to optimize operations and share insights with suppliers. This shift could push OEMs to adapt their digital business models; iii) While electric vehicles generate both significant loads and major flexibility potential, their battery data remains both strategic IP and system critical. Here, neutral data intermediation could balance commercial protection with system-level need. These use cases connect to the broader architecture of the Common European Energy Data Space, which Pablo Riesgo Abeledo (European Commission, Directorate-General for Energy) presented as being structured around three flagship applications: flexibility services, smart/bidirectional charging and energy efficiency in buildings.

Remaining challenges and next steps

As Martin Braun emphasized, the stakes are ultimately systemic:

»The energy we all know is the spine of our society and industry.«
Martin Braun, Head of Fraunhofer IEE

Making Europe's data economy work will hinge on three elements coming together at once: clear legal rights for users and operators, balanced with protections against directly competing uses; viable economic incentives, including fair compensation models that motivate investment in data accessibility; interoperable infrastructure, covering semantics, APIs, and neutral intermediation mechanisms. Open questions remain around trade secrets, real-time access, and legal definitions that both keep markets contestable and safeguard innovation. Overcoming these hurdles will require coordinated policy support, industrial commitment, and sustained R&I investment.

Immediate action is needed to translate the DA and DGA from regulation into concrete, scalable solutions capable of unlocking the full potential of Europe's energy data economy.