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Implementing EU building, energy and market rules for building-level flexibility: insights from six pilot contexts

Energy flexibility from buildings is increasingly recognised as (i) a relevant demand-side resource for integrating renewable electricity and supporting a decarbonised energy system (EPaC 2024a; EC2025a; IEA 2023) and (II) a cost-effective complement to storage and network reinforcement where flexibility helps optimise existing infrastructure and reduce system costs (EC 2025a; EC2025b), yet it remains difficult to operationalise because the underlying process is complex. Using flexibility from buildings as an advantage for the energy system depends on the tight orchestration of multiple elements in near-real-time windows: building and control technologies, data and information flows, user response, and price and weather signals and energy systems requirements. These elements must be framed by workable regulatory obligations, consumer protection, and remuneration and benefit-allocation arrangements.

This extended abstract presents emerging findings from a regulatory review conducted within the BlueBird project. The regulatory review of the national implementation of selected EU provisions relevant to building flexibility included 5 pilot countries and regions and four EU directives: the Electricity Market Directive (EMD), the Energy Performance of Buildings Directive (EPBD), the Energy Efficiency Directive (EED) and the Renewable Energy Directive (RED). The review examines the regulatory and institutional interface through which buildings and building actors are linked to the energy system and its actors.

Methodologically, the analysis details provision-by-provision and then moves to interpreting them through a 5-step process lens to make the regulatory landscape easier to grasp for energy-policy and energy-efficiency audiences and to clarify where provisions support readiness, operability and value capture. The review is guided by three questions: where national implementation currently stands; what implementation practices may be transferable; and what barriers still require addressing.

Preliminary findings suggest that implementation is uneven across countries and across the different parts of the flexibility process. Some national frameworks show promising elements, such as clearer arrangements for energy sharing, stronger data access provisions, or early approaches to integrating demand-side flexibility into planning and market participation. However, good practices are often partial. A country may have relevant market-access provisions but weaker building-readiness mechanisms; another may have promising smart-building or energy-community arrangements but limited clarity on how flexibility is activated, aggregated or rewarded in practice.

The extended abstract presents two complementary visuals. The first is a comparative maturity overview of selected provisions across the reviewed countries and regions. The second is a process map showing where these provisions intervene in the chain through which building flexibility becomes usable for the energy system. The process map links provisions to the broader implementation logic and indicates where good practices, weak links or barriers are observed.

Building flexibility is often discussed as a technical or market opportunity, but its implementation depends on a chain of enabling conditions that are distributed across several EU directives. This extended abstract uses a cross-country and cross-provision review to examine how selected national frameworks support different steps in the process

of enabling, activating and valorising flexibility from buildings. It identifies emerging implementation patterns, transferable good practices, and remaining barriers.

Step	Includes	Directive influence	Notable practices	Barriers
1. Enable flexibility readiness	Smart controls; metering; data access; consent; contracts; aggregation; CEC/REC/CSC structures	EMD: active customers, aggregation, energy sharing, dynamic tariffs. RED: RECs, CSC, renewables, DSO data. EPBD: SRI, ZEB, EV-ready buildings. EED: EE1st, flexibility in planning	Austria: broad CEC/REC roles, data access. Brussels: CEC/REC aggregation, non-controlling company role. Spain: wider CSC/energy sharing, multiple contracts	Fragmented transposition; unclear CEC/REC/CSC interaction; admin burden; restrictive eligibility/proximity rules; limited DSO data
2. Forecast and assess flexibility potential	Forecast demand, generation, storage state, occupancy, weather, prices, grid constraints, available flexibility	RED Art. 20a: DSO data. EPBD SRI: grid adaptability, DR, storage. EED Art. 3/27: demand-side flexibility in planning. EMD: price signals	Spain: Datadis/SIPS. Austria: quarter-hourly EC data. Poland: CSIRE emerging. Germany: scenario framework for grid planning	Delayed/incomplete data; manual processes; DSO-first data access; weak interoperability; limited real-time data for storage
3. Optimise and select response	Choose feasible response: load shifting, HVAC, storage, EV charging, self-consumption, energy sharing, aggregation, DR	EPBD: smart systems, SRI, ZEB, EV infrastructure. RED: CSC/REC/storage/local RES. EMD: dynamic tariffs, aggregation. EED: flexibility as alternative to grid investment	Spain: CSC with allocation coefficients and broader radius. Austria: RECs pool heat pumps, EVs, batteries; storage recognised in ZEB logic. SRI pilots: Austria/Spain/Flanders/Germany	Weak owner incentives; unclear SRI value; evolving ZEB methods; restrictive CSC rules; limited market access; unclear storage/nearby RES accounting
4. Commit, validate and activate	Formalise and operate: bid, tariff choice, aggregation instruction, energy-sharing allocation, flexibility order, asset control	EMD: aggregation, Art. 15a energy-sharing organiser, Art. 4 multiple contracts, Art. 11 dynamic prices. RED: REC/CSC activation. EPBD: technical capability. EED: DSO flexibility procurement	Spain: multiple contracts, aggregation and bilateral participation. Brussels: energy-sharing organiser. Austria/Wallonia: dynamic tariffs. Germany: EnWG §14a/§14c	Licensing complexity; high organiser/aggregator costs; unclear aggregator-supplier coordination; manual data hubs; weak coexistence of supply and sharing contracts
5. Verify, settle and learn	Validate delivery; allocate value; settle payments/benefits; manage disputes/risks; update forecasts and optimisation	EMD: billing, contracts, metering, aggregation settlement. RED Art. 20a: data for verification. EED Art. 27: CBA and wider benefits. EPBD/SRI: asset/investment signal	Austria: quarter-hourly data supports settlement. Spain: Datadis improves transparency. Wallonia/Brussels: 15-min CSC settlement. Germany/Belgium: flexibility in planning feedback	Delayed/manual data; non-standardised settlement; unclear compensation; weak flexibility remuneration; CAPEX bias favouring grid reinforcement

References

European Commission (2025a). *Commission Recommendation of 2.7.2025 on innovative technologies and forms of renewable energy deployment, on the establishment of areas for grid and storage infrastructure necessary to integrate renewable energy into the electricity system in accordance with Article 15e of revised Directive (EU) 2018/2001, and on future-proof network charges to reduce energy system costs*. C(2025) 4024 final. Brussels: European Commission.

European Commission (2025b). *Commission guidance on future-proof network charges to reduce energy system costs*. C(2025) 4010 final, Annex. Brussels: European Commission.

European Parliament and Council (2024a). *Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast)*. Official Journal of the European Union.

IEA (2023). *Demand response*. Paris: International Energy Agency.