

# ERA-Net Smart Energy Systems

## **POLICY BRIEF**

### 2020 Summary

#### **INTRODUCTION**

The ERA-Net SES Knowledge Community unites scientific experts in smart energy systems. On the basis of their profound expertise, these researchers develop an informed opinion of key aspects which, according to their perspective, should be considered by policy makers. With its working groups, ERA-Net SES provides a platform for initiating and developing the expert discussions regarding the **messages of the research community to the policy makers**.

This document is the **condensed version** of the ERA-Net SES Policy Briefs. It has been derived from and together with projects in the ERA-Net SES focus area “Regional Energy systems” (RegSys). In that focus area, projects mainly deal with integrated local and regional energy systems, often addressing sector-coupling and cross-domain integration from a technical, organisational, market and adoption angle. To that end, some projects deal with microgrids and (local) energy communities.

Policy makers and regulators are invited to review the **full text** and share their perspective in the respective [living documents](#) on the ERA-Net SES **Knowledge Community platform expera**, so the knowledge can be exchanged and can evolve. If you are not an expera expert member yet, upgrade your follower account or [register](#) for access.

## RECOMMENDATIONS

### 1 SYSTEM ARCHITECTURE & IMPLEMENTATION MODELLING AND INTEROPERABILITY & STANDARDISATION

- Clear terminology: To constructively discuss integrated regional energy systems in relation to the overall energy system, terms such as "integrated", "regional" and "local" need to be clearly defined. Amongst the key terms and models that wait for a commonly used terminology are: regional energy supply, peer-to-peer trading, energy communities (with respect to EC directives), microgrids and energy positive districts.
- Modelling local ICT systems: ICT architectures to manage regional energy systems may differ from legacy systems. The discussion of developing cellular energy systems should go in parallel with the discussion of establishing regional data hubs and broadband networks (e.g. 5G).
- Energy transition as part of regional development: The development of integrated regional energy systems does not only aim at more resilience and new business cases on a regional and supra-regional level, it also aims at the welfare of the region itself. Therefore, regional development institutions for business and infrastructure need to be involved in the discussion.

### 2 STORAGE & CROSS ENERGY CARRIER SYNERGIES

- Flexibility in integrated systems: The use of flexible energy storages in a cost-efficient manner should be made easier to unleash the full potential which they could offer. They should be promoted to bridge the borders of multiple energy domains and help stabilizing the electricity grids.
- Consistent market places: Processes of bidding, activation and billing flexibility in generation, storage and consumption should be standardized on a European level to ensure that liquid markets for providing local services can really be established.
- Cross-domain businesses: New business models are needed to enable cross-sectoral co-operation between clean electricity generation, heating, gas and mobility – all sectors would benefit!

### 3 REGULATORY & MARKET DEVELOPMENT

- Fair access for small-scale distribution-level resources: incorporate and transpose as soon as possible the EU legislation recently adopted on the internal market for electricity concerning the adjustment of ancillary services markets' framework with regard to activation period, minimum bid sizes, asymmetric bidding and frequency of contracting phase.
- Rules and monitoring practices enabling grid-oriented service provision: allow for sharing data between DSOs and market parties, lower barriers for small-scale actors to participate in flexibility trading and allow for flexibility service procurement between DSOs and TSOs.
- Establishment of local electricity and flexibility markets (e.g. by implementing the model of "Citizen Energy Community"): promote technological interoperability and define and regulate new actors and their relationship including concepts and features, different voltage levels and services, ancillary services and remuneration as well as responsibilities within the market. Support a qualified discussion of the development of a "Harmonized Electricity Market Role Model" (HERM) in the framework of the respective EU Bridge Action.

### 4 CONSUMER & CITIZEN INVOLVEMENT

- Inclusion of social sciences: When building smart energy solutions, deploy tested approaches and use knowledge from social sciences and humanities for engaging professional or end-users starting in the early development process of a project.
- Agile development and co-creation: Applying and testing prototype solutions in everyday life contexts in early stages of a project is crucial for enabling adoption. This requires innovation processes with many stakeholders and a dialogue with public-sector actors.
- Smart and conscious integration of consumers: Exploiting the flexibility potential of active generation, storage and consumption of energy carriers such as electricity, heat and cold demands smart technology. It must be based on the state-of-the-art knowledge on user requirements to ensure minimal

bothering and maximum comfort and benefit for the user. Yet, it may not compromise data privacy nor personal rights.

- One voice, one direction: The lack of information, varying or even contradicting messages and opposing actions to users from different policy levels create confusion. In order to motivate broad action, a common message and roadmap of actions is needed.