

# Policy messages on Innovative Regulatory Approaches with Focus on Experimental Sandboxes to Enable Smart Grid Deployment

## What is a Regulatory (Experimental) Sandbox?

**Regulatory (Experimental) Sandboxes** for smart grids transitions are new, innovative policy instruments for projects, to be tested under experimental conditions, which would otherwise be hampered by institutional barriers (including energy legislation, regulation of monopolistic grid operators, market structures, infrastructure investment mechanisms etc.). They provide an **experimental environment** to stimulate and foster innovation, replication and business model development. This can be achieved by granting stable framework conditions for a limited time (and often limited geography), e.g. by opening up, derogating or waiver rules and regulations. Thus, new products can be developed in a real-world environment without some of the usual rules and regulations applied.

## Why does it matter for Smart Grid Transition?

The urgency of transition of the energy system requires **speeding up the innovation processes** that will shape its future technological, economic and regulatory components.

As it is necessary to be quick, **regulatory changes will often lag**, what is identified as preferable pathways, but these changes could be accelerated through Regulatory Sandboxes, which are able to verify effects of new regulatory instruments before actual implementation.

All energy systems, **whether vertically integrated or deregulated, have some sort of regulatory or market oversight**. Some of these regulations have been long established and originate from stem out of initial structures created around the turn of the 20<sup>th</sup> century. However, as the electricity grid transitions towards a more decentralized structure, with deepened engagement of end-users (including consumers) and involvement of a wider variety of other stakeholders and service providers, there is a need to enable testing of new regulatory structures that can better support integration of advanced smart grid technologies and business models.

## Scope of Experimenting

The first attempts to set up Regulatory Sandboxes, by granting temporary exemptions from regulation, are being made in Germany, Italy, South Korea, The Netherlands, Singapore and United Kingdom. Other countries such as Australia, Austria, France, Ireland, Sweden, and Denmark are in the stage of providing the legislative framework conditions and policy schemes for such arrangements.

The need for Regulatory Sandboxes is often related to solutions which were not thought of or were not necessary before, but which are related to new challenges for the energy system. Hence, the **scope of experimenting** mentioned and applied for are often related to:

- development of flexibility services for grid stability,
- reduction in environmental impacts,
- sector coupling,
- energy storage integration in the power sector, and
- management of local energy communities.

The main **innovation goals**, which are considered as feasibly addressed with a sandbox program are:

- new products (e.g. for energy management),
- new energy services (e.g. peer to peer exchange of energy and flexibility services),
- platform solutions (e.g. distributed ledgers with blockchains),
- new tariff-models (e.g. grid tariffs for battery storage), and
- new business models (e.g. local energy community).

The **main goals for regulators**, apart from fostering innovation, are to understand and learn about different possibilities of improving regulations according to the changing challenges ahead, e.g. for platforms providing flexibility to grid operators.

## Messages for Decision Makers

### **Regulatory Sandboxes as novel innovation policy instruments for overcoming regulatory barriers in the energy transition**

A sandbox program should focus on projects aiming at smart energy grid solutions, which are related to the speeding-up of the energy transition of the energy systems and should be legitimized by well-defined policy aims. It should address solutions that can provide overall system benefits. Sandboxes are a new policy instrument to foster innovation and by lifting up barriers to achieve an effective energy transition, when current regulations are blocking better solutions necessary to achieve the energy transition, e.g. with respective exemptions granted, advanced storage solutions could be proven to work in a real-world environment.

### **Learning is as important as the experimenting in Sandbox Projects**

- **For innovators perceiving regulatory barriers**, a review of a project proposal by experts from regulatory bodies is highly valuable whether a regulatory exemption is necessary or not.
- **Learning among innovators can be intensified if** trustful knowledge exchange can be organized through formats such as Community of Practice, which provide opportunities for not having to make the same mistakes others already have paid for.
- **For regulatory bodies and legislators**, trials in Regulatory Sandboxes provide valuable evidence to help understand whether and how regulation should change permanently.

### **Energy and Innovation Policies has to be orchestrated with complementary action**

Setting-up and funding regulatory sandbox programs requires an orchestrated set of complementary actions across policy fields combining:

- research and innovation instruments (e.g. public funding of replication projects), with
- legislative measures (e.g. experimental clauses), coupled with innovation oriented regulatory bodies, and
- instruments of energy policy (Ministries).

### **Involvement of regulatory bodies is key**

Regulatory bodies should be involved in enabling sandbox programs from the beginning and they should have an active role in fostering innovation towards more sustainable energy systems.

The overall aim should be to changing the goals for regulatory bodies towards a balanced weight on long- and short-term societal benefits of energy systems. Legislation should also provide regulators with enough room for maneuver, which would allow them to become supportive actors within the innovation ecosystem, instead of being considered as hindrance.

## Way forward

As Regulatory Sandboxes are rather new, and only a few implemented projects are known in practice, further activities should include the evaluation of existing sandbox projects (e.g. from The Netherlands and United Kingdom).

Learnings amongst policy makers and practitioners from regulatory bodies should be continued and extended (e.g. by establishing Communities of Practice based on Chatham House Rules).

For further dissemination and discussion of the results of sandbox related activities, the ISGAN Academy will offer a webinar on 12 June 2019 at 14:00 CEST.

## Background

Because of ISGAN events at CEM9 in Copenhagen, the International Smart Grid Action Network (ISGAN) has initiated a project on knowledge exchange from Regulatory Sandboxes. The project aims to advance international dialogue around good practices and new approaches for innovative market- and power system design, which is needed to catalyze Smart Grid investments.

During the Stockholm Smart Grid Week, first week in April 2019, a knowledge exchange event on experimental (regulatory) sandboxes, to enable smart grid deployment, was arranged in partnership with International Confederation of Energy Regulators (ICER). Outcomes from this event, as well as from other project activities such as interviews, online surveys, webinars and the collection of country cases, are input to the policy recommendations given here, by the ISGAN Inter-Annex project team from Annexes 2, 4, 7 and 8.

### ISGAN Participants (26 organizations)



### ISGAN Operating Agent & Co-Secretariat



### ISGAN Co-Secretariat



### ISGAN operates under the Clean Energy Ministerial and IEA Energy Technology Network

