

Regulatory Experimentation in Energy: Three Pioneer Countries and Lessons for the Green Transition

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The green transition represented by EU's Green Deal relies on disruptive innovation, new technologies, and sustainable solutions to achieve the decarbonisation objectives. It is evident that regulation will play a relevant role in the attainment of those targets. However, regulation cannot focus solely on the cost-efficient use of existing infrastructure and investment in replacement and reinforcement. It also needs to consider innovation, despite that regulation cannot always move as fast as innovation. This is evidenced by the Council of European Energy Regulators (CEER), which recognises that national energy regulators are being challenged to keep up with changes in the sector and to ensure that policy and regulation do not create unjustified barriers against innovation while continuing to empower and protect consumers during the transition.

Regulatory experimentation is a new instrument in the regulatory toolbox that allows for more adaptive regulation (i.e., designing regulation to incorporate learning over time) than traditional approaches. In most cases, regulatory experimentation closely resembles so-called regulatory sandboxes, a form of structured experimentalism. The idea behind a sandbox had its origin in software engineering: a sandbox is an environment for running potentially unsafe codes without the risk of infecting the entire system.

Regulatory experimentation enables real-life testing of new products, services, or business models by allowing temporary removal of regulatory barriers while maintaining the protection of consumers. These removals can be in the form of a derogation from a rule, but it can also mean assigning responsibility to players to conduct activities that they are normally not allowed to engage in. An important difference with respect to waivers is that regulatory learning is a clear objective in regulatory experimentation; the idea is to review the relevant regulations after the experiment. Waivers are narrowly defined derogations that are granted for strictly defined activities or types of actors which are applied automatically to everyone concerned.

They are often used to stimulate new market players and activities and revoked again when the business models mature.

The need for regulatory experimentation is often related to solutions which were not previously thought of or were not necessary, but which are related to new challenges in the energy system. There is academic literature discussing regulatory experimentation that explains that with new science, technology and social conditions emerging there is interest in moving from static to adaptive regulation. However, there is limited literature on (and application of) regulatory experimentation in the energy sector. In this paper we look at some experiences with regulatory experimentation in the energy sector in three pioneering countries in Europe: the Netherlands, Great Britain, and Italy. We compare the implementations along six dimensions: eligible project promoters, scope of the derogations, length of the derogations, administration of the experiments, funding, and transparency. Table 1 in the following page summarises the findings for the approaches in the three countries.

We have found that the early approaches to regulatory experimentation differ significantly in Great Britain, Italy, and the Netherlands. At one end of the spectrum, the Italian regulator truly designed regulatory pilots with strictly defined project promoters and targeted derogations, while at the other end the British regulator left it open to all sorts of project promoters to design their own experiments. The approach in the Netherlands lays in the middle with a pre-defined 'menu of derogations' from which project promoters could choose. In all three countries, these first experiences with regulatory experimentation were considered positive and the initiatives quickly expanded.

Looking at how the approaches in these three countries are evolving, we observe that the implementation of 'regulatory sandboxes 2.0' in Great Britain and the Netherlands seems to be converging, while the approach in Italy has evolved from designing regulatory pilots to pilot

regulation. We notice that even though the scope of regulatory experiments is expanding (e.g., also covering gas legislation), most experimentation is happening at the lower voltage/pressure level. However, in order for the green transition to succeed, innovation with regard to technologies at the transmission level will also be needed. Examples are power-to-x technologies enabling sector integration.

Currently, the only experiences with deviations from EU regulations have been exemption procedures. More is needed. We believe that when setting up an 'EU umbrella' for the sandbox approach as the

Agency for the Cooperation of Energy Regulators (ACER) and CEER propose, lessons can be learned from the national case studies mentioned here. Transposing the Italian and Dutch approach to the EU level might be the most realistic strategy in the short term. If experiences are positive, the step to EU-wide sandboxes as in the British case can be taken. In addition, when thinking about regulatory experimentation at the EU level, involvement of an EU actor seems crucial. In this regard, ACER could be the right party under the condition that enough resources are provided to administer the regulatory experiments.

	Eligible project promoters	Derogations	Length of derogations	Administration	Funding	Transparency
IT (2010-2015)	DSOs or third-party EV charging station operators	Targeted	4-5 years	Regulator, with external experts helping in the selection procedure	Yes	6-month reports and final reports to the regulator. Final public report.
NL (2015-2018)	Initially communities and homeowner associations	Menu of options	Default: 10 years	Ministry with advice and monitoring from the regulator	No	6-month or yearly meet-ups of experiments. Progress reports, not public.
GB (2016-2017)	Communities and companies	Open	2 years	Regulator	No	Regular updates and report at the end. Parts of the final reports are public.

Table 1. Summary of the three approaches along six dimensions

References:

Schittekatte, T., Meeus, L., Jamasb, T. and Llorca, M. (2020). Regulatory Experimentation in Energy: Three Pioneer Countries and lessons for the Green Transition (chapter for the book "Energy Regulation in the Green Transition: An Anthology", an initiative led by the Danish Utility Regulator)

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