

Regulation and Innovation: a suggested Taxonomy

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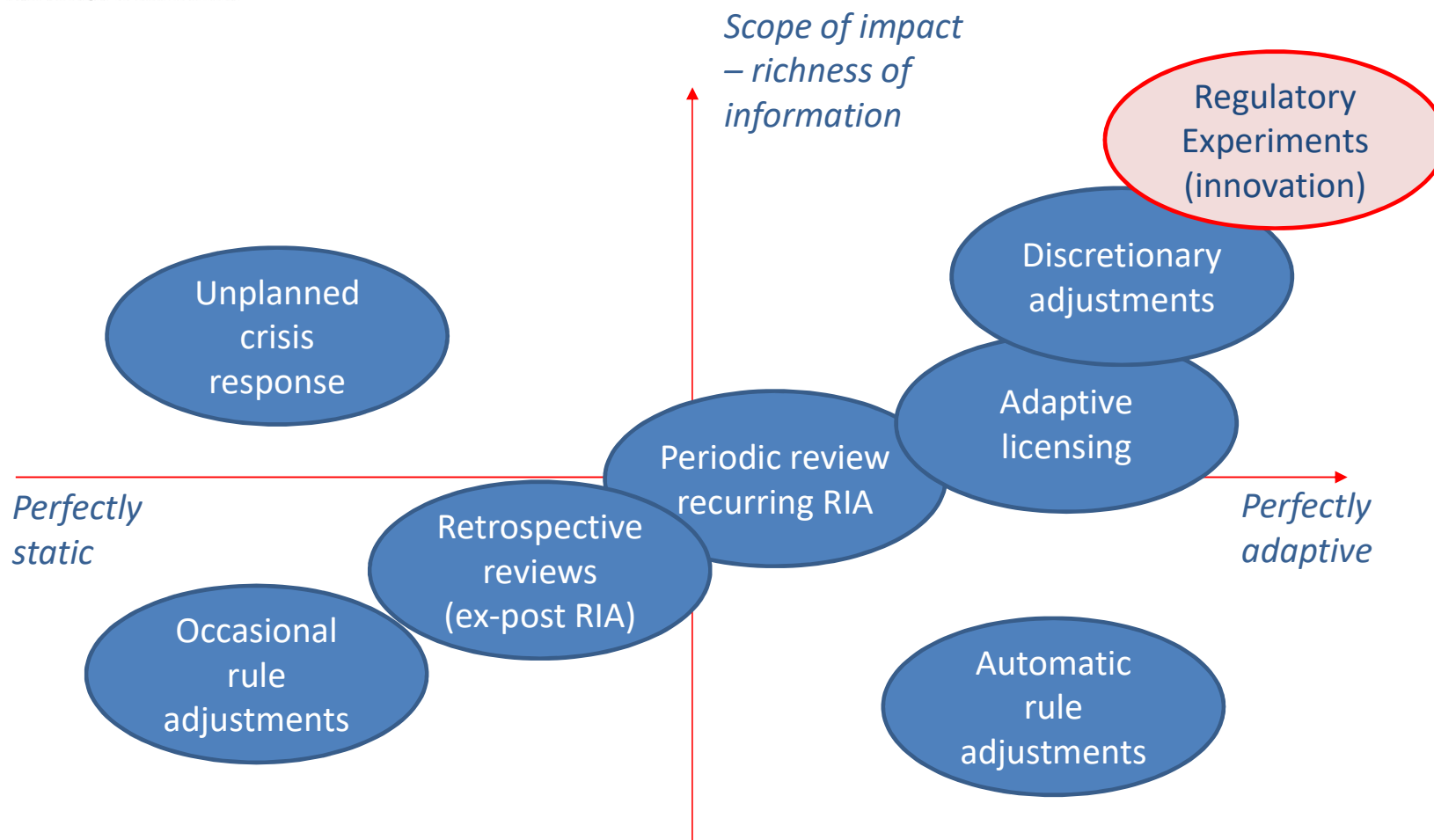
Law must be stable, and yet it cannot stand still

Roscoe Pound,
Dean at Harvard Law School
Interpretations of Legal History, 1923

Barrier 6. Rigid regulatory system hampering smart grid deployment

ISGAN
*Policy messages on Upscaling
of smart grid solutions*, 2019

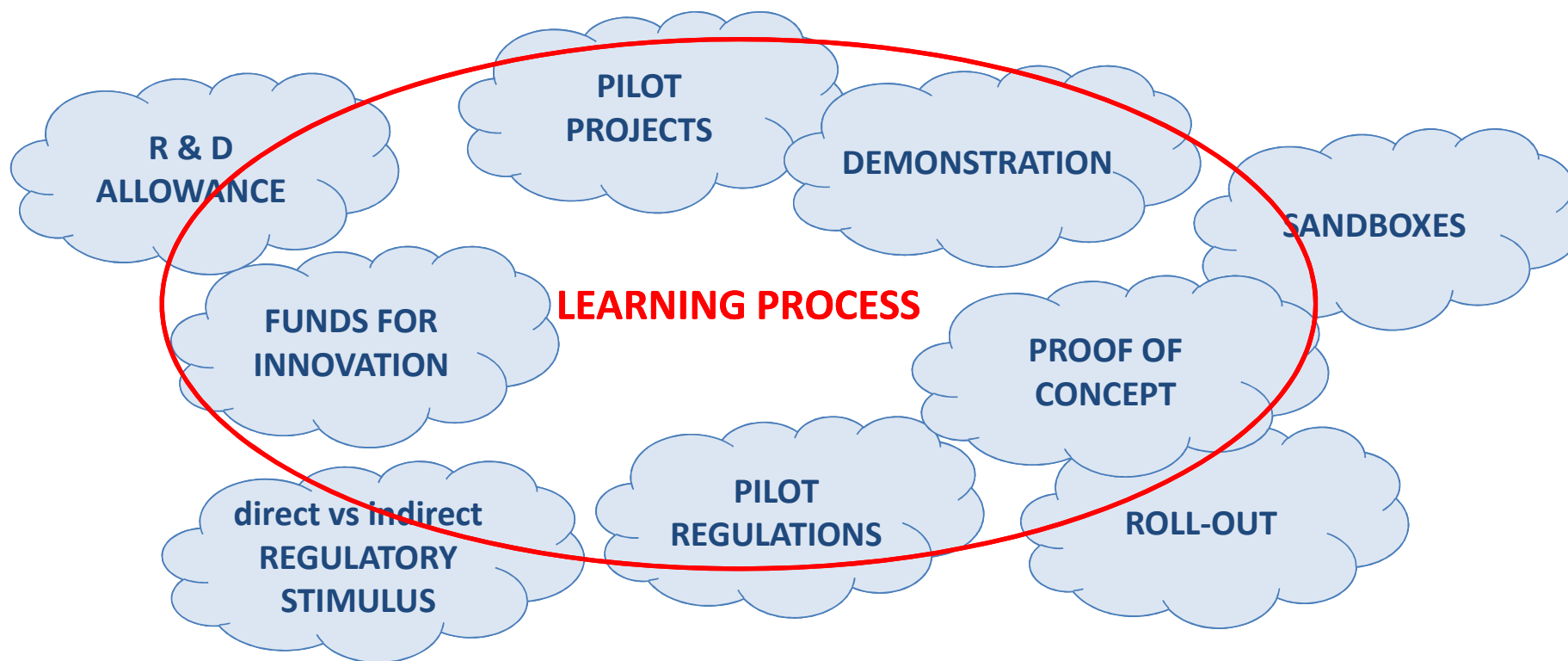
https://www.iea-isgan.org/wp-content/uploads/2019/12/ISGAN-Policy-Messages-on-Upscaling_November2019-1.pdf



Source: L. S. Benneer, J. B. Wiener, “*Adaptive Regulation: Instrument Choice for Policy Learning over Time*”, draft working paper, February 2019



Wide regulatory tool-kit for supporting innovation



Still, not yet a common language among regulators



A Proposal for a Taxonomy: 1st axis

<i>SYSTEM-WIDE INNOVATION</i>	In a few cases, roll out of innovation tested in confined trials (or pilots) is incentivized by Regulators (IT: <i>output-based scheme*</i>)
<i>ZONE-WIDE INNOVATION</i>	Approach already used (IT, UK, ...) for smart grid pilot projects : a pre-defined, confined area is upgraded for demonstration

(*) M. Delfanti, S. Larzeni, L. Lo Schiavo, V. Olivieri *Regulatory incentive mechanisms for promoting investments in smart distribution system, CIRED paper n.463, Helsinki 2016*

A Proposal for a Taxonomy: 2nd axis

	<i>GRID OPERATORS ONLY</i>	<i>GRID AND MARKET OPERATORS JOINTLY</i>
	Innovation focused on infrastructure technologies carried out mainly by grid operators (<i>less complex, but: risk of competition foreclosing</i>)	Innovation focused on business models experimented by market players (e.g. sandboxes*) (<i>more complex and sometimes out of NRAs powers</i>)

A «**sandbox**»
 is a bottom-up
 initiative, typically
 carried out at
 retail level

(*) ISGAN - Innovative Regulatory Approaches with Focus on Experimental Sandboxes
 Casebook Australia, Austria, Germany, Italy, the Netherlands, the United Kingdom and the United States, May 2019

A Proposal for a Taxonomy: 4 cells

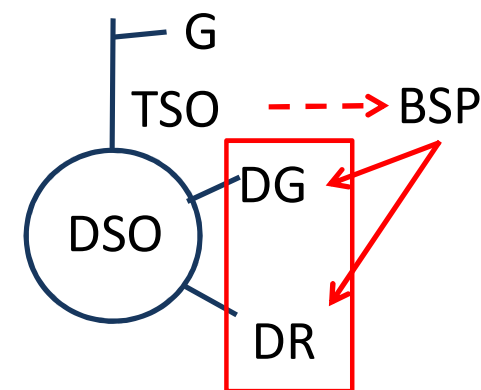
	<i>GRID OPERATORS ONLY</i>	<i>GRID AND MARKET OPERATORS JOINTLY</i>
<i>SYSTEM-WIDE INNOVATION</i>	INCENTIVES FOR ROLL-OUT	PILOT REGULATIONS
<i>ZONE-WIDE INNOVATION</i>	PILOT PROJECTS	REGULATORY SANDBOXES

Regulatory concern: *risk of discrimination* among players or customers, f.i. in case of undue tariff wavers

Source: A. Guerrini, L. Lo Schiavo, C. Poletti “Innovazione e regolazione” [Innovation and regulation] working paper, publication forecoming, 2020

A case of Pilot Regulation: widening participation to ancillary service market in Italy

DISPATCHING	CURRENT REGULATION	PILOT REGULATION (ARERA decisions 300/17, 422/18, 153/20)
Minimum size	10 MW	1 MW aggregated (to be lowered to 0.2 MW)
Admitted sources for generation unit	only thermal and large hydro	also RES-NP
Admitted demand units	only very large customers	any active demand unit (also MV-LV)
Remuneration for ancillary services	Market, Pay as bid [€/MWh]	Additional remuneration [€/MW] (under condit.s)
Control device	Obligations (refresh 4 seconds)	Same obligations, but at aggregated level

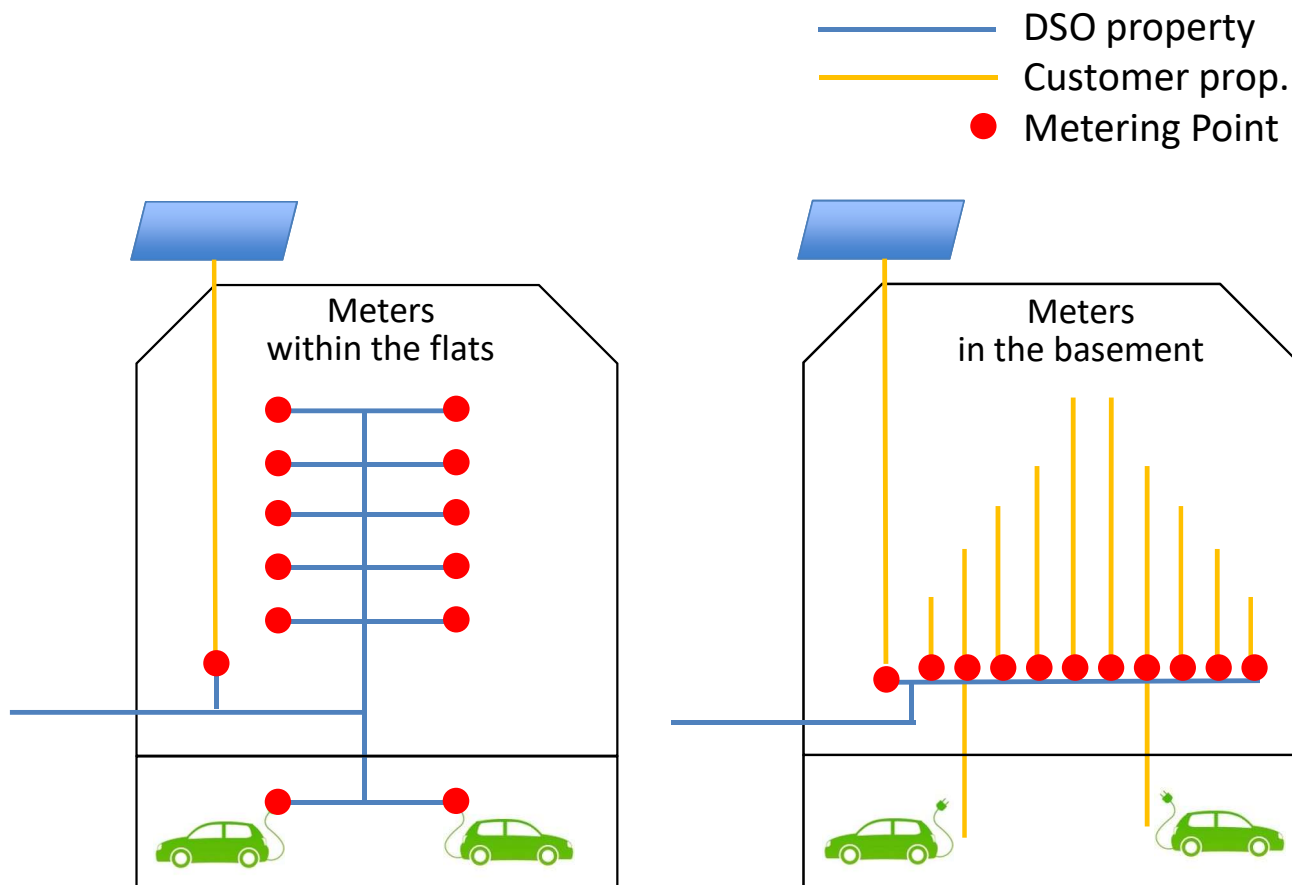


Virtual Dispatchable Unit
[in Italian: UVA]

BSP Balancing Service Provider
 G Traditional, large generation
 GD Distributed Generation
 DR Demand Response
 TSO Transmission System Operator
 DSO Distribution System Operator

Further cases of Pilot Regulations for DSOs (Italy)

- Maintenance and developments of obsolete «uprights»: how to facilitate DSO's works within private property
- Collective self-consumption within apartment blocks



Thank you for your kind attention!

www.arera.it

Further documentation on pilot regulations (in Italian only):

- Participation of distributed resources to ancillary service market: *Relazione* 143/2019 , pages 33-43, www.arera.it/allegati/docs/19/291-19.pdf (update of this Report to be published in July)
- Maintenance of DSO's uprights : *Deliberazione* 467/2019 www.arera.it/it/docs/19/467-19.htm and public workshop www.arera.it/it/eventi/20/200218.htm
- Collective self-consumption within apartment blocks: *Documento per la consultazione* 112/2020 www.arera.it/allegati/docs/20/112-20.pdf

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Appendix

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Activities of Annex 7: Analysis and policy advice on regulatory experimenting and institutional barriers for replication of smart grid solutions

- **Regulatory Experimenting:**

- Impact Assessment of Regulatory Experimenting programs (developing an evaluation concept and intervention logic)
- ISGAN ETIP-SNET Webinar on Regulatory Experimenting (programs and projects): 28 September 2020
- ISGAN Case Book on Innovative Regulatory Approaches with Focus on Experimental Sandboxes – UPDATE autumn 2020

- **Institutional Challenges for Replication and Upscaling:**

- Innovation Ecosystem and regulatory challenges for Energy Transition
- Institutional and regulatory context to replication and upscaling of integrated energy system solutions

Messages for decision makers

www.iea-isgan.org/policy-messages-on-innovative-regulatory-approaches-with-focus-on-experimental-sandboxes-to-enable-smart-grid-deployment/



1. Regulatory Sandbox programs should:

- ✓ Aim at speeding-up energy transition.
- ✓ Foster innovation by lifting up (removing) barriers in current regulation.

2. Learning as important as the experimenting in Sandbox Projects.

- ✓ For innovators perceiving regulatory barriers – **regulatory bodies may tell** whether a regulatory exemption is necessary or not.
- ✓ **Learning among innovators can be intensified** if trustful knowledge exchange can be organized – avoiding making mistakes already made by others.
- ✓ For regulatory bodies and legislators, **trials** in Regulatory Sandboxes **provide valuable evidence** to help understand whether and **how regulation should change permanently**.

3. Energy and Innovation policies have to be orchestrated with complementary action combining:

- ✓ Research and innovation instruments,
- ✓ with legislative measures, with innovation oriented regulatory bodies, and
- ✓ instruments of energy policy (Ministries).

4. Involvement of regulatory bodies is key.

- ✓ They should be involved in enabling sandbox programs from the beginning and should have an **active role in fostering innovation** towards more sustainable energy systems.
- ✓ The overall aim should be to **change the goals for regulatory bodies towards a balanced weight on long- and short-term societal benefits** of energy systems.