

Advancing the Clean Energy Transition through Knowledge and Impact – Sandboxing and Market Acceleration 23 October, 09:00 – 12:30 CEST

**Annual Conference 2024** 



Moderation: Andreas Corusa Head of Knowledge Community Management

Co-Moderation: Tanja Suni Head of Impact Management



## **Today's Agenda**



EUROPEAN PARTNERSHIP

**CETPartnership Annual Conference 2024** 

23/10/2024

the European Union



## Main goals of this session

- Get insights on the Net-Zero Industry Act especially on sandboxing and applicability
- Discuss the possibilities and impacts of sandboxing in your own research
- Discuss strategies to accelerate market uptake through sustainability and business readiness





the European Union

## What is the Clean Energy Transition Partnership?

## We facilitate and accelerate the Clean Energy Transition in Europe and beyond

By aligning innovation priorities, pooling funding and leveraging knowledge and experience from more than 30 countries, together with about 50 public funders

We have established an <u>impactful</u> transnational innovation <u>community</u> driving the Clean Energy Transition.

#### What we mean by impactful:

Projects which inspire action – innovations which are recognized internationally – Transferable solutions which have been adopted by society

What we mean by community: A community of change-makers from researchers, corporates, entrepreneurs, policy makers to visionaries who have created scalable and impactful solutions towards a climate neutral world.





30+ Countries20+ EU Member States+ 10 Associated Countries

**47+ Funding Partners** Funding Agencies & Ministries

#### Top-up

European Commission is the single biggest financing organisation

**13 Coordination Units** Coordinator: BMK / SWEA

Annual Calls for RTDI Projects 100 – 140 M € per year 2022 - 2027

Call 2024 Total > 130 M €





## **CETPartnership project portfolio**

- 2 joint calls carried out
- 108\* projects (to be) funded (46 active projects, 62 upcoming projects)
- 250 MEUR project volume, of which:
  - 187 MEUR funding
  - 1,7 MEUR average funding per project
  - 7,7 organisations per project on average



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## **Clean Energy Transition Partnership (CETPartnership)**

#### Key Focus Areas (TRIs):

- **TRI 1**: Integrated Net-zero-emissions Energy Systems
- **TRI 2**: Enhanced Zero Emission Power Technologies
- **TRI 3**: Climate Neutrality with Storage Technologies, Renewable Fuels, and CCUS
- **TRI 4**: Efficient Zero Emission Heating and Cooling Solutions
- **TRI 5**: Integrated Regional Energy Systems
- TRI 6: Integrated Industrial Energy Systems
- **TRI 7**: Integration in the Built Environment







\*Preliminary figures subject to changes in negotiation / contractual phase, TRI1-TRI2 combined call module split 50:50

35

30

25

20

15

10

5

0

TRI 1

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### **Knowledge Community and Impact: Who we are**





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### **Our Approach**

- Diverse event formats: workshops, conferences, online forums
- Inter-disciplinary cooperation and resource sharing
- Bridge-building between academia and industry

#### Upcoming events





ONLINE 30 OCT 2024 - 15:00

#### Grand Challenges in Offshore Renewable Energy: From Technology Development to Sustainability

Join this interactive workshop on offshore renewable energy including a round of interaction with our funded projects organised by CETPartnership Transition Initiative 2. Register by logging in and clicki...

Thematic Events

ONLINE 6 NOV 2024 - 09:00

#### Knowledge Sharing Workshop - CETP TRI 1 + 6 Flexibility in Industry

Join the CETPartnership Knowledge Sharing Workshop on the value of thermal storage in industry to foster energy system flexibility. You register by clicking the green 'attend' button.

Thematic Events



## **Key Benefits**

- Knowledge sharing and networking
- Accelerated innovation in research
- Advancement of cutting-edge research
- Improved research outcomes and productivity
- Regular impact assessments and metrics tracking







## Join Us and Stay Tuned

- Opportunities for collaboration
- Access to shared resources
- Be part of a growing research community



https://cetpartnership.eu



https://www.linkedin.com/company/cetpartnership/



https://clean-energy-transitionpartnership-2023.cetp.b2match.io/



https://www.youtube.com/@cetpartnership



# Living Labs and regulators sandboxes



Martina Desole Director ENOLL









## **ENoLL infoday**

23rd October 2024 Martina Desole, Director ENoLL European Network of Living Labs

## ENoLL is the international non-profit association of certified Living Labs

Active in 20+ EUcontinents +500funded projects 38 historically to support LL countries certified creation and living labs strengthen the  $\sim 165$  active impact of LL members (89%) in Europe)

- Founded in 2006 under the auspices of the Finnish European Presidency
- ENoLL focuses on facilitating knowledge exchange, joint actions and project partnerships among its members
- Its aim is to promote the Living Labs concept, support
  EU policies, enhance Living Labs and their
  sustainability and enable their implementation at a global level.
- ENoLL growing community includes members that operate by the main living lab principles such as **multi-stakeholder co-creation**, **iterative active user involvement** and **real-life intervention**.



## A path to grow

#### MISSION

ENoLL mission is to be an **Ambas sador** of European values of **co-creation** and **open innovation**, to provide value to its **members** and external **stakeholders** by offering them **opportunities** to develop their **capacities & knowledge** in order to strengthen them in **developing and scaling-up** impactful innovative products & services and expanding their own value to their own stakeholders

VISION

ENoLL aims to be the leading organization empowering the **global** development of Living Labs as **enablers** of **impactful** open innovation ecosystems where everyone can co-create and innovate via cross-border & crosssectoral **collaboration** in an **inclusive** way







#### European Network of Living Labs

## Living Labs EU-wide recognition



towards agroecology

throughout Europe

the health of citizens



## What are Living Labs?

Living Labs are open innovation ecosystems in real-life environments based on a systematic user co-creation approach that integrates research and innovation activities in communities, placing citizens at the centre of innovation



Living Labs operate as **intermediaries** among **citizens**, **research organisations**, **companies and government** agencies or levels for joint-value co-creation, rapid prototyping or to scale up innovation and businesses.

They are open innovation ecosystems in **real-life** environments using **iterative feedback processes** throughout the lifecycle approach of an innovation







Living Lab are trustful regional ecosystems

Living Labs create a trustful environment which all stakeholders perceive as safe and neutral to open and contribute, understanding the value for them but also the value for the whole ecosystem European Network of Living Labs

## **Regulatory learning context**

#### **INNOVATORS**

face the challenge of fitting their innovative solutions into relevant laws, policies, standards, rules and specifications set by regulatory authorities

#### CITIZENS

are crucial for the acceptance of innovation, but concerns about the lack of public scrutiny over new technologies and their impact may undermine trust and policy legitimacy.



#### REGULATORS

Regulators create and enforce policies while balancing environmental, social, and economic objectives. They must adapt to rapid innovation to ensure regulations remain effective. The public sector faces two risks: under-regulation, which leaves society vulnerable, and over-regulation, which can stifle innovation and deter investment. Striking the right balance is crucial to fostering sustainable progress.

### INNOVATORS

European Network of Living Labs

## Key definitions and concepts

**Regulatory learning** refers to all insights relevant to current and future regulatory policy, which regulators and the multiple helix components gain as a result of engaging with a living lab environment where an innovative technology or solution is being tested in compliance with relevant regulations.

•**Regulatory experimentation** involves a test or trial of a new product, service, approach or process, designed to generate evidence that can inform the design, revision or administration of a regulatory regime (Gorst et al., 2021). Regulatory experimentation can also take the form of a temporary removal of regulatory barriers (Schittekatte et al., 2021).

# Regulatory sandboxes, testbed, and Living Labs

European Network of

Living Labs

**Regulatory Sandboxes** are structured framework for cooperation with competent authorities that allow innovators to develop and test ideas, products, business models and services in a controlled real-world environment under the supervision of a competent authority. Are always limited in terms of time and scope

**Testbed** are used for the development, testing and scaling up of innovations in a dedicated environment. Unlike regulatory sandboxes there is no direct link to regulation because the testing focuses on technologies with some consultancy and advisory on regulatory aspects.

**Living Labs** combine the experimentation feature with the citizen engagement throughout the process. The main goals of Living Labs are to explore the effect of innovation on users and society and to better calibrate the relevant requirements.

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## Why Living Labs and Sandboxes

Living labs are vibrant ecosystems that facilitate the **involvement of any relevant stakeholders of the quadruple helix model** – in this case including regulators – in **joint co-creation processes**.

As such, living labs can provide an especially fertile ground "for designing, exploring, experiencing, and refining new policies and regulations in real-life scenarios for evaluating their potential impacts before their implementations"

Especially in an unregulated field, LL can support in understanding the nature of innovation, its potentials and associated risks, ensuring consistency with core policy objectives and values

Keyword: co-creation!

## VALENCIA LIVING LAB AND SANDBOX: TWO STEPS FORWARD TOWARDS CLIMATE NEUTRALITY

9 DE FEBRUARY DE 2024 DE: CATEGORÍAS: <u>INVEST NEWS</u>, <u>NEWS</u>

Valencia has been accepted into the European Network of Living Labs (ENoLL), recognizing the city's efforts in promoting innovation. With this achievement, our city joins over 480 members in Europe and worldwide, comprising a prestigious and independent non-profit organization dedicated to fostering an open and global innovation ecosystem for co-creation and collaboration.

## But what exactly is an Urban Innovation Sandbox?

A sandbox is a controlled and secure testing environment where technological innovations can undergo testing before being commercialized and implemented. The aim is to provide companies, startups, and academic institutions with a suitable location in the city to test their inventions with streamlined bureaucracy.

This initiative aligns with the goal of achieving climate neutrality by 2030 while promoting business productivity and competitiveness, contributing to the knowledge society, enhancing public services to meet evolving citizen needs, and fostering an innovative ecosystem and culture.

With the Living Lab and the Sandbox (almost) ready, Valencia now possesses two out of the three experimentation spaces prioritized by the European Commission to promote innovative experimentation policies among member states under public-private collaboration frameworks.



#### **Limerick's Citizen Innovation Lab**

Limerick's Citizen Innovation Lab is a living lab that engages citizens via digital tools in creating a citizen-sourced open-data portal to enable local policy and regulatory change (funded under the Positive City Exchange project, Horizon 2020). It was used to develop smart sensors to gather evidence with a view to enabling change in the building and fire regulations in Limerick (a project that was supported by the Small Business Innovation Research challenge in Ireland).



#### Kraków Living Lab

The Kraków living lab organises policy learning labs (PLL) with innovators and citizens, where policymakers can learn about concrete applications of emerging technologies, the barriers that innovators have encountered and the ways in which citizens feel affected. In a PLL focused on AI, companies identified challenges requiring regulatory standardisation. Interactions in PLLs have also helped shape the Regional Innovation Strategy and an air pollution regulation.

European Network of Living Labs

40 regulatory sandboxes in Europe by the end of 2021

#### Figure 2: number of cases per Member State



End of 2021

#### European Network of Living Labs

#### Figure 3: number of cases per sector



End of 2021



## **Outside Europe**

Examples in:



















## What's next

Relaunch of the Joint Working group Living Labs as Regulatory Learning Tools

Preparation of sandboxes in the context of the **Interoperable Europe Act**, Artificial Intelligence and NetZero (energy)

European Network of Living Labs

## **Contact us!**



www.enoll.org

info@enoll.org



Martina Desole Martina.desole@enoll.org



## **Net-zero regulatory sandboxes**



Andrea Hercsuth Policy Officer European Commission DG ENER



**EUROPEAN PARTNERSHIP** 

## Net-zero regulatory sandboxes

23 October 2024

**CETPartnership Annual Conference** 



#### Need for regulatory experimentation in the energy sector Staff Working Document on Regulatory learning in the EU SWD(2023) 277/2 final

#### System transformation

- **Profound transformation in the context of the digital and green transition** (EU Green Deal, Fit for 55 Package; REPowerEU, Digital Strategy)
- Climate security of supply competitiveness -> accelerated deployment of EE, RES, smart energy systems
- Innovation key to enabling the complex transformation of the sector to reach our objectives

#### Barriers

- Innovative energy projects might face different types of **barriers** 
  - Technical challenges (e.g. interoperability); Limited resources to fund innovation due to high financial risks; Resistance to change among stakeholders
  - **Regulatory barriers** delays in transposition, lack of sufficiently streamlined regulation, lack of regulation, split incentives
- Limitations built in the regulatory framework might serve well justified societal purposes –> not in the scope of regulatory experimentation
- Focus on **unintended regulatory barriers** (flexibility markets for electricity, waste-heat recovery, integration of demand-side assets, prosumer-use cases, community energy storage, offshore wind farm permitting, recycling of blades, agri-PV, floating PV, integrated PV in building codes...)

Categorisation of experimentation tools by main focus



\* Specific tools developed and used in the energy sector

#### **Testbeds**

- Experiments to develop, test and upscale a product or service in a dedicated environment
- The focus of the experiment is mostly **technical** (technology requirements, standards, and performance)
- Regulatory authority is typically **not** involved

#### Living labs

- Co-create, prototype, test and upscale innovative solutions to (local) needs in reallife settings
- Experimentation includes the **involvement** of citizens as well as other stakeholders and end-users as co-creators to **assess** user uptake and acceptance
- Not systematically linked with regulatory authorities but can be used by regulators to anticipate future needs

#### **Regulatory sandboxes**

- Schemes that enable the testing of innovations in a controlled real-world environment, under a specific plan developed with and monitored by a competent authority
- · Aim to facilitate regulatory learning
- Competent authorities can either provide bespoke guidance on how to interpret a legislative flamework or provide a degree of flexibility through derogations<sup>1</sup>



## Current state\* of regulatory experimentation in MSs in the energy sector





## Regulatory sandbox toolbox

- definition of objectives and potential impact
- choice of tool
- sectoral vs general approach
- broad definition of areas vs focused approach
- top-down vs bottom-up initiatives
- the competent authority
- the participants and their involvement
- the innovative element and how it is defined and evaluated
- derogations
- duration of the trials

- safeguards
- transparency and flexibility of the scheme
- the application process: call windows vs continuous (on-demand) evaluation
- indicators reporting and monitoring
- impact and replicability
- exchange of knowledge
- regulatory learning mechanism
- advisory service



## Final remarks and lessons learnt

- there is no single instrument that is suitable in all circumstances > selection of the right tool
- designing it with the **involvement of stakeholders**
- energy regulators (NRAs) need to have competences reflected in their mandate to support innovation in the energy market
- NRAs should always be able to support innovation in regulated activities by applying incentive regulation in large-scale and smaller-scale pilot projects.
- regulatory experiments should be part of a broader strategy serving the long-term objectives of the energy transition and mutually supporting other roadmap instruments > projects should prove making a concrete contribution to that policy framework.
- **regulatory learning** is always a **clear objective** when granting derogations.
- · well-designed reporting and monitoring with

appropriate indicators to capture the trial's contribution to energy policy and societal objectives, and to provide input for regulatory learning and scaling-up is key for a successful scheme

the stakeholders need competent authorities (particularly for energy regulators) to provide **consulting/advisory services** that help market participants understand the boundaries set by the regulatory framework for their activities

**one-stop-shop approach** is highly appreciated when different authorities are competent to provide derogations in the same field

fundamental that **communication** takes place effectively to spread the lessons learnt from regulatory sandboxes for their future use also in other projects



## General objective of NZIA Ensuring reduction of strategic dependencies



 Establishing a regulatory framework to ensure the Union's access to a secure and sustainable supply of net-zero technologies including by scaling up the manufacturing capacity of net-zero technologies and their supply chains.

Two political benchmarks – reaching manufacturing capacities

at least 40% of EU annual deployment needs for the corresponding technologies necessary to achieve the Union's 2030 climate and energy targets.

an increased Union's share for the corresponding technologies in view to reach **15%** of **world production by 2040**, based on the monitoring in the Act.



## **NZIA - Overview**



## Net-zero regulatory sandboxes

#### WHY?

- To promote innovation in the field of net-zero technologies
- To enable regulatory learning
- Innovative technologies essential to achieve climate neutrality objective, security of supply and resilience

#### HOW?

- To test innovative net-zero technologies and other innovative technologies
- In controlled real-world environment (by competent authority)
- Limited time
- Balance legal certainty for participants objectives of Union law
- Derogations in national law



## Establishment

- **Designation** of one or several **national contact points** by MSs (in 9 months)
- Establishment of regulatory sandboxes by MSs on own initiative or request of companies
- **Modalities and conditions** to be adopted through **implementing act** (eligibility criteria, selection procedure, participation, monitoring, exiting, terms and conditions for applicants)
- Fostering innovation and regulatory learning, special circumstances of SMEs and start-ups



## **Competent authorities**

- Competences of supervisory authorities (supervisory, corrective powers) flexible manner to support the objective of removing barriers, alleviating regulatory burden, reducing regulatory uncertainty, and supporting innovation in net-zero technologies
- Granting derogations or exemptions (in national law) while respecting Union law and key objectives and requirements of national law
- **Safeguards** for health, safety of workers, general population, environment and maintaining third party liability
- Possibility of extension



## **Enabling measures**

- Facilitating cross-border cooperation
- Coordination of activities, cooperation and information sharing in the framework of Net-Zero Europe Platform (including invitation of companies)
- Regular reporting by the Commission on results, good practices, lessons learnt, recommendations, application of this Regulation and other Union legislation supporting regulatory sandboxes
- Additional support measures for SMEs (priority access, awareness raising, dedicated communication channel; administrative support and information on available financial support)



## Classification of regulatory experimentation tools used in the energy sector





## Examples for fields of experimentation

#### Higher share of (variable) RES in the energy system and decentralized production

- > Integration of RES into electricity network (FR, optimizing grid connections)
- > Integration of RES and low carbon gases / hydrogen (FR, biogas to natural gas network; methane by methanation)
- Production of renewable hydrogen with electrolyser (DK, wind taxi fleet)

#### Empowerment of consumers and demand-response

- > Self-consumption and energy communities (BE, NL special exemptions for tariff settings and supplier obligations)
- Demand response to residential consumers

#### Investment and management of a more complex network (digitalization)

- Electricity network tariff design (SE, testing of new tariffs)
- > Smart grids (PT, pilot projects on uses of smart meter data on technical quality of service)
- > Flexibility and balancing services (IT, 2017 pilot regulation opening balancing and ancillary services)
- Storage in balancing (FR, participation of battery storage in system services hybridization and dynamic aggregation with means of production)

#### Sector coupling and electrification of other sectors

<sup>28</sup> > Electromobility (IT, charging of private EV, derogation from ordinary tariff system)



## Useful links:

• Regulatory learning in the EU (Guidance on regulatory sandboxes, testbeds, and living labs in the EU, with a focus section on energy SWD(2023) 277/2 final:

https://research-and-innovation.ec.europa.eu/system/files/2023-08/swd\_2023\_277\_f1.pdf

- JRC (2023): Gangale, F., Mengolini, A., Covrig, L., Chondrogiannis, S., Shortall, R.: Making energy regulation fit for purpose. State of play of regulatory experimentation in the EU - Insights from running regulatory sandboxes <u>https://publications.jrc.ec.europa.eu/repository/handle/JRC132259</u>
- CEER: Paper on Regulatory Sandboxes in Incentive Regulation Distribution Systems Working Group Ref: C21-DS-74-04 25 May 20 <u>https://www.ceer.eu/documents/104400/-/-/72eab87d-9220-e227-1d26-557a63409c6b</u>
- ISGAN: Smart Grid Case Studies. Innovative Regulatory Approaches with Focus on Experimental Sandboxes
  2.0 <u>https://www.iea-isgan.org/wp-content/uploads/2019/05/ISGAN-Casebook-%e2%80%9cInnovative-Regulatory-Approaches-with-Focus-on-Experimental-Sandboxes%e2%80%9d.pdf</u>
- ENTEC: Regulatory sandboxes in the energy sector Final report <a href="https://op.europa.eu/en/publication-detail/-/publication/86c18e4c-1ecb-11ee-806b-01aa75ed71a1/language-en?WT\_mc\_id=Searchresult&WT\_ria\_c=37085&WT\_ria\_f=3608&WT\_ria\_ev=search&WT\_URL=https%3A//energy.ec.europa.eu/</a>
- ETIP-SNET: Regulatory sandboxes Policy report drafted by WG5's regulatory sandboxes task force <u>https://data.europa.eu/doi/10.2833/676429</u>



## Thank you!

Contact:

andrea.hercsuth@ec.europa.eu





# Knowledge Community Session & Impact Workshop



**EUROPEAN PARTNERSHIP** 



### **Rooms and Moderation**

Room No.	Session 1/Moderator	Session 2/Moderator	Technical support
Room - 1	KC Interactive Session/ Andreas Corusa	Impact Interactive Session/ Tanja Suni	Afnan Tariq
Room - 2	Impact interactive Session/ Tanja Suni	KC Interactive Session/ Andreas Corusa	Pranit Nale

Remark: Participants and experts will be automatically assigned to specific rooms.





### **Purpose of the Discussions in Breakout Rooms**

- Knowledge Community Session:
  - O Discuss and learn about **regulatory impacts** on your project work
  - O Discuss **sandboxing possibilities** for future reserach
- Impact Session:
  - Reflect on project readiness by assessing technological, market, and societal factors that influence scaling and commercialization.
  - Identify challenges and support needs to accelerate market uptake, focusing on sustainability, social acceptance, and market and business readiness.





## Wrap-up and fish-bowl discussion





Andrea Hercsuth Policy Officer European Commission DG ENER

Tanja Suni Head of Impact Management CETPartnership



#### Andreas Corusa

Head of Knowledge Community Management CETPartnership







# Final reflections and outlook in the future!



#### **Davide Amato**

Deputy Head of Unit – Clean Energy Transition, DG R&I European Commission



#### Michael Hübner

CETPartnership Coordinator Austrian Ministry for Climate Action



## What's next?



#### **Comprehensive documentation**

You will receive a **follow-up e-mail** when the documentation is ready

- Recordings of each session
- Presentations of each session
- Wrap-Up report: A summary of the conference insights

#### **Strategic Review**

• Internal evaluation to integrate conference insights and outcomes into CETPartnership



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## Interested in our Joint Call 2024?

- Pre-proposal submission deadline is on 21<sup>st</sup> of November.
- Do you have questions? Then join our Q&A session later at 14:00 CEST.

Scan the QR Code to register on our event platform







# Thank you for a successful Annual Conference!



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