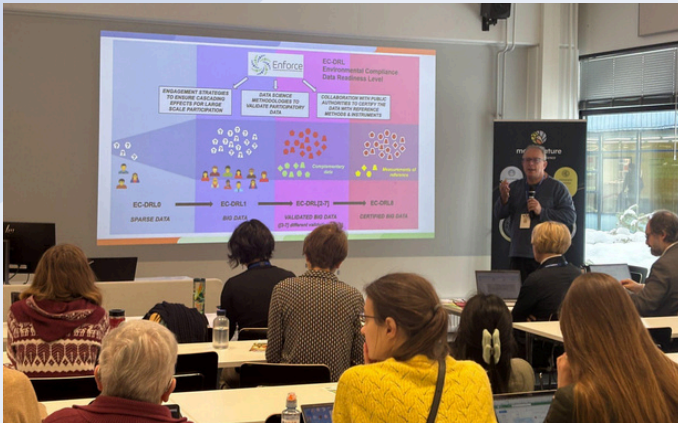


Bridging the Citizen Science data-to-policy gap: Leveraging data readiness level frameworks to create pathways for actionable environmental insights

Jaume Piera, Karen Soacha-Godoy, Meritxell Turó, Vanessa-Sarah Salvo



This session was held on Friday, 6 March 2026, in two parts, proposed as a collaboration between two sister projects, [ENFORCE](#) (convenors: Vanessa-Sarah Salvo, Anna Berti Suman and Jaume Piera) and more4nature (convenors: Uta Wehn and Joan Maso), with Karen Soacha also participating as convenor representing RIECS-Concept. The main goal of the two panels discussion was to build consensus on the Data Readiness Level (DRL) dimensions, a concept initially developed within ENFORCE and proposed for broader use across projects and contexts. The DRL concept was conceived initially in the ENFORCE but it was proposed to be used extensively in other projects and contexts. This part started with a live questionnaire - administered through Mentimeter - among participants to get a first impression about the questions and topics addressed in this session.

01. Setting the scene: Data Readiness Levels and key challenges

- **Anna Berti Suman**, substituting the initial speaker **Vanessa-Sarah Salvo**, introduced the ENFORCE project,
- **Uta Wehn/Joan Masó** introduced the more4nature project,
- **Jaume Piera** introduced the ENHANCE project,
- **Karen Soacha** introduced the RIECS-Concept project,
- **Kelly Haynes**. Mind the Data Gap: turning Citizen Science into Trusted Evidence,
- **David Kocman**. Empowering Citizens for Policy Change through Data and Dialogue

02. From data to policy: priorities, trust and implementation

- **Uta Wehn**: Increasing and institutionalising citizen science contributions to environmental compliance assurance,
- **Joanna Storie**: Lessons learnt from a systematic review of environmental citizen science and its impact on policymaking,
- **Eline Verhoeven**: Citizen science data-to-policy for air quality: insights from local governments,
- **Jean-Marc Bertho**: Radiation measurement by citizen: challenges and opportunities.



Discussion points

The Tension Between Data Readiness Requirements and Citizen Engagement

The motivations of citizen scientists shape their willingness to participate and remain engaged, raising the question of whether increasing expectations around data readiness may sometimes feel like an additional burden. The discussion pointed to the need to avoid turning readiness requirements into barriers that discourage involvement.

At the same time, infrastructures are essential for making DRL operational. ENHANCE illustrated this through a One Health coastal management approach that combines Copernicus data, citizen science data and other sources within an interoperable platform designed to support decision-making in Mediterranean case studies. This points to a broader insight: data readiness is connected not only to data collection but also to identification, validation and trust in emerging hybrid systems, including community supported and AI assisted services. RIECS-Concept reinforced this by arguing that fragmentation across tools, standards and communities weakens both scientific value and usefulness for policymakers.

The Role of Interpretation, Feedback and Real-Time Relevance in Making Citizen Science Actionable

Data quality alone is not sufficient for citizen science to be actionable. The discussion suggested that citizen science becomes more useful when participants are meaningfully involved in interpretation, when results are communicated back in useful ways, and when data can be situated within real-time decision contexts. "Mind the Data Gap" introduced a complementary concept to DRL, that of "tiers of citizen's precision", with tier 1 representing data that is fit only for early warning, extending up the compliance ladder. The "Empowering Citizens for Policy Change through Data and Dialogue" experience further showed that participant access to information can influence awareness and behaviour, including route choices and ideas for infrastructure improvement.

Openness, Privacy and Trust in Citizen-Generated Data

The balance between data openness and privacy is particularly sensitive when citizen-generated data can reveal sensitive locations or practices — ranging from air quality monitoring near private homes to biodiversity observations linked to environmental compliance. Questions around trust, minority voices and activism also emerged, including how to ensure that citizen science can support underrepresented perspectives while remaining credible for policymakers.

Familiarity with citizen science in environmental regulation and compliance varied across the session, though engagement with the topic was broadly present. When considering what the concept of "data readiness level" primarily evokes, usability and quality emerged as the dominant associations, ahead of trustworthiness, accessibility and standards — suggesting that readiness is understood first as a functional and technical matter, before it is framed as a question of credibility or openness.



Key takeaways

01 **Data readiness should enable policy pathways without undermining citizen science**

DRL frameworks should primarily assess the data and the conditions for its use, rather than judging or ranking the motivations of participants. The challenge is to find a balance between improving data usability for policy and regulation, while respecting the diversity of citizen science practices, motivations and capacities. In this sense, data readiness should help create pathways for action without undermining the social foundations that make citizen science possible.

DRL should not be understood only as a technical maturity scale. Transforming participatory environmental data from community awareness tools into evidence that can support environmental protection and law enforcement requires linking fitness-for-purpose with FAIR principles and ensuring that data can be reused by public bodies in official monitoring and compliance contexts. Yet statistical validity, legal admissibility and community-defined indicators do not always align neatly, and any credible DRL framework must grapple with these tensions rather than paper over them.

02 **Fragmentation undermines both science and policy**

Citizen science infrastructures should act as connecting layers across initiatives, coordinating governance and social trust. Fragmentation across tools, standards and communities weakens both scientific value and usefulness for policymakers – making interoperability not just a technical requirement, but a condition for collective impact

03 **Engaging duty holders requires cooperative approaches and shared language**

The more4nature project highlighted the importance of focusing on and working with duty holders (corporations that may span from champions to serial offenders) and of promoting cooperative rather than confrontational approaches. Disciplinary language barriers and criteria definition across diverse stakeholders remain key challenges, underscoring the need for shared frameworks that can bridge different interests and perspectives.



04

Effective DRL scales must balance scientific rigour with community relevance

DRL dimensions should include not only technical quality and validation, but also communication, participant feedback and active involvement in interpretation. Scales that are too detailed risk losing community engagement, while those that are too simplified may fall short of regulatory use, making the balance between standardisation and local relevance one of the central design challenges for any credible DRL framework.

05

DRL frameworks must bridge technical robustness with social legitimacy

Moving from citizen-generated data to actionable environmental insight requires more than interoperable formats, metadata and validation protocols. It also requires trust, inclusion, realistic implementation pathways, and sensitivity to the motivations and capacities of the people who generate the data. Individual projects alone cannot address these systemic challenges, long-term pathways, support mechanisms and realistic expectations for policy impact are equally necessary.

Non-standardized collection methodologies remain the main barrier to seamless data acquisition and integration, compounded by limited validation during collection and fragmented data storage. These challenges point to a shared conclusion: DRL frameworks are most useful, and most credible, when they bridge technical robustness with social legitimacy.

06

Institutional trust starts with social readiness, not technical compliance

FAIR principles ensure data are well managed, but DRL frameworks must also assess fitness-to-purpose – that is, whether data are fit for specific regulatory and policy purposes, while remaining attentive to the participatory conditions under which those data are produced.

This priority is reflected in how the conditions for institutional trust were ranked: social readiness and capacity building came first, followed by interoperable infrastructures and clear alignment with regulatory priorities. Legal recognition, technical standards for open data, and data provenance with chain of custody ranked lower – not because they were seen as unimportant, but because institutional trust was understood as beginning with social and organisational conditions, not only with technical compliance. This broader understanding is essential if citizen science is to contribute not only data, but also socially grounded evidence that can travel into policy and environmental compliance contexts.



Join our community!
join-enforce.eu



LinkedIn
ENFORCE

Project Coordination:
info@join-enforce.eu

Dr. Svetlana Klessova
Project Coordinator
G.A.C. Group France



Youtube
ENFORCE_EU

Prof. Chrysi Laspidou
Scientific Coordinator
University of Thessaly

