

Can citizen science enable transformative change in forests? A case study on active participation in environmental compliance in forestry

Mirabela Marin¹ · Nicu Constantin Tudose¹ · Mihai-Ionuț Hapa^{1,2} · Cezar Ungurean¹ · Florentina Nanu³ · Ciprian Nanu³

¹National Institute for Research and Development in Forestry "Marin Drăcea", Romania ²Transilvania University of Braşov, Romania ³Business Development Group SRL, Romania

BRAŞOV
Romanian case study

10 APRIL 2025
workshop

STS RECORDS (2020-2025)
875 calls

N = 12
questionnaires

01 BACKGROUND & AIM

Forest governance in Romania has gained lately increased attention. We are facing a highly polarized society where any activity that involves timber harvesting or transport is often immediately considered as suspicious. This "lack of trust" creates a challenging environment for both forest managers and the general public.

RESEARCH AIM

To examine citizen reporting of suspected illegal timber transport and enhance forest resilience by developing an independent, user-friendly mobile application that simplifies data collection through three guiding questions and photo uploads.

02 RESEARCH DESIGN

1

Stakeholder
workshop

12

participants

875

records

A local exploratory pilot—not a representative citywide survey.

03 WOOD TRACKING TOOLS SCREENING

In Romania we have the following wood tracking tools

1. SUMAL

Target: Authorities & Operators
Pros: Comprehensive real-time monitoring, full traceability.
Cons: Complex interface, restricted public access.

2. FOREST INSPECTOR

Target: General public
Pros: Highly mobile-friendly, transparent notifications.
Cons: Totally dependent on the operation of SUMAL.

3. FOREST GUARDIANS

Target: Civic engagement / NGO
Pros: satellite imagery, deforestation monitoring.
Cons: No legal authority, subjective interpretations.

4. Timflow

Target: Private (HS Timber).
Pros: Ultra-precise GPS data (30s temporal resolution), stability.
Cons: Limited to own factories, high costs.

04 EVIDENCE & ANALYSIS

RECORDED

875 reports made by the citizens who used Forest Inspector app.

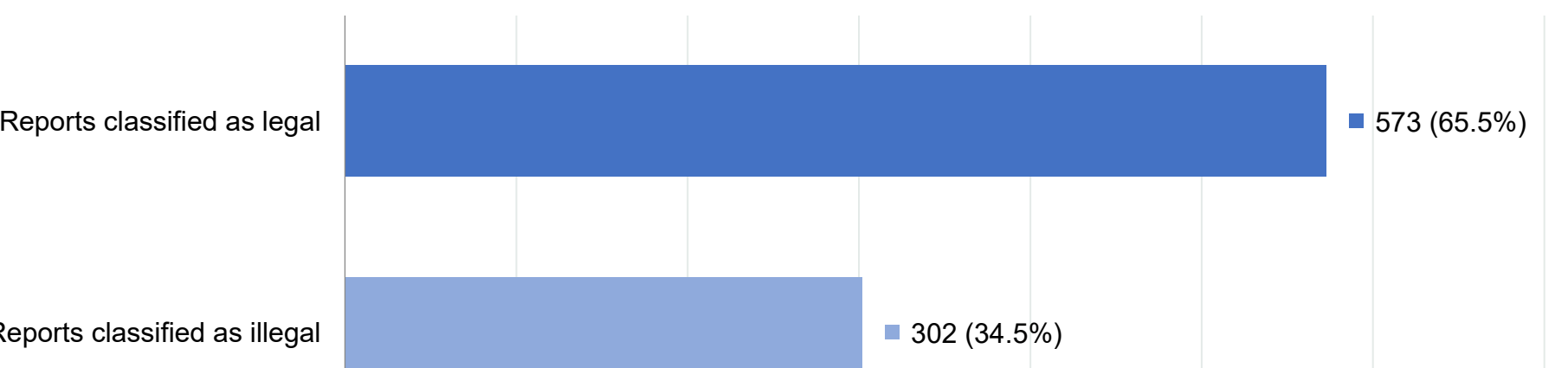
REPORTED

12 Five-point response scale and open-ended responses.

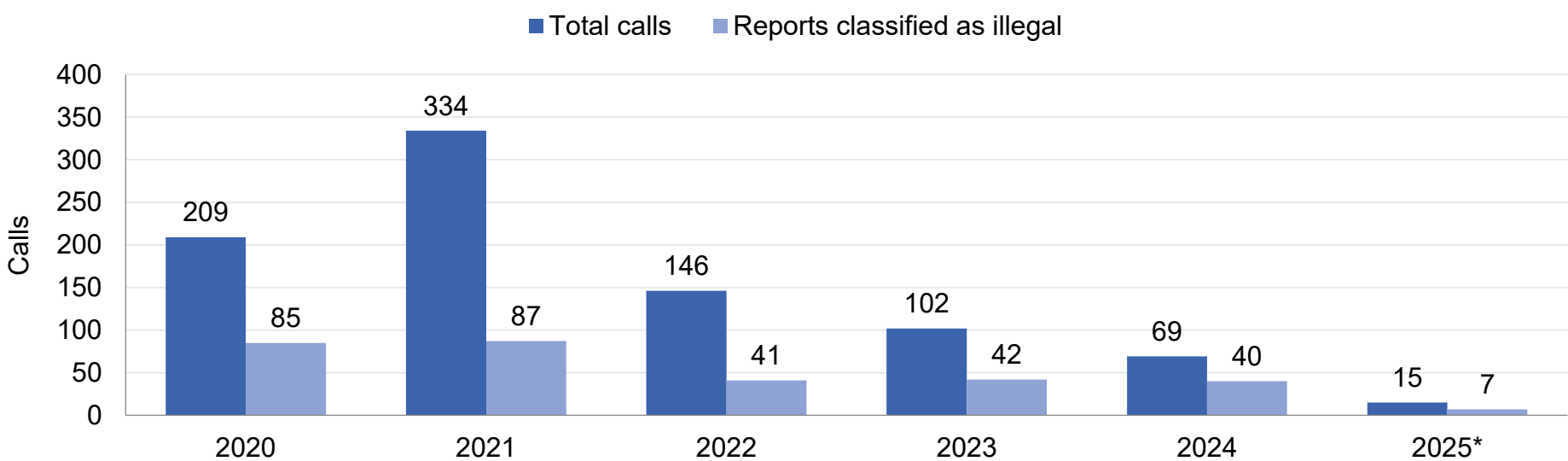
ANALYSIS • Descriptive summaries + qualitative synthesis; no pre/post comparison or control group.

05 STS RECORDS

Recorded outcomes



Citizen reporting by year



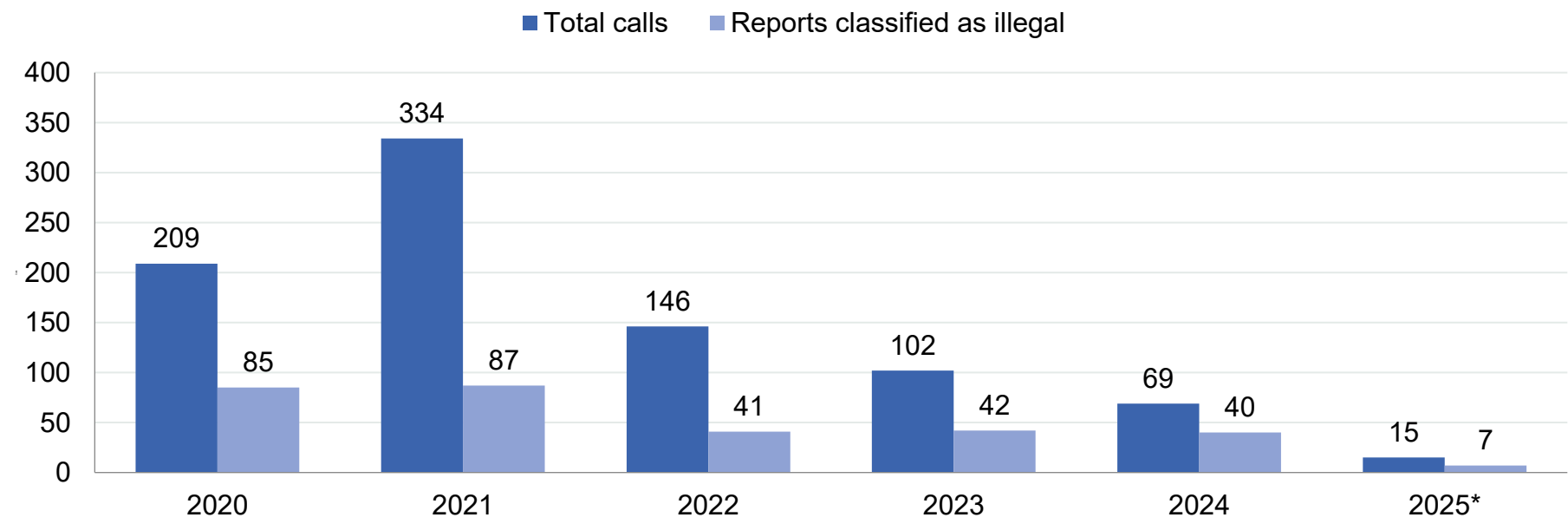
05 STAKEHOLDER WORKSHOP

Participatory activity during the Braşov Living Lab

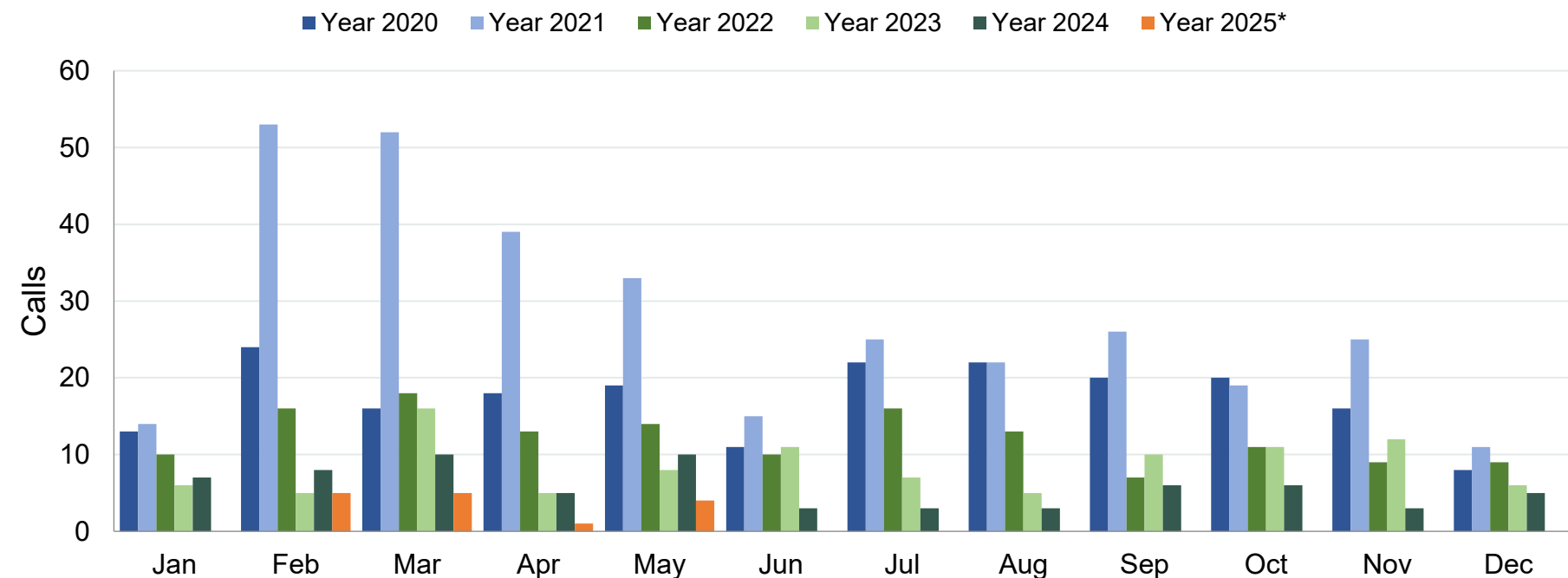


05 STS RECORDS

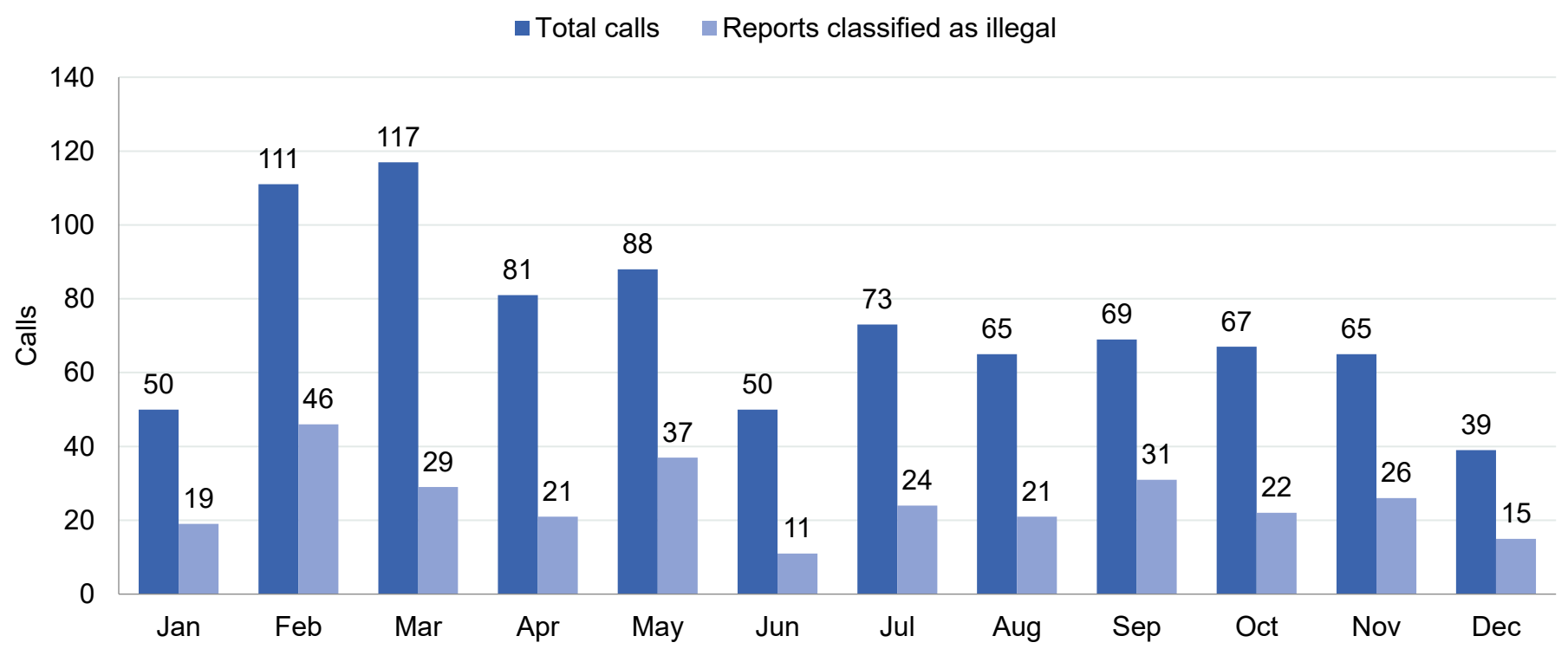
Citizen reporting by year



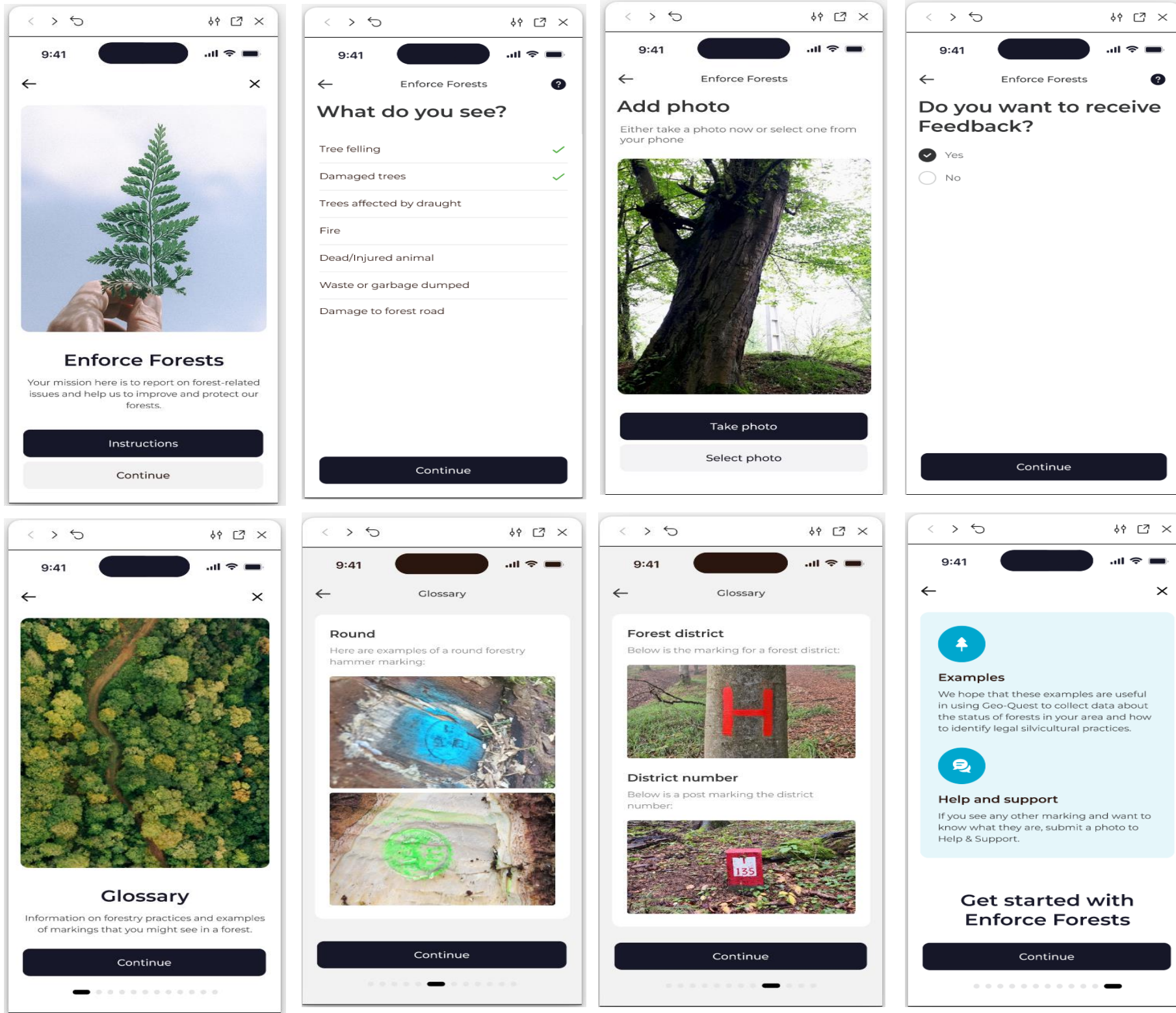
Reporting by month



Reporting by month



07 ENFORCE Mobile App



Beyond Logging

It **expands reporting** to include aspects related to forest health like broken or drying trees, waste dumping, and damages on forest roads.

Educational Support

It includes an **illustrated glossary** to raise citizens awareness on forest management practices.

Expert Validation

Forest managers, responsible for that area have to **validate the reported event**.

The "Feedback Loop"

It includes a **feedback option** for users who wish to receive updates on their reports.

08 POST-WORKSHOP SURVEY

12 valid responses · descriptive means on a five-point scale · ordinal responses summarise participant perceptions

Citizen science and collaboration

Citizen science can support environmental compliance (n = 12)



Capacity building for citizen involvement is useful to authorities (n = 12)

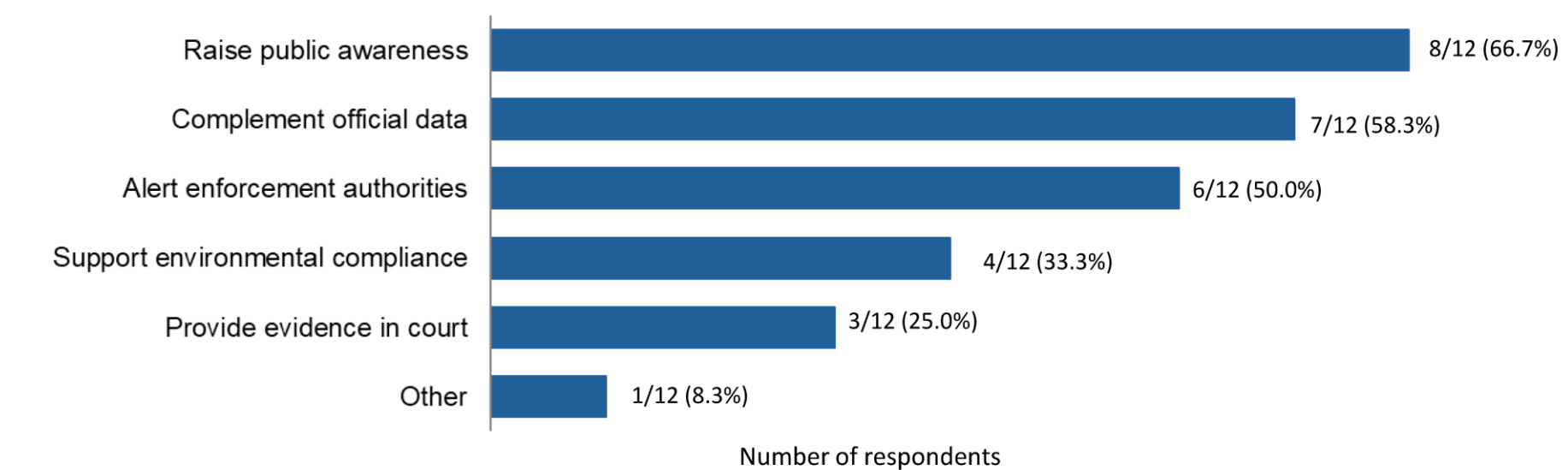


Collaboration on timber traceability is important (n = 12)



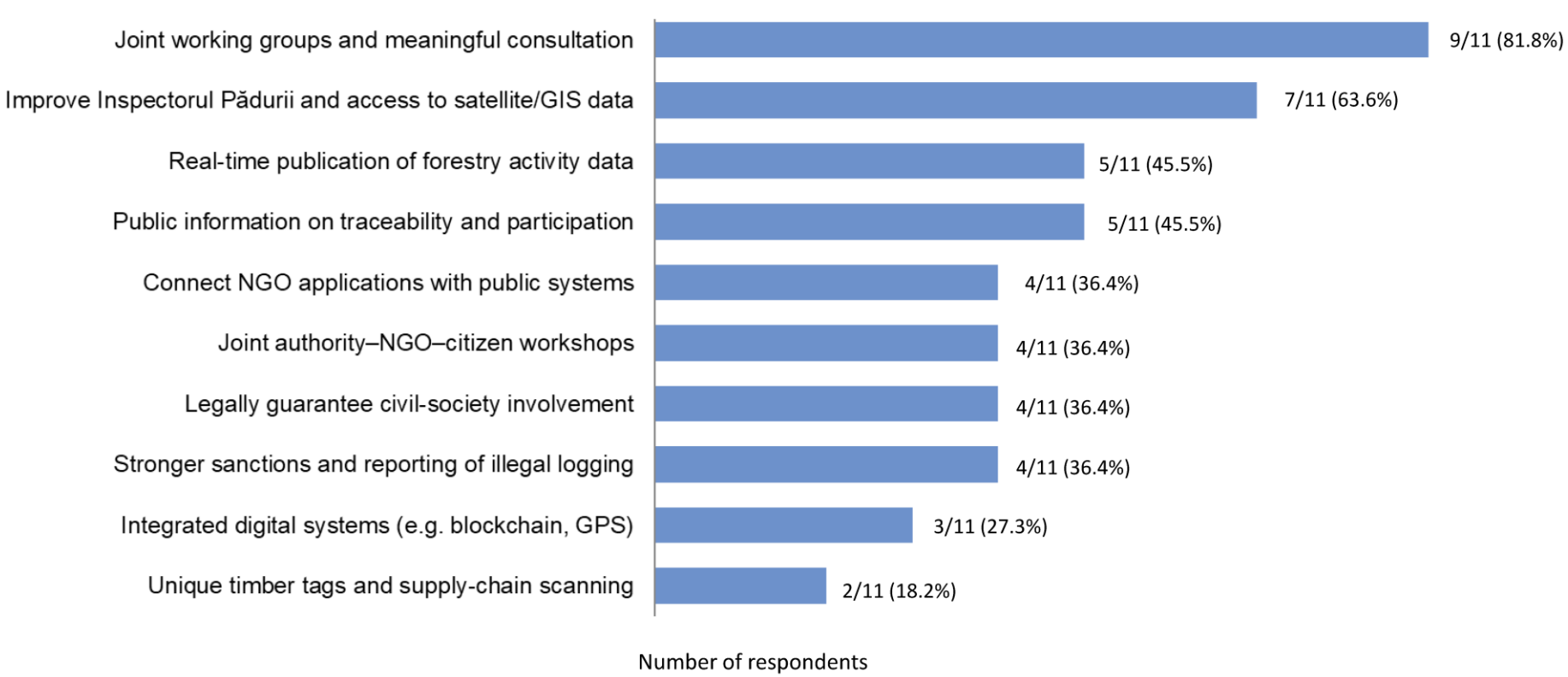
Uses of citizen data

Workshop survey – 12 respondents – Multiple selections allowed



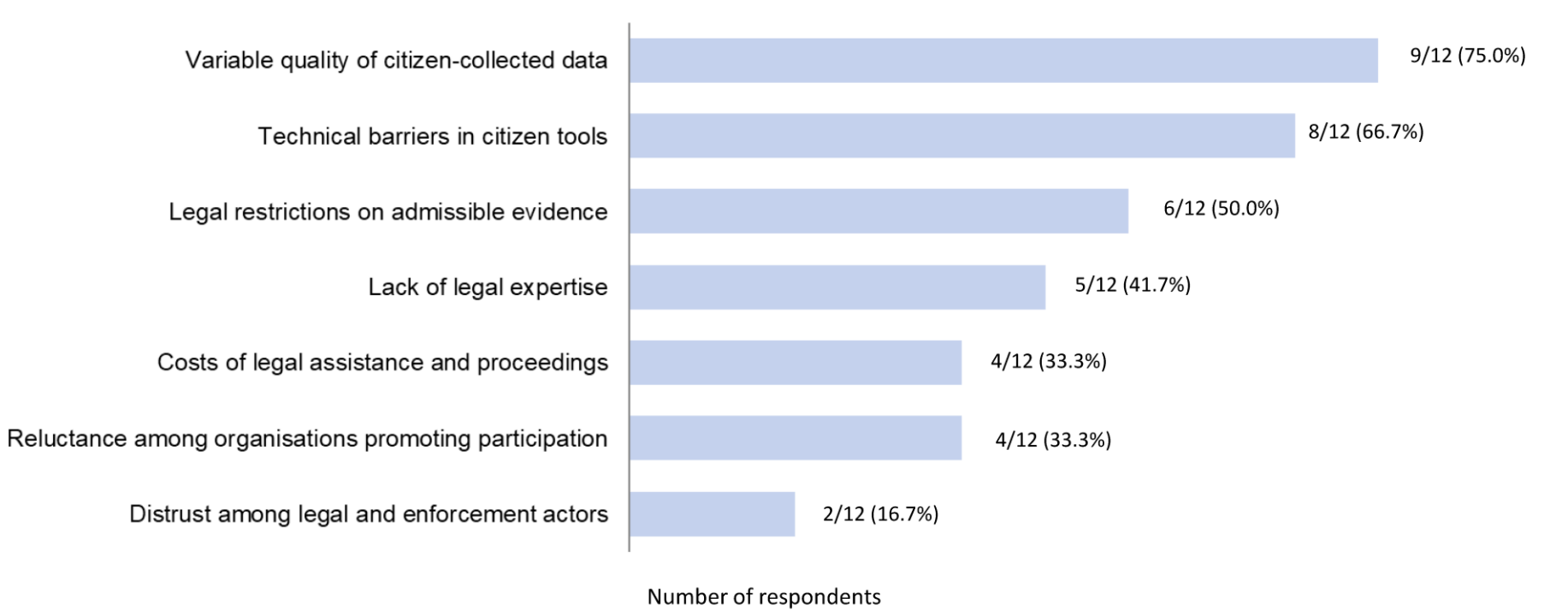
Collaboration measures

Workshop survey – 11 respondents – Multiple selections allowed



Barriers to participation

Workshop survey – 12 respondents – Multiple selections allowed



Additional barriers

Open responses – 10 participants – Themes may overlap

Theme	n	Response summary
Bureaucracy and procedures	3	Burdensome procedures and a need for coordination to simplify them.
Legal complexity	3	Too much or unclear legislation, inconsistent rules, and general legislative barriers.
Transparency and access	2	Limited transparency and access to environmental documents.
Advice and affordability	2	Lack of free technical advice and inability to afford intermediaries.
Communication capacity	1	Limited institutional staff and funding for communication.
Recognition of citizen input	1	Citizen contributions are disregarded in public consultation.

Suggested improvement

Open responses – 11 participants – Themes may overlap

Theme	n	Response summary
Image-based monitoring	3	Combine satellite, photo and video monitoring; check timber volume from images.
SUMAL development and capacity	3	Use monitoring feedback, extend functions and fund implementation and control.
Focus on first market placement	2	Concentrate checks at first market placement; one response opposes later product tracking.
AI and machine learning	2	Apply AI and machine learning, including volume checks from SUMAL images.
Information integration	1	Centralise information at national and European levels.
Transparent reporting	1	Publish identified problems regularly and transparently.
Public awareness	1	Raise public awareness to encourage fair market behaviour.

10 CONCLUSIONS & LIMITS

- Citizen demotivation**
Citizen engagement is declining due to systemic barriers and high false-positive rates
- Feedback Loop**
Bridging the trust gap requires continuous feedback loops and broader reporting capabilities
- Decision-support**
Collaborative frameworks enhance decision-support and environmental resilience

TAKE-HOME MESSAGE The innovation of our ENFORCE methodology is the Empowerment Feedback Loop, for increase trust, reinforce citizen engagement, and strengthen continuous learning.

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