



Ruralities

**RURALITIES - CLIMATE SMART, ECOSYSTEM-ENHANCING AND
KNOWLEDGE-BASED RURAL EXPERTISE AND TRAINING CENTRES**

D2.3 'RURALITIES PROJECT IMPACT SENSING' HANDBOOK

**WP2 – IMPACT: shift-driven instrument for tracking
and alignment**

Horizon Europe Grant agreement: 101060876

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ABSTRACT

The project 'Climate smart, ecosystem-enhancing and knowledge-based rural expertise and training centres' (RURALITIES) delivers an ecosystem-enhancing and climate action driven expertise and learning framework organised in hubs e.g., the '**RURALITIES**', comprising a series of innovative methodologies with the learner at its core, supported by a comprehensive network of living labs, and a blockchain-based digital platform combining the Internet and wireless technologies, to assist engage, connect and empower actors. This is done via a multi-point approach e.g., multi-actors, multi-disciplines, multi-systems, multi-scale, multi-sectors, and multilevel.

RURALITIES is rooted in the recruitment, preparation, training and coaching of 1.000+ facilitators for a variety of tasks (e.g., trainers, facilitators, role models, hub coordinators, etc.), and who play a significant role in creating the matrix and the platform upon which the learning framework is built, develops and evolves. RURALITIES proposes to ideate, implement, futureproof, validate and deliver the expertise and learning centres via real-scale practicing in 6 simplified rural socio-ecological systems (SIMSES) e.g., demonstrators, 2 in Italy, 1 in the United- Kingdom (UK), 1 in Slovenia, 1 in Spain and 1 in Romania. **RURALITIES** coordinates identified actions of local, regional authorities in supports of rural innovation in regions and economic sectors where rural innovators are not yet engaged in a relevant network.

RURALITIES coordinates identified SIMSES networks promoting rural innovation solutions whilst establishing innovative multipoint 'RURALITIES Hubs' of expertise and training on rural innovation. This is done via coordinating action for the managing authorities and regional bodies influencing regional and national policy instruments in Italy, the UK, Slovenia, Spain and in Romania.

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50	AP	ASPI	ASPIRE-IGEN GROUP LIMITED	UK
51	AP	EW	CONSERVATION EDUCATION AND RESEARCH TRUST	UK
52	BEN	APPO	APODISSI LTD	NG

ACRONYMS

Acronym	Description
EID	Expected impact destination
EOT	Expected outcomes topic
GDPR	General Data Protection Regulation
G-form	Google Form
MICS	Measuring the Impact of Citizen Science
QR Code	Quick Response Code
RURALITIES	Climate-smart, ecosystem-enhancing and knowledge-based rural expertise and training centres
RURNex	Rural Nexus
SDGs	Sustainable Development Goals
SIMSES	Simplified rural socio-ecological systems
URL	Uniform Resource Locator
WP	Work Package

1. INTRODUCTION

Deliverable D2.3 is an integral part of the 'T2.3 - Co-create the Citizen Sensing system part of the project monitoring framework.' This document serves as a handbook for SIMSES leaders and facilitators, outlining the impact monitoring framework of the 'RURALITIES Project Impact Sensing', a participatory monitoring system of the environmental, economic, social and societal nexus (RURNex). The system comprises the citizen sensing methodology and the RURALITIES Citizen Sensing Online Interface that is described in D2.7.

Rooted in the work programme topic (outcomes) and destination (impact) definitions, this impact monitoring framework is designed to be directly implemented in the project's selected SIMSES, integrating place-specific evidence. Furthermore, this framework will also be used as a reference in the various capacity-raising activities developed through WP7 and WP8.

The 'RURALITIES Project Impact Sensing' was co-created with SIMSES leaders through communication during the RURALITIES Biweekly SIMSES Calls, and the progress was validated and tracked by the WP2 leader EQUIP, T2.4 leader UPM, and Earthwatch, who provided relevant inputs. Furthermore, D2.3 secures tangible, measurable pathways to achieve and demonstrate impact across all expected outcomes (EOT-1 to EOT-5) and Work Programme destination impacts (EID-1 to EID-6).

RURALITIES Citizen Sensing directly involves rural people in impact monitoring. This empowers communities to express themselves and provides the consortium with the necessary data for adjusting the activities and further improving the impact, thus creating a positive feedback mechanism. In other words, this data feeds into the broader RURALITIES discussion, enabling early detection of issues and facilitating adequate responses.

D2.3 presents a foundation for identifying and embedding local initiatives through WP6 and fostering horizontal learning exchanges. This is important for enhancing rural communities' capacity to identify pragmatic solutions or adapt existing innovations to their local contexts. In addition, RURALITIES Citizen Sensing emphasizes broad participation (women, youth, marginalized groups, illiterate participants, etc.).

2. IMPACT MONITORING FRAMEWORK

2.1 Methodological background

The RURALITIES project impact sensing framework is grounded in the *MICS* (Measuring the Impact of Citizen Science) methodology.¹ RURALITIES will use MICS to measure the project's social impact through the extensive and exhaustive list of approximately 200 indicators² spread across five domains:³

1. **Environment**
2. **Society**
3. **Economy**
4. **Governance**
5. **Science & Technology**

The MICS platform provides RURALITIES the possibility that the attained impact results will be comparable with other initiatives and evaluates the project's impact in relation to the SDGs.⁴

The impact assessment output is comprised of four sections:

- Project overview, displaying general project details to give context to the impact report
- Rule-based scores, based on a set of rules that combine a specific set of impact metrics on the same indicator
- Recommendations and guidance presented to the user on how to improve their impact
- Machine-learning-based scores, calculated using a statistically driven approach that analyses the patterns in the data of all Initiatives that have contributed.⁵

Through the process of turning the inputs collected from users into an assessment of impact, a range of data will be created regarding an initiative's characterisation and activities, and its relationship with impactful outputs. The MICS platform adheres to FAIR principles, and the impact reports can be further used to demonstrate measurable outcomes to funders, policymakers, or the public.⁶

¹ "MICS.Tools," accessed March 28, 2025, <https://mics.tools/>.

² Luigi Ceccaroni, "D5.6 - Developing Metrics and Instruments to Evaluate Citizen Science Impacts on Society, Governance, the Economy, the Environment and Science" (Measuring Impacts of Citizen Science, 2022).

³ James Sprinks et al., "Design of a Platform to Measure the Impact of Citizen Science," in *Proceedings of Engaging Citizen Science Conference 2022 — PoS(CitSci2022)* (Engaging Citizen Science Conference 2022, Aarhus University, Denmark: Sissa Medialab, 2022), 006, <https://doi.org/10.22323/1.418.0006>.

⁴ James Sprinks et al., "Coordinator Perceptions When Assessing the Impact of Citizen Science towards Sustainable Development Goals," *Sustainability* 13, no. 4 (February 23, 2021).

⁵ James Sprinks et al., "Design of a Platform to Measure the Impact of Citizen Science," in *Proceedings of Engaging Citizen Science Conference 2022 — PoS(CitSci2022)* (Engaging Citizen Science Conference 2022, Aarhus University, Denmark: Sissa Medialab, 2022).

⁶ James Sprinks et al., "The MICS Platform: Measuring the Impact of Citizen Science," in *ResearchGate* (River Restoration Centre Annual Conference, Harrogate, 2021).

The project board will conduct overall impact measurements at the project level through the MICS platform. SIMSES and WP leaders will receive actionable and evidence-based recommendations based on the imported data, which will enable them to improve the impact within the deficient areas.

Furthermore, the RURALITIES Citizen Sensing framework will provide data from participants themselves to inform the compatible indicators. In other words, this framework will provide evidence-based inputs for a wider MICS impact measurement process. RURALITIES Citizen Sensing will be integrated into the official RURALITIES website to share results and build up the identification of bottom-up initiatives through T6.3.

2.2 RURALITIES Citizen Sensing

A set of MICS indicators which are suitable for direct measurements, and which are directly related to participants was first identified. Each indicator has a question which is framed around the participant's personal perceptions and experiences, which is crucial for avoiding managerial bias.

To ensure the feasibility of participant-generated impact data and compliance with the RURALITIES Citizen Sensing framework, questions from the original MICS indicators were omitted. These omissions were carefully evaluated based on clearly defined criteria that ensure each question directly reflects participants' subjective experiences and avoids potential bias, redundancy, or ambiguity. The criteria and associated examples for omitting specific questions are summarized in the table below:

Table 1 The criteria and associated examples for omitting specific questions

Criterion for Omitting MICS Questions	Elaboration	Example (MICS question number - question)
Meta-level questions	Questions that require a meta-level position in relation to the project as a whole. Individual participants are interacting with certain dimensions of the project. RURALITIES provides a diverse set of activities, diverse topics, and diverse facilitators. This is also because SIMSES significantly differs in terms of particular Systemic Innovation Areas.	201 - How is the project managed? <ul style="list-style-type: none"> • The project is run by a single organisation • The project is run by a group of organisations but led by a single organisation • The project is run by a group of organisations who lead equally • The project is run by citizens • An Artificial Intelligence is running the project • Some other management structure • I don't know
Questions with predetermined and familiar answers	Questions whose answers are known to the project board with 100% certainty. Answers to these questions are fully documented within formal project documentation such as the Grant Agreement. This information may	301 - How has the project been funded? <ul style="list-style-type: none"> • Internal funding of the coordinating organisation(s) • Micro funding • Crowdfunding

	not necessarily be confidential. Nonetheless, participants either would not be familiar with it, or their answer would not add value.	<ul style="list-style-type: none"> • Private foundations or non-governmental organisations • Corporate sponsors / funders • Government funding or appropriation • Other national sponsors / funders • European Union (for example, via Horizon 2020 or Horizon Europe) • Other international sponsors / funders • The project does not require funding • None of the above • I don't know
Questions related to externalities	Questions that are not referencing a relation between the project and the participant, but a relation between the project and certain externalities (international organisations, international strategic documents, etc.).	239 - Is the project at all related to the Sustainable Development Goals (SDGs)? <ul style="list-style-type: none"> • Yes • No • I don't know
Availability-related questions, easily verifiable by the Project Board	Questions related to certain forms of availability (e.g., resources) in relation to the participants (e.g., things that are provided by the project), that are familiar to the project board and backed up by formal documents and reports.	226 - Is the code of ethics made available to participants? <ul style="list-style-type: none"> • Yes • No • I don't know
Overly abstract or complex questions	Questions that are too abstract, require extensive elaboration and/or analysis, and are beyond self-reflection.	165 - Does the project foster resilience (potentially by fostering learning and adaptation, which then leads to resilience)? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • After five minutes, I still don't understand the question • I don't know
Questions related to the organizational level of activity	Questions addressing impacts on external organizations rather	320 - Does the project explicitly contribute to the reduction of costs for other external organisations?

	than individual participants' experiences.	<ul style="list-style-type: none"> • Yes • No • I don't know
Questions that require a certain form of socio-demographic or socio-economic analysis	Questions involving complex socio-demographic factors that cannot be accurately assessed by participants through intuitive and subjective self-reflection.	155 - Does the project involve a socio-economically diverse pool of participants? <ul style="list-style-type: none"> • Yes • No • Participants are from the same socio-economical group • I don't know
Questions that are too complex for accurate self-assessment	Questions addressing topics like mental health or social capital, which are challenging for accurate self-assessment through a single question and cannot be based solely on self-reflection. In this group are also questions related to the change in values or perceptions, that is, some social phenomena which would require a set of indicators and a questionnaire of their own to accurately measure what is required. This is not feasible in the context of RURALITIES Citizen Sensing.	140 - Does the project have a positive impact on the mental health of participants? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know

List of Indicators

The following section presents the finalized set of indicators selected for the RURALITIES Citizen Sensing framework, directly derived from the comprehensive MICS methodology. These indicators have been carefully chosen based on their relevance, clarity, and suitability for capturing the subjective experiences and perceptions of project participants. Each indicator aims to measure specific aspects of participant engagement, behavioral and attitudinal changes, and overall impacts attributed to involvement in the RURALITIES project.

Table 2 Finalized set of indicators selected for the RURALITIES Citizen Sensing framework

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
1	107	Society	Co-ownership	<p>Does the project explicitly foster co-ownership of the project among participants and other stakeholders?</p> <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	<p>Do you feel that you and other participants share a sense of ownership of RURALITIES' goals and outcomes?</p> <ul style="list-style-type: none"> • Yes • No • I am not sure 	Kieslinger et al. 2017, Pocock et al. 2019	EOT-1: The Indicator is related to local innovation capacity through co-creation and mobilization of local knowledge and stakeholder ownership.
2	108	Society	Satisfaction with Participation	<p>Are the participants satisfied with the process of participation in the project?</p> <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	<p>Are you satisfied with the overall process of taking part in RURALITIES (e.g., your level of involvement, communication, facilitation)?</p> <ul style="list-style-type: none"> • Yes • No • I am not sure 	Butterfoss 2006, Gresle et al. 2019, and DITOs consortium 2016	EOT-1: The indicator is related to promoting co-creation and horizontal knowledge sharing, ensuring participatory involvement of rural citizens and communities.

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
3	109	Society	Alignment with Participant Demands	Do the goals of the project align with the demands of the participants? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	How closely do the RURALITIES' goals align with your demands? <ul style="list-style-type: none"> • They match well • They do not really match • I am not sure 	Guldberg et al. 2019 and Gresle et al. 2019	EOT-1: The Indicator is related to ensuring innovation ecosystems are adapted to local needs, identities, and traditions of rural communities.
4	110	Society	Satisfaction with Project Results	Are participants satisfied with the results of the project? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	Are you satisfied with the results the RURALITIES project has produced so far? <ul style="list-style-type: none"> • Yes • No • I am not sure 	Woods et al. 2020 and Butterfoss 2006	EOT-1, EOT-2, EOT-3, EOT-4, EOT-5, EID-2, EID-3, EID-4, and EID-6: Satisfaction with the project results, reflecting stakeholders' and local community needs and expectations.
5	115	Society	Personal Behavioral Change	Does the project contribute to personal change in behavior? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured 	Have you changed any of your day-to-day habits or routines (e.g., your daily routines, consumption habits, etc.) due to your involvement in RURALITIES?	Kieslinger et al. 2017, Haywood and Besley 2014, Braun and Dierkes 2019, Phillips et al.	EOT-2 and EOT-3: aiming to stimulate social and behavioral changes towards sustainable rural innovation practices,

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
				<ul style="list-style-type: none"> No I don't know 	<ul style="list-style-type: none"> Yes No I'm not sure 	2018 and Kaiser 2020	encouraging community-driven innovation and short innovation cycles.
6	116	Society	Self-organization	<p>Do participants self-organize to carry out additional activities beyond the original scope of the project?</p> <ul style="list-style-type: none"> Yes No I don't know 	<p>Have you initiated or joined additional activities beyond the original RURALITIES project plan?</p> <ul style="list-style-type: none"> Yes No I'm not sure 	Chase and Levine 2016 and DITOs consortium 2016	EOT-1 and EOT-5: Related to encouraging self-organization, decentralized governance, and promoting additional innovation activities initiated by local communities beyond the project's original scope.
7	117	Society	Involvement in Similar Activities	<p>Are participants involved in similar activities outside of the project as a consequence of being involved in the project?</p> <ul style="list-style-type: none"> Yes No 	<p>Have you joined any similar activities outside of the scope of this project as a result of your involvement in RURALITIES?</p> <ul style="list-style-type: none"> Yes 	Kieslinger et al. 2017 and Wehn et al. 2017	EOT-1 and EID-2: Indicator is related to promoting ongoing community engagement and capacity-building

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
				<ul style="list-style-type: none"> I don't know 	<ul style="list-style-type: none"> No I'm not sure 		that extends beyond direct project activities.
8	138	Society	Motivation	<p>Does the project actively raise motivation amongst participants?</p> <ul style="list-style-type: none"> Yes, and it has been measured Yes, but it has not been measured No I don't know 	<p>Has your involvement in RURALITIES increased your motivation to continue to engage in the project or similar activities?</p> <ul style="list-style-type: none"> Yes No I'm not sure 	Kieslinger et al. 2017 and Phillips et al. 2018	EOT-2 and EID-2: Increase of participant motivation and engagement, empowering rural communities and vulnerable groups to take active roles in rural innovation activities.
9	139	Society	Self-Efficacy	<p>Does the project increase the self-efficacy of participants?</p> <ul style="list-style-type: none"> Yes, and it has been measured Yes, but it has not been measured No I don't know 	<p>Has your confidence in your own ability to contribute or solve problems regarding topics covered by RURALITIES increased because of your involvement in this project?</p> <ul style="list-style-type: none"> Yes No I'm not sure 	Phillips et al. 2018, DITOs consortium 2016 and Fazey et al. 2014	EOT-2 and EID-2: Participant self-efficacy and empowerment to manage and solve local rural challenges.

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
10	145	Society	Acquisition of New Knowledge	Do participants gain new knowledge from taking part in the project? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	Have you learned new information or gained new insights through your involvement in RURALITIES? <ul style="list-style-type: none"> • Yes • No • I'm not sure 	Kieslinger et al. 2017, Bonney et al. 2009 and Fazey et al. 2014	EOT-2: Improved knowledge among rural citizens through extensive capacity-building activities on topics relevant to sustainable rural livelihoods.
11	146	Society	Acquisition of New Skills	Do participants gain new skills from taking part in the project? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	Have you gained new skills from taking part in RURALITIES (e.g., using an app)? <ul style="list-style-type: none"> • Yes • No • I'm not sure 	Kieslinger et al. 2017, Haywood and Besley 2014, Bonney et al. 2009, Phillips et al. 2018 and Fazey et al. 2014	EOT-2 and EID 5: Practical skills of rural citizens in various innovation domains essential to rural life and economy.
12	147	Society	Acquisition of New Competencies	Do participants gain new competencies from taking part in the project? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	Have you gained new competencies from taking part in RURALITIES (e.g., teamwork, creativity, etc.)? <ul style="list-style-type: none"> • Yes • No • I'm not sure 	Kieslinger et al. 2017 and Wehn et al. 2017	EOT-2 and EID-3, EID-5: Rural citizens' competencies in critical areas such as creativity, teamwork, and adaptability, essential for

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
							sustainable rural development.
13	233	Governance	Political Involvement	<p>Are participants more actively involved in political processes as a result of taking part in the project?</p> <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	<p>Since joining RURALITIES, have you become more involved in political processes or policy-related activities as a result of your participation in RURALITIES (e.g., interacting with local officials, writing a letter to your local council, etc.)?</p> <ul style="list-style-type: none"> • Yes • No • I prefer not to say 	<p>Haywood and Besley 2014, Woods et al. 2020 and Kieslinger et al. 2017</p>	<p>EOT-1: encouraging rural citizens' participation in governance and policy processes through decentralized decision-making and active involvement in local issues.</p>
14	310	Economy	Livelihood Improvement	<p>Does the project have a positive impact on the livelihoods of participants?</p> <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	<p>Has your involvement in RURALITIES had a positive effect on your livelihood (e.g., income, employment, etc.)?</p> <ul style="list-style-type: none"> • Yes • No • I'm not sure 	<p>Chase and Levine 2016</p>	<p>EOT-2, EID-2 and EID 4: Enhanced economic autonomy, job creation, and improved livelihoods of rural citizens through innovative rural activities.</p>

Question #	MICS #	Category	Indicator	MICS Question	Citizen Sensing Question	Sources	Alignment with EOTs and EIDs
15	407	Environment	Environmental Stewardship	Does the project lead to an increased stewardship of the natural environment among participants? <ul style="list-style-type: none"> • Yes, and it has been measured • Yes, but it has not been measured • No • I don't know 	Have you taken on more responsibility or action to protect or care for the environment because of your involvement in RURALITIES (e.g., reducing waste, volunteering for cleanups, or conserving resources)? <ul style="list-style-type: none"> • Yes • No • I'm not sure 	Phillips et al. 2018	EOT-1 and EID-1: fostering increased stewardship and active responsibility towards natural resource management and sustainable ecosystem practices.

Questions have been formulated based on each of the indicators and the literature used to develop the MICS methodology, and a RURALITIES Citizen Sensing Questionnaire was created (See: Annex I).

2.3 Protocol for Supporting Inclusive and Equitable Participation

To ensure inclusivity and equitable participation in the RURALITIES Citizen Sensing, SIMSES leaders and facilitators will implement specific measures to support participants facing literacy challenges, physical impairments, or limited digital skills. The following protocol outlines clear, concise, and feasible measures:

Table 3 Measures to support inclusive and equitable participation

Challenge	Protocol Measures
Literacy barriers	SIMSES leaders and facilitators will provide manual assistance for participants who are facing literacy barriers. They will read questions and answer options aloud, clearly, and slowly. Participants will provide verbal responses, which facilitators will accurately record.
Physical impairments	SIMSES leaders and facilitators will ensure that the venue for completing the questionnaire is physically accessible. They will offer support devices or aids (e.g., adjustable seating) and physically assist participants if required (e.g., marking responses).
Digital literacy	SIMSES leaders and Facilitators will provide step-by-step guidance for participants if using digital devices presents a challenge. Printed versions of questionnaires will be made available for participants uncomfortable with digital formats. SIMSES leaders and facilitators will manually input paper-based responses into digital forms afterward.
Language barriers	As the RURALITIES project's six SIMSES are using five distinct languages, G-Forms questionnaires will be made available in all required languages. Each participant will have access to questionnaires precisely translated into their native language, ensuring clarity and ease of understanding. Additionally, trained facilitators fluent in these languages will be present to provide personalized support and assistance.

This protocol ensures that all participants, regardless of literacy level or physical ability, can effectively engage with the RURALITIES Citizen Sensing process, thus contributing to accurate, inclusive, and representative data collection. It is also ensured that clear and straightforward language is used in the questionnaires.

2.4 Data Collection, Management and Analysis

Data will be collected primarily through digital questionnaires using Google Forms, ensuring standardized data input. For participants facing literacy, digital, or physical accessibility challenges, trained facilitators will provide the needed support, as it is outlined in the "Protocol for Supporting Inclusive and Equitable Participation".

SIMSES leaders are leading the dissemination of the Questionnaire to participants who participate in the RURALITIES activities and provide the necessary assistance.

The target group for all the activities is drawn from the ongoing T5.1 efforts (M4 until M60), that is, from the RURALITIES Multi-actor Repository, which will later be listed in D5.3 "RURALITIES Augmented Knowledge Alliance".

The questionnaire is digitized through Google Forms with a unique URL and associated with a unique QR code. During RURALITIES activities, SIMSES leaders and facilitators can display the QR code on a screen or banner so participants can scan it with a smartphone or type the short link into their phone or any internet-connected device. They are taken directly to the local language version of the Google Form.

Nonetheless, the SIMSES leaders and facilitators have the ability to assess the best data-gathering method and, if they deem necessary, print out the Questionnaire for participants to fill out and later input the results using Google Forms. They can print the QR code (and the short link) on flyers, posters, or handouts.

Collected data will be stored in the project's repository and will comply with General Data Protection Regulation (GDPR) guidelines. Regular backups will be performed to ensure data integrity and mitigate potential data loss. All data is anonymous to the data analyst to ensure participants' privacy and confidentiality. The possibility of linking responses to individual participants is not possible.

T2.3 leader will conduct regular monitoring and validation of data inputs and intervene in the process in case any errors or inconsistencies occur. In addition, SIMSES leaders and facilitators will be familiarized with good practices regarding accurate data collection.

Analysis will involve the aggregation of participant responses according to the "Majority Rule" outlined in the methodology section. Results will be used as input for the project-wide MICS measurement. All data management and analysis practices adhere to ethical guidelines, ensuring participant rights, dignity, and privacy.

Feedback will be gathered from SIMSES leaders and facilitators to ensure ongoing improvement and improvement of the outlined protocols.

2.5 Integrating Data into MICS

Results are collected incrementally and used to provide evidence-based input during the exhaustive MICS measurements by the project board.

The MICS framework asks for one final aggregated answer per question (e.g., "Yes, and it has been measured"). Responses from multiple participants will be aggregated to deliver a single, consolidated MICS-compatible answer for each selected indicator. The majority rule is chosen as a straightforward and

transparent solution with the aim of best representing the target group's dominant view. This ensures that the final aggregated result truly reflects a majority sentiment.

The criteria are the following:

- If one response option receives more than 50% of all valid responses, that option is adopted as the final answer for that indicator.
- If no option reaches a 50% threshold, the result is considered inconclusive and is marked as "I don't know." This indicates that the participants' views are too dispersed, and labeling one as correct would be methodologically dishonest.

2.6 Limitations of the Methodology

The RURALITIES Project Impact Sensing framework, based on the MICS methodology, is designed to measure impact across multiple domains by capturing the subjective perceptions and experiences of participants. While the approach offers comparability and a participatory dimension, several limitations must be communicated.

The majority rule used to aggregate responses into a single final indicator is chosen due to transparency reasons and due to its simplicity in application. On the other hand, it may tend to simplify the complexity of participant opinions. In situations where responses are closely divided, the approach may yield an "inconclusive" outcome, which could obscure subtle but meaningful shifts in perceptions. This limitation is found acceptable as it is of a scientific nature, while the goal of RURALITIES Citizen Sensing is to create the feedback loop between the partners, SIMSES leaders, facilitators, and participants to improve the impact of RURALITIES' activities by using the recommendations that the MICS platform provides. Therefore, in the hypothetical case where responses are closely divided, an "inconclusive" outcome will still be a valuable input for the MICS process, which will result in adjustments of the project activities.

Next, by having a range of opinions reflected in a single categorical outcome (e.g., "Yes" or "No"), the methodology may not capture the full spectrum of participants' experiences. This trade-off between clarity/inclusivity and nuance means that some differences in attitudes or behavioral changes might be underrepresented.

Furthermore, the citizen sensing framework depends on participants' self-assessment of their experiences and subjective perceptions. This data is inherently subjective and can be influenced by various forms of response biases (e.g., social desirability, recall limitations, etc.). Still, this is preferred in the case of RURALITIES Citizen Sensing as it is assessed by the partners as an acceptable trade-off between scientific rigor and pragmatic utilization, which is crucial for improving the impact of the project. RURALITIES works with large scales and involves rural actors meaningfully in many activities. Thus, adding complexity to better satisfy the scientific rigor could inhibit the actual response rates and engagement, which is crucial for creating valuable feedback loops.

3. CONCLUSION

The RURALITIES Project Impact Sensing framework has been carefully designed to integrate the participatory MICS (Measuring Impacts of Citizen Science) methodology, providing a structured and systematic approach to monitor and evaluate the impacts arising from the active participation of rural actors in the project. This framework places strong emphasis on inclusivity, ensuring that the diverse experiences, perspectives, and needs of rural communities and stakeholders are effectively captured and reflected in the impact assessment process.

By embedding an iterative and participatory approach, the framework empowers rural communities and other local actors to become key contributors in shaping and assessing project outcomes. Through continuous data collection and a built-in feedback mechanism, the framework facilitates a dynamic exchange between project partners and participants. This enables timely and responsive adjustments to project activities, ensuring that they remain aligned with community expectations, local realities, and emerging needs.

While the framework acknowledges certain methodological limitations—such as the challenges inherent in participatory data collection and the variability of local contexts—it nonetheless provides a robust, pragmatic, and actionable foundation for impact monitoring. The insights generated through this process are essential for advancing the project's objectives of enhancing local innovation capacities, fostering community empowerment, and promoting sustainable environmental stewardship in rural areas.

D2.7 provides a detailed description of the technical implementation of this methodology. It specifically outlines the development of the online Citizen Sensing interface, which serves as a key operational tool for conducting impact sensing activities. This digital interface has been designed to facilitate the efficient collection of community-driven data, ensuring that the monitoring process is accessible, user-friendly, and adaptable to the diverse technological and digital literacy levels of rural participants.

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5. ANNEXES

5.1 Annex 1 - RURALITIES Citizen Sensing Questionnaire

1	<p>Do you feel that you and other participants share a sense of ownership of RURALITIES' goals and outcomes?</p> <ul style="list-style-type: none"> ● Yes ● No ● I am not sure
2	<p>Are you satisfied with the overall process of taking part in RURALITIES (e.g., your level of involvement, communication, facilitation)?</p> <ul style="list-style-type: none"> ● Yes ● No ● I am not sure
3	<p>How closely do the RURALITIES' goals align with your demands?</p> <ul style="list-style-type: none"> ● They match well ● They do not really match ● I am not sure
4	<p>Are you satisfied with the results the RURALITIES project has produced so far?</p> <ul style="list-style-type: none"> ● Yes ● No ● I am not sure
5	<p>Have you changed any of your day-to-day habits or routines (e.g., your daily routines, consumption habits, etc.) due to your involvement in RURALITIES?</p> <ul style="list-style-type: none"> ● Yes ● No ● I'm not sure
6	<p>Have you initiated or joined additional activities beyond the original RURALITIES project plan?</p> <ul style="list-style-type: none"> ● Yes ● No ● I'm not sure
7	<p>Have you joined any similar activities outside of the scope of this project as a result of your involvement in RURALITIES?</p> <ul style="list-style-type: none"> ● Yes ● No ● I'm not sure
8	<p>Has your involvement in RURALITIES increased your motivation to continue to engage in the project or similar activities?</p> <ul style="list-style-type: none"> ● Yes ● No ● I'm not sure
9	<p>Has your confidence in your own ability to contribute or solve problems regarding topics covered by RURALITIES increased because of your involvement in this project?</p> <ul style="list-style-type: none"> ● Yes

	<ul style="list-style-type: none"> • No • I'm not sure
10	<p>Have you learned new information or gained new insights through your involvement in RURALITIES?</p> <ul style="list-style-type: none"> • Yes • No • I'm not sure
11	<p>Have you gained new skills from taking part in RURALITIES (e.g., using an app)?</p> <ul style="list-style-type: none"> • Yes • No • I'm not sure
12	<p>Have you gained new competencies from taking part in RURALITIES (e.g., teamwork, creativity, etc.)?</p> <ul style="list-style-type: none"> • Yes • No • I'm not sure
13	<p>Since joining RURALITIES, have you become more involved in political processes or policy-related activities as a result of your participation in RURALITIES (e.g., interacting with local officials, writing a letter to your local council, etc.)?</p> <ul style="list-style-type: none"> • Yes • No • I prefer not to say
14	<p>Has your involvement in RURALITIES had a positive effect on your livelihood (e.g., income, employment, etc.)?</p> <ul style="list-style-type: none"> • Yes • No • I'm not sure
15	<p>Have you taken on more responsibility or action to protect or care for the environment because of your involvement in RURALITIES (e.g., reducing waste, volunteering for cleanups, or conserving resources)?</p> <ul style="list-style-type: none"> • Yes • No • I'm not sure

Google Form link: <https://forms.gle/j7KmHToMAGY38Ljt5>

Google Form QR Code:

