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**WIMBY**

Wind in My Backyard: Using holistic modelling tools to advance social awareness and engagement on large wind power installations in the EU

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**Deliverable D4.2a**

**Draft guidelines on the MCSA application**



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## SHORT ABSTRACT FOR DISSEMINATION PURPOSES

















**Abstract** This deliverable presents a guideline for implementing the Multi-Criteria Satisfaction Analysis (MCSA) framework in evaluating wind power plant projects. The framework translates stakeholder preferences, including those of local residents, into levels of acceptability to assess the potential or planned wind energy installations. Building on the inputs from T4.1, a tailor-made, transparent Socio-Demographic MCSA system is developed, encompassing criteria, indicators, and factors that influence wind energy acceptability positively or negatively. Satisfaction levels are analysed using a preference disaggregation decision analysis model with the MUSA method, based on stakeholder questionnaires. Aggregated preferences yield overall satisfaction functions, categorizing satisfaction levels by participant characteristics and enabling formulation of targeted acceptability improvement strategies. Specific guidelines are provided for local authorities and analysts to apply this framework within their areas of interest. The methodology will be validated through case studies, which will refine the guidelines before their final publication. Insights from this analysis will be presented in D4.3, they will inform recommendations in T4.6, contribute to the awareness-raising platform in T5.4, and support dissemination efforts in WP6.



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## **ABBREVIATIONS**

<b>Acronym</b>	<b>Description</b>
<b>MCDA</b>	Multi-Criteria Decision Analysis
<b>MCSA</b>	Multi-Criteria Satisfaction Analysis
<b>MUSA</b>	MULTicriteria Satisfaction Analysis

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## EXECUTIVE SUMMARY

This deliverable, D4.2a, focuses on the development and dissemination of practical guidelines and instructions for implementing the Multi-Criteria Satisfaction Analysis (MCSA) framework in the context of wind energy development projects. Building upon the methodological foundation established in D4.1, this document incorporates lessons learned from applying the MCSA framework in the first two pilot site regions, enabling the refinement of its processes and providing actionable insights for practitioners to support local planning authorities, energy developers, and analysts in assessing and enhancing stakeholder satisfaction and acceptability of wind farms.

The key output of D4.2a is a comprehensive guideline that details the step-by-step application of the Socio-Demographic MCSA framework. This includes defining relevant criteria, designing stakeholder questionnaires, collecting and processing data, and interpreting results to inform decision-making. The document emphasizes practical implementation, highlighting considerations such as adapting the framework to local contexts, ensuring stakeholder engagement, and integrating findings into planning processes. Additionally, this deliverable synthesizes lessons learned from the initial pilot sites, identifying both challenges and opportunities encountered during the early application of the framework. These insights address aspects such as stakeholder diversity, regional variations in satisfaction drivers, and data collection strategies, offering strategies to improve future deployments.

### Attainment of Objectives and Explanation of Deviations

All task objectives have been successfully achieved within the planned timeline. Additionally, the scope of the study has been expanded beyond the original plan. Initially, only one pilot site study was scheduled; however, two pilot site studies have already been completed, and a third is currently underway.

A notable adjustment was made to the target group of the satisfaction analysis, shifting the focus to residents to ensure comprehensive coverage of acceptability with a larger sample size of interviewees residing in the pilot sites. The collaborative approach, incorporating diverse inputs from project partners and stakeholders, has ensured that the deliverable aligns with the expected standards and significantly contributes to the overarching goals of the WIMBY project.



## **1. INTRODUCTION**

As the global transition toward sustainable energy accelerates, the expansion and repowering of wind power installations continue to play a crucial role in meeting renewable energy targets. However, these initiatives frequently encounter significant socio-economic and environmental obstacles, including resistance from local communities, individual residents, or other relevant stakeholders[1]. Addressing such challenges requires a structured decision-making approach that actively engages stakeholders and systematically assesses their preferences and satisfaction levels. Especially in residential and commercial areas, local acceptability often plays a critical role in the success of such projects.

Task T4.1 of the WIMBY project responds to these needs by designing and structuring a comprehensive satisfaction analysis framework. This framework is based on Multi-Criteria Satisfaction Analysis (MCSA), a methodological extension of Multi-Criteria Decision Analysis (MCDA). At its core, the MCSA framework employs the MULTicriteria Satisfaction Analysis (MUSA) method to measure and analyse satisfaction levels across multiple dimensions [2]. MUSA enables the aggregation of individual preferences into a coherent assessment of overall satisfaction, providing transparent insights into the diverse factors influencing stakeholder acceptability of wind energy projects.

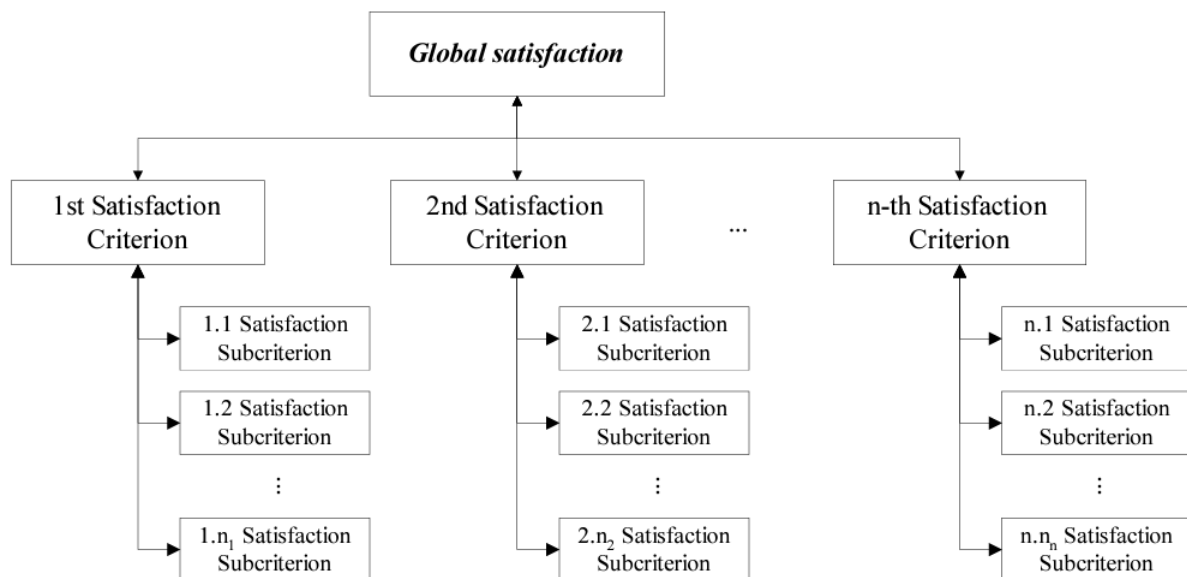
Building on the results of T4.1 (described in D4.1), T4.2 (which forms the basis of this D4.2) focuses on applying the MCSA framework to real-world scenarios through pilot site demonstrations. This task aims to operationalize the framework by collecting and analysing resident feedback at selected pilot locations, providing a detailed evaluation of local satisfaction levels. T4.2 also includes the refinement of the framework based on pilot findings, ensuring its adaptability and reliability across diverse contexts. Additionally, it produces actionable recommendations tailored to the needs and concerns of local stakeholders, contributing to the development of strategies that enhance the acceptability of wind energy projects.

The outputs of T4.2 serve multiple purposes: they validate the MCSA framework developed in T4.1, inform the creation of practical guidelines for its broader application, and support the integration of wind energy solutions into regional and local planning processes.



## 2. REVISIT AND REFINE MUSA FRAMEWORK INTO MCSA FRAMEWORK

In D4.1, we introduced the foundation of the satisfaction analysis framework, the MUSA method. This approach enables a systematic analysis of stakeholder satisfaction and acceptance regarding wind farm development based on multiple criteria. As shown in Figure 1, MUSA disaggregates overall global satisfaction into individual satisfaction components associated with each criterion, effectively breaking down a complex evaluation into manageable and interpretable parts. This hierarchical decomposition facilitates a detailed assessment of how each subcriterion contributes to overall satisfaction. By employing the MUSA method, we can quantitatively measure the impact of each criterion on global satisfaction, enabling the identification of strengths and opportunities for improvement within the satisfaction structure. This structured approach ensures a transparent and comprehensive understanding of stakeholder satisfaction.



**Figure 1 Structure of a MUSA problem**

MUSA generates a series of indices that provide deeper insights, enhancing the interpretability and reliability of satisfaction assessments. A detailed description of these indices and their calculations can be found in Deliverable D4.1.

In our study, there is a need to account for divergent interests that may arise due to varying socio-demographic or geographical characteristics of participants. These variations are particularly relevant to this study. For example, the proximity of wind turbines to residents' homes can significantly

influence their opinions. Residents living closer to wind turbines may have distinct preferences compared to those living further away, necessitating a tailored analysis. To address this, we expanded the MUSA-based framework to capture these nuanced differences, focusing on the satisfaction levels of local residents regarding wind power plants. The refined framework systematically evaluates diverse group responses and preferences, ensuring a comprehensive and inclusive assessment. Moreover, it maintains accessibility and efficiency, minimizing the time commitment required from participants while accurately capturing their input. In addition, a subset of participants is selected for a Perception Interview to provide qualitative insights into real-world barriers, exploring concerns that affect the feasibility of the project beyond mere acceptability. This dual-input approach—combining quantitative ratings with qualitative feedback—provides a more holistic view of resident attitudes.

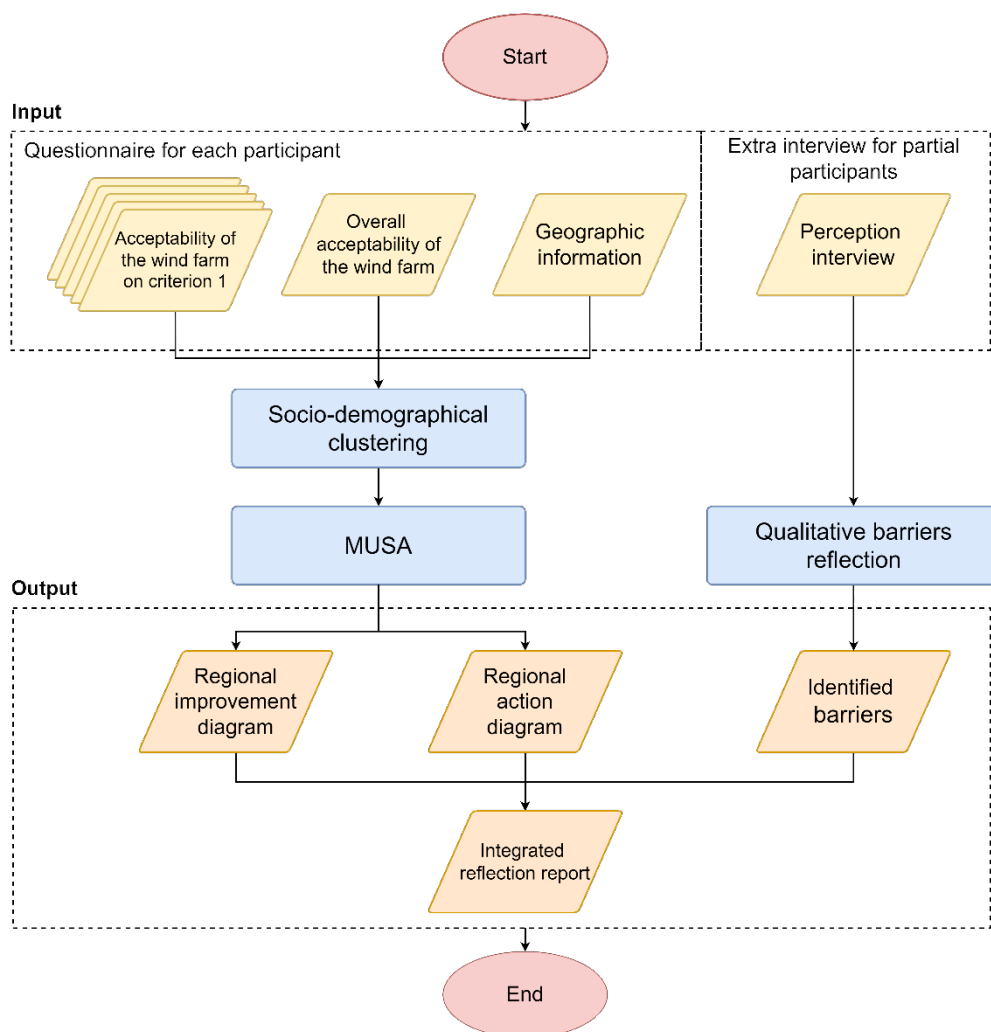
To effectively elicit preferences, we proposed the refined framework after D4.1, termed the Socio-Demographic MCSA, which incorporates considerations of socio-demographic and geographic factors. The flowchart of the framework is illustrated in Figure 2. Aligned with the objectives of Task T4.1, in Task T4.2 the refined framework has been implemented and further improved through applications in pilot site regions within Work Package 3 “Societal engagement in pilot cases”. Insights from these real-world applications inform actionable recommendations tailored to the unique preferences and concerns of local residents.

The framework is structured into several key steps:

- **Data collection and processing:** Data is gathered through structured questionnaires supplemented by selective follow-up interviews. The questionnaire captures multiple dimensions of resident perceptions, including the acceptability of the wind farm based on specific criteria, overall acceptability, and socio-demographic information. Input processing involves performing quality checks on the collected data to ensure accuracy, completeness, and consistency. This step also includes formatting and preparing the data to make it usable for the subsequent MCSA analyses.
- **Socio-Demographic clustering:** To reflect the diversity of resident perspectives, participants are categorised based on relevant socio-demographic attributes, including living locations. This approach helps capture specific concerns related to proximity to wind turbines, as participants living closer or farther from potential installations may have differing expectations and perceptions..



- **MUSA analysis:** Following clustering, the extended MUSA method is applied to quantitatively analyse acceptability across various criteria. This step provides a detailed breakdown of stakeholder preferences and their relative importance.
- **Qualitative barriers reflection:** While the MUSA analysis yields quantitative insights into hypothetical implementation's acceptability, real-world implementation may face additional challenges. To address these, besides MUSA, in-depth qualitative interviews are conducted with selected participants to explore practical barriers, such as regulatory constraints, logistical issues, and other feasibility concerns.
- **Integrated reflection report:** The final output consolidates findings from the MUSA analysis, regional satisfaction diagrams, and qualitative interviews into a comprehensive reflection report. This report provides decision-makers with a view of resident attitudes, combining insights on both acceptability and practical feasibility.



**Figure 2 Socio-Demographic MCSA framework**



### 3. MCSA GUIDELINE

The MCSA framework has been developed to systematically analyse the satisfaction and acceptability of residents regarding wind turbine installations. Building on this, it is important to provide practitioners with clear and formal guidance for effective implementation.

Therefore, this section introduces the workflow of the MCSA framework, outlining the step-by-step process from problem structuring to data analysis. The workflow illustrated in Figure 3 serves as a practical guideline, ensuring consistency, accuracy, and relevance in applying the framework across different contexts.

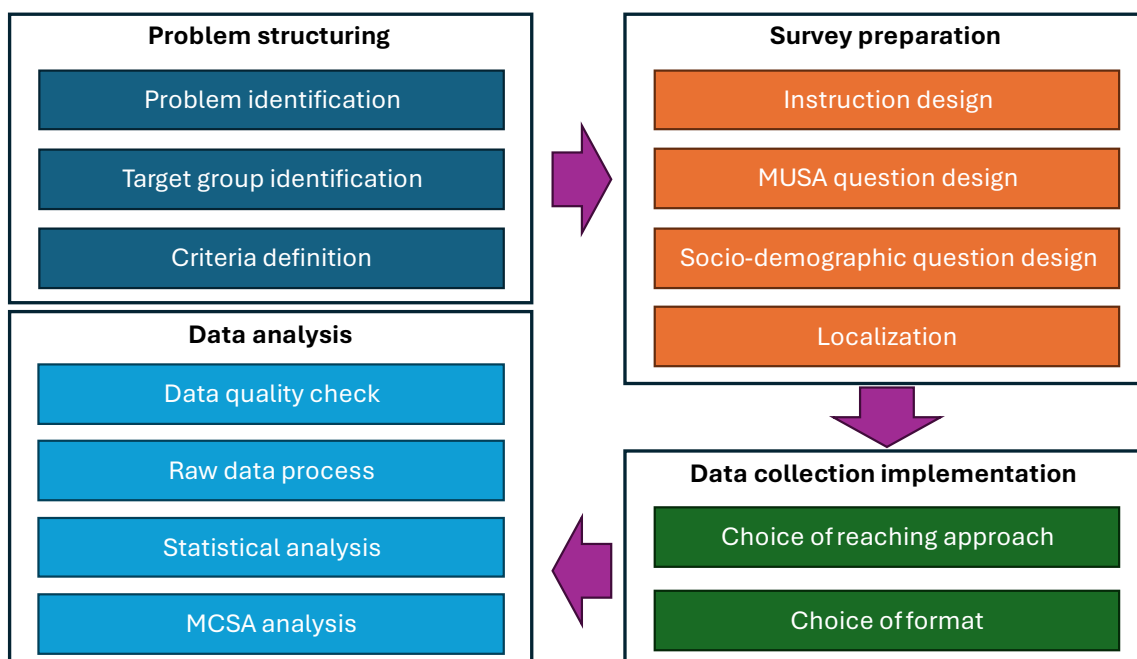


Figure 3 MCSA workflow

- **Problem Structuring:** The foundation of the MCSA framework begins with a clear understanding of the problem and its context.
  - *Problem Identification:* Clearly identify the key objective of the study. This involves identifying the specific target object to be evaluated for satisfaction or acceptability. In our study, this target object is “the acceptability of the wind turbine installation in the vicinity.”
  - *Target Group Identification:* The identification of target groups is a crucial step in designing a satisfaction or acceptability analysis, as it ensures that the study focuses on the perspectives of the most relevant stakeholders. In our study, the primary target group is local residents, as they are the most



directly impacted by wind turbine installations in their vicinity. These residents may experience changes in their environment, such as visual or noise impacts, which significantly influence their acceptability of the project. Additionally, secondary stakeholder groups may include tourists and visitors who may also have valuable perspectives.

- *Criteria Definition:* This step establishes the specific dimensions that will be evaluated to understand stakeholder perspectives. There is no strict maximum number of criteria for MUSA; however, it is important to strike a balance. On one hand, the criteria should be comprehensive to capture all relevant aspects, and on the other hand, they should be streamlined to avoid unnecessarily extending the answering time, which could reduce participants' willingness to engage[3].
- **Survey Design and Preparation:** A well-structured survey is essential for capturing comprehensive and actionable data.
  - *Instruction Design:* Develop clear and concise instructions for survey participants to ensure consistency in understanding and responses.
  - *MUSA Question Design:* Craft questions that align with the MUSA method under the MCSA framework, focusing on measuring satisfaction across identified criteria. Each question must be carefully designed to address a specific criterion, allowing participants to provide clear and relevant feedback. It includes defining an appropriate point-scale for each question is equally important and developing criterion-specific Likert scales that resonate with the context of each question. For example, noise pollution might use a 4-point scale ranging from “No Impact” to “High Degree of Impact,” while aesthetic integration could use a 5-point scale from “Strongly Negative” to “Strongly Positive.” This is because noise pollution is assessed using a unidirectional question, where a 4-point scale suffices to capture varying degrees of disturbance. In contrast, aesthetic integration is evaluated through a bidirectional question, acknowledging that it can have both positive and negative impacts. Therefore, a 5-point scale is employed, including a neutral option, with two positive and two negative choices to accurately reflect respondents' perceptions.



- *Socio-Demographic Question Design*: Incorporate questions to capture participants' socio-demographic attributes, such as age, education, income, and living location, to enable categorisation and clustering. These questions must comply with GDPR principles by collecting only the minimum data necessary to identify patterns and differences in opinions while ensuring the essential information required for categorization and clustering is obtained.
- *Localization*: Adapt the survey to the specific context of the pilot site region, considering cultural, linguistic, and geographic nuances.
- **Data Collection Implementation**: Effective outreach and data collection methods are critical for obtaining high-quality data.
  - *Choice of Reaching Approach*: Decide on the mode of distribution, such as online surveys, in-person interviews, or community workshops, based on the target group's accessibility and preferences.
  - *Choice of Format*: The choice of format for data collection should align with the specific characteristics of the location and the selected outreach approach. Depending on these factors, the method can range from structured surveys to more in-depth extended interviews. Surveys are ideal for efficiently collecting standardized data from a larger group of participants, while extended interviews allow for deeper exploration of individual perceptions and nuanced concerns. In both formats, the MUSA survey is essential, but the interview is optional. For example, in Pantelleria, we met some participants in a café, and since they had more time to answer detailed questions, interviews were conducted. However, in Styria, where the survey took place over a single day in a museum, participants were less willing to answer additional questions, so a simpler questionnaire was used instead. Selecting the appropriate format ensures that the data collection process is both effective and contextually relevant.
- **Data Processing and Analysis**: Collected data is processed and analysed to derive meaningful insights. Expected output can be found in D4.1.



- *Data Quality Check*: Review the raw data to ensure accuracy, completeness, and consistency. Handle missing or inconsistent responses appropriately.
- *Raw Data Processing*: Convert raw responses into a usable format for statistical and MUSA analysis, such as coding responses and normalizing scales.
- *Statistical Analysis*: Conduct descriptive and inferential analyses to understand response patterns and identify significant trends across socio-demographic groups.
- *MCSA Analysis*: Apply the MUSA method to quantify satisfaction and derive detailed insights into the acceptability of wind turbines. The analysis includes identifying satisfaction levels for individual criteria and their contributions to overall acceptability.



## 4. THE SATISFACTION ANALYSIS SURVEYS IN MUSA

This chapter presents the provisional survey before localisation developed for the Styrian pilot site to collect essential inputs for the satisfaction analysis framework. The questionnaire collects stakeholder perspectives on the acceptability of wind turbine installations. We offer a survey design template accompanied by guidelines for localization, enabling readers to gain valuable insights into structuring a satisfaction analysis survey. This includes the formulation of questions, designing response formats, and adapting the survey to diverse contexts.

The actual online survey we designed for Styria pilot site is presented in ANNEX.

### Survey on the acceptability of wind turbines in Styria

#### **Part I: Introduction**

##### **Purpose**

The aim of this survey is to establish personal opinions on wind turbines in order to investigate the acceptance and opinions of the population with regard to the expansion of wind turbines in Styria.

The survey is part of the WIMBY (Wind in my Backyard) research project funded by the EU Horizon Program and has no connection with specific wind power projects.

The full survey will take approximately 5 minutes to complete.

##### **Confidentiality**

Your answers will be used exclusively for research purposes. All results will be published in an aggregated format, fully anonymized, ensuring that individual responses cannot be traced back to any participant. They will be treated confidentially and under no circumstances will they be shared with third parties or companies outside the WIMBY initiative. The data processing policy is available in full on our website at: <https://wimby.eu/privacy-policy/>.

##### **Instructions**

The survey is divided into three sections, focusing on:



- Section A: Environmental aspects of wind energy
- Section B: Community aspect of wind turbines
- Section C: Your individual opinion

At the end of the questionnaire, we ask you to provide personal information (socio-demographic data). For each question, select the answer that comes closest to your opinion or experience. Now, please look at the image of the wind turbine on the Sommeralm north of Graz. This image gives you a visual impression of what wind farms normally look like in Styria.

### ***Section A – Environmental aspects of wind energy***

**A1 Do you think that the installation of wind turbines in Styria will cause undesired land use changes?**

- To a high degree
- To a moderate degree
- Maybe a bit
- Not at all

**A2 Are you concerned that wind turbines will harm biodiversity in Styria?**

- To a high degree
- To a moderate degree
- Maybe a bit
- Not at all

**A3 Do you think that wind turbines can help produce clean energy in Styria?**

- Rather negatively
- Slightly negatively
- No effect
- Slightly positively
- Rather positively

**Summarizing question: Environmental aspects**

**A4 How do you assess the potential environmental impact of the construction of wind turbines in Styria?**

- Rather negatively



- ☐ Slightly negatively
- ☐ No effect
- ☐ Slightly positively
- ☐ Rather positively

### **Section B – Community aspect of wind turbines**

#### **B1 How do you think the installation of wind farms in Styria will affect the regional economy?**

- ☐ Rather negatively
- ☐ Slightly negatively
- ☐ No effect
- ☐ Slightly positively
- ☐ Rather positively

#### **B2 Are you concerned that the installation of wind turbines in Styria will negatively affect the community lifestyle?**

- ☐ To a high degree
- ☐ To a moderate degree
- ☐ Maybe a bit
- ☐ Not at all

#### **B3 Do you expect that wind turbines can pose a safety risk of people and infrastructure?**

- ☐ To a high degree
- ☐ To a moderate degree
- ☐ Maybe a bit
- ☐ Not at all

#### **B4 Do you agree that wind turbines in Styria can increase the social awareness and political commitment of the population?**

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly agree

#### **B5 Do you think that wind turbines in Styria are a reliable technology in the long term?**



- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly agree

**Summarizing question: Community aspect**

**B6 From the community point of view, how do you rate the installation of wind turbines in Styria?**

- ☐ Very negative
- ☐ Rather negative
- ☐ Neutral
- ☐ Rather positive
- ☐ Very positive

**Section C – Personal aspects**

**C1 How do you think the installation of wind turbines in Styria will affect your personal financial situation?**

- ☐ Rather negatively
- ☐ Slightly negatively
- ☐ No effect
- ☐ Slightly positively
- ☐ Rather positively

**C2 Do you think that the installation of wind turbines in Styria will negatively affect the aesthetics of the landscape?**

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly agree

**C3 To what degree are you concerned about noise pollution from the wind turbines?**

- ☐ To a high degree
- ☐ To a moderate degree
- ☐ Maybe a bit
- ☐ Not at all



**C4 To what degree are you concerned about the shadow flicker from the wind turbines?**

- ☐ To a high degree
- ☐ To a moderate degree
- ☐ Maybe a bit
- ☐ Not at all

**Summarizing question: Personal aspects**

**C5 From a personal point of view, how do you rate the installation of wind turbines in Styria?**

- ☐ Very negative
- ☐ Rather negative
- ☐ Neutral
- ☐ Rather positive
- ☐ Very positive

**Final question**

**Taking into account all your previous answers, how do you rate your overall acceptability, concerning the installation wind turbines in Styria?**

- ☐ Very low
- ☐ Low
- ☐ Moderate
- ☐ High
- ☐ Very high

***Socio-demographic Information***

**SD1 What is your age?**

- ☐ 18 – 24 years
- ☐ 25 – 34 years
- ☐ 35 – 44 years
- ☐ 45 – 54 years
- ☐ 55 – 64 years
- ☐ 65 or older

**SD2 What is your gender?**

- ☐ Male
- ☐ Female



- Non-binary
- Prefer not to say

**SD3 What is your level of education?**

- Secondary schools or less (e.g., high school)
- College or vocational training
- Bachelor's degree
- Postgraduate degrees (Masters, PhD or higher)

**SD4 Are you currently employed?**

- Yes, full-time
- Yes, part-time
- No, not employed
- Retired
- Student
- Prefer not to say

**SD4.1 If you are currently employed, what is your profession?**

*Please fill in your profession.*

**SD5 Have you lived or are you currently living in Styria?**

- I am currently living in Styria
- I have lived in Styria
- I have never lived in Styria
- Prefer not to say

**SD5.1 In which municipality?**

*Please fill in the municipality.*



## **5. LESSONS LEARNT FROM PREVIOUS PILOT SITES**

Following the implementation of the MCSA framework in two pilot site regions, we aim to summarize the key lessons learned and provide actionable insights to inform and enhance future applications. These findings highlight both the challenges encountered and the strategies developed to ensure effective implementation of the framework.

### **5.1 Pantelleria (Sicily, Italy) pilot site**

In Pantelleria, we initially launched an online questionnaire to gather responses efficiently. Posters containing a QR code linked to the questionnaire were distributed across local public spaces, including bars, restaurants, and hotels. Despite these efforts, the response rate was extremely low, with only one participant completing the survey.

Upon arriving in Pantelleria to conduct the offline survey, we identified several factors contributing to the low response rate. A significant portion of the local population is elderly, and many do not own smartphones, making QR code scanning impractical. Additionally, literacy challenges stemming from generally low education levels among some residents further hindered their ability to read and respond to the survey independently. Such challenges are not uncommon in rural regions across Europe, where educational access and literacy rates may vary significantly [4], [5].

To address these challenges, we adapted the survey approach and format in accordance with the implementation guidelines. Collaborating with Italian-speaking partners from Politecnico di Torino, we adopted a street interview method in the residential centres of Pantelleria. This approach allowed us to engage directly with residents in a more accessible and interactive manner.

During these interviews, detailed verbal instructions were provided to ensure participants fully understood the purpose of the survey and the questions being asked. For individuals unable to read, the survey questions and answer options were read aloud, with additional explanations offered as needed.

In addition to street interviews, we conducted more detailed conversations in an interview format with residents and tourists in local bars. Since many individuals stayed in these places for extended periods, we were able to conduct in-depth interviews, delving deeper into practical barriers and concerns. These discussions provided valuable qualitative insights into local perceptions, potential barriers to wind turbine acceptability, and the unique socio-demographic factors influencing responses in Pantelleria.



By adapting our survey approach to the local context, we successfully overcame the initial challenges and gathered meaningful data.



**Figure 4 Street interview conducted in Pantelleria (participants pictured have granted permission).**

## **5.2 Ennstal (Styria, Austria) pilot site**

Due to the large area of 16'400 km<sup>2</sup> and over 1.2 million inhabitants, we developed an online and offline questionnaire for the pilot site region of the Ennstal valley in Styria to maximize respondent participation. The survey preparation included the translation of the questions from English to German, producing printed copies and ensuring the availability of pens.

The offline questioning was conducted at two locations: An outdoor site at the Planai Mountain Railway in Schladming and an indoor site at the Museum Trautenfels Castle in Stainach/Pürgg. The selection of an outdoor and indoor location was made strategically to reach a diverse range of people and consider different weather conditions. At both locations, we greeted the visitors and asked if they had a moment. If the response was positive, we informed them verbally about the WIMBY project and the purpose and confidentiality of the survey.

Overall, the response rate at both locations exceeded our expectations. At the first location at the Mountain Railway in Schladming, on average every third respondent was willing to complete the survey. According to our observations, people who sat down on the bench were more willing to complete the questionnaire than those who stood next to the hiking map.

The most common reasons for non-participation in the survey included: (1) lack of time ("I do not have time"), (2) irrelevance to the field of work ("I do

not work in this field”), (3) the length of the questionnaire (“the questionnaire seem too long and it is a lot to read”), and (4) one participant had difficulties reading the font size (“the font is too small”). We thanked the people who did not have time to answer the questionnaire for their time and wished them a good hike. In a few cases, people did ask again what these questions were about and then took part after all. To the second reason, we assured that prior experience in the field is not required and emphasized that the questions are not knowledge-based, but rather multiple-choice items focused on personal opinions. To the third reason, we assured them that it will not take longer than five minutes. To the fourth reason, we read the questions and answers out loud. At the end we asked the respondents if they want to comment, give feedback or add anything and thanked them sincerely for the participation.



**Figure 5 The interviewers are waiting for the next respondents in the Planai mountain railway in Schladming (participants pictured have granted permission) and the view of the valley in Styria.**

At the second location, the Museum Trautenfels Castle in Stainach/Pürgg, we conducted the surveys in the hallway next to the ticket office. After visitors purchased their museum ticket, we greeted and asked if they have five minutes to give their opinion on the installation of wind turbines in Styria. Of all the visitors, only two refused to complete the questionnaire, arguing that they were not interested in the issue.



**Figure 6 The location Museum Trautenfels Castle in Stainach/Pürgg and interviews being conducted in the hallway of the museum (participants pictured have granted permission)**

The online questionnaire<sup>4</sup> was very successful, reaching many residents from Styria. The approach of conducting both offline and online surveys provided a multifaceted understanding of the different perspectives of the Styrian population on the installation of wind turbines.

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<sup>4</sup> created on the Qualtrics survey platform



## **6. OUTLOOK**

Having successfully implemented the MCSA framework in two pilot site studies—Pantelleria in Italy and the Ennstal valley in Styria, Austria—we are now preparing for the next phase of the study, which includes the third case study and holistic analysis among all pilot sites. In January 2025, the framework will be applied to a third pilot site in Portugal, focusing on the regions of Viana do Castelo and Torres Vedras. This upcoming study will continue the exploration of stakeholder satisfaction and acceptability of wind farms, leveraging insights gained from the initial pilot sites to further refine the methodology and approach.

In Portugal, the MCSA framework will once again evaluate multi-dimensional criteria across dimensions, with a tailored approach to address the unique context of the pilot site regions.

Following the completion of the third pilot study, a comparative analysis will be conducted across the three pilot sites. This analysis aims to uncover similarities and differences in stakeholder satisfaction and acceptability of wind farms across diverse regions and contexts. It will explore factors such as geographic location, cultural attitudes, and socio-demographic characteristics to identify common drivers and barriers to wind energy acceptability.

The results of this comparative analysis will provide insights for policymakers, planners, and developers, offering evidence-based recommendations to improve the integration of wind energy projects into local communities.

## **7. CONCLUSIONS**

This deliverable provides a comprehensive guideline for implementing the socio-demographic MCSA framework, focusing on capturing stakeholder satisfaction and acceptability of wind power projects. The framework builds on the foundations established in D4.1 and incorporates socio-demographic and geographic considerations to reflect the diverse perspectives of local communities. The step-by-step workflow outlined in this deliverable serves as a practical tool for practitioners, enabling systematic and transparent engagement with stakeholders and the collection of meaningful data to inform decision-making.

Key lessons were derived from the application of the framework in the pilot site regions of Pantelleria (Sicily, Italy) and Ennstal (Styria, Austria) offering valuable insights for future implementations. This deliverable underscores

the importance of tailoring the survey approach to local contexts and emphasizes the value of combining quantitative and qualitative insights for a comprehensive understanding of stakeholder satisfaction. The guidelines and lessons learnt not only ensure effective implementation of the MCSA framework but also serve as a resource for practitioners to foster greater community engagement and support for wind power projects.

The results and detailed analysis from the pilot site studies will be presented in D4.3. Together, these deliverables will strengthen the practical applicability of the MCSA framework and contribute to the overarching goals of the WIMBY project, promoting the inclusive and sustainable deployment of wind energy solutions.

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## ANNEX

### ***The implemented satisfaction analysis survey for Styria pilot site***

This section presents the translated survey that was designed for the online survey of Styrian residents. The survey design adheres to the ethical guidelines approved by the Paul Scherrer Institute, ensuring compliance with established ethical standards and practices in the WIMBY project.





## Allgemeine Information

Ziel dieser Befragung ist es, persönliche Einstellungen zu Windkraftanlagen zu erheben, um die Akzeptanz und Einstellung der Bevölkerung hinsichtlich des Ausbaus von Windkraftanlagen in der Steiermark zu erforschen. Die Umfrage findet im Rahmen des vom EU-Horizon Programms finanzierten Forschungsprojektes WIMBY (Wind in my Backyard) statt und steht in keinem Zusammenhang mit konkreten Windkraftprojekten.

Das Ausfüllen des Fragebogens dauert ca. 5 Minuten.

## Vertraulichkeit

Ihre Antworten werden ausschließlich für Forschungszwecke verwendet. Die Ergebnisse werden in zusammengefasster Form und ausschließlich anonymisiert veröffentlicht. Eine Rückverfolgung einzelnen Antworten zu einem/einer Teilnehmer\*in ist daher nicht möglich. Ihre Daten werden vertraulich behandelt und nicht an Dritte oder Unternehmen außerhalb des WIMBY-Projektes weitergegeben. Die vollständige Datenverarbeitungspolitik ist auf unserer Website abrufbar unter: <https://wimby.eu/privacy-policy/>.

## Anleitung

Die Befragung ist in drei Abschnitte unterteilt, die sich mit folgenden Themen befassen:

- Abschnitt A: Umweltaspekte der Windenergie
- Abschnitt B: Regionale Auswirkungen von Windkraftanlagen
- Abschnitt C: Persönliche Aspekte

Am Ende des Fragebogens ersuchen wir sie noch um die Angabe persönlicher Informationen (sozio-demografischen Daten). Bitte wählen Sie bei jeder Frage jene Antwort aus, die am ehesten Ihrer Meinung oder Erfahrung entspricht.

Nehmen Sie sich bitte nun einen Moment Zeit und betrachten Sie das Bild einer Windkraftanlage auf der Sommeralm nördlich von Graz. Dieses Bild gibt Ihnen einen visuellen Eindruck davon, wie Windkraftanlagen in der Steiermark im Alpenraum üblicherweise aussehen.





This is an example of two questions from section A that were translated into German for the online survey:

Abschnitt A - Umweltaspekte der Windenergie

QA1. Glauben Sie, dass die Errichtung von Windkraftanlagen in der Steiermark zu unerwünschten Landnutzungsänderungen führen wird?

☐ In hohem Maße

☐ In moderatem Maße

☐ In geringem Maße

☐ Überhaupt nicht

QA2. Befürchten Sie, dass Windkraftanlagen der Artenvielfalt in der Steiermark schaden?

☐ In hohem Maße

☐ In moderatem Maße

☐ In geringem Maße

☐ Überhaupt nicht



This is an example of questions from the socio-demographic questions that were translated into German for the online survey:

Soziodemografische Angaben

QSD1. Wie alt sind Sie?

- ☐ 18 - 24 Jahre
- ☐ 25 - 34 Jahre
- ☐ 35 - 44 Jahre
- ☐ 45 - 54 Jahre
- ☐ 55 - 64 Jahre
- ☐ 65 Jahre oder älter

QSD2. Welche Geschlechtsidentität haben Sie?

- ☐ Männlich
- ☐ Weiblich
- ☐ Divers
- ☐ Möchte ich nicht sagen