Integration Guideline for Social Dimensions into Agri-Climate Change Adaptations Planning and Decision Processes at the Municipal Level

Final document

October, 2024

Funded by the European Union. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA).Neither the European Union nor EACEA can be held responsible for them.

This guide for Social Dimensions in Agricultural Climate Change Adaptation Planning and Decision Making at Municipal Level has been prepared as part of the Erasmus+ project "Integrating social dimensions in agricultural climate change adaptation" - 2022-1-MK01-KA220-ADU-000086031.

If you have any questions about the manual, please get in touch:

Hazal Ozturk

Project Manager

Eurasia Institute Research and Development Limited Company

hazaleurasia.edu@gmail.com

Integration Guideline for Social Dimensions into Agri-Climate Change Adaptations Planning and Decision Processes at the Municipal Level Published by the project consortium of the project “Integrating social dimensions into agri-climate change adaptations”

The partner consortium of the project: "Integrating social dimensions into agri-climate change adaptations":

- Municipality of ROSOMAN
- Association of secondary schools "TERA-FITON-ANIMAL" - SVETI NIKOLE
- Research Institute EURASIA - TURKEY
- Organization for research and development of technologies OMNIA – CYPRUS

PERSON RESPONSIBLE FOR PROJECT IMPLEMENTATION

- Trajce Dimovski – project coordinator- Municipality of ROSOMAN

Project website:

https://agriclimate.eu/

Introduction

Global agricultural systems face serious challenges from climate change, which will affect employment, health, housing, water, food security and nutrition, among other vital components of rural life (UN, 2021). Climate variability and extreme weather events put rural people at risk, who are mostly dependent on natural resources for their livelihoods (EU, 2020). As these communities face the reality of a changing climate, effective adaptation techniques are essential to maintain the resilience and sustainability of agricultural practices. To address the complex impacts of climate change on rural residents, social components should be included in municipalities' efforts to adapt to climate change (UN, 2021). This guide aims to provide municipalities with a structured approach for incorporating social considerations into agricultural climate change adaptation planning and decision-making processes.

Emphasising the promotion of social dimensions, the Development of Guidelines for Integration of Social Dimensions in Agricultural Climate Change Adaptation Planning and Decision Making at Municipal Level aims to provide comprehensive and process-oriented assistance for integrating climate change adaptation into the agricultural sectors of municipalities. This guide will be a crucial tool to assist rural municipalities in the smooth integration of the Municipal Strategy for Climate Change Adaptation measures in agriculture. This programme aims to guarantee inclusive and participatory planning processes that involve all key stakeholders, in particular farmers, in climate change adaptation by integrating social dimensions.

Background and Rationale

The impacts of climate change are deeply felt in rural areas, where agricultural activities form the backbone of economies and livelihoods (EU, 2020). These regions are particularly vulnerable due to their dependence on natural resources threatened by a changing climate (UN, 2021). As climate change intensifies, rural communities face increasing risks to agricultural productivity, water availability and overall socioeconomic stability (EU, 2020). Moreover, inequalities in access to resources and decision-making power often exacerbate these vulnerabilities, disproportionately affecting marginalised groups such as small-scale farmers and women (UN, 2021).

Integrating social dimensions into climate change adaptation strategies is crucial for several reasons. First, it ensures that adaptation measures are not only technically feasible, but also

socially acceptable and fair (EU, 2020). By involving local stakeholders, including municipalities, farmers, policy makers and community leaders, in the adaptation planning process, they can tailor their strategies to meet the specific needs and priorities of their communities (UN, 2021). This participatory approach increases ownership and effectiveness of adaptation initiatives by promoting sustainable development and resilience in the face of climate uncertainties (EU, 2020).

In light of these challenges and opportunities, this guide aims to provide municipalities with practical tools and recommendations for integrating social dimensions into agricultural climate change adaptations. By improving understanding, fostering co-operation and reducing barriers to participation, this guide also aims to empower rural communities to effectively respond to and mitigate the impacts of climate change on agriculture.

Impact of Climate Change on Rural Areas

The impacts of climate change on rural communities are extensive and diverse, having a major impact on their well-being and livelihoods in many different ways. As temperatures rise and weather conditions become more unpredictable, rural communities face increasing challenges to agricultural production, water availability, health outcomes and overall socio-economic stability (IPCC, 2021). These impacts are exacerbated by the heavy dependence of rural people on natural resources and agriculture, which are directly affected by climate extremes and unpredictability (FAO, 2020).

(Figure 1, Freepik)

The vulnerability of rural populations to climate change stems not only from their economic dependence on agriculture, but also from their limited adaptive capacity and access to resources. In particular, farmers face increased risks of crop loss, livestock loss and reduced income due to unpredictable weather patterns and changing climatic conditions (World Bank, 2020). Moreover, rural communities often lack sound infrastructure and social services, further increasing their vulnerability to climate-related shocks and stresses (IPCC, 2021).

Need for Social Dimension Integration

Integrating social dimensions into climate change adaptation strategies is critical for ensuring relevance, effectiveness and long-term sustainability in rural areas. Social dimension integration involves incorporating local knowledge, values and community perspectives into adaptation planning and decision-making processes (FAO, 2020). By engaging stakeholders, including farmers, local authorities and civil society organisations, adaptation efforts can better address the specific needs and priorities of rural communities.

(Figure 2, freepik)

Effective integration of social dimensions enhances adaptive capacity by fostering local ownership, building trust and promoting collective action in response to climate risks (World Bank, 2020). It ensures that adaptation measures not only reduce climate impacts but also contribute to broader development goals such as poverty reduction, food security and social equity (IPCC, 2021). Furthermore, inclusive decision-making processes empower marginalised

groups such as women and indigenous communities to participate in shaping resilient and sustainable futures amid climate uncertainties (FAO, 2020).

Objectives of the Guideline

Main objective: Integrating social dimensions into agricultural climate change adaptations at local level.

Specific Objectives:

1. **Providing the agricultural sector with knowledge and skills for adaptation:** Strengthening the capacity of farmers and agricultural stakeholders to understand, anticipate and respond effectively to the impacts of climate change through training programmes and technical assistance (World Bank, 2020).
2. **Analyse the social aspects and consequences of climate change on agriculture:** Conduct comprehensive assessments to identify and prioritise social vulnerabilities, impacts and adaptation needs in rural communities (IPCC, 2021).
3. **Promote local co-operation on climate-related issues:** Facilitate cooperation among various stakeholders to develop joint strategies, share information and mobilise resources for climate resilience at the local level (FAO, 2020).
4. **Support efforts to strengthen adaptation to climate change in agriculture:** Implement adaptive practices and policies that increase the resilience of agricultural systems to climate risks, including improved water management, soil conservation and diversified cropping systems (IPCC, 2021).
5. **Strengthen the inclusion of social dimensions in local strategies and programmes for adaptation:** Integrating social considerations such as equity, inclusion and community participation into adaptation planning and policy development processes at the municipal level (World Bank, 2020).

Furthermore, this manual serves as a tool:

- **Minimise Barriers**: Minimise barriers and constraints that prevent farmers from participating in climate adaptation measures.
- **Increase Participation**: Encourage the active participation of various stakeholders in the adaptation process, including farmers, policy makers and agricultural experts.

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

- **Support Municipalities**: Provide rural municipalities with structured, clear and actionable guidelines to integrate social dimensions into their climate change adaptation strategies.
- **Promote Transparency**: Promote transparent and participatory decision-making processes at all stages of strategy design and implementation.

Methodology

The methodology for the development of Guidelines for the integration of social dimensions in agricultural climate change adaptation planning and decision-making at the municipal level emphasises rigorous coordination, scientific guidance and collaborative design among project partners. EURASIA will lead the coordination efforts and ensure that the guidelines maintain high quality and consistency throughout their development. This leadership role includes overseeing the scientific aspects of the work package to ensure alignment with current research and best practices in climate adaptation.

The collaborative design process involves the active participation of all partners who will contribute to the preparation and improvement of the guidelines. This approach not only brings together different perspectives, but also facilitates the sharing of practical work and best practices in different contexts. The Guide aims to provide comprehensive and context-relevant guidance for integrating social dimensions into municipal climate adaptation strategies, drawing on the collective expertise of stakeholders.

Accessibility and inclusion are at the centre of the methodology and the document is planned to be translated into multiple languages. This translation effort ensures that the guidelines are accessible to all project partners and stakeholders, promoting wider availability and application in different geographical and linguistic contexts (United Nations, 2021).

Activities

1. **Coordination Meetings:** Regular coordination meetings will be held to ensure harmonisation of activities, monitor progress and promptly address emerging challenges. These meetings serve as a platform for partners to synchronise their efforts and maintain momentum towards guideline development.
2. **Stakeholder Workshops:** Interactive workshops will be organised to engage key stakeholders, including farmers, local policy makers and agricultural experts. These workshops will gather valuable inputs on local climate challenges, social dynamics and

priorities for climate adaptation, thus validating the content and applicability of the guidelines.

3. **Drafting Sessions:** Collaborative sessions will focus on the drafting and iterative refinement of the guidelines. Partners will contribute insights, case studies and practical examples to enrich the content and ensure its relevance to different municipal settings.
4. **Feedback and Validation:** Stakeholder feedback will be systematically collected and integrated into the guideline to improve its clarity and effectiveness. This iterative process of feedback collection and document improvement ensures that the final guideline reflects the needs and aspirations of the intended users.
5. **Finalisation and Translation:** The Guidelines will be finalised on the basis of consolidated feedback and insights gathered during the drafting and validation phases. It will then be translated into common languages to facilitate its widespread adoption and implementation.

Dissemination and Impact

The dissemination strategy will ensure wide uptake and long-term impact of the Integration Guide:

- **Dissemination Events:** Presentation of the Guidelines at special dissemination events targeting at least 100 stakeholders, including farmers, policy makers and agricultural experts.
- **Target Audience:** The Guide will specifically address stakeholders involved in the agriculture and climate change adaptation sectors and will aim to equip them with practical tools and insights.
- **Long Term Impact:** Expected results include strengthening resilience and adaptive capacity in rural agricultural communities and promoting sustainable development through equitable and inclusive adaptation planning processes.

As a result, the Integration Guide is a crucial tool to bridge the gap between climate change adaptation strategies and the social dynamics of rural farming communities. By promoting inclusiveness and participatory governance, the Guide aims to ensure that climate change adaptation efforts are not only effective, but also equitable and sustainable in the long term.

Expected Results

The methodology outlined aims to achieve ambitious results focussed on promoting effective climate adaptation strategies through social inclusion and participatory governance. The development of a comprehensive and applicable guideline will provide several important benefits:

1. **Clear and Structured Guidance:** The Integration Guidance will provide specific instructions for involving stakeholders in the formulation and implementation of adaptation measures and will ensure clarity and consistency across municipal settings (FAO, 2020).
2. **Reducing Barriers for Farmers:** Access to resources, technologies and information required for effective climate adaptation will be facilitated, thereby reducing barriers and promoting equitable participation among farmers and rural communities.
3. **Enhanced Stakeholder Engagement:** The Guidelines will promote inclusive and participatory decision-making processes and empower local communities and stakeholders to actively participate in shaping adaptation strategies tailored to local realities and needs.
4. **Support for Transparent Decision-Making Processes:** Strengthened governance structures and accountability mechanisms will support transparent decision-making processes and ensure effective implementation and monitoring of adaptation strategies (FAO, 2020).
5. **Capacity Building:** The Integration Guide, consisting of at least 30 pages, will be well-structured and visually engaging and will provide actionable recommendations for municipalities to strengthen their capacity to address the impacts of climate change on agriculture. This will include awareness raising and skills development among rural municipalities through socially inclusive and participatory approaches.

   These expected results underline the important role of the guidelines in bridging the gap between climate change adaptation strategies and the social dynamics of rural agricultural communities. By promoting inclusiveness and participatory governance, the guidelines aim to ensure that adaptation efforts are not only effective, but also equitable and sustainable in the long term.

Stakeholder Engagement

Stakeholder engagement is crucial in ensuring the success and sustainability of climate change adaptation strategies in agriculture. Therefore, effective engagement involves identifying and involving key stakeholders such as farmers, local communities, policy makers and agricultural experts. In this way, each group brings unique perspectives and expertise that are essential for the preparation of comprehensive adaptation plans (FAO, 2020; IPCC, 2021).

(Figure 3, Freepik)

Engagement with stakeholders starts by first identifying those directly affected by climate change and adaptation measures. For example, farmers as primary stakeholders are crucial as they are directly dependent on agricultural practices affected by climate variability (UNDP, 2020). Local communities, including residents and community leaders, provide valuable information on local priorities and concerns, ensuring that adaptation strategies are context-relevant and sustainable (UNEP, 2021).

On the other hand, stakeholder outreach and engagement strategies may vary according to the diversity and specific needs of stakeholders. Effective communication channels such as workshops, focus groups and online platforms facilitate dialogue and collaboration (IPCC, 2021; UNEP, 2021). Moreover, tailoring these communication methods to stakeholders'

preferences and accessibility increases participation and inclusiveness in decision-making processes (FAO, 2020).

Techniques used to promote active participation include capacity building through training sessions on climate change impacts and adaptation strategies (UNDP, 2020). Providing accessible information in local languages and ensuring cultural sensitivity are essential to promote meaningful participation and ownership of adaptation initiatives (UNEP, 2021). Collaborative approaches, such as co-designing adaptation plans with stakeholders, promote shared responsibility and increase the effectiveness of these practices (FAO, 2020).

Consequently, stakeholder engagement in climate change adaptation for agriculture requires proactive identification, inclusive outreach strategies and collaborative techniques to ensure comprehensive and sustainable solutions. By involving different stakeholders at all stages of planning and implementation, adaptation strategies can effectively address local challenges and increase community resilience in the face of climate uncertainties.

Identification of Relevant Stakeholders: Farmers, Local Communities, Policy Makers, Agricultural Experts

Identification and engagement of key stakeholders is crucial for municipalities when developing climate change adaptation strategies in agriculture. This section summarises the stakeholders necessary to prepare effective and inclusive adaptation plans: farmers, local communities, policy makers and agricultural experts.

(Figure 4, Freepik)

Farmers: Farmers are key stakeholders in municipalities' climate adaptation efforts as they directly depend on and manage agricultural activities affected by climate change. Their in-depth understanding of local agricultural practices and first-hand experiences with climate variability provide invaluable insights into adaptation needs and challenges (FAO, 2020). Therefore, working with farmers ensures that adaptation strategies are grounded in practical realities and respond to local agricultural vulnerabilities, such as changing rainfall patterns and pest outbreaks.

Local Communities: In addition to farmers, local communities include residents, community leaders and non-farm businesses whose well-being is intertwined with agricultural productivity. Their perspectives on broader community needs, social dynamics and economic impacts of climate change are critical for designing comprehensive adaptation strategies (IPCC, 2021). Therefore, engaging local communities fosters ownership of adaptation initiatives, promotes social equity and ensures that solutions meet diverse community needs and priorities (UNDP, 2020).

Policy makers: Municipal policymakers have key responsibilities in setting regulatory frameworks, allocating resources and integrating climate adaptation into municipal planning. Their decisions shape the implementation and effectiveness of adaptation strategies across sectors, including agriculture (UNEP, 2021). Co-operation with policy makers ensures alignment between adaptation plans and municipal development goals, facilitates policy support and increases the sustainability of adaptation measures over time (FAO, 2020).

Agriculture Experts: The expertise of agricultural researchers, extensionists and agronomists is also essential for integrating scientific knowledge and technical solutions into municipal climate adaptation strategies. These experts provide critical insights on climate-smart practices, innovative technologies and research findings that optimise agricultural resilience (IPCC, 2021). Engagement with agriculture experts enables municipalities to benefit from the latest research and best practices, increasing the feasibility and impact of adaptation efforts in agriculture (UNDP, 2020).

Consequently, the identification and engagement of relevant stakeholders (farmers, local communities, policy makers and agricultural experts) is essential for municipalities to develop sound climate change adaptation strategies in agriculture. Working together, these stakeholders ensure that adaptation plans are context-relevant, inclusive and capable of building resilience to climate uncertainties.

Stakeholder Outreach and Engagement Strategies

Effective stakeholder outreach and engagement is crucial for developing inclusive and successful climate change adaptation strategies in agriculture at the municipal level. In this section below, evidence-based strategies and methodologies for promoting active engagement and co-operation among various stakeholders are reviewed.

Understanding Stakeholder Dynamics: Before implementing outreach strategies, municipalities should conduct a comprehensive stakeholder analysis to identify interests, concerns, and potential barriers to engagement (Bryson, 2018). This analysis can ensure that outreach efforts are tailored to the specific needs and priorities of different stakeholder groups and increase the relevance and effectiveness of engagement activities (Bryson & Crosby, 2019).

Multi-Stakeholder Platforms: The establishment of multi-stakeholder platforms (MSPs) is a proven approach to facilitate dialogue, consensus building and joint decision-making among different stakeholders (Dietz et al., 2020). MSPs provide a structured framework for collaboration, allowing stakeholders such as farmers, policy makers, researchers and community representatives to share information, exchange perspectives and co-design adaptation measures (IPCC, 2021).

Participatory Workshops and Focus Groups: Organising participatory workshops and focus groups can also promote interactive discussions and knowledge co-production on climate impacts and adaptation options (Reed et al., 2009). These sessions will allow stakeholders to contribute local knowledge, prioritise adaptation needs and co-develop actionable strategies that reflect their context and aspirations (UNDP, 2020).

(Figure 5, freepik)

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

Information and Communication Technologies (ICTs): Utilising ICT tools such as online platforms, mobile applications and virtual meetings can enhance stakeholder engagement by overcoming geographical barriers and facilitating continuous communication (Oliver et al., 2018). ICTs enable real-time information sharing, remote participation in decision-making processes, and broad stakeholder engagement, especially in rural areas where physical access is limited (Serrano-Cinca et al., 2021).

(Figure 6, Freepik)

Capacity Building and Training: The provision of capacity-building initiatives, workshops and training sessions also helps to improve stakeholders' understanding of climate change impacts and adaptation strategies (UNEP, 2021). Capacity building empowers stakeholders with the necessary skills, knowledge and tools to actively participate in adaptation planning, implementation and monitoring (FAO, 2020).

Public Awareness Campaigns: Engaging with a wider audience through targeted awareness campaigns, community events and educational outreach programmes raises awareness about the impacts of climate change on agriculture and encourages support, which is crucial for adaptation initiatives (IPCC, 2021). Public engagement builds social legitimacy, mobilises resources and strengthens political will to implement climate-resilient agricultural practices (UNDP, 2020).

In summary, using a combination of these strategies (comprehensive stakeholder analysis, multi-stakeholder platforms, participatory approaches, ICT tools, capacity building and public awareness campaigns) facilitates effective stakeholder outreach and engagement in the development of climate change adaptation strategies in agriculture at municipal level.

Strategy for Identifying Relevant Stakeholders

Identifying and involving key stakeholders is essential to ensure that climate change adaptation strategies are inclusive and sensitive to local needs:

1. **Stakeholder Mapping**: Conduct a comprehensive stakeholder analysis to identify all relevant actors involved in or affected by climate change impacts on agriculture. This includes farmers, local communities, policy makers, agricultural experts, researchers, NGOs and relevant government agencies (Bryson, 2018).
2. **Inclusive Approach**: Ensure inclusiveness by considering diverse perspectives and ensuring representation of marginalised or vulnerable groups that may be disproportionately affected by climate change (IPCC, 2021).
3. **Local Knowledge Integration**: Recognise the importance of local knowledge and indigenous practices in understanding climate impacts and adaptation strategies. Engage with community leaders and traditional knowledge holders to incorporate local insights into decision-making processes (UNEP, 2021).
4. **Multi-Sectoral Collaboration:** Promote collbaration between different sectors (e.g. agriculture, environment, health) to address the interlinked challenges posed by climate change. This approach improves coordination and exploits synergies for effective adaptation planning (Dietz et al., 2020).

Stakeholder Outreach and Engagement Strategies

Once stakeholders have been identified, municipalities should implement targeted strategies to encourage active participation and co-operation. This section summarises specific strategies that municipalities can use to engage stakeholders once stakeholders have been identified. It focuses on practical steps and tools that can be implemented to ensure active participation and co-operation among stakeholders. The strategies mentioned include:

1. **Multi-Stakeholder Platforms (MSPs)**: Establish MSPs as forums for dialogue, consultation and joint decision-making. MSPs facilitate information exchange,

consensus building and co-design of adaptation measures, ensuring that solutions are context-specific and endorsed by diverse stakeholders (Bryson & Crosby, 2019).

2. **Participatory Approaches**: Organise participatory workshops, focus groups and community meetings to involve stakeholders in the co-production of knowledge and adaptation strategies. These sessions allow stakeholders to contribute local expertise, identify priorities and develop actionable plans together (Reed et al., 2009).
3. **Capacity Building**: Organise capacity building workshops and training sessions to improve stakeholders' understanding of climate change impacts and adaptation options. Capacity building empowers stakeholders with the knowledge and skills necessary to actively participate in adaptation planning and implementation (FAO, 2020).
4. **Use of Information and Communication Technologies (ICT)**: Utilise ICT tools such as online platforms, mobile applications and virtual meetings to facilitate remote participation and real-time information sharing. ICTs overcome geographical barriers, enhance outreach efforts and ensure continuous engagement of stakeholders, especially in rural areas (Oliver et al., 2018).
5. **Public Awareness Campaigns**: Launch targeted public awareness campaigns to raise awareness about the impacts of climate change on agriculture and the importance of adaptation. These campaigns mobilise community support, build social legitimacy for adaptation measures and gather political will for sustainable agricultural practices (UNDP, 2020).

Techniques to Encourage Active Participation and Co-operation

Effective stakeholder engagement in climate change adaptation planning requires the use of science-based techniques that foster active participation, co-operation and co-creation of solutions. This chapter examines evidence-based methodologies to promote inclusive decision-making and enhance stakeholder engagement at the municipal level, and provides a more detailed description of how to ensure meaningful and inclusive participation. Key points are:

Participatory Workshops and Focus Groups

Participatory workshops and focus groups are crucial in fostering active engagement of stakeholders. These sessions provide structured platforms for stakeholders (farmers, local communities, policy makers and agricultural experts) to come together to discuss climate

change impacts, adaptation strategies and community priorities (Reed et al., 2009). Facilitators guide discussions to ensure that all voices are heard and allow for the exchange of local knowledge and perspectives. This approach not only encourages consensus building, but also develops collective problem-solving skills among stakeholders.

Deliberative Dialogue and Consensus Building

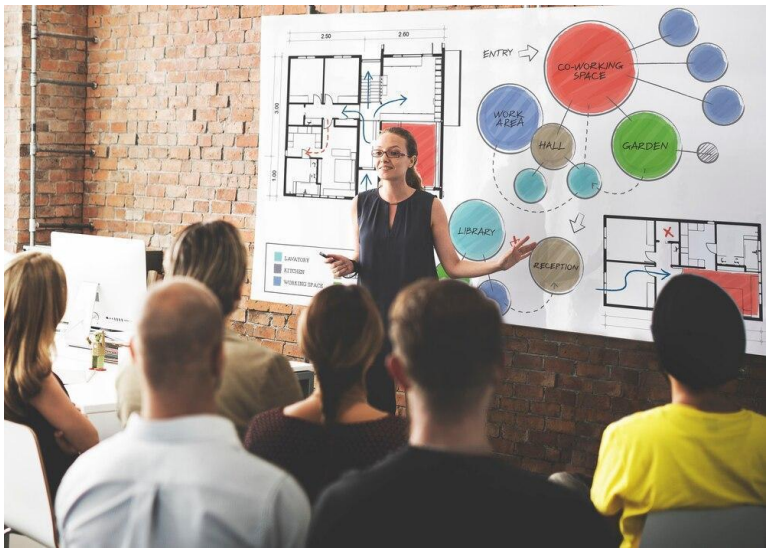
Deliberative dialogue methodologies facilitate informed and inclusive discussions between different stakeholders. These dialogues aim to build consensus on adaptation priorities and strategies through mutual understanding and respectful negotiation. Techniques such as scenario planning, where stakeholders collaboratively explore future climate scenarios and their consequences, improve foresight and decision-making processes (Turnpenny et al., 2009). By encouraging deliberation and consensus building, these methodologies ensure that adaptation measures are closely aligned with the needs and aspirations of society.

Multi-Stakeholder Platforms (MSPs)

The establishment of Multi-Stakeholder Platforms (MSPs) serves as a formalised approach to promote cooperation and joint decision-making. MSPs bring together stakeholders from various sectors to discuss climate challenges, share information and co-design adaptation strategies. These platforms facilitate networking, coalition building and the alignment of different interests towards common goals (Bryson & Crosby, 2019). MSPs increase transparency and accountability in decision-making processes, ensuring that adaptation strategies are collectively endorsed and supported by stakeholders.

Capacity Building and Training

Effective stakeholder engagement depends on capacity building and training initiatives that equip participants with the necessary knowledge and skills. Workshops on climate science, risk assessment methodologies and adaptive technologies improve stakeholders' understanding of climate change impacts and adaptation options (FAO, 2020). Training sessions focusing on communication, negotiation and conflict resolution empower stakeholders to meaningfully engage in deliberative processes and collaborative decision-making (UNDP, 2020). Capacity-building initiatives promote stakeholder ownership of adaptation strategies, increasing their capacity to effectively implement and monitor climate resilience measures.



(Figure 7, Freepik)

ICT Tools for Enhanced Engagement

Information and Communication Technologies (ICTs) play an important role in expanding opportunities for stakeholder engagement, especially in geographically dispersed or remote communities. Online platforms, mobile applications and virtual meetings facilitate real-time communication, information sharing and remote participation in decision-making processes (Oliver et al., 2018). ICT tools promote inclusiveness and transparency, enabling continuous feedback loops and comprehensive stakeholder engagement in adaptation planning efforts (UNEP, 2021). Applying these evidence-based techniques increases the inclusiveness and effectiveness of stakeholder engagement in agricultural climate change adaptation planning at the municipal level. By promoting active engagement, co-operation and information exchange among various stakeholders, municipalities can develop robust and context-relevant adaptation strategies that promote resilience and sustainability in agriculture.

Effective stakeholder outreach and engagement is crucial for developing successful climate change adaptation strategies in agriculture at the municipal level. This involves using a mix of strategies such as stakeholder analysis, creating multi-stakeholder platforms, organising participatory workshops, utilising ICT tools, capacity building and conducting public awareness campaigns. These strategies ensure that outreach efforts meet the specific needs and priorities of different stakeholder groups, making engagement activities more relevant and effective.

Identifying and engaging the right stakeholders is the first step in making climate change adaptation strategies inclusive and sensitive to local needs. Conduct a comprehensive stakeholder analysis to identify all relevant actors, such as farmers, local communities, policy makers, agricultural experts, researchers, NGOs and government agencies. It is important to ensure that the engagement process is inclusive, taking into account the different perspectives of marginalised or vulnerable groups, especially those that may be more affected by climate change. Recognising and incorporating local knowledge and local practices into decision-making processes can ensure that strategies are grounded in the local context. Co-operation between different sectors, such as agriculture, environment and health, also enhances coordination and leverages synergies for effective adaptation planning.

Once stakeholders have been identified, targeted strategies should be implemented to encourage active participation and co-operation. Multi-stakeholder platforms (MSPs) are excellent forums for dialogue, consultation and joint decision-making processes. They provide a structured cooperation framework that allows stakeholders to share information, exchange perspectives and co-design context-specific and widely endorsed adaptation measures. Participatory workshops, focus groups and community meetings enable stakeholders to co-produce knowledge and adaptation strategies, contributing local expertise, identifying priorities and developing actionable plans.

Capacity building and training are essential to improve stakeholders' understanding of climate change impacts and adaptation options. Workshops and training sessions empower stakeholders with the knowledge and skills needed to actively participate in planning and implementation. Information and Communication Technologies (ICTs) such as online platforms, mobile applications and virtual meetings can overcome geographical barriers and facilitate continuous communication and real-time information sharing. ICT tools enable broad stakeholder engagement, especially in rural areas where physical access is limited. Public awareness campaigns are also crucial to raise awareness about the impacts of climate change on agriculture and the importance of adaptation, mobilise community support, build social legitimacy for adaptation measures and gather political will for sustainable agricultural practices.

Promoting active participation and co-operation requires science-based techniques. Participatory workshops and focus groups are vital to provide structured platforms for stakeholders to discuss climate change impacts, adaptation strategies and community priorities. Facilitators encourage consensus building and collective problem solving by

ensuring that all voices are heard. Deliberative dialogue methodologies facilitate informed and inclusive discussions aimed at reaching consensus on adaptation priorities and strategies through mutual understanding and respectful negotiation. Techniques such as scenario planning, where stakeholders explore future climate scenarios and their consequences, enhance foresight and decision-making processes. Multi-Stakeholder Platforms (MSPs) increase transparency and accountability in decision-making processes by bringing together stakeholders from various sectors to discuss climate challenges, share information and co-design adaptation strategies.

Effective stakeholder engagement also depends on capacity building and training initiatives that equip participants with the necessary knowledge and skills. Workshops on climate science, risk assessment methodologies and adaptive technologies enhance stakeholders' understanding of climate change impacts and adaptation options. Training sessions focusing on communication, negotiation and conflict resolution empower stakeholders to meaningfully engage in negotiation processes and collaborative decision-making. ICT tools expand opportunities for stakeholder engagement, especially in geographically dispersed or remote communities. Online platforms, mobile applications and virtual meetings promote inclusiveness and transparency by facilitating real-time communication, information sharing and remote participation in decision-making processes.

Integrating these strategies improves inclusiveness and representation by ensuring the identification and participation of all relevant stakeholders, including marginalised groups. Enhanced co-operation and co-creation allows stakeholders to jointly develop and endorse adaptation strategies. Capacity and awareness building equips stakeholders with the necessary knowledge and skills to actively participate in planning and implementation. Utilising technology ensures continuous engagement and overcomes geographical barriers. Strengthening public support through targeted campaigns raises awareness and builds social legitimacy for adaptation measures. This integrated approach ensures that climate change adaptation strategies in agriculture are inclusive, context-specific and supported by a broad coalition of stakeholders, leading to more resilient and sustainable outcomes.

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
EURASIA INSTITUTE
omnia RESEARCH | TECHNOLOGY | DEVELOPMENT
Funded by the European Union

Integrating Social Dimensions into Climate Change Adaptation

Integrating social dimensions into climate change adaptation is critical for building effective, inclusive and sustainable adaptation strategies at the municipal level. Social dimensions include various social, economic, cultural and political factors that influence how different groups in a society experience and respond to climate impacts. Understanding these dimensions, especially for municipalities in rural areas, is essential to ensure that adaptation plans address the real needs of the community and increase overall resilience.

Understanding Social Dimensions in the Context of Climate Change Adaptation

Social dimensions of climate change adaptation encompass the ways in which different social groups are affected by and respond to climate change. Factors such as income levels, social status, access to resources and existing vulnerabilities play an important role in shaping how communities adapt to climate impacts. In rural municipalities, where communities are heavily dependent on natural resources and agricultural activities, these social dimensions become even more important. Understanding these factors helps to design adaptation strategies that are appropriate to the local context and meet the specific needs of the community (IPCC, 2014).

For example, rural communities often face unique challenges such as limited access to markets, inadequate infrastructure and lower levels of education, which can increase their vulnerability to climate change. Furthermore, social dynamics such as gender roles, cultural practices and community networks influence how different groups perceive and respond to climate risks. By understanding these social dimensions, municipalities can develop targeted interventions that increase adaptive capacity and reduce vulnerability.

(Figure 8, freepik)

Methods for Assessing Social Impacts and Vulnerabilities

Assessing social impacts and vulnerabilities involves a comprehensive analysis of how climate change affects different social groups within a municipality. This process often involves both quantitative and qualitative methods to collect data on the social, economic and cultural factors that influence vulnerability. Social vulnerability assessments are important tools to help identify the most vulnerable groups and understand the specific challenges they face (Adger et al., 2003).

Quantitative methods may include surveys and statistical analyses to assess indicators such as income levels, education, health status and access to resources. Qualitative methods involve participatory approaches such as focus group discussions, interviews and community workshops, and gather insights from community members themselves. These methods help to capture the nuanced experiences and perspectives of different social groups, enabling a holistic understanding of social vulnerabilities.

For example, in the context of rural municipalities, a social vulnerability assessment may reveal that women and older persons are particularly vulnerable due to their dependence on subsistence agriculture and limited access to adaptive resources. Similarly, smallholder farmers may face specific challenges related to crop failure and water scarcity. By identifying these vulnerabilities, municipalities can prioritise interventions to address the needs of the most affected groups and increase the overall resilience of the community.

In the project "Integrating Social Dimensions into Agricultural Climate Change Adaptations" with project code 2022-1-MK01-KA220-ADU-000086031, social impacts and vulnerabilities were assessed, while the methodology used in this research aimed to comprehensively investigate the impacts of climate change on agriculture in Rosoman Municipality using a detailed, multidimensional approach. Through a mix of traditional and innovative research techniques, the relevance, comprehensiveness and representativeness of the data was ensured, increasing the depth and accuracy of the findings.

Work Package 2 focussed on producing a comprehensive local level assessment in three main categories: visible climate change impacts, social impacts and existing knowledge gaps within the farming community. The research disaggregated these categories into specific sub-areas,

providing insights from both macro and micro perspectives. Data collection methods included semi-structured interviews to capture the perspectives of different stakeholders and survey questions structured by OMNIA to collect quantitative data on climate change impacts. These methods facilitated a holistic view of community awareness and perceptions.

Data profiling and analysis were very important:

- The stakeholder profile categorised unique perspectives, ranging from the experiences of farmers to the views of policy makers.
- The climate risk profile has been adapted to questions to address Rosoman's specific agricultural challenges.
- The profile of agricultural practices assessed resilience and adaptability to climate change impacts.

Analytical approaches include descriptive analysis for demographic information, correlation analysis to relate demographic factors to climate perceptions, sentiment analysis to understand stakeholder attitudes, gap analysis to identify knowledge gaps, vulnerability analysis to measure stakeholder vulnarabilities and comparative analysis to synthesise findings.

Incorporating Social Considerations into Municipal Adaptation Plans

Incorporating social considerations into municipal adaptation plans involves integrating findings from social vulnerability assessments into planning and decision-making processes. This ensures that adaptation strategies are inclusive, equitable and effective in addressing the specific needs of the community. For municipalities, this process typically involves collaboration with various stakeholders, including local communities, policy makers, agricultural experts and NGOs, to co-design socially relevant and context-appropriate adaptation measures (Biesbroek et al., 2017).

The key steps in this process are:

1. **Stakeholder Engagement:** Engaging with various stakeholders to gather their inputs and ensure their active participation in the adaptation planning process. This includes organising community consultations, workshops and participatory decision-making forums to include the voices of different social groups.

2. **Development of Inclusive Policies:** Formulate policies and strategies that explicitly address social dimensions and prioritise the needs of vulnerable groups. This may include measures to improve access to adaptation resources, enhance social safety nets and promote gender equality in adaptation planning.
3. **Community Capacity Building:** Strengthening the capacity of local communities to adapt to climate change by providing training, resources and support. This includes initiatives such as farmer training programmes, community-based adaptation projects and the establishment of local climate adaptation committees.
4. **Monitoring and Evaluation:** Implement robust monitoring and evaluation mechanisms to monitor the effectiveness of adaptation measures and ensure continuous improvement. This includes regular assessment of social impacts, feedback loops with the community and adaptive management practices to refine and adjust strategies as needed.

Case Study: Integrating Social Dimensions into Municipal Adaptation

Focusing on integrating social dimensions into climate change adaptation in rural municipalities in North Macedonia, this project exemplifies a comprehensive approach. Through extensive stakeholder engagement and participatory workshops, local communities and policy makers collaborated to identify critical social vulnerabilities linked to climate impacts on agriculture. Stakeholders universally recognise the tangible impacts of climate change, such as unpredictable weather patterns leading to droughts, storms and floods that disrupt traditional crop cycles and cause significant crop losses. There is an urgent need for timely information dissemination to facilitate better preparedness and adaptation.

The analysis also reveals social inequalities among stakeholders. Women, especially in patriarchal societies, face disproportionate challenges due to their dual roles in agriculture and household responsibilities. Older farmers constrained by physical limitations find it difficult to adopt new technologies, while younger farmers who are more skilful with technology may lack the experience or resources to implement them effectively. Income levels and educational attainment emerge as critical factors affecting adaptive capacities, underlining the need for specific, context-specific adaptation strategies.

Stakeholders emphasise the importance of localised adaptation measures that respond to regional challenges. While modern agricultural technologies are valued, there is consensus that solutions need to be effectively adapted to local contexts. Proactive and inclusive policies

that focus on farmer training, increase access to resources and technologies, and provide subsidies for climate-resilient practices are advocated. Stakeholders advocate participatory policy-making processes that integrate local knowledge and challenges and ensure that policies are practical and responsive.

Despite the challenges posed by climate change, stakeholders express resilience and optimism. They believe that through the adoption of appropriate technologies, increased community engagement and supportive policies, the agricultural sector can successfully mitigate and adapt to the impacts of climate change. Qualitative findings emphasise the multifaceted nature of these impacts, which go beyond economic losses to affect community structures and identities. Addressing these challenges requires holistic approaches that integrate technological advances, sound policies and genuine stakeholder engagement to effectively meet the needs of those most affected.

The project resulted in the creation of a comprehensive Municipal Strategy for Climate Change Adaptation, which includes specific measures to support vulnerable groups such as women, small farmers and older persons. By including social considerations in their adaptation plans, municipalities have increased their adaptive capacity and resilience, ensuring that strategies are not only effective but also socially equitable and sustainable.

Best Practices from other European Countries

1. Sweden Local Climate Adaptation Programme

Sweden's Local Climate Adaptation Programme exemplifies a proactive approach to integrating social dimensions into climate adaptation strategies at the municipal level. The programme is managed by the Swedish Environmental Protection Agency (EPA) and focuses on engaging local communities, policy makers and stakeholders in developing tailored adaptation measures. It emphasises the importance of participatory planning to ensure that adaptation efforts effectively address local vulnerabilities (Swedish EPA, 2021).

(coat of arms of Naturvårdsverket)

The Swedish approach includes:

- **Community Engagement:** Stakeholders, including residents, businesses and local organisations, are actively involved in identifying climate risks and co-designing adaptation solutions.
- **Capacity Building:** The programme provides resources and support to increase community resilience, such as workshops, training sessions and funding opportunities for adaptation projects.
- **Data-Driven Decision Making:** Using scientific data and climate projections to inform decision-making processes ensures that adaptation strategies are evidence-based and sensitive to future climate scenarios.

2. The Netherlands: Spatial Adaptation Delta Plan

The Netherlands' Spatial Adaptation Delta Plan is recognised for its integrated approach to managing water-related risks and climate impacts. Developed collaboratively by government agencies, water boards and local stakeholders, the plan includes physical infrastructure measures as well as social dimensions, prioritising equity and community well-being (Government of the Netherlands, 2021).

(Delta Plan for Spatial Adaptation, n.d.)

The main features of the Delta Plan are the following:

- **Multi-sectoral Collabaration:** Coordination between various stakeholders, including urban planners, environmental experts and social welfare organisations, to develop holistic adaptation strategies.

- **Inclusive Design:** Ensure that adaptation measures take into account the needs of vulnerable populations such as low-income communities and elderly residents through targeted interventions and social support systems.
- **Adaptive Governance:** Implement flexible governance structures that promote adaptive management and iterative improvements based on community feedback and changing climate conditions.

3. United Kingdom: Climate Only

The Climate Just project in the UK focuses on addressing social justice issues exacerbated by climate change impacts such as flooding and heatwaves. Led by the University of Manchester, the initiative provides tools and resources to map social vulnerability in different communities, helping local authorities prioritise interventions and allocate resources more equitably (Climate Just, n.d.).

(Climatejust, n.d)

The components of the Climate Just project are:

- **Vulnerability Mapping:** Using spatial analysis and socio-economic data to identify areas that are more vulnerable to climate impacts and provide targeted support to marginalised groups.

- **Policy Integration:** Incorporating social justice considerations into local and national climate adaptation policies, promoting inclusive decision-making processes and community resilience.
- **Capacity Building:** Building local capacity through training programmes and knowledge sharing initiatives to empower communities to adapt to climate change challenges.

4. Germany: National Adaptation Strategy

Germany's National Adaptation Strategy emphasises the integration of social dimensions into adaptation planning to increase resilience and reduce inequalities between regions and social groups. Led by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the strategy focuses on inclusive governance and stakeholder engagement to ensure that adaptation measures are socially equitable and effective (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2020).

Key aspects of Germany's approach are:

- **Participatory Processes:** Engaging stakeholders from civil society, academia and industry in the development of adaptation strategies that reflect diverse perspectives and priorities.
- **Equity and Justice:** Addressing social inequalities exacerbated by climate impacts through targeted policies and support mechanisms for vulnerable populations.
- **Sectoral Integration:** Coordinating adaptation efforts across sectors, including agriculture, urban planning and health, to promote synergies and maximise adaptive benefits for communities.

Some Rural Best Practices examples around EU

As climate change increasingly affects rural communities in Europe, the need for effective and inclusive adaptation strategies is more urgent than ever. Largely dependent on agriculture, these communities face challenges such as drought, extreme weather and water scarcity. While technical aspects of climate resilience are crucial, social dimensions such as equity, community engagement and support to vulnerable populations play a crucial role in ensuring that adaptation strategies are both sustainable and socially beneficial.

Rural municipalities are uniquely positioned to implement adaptation strategies that not only mitigate the impacts of climate change, but also increase social resilience. By prioritising local knowledge, engaging different stakeholders and addressing socio-economic vulnerabilities, they can create adaptive systems that promote inclusiveness and support long-term sustainability. Both in the European Union (EU) and in regions in EU Member States, local governments are pioneering approaches to climate adaptation that align technical resilience with social priorities and strengthen the adaptive capacity of communities. Hence, the following case studies from the EU and EU accession countries illustrate practical, community-centred adaptation strategies in rural areas. These examples highlight how municipalities in different European contexts have integrated social dimensions into their climate resilience efforts - promoting equity, empowering marginalised groups and building capacity at the grassroots level. Through such approaches, these municipalities demonstrate the important role of socially inclusive adaptation in promoting a more resilient agricultural sector and protecting the well-being of rural communities.

Trentino-Alto Adige, Italy:

Context: Known for its small rural communities, Trentino-Alto Adige has a large number of small farmers dependent on agriculture. Climate change is leading to more frequent flooding, affecting crop production and livelihoods (Giacomelli, A., Marchi, B., & Salvati, L. (2019)).

Social considerations: Adaptation plans should include specific capacity-building initiatives and subsidies for smallholder farmers and local cooperatives, and ensure that these communities have the support they need to adopt more resilient agricultural practices.

Odemira, Portugal:

Context: Odemira, with small rural communities, relies heavily on agriculture and is increasingly vulnerable to drought and soil degradation. Most farmers come from low-income backgrounds and may face difficulties in accessing resources for climate adaptation (Ribeiro, L. M., Gonçalves, L. A., & Filipe, J. C. (2020)).

Social Considerations: Socially inclusive policies here could focus on providing affordable access to water-saving technologies, targeted training on sustainable agricultural practices, and subsidies for climate-resilient crop varieties.

Odessa Oblast, Ukraine:

Context: This region has experienced extreme temperature changes affecting agricultural production, which is the main livelihood of the population. Small farmers in particular are struggling to implement new technologies due to limited resources (UNDP Ukraine,2020).

Social Considerations: Climate adaptation strategies should address resource accessibility with a focus on social vulnerabilities among smallholder farmers and provide affordable and locally adaptive capacity building programs and technological support.

Pannonian Plain, Hungary

Context and Adaptation Needs: Rural areas in the Pannonian Plain, especially in southern Hungary, are experiencing increasing temperatures and erratic rainfall, affecting the livelihoods of small-scale farmers. Municipal adaptation strategies include water retention projects, stakeholder engagement for policy design and financial support for farmers switching to climate-resilient crops. These policies focus on socio-economic vulnerabilities and promote equitable participation in planning (Fazekas, Z., & Mózsi, A., 2019).

Puglia Region, Italy

Context and Adaptation Needs: The Puglia region, known for olive cultivation, is facing increasing drought and soil degradation. Local governments have developed adaptation plans that include supporting farmers in the adoption of water-saving technologies and drought-resistant crop varieties. There is a focus on ensuring social equity in policy implementation, particularly by providing resources and training to smallholder farmers and migrant labourers engaged in agriculture (De Santis, P., Esposito, M., & Di Turi, L., 2020).

Södermanland County, Sweden

Context and Adaptation Needs: Södermanland County, a predominantly rural area in Sweden, has implemented municipal-level adaptation plans to tackle flooding and water scarcity. The strategy includes community engagement, particularly through workshops with farmers, and offers grants for climate-resilient agricultural practices. The local government prioritises measures to support socially vulnerable groups, such as low-income and elderly farmers, in adapting to climate change (Swedish Environmental Protection Agency, 2021).

Moravskoslezský Region, Czech Republic

Context and Adaptation Needs: As a mixed rural and industrial area, this region is exposed to climate impacts such as heavy rainfall and drought. The regional adaptation plan includes stakeholder engagement, policy integration and resource allocation to support rural communities. Social dimensions are emphasised in promoting equitable access to adaptation resources and education for small farmers and low-income residents (Ministry of Environment of the Czech Republic, 2020).

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
EURASIA INSTITUTE
omnia RESEARCH | TECHNOLOGY | DEVELOPMENT
Funded by the European Union

Planning and Decision-Making Processes

Effective planning and decision-making processes are essential for integrating climate change adaptation into municipal strategies, especially in rural agricultural contexts. This chapter analyses frameworks, tools, methods and case studies that facilitate inclusive and transparent decision-making. It also aims to provide a roadmap for the implementation and evaluation of planning and decision-making tools and methods to be used by municipalities. With some good practices already implemented and evaluated, they can even find out how to implement specific tools for participatory planning and decision-making and how to evaluate their results.

Framework for Participatory Planning and Decision Making

A robust framework for participatory planning and decision-making is crucial to ensure that climate adaptation strategies reflect the diverse needs and realities of local stakeholders. Participation increases the legitimacy and effectiveness of adaptation measures by integrating local knowledge and priorities (UNEP, 2021). According to the United Nations Environment Programme (UNEP), participatory frameworks should include mechanisms for stakeholder engagement throughout the planning cycle, from identification and prioritisation of adaptation measures to implementation and evaluation (UNEP, 2021).

The Adaptive Governance Approach proposed by Pahl-Wostl et al. (2007) emphasises the iterative and adaptive nature of decision-making processes in response to changing climate conditions. This approach increases resilience and adaptive capacity within communities by promoting continuous stakeholder engagement and learning (Pahl-Wostl et al., 2007). This adaptive approach is particularly important in rural areas where climate impacts can be unpredictable and severe.

Moreover, integrating social dimensions into climate adaptation strategies requires a multi-level governance framework that harmonises local, regional and national policies. According to Adger et al. (2005), multi-level governance facilitates the coordination of actions at different scales and ensures that local adaptation measures are supported by broader policy frameworks (Adger, Arnell, & Tompkins, 2005).

Tools and Methods for Inclusive and Transparent Decision Making

Various tools and methods increase the inclusiveness and transparency of decision-making processes in climate adaptation planning. For example, **multi-criteria decision analysis**

(MCDA) enables stakeholders to systematically assess and prioritise adaptation options based on multiple criteria, including social, economic and environmental dimensions (European Commission, 2020). MCDA increases the robustness and acceptability of adaptation strategies by ensuring that decisions are evidence-based and that different stakeholder perspectives are taken into account.

Participatory Geographic Information Systems (PGIS) facilitate spatial decision-making by integrating local knowledge and spatial data into planning processes (Brown & Kyttä, 2014). PGIS allows stakeholders, including farmers and local communities, to spatially map vulnerabilities, resources and adaptation needs, promoting informed decision-making and effective resource allocation (Brown & Kyttä, 2014). For example, in the Philippines, the use of PGIS has helped local communities identify flood-prone areas and develop localised adaptation measures (Gaillard & Maceda, 2009).

Scenario planning is another valuable tool that enables stakeholders to anticipate and prepare for a range of possible future conditions. It involves the development of multiple plausible scenarios based on different assumptions about climate trends and socio-economic factors (Lempert et al., 2006). Scenario planning helps communities explore uncertainties and develop flexible adaptation strategies that can be adjusted as conditions change (Lempert, Groves, Popper, & Bankes, 2006).

Tools and Methods for Inclusive and Transparent Decision Making

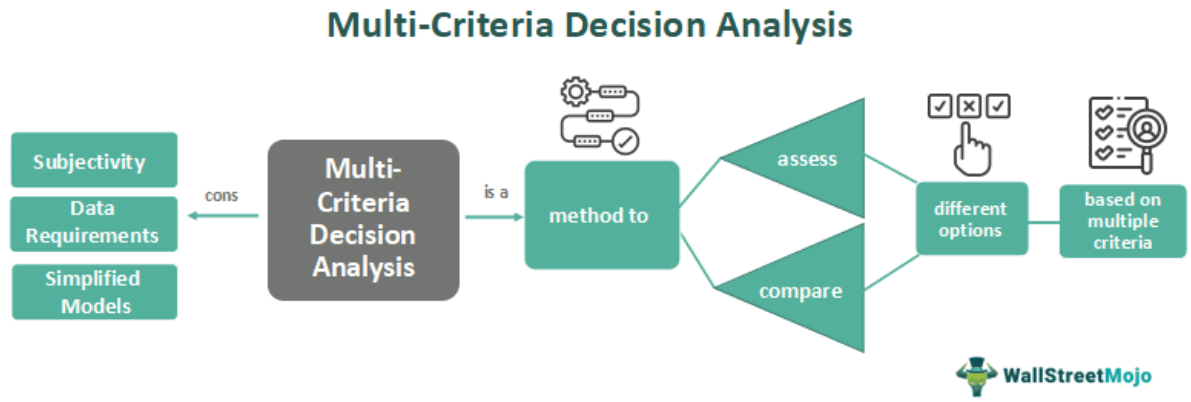
Integrating social dimensions into agricultural climate change adaptations at the municipal level requires the use of tools and methods that promote inclusiveness and transparency in decision-making processes. These tools and methods help to ensure that all stakeholders, particularly vulnerable and marginalised groups, are effectively engaged and their perspectives are incorporated into adaptation strategies. The following summarises some key tools and methods and assesses how they align with the objectives of the Guidelines on Integration of Social Dimensions in Agricultural Climate Change Adaptation Planning and Decision Making at Municipal Level.

Multi-Criteria Decision Analysis (MCDA)

Multi-Criteria Decision Analysis (MCDA) is a decision-making framework that allows stakeholders to systematically evaluate and prioritise adaptation options based on multiple

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

criteria, including social, economic and environmental dimensions (European Commission, 2020). MCDA increases the robustness and acceptability of adaptation strategies by ensuring that decisions are evidence-based and take into account different stakeholder perspectives.



(wallstreetmojo,2024)

Implementation:

- **Stakeholder Workshops:** Facilitate workshops where stakeholders identify and weigh different criteria related to climate adaptation measures.
- **Decision Matrices:** Use decision matrices to compare adaptation options against established criteria, ensuring a balanced assessment of social, economic and environmental impacts.

Evaluation:

- **Inclusiveness:** Involves a wide range of stakeholders in the decision-making process and ensures that all relevant perspectives are taken into account.
- **Transparency:** Makes decision-making more accountable by providing a transparent framework for the assessment and prioritisation of adaptation measures.

Participatory Rural Appraisal (PRA)

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

Participatory Rural Appraisal (PRA) is a set of participatory and visual techniques designed to enable local people to share, develop and analyse their knowledge of life and conditions, plan and take action. PRA is particularly effective in rural settings, making it highly suitable for agricultural climate adaptation planning.

Implementation:

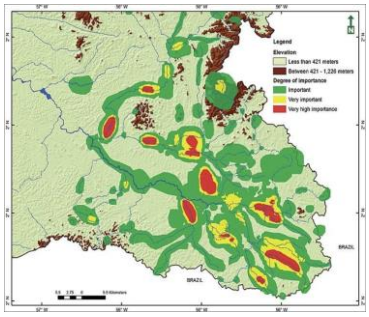
- **Workshops and Focus Groups:** Organise workshops and focus groups with farmers, local communities and other stakeholders to gather different perspectives on climate impacts and adaptation needs.
- **Participatory Mapping:** Use participatory mapping to visualise areas most affected by climate change and identify potential adaptation measures.

Evaluation:

- **Inclusiveness:** Ensures that the voices of local communities, especially marginalised groups, are heard and taken into account in the planning process.
- **Transparency:** Provides a transparent platform for stakeholders to express their views and contribute to the decision-making process.

Participatory Geographic Information Systems (PGIS)

Participatory Geographic Information Systems (PGIS) combine GIS technology with participatory approaches to collect, analyse and visualise spatial data contributed by the public. PGIS facilitates spatial decision-making by integrating local knowledge and spatial data into planning processes (Brown & Kyttä, 2014).



(ESRI,2013)

Implementation:

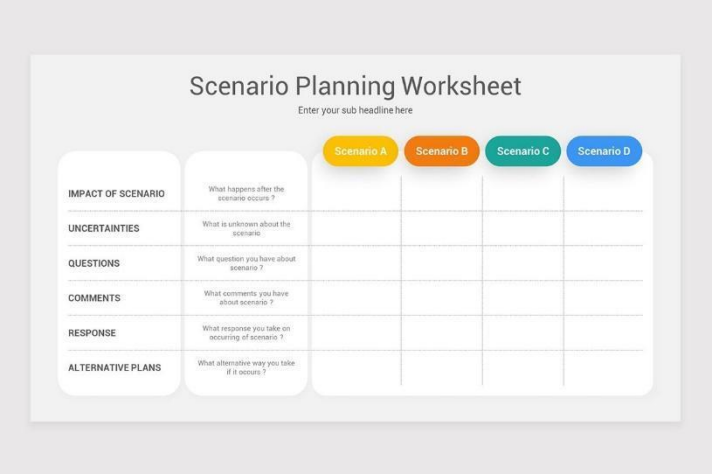
- **Community Mapping:** Engaging community members to map areas vulnerable to climate impacts and identify potential adaptation interventions.
- **Interactive Platforms:** Develop interactive GIS platforms where stakeholders can contribute data, view maps and discuss adaptation options.

Evaluation:

- **Inclusiveness:** Encourages community participation in the planning process by ensuring that spatial data reflect local knowledge and experiences.
- **Transparency:** Provides a transparent and accessible way for stakeholders to contribute to and review spatial data and adaptation plans.

Scenario Planning

Scenario planning involves developing and analysing multiple plausible future scenarios to understand potential impacts and uncertainties. This method helps stakeholders to anticipate different future situations and develop flexible and robust adaptation strategies (Lempert et al., 2006).



(Nulivo,2024)

Implementation:

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
EURASIA INSTITUTE
omnia RESEARCH | TECHNOLOGY | DEVELOPMENT
Funded by the European Union

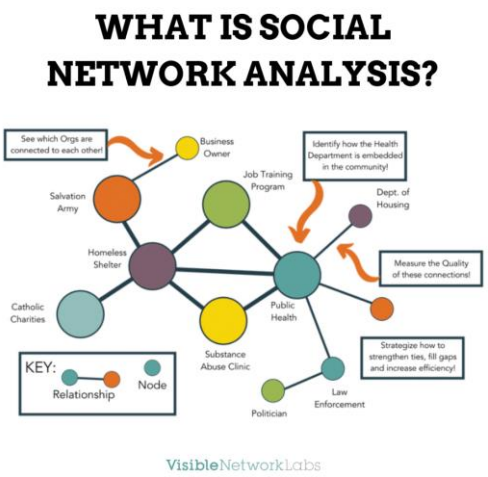
- **Stakeholder Workshops:** Organise workshops where stakeholders jointly develop and analyse climate change scenarios, considering both social and environmental factors.
- **Adaptive Pathways:** Create adaptive pathways that summarise different strategies and actions depending on how the scenarios unfold.

Evaluation:

- **Inclusiveness:** Engages a wide range of stakeholders in forecasting and planning for various future scenarios and ensures that different perspectives are included.
- **Transparency:** By openly discussing uncertainties and potential impacts, it increases transparency and enables informed decision-making.

Social Network Analysis (SNA)

Social Network Analysis (SNA) is a method used to analyse social structures using networks and graph theory. It helps to identify key stakeholders, the relationships between them and how information flows within a community.



(Visible Network Labs,2024)

Implementation:

- **Stakeholder Mapping:** Identify key stakeholders and their links, focusing on who influences decision-making and how information is shared.
- **Engagement Strategies:** Develop targeted engagement strategies based on analyses of social networks to ensure effective communication and collaboration.

Evaluation:

- **Inclusivity:** Identifies key influencers and knowledge brokers within the community, ensuring that all critical voices are included.
- **Transparency:** It makes the decision-making process more transparent by clarifying the roles and relationships of different stakeholders.

Decision Support Systems (DSS)

Decision Support Systems (DSS) are computer-based tools that assist decision making by integrating various data sources and providing analytical capabilities. They can be used to model climate impacts, assess adaptation options and support informed decision-making.

Implementation:

- **Data Integration:** Integrating data on climate change impacts, socio-economic factors and stakeholder inputs to model different adaptation scenarios.
- **Evaluation and Prioritisation:** Use DSS to assess and prioritise adaptation measures against criteria such as cost-effectiveness, social impact and feasibility.

Evaluation:

- **Inclusiveness:** Bringing together diverse data sources and stakeholder inputs ensures that decision-making is based on comprehensive and inclusive information.
- **Transparency:** Makes decision-making more accountable by providing a transparent framework for the assessment and prioritisation of adaptation measures.

Case Studies and Best Practices from Other Municipalities

Analysing case studies and best practices from municipalities around the world provides valuable insights into successful approaches to climate adaptation planning. For example, the City of Copenhagen's Climate Adaptation Plan integrates stakeholder consultations and scenario-based planning to address climate risks while increasing urban resilience (City of Copenhagen, 2020). Copenhagen's approach engages a variety of stakeholders, including residents, businesses and civil society organisations, ensuring that adaptation measures are socially inclusive and responsive to community needs.

Similarly, the participatory approach adopted by Barcelona in its Urban Master Plan for Climate Change Adaptation involves stakeholders in co-designing and implementing adaptation measures in various sectors, including agriculture (Ajuntament de Barcelona, 2018). This collaborative approach not only increases the effectiveness of adaptation strategies, but also strengthens the community's resilience to climate impacts.

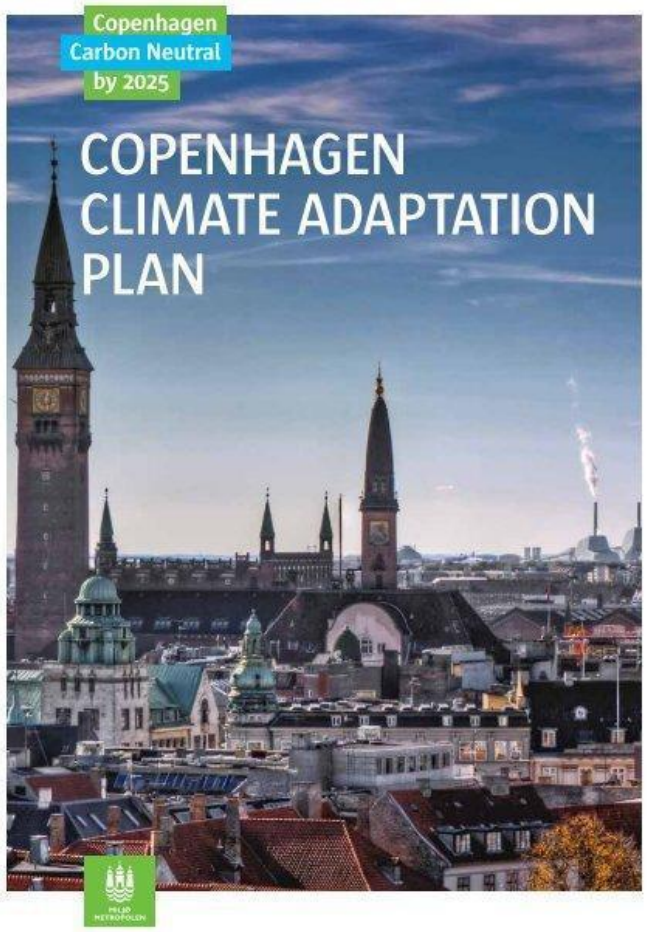
In the United Kingdom, the East of England Adaptation Planning Toolkit is a notable example of integrating social dimensions into climate adaptation planning. The toolkit provides a step-by-step guide for local governments to engage with stakeholders, assess vulnerabilities and develop adaptation strategies tailored to local contexts (East of England Regional Assembly, 2009). The toolkit emphasises the importance of involving local communities in decision-making processes to ensure that adaptation measures are based on local knowledge and address specific community needs.

To effectively integrate social dimensions into climate adaptation strategies, analysing case studies and best practices of other municipalities provides invaluable insights. These examples illustrate successful approaches and innovative solutions that can be adapted and implemented in different contexts. Below are detailed case studies from European municipalities that highlight effective strategies for participatory and inclusive climate adaptation planning.

City of Copenhagen, Denmark

Copenhagen's Climate Adaptation Plan is a pioneering example of how urban areas can address climate change through comprehensive and participatory planning. The Plan involves

stakeholders at all stages, from initial consultations to implementation and monitoring. Key features of Copenhagen's approach are:



- **Stakeholder Consultations:** The Municipality engaged residents, businesses and civil society organisations through public meetings, workshops and online platforms. This inclusive approach ensured that adaptation measures reflect the needs and concerns of the community.
- **Scenario Based Planning:** The plan uses scenario planning to assess future climate risks and develop adaptive strategies. This method allows the city to prepare for a range of possible outcomes, increasing its resilience to climate impacts (klimatilpasning , n.d).
- **Green Infrastructure:** Copenhagen has invested in green infrastructure such as parks, green roofs and permeable surfaces to manage rainwater and reduce flood risks. These projects are designed in co-operation with local communities to ensure they deliver social and environmental benefits.

The success of Copenhagen's Climate Adaptation Plan can be attributed to its extensive stakeholder engagement and forward-thinking strategies that have made the city a model for urban climate resilience (City of Copenhagen, 2020).

Barcelona, Spain

Barcelona's Urban Master Plan for Climate Change Adaptation demonstrates the benefits of integrating social dimensions into urban planning. The plan emphasises stakeholder engagement and social equity, ensuring that adaptation measures meet the needs of all community members, especially the most vulnerable. Key aspects are:

- **Co-designing Adaptation Measures:** The city involves residents in co-designing adaptation measures such as green spaces and cooling centres to increase urban resilience to heat waves and other climate impacts. This participatory approach ensures that solutions are practical and widely accepted.
- **Focus on Social Equity:** Barcelona's plan prioritises vulnerable populations, including low-income residents and the elderly, who are disproportionately affected by climate change. Adaptation measures are designed to increase the resilience of these populations and reduce social inequalities.
- **Community Based Projects:** The City supports community-led projects that increase local adaptive capacity, such as urban gardens and energy-efficient housing initiatives. These projects empower residents to take an active role in climate adaptation and build stronger, more resilient communities.

Barcelona's inclusive and equitable approach to climate adaptation has become a best practice example for other municipalities, leading to more effective and socially just outcomes (Ajuntament de Barcelona, 2018).

Rotterdam, Netherlands

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

Rotterdam's Climate Adaptation Strategy is recognised for its innovative and integrative approach to managing water and climate risks. The strategy focuses on creating a climate-resilient city through collaborative planning and cutting-edge technologies. Key components are:

(Urbanisten, 2013)

- **Integrated Water Management:** Rotterdam has developed an integrated water management system that combines flood protection, water storage and water quality improvement. It has been designed with input from a wide range of stakeholders, including residents, businesses and environmental organisations.
- **Blue-Green Infrastructure:** The city has invested heavily in blue-green infrastructure such as water plazas, green roofs and urban wetlands to increase resilience to floods and provide recreational spaces for residents. These projects are implemented in collaboration with local communities to maximise their social and environmental benefits.
- **Public-Private Partnerships:** Rotterdam has encouraged strong public-private partnerships to finance and implement climate adaptation projects. These collaborations ensure that adaptation measures are effective and sustainable by leveraging the expertise and resources of both sectors.

Rotterdam's holistic and collaborative approach to climate adaptation serves as a model for the integration of social and environmental objectives and demonstrates how cities can build resilience through innovation and partnership (City of Rotterdam, 2013).

East of England, United Kingdom

The East of England Adaptation Planning Toolkit provides a practical guide for local authorities to engage with stakeholders, assess vulnerabilities and develop tailored adaptation strategies. The toolkit emphasises the importance of participatory planning and social inclusion. Key features include:

- **Stakeholder Engagement:** The toolkit outlines methods for involving various stakeholders in the adaptation planning process, including farmers, community groups and local businesses. This ensures that adaptation measures are informed by local knowledge and address specific community needs.
- **Vulnerability Assessment:** The toolkit provides guidelines for conducting vulnerability assessments that take into account social, economic and environmental factors. This comprehensive approach helps identify the populations and areas most at risk, guiding the development of targeted adaptation measures.
- **Adaptive Planning:** The toolkit promotes adaptive planning practices that allow local governments to adjust their strategies in response to new information and changing circumstances. This flexibility increases the effectiveness and sustainability of adaptation efforts.

The East of England Adaptation Planning Tool has been widely adopted by local governments in the region, leading to more inclusive and effective climate adaptation strategies (East of England Regional Assembly, 2009).

Drawing on best practices from municipalities such as Copenhagen, Barcelona, Rotterdam and the East of England, the Guide on Integrating Social Dimensions into Municipal Level Agricultural Climate Change Adaptation Planning and Decision Making provides a comprehensive framework for the effective inclusion of social considerations in climate adaptation strategies. This guidance ensures that adaptation measures are inclusive, participatory and sensitive to the needs of local communities, particularly in rural agricultural contexts. The following are key components and steps for integrating social dimensions based on insights from these case studies.

Key Components of the Guideline

1. Understanding the Social Dimensions of Adaptation to Climate Change

Objective: To ensure that climate adaptation strategies are socially inclusive and address the needs and vulnerabilities of all members of society, particularly the most vulnerable.

Important Considerations:

- Social dimensions encompass elements such as equity, inclusion and social resilience.
- It is crucial to understand how climate change disproportionately affects different social groups.
- Ensure that cohesion measures promote social justice and reduce inequalities.

Action Steps:

- Conduct comprehensive social impact assessments to identify vulnerable groups and their specific needs.
- Integrate social equity objectives into overarching climate adaptation goals.

2. Methods for Assessing Social Impacts and Vulnerabilities

Objective: To systematically assess the social impacts of climate change and identify the most vulnerable populations within the municipality.

Important Considerations:

- Use participatory methods to involve the community in the evaluation process.
- Consider both direct impacts (e.g. health, livelihoods) and indirect impacts (e.g. social cohesion, mental health).

Action Steps:

- Organise surveys, focus groups and community workshops to collect qualitative data on social impacts.
- Use geographic information systems (GIS) to map vulnerabilities and identify hot spots.

Best Practice Insight: East of England's use of vulnerability assessments as a tool to tailor adaptation measures to local needs.

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

3. Incorporating Social Considerations into Municipal Adaptation Plans

Objective: To incorporate social dimensions into all stages of adaptation planning, from design to implementation and monitoring.

Important Considerations:

- Social considerations should be integrated into policy frameworks, project designs and monitoring mechanisms.
- Ensuring transparency and accountability in decision-making processes.

Action Steps:

- Develop clear guidelines for the inclusion of social dimensions in policy and project development.
- Establish mechanisms for continuous community engagement and feedback throughout the harmonisation process.

Best Practice Insight: Barcelona's focus on co-designing adaptation measures with community members to ensure they are practical and acceptable.

Steps for Integration

Step 1: Identification and Engagement of Stakeholders

Objective: To identify all relevant stakeholders and ensure their active participation in the adaptation planning process.

Action Steps:

- Identify stakeholders, including farmers, local communities, policy makers and agricultural experts.
- Use a variety of engagement methods (e.g. public meetings, workshops, online platforms) to reach different groups.
- Encourage partnerships and co-operation between stakeholders.

Best Practice Insight: Copenhagen's extensive stakeholder consultations ensuring that community needs are reflected in adaptation measures.

Step 2: Participatory Planning and Decision Making

Objective: To establish a participatory framework that enables stakeholders to contribute to planning and decision-making processes.

Action Steps:

- Establish a participatory planning framework with regular consultation meetings and feedback loops.
- Use scenario planning and visioning exercises to involve stakeholders in envisioning future adaptation pathways.

Best Practice Insight: Rotterdam's use of integrated water management and public-private partnerships to involve stakeholders in adaptation planning.

Step 3: Developing Socially Inclusive Adaptation Measures

Objective: To develop adaptation measures that are socially inclusive and respond to the needs of all community members.

Action Steps:

- Design adaptation measures that address both social and environmental objectives (e.g. green infrastructure providing recreational spaces).
- Prioritise measures that benefit vulnerable populations and reduce social inequalities.

Best Practice Insight: Barcelona's urban gardens and energy-efficient housing initiatives that empower residents and increase local resilience.

Step 4: Implementation and Monitoring

Objective: To ensure effective implementation and continuous improvement of compliance measures.

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

Action Steps:

- Implementation of adaptation measures with active stakeholder engagement.
- Establish monitoring and evaluation frameworks that include social indicators.
- Use adaptive management to improve strategies based on feedback and new information.

Best Practice Insight: East of England's adaptive planning practices that allow strategies to be adjusted on an ongoing basis.

Expected Results

Municipalities can achieve the following results by following this guide:

- **Comprehensive Guidance:** A detailed, well-structured and visually engaging document that provides clear instructions for integrating social dimensions into climate adaptation plans.
- **Enhanced Stakeholder Engagement:** Increased participation and co-operation among stakeholders ensures that adaptation measures are based on local realities and needs.
- **Capacity Building:** Raising awareness and capacity among rural municipalities to address the impacts of climate change on agriculture using socially inclusive and participatory approaches.
- **Reducing Barriers for Farmers:** Improving access to resources, technologies and information needed for effective climate adaptation, thereby reducing barriers for farmers.
- **Support for Transparent Decision Making Processes:** Strengthened governance structures and accountability mechanisms to ensure effective implementation and monitoring of adaptation strategies.

From Urban to the Rural Municipalities

From localised flood protection in Vejle, Denmark, to agroforestry efforts in La Garrotxa, Spain, these case studies demonstrate the importance of tailored approaches that draw on local knowledge and stakeholder input. They emphasise innovative solutions that not only reduce environmental impacts but also increase the social and economic resilience of rural

populations. Through participatory planning, strategic partnerships and support for sustainable agricultural practices, these municipalities exemplify how rural areas can effectively and equitably adapt to climate change. The following case studies provide a comprehensive overview of these various adaptation measures, offering insights that can inform policy-making processes and inspire similar initiatives in other rural contexts.

Vejle, Denmark

Vejle Municipality is recognised for its innovative approaches to rural resilience, particularly in addressing flood risks through community-based solutions. Vejle's adaptation strategy focuses on co-operation with residents, local farmers and environmental groups to implement water management techniques appropriate for rural areas. The key components are:

1. **Localised Flood Protection:** The municipality collaborates with farmers and residents to develop adaptive water management practices, including water retention ponds and modified drainage systems. This reduces flood risks on farmland and protects crops.
2. **Community Workshops:** Regular workshops and training sessions help raise awareness and equip residents with knowledge about resilient agricultural practices, ensuring that adaptation measures are practical and culturally accepted.
3. **Cross-Sectoral Partnerships:** Vejle's partnerships with agricultural and environmental organisations ensure that adaptation measures are well informed by scientific data and local knowledge (Vejle Kommune, 2020).

La Garrotxa, Spain

La Garrotxa, a rural region in Catalonia, has developed a Climate Adaptation Plan that focuses on maintaining traditional agriculture and biodiversity in the face of climate change. The key elements are the following:

1. **Participatory Land Management:** The municipality is collaborating with local farmers and nature conservationists to integrate climate considerations into land management, focusing on soil conservation and water saving techniques to increase resilience to drought.

2. **Agroforestry Initiatives**: La Garrotxa promotes agroforestry practices that combine agricultural products with tree planting to increase carbon sequestration and biodiversity and support small-scale farmers.
3. **Rural Development Programmes:** The adaptation plan aims to increase resilience while protecting the local ecosystem by providing training and financial incentives to promote environmentally friendly practices among farmers (Ajuntament de La Garrotxa, 2019).

Banská Bystrica, Slovakia

Banská Bystrica in central Slovakia has implemented a Rural Climate Action Plan that prioritises social equity and community engagement in climate adaptation. The municipality's approach includes (Municipality of Banská Bystrica, 2020):

1. **Inclusive Stakeholder Engagement:** Through community meetings and participatory decision-making processes, residents, especially marginalised groups, contribute to the adaptation planning process and ensure that strategies address social vulnerabilities.
2. **Water Management Programmes**: With the support of EU funds, the municipality has developed sustainable water management systems in rural areas to combat both drought and flood risks.
3. **Youth-led initiatives:** The plan encourages local youth to lead climate resilience projects, fostering a sense of ownership in the community and building long-term adaptive capacity.

Agrinio, Greece

The rural municipality of Agrinio in Western Greece has focussed on adapting agricultural practices to climate change through its Climate Adaptation Plan. The main actions are the following (Municipality of Agrinio, 2021):

1. **Farmer Training Programmes**: Agrinio offers workshops to local farmers on climate-resilient practices such as crop diversification and soil conservation to help them cope with the increased risk of drought.

2. **Climate-Smart Agriculture Projects:** The municipality is promoting the adoption of climate-smart techniques, including precision agriculture and drip irrigation, to increase agricultural productivity while conserving water.
3. **Partnerships with Agricultural Institutes:** Collaborating with regional agricultural institutes, Agrinio leverages research to inform evidence-based strategies appropriate to the local climate and agricultural context.

Koprivnica-Križevci County, Croatia

This rural county has developed an adaptation plan that combines climate resilience with socio-economic development. Key strategies include the following(Koprivnica-Križevci County, 2019).:

1. **Resilient Crop Initiatives**: The county promotes the cultivation of climate-resilient crops that help smallholder farmers maintain productivity despite changing weather conditions.
2. **Local Climate Action Groups:** The establishment of local action groups ensures that residents and farmers have a platform to voice their concerns and actively participate in the development of adaptation measures.
3. **Economic Support for Farmers**: By offering subsidies to farmers who adopt sustainable practices, Koprivnica-Križevci supports the transition to resilience-oriented agriculture and helps protect local livelihoods.

Implementation Strategies

Successful integration of social dimensions into climate adaptation measures at the municipal level requires a structured and systematic approach. This includes clear implementation steps, robust monitoring and evaluation (M&E) frameworks, and continuous improvement and feedback mechanisms. These components will ensure that adaptation measures are not only implemented effectively, but also remain responsive to the changing needs and circumstances of local communities.

For the strategies in this chapter, templates for implementation strategies for municipalities have already been provided.

1. Initial Assessment and Planning. Municipalities should start with initial assessments and planning for comprehensive social impact assessment.

Comprehensive Social Impact Assessment (SIA): The first step is to conduct a detailed social impact assessment (SIA) to identify the potential social impacts of climate change and the vulnerabilities of different social groups. This includes collecting data on demographics, socioeconomic status, health, livelihoods and access to resources. Data collection methods include surveys, interviews, focus groups and participatory rural appraisals (PRA). The HIA should also assess the capacity of local institutions and communities to cope with and adapt to climate change. For example, in the EU-funded project "Adaptation to Climate Change in the Agriculture Sector", comprehensive CIAs were carried out in several rural municipalities to understand the specific social vulnerabilities and adaptation needs of local farming communities (European Commission, 2018).

2. Stakeholder Engagement and Co-operation. Municipalities should then continue to identify and engage with stakeholders to ensure that their inputs and perspectives are included in the planning phase.

Identification and Engagement of Stakeholders: Identify relevant stakeholders, including farmers, local communities, policy makers, agricultural experts, NGOs and other relevant actors. Engage these stakeholders through community forums, stakeholder workshops and advisory committees to ensure that their inputs and perspectives are incorporated into the planning process. Effective stakeholder engagement fosters ownership, increases trust and ensures that adaptation measures are context-specific and meet local needs. For example, the

"Climate-ADAPT" platform emphasises stakeholder engagement through participatory workshops and collaboration with local authorities and communities to ensure inclusive adaptation planning (EEA, 2017).

Building Partnerships: Develop partnerships with local organisations, research institutions and government agencies to leverage their expertise, resources and networks. Collaborative efforts can increase the effectiveness of adaptation measures and ensure a coordinated approach to addressing climate impacts.

3. Development of Adaptation Measures. Third, municipalities should adopt some co-creation strategies where they can work in collaboration with stakeholder(s) to develop adaptation measures that address identified social vulnerabilities and needs.

Co-Creation of Adaptation Strategies: Work collaboratively with stakeholders to develop adaptation measures that address identified social vulnerabilities and needs. This should be an iterative process involving multiple rounds of consultation and feedback. Adaptation measures should be evidence-based and designed to build community resilience. Consider a range of strategies, including infrastructure improvements, changes in agricultural practices, water management and disaster risk reduction. In the "LIFE-MICACC" project in Hungary, specific adaptation measures for rural municipalities, including flood protection, water management and sustainable agricultural practices, were developed with strong public participation (European Commission, 2020).

Pilot Testing and Demonstration Projects: Implementation of pilot projects to test the feasibility and effectiveness of proposed adaptation measures. Pilot projects provide an opportunity to refine strategies based on practical experience and stakeholder feedback. Successful pilot projects can be scaled up and replicated in other areas.

4. Integration into Municipal Plans. Municipalities can then start to incorporate these adaptation measures integrated into existing municipal strategies and plans, such as climate action plans.

Incorporate Adaptation Measures into Policy Frameworks: Ensure that adaptation measures are integrated into existing municipal strategies and plans, such as climate action plans, zoning regulations and land use plans. This ensures coherence and supports the inclusion of climate adaptation in broader development goals. It also helps to secure political and financial support

for implementation. For example, the Copenhagen Climate Adaptation Plan provides a holistic approach to climate resilience by integrating specific adaptation measures into the city's broader urban development strategies (City of Copenhagen, 2011).

Securing Financing and Resources: Identify and secure the financing and resources needed to implement adaptation measures. This may include applying for grants, leveraging public-private partnerships and mobilising community resources. Ensuring adequate financing is critical for the sustainability of adaptation efforts.

5. Monitoring and Evaluation (M&E). Municipalities can then establish monitoring and evaluation frameworks to track their progress and effectiveness in adaptation.

Establish Monitoring and Evaluation (M&E) Frameworks: Develop robust monitoring and evaluation frameworks to track the progress and effectiveness of adaptation measures. M&E frameworks should include clear indicators, baselines and targets covering both quantitative and qualitative aspects. Regular monitoring helps to identify challenges and opportunities for improvement. The Adaptation Scotland programme has developed a comprehensive M&E framework with indicators to assess the resilience of communities, ecosystems and infrastructure to climate impacts (Adaptation Scotland, 2019).

Regular Data Collection and Analysis: Conduct regular data collection through surveys, site visits and stakeholder consultations. Analyse data to assess the results and impacts of compliance measures and adjust strategies as needed to address any gaps or issues.

6. Feedback and Continuous Improvement. Municipalities can also establish feedback mechanisms to gather input from relevant stakeholders on the process.

Establish Feedback Mechanisms: Create feedback loops to continuously gather input from stakeholders on the effectiveness of compliance measures. This can be done through community meetings, surveys and digital platforms. Stakeholder feedback is crucial for the refinement and development of adaptation strategies. As in the case of the Netherlands, the Room for the River project incorporates continuous feedback from local communities into the implementation process, ensuring that measures remain relevant and effective (Ruimte voor de Rivier, 2015).

Adaptive Management: Adopting an adaptive management approach that involves regularly

reviewing and updating adaptation measures based on new information and changing circumstances. This approach ensures that adaptation strategies remain effective over time by providing flexibility and responsiveness.

Capacity Building and Training: Provide ongoing training and capacity building programmes for local governments and communities on climate adaptation, social inclusion and participatory planning. Building local capacity ensures that stakeholders have the knowledge and skills needed to contribute effectively to adaptation efforts. The Resilient Cities programme supported by ICLEI offers training workshops and capacity building initiatives for municipal authorities and community leaders on integrating social dimensions into climate adaptation planning (ICLEI, 2018).

Conclusion

The development of the Guidance on Integrating Social Dimensions into Agricultural Climate Change Adaptation Planning and Decision Making at the Municipal Level marks a significant advance in addressing the complex interplay between climate change and social dynamics in rural agricultural communities. This guidance underlines the need to incorporate social considerations into climate adaptation strategies to promote resilient, inclusive and sustainable agricultural practices.

Integrating social dimensions into climate adaptation is not only a complementary measure but also a critical component of effective climate resilience. Rural communities are inherently vulnerable to climate impacts due to their dependence on natural resources and limited adaptive capacity (IPCC, 2014). Therefore, it is crucial to understand and address the social aspects of climate change such as equity, access to resources and community adaptation. This guide provides a comprehensive framework for municipalities to incorporate these aspects into their planning processes, ensuring that adaptation measures are socially inclusive and equitable.

It also emphasises the importance of stakeholder engagement and provides a structured approach to participatory planning and decision-making processes. Effective climate adaptation requires the active engagement of all relevant stakeholders, including farmers, local communities, policy makers and agricultural experts. By fostering an inclusive dialogue and drawing on diverse perspectives, municipalities can develop more robust, context-relevant and widely accepted adaptation strategies. This participatory approach not only increases the legitimacy of the decision-making process, but also enables local communities to take ownership of climate adaptation initiatives (Reed, 2008).

In addition, the guidance provides advanced tools and methods to increase the inclusiveness and transparency of decision-making processes. Techniques such as Multi-Criteria Decision Analysis (MCDA), Participatory Geographic Information Systems (PGIS) and scenario planning provide municipalities with tools to systematically assess adaptation options, integrate local knowledge and prepare for a range of future scenarios (European Commission, 2020; Brown & Kyttä, 2014; Lempert et al., 2006). These tools can ensure that adaptation strategies are evidence-based, inclusive and adaptable to changing circumstances.

The Guide illustrates the practical application of social dimension integration in climate adaptation, drawing lessons from successful case studies and best practices in Europe, such as the Netherlands' Delta Programme, the UK's Climate Change Act and Germany's Federal

Climate Change Adaptation Strategy. These examples highlight the importance of comprehensive stakeholder engagement, robust policy frameworks and continuous monitoring and evaluation to achieve effective adaptation outcomes (Commissioner of the Delta Programme, 2020; Committee on Climate Change, 2019; Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2020).Moreover, case studies in rural municipalities across Europe and EU Member States, such as Denmark's flood resilient infrastructure in Vejle and agroforestry initiatives in La Garrotxa, Spain, showcase localised, community-driven approaches to climate adaptation. These examples underline the value of tailored, context-specific solutions that address the unique vulnerabilities and resource dependencies of rural areas while actively involving local stakeholders.

The Guidelines outline clear steps for implementing social dimension integration in climate adaptation measures, from conducting baseline social assessments to establishing multi-stakeholder platforms and designing socially responsive adaptation measures. It also emphasises the importance of continuous monitoring, evaluation and feedback mechanisms to ensure the effectiveness and adaptability of these measures over time (UNDP, 2010). This iterative process of evaluation, implementation and improvement is crucial to maintain the relevance and impact of adaptation strategies.

As a result, by following this guidance, municipalities can expect to achieve several important results, including reduced barriers for farmers, increased stakeholder engagement and strengthened governance structures. These outcomes will contribute to more transparent decision-making processes and increased capacity of rural municipalities to effectively address the impacts of climate change on agriculture. In the long term, this guide aims to promote resilient and adaptive agricultural communities that are equipped to deal with the challenges of climate change.

References

Adaptation Scotland. (2019). Monitoring and Evaluation Framework. Retrieved from https://www.adaptationscotland.org.uk

Adger, W. N., Arnell, N. W., & Tompkins, E. L. (2005). Successful adaptation to climate change across scales. Global Environmental Change, 15(2), 77-86. doi:10.1016/j.gloenvcha.2004.12.005

Ajuntament de Barcelona. (2018). Urban Master Plan for Climate Change Adaptation. Retrieved from https://www.barcelona.cat

Ajuntament de La Garrotxa. (2019). Climate Adaptation and Rural Sustainability. Ajuntament de La Garrotxa.

Arnstein, S. R. (1969). Ladder of Citizen Participation. *Journal of the American Institute of Planners*, 35(4), 216-224.

Banská Bystrica Municipality. (2020). Rural Climate Action Plan. Banská Bystrica Municipality.

Berrang-Ford, L., Ford, J. D., & Paterson, J. (2011). Are we adapting to climate change? Global Environmental Change, 21(1), 25-33.

Biesbroek, R., Dupuis, J., & Wellstead, A. (2017). Explaining through causal mechanisms: Resilience and governance in adaptation processes. Regional Environmental Change, 17(2), 351-362.

Bours, D., McGinn, C., & Pringle, P. (2014). Guidance note for monitoring and assessing adaptation to climate change. *SEA Change CoP and UKCIP*.

Brown, G., & Kyttä, M. (2014). Key issues and research priorities for public participation GIS (PPGIS): A synthesis based on empirical research. *Applied Geography, 46,* 122-136. https://doi.org/10.1016/j.apgeog.2013.11.004

Bryson, J. M. (2018). Strategic planning for public and non-profit organisations: A guide to strengthening and sustaining organisational success (5th ed.). John Wiley & Sons.

Bryson, J. M., & Crosby, B. C. (2019). Designing and conducting stakeholder analyses. In L. M. Salazar (Ed.), Public administration: Reflections and perspectives (pp. 129-148). Nova Science Publishers.

Cabannes, Y. (2004). Participatory budgeting: An important contribution to participatory democracy. *Environment and Urbanisation*, 16(1), 27-46.

Chambers, R. (1994). The origins and practice of participatory rural appraisal. *World Development*, 22(7), 953-969.

Climate Just. (n.d.). Retrieved from https://www.climatejust.org.uk/.

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

Committee on Climate Change. (2019). *UK adaptation progress report 2019*. Retrieved from https://www.theccc.org.uk/publication/progress-in-preparing-for-climate-change-2019-progress-report-to-parliament/

De Santis, P., Esposito, M., & Di Turi, L. (2020). *Climate adaptation for agricultural resilience in the Mediterranean: The case of Puglia, Italy.* Journal of Rural Studies, 74, 95-105. https://doi.org/10.1016/j.jrurstud.2019.07.006

Delta Programme Commissioner. (2020). *Delta Programme 2020: Working together on Delta*. Retrieved from https://english.deltacommissaris.nl/delta-programme-2020.

Dietz, T., Ostrom, E., & Stern, P. C. (2020). The struggle to manage the commons. Science, 330(6001), 923-928.

Eakin, H., & Lemos, M. C. (2006). Adaptation and the state: Latin America and the challenge of capacity building under globalisation. *Global Environmental Change*, 16(1), 7-18.

East of England Regional Assembly. (2009). East of England Adaptation Planning Toolkit. Retrieved from https://www.eera.gov.uk.

Environment Agency (2012). Thames Estuary 2100: Managing flood risk across London and the Thames Estuary. Retrieved from https://www.gov.uk/government/publications/thames-estuary-2100-te2100.

Esteves, A. M., Franks, D., & Vanclay, F. (2012). Social impact assessment: The state of the art. *Impact Assessment and Project Appraisal*, 30(1), 34-42.

European Commission. (2018). Adaptation to Climate Change in the Agriculture Sector. Retrieved from https://ec.europa.eu/agriculture/climate-change_en

European Commission. (2020). *Climate change adaptation strategies*. Retrieved from https://ec.europa.eu/clima/policies/adaptation/strategies_en.

European Commission. (2020). *Evaluation of EU support for environment and climate change in third countries (2007-2013).* Luxembourg: Publications Office of the European Union. https://doi.org/10.2779/198494

European Commission. (2020). Multi-criteria decision analysis (MCDA) in environmental decision making. Retrieved from https://ec.europa.eu/environment/integration/research/newsalert/pdf/MCDA_in_environmental_decision_making_93NA_en.pdf.

European Commission. (2021). Climate change adaptation in agriculture: Best practices and case studies. Retrieved from https://ec.europa.eu/clima/sites/default/files/docs/pages/communication_combating_climate_change_en.pdf

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

European Union. (2020). Climate change impacts and adaptation in agriculture. Retrieved from https://ec.europa.eu/environment/climat/adaptation/what_en.htm

FAO (2020). Climate change adaptation in agriculture: Best practices and case studies. Retrieved from https://www.fao.org/climate-change/en/

FAO. (2020). Capacity building for agricultural innovation systems. Food and Agriculture Organisation of the United Nations. Retrieved from http://www.fao.org/capacitydevelopment.

FAO. (2020). Climate change and food security: Risks and responses. Retrieved from http://www.fao.org/climate-change/en/.

Fazekas, Z., & Mózsi, A. (2019). *Climate adaptation and resilience strategies in the Hungarian Pannonian region.* Environmental Science & Policy, 98, 45-55. https://doi.org/10.1016/j.envsci.2019.05.001

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. (2020). National Adaptation Strategy. Retrieved from https://www.bmu.de/en/topics/climate-energy/climate/national-adaptation-strategy/.

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. (2020). *Climate action plan 2050: Germany's long-term strategy for greenhouse gas neutrality*. Retrieved from https://www.bmu.de/en/topics/climate-energy/climate/national-climate-policy/germanys-climate-action-programme-2050/.

Gaillard, J. C., & Maceda, E. A. (2009). Participatory 3-D mapping for disaster risk reduction. *Disaster Prevention and Management: An International Journal, 18*(2), 164-175. https://doi.org/10.1108/09653560910954883

Gaillard, J. C., & Maceda, E. A. (2009). Participatory 3D mapping for disaster risk reduction. Community Development Journal, 44(2), 168-180. doi:10.1093/cdj/bsn020

Gaillard, J. C., & Maceda, E. A. (2009). Participatory Three-Dimensional Mapping for Disaster Risk Reduction. *Community, Environment and Disaster Risk Management,* 1, 85-104.

Government of the Netherlands. (2021). Spatial Adaptation Delta Plan. Retrieved from https://english.deltaprogramma.nl/.

Intergovernmental Panel on Climate Change (IPCC). (2014). *Climate change 2014: Impacts, adaptation and vulnerability. Part A: Global and sectoral dimensions. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press.

IPCC (2014). *Climate change 2014: Impacts, adaptation and vulnerability. Part A: Global and sectoral dimensions. Contribution of Working Group II to the Fifth Intergovernmental Assessment Report on Climate Change.*

IPCC. (2021). Climate Change 2021: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

Koprivnica-Križevci County. (2019). Adaptation and Resilience in Rural Agriculture. Koprivnica-Križevci County.

Lempert, R. J., Groves, D. G., Popper, S. W., & Bankes, S. C. (2006). A generic, analytical method for generating robust strategies and narrative scenarios. *Management Science, 52*(4), 514-528. https://doi.org/10.1287/mnsc.1050.0472

Ministry of the Environment of the Czech Republic. (2020). *National Action Plan for Climate Adaptation.* Retrieved from https://www.mzp.cz/

Municipality of Agrinio. (2021). Climate Adaptation for Sustainable Agriculture. Municipality of Agrinio.

Municipality of Copenhagen. (2011). Copenhagen Climate Adaptation Plan. Retrieved from https://kk.sites.itera.dk/apps/kk_pub2/pdf/983_jkQTVjKMyF.pdf.

Municipality of Copenhagen. (2012). Copenhagen Climate Adaptation Plan. Retrieved from https://kk.sites.itera.dk/apps/kk_pub2/pdf/983_jkQTVjKMyF.pdf.

Municipality of Rotterdam. (2013). Rotterdam Climate Change Adaptation Strategy. Retrieved from https://www.rotterdam.nl.

Oliver, J. L., Díaz-Puente, J. M., & Fernández-Güell, J. M. (2018). The impact of information and communication technologies on knowledge management in agriculture. Information Processing & Management, 54(5), 896-907.

Pahl-Wostl, C., Craps, M., Dewulf, A., Mostert, E., Tabara, D., & Taillieu, T. (2007). Social learning and water resources management. Ecology and Society, 12(2), 5. Retrieved from https://www.ecologyandsociety.org/vol12/iss2/art5/.

Reed, M. S. (2008). Stakeholder engagement for environmental management: A literature review. *Biological Conservation, 141*(10), 2417-2431. https://doi.org/10.1016/j.biocon.2008.07.014

Reed, M. S., Evely, A. C., Cundill, G., Fazey, I., Glass, J., Laing, A., ... & Stringer, L. C. (2009). What is social learning? Ecology and Society, 15(4), r1.

Ribeiro, L. M., Gonçalves, L. A., & Filipe, J. C. (2020). *Agricultural sustainability and climate change adaptation in Portugal: Insights from the Alentejo region.* Land Use Policy, 99, 105048. https://doi.org/10.1016/j.landusepol.2020.105048

Rotterdam Climate Initiative. (2013). Rotterdam Climate Evidence: Rotterdam Climate Initiative. Retrieved from https://www.rotterdamclimateinitiative.nl/en.

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

Ruimte voor de Rivier (2015). Ruimte voor de Rivier: Climate Adaptation in Practice. Rijkswaterstaat.

Swedish Environmental Protection Agency. (2021). Local Climate Adaptation Programme. Retrieved from https://www.naturvardsverket.se/en/.

Swedish Environmental Protection Agency. (2021). *Local climate adaptation strategies and community involvement in Södermanland.* Naturvårdsverket. Retrieved from https://www.naturvardsverket.se/

Turnpenny, J., Lorenzoni, I., & Jones, M. (2009). Noisy and definitely not normal: Responding to wicked problems in the environment, energy and health. Environmental Science & Policy, 12(3), 347-358.

UNDP. (2010). *Handbook on planning, monitoring and evaluation for development results*. Retrieved from https://www.undp.org/publications/handbook-planning-monitoring-and-evaluating-development-results

UNDP. (2020). Localising the Sustainable Development Goals: The role of local institutions in combating climate change. Retrieved from https://www.undp.org/publications/localizing-sustainable-development-goals

UNEP. (2021). Climate Change Adaptation: Guidelines for Planning and Implementation. United Nations Environment Programme. Retrieved from https://www.unep.org/resources/report/climate-change-adaptation-guidance-planning-and-implementation.

UNEP. (2021). Participatory Approaches in Environmental Governance. Retrieved from https://www.unep.org.

United Nations Development Programme (UNDP). (2010). *Handbook on planning, monitoring and evaluation for development results*. Retrieved from https://www.undp.org/publications/handbook-planning-monitoring-and-evaluating-development-results

United Nations Framework Convention on Climate Change (UNFCCC). (2020). *Synthesis report on the total impact of intended nationally determined contributions*. Retrieved from https://unfccc.int/documents/226754.

United Nations. (2021). Climate change and agriculture. Retrieved from https://www.un.org/en/sections/issues-depth/climate-change/.

United Nations. (2021). Sustainable Development Goals Report. Retrieved from https://unstats.un.org/sdgs/report/2021/

Vejle Kommune. (2020). Climate Adaptation in Vejle. Retrieved from Vejle Kommune website.

Wamsler, C., & Pauleit, S. (2016). Mainstreaming climate policy and advancing ecosystem-based adaptation: Two pioneer countries, different paths, one goal. *Environmental Science & Policy, 55,* 221-230. https://doi.org/10.1016/j.envsci.2015.09.007

НАЦИОНАЛНА АГЕНЦИЈА ЗА ЕВРОПСКИ ОБРАЗОВНИ ПРОГРАМИ И МОБИЛНОСТ
Funded by the European Union

World Bank (2020). Improving participation and decision-making processes for climate resilient agriculture. Retrieved from https://www.worldbank.org/en/topic/climatechange

World Bank. (2020). *Adaptation to climate change in coastal regions*. Retrieved from https://www.worldbank.org/en/topic/environment/publication/adaptation-to-climate-change-in-coastal-areas.

For Figures

Barcelona Pel Clima. (n.d.). Barcelona for the climate. Barcelona Pel Clima. Retrieved on 23 July, 2024 from https://www.barcelona.cat/barcelona-pel-clima/en.

City of Copenhagen. (n.d.). Copenhagen climate adaptation plan. Retrieved on 23 July, 2024 from https://en.klimatilpasning.dk/media/568851/copenhagen_adaption_plan.pdf.

Climate Just. (n.d.). Climate Just. Climate Just. Retrieved from https://www.climatejust.org.uk/ on 23 July, 2024.

De Urbanisten. (n.d.). Rotterdam adaptation strategy. Retrieved on 23 July, 2024 from https://www.urbanisten.nl/work/rotterdam-adaptation-strategy.

Delta Programme. (n.d.). Delta Plan on spatial adaptation. Retrieved on 23 July, 2024 from https://english.deltaprogramma.nl/three-topics/spatial-adaptation/delta-plan.

Esri. (n.d.). Participatory GIS: Engaging communities in mapping and decision-making. Retrieved on 23 July, 2024 from https://www.esri.com/about/newsroom/arcnews/participatory-gis/.

Freepik. (2024). Freepik. Freepik. Retrieved on 23 July, 2024 from https://www.freepik.com/.

Nulivo (n.d.). Scenario planning PowerPoint template models. Retrieved on 23 July, 2024 from https://www.nulivo.com/items/1624/scenario-planning-powerpoint-template-models.

Visible Network Labs. (2024, 14 February). Social network analysis tools for mapping relationships. Retrieved on 23 July, 2024 from https://visiblenetworklabs.com/2024/02/14/social-network-analysis-tools-for-mapping-relationships/.

WallStreetMojo. (2024). Multi-criteria decision analysis. Retrieved from https://www.wallstreetmojo.com/multi-criteria-decision-analysis/ on 23 July, 2024.

Wikipedia contributors. (n.d.). Environmental Protection Agency (Sweden). Wikipedia, the Free Encyclopaedia. Retrieved July 23, 2024 from https://en.wikipedia.org/wiki/Environmental_Protection_Agency_%28Sweden%29#/media/File_%C3%A5rdsverket_vapen.svg.