



Deliverable 4.1

Report neighborhood learning process

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1 Introduction

This deliverable presents the development, execution, and evaluation of twelve creative and artistic interventions aimed at engaging people in climate-related issues. These interventions were conducted in Norway, Finland, Austria, and Italy, and were designed based on two key theoretical frameworks: transformative learning theory and the theory of collective efficacy.

Transformative learning theory emphasizes the need for individuals to undergo a deep shift in perspective, fostering critical reflection and leading to meaningful changes in understanding and behavior.

Meanwhile, the **theory of collective efficacy** focuses on the shared belief in a community's ability to effect change through collective action. Both theories underscore the importance of engaging people not only cognitively but also emotionally and socially to address complex issues like climate change.

The interventions employed creative, artistic approaches to prompt reflection and dialogue on climate topics, offering novel ways for participants to connect with the issue.

This deliverable will outline the design of these interventions, their theoretical underpinnings, and the impact they had on participants in terms of fostering new perspectives and enhancing collective capacity for climate action.

2 Theories that guide the development of the learning design

2.1 Transformative Learning Theory

Transformative Learning Theory, proposed by Jack Mezirow (Mezirow, 2008), revolves around the idea that individuals can undergo a profound shift in their perspectives, beliefs, and habits of mind through a process of critical reflection, leading to personal transformation. This theory primarily focuses on how adults learn and grow through experiencing disorienting dilemmas or challenging situations that challenge their existing frames of reference.

Key components of Transformative Learning Theory include:

- **Frames of Reference:** Frames of reference encompass the structures that shape our perceptions, thoughts, and interpretations of experiences. They consist of two main components: habits of mind and points of view.
 - **Habits of Mind:** These are broad, habitual ways of thinking, feeling, and acting that influence how individuals process information and make sense of the world around them. Habits of mind are shaped by various factors such as cultural, social, educational, and personal experiences. They involve deeply ingrained patterns of thought that affect how individuals categorize experiences, form beliefs, interact with others, and understand themselves. Habits of mind can include:
 - **Cultural and Social Codes:** These encompass the norms, values, and expectations imposed by one's culture or society, influencing behavior and thinking patterns.
 - **Educational Influence:** The methods and approaches learned through formal education that shape the way individuals perceive information and solve problems.
 - **Psychological Factors:** Personal traits, cognitive biases, and emotional responses that impact how individuals interpret situations and make decisions.
 - **Other Influences:** Economic, political, religious, and linguistic factors that contribute to the formation of habits of mind.
 - **Points of View:** These represent the perspectives, beliefs, judgments, attitudes, and emotions that shape how individuals interpret specific situations or experiences. Points of view are the

lenses through which individuals view the world and make meaning of their encounters. Points of view can encompass:

- **Belief Systems:** Personal convictions, values, and ideologies that influence how individuals perceive and interpret events.
- **Emotional Responses:** Feelings and emotions that color one's interpretation of situations, impacting decision-making and reactions.
- **Memory and Perception:** Past experiences and memories that shape how individuals view similar future situations.
- **Cognitive Patterns:** The thought processes and biases that influence interpretations and judgments.
- **Disorienting Dilemmas:** These are experiences or situations that challenge an individual's existing beliefs, assumptions, or perspectives, causing a sense of discomfort or disorientation. These dilemmas can prompt individuals to question their assumptions and seek new ways of understanding and making sense of their experiences.
- **Critical Reflection:** When faced with a disorienting dilemma, individuals engage in critical reflection, which involves examining their beliefs, assumptions, and perspectives. This reflective process allows individuals to reconsider their frames of reference and explore new ways of thinking and understanding.
- **Transformation:** Through the process of critical reflection and the exploration of new perspectives, individuals can undergo transformation. This transformation involves a fundamental shift in their beliefs, values, and ways of seeing the world. It leads to a deeper understanding of oneself, others, and the world around them, enabling personal growth and development.

Mezirow identified a series of phases that individuals may go through during the process of transformative learning. These phases include experiencing a disorienting dilemma, self-examination, critical assessment of assumptions, recognizing shared discontent, exploring new options, planning and implementing change, trying out new roles, building competence, and integrating the new perspective into one's life.

The Transformative Learning Theory emphasizes the importance of critical reflection, open-mindedness, and the willingness to challenge existing beliefs and perspectives in fostering personal growth and transformation. It acknowledges that transformative learning is a complex and ongoing process that occurs throughout an individual's life in response to various experiences and challenges.

How can transformative learning processes inform the intervention design in CLEANcultures?

Transformative Learning Theory can inform the intervention planning in various ways:

1. **Creating Disorienting Dilemmas:** Interventions can introduce individuals to experiences or information that challenge their existing perceptions about climate change and the related local problems. This could involve immersive experiences, engaging storytelling, or exposure to the lived experiences of those already impacted by climate-related local problems. These encounters can create a sense of disorientation or discomfort, prompting individuals to reevaluate their perspectives.
2. **Encouraging Critical Reflection:** Interventions should encourage individuals to critically reflect on their beliefs, assumptions, and behaviors concerning climate change and climate-challenges in the neighborhood. This can be achieved through workshops, or discussion platforms that facilitate dialogue, critical thinking, and examination of personal values and actions in relation to environmental issues.
3. **Promoting Open Dialogue and Exchange:** Creating spaces for open dialogue, where diverse perspectives on climate change are welcomed and respected, allows individuals to consider alternative viewpoints. This approach fosters a deeper understanding of different cultural, social, and economic factors influencing climate change perceptions and actions.
4. **Empowering Agency and Action:** Interventions should empower individuals to take meaningful action. This can involve providing practical tools, resources, and guidance on sustainable practices, advocacy, and community initiatives. Emphasizing the potential impact of individual and collective actions can motivate people to contribute to addressing climate change.
5. **Facilitating Learning Communities:** Building communities or networks where individuals can share experiences, learn from each other, and collectively explore solutions enhances the transformative learning process. These communities can serve as supportive environments for ongoing reflection and action.
6. **Utilizing Multiple Learning Approaches:** Incorporating various learning methods such as experiential learning, storytelling, visual aids, simulations, and interactive activities appeals to different learning styles, making climate change education more engaging and effective.

7. **Long-term Engagement and Follow-up:** Recognizing that transformative learning is a continuous process, interventions should provide ongoing support, follow-up activities, and opportunities for individuals to reflect on their progress and challenges in adopting sustainable behaviors.

2.2 Enhancing Collective Efficacy

Collective efficacy theory, as proposed by Albert Bandura, is rooted in social cognitive theory and emphasizes the shared belief within a group regarding their collective capability to organize and execute actions to achieve specific goals (Bandura, 2000). This theory states that collective efficacy is a multifaceted construct influenced by various factors such as self-efficacy beliefs, outcome expectations, and environmental facilitators (Bandura, 2004). The theory also highlights the role of collective efficacy in fostering groups' motivational commitment, resilience to adversity, and overall performance accomplishments. It has also been linked to diverse domains such as health promotion, community engagement, and terrorism prevention, highlighting its relevance and applicability across various fields (Bandura, 2004; Salanova et al., 2014).

Collective efficacy involves two key components:

1. **Belief in Ability:** It encompasses the shared belief among members of a group that they possess the collective skills, knowledge, and resources required to achieve success in a particular endeavor. This belief influences the group's motivation, persistence, and effort toward their shared goals.
2. **Shared Responsibility:** It reflects the shared perception that group members hold a joint responsibility for the outcomes of their collective actions. This sense of shared responsibility fosters collaboration, coordination, and mutual support among members.

Several factors contribute to the development and strength of collective efficacy within a group or community:

- **Past Experiences:** Successes or failures in previous endeavors significantly influence collective efficacy. Successes tend to enhance group members' confidence in their abilities, while failures may weaken their belief in their collective capabilities.
- **Leadership and Role Models:** Effective leadership and the presence of role models within the group can positively influence collective efficacy. A strong and supportive leader or influential figures can instill confidence and inspire belief in the group's abilities.
- **Social Persuasion:** Encouragement, support, and positive feedback from peers and significant others play a crucial role in strengthening collective efficacy. Constructive feedback and reassurance can boost confidence and belief in the group's capabilities.
- **Group Cohesion:** A strong sense of unity, trust, and solidarity among group members enhances collective efficacy. Cohesive groups are more likely to work together toward common goals and support each other, fostering a stronger belief in their collective abilities.

How can collective efficacy enhancement inform the intervention design in CLEANcultures?

An intervention targeting climate change perception and action on a neighborhood level can effectively leverage the concept of collective efficacy to inspire and empower community members to take meaningful steps toward addressing climate change. The following elements can thereby be informed by collective efficacy:

1. **Disseminate relevant information:** Provide scientifically accurate and accessible information about climate change tailored to the local context. This could include workshops, seminars, or information sessions within the neighborhood.
2. **Provide Learning opportunities:** Encourage dialogue and discussions to deepen understanding and awareness of climate change impacts on the local community.

3. **Allow for skill development:** Offer exchange between active and non-active neighbors emphasising practical skills related to sustainability, such as composting, energy efficiency, gardening, or waste reduction.
4. **Encourage Behavioral Change:** Empower individuals by highlighting the impact of their actions. Show how small changes, when adopted collectively, can make a significant difference in mitigating climate change.
5. **Support existing community groups:** Establish community-led groups dedicated to climate action. Encourage diverse participation to represent different perspectives within the neighborhood.
6. **Support collaborative Projects:** Initiate collective projects such as community gardens, clean-up drives, or renewable energy initiatives. These projects promote a sense of shared responsibility and achievement.
7. **Identify Local Champions:** Recognize and highlight individuals or groups within the community who have made significant efforts toward sustainability. These role models can inspire others and demonstrate the possibilities of collective action.
8. **Encourage Leadership Opportunities:** Encourage and support emerging leaders within the community to take on active roles in driving climate action initiatives.
9. **Provide Feedback Loops:** Establish mechanisms to provide regular feedback on the progress of community initiatives. Celebrate achievements, no matter how small, to reinforce positive behavior.
10. **Establish Peer Support Networks:** Foster networks where community members can support each other, share experiences, and provide mutual encouragement.

2.3 Procedure

Two to three interventions including unconventional communication approaches are foreseen opened by one (more) conventional workshop. The workshop is dedicated to communicate and discuss the results of the evaluation of the local climate-culture (survey and interview results).

The interventions must include an unconventional approach towards communicating about climate, as well as they must be designed in a way, that they can cover multiple of the intervention design aspects mentioned above. Furthermore, should they be designed in a way acknowledging local features. E.g. if a neighbourhood cannot be expected to have a lot of experience with very unusual artistic approaches, such approaches should not be used.

In the following we will first give a short description of the different neighborhoods with their specific constellations. We then explain how the interventions were designed based on the information. Then we will depict the results of the evaluation, differentiated by content-related and method-related results. We conclude with general considerations of lessons learned.

3 Characterizing the neighborhoods

The characterisations can also be found in the Neighborhood Case Analysis.

3.1 Eggenberg (AU)

3.1.1 Basic information about Eggenberg

Eggenberg is a (middle-class) district of the city of Graz situated on the Southern edge of the Alps at the transition from mountainous regions to gently rolling hills. The core city of Graz as well as the urban region of Graz and its surroundings are not only the economic engine of Styria but will also be one of the few regions with positive population development and high centrality in the future and have supra-regional significance for south-eastern Austria (Landesentwicklungsplan, 2009). Graz has also an above-average range of services and cultural facilities, as well as many central institutions such as theaters, hospitals, universities, etc., which are of great importance to the city. The population forecasts for Graz and its surrounding regions (Graz Umgebung) show that the district of Graz-Umgebung will grow the most in the next decades in comparison to the rest of Styria, especially the municipalities in the southern part of Graz. This trend will also increase for the city of Graz in the future due to international immigration. Especially in the southern Grazer Feld there are strong functional interdependencies, which are also reflected in the commuter flows. Transport policy and spatial development are closely linked here. Graz (and with that Eggenberg) is expected to further grow in the future and stay central for all economic activities in the whole region. Currently, there is much construction/densification in the whole city, and to a very high degree also in Eggenberg.

Climatically, Graz lies in the area of the temperate climate zone, but is influenced by the Pannonian climate. Precipitation is expectable in all seasons, with a maximum in summer. Winter conditions are characterized by a pronounced basin location, with long-lasting inversion weather conditions with negative consequences for the air quality especially caused by high levels of particulate matter (PM10). Due to the shielding effect of the Alps, there is a pronounced lack of wind in the Graz urban area and a high risk of inversion in the winter months. The areas with the weakest wind for Graz are found in the area of Eggenberg. Average daily temperature in July is 19°C, in January -3°C. In summer, usually numerous hot days occur (30 degrees+). Eggenberg is situated at the western edge of Graz and once marked the boundary of the city. The transition from the urban area to the surrounding communities along the administrative boundaries is, however, no longer perceptible due to the strong settlement-structural over-formation. This is associated with increasing functional relationships (living, working, shopping, leisure) between the core city and the surrounding area.

Eggenberg itself has only a few social open spaces (sports field, playground), but a lot of green space, especially the park of the historical Eggenberg castle. Furthermore, it borders to the recreational area of the hill Plabutsch. The population of Eggenberg is marked by a share of around one third of people coming from other countries. Around 16 percent of the inhabitants are below the age of 20 and around 20 percent of the population is older than 60 years.

3.1.2 Climate scenarios for Eggenberg

Due to the shielding effect of the Alps and its basin position, climate in Graz is characterized by a lack of wind and therefore heat in summer and low air quality throughout the whole year. Temperature is expected to rise further in the future, precipitation is expected to stay constant, but extreme situations (droughts, extreme rainfall with flood) are also expected to become more frequent. Contrary to other cities with typical heat islands in the city centre, heat is distributed among several small areas, especially in the industrial areas and the most dense populated areas (which are also the areas with the highest degree of soil sealing).

3.1.3 Climate related challenges in Eggenberg

Eggenberg will in the future experience even more heat days than there already are, and smaller floods might also occur (especially due to heavy rain). Nevertheless, Eggenberg sees an enormous building boom and the sealing of more and more areas. Regarding the nearby recreational area, the Plabutsch hill, some interview partners already have the feeling that an increasing dryness can be experienced. The two main challenges in the district are 1) how to provide living space and infrastructure for a growing population while keeping the problem of soil sealing and reduction of green space to a minimum, 2) how to improve mobility concepts and

especially cope with the commuting problem from the bordering regions. Accordingly, the main problems expected for the future are growing heat, sealing, loss of public green spaces and individual traffic.

Climate change in general does not seem to be a big subject of discussion in the district, more important (if at all) seem to be the topics of sustainability and sustainable lifestyles (individual mobility, food, sustainable travelling,...) and conservation of nature.

One big discussion point is the increasing sealing of green spaces and public places for the sake of housing, whereby there is a lack of trust regarding real estate and construction companies, as they are perceived not always to be honest, not keeping their promises and being only profit-driven (e.g. they promise to also take nature conservation into account but they are perceived to do not). But it is also acknowledged that more living space is needed (and that tighter building also produces infrastructural advantages). The city on the other hand is seen as a constructor who cares more also about environment, when realising subsidised housing (less soiling, PV on the roofs).

Another issue is the traffic in Eggenberg, especially the one caused by commuters who drive through Eggenberg to reach their workplaces in the inner city (Eggenberg has one of the main commuter roads for the Western surrounding areas of Graz). By some interviewees it is also seen that city planning considers cars as the more important vehicle in comparison to other forms of movement, especially to public transport. One interview partner reports the lack of a direct bus line from the north to the south of the area, assuming that this results in more car traffic, e.g. when parents are picking up children from school in this area. This person in general sees the public transport in the quarter not enough developed, for example, continuous separate lanes for buses and express buses are missing, as well as a general concept for public transport. In the past there was a conflict about the route of a new tram line. Originally designed to go through a residential area, this was stopped by protests of people who would have lost parts of their property to the tram line.

Another issue is that the recreational area Plabutsch hill located in the neighbourhood of Eggenberg is hardly reachable by foot, due to limited direct paths as the hill is surrounded by residential buildings and private properties.

Interviewees perceive that climate change is recognized by politicians as an issue, but no positive changes occur. In contrary, harmful influences seem to even grow, e.g. by the constantly increasing soil sealing. Awareness of climate change is very high, yet people refuse to get out of their middle/upper class comfort zone ("If they have a car, they use it").

The neighbourhood itself is not by all interview partners perceived as a real community that works together. Yet, one major exception was reported, then residents engaged against a planned gondola to the nearby recreational area Plabutsch hill: For this situation, a strong feeling of community was reported. Yet, the subject of climate change is not seen as a similarly connecting topic, although the issue of building construction and soil sealing is seen as a topic which might have the same potential of connecting the neighborhood.

3.1.4 Stakeholders in Eggenberg

The main stakeholders in the neighbourhood are the city district council and the city district community network. They communicate through the local newspaper and social media. So far, they have made some efforts to increase public transport and improving bike infrastructure.

There are also local clubs which e.g. organise neighbourhood events, as well as a city-funded District Civic Centre.

3.1.5 Conflicts in Eggenberg

Generally, there are seen some conflicts of use regarding public space (silent and relaxed versus active and loud, or about the question what public areas can and should be used as parking lots).

Other conflicts occur between people demanding more housing space, and the general wish and need for green spaces. As a side effect, the ongoing construction results in an increase of real estate prices and rents affecting the whole area, driven by high price levels of the newly built apartments (especially of high-class). This problem is even amplified if the apartments are merely designed as investments (purely planned as an investment opportunity and without the need or wish to rent it out), fuelling the shortage of living space at the expense of green space. residents report the feeling that "their Eggenberg" is "abused" for purposes of outsiders.

Conflicts are also seen between the users of different modes of mobility, especially when it comes to the matter of bicycles versus cars and conflicts regarding space (bike lanes, parking lots etc.).

Conflicts in the neighbourhood are not really seen as being related to climate change. The main motive seems to be to sustain one's own desired level of quality of life. Although occurring conflicts regarding the use of space also affect the climate situation in the neighbourhood, climate change itself does not seem to be an argument in these conflicts. One conflict line seems to run between the long-established residents of Eggenberg, who prefer that things and (green) areas stay as they are, and new residents who occupy living space and public places.

Protest against construction activities does not seem to be organized and only brought to the public by individuals. "Average" residents (without any local network) feel rather not heard, their concerns not really being recognized by politicians, the local administration and real estate companies. Conflict management has not been implemented in a systematic manner.

3.1.6 Local resources in Eggenberg

There are a number of organizations that can be of importance for local action: district council, local civic clubs, schools and the University of Applied Sciences, sport clubs and religious aggregations. There is also an active city district network community (District Civic Centre) with own meeting places which can be used.

3.2 Jakomini (AU)

3.2.1 Basic information about Jakomini

The lively, multi-cultural residential and commercial district of Jakomini is located in the south of the center of the Styrian capital Graz (Austria). Regarding weather and climate conditions the same factors as for Eggenberg apply.

Over 30,000 people live in an area of 4.06 km², which makes Jakomini the most populous district of Graz. The district plays an important role in Graz's city life not only because of its central location, but also because of its local institutions, remarkable buildings, and numerous events.

The district of Jakomini is home to the Messe Graz (fair ground), the Stadthalle, and the Seifenfabrik, which host different types of events. The park Augarten is used by the population for recreation and leisure. The central place of the district, the Jakominiplatz, is also the central hub for public transport in Graz, providing very good public transport connections for the local residents and is therefore frequented by many citizens every day.

The two largest sites of the Graz University of Technology – the campus "Neue Technik" and the campus "Inffeldgasse" – are located in the Jakomini district. Other important municipal institutions, such as the Graz Regional Court, the Graz Tax Office or the Regional Health Insurance Fund, are also located in the Jakomini district.

The Western border of the district is formed by the river Mur, the biggest river of Graz. Its small shore area (about 20 meters) is under nature protection and can be used for leisure activities. Apart from that, green public space is rather scarce in Jakomini district.

The core city of Graz as well as the wider urban region of Graz and its surroundings are not only the economic engine of Styria but will also be one of the few regions with positive population development and high centrality in the future and have supra-regional significance for south-eastern Austria. Graz (and with that Jakomini) is expected to further grow in the future and stay central for all economic activities in the whole region. Currently, a lot of construction and densification is taking place in the district.

3.2.2 Climate scenarios for Jakomini

Due to the shielding effect of the Alps and its basin position, climate in Graz is characterized by a lack of wind and therefore heat in summer and low air quality throughout the whole year. Temperature is expected to further rise in the future, precipitation is expected to stay constant, but extreme weather situations (droughts, extreme rainfall with flood) are also expected to rise. Contrary to other cities with typical heat islands in the centre of the city, heat is distributed among several small areas, especially in the industrial areas and the most dense populated areas (which are also the areas with the highest degree of soil sealing). At least one interviewed person states for Jakomini district, that she can already feel the increased heat in summer and that this affects

her behaviour (not going out so often anymore). Also gardening becomes more difficult, here especially the temperature changes (sometimes very hot, sometimes very rainy) are problematic.

3.2.3 Climate related challenges in Jakomini

Jakomini is known as the hottest district in Graz, due to its high density of buildings and comparably little green space. Jakomini will in future experience even more heat days than there already are and smaller floods (especially due to heavy rain) might also occur. Nevertheless, Jakomini sees an enormous building boom and the sealing of more and more areas. On the other hand, there are some attempts and preliminary studies to re-green public spaces. But no concrete action has been implemented yet.

One long lasting challenge is the unsatisfying traffic situation with too much car traffic, from commuters but also from residents. This is a problem not only because of air pollution and noise, but also because of the huge resulting demand for parking spaces.

The second big issue is how to steer building activities in a way that ensures quality of life for all residents and preserves public green spaces. Building developers are perceived to focus solely on profit and to want to build as much and big as possible. Residents try to counteract this development. Yet, one challenge is that remaining undeveloped properties are rather small. Real estate investors exhaust the possible space for their building projects, sealing much of the left free ground.

Another challenge is the creation of more public green space. The interviewed people agree that there is not enough public (green) space in the district. Since 1997 there is a special program in the city development plan to preserve and expand green space especially in the more crowded areas of the city (like Jakomini). There are attempts to increase the available space: For example, a study about re-greening public areas was made and concepts were developed but no concrete action has yet been implemented. Some interviewees report that the politicians in charge only act for appearances, but do not really contribute to improving the situation.

Climate change is not necessarily seen as something that needs to be tackled on neighbourhood level. Residents perceive climate related challenges as soon as they affect their quality of life and they favor climate friendly measures, such as preservation of green spaces, if it serves their quality of life. The local discussion is therefore not about protecting the climate itself, but about protecting life quality - which implies climate friendly measures. In general, there is a mentality of "we as small, powerless residents" cannot do anything against "the people in charge". Sustainability issues often are about regional consumption (e.g. buying regional products on farmers' markets).

Local people have the feeling that climate change is an important, yet intangible issue and that something needs to be done, but they do not know how to do it and regarding larger scale issues (densification) they feel rather powerless against institutions, politics and especially the construction sector. Actions and ideas are split up to smaller, individual approaches (like waste management in one's own building, workshops on sustainable food, advocating for more trees in the district), focussing on rather narrow subjects. This leads to the challenge that people agree that something needs to be done against climate change and its impacts, but they do not know what and how.

3.2.4 Stakeholders in Jakomini

The main stakeholders in the neighbourhood are the district council, schools, the biggest housing cooperative, the manager of the city planning office, representatives of the district neighbourhood centres, and the representatives of local citizen initiatives. They communicate via a local newspaper, their homepages, newsletters, social media, and workshops (the district managers for example uses social media to post tips about hidden green spaces in the district). There are two well-known neighbourhood centres, which are very popular and often used as locations for meetings, workshops, and other neighbourhood activities.

3.2.5 Conflicts in Jakomini

A major conflict line is between people who are in favour of further building activities (for example for monetary reasons or because they want to ensure the economic development as well as affordable housing in the district) and those opposed to these building projects. There are also organized protest against some construction projects. Yet, there is a huge imbalance of power between the residents and the construction sector.

A line of conflict exists between the construction of parking spaces at the expense of green space and the removal of parking spaces to (re-)create green space, especially by planting trees.

Another conflict line is about the often unsatisfying waste separation behaviour, especially in larger building complexes.

Further, residents report that not enough effort is made by politicians / the city administration to re-green public spaces.

A major local conflict was the construction of a hydroelectric power plant in the river Mur, which was seen as a chance for more local sustainable energy production, but which also involved a great deal of re-designing the river banks in Jakomini, including cutting down of a considerable number of trees. Some people strongly favoured the project, some strongly opposed. There was a huge public and media discussion. In the end, the plant was built.

3.2.6 Local resources in Jakomini

According to the district's council, local schools are very active entities with regard to local projects. Besides teachers and pupils, also other local residents can be well addressed through the children of which enables engagement the diverse neighbourhood.

District council's members are very active and very involved in the neighbourhood life. Further, there are some very engaged individual people, realising projects regarding urban community gardening, sustainability workshops, up-cycling, preserving urban green spaces, waste management, energy saving strategies and much more.

There are two neighbourhood centres, which are very popular. People also frequently use the (few) parks.

3.3 Admont (AU)

3.3.1 Basic information about Admont

Admont is a village with around 5,000 inhabitants situated in the district of Liezen in the north west of Styria (Western Upper Styria). The village's scenery is dominated by a Benedictine Monastery with its spacious estates situated in the south east of the village centre (the monastery is also the biggest landowner in the region). The village itself is grouped mainly along one main street. Admont is situated in the neighbourhood of the Gesäuse national park ().

Local traffic is strongly dominated by individual car traffic. Public transport mainly takes place via bus lines (despite the facts that Admont has a train station, train traffic offers only few connections). It takes a long time to reach bigger cities with public transport. This problem is especially important, since 50 percent of the local workforce needs to commute. The district's capital is reachable in a 20-minute car drive. The federal state capital Graz can be reached by a 1.5 hours car drive.

Tourism is an important driver of the local economy: Several skiing regions are located around Admont and the region is also famous for its mountains and hiking tracks.

Demographically Admont shows a shrinking population and (accompanying this) higher proportions of older people (8% below 20 years, 60% between 20 to 65 years, 23% older than 65 years).^[1] Furthermore, the village is not very well connected to bigger cities (especially not via public transport). Both aspects do not make the site very attractive for industrial companies. Nevertheless, unemployment is low at 3,5%.

The economically important forestry sector might face challenges in the future, since warmer and moister winters and less days with frost are likely to change the structure of the local tree population and favour the spread of parasites in forestry and agriculture.

On the other hand, Admont is economically focusing more strongly on tourism. Higher temperatures especially in spring and autumn might be even beneficial, since it expands the season for summer activities in the mountains (hiking, climbing, etc.). Yet, rising temperatures and declining snow security are a huge challenge for winter tourism.

[1] https://www.landesentwicklung.steiermark.at/cms/dokumente/12256483_141979478/1e69a378/61253.pdf

3.3.2 Climate scenarios for Admont

Climate estimations predict that Western Upper Styria, where Admont is located, will be especially affected by the raise of average temperature with an average rise of about 1.5 degrees in summer and 1.8 degrees in winter.^{2[2]} Regarding precipitations, more rain is expected in fall and winter and less in summer.

Admont was already hit by past floodings, heavy rain and windbreak. It is predicted that flooding and also mudslides will occur more often in the future.^{3[3]}

Furthermore, warmer and moister winters and less days with frost will change the structure of the tree population and favour the spread of parasites in forestry and agriculture.

Less time with a closed layer of snow is also likely, which will provide challenges for winter tourism.

3.3.3 Climate related challenges in Admont

Extreme weather events are increasing, leading to high damages. As a result, more areas in the region are identified as flood protection zones, leading to building restrictions.

Another climate related effect is the growing appearance of neophytes.

In general, local discussions are not strongly centred around climate change driven impacts, but rather livelihood, environment and sustainability. One connected and highly discussed issue is (sustainable) mobility, since Admont is poorly connected to public transport (trains only are available on weekends). Residents agree that the current situation needs improvement. Projects concerning e-car-sharing and shared taxis are currently in the planning stage. Further discussions evolve around the topic on how to best build bike-ways from and to the national park ('slow' tourism, less individual traffic by car). Further discussions are connected to the fact, that in recent years more areas were designated as flood protection areas, leading to building restriction in these areas (which reduces the value of the properties).

In general, climate change is not really seen as a big problem in this neighbourhood. Effects, such as the appearance of neophytes and a general but slow change of plants (e.g. earlier growing), flooding, or warmer temperatures are not really seen as connected to climate change in their actual severity. So in the dominant local culture and narratives, climate change does not play a huge role, unless concerning extreme weather events or winter tourism. The dominating narrative seems to be "climate change is happening, but not at our doorstep", as the region is rural and green.

One bigger challenge, at least roughly connected to climate change, is the low reachability of the village with public transport. Admont has a train station, but trains for passenger traffic only go very rarely and there are also only few bus connections, which is why residents rely strongly on cars.

Another challenge is how to shape tourism for the future, preparing for changing climate conditions. Admont lies near a national park, so it is important to develop tourism in a way, which preserves nature but also takes into account climate change adaptation and mitigation.

Extreme weather events and the loss they cause are seen as a huge challenge connected to climate change.

3.3.4 Stakeholders in Admont

Local politicians are very important stakeholders, such as the the mayor and the community council. They are considered by all of the interview partners as the instance you need to have on board if you want to take action in the village.

Another important stakeholder is the management of the monastery situated in Admont, since they are not only the biggest employer of the village, but also the biggest land owner. For example, they currentlye planning renewable energy projects (windfarms) on their land.

Other relevant stakeholders are the managers of the neighbouring national park and of the local energy producer.

A lot of communication seems to take place face to face (which is rather easily possible in a small village). But there is also a community newspaper which is used to inform residents about what is going on in the village.

^{2[2]} [https://www.umwelt.steiermark.at/cms/dokumente/11919303_125052026/76863340/2017-10-20%20KWA-Strategie%20Steiermark%202050%20\(Web\).pdf](https://www.umwelt.steiermark.at/cms/dokumente/11919303_125052026/76863340/2017-10-20%20KWA-Strategie%20Steiermark%202050%20(Web).pdf)

^{3[3]} https://klar-anpassungsregionen.at/fileadmin/user_upload/regionen/1/12_Ennstal/Anpassungskonzept_KLAR_Ennstal.pdf

Mainly this newspaper is used as a medium of communication; but there is also presence on social media from e.g. the monastery, the leading political party or the national park Gesäuse.

There are local restaurants where people meet and many residents are in clubs and associations (sports, music, fire fighters etc.). Surprisingly, there is no such thing as a main square where people would gather informally.

There has been a Fridays for future-walk through the village. The Green party is engaged in the community council.

3.3.5 Conflicts in Admont

In general, climate change seems not to be something that provokes conflicts at a larger scale. Smaller conflicts, which appear to be remotely connected to climate change, concern for example mobility: there is the question of how to expand safe walkways as some landowners seem not to be willing to dispense land for new side-walks. Another subject of smaller conflicts is that some parking lots near the national park will be chargeable in the near future with the aim of stronger regulating tourist mobility by car. But this of course also means that local residents will need to pay parking fees, which they oppose.

Another conflict with a slighter connection to climate change and environment are the strict regulations, which account for sport activities in the national park near Admont (e.g. way-leave). Some locals favour less rules in this area.

Another conflict point results from the perception that the local administration should much more support measures for climate and environmental preservation, and also support more the existing individual efforts. Some residents report low individual political efficacy.

In general, conflicts are not seen by locals as primarily connected to climate change. Discussions seem to focus on the issue of local quality of life, or sustainability in general. There seem few people engaged in the conflicts, but they keep on pushing their ideas. Yet, these individuals seem to lose motivation because they feel neglected or even blocked by the local authorities. People seem to get power on basis of their networks. If these networks are not available, it seems difficult to promote one's ideas.

3.3.6 Local resources in Admont

The village has a very strong tradition of clubs and associations spanning all hobbies and activities from sports to music to the volunteer fire department. Furthermore, Admont has a high number of schools, and schools have already in the past been subject to local nature protection measurements. Another important resource is the monastery, which is not only the biggest employer and land-owner, but also is seen as an authority regarding ethical topics.

3.4 Pyhäntä (FI)

3.4.1 Basic information about Pyhäntä

Pyhäntä is a small municipality in the Northern Ostrobothnia area. Located in inland, Pyhäntä is bordering to provinces of Kainuu and Northern Savonia. The municipality covers an area of 847.5 square kilometres. Of this, land area is 810.8 km², and that of water 36.7 km². Pyhäntä has a population of 1,631 (12/2021)^{4[4]}. Its population density is 1.8 inhabitants / land-km² (12/2019). When looking at the population structure, 22% of the population is below the age of 14, 54% aged 15-64 and 23% elder than 23%.^{5[5]} As is common also for the other rural areas in Eastern and Northern Finland, the municipality is challenged by population aging.

However, the economy of the community has remained stable, and it has made a positive financial statement since 2006. The municipality has succeeded in turning the trend of population loss during the last few years. It has a low unemployment rate, about 5% in 2021. The economic structure of Pyhäntä in 2021 was the following: Agriculture and forestry 8.1%, Industry 63.1% and services 27.7%. Pyhäntä is often referred as "most industrialised municipality in Finland", has a lively business sector and the employment "self-sufficiency" of the municipality is 130-135%. The relatively high number of vacancies has occasionally resulted even in population growth. The largest employers in the area are or have been Jukkatalo Oy (manufacturer of wooden

^{4[4]} Pyhäntä. Suomen keskipiste -file. Reference will be specified.

^{5[5]} <https://www.pyhanta.fi/kunta-info>

detached houses; submitted bankruptcy petition in August 2023) and Piklas Oy (producer of doors and windows manufactured in Finland) of the PRTforest group, Maustaja (contract manufacturer of food products) and Lapwall Oy (producer of wood elements).

The community has a 3 km long district heating network. It is owned by the Pyhäntä community and almost all of the public buildings are heated with the district heat. Heat is provided by the Latvaenergia company who produces it mainly (90%) with wood.^{6[6]} In addition to the planned Kunnunsuo wind park as the primary approached case studied in this project, there are also two other wind parks under different phases of the planning process, Pilpankangas and Pyöriänneva with a possible completion in 2026-27. Completed in December 2021, the Piiparinmäki-Murtomäki wind park represents an existing reference case for wind power for the municipal residents. It is located on state-owned lands in the Pyhäntä and Kajaani municipalities, and includes 41 wind mills, 211 MW^{7[7]}, making it the largest wind park of Finland as of March 2022^{8[8]}.

3.4.2 Climate scenarios for Pyhäntä

Climate change can already be detected in the global temperatures. According to IPCC, human activities have so far caused an approximately 1 degree warming in global temperatures^{9[9]}. In Finland, like other Nordic areas, warming is faster than the average rate. Over the last 4 decades, temperature has increased by 0.2-0.4 degrees per decade in Finland^{10[10]}. Furthermore, warming is higher in the winters than in the summers. According to the Finnish Meteorological Institute, Northern winters will warm by 2-7 degrees by 2060. Nature is affected in many ways by climate change. While flooding is expected to increase in some areas, in Northern Finland, where Pyhäntä is also located, flooding is expected to decrease due to reduced snow cover.^{11[11]} On the other hand, warming and thereby expanding growing season may enable agriculture further North than is presently possible.^{12[12]} One interviewed resident reports discussions on large variations in weather the residents have experienced recently, and they link these observations to changing climate.

3.4.3 Climate related challenges in Pyhäntä

Peat production has been important in Pyhäntä. However, as a result of the previous government's (2019-2023) decision to reduce peat energy use by at least 50% by 2030, use has been decreasing even faster and it has been assumed to reduce by at least 70% by 2030^{13[13]}. Reduced production can result in unemployment or other economic difficulties for the producers. Use of lands for windmills is one important way of compensating for the losses from phase out of peat production.

Further aspect related to climate change is the increased need for carbon-free renewable energy production in order to mitigate climate change. As another driver, it is referred in the discussions that due to high demand for clean water by the industrial park located in the municipality and its vulnerability to oil leaks, there has been a long-term push away from fossil fuels, favouring renewable and indigenous energy. For wind power, like our case study, landscape impacts are one of the key environmental impacts. They also reach beyond the wind power park area. Furthermore, the park may cause restrictions for areas available for hunting. Hence, relevant restriction of the neighbourhood area may be something else than the borders of the wind farm. Increased traffic during construction periods of wind park projects and its harmful impacts are another climate related challenge.

Based on the interviews, some interviewees regret to see the profits of the wind power projects distributed to investors, whereas they see the local residents sharing the negative impacts. Also, it is questioned why the amount of wind power production needs to highly exceed the electricity consumption of the municipality of its own. Increasing electricity bills under these conditions is seen especially frustrating. These issues are seen particularly challenging by some locals in case of foreign investors.

Some interviewees brought up the issue of sharing the burden of climate actions reasonably, e.g. due to the necessity of fossil-fuelled cars for everyday living in sparsely populated areas. These people seen it unfair if the burden falls largely over the residents of a small community of Pyhäntä, as they see their way of living

6[6] <https://www.pyhanta.fi/kunnallistekniikka>; <http://www.latvaenergia.fi/fi/>

7[7] <https://ilmatar.fi/projekti/piiparinmaki-2/>

8[8] <https://yle.fi/uutiset/3-12374594>

9[9] Masson-Delmotte et al. (eds.) 2018. Global Warming of 1.5. Summary for Policy makers. Intergovernmental Panel on Climate Change (IPCC).

10[10] Finnish Meteorological Institute, <https://www.ilmatieteenlaitos.fi/ilmastonmuutoskysymyksiä#0>

11[11] Finnish Meteorological Institute, <https://www.ilmatieteenlaitos.fi/ilmastonmuutoskysymyksiä#0>

12[12] Sokka et al. 2020. <https://doi.org/10.1080/23311843.2020.1805959>

13[13] Afry Management Consulting 2020. Selvitys turpeen energiakäytön kehityksestä Suomessa. https://afry.com/sites/default/files/2020-08/tem_turpeen_kayton_analyysi_loppuraportti_0.pdf

relatively modest. The significance of China in the global climate challenge is emphasized and the national decision-makers in the capital region of Finland are seen negligent towards distant areas in these talks.

3.4.4 Stakeholders in Pyhäntä

Relevant stakeholders in the area include Metsähallitus, "the (Finnish) Forest Administration", which is developing the Konnunsuo wind park. Metsähallitus is a state-owned enterprise administering some 120,000 square kilometres of state-owned land and water areas, in total about 35% of Finland's total surface area. Municipality of Pyhäntä and its decision-makers and officials are also central stakeholders for the project.

There are seven villages in the municipality, of which the villages Ahokylä (16 km car trip from the municipal centre) and Viitamäki (16 km car trip from the municipal centre) are the most relevant ones for the Konnunsuo wind park. Piiparinmäki wind park that was completed in 2021 and prepared from 2012 provides a relevant reference case for local aspects, with Tavastkenkä village (12 km car trip from the municipal centre) centrally affected by Piiparinmäki wind park. According to assumption of the wind power plant developers, the area of Konnunsuo is in use of many groups and parties, e.g., hunters and berry pickers. There is a local hunting club in the area, Ahokylän Erä, which could be a relevant stakeholder. Furthermore, there is a club for recreational fishing, which may have an interest in the project.

Central arena for communication in the case is the Official Environmental Impact Assessment process, a regulatory process to be done at local level before the actual decision or plan for building wind mills can be made. One of the aims of the process is to consider other uses of the land areas and needs by them, such as those of businesses. For the Official Environmental Impact Assessment process, a stakeholder group is established. Many stakeholder groups can be invited to participate in it, such as the Centre for Economic Development, Transport and the Environment, the municipality of Pyhäntä, Regional Council, The Finnish Defence Forces, The Finnish Heritage Agency, wildlife agencies, rescue departments, power grid utility Kajave, telecommunication network companies, etc. During the process, different events by professional, experienced leaders in such processes will be organized for interaction. In addition to official arenas, there is a common view that among villages actives that it is possible to express opinions on the plans and have an impact on their implementation. Municipal processes in Pyhäntä are seen to have low threshold and the culture can be described as dialogic by the proponents of this view, From the side of municipal authorities, the mayor has established a practice to organise "mayor's village rounds" to meet with the locals and to discuss acute plans. On the other hand, according to an opinion of one interviewee, the plans are taken forward in small groups, and the information is not shared enough, resulting in a feeling that opinions are not heard in the planning processes.

In addition to the Pyhäntä residents, there are some 200 vacational houses within or close to the Konnunsuo areas. The vacational residence is centred around Lake Iso Lamujärvi, which is well-known for its recreational value.

For communication, there is the Siikajokilaakso newspaper, which is common newspaper for three municipalities, i.e. Pyhäntä, Siikajoki and Siikalatva. It is published weekly but the newspaper also has webpages where news are updated more frequently. Pyhäntä municipality has its own Facebook page, and there is also an unofficial group for Pyhäntä residents and others interested in it (*Pyhännän vapaa puskaradio*).

3.4.5 Conflicts in Pyhäntä

Climate change as such does not seem to be causing conflicts in the area. Wind power construction is promoted by the municipal authorities at least due to its constant stream of tax income. Also, renewable energy is seen valuable for the image of industrial plants operating in the municipality. Furthermore, as peat production is being given up, wind power replaces some of the lost income. There is previous cooperation between Metsähallitus and the municipality, which probably increases trust between them. It is often referred in the discussions that prior wind power process of Piiparinmäki was completed without any official complaints towards the process. However, additional wind power is referred as a polarized issue among the residents in the municipality, and not all the proposed projects are approved without consideration. Konnunsuo area has been chosen as one of the prioritised projects, as the location is seen having advantages with little nearby residents. It is argued not to be the most vulnerable with respect natural or biodiversity values etc., as the area has had prior use for peat production, thereby also including real estate managed by the peat production company (nowadays Neova). As peat production is associated with other environmental impacts, especially on water quality, this can favour opinions on land use changes in Konnunsuo.

Potential conflicts are expected to rise from hunters using the area, and from the permanent and recreational residents potentially suffering from visual impacts to the landscape. Interviewees report an issue of wind power parks fragmenting the areas used for hunting. Dogs used for tracing animals can be disturbed by roads and other infrastructure needed for building and maintenance of wind power plants. Also, the nature of hunting experience is seen changing. The traditional experience is described with distant and quiet wildlife experience, but this is expected to change in areas where wind power plants will be built. On the other hand, there are hunters who welcome the road infrastructure improvements that make hunting areas more accessible.

According to the interviewees, the visual impacts seem to have larger harmful effect than noise. Experiences on earlier Piiparinmäki wind park have included more significant visual impacts on the landscape that were expected by the local residents before the construction started. According to one interviewee, the surprisingly large visual impacts may have an effect on the attitudes towards wind plants still under planning, including Konnunsuo.

Noteworthy, there is private ownership in the studied area for Konnunsuo wind power park. This gives a reason to expect potentially strong interests and views towards the wind park.

3.4.6 Local resources in Pyhäntä

There is a lively village association activity within the seven villages of Pyhäntä. In Konnunsuo area, there is a hunting lodge owned by Ahokylän Erä hunting club. In Tavastkenkä area near the earlier Piiparinmäki wind park, village association owns a sauna building that has potential as a resource. In addition to villages nearest to the planned and existing wind power parks, relevant resources commonly available for the municipal residents in the centre of the municipality of Pyhäntä include e.g. the Pyhäntä library, administrative buildings of the municipality, and market space).

3.5 Simo (FI)

3.5.1 Basic information about Simo

Simo is a municipality by the Baltic sea in the south west part of Lapland in Finland. It is located 50 km from the Swedish border. The area of Simo 2,086.29 km² of which 639.89 km² is water. Number of people living in the municipality of Simo is 2,953 (31 March 2021). According to 2017 data, 54% of the population lived in population centres while 46.0% lived in sparsely populated areas. As a whole, Simo is a sparsely populated area with a population density of 2.0 inhabitants / land-km² in 2021. Population of Simo has been decreasing over the last years and the share of people of over 65 years has been increasing (Figure 1).

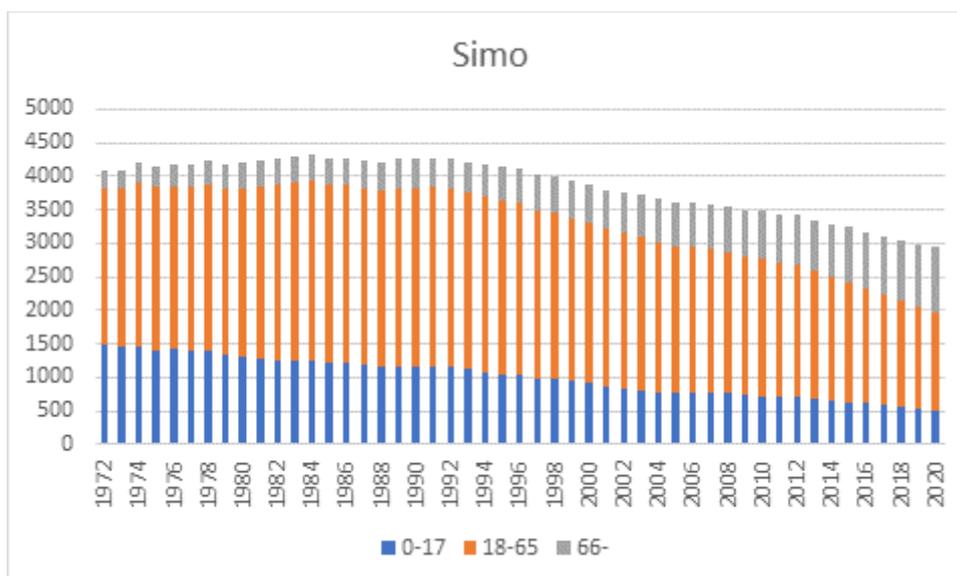


Figure 3.1 Demographic development of Simo according to age groups (Data source: Statistics Finland)

In addition to municipality of Simo and associations, there are approximately 160 active companies in the municipality of Simo. Measured by the number of companies, the most significant sectors are construction, logistics and warehousing, wholesale and retail.^{14[14]} Presently tourism sectors is also growing, not least due to Simojoki river and its salmon population. Furthermore, agriculture, forestry, and peat production are significant in the local economy, although according to the interviews, phase-out of peat use Finland has hit the sector significantly. According to data by Statistic Finland, in 2021, share of workplaces in Simo in primary production was 8.0 %, in secondary production 13.8 % and in services 75.6 %.

In wind power, Simo is stated as the forerunner of Lapland with the first mills taken in use in 2012. Wind power is a significant source of income for the municipality of Simo. As of September 2023, there were 64 mills in operation in 7 sites with a power of 246-280 MW (according to a map by Finnish Wind Power Association). To demonstrate the scale of economic impacts, the 37 mills running in 2019 generated income of 850 000 €/year through real estate taxes. In comparison, the operational costs of the municipality (2019) in total were 23.2 M€, and the total tax income 12.3 M€.

The Lyypäkki wind power park area under planning selected as the case for primary approach in CLEANcultures, is located slightly over 30 km to North-East from the population centre of Simo. The number of inhabitants near Lyypäkki is very low. According to the municipal planning process, there is minimum of 2 km distance from single mills to occupational buildings. Within a radius of 5 km of the planned mills there are 74 occupational buildings and 111 holiday homes. In nearby Alaniemi village, there are less than 100 residents. Importantly, during the summer seasons, the number multiplies due to vacational residents. Despite defined as the primary case for study approaches, the interviews and study methods applied for Simo were finally not limited to Lyypäkki wind power park only. First, it proved challenging and unnecessary to limit the target group of the study to the few residents near that particular site, e.g. to gather a reasonable number of respondents for the surveys. Also, involving the key stakeholders and residents of Simo more broadly opens up the valuable insights stemming from the history of wind power in the community that is already significant.

The development of municipality as a whole is also affected by larger economic trends during the CLEANcultures project. For example, in the nearby city of Kemi, a paper mill was closed down in 2021. The effects in the regional economy and employment were significant. On the other hand, there has also been a new pulp mill under construction/planning in Kemi. Worth 2 billion euros, it has been described as the largest investment of the history of Finnish forest industry, and was taken in use in September 2023.

3.5.2 Climate scenarios for Simo

As pointed out in Section 3.1.4.2, in the Northern areas warming is faster than the average global rate. Over the last 4 decades, temperature has increased by 0.2-0.4 degrees per decade in Finland^{15[15]}. Furthermore, warming is higher in the winters than in the summers. According to the Finnish Meteorological Institute, Northern winters will warm by 2-7 degrees by 2060. Nature is potentially affected in many ways by the climate change, as living conditions of the Northern species can change, and increased flooding risk among other impacts. As Simo is located in Lapland, reindeer herding is expected to be one of the main sufferers from climate change. Climate change is expected to cause larger variability in temperature and thereby snow melt and freeze, winds and precipitation, which are then likely to affect e.g. forage availability for reindeers (Sokka et al. 2020)^{16[16]}.

The 178 km long river Simojoki flows through the municipality. It starts from the Simojärvi lake in the Ranua municipality and runs into the Baltic Sea. Several smaller rivers flow into it from the North, such as the Iso-Tainijoki, Kuivasjoki and Simoskanoja.^{17[17]} Simojoki river is a popular fishing river and it has one of the last natural salmon populations in Finland (Finnish Federation for Recreational Fishing 2021)^{18[18]} Fishing is also expected to be impacted by climate change, particularly through potential changes in the spatial distribution of species (e.g. Fossheim et al. 2015)^{19[19]}.

The Lyypäkki area is presently mostly used for forest industry. The development of Lyypäkki area is likely to affect directly the present recreational use. A key question is thus how the different uses will be balanced.

^{14[14]} <https://www.simo.fi/tyo-ja-yrittaminen/yritystoiminta/>

^{15[15]} Finnish Meteorological Institute, <https://www.ilmatieteenlaitos.fi/ilmastonmuutoskysymyksiä#0>

^{16[16]} Sokka, L., Lindroos, T.J., Ekholm, T., Koljonen T. 2020. Impacts of climate change and its mitigation in the Barents region. *Cogent Environmental Science* 6(1),

DOI: [10.1080/23311843.2020.1805959](https://doi.org/10.1080/23311843.2020.1805959)

^{17[17]} <https://fi.wikipedia.org/wiki/Simo>

^{18[18]} <https://www.vapaa-ajankalastaja.fi/kalastuspaikka/simojoki/>

^{19[19]} Fossheim, M., Primmerio, R., Johannesen, E., Ingvaldsen, R. B., Aschan, M. M., & Dolgov, A. V. (2015). Recent warming leads to a rapid borealization of fish communities in the arctic. *Nature Climate Change*, 5(7), 673–677. <https://doi.org/10.1038/nclimate2647>

3.5.3 Climate related challenges in Simo

Wind power production is already presently wide-spread in the municipal in total having a nominal capacity of 280 MW (Finnish Wind Power Association 2021)^{20[20]}. Simo is characterized as forerunner area of Lapland in wind power and it is the largest wind power producer in the area^{21[21]}. According to preliminary plans, the Lyyppäkki wind power park will include ca. 40 windmills. Maximum height of the mills reaches 300 meters measured from the ground level. As a result of the government's (2019-2023) decision to reduce peat energy use by at least 50% by 2030, peat use has been decreasing even faster and it has been assumed to reduce by at least 70% by 2030^{22[22]}. Reduced production has resulted in unemployment or other economic difficulties for many of the producers.²³⁾ Use of lands for wind mills is one way of compensating for the losses from phase out of peat production.

While it is not possible to get measured data on climate change impacts on such a small scale yet, according to the municipality representatives interviewed, local residents have reported "grassroot" level observations on e.g. thinning of ice of the Simojoki River due to milder climate. Local interviewees also report that they have noticed changing of climate from clear four seasons in the previous decades, thinning of ices, increased heat in the summer that they link to climate change. Also, there are experiences on growing challenges for snowmobile driving. Some indirect effects have also been identified that may be linked to climate and energy policies, e.g. use of wood reportedly increased to a level observable by local residents.

Landscape impacts are one of the key environmental impacts of the case and they also reach beyond the wind power park area. Furthermore, the power transmission infra required has sometimes even more direct connection to residents.

Even though the population of Simo is small, large land area of the municipality means that not everyone knows everyone and there are "sub-communities" identified, e.g. people living near the sea coast etc. There is communal interest towards wind projects due to their relatively big impact on ways of earning living, landscape and municipal economy, and, to somewhat lesser degree, on more general climate issues as well.

The municipality of Simo highlights the role of wind power in the communications by the local governance. For example, the annual review of the municipality of Simo (2019)^{23[23]} states the role of wind power as the central climate action, making the calculational CO₂ emissions per capita even negative. Furthermore, there is a dedicated section on wind power on the website of Simo^{24[24]}, referring to rankings in national statistics, including a presentation "Simo – experiences as a wind power municipality".

3.5.4 Stakeholders in Simo

Wind power for Lyyppäkki is being developed by Metsähallitus, "the (Finnish) Forest Administration", a state-owned enterprise administering some 120,000 square kilometres of state-owned land and water areas, about 35% of Finland's total surface area. It is noticeable that the land areas where the wind mills will be placed are publicly owned.

In addition to Metsähallitus, other important stakeholders include the Municipality of Simo and its officials and local decision-makers. Other key stakeholders include representatives of the Alaniemi Village association and the Reindeer Herders' Association. Furthermore, there is a tourism entrepreneur near the area (natural park). Also, those who have direct interest towards the power transmission line can be mentioned.

As in Pyhäntä, central arena for communication is the Official Environmental Impact Assessment process, a regulatory process to be done at local level before the actual decision or plan for building wind mills can be made. One of the aims of the process is to consider other uses of the land areas and needs by them, such as those of businesses. For the Official Environmental Impact Assessment process, a stakeholder group is established. Many stakeholder groups are invited to participate in it, e.g. Centre for Economic Development, Transport and the Environment, the municipality of Simo, Regional Council of Lapland, The Finnish Defence Forces, The Finnish Heritage Agency, wildlife agencies, rescue departments, power grid utilities, telecommunication network companies, etc. During the process, different events by professional, experienced leaders in such processes will be organized for interaction. Similarly as in Pyhäntä, there is a view that local villages can influence in the decisions with their activity.

20[20] <https://tuulivoimayhdistys.fi/en/wind-power-in-finland/wind-power-in-production-and-dismantled>

21[21] <https://yle.fi/uutiset/3-12275296>

22[22] Afry Management Consulting 2020. Selvitys turpeen energiakäytön kehityksestä Suomessa. https://afry.com/sites/default/files/2020-08/tem_turpeen_kayton_analyysi_loppuraportti_0.pdf

23[23] <https://www.simo.fi/wp-content/uploads/2020/12/toimintakertomus-vuodelta-2019.pdf>

24[24] <https://www.simo.fi/tuulivoima/>

Other important media for communication is the local newspaper Kotikulmita, published weekly in the area of Simo, Tornio, Keminmaa, Tervola and Kemi. Furthermore, Simo has the local publication Simolainen, which is published by the municipality of Simo. There is also a local Facebook group "Simon puskaradio", ("the bush telegraph of Simo") which can give some indication of lay persons views.

3.5.5 Conflicts in Simo

Definition of a neighbourhood is an interesting question, as the location of Lyypäkki wind power park is far away in the forest, very distant from the population centres, with 2 km minimum distance defined from the single windmills by the municipal planning process. In the interviews concentrating on that particular park, especially, conflict of interest has been identified between reindeer herding and wind power, due to impacts on behaviour of the animals and hence, to the way of living. The behaviour is stated to be impacted especially during construction period of the wind farm and the associated infra, such as power transmission lines and power stations. Also, other recreational use of nature (particularly hunting but also berry picking and fishing) and persons worried on biodiversity can be mentioned on groups having critical preconception on wind power. Interestingly, required power transmission infrastructure seems to be as hot topic as the wind power park itself, as the compensation is reported not as lucrative for power transmission line building.

Windmills represent significant financial income for the small municipality of Simo suffering from population loss and economic reform, hence, wind power is quite progressively favoured by the municipal council. Private landowners potentially benefitting from the mills have often strong position favouring them, whereas the others, capturing only experienced landscape impacts and noise, etc., can represent fierce opponents.

Interestingly, the Simo municipality was a candidate for the new nuclear power plant for Finland in early 2010s. The acceleration of wind power building witnessed from the 2010s has been described in the interviews in a way replacing the earlier nuclear plans. The earlier mills were built closer to the occupation, that assumedly had an impact on the negative attitudes by someone. The views on wind power are described very polarized currently, with some political groups strongly publicly opposing wind projects. There is also a view that wind power is acceptable within certain limits, but "enough is enough".

One important arena for solving potential conflicts is the Official Environmental Impact Assessment process (a regulatory process to be done at local level before the actual decision or plan for building windmills be made). By definition, the process aims at assessing the impacts and combining different needs. Implementation of the financial compensation mechanisms defined in the law can also help in solving the conflicts.

Reindeer herding appears a potential conflict between the wind power development raised by the primarily approached case of Lyypäkki. There, the situation is reported as highly inflamed according to some interviewees. In the case of Lyypäkki, location and dimensioning of the wind park is seen particularly problematic from reindeer herding point of view, and wind power is seen not absolutely negative, as parks of smaller scale could be more easily acceptable. Furthermore, some consider these areas of disagreement to be manageable in the negotiations, after all. The economic significance of reindeer herding is described small in the interviews, but the traditional and cultural historic values emphasized on the other side. However, it must be noted that considering all the wind power sites in operation in Simo, the criticality of the issue of reindeer herding is not identical with all of them.

3.5.6 Local resources in Simo

Local resources are described based on the annual review of Simo (2019) and information received from the interviews and other interactions. There are two comprehensive schools (in total 324 students) and upper secondary school (63 students) in operation. There are also two kindergartens in the municipality, the Simo kindergarten (21 children) and Maksniemi kindergarten (42 children). Adult education centre (Kivalo) could be a useful resource for the project as well as the culture department in the municipal governance, whose activities are reported in the annual review. In 2019, altogether 4400 people participated in cultural events. A space has been opened to be used by the municipality and organisations that is referred to as used place for many activities ("Toivon tupa"). Furthermore, there is a music school in Simo (14 students) and a sports club Simon Kiri, operating at least near the stadium built to play a Finnish version of the game of baseball ("pesäpallo"). In addition, relevant resources commonly available for the municipal residents in the centre of the municipality include e.g. the library, and other administrative buildings of the municipality.

Here, it must be remembered that wind power farm area of the primarily studied case of Lyypäkki is located slightly over 30 km to North-East from the population centre of Simo, where potential infrastructure may exist. Furthermore, village association near the wind power sites (the village of Alaniemi) and its leading persons are also potentially important in accessing local resources. There exists a house that has been used in organising different events in the village.

3.6 Marco Simone / Guidonia (IT)

3.6.1 Basic information about Marco Simone

The neighbourhood is relatively new settlement in the city, mostly composed by single or semi-detached houses, and it is populated by middle class families mostly commuting to Rome for work purposes on a daily basis.

The neighbourhood is relatively isolated from the rest of the Guidonia Municipality, and also from the centre of Rome, so that inhabitants have to rely mostly on the private car as the main transportation mode.

A substantial part of the population of Guidonia is made up of families from East Rome, a populous geographic area affected by large traffic and transport flows (ring road, motorway). It is a population made up mainly of families of medium socio-economic status.

3.6.2 Climate scenarios for Marco Simone

The town of Guidonia is located a few kilometres from Rome. The environmental situation is affected by the effects of the big city (pollution, car traffic), also as a consequence of the fact that the efficiency of public transport is one of the negative aspects that emerged from the first data. Consequently, climate issues also depend to a large extent on this geographical and social positioning.

3.6.3 Climate related challenges in Marco Simone

The climate changes affecting the neighbourhood are the same as affecting the city of Rome and the entire Lazio region. The dominant themes mainly concern two areas. The first is the management of urban and industrial waste. On this issue, the people interviewed and the participants in the focus groups spoke at length. The main problems relate to the construction of a landfill not far from the neighbourhood and the related activities of a cement factory located in the municipality of Guidonia. A second relevant issue is that of mobility and transport: despite the proximity to Rome and the connection by motorway, there are no surface connections in line with the current needs of students and commuters.

Participants reported progressive and significant improvements in the attention of the population to these topics and the proposed solutions. The transition to pro-environmental behaviours is slow and a part of the population is still not paying attention. Over time, the intervention of the Marco Simone online association has brought important changes in awareness of these problems and the necessary actions. In general, the lack of dialogue with the municipal administration weighs heavily.

Climate change as a global issue does not emerge as a very salient theme among the residents interviewed, apart from some specific references to issue of waste reduction and zero waste circular economy models. Our participants expressed, however, more concern over other local environmental issues, indirectly related to climate change, such as sustainable transport or energy efficient housing.

The main challenge is the global involvement of the population of the entire city and a greater activation of political decision-makers and the municipal administration.

Certainly, more attention is expected on aspects concerning the climate, at EU level it is hoped that there will be greater solidarity and less attention to gains. The respondents also want greater synergy with other civic associations and with politics.

3.6.4 Stakeholders in Marco Simone

The associations, the Municipality, public transport companies, and families are the main stakeholders in the neighbourhood. Their main communication strategy is via the Facebook page, and also through direct face to face communications during local events and initiatives (e.g., the Christmas market, or local cleaning of the streets, etc.). Recently, the association has started using social media to communicate its initiatives and proposals. They are planning a greater use of Instagram, to be placed side by side with Facebook. Meetings are usually informal and occur in public open spaces, such as a small green area that the association is managing after a municipal concession.

So far, there have been various initiatives to raise awareness of the population, conferences and field activities have been promoted with real waste collection campaigns. Regarding transport, numerous proposals have been made to implement bus lines to facilitate students and commuters.

3.6.5 Conflicts in Marco Simone

From what was reported by the participants, there are no particular conflicts within the neighbourhood. The only elements of conflict are related to communication problems with the municipal administration. Regarding communication and conflicts with the municipal administration, the neighbourhood association highlights some paradoxes: first of all, the production of CO₂ in waste management because the result of the processing involves a large release of pollutants; furthermore, the location of the landfill leads to pollution of the underground aquifers. There is also a landscape problem for tourists because the landfill is located near an archaeological park and other areas of naturalistic interest. Active and responsible citizens, disinterested or less sensitive citizens, and the municipal administration are the main protagonists of the conflicts. The main strategy is mobilising local residents for public protest initiatives and discussing on social media. Conflicts manifest through public debates and social media. There is a dimension of power imbalance because citizens clash with politics. There is certainly no communication with the municipal administration, as has been repeatedly highlighted by all the participants. However, there are no stakeholders who are extraneous or excluded from the change strategies.

Certainly the activists of the Marco Simone online association are more interested and motivated than the others. On several occasions, they try to raise awareness of a larger share of the population.

The relation to climate change is based on the issue of waste management and waste-to-energy burning options, which are strongly opposed by the local association but supported (either explicitly or implicitly) by local and regional authorities.

No conflict management has been tried in a systematic way, just on the basis of some individual initiatives by local political representatives.

3.6.6 Local resources in Marco Simone

Our participants did not talk about specific places, on the contrary they denied that there are any main places that act as resources or "represent" the debates. However, they specified that change is often favoured "house by house". The association does not have an official meeting place or an office, meeting occurs in public places, such as clubs, restaurants, outdoor parks, etc. All the participants and members of the association declare that they have the same relevance and role in bringing about the desired changes.

3.7 Santa Maria / Macomer (IT)

3.7.1 Basic information about Santa Maria

"Santa Maria" is a neighborhood in the outer edge of the municipality of Macomer, a small city in the northwest of Sardinia. The surrounding area is characterized by a rural economy and it is also an area of strong tourist attraction, although the town of Macomer has traditionally based its economic activities on the rural sector and on the presence of small/medium industrial hub (with important activities in the food transformation, textile, and small manufacturing sector). The industrial activities have however faced an important crisis over the last two decades, with severe economic and occupational impacts. The area is also subject to a population shrinking, very common in many Mediterranean rural areas. Our partners in the Clean Cultures project are the cooperatives "Soluzioni professionali" and "Progetto H", two social cooperatives which has been operating since 1983 with various types of projects in the city of Macomer.

3.7.2 Climate scenarios for Santa Maria

Sardinia in general is characterized by a prevalence of Mediterranean climate prevailing, with extremely hot and dry summers and mild temperatures in winter. The climate in the town of Macomer is typical of the Sardinia region, although generally more rigid than the average in winter, being located in an inland areas exposed to

string and colt winds from North-West. It is not located in a particularly busy area and is less affected by large tourist flows compared to the coastal areas of Sardinia.

3.7.3 Climate related challenges in Santa Maria

Macomer is a locality that has less than 10,000 inhabitants; the demographic trend shows a limitation of the resident population due both to the fact that there are more emigrants from the country than immigrants and to the fact that mortality is higher than births. The local economy is largely based on agriculture and livestock. The main climate related-challenge is the increased frequency and severity of wild forest fires during summer. Apart of that, there are no particular perceived critical issues in the neighbourhood with respect to the entire town and the region regarding specific climate-related challenges. The main challenge is the difficulty of involving the population of the entire city by the political decision-makers and the municipal administration.

3.7.4 Stakeholders in Santa Maria

The main informant we considered in the town of Macomer is the Progetto H cooperative. Their main theme of interest is the contrast to food waste. The Progetto H project operators carry out a continuous law enforcement activity involving schools and children. Another relevant issue is that of waste management: for some time, plastic bottles for water distribution have been eliminated in the school canteens and in the restaurant. Finally, the cooperative manages a hydroponic greenhouse with the aim of carrying out food production with 0 environmental impact. Attention to waste management issues has had an impact on the environment and climate change concern of the people outside the cooperative, according to their representatives. The cooperative deals with social issues that over time have shown a link with environmental sustainability, and it is in fact active in services for children (school canteens) where waste management (food waste). The cooperative also runs a restaurant inspired by the same principles, following a series of procedures and complies with the criteria necessary to adhere to national and European certifications. Thanks to the collaboration with other associations in the area, the food surpluses from the canteens and from the restaurant were destined to needy targets. The target groups of this initiative are children and families and teachers.

The representatives of the associations also made a large investment of expectations on young people, promises for the future and for change. The problems faced do not have easy solutions, but through the interventions already underway with children and in schools, our interviewees reported that young people are more attentive than their parents and teachers.

Among the relevant stakeholders, also it is to mentioned a network of associations promoted by young people and civic committees, born following the fires of the 2021 summer and the protests against the local incinerator. No particular use of social media was reported as a communication channel by the cooperative representatives.

3.7.5 Conflicts in Santa Maria

From what was reported by the participants, there are no particular conflicts within the neighborhood. Relevant issues are discussed within the community; it is not a question of real conflicts but of issues on which social change, policies and the development of values are based. One of the central arguments concerns the presence of an incinerator not far from the "Santa Maria" district; several groups are averse to the presence of this apparatus. Many activists of these associations come from the Santa Maria neighborhood which is most directly exposed to the incinerator. The debate concerning the incinerator concerns the technologies used and the actual environmental impact of the transformation of the waste processed at that site. In the perception of local residents, this installation will have an impact on both the environment and the landscape.

Despite the potential conflictual situation, our case analysis revealed the presence of frequent and lively debate, open to all categories. According to our informants, however, the population seems to perceive a risk for the politicization of events. No particular use of social media is reported, and debates seem to take place in the "live" public arenas of the conference room and squares. There seems to be no particular power imbalance. As common in the current European society, there seems to be a perceived gap between the population and politics, but perhaps the biggest gap is between adults and the world of youth, far more attentive and sensitive to these issues.

3.7.6 Local resources in Santa Maria

Regarding local resources and initiatives, various initiatives to raise awareness of the population, conferences and field activities have been promoted with real waste collection campaigns. As regards transport, numerous proposals have been made to activate bus lines to facilitate students and commuters.

Generally speaking, population awareness could be greater. Surely, it has been possible in the past to do a good job with children, because they are more attentive and sensitive to these topics. On the other hand, it is more complicated with teachers and parents for whom awareness-raising work must be more intense.

Local action groups (GAL) are also present in the area, which are social structures active in carrying out initiatives of common interest previewed in the current Italian legislation. They benefit from public funding but carry out bottom-up initiatives.

3.8 Myrsletta / Norde Follo (NO)

3.8.1 Basic information about Myrsletta

Myrsletta is located 2 km from the centre of the town Ski (in Norde Follo municipality), which constitutes approximately a 27 minutes' walk. Field A was regulated in 1981 and building started in 1989. The neighbourhood consists of town- and semi-detached houses, which are divided vertically. Myrsletta has a total of approximately 500 residents, of which many are families with children, but also some seniors. Most residents own their houses or apartments, but the neighbourhood also has some social housing residents, who rent from the municipality. The schools are close by, with the following districts: Hebekk barneskole (primary school) and Ski ungdomsskole (junior high school). Nordre Follo i

s expected to grow quickly due to an improved connection via commuter trains to Oslo which will make the commuting distance only 10 minutes from Oslo central station compared to today's 20 minutes.

3.8.2 Climate scenarios for Myrsletta

Climate change in general and especially the loss of species is a concern. The risk of loss of species and issues concerning future land use is dominant in the municipality's descriptions. However, the residents do not seem to share this concern.

The expected growth of Nordre Follo is considered a challenge especially with regards to land use and mobility. However, this concern is mainly articulated by the municipality and does not seem to be an issue for the residents. The residents have discussed measures to meet the expected increased precipitation levels, and some work on securing the foundations of the houses and leading the water away (open water solutions and pumping the water away) will become actualised and may be a way into more specific engagement. The co-ownership is in a process of replacing their garages due to that they are in bad shape. They are also planning to install electric chargers. The residents are mostly using private cars for mobility, and many households own more than one car. This does not seem to be expected to change.

3.8.3 Climate related challenges in Myrsletta

Securing and draining the house foundations due to precipitation and problems with the drainage being under-dimensioned is an issue. This is something the steering group leader is trying to address, but so far this has not been followed up with a plan for measures. Mental models of the residents do not seem to relate specifically problems to climate change, but are rather sticking to a more general level of the topic. A main challenge seems to be the need for improvement of the building envelopes and improving the energy system (air-to air heat pumps).

The neighbourhood has made improvements in the general maintenance of the neighbourhood, focusing specifically on the organization and a long-term plan for maintenance has been introduced. The neighbourhood has increased its monthly costs and professionalized the management of the co-ownership. A strong leader of the co-ownership has been a main player in this development

Private car-ownership dominates, and people do not use the public transport much even though the location is beneficial for access (bus stops nearby). Local sharing of tools in a neighbourhood facebook group has become popular over the last few years. People also give away things via this group.

Another challenge will be the large growth of residents in Nordre Follo and in Ski (the town where the neighbourhood Myrsletta is located).

3.8.4 Stakeholders in Myrsletta

The main stakeholders in the neighbourhood are the residents, the steering board of the co-ownership, local schools and kindergartens (which children in the neighbourhood go to). A lot of the communication goes via the local facebook group, and also the steering board of the co-ownership arranges resident meetings. Even the residents who rent partake in these meetings, but they do not have a formal vote. Meetings take place in the outdoor areas of the neighbourhood, including the walking paths (no-car roads) outside the houses. They also have a meeting room that is possible to rent and use for special occasions and meetings in the co-ownership.

3.8.5 Conflicts in Myrsletta

Heated discussions about the building of new garages occurred, but these were not developed into conflicts. The relation of this conflict to climate change is weak. The main protagonist is the steering group leader of the ownership. The steering group leader has a strong personality and has earned some local credibility as a leader amongst the residents. His suggestions are likely to be accepted. Probably there is a power imbalance between the steering group and the other residents. Also, there is clearly a power imbalance between the people who own their house and the ones who rent from the municipality. Some residents are active, while others are not so involved. However, they all seem to partake in the co-ownership's meetings. No one is actively excluded, but the lack of a formal right to vote for non-house owners is of course excluding. The conflict manifested via the facebook group and in person.

3.8.6 Local resources in Myrsletta

The steering board of the co-ownership is a very good resource for the project. There is a neighbourhood house with meeting room facilities, kitchen and bathtooms available for all residents. We have used this as a meeting arena for the project.

3.9 Driva / Oppdal (NO)

3.9.1 Basic information about Driva

Surrounded by beautiful mountains, "Dovrefjell" and "Sunnalsfjella" National parks and "Knutshø" nature reserve area, the area has rich nature assets - both in the form of flora and fauna - and many possibilities for outdoors sports activities and recreation. Driva is a popular resort for vacations, especially during wintertime, with many part-time residents (with private cabins) who do not pay Municipal taxes to Driva. The E6 road is the main access point to Driva, and there are plans to increase the number of driving lanes, which means that some farmland will be utilized for the road. Collective transport does not connect Driva well, but the nearest town, Oppdal, is accessible via train and bus in addition to the E6.

3.9.2 Climate scenarios for Driva

Predictions of increased flooding, and the potential loss of unique flora and fauna. Drivas population is increasing and is expected to continue to grow. There are people who live in Driva but commute to other locations for their livelihood. During the last years there has also been a "wave" of people who are looking to live closer to nature.

3.9.3 Climate related challenges in Driva

The river Driva has been flooding in the past, with the result of (farm-)land erosion. This is handled by securing the riverbanks. During extreme flooding, voluntary work by locals has been extensive.

The E6 and its extension is discussed a lot. Local resistance to sacrificing the local environment (farmland) and safety for cyclists and people walking by foot is especially prominent. This was particularly related to the safety of children. The need of and protection of the local more traditional farms is also highlighted. A skepticism to electric vehicles was noted, with technical motivations such as battery range and access to

charging stations. However, there are also people who have bought an electric car and are happy with their choice. A certain skepticism towards whether climate change is going to increase the flooding was expressed as the river Driva has always had flooding. The locals do not experience an increase of this.

It is a close-knit society where people know each other and often do business or otherwise cooperate with each other. There is some interaction with the seasonal tourists, especially those who return every year or own their own cabin in Driva. No hostility towards the visitors was expressed, but there is a wish to attract more permanent residents.

The residents are used to a wild and “aggressive” nature and do not seem to be very afraid of future consequences. However, the need to preserve local and smaller businesses and attract new workplaces is central. A large, planned land-based fish farm is being referred to as very positive for the local society and for the environment due to its methods of water recycling.

The securing of the riverbanks and the preservation and continued use of local flora and fauna (with tourism, potato-farming, shale extraction and sheep-farms) as a livelihood has a long tradition here. The discussions about the E6 seems to be something that has been debated over a long period of time as has the conditions for local businesses, especially farmers.

The neighbourhood deals with a large amount of cabin owners not paying taxes locally. Conditions where local businesses cannot compete with large centralized (Oslo et cetera) ones. The local slaughterer had to give way for a larger non-local business. The transport and mobility is highly based on cars which is considered a problem. Fear of loss of flora and fauna and the flooding of the river is a main challenge.

The future seems unclear, but there are many people who are involved in debates and try to influence the future. Local “greener” and smaller-scale businesses are popping up as well as people like artists and architects.

3.9.4 Stakeholders in Driva

Stakeholders in Driva are the permanent residents, the people who work there (often the same people), local businesses and employers (existing and coming/planned), the municipality and school/kindergarten, interest groups (for instance the OASIS-group), artists,craftspersons, farmers (including more hobby or own household-based small-scale ones), and recurring visiting tourists (including cabin owners).

The municipality is really active online and also uses social media. They use all sorts of meetings arenas, including social media and meeting in person. Meetings happen in the local schools and at local businesses (which are often also their homes). The camping sites are also used as meeting places.

The municipality has developed both a masterplan^{25[25]} and an energy and climate plan.^{26[26]} Both these are very ambitious and specific, and the municipality has involved local competences in addition to internal resources in creating them.

3.9.5 Conflicts in Driva

There are conflicts in Driva but there seems to be fruitful discussions going on and the conflicts do not seem to be personal, but factual. The residents are not always in agreement with the decisions of the Oppdal municipality. This especially relates to the extension of the E6, where people have taken different sides, and the conditions for local businesses versus the central large-scale ones taking over. The local newspaper (and their website) is influential as is often the case in more remote locations. Some people are very involved and some do not get into debating the issues.

In Driva, all discussions are basically related to nature and the use of it. Some refer to people in the city as unknowledgeable in relation to what it means to live close to nature.

3.9.6 Local resources in Driva

Driva has a strong local community with the schools, local businesses, interest organizations, tourists at camping sites and cabin owners as possible resources.

^{25[25]} <https://www.oppdal.kommune.no/globalassets/pdfdokumenter/naring/masterplan-oppdal-pdf.pdf>

^{26[26]} https://www.oppdal.kommune.no/globalassets/pdfdokumenter/kommuneplan/rev001_horing_klima-og-energiplan_2018_2029.pdf

4 Interventions in Austria

4.1 First intervention in Austria

4.1.1 Description

Content: After introducing the participants to the topic of climate change and perceptions in the neighbourhood by presenting and discussing the results from the survey, which took place three months earlier in the neighbourhood, a music group transformed the previously discussed content as well as spontaneous reactions of the audience into improvised musical performances. The artists engaged the audience in a spontaneous conversation in which there was space for worries, concerns, fears and hopes regarding the climate crisis. By means of music, climate-relevant topics were conveyed in a respectful but also humorous way.

4.1.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The design of this first intervention responds to transformative learning approaches as well as to attempting to enhance collective efficacy:

With regards to transformative learning theory, it aims to provoke disorienting dilemmas by including information on climate-related problems as experiences by neighbours as well as by providing different opinions of the neighbourhood. This secondly also provides the opportunity for critical reflection. Furthermore, the uptake of the statements of the participants in a back-and-forth manner to create the songs, provided the opportunity for an open dialogue and exchange.

With regards to enhancing collective efficacy, the first intervention provides relevant information about climate-relevant topics in the neighbourhood. It secondly provides learning opportunities and allows for skill development by providing examples of climate-action that took already place.

4.1.3 Setting in Eggenberg

The intervention took place in the community room of the parish in the neighbourhood. We personally invited the local city council as well as all interview partners. Furthermore, all people from the neighbourhood that gave us their allowance to contact them again in the questionnaire (which was distributed 2 months prior to the meeting) received an invitation. We also published the invitation on relevant communication channels of the neighbourhood (community homepage, local Facebook groups).



Figure 1: Impressions from the first intervention in Eggenberg

4.1.4 Setting in Jakomini

The intervention took place in a neighbourhood-café at a time where neighbours usually can come together to cook together. We personally invited the local city council as well as all interview partners. Furthermore, all people from the neighbourhood that gave us their allowance to contact them again in the questionnaire (which was distributed 2 months prior to the meeting) received an invitation. We also published the invitation on relevant communication channels of the neighbourhood (community homepage, local Facebook groups, local newsletter).

4.1.5 Setting in Admont

The intervention took place in the community hall. We personally invited the local municipality council as well as all interview partners. Furthermore, all people from the neighbourhood that gave us their allowance to contact them again in the questionnaire (which was distributed 2 months prior to the meeting) received an invitation. We also published the invitation on relevant communication channels of the neighbourhood (community homepage, local Facebook groups, local newsletter).

4.1.6 Intervention result Eggenberg

At this first intervention, 20 people showed up to the event. To gather feedback, a short questionnaire, asking for the three most important aspects of climate-change, new things learned at the event and next desirable steps at the neighbourhood were asked. Furthermore, we created a flip chart with the most relevant challenges for the neighbourhood as derived from the discussion (see last image in Figure 1).

4.1.6.1 Content-related results

The following aspects were central in the discussions:

- **Mobility:** Hereby it was especially discussed, how mobility within the neighbourhood can change away from car-transport to other forms. Suggestions were to better connect public transport as well as an extension of bike-lanes and park and ride opportunities and priority for pedestrians in the traffic planning, especially for pedestrians with special needs (as older people).
- **Energy use:** Probably driven by the sharp increase in energy costs that appear in the months before the discussion, there was much discussion on how the energy use in the neighbourhood can be optimized in the neighbourhood. Suggestions were a higher proportion of houses being connected to district heating, and a preferential treatment for PV when building houses.
- **Preserving nature:** The discussion focused especially around the topic of preserving or planting new trees.
- **Dealing with climate-change:** The desire was expressed to get more information on climate-change related issues, as well as the wish to make visible those persons in the neighbourhood that are able to provide information on climate-change related topics.

Feedback from the short questionnaire was overall positive, although multiple participants stated that they didn't learn anything new. However, they rated the approach with the music as creative and engaging.

Generally, the intervention's informal atmosphere fostered open discourse, making discussions on climate change related topics approachable and engaging. Playing improvised songs about the neighbourhood reinforced the connection to one's surroundings. Additionally, the intervention's low entry threshold attracted and engaged new audiences, broadening the reach of climate-related initiatives and promoting a more diverse and inclusive approach to climate learning.

4.1.6.2 Methodological results

All in all the choice of the location was suitable. The place was known by the neighbours as a place to come together. The cooperation with the parish gave us additional promotion opportunities. The pastor was very cooperative and gave the event additional weight. The music-impro worked well. It was the second time that we used this kind of intervention and the musicians experience from the first time helped to break the ice faster

and get the people engaged fast. We also provided some finger-food and cookies after the event, with the effect that people stayed longer and had ongoing discussions with each other.

4.1.7 Intervention results in Jakomini

15 people, apart from the intervention team, took part in this first intervention. To gather feedback, a short questionnaire, asking for the three most important aspects of climate-change, new things learned at the event and next desirable steps at the neighbourhood were asked. Furthermore, we created a flip chart with the most relevant challenges for the neighbourhood as derived from the discussion.

4.1.7.1 Content related results in Jakomini

The following results were central in the discussion:

- Preserving nature: Similar to Eggenberg, much discussion focused around the topic of how green space can be preserved and expanded. Discussants for example asked for support in the preservation of private gardens and trees (support in maintenance, but also for example with regards to insurance if big tree branches are breaking and causing damage), but there were also requests for opening up and greening semi-public spaces like the area of the trait fair or the parc of the medical center situated there, or making flat roofs accessible.
- Reducing energy costs: Here discussants saw a big responsibility by bigger players like housing cooperations, but also business-owners.
- Reducing heat: Suggestions circled around the topics of planting more trees, but also to green bus stops.

The results from the mini-survey reflected the topics of the discussion. Respondents agreed, that it was especially interesting to hear the opinions of other people in the district, or mentioned that they were not aware the topic is relevant for the people. Suggestions for next steps circled strongly around increasing green space.

4.1.7.2 Methodological results in Jakomini

The place was probably a little bit too small for this kind of interventions. Some participants complained, that the musical part was too loud. The combination with the cooking event has on the one hand advantages, since people showed up that probably wouldn't have come in a pure climate-focussed setting. On the other hand not all of these people were willing to engage and discuss over a longer period of time.

4.1.8 Intervention results in Admont

23 people, apart from the intervention team, took part in this first intervention. To gather feedback, a short questionnaire, asking for the three most important aspects of climate-change, new things learned at the event and next desirable steps at the neighbourhood were asked. Furthermore, we created a flip chart with the most relevant challenges for the neighbourhood as derived from the discussion.

4.1.8.1 Content-related results in Admont

The following results were central in the discussion:

- Mobility: Discussants criticised the high dependence on car mobility in Admont, and also that many shorter distances are done by car. Partially this is consequence of the poor infrastructure for pedestrians and bikers (small sidewalks, no dedicated bike lanes), which makes it risky to walk or bike.
- Extensive land development: Although not expected, building activity was a mature point of discussions, since discussants saw building activity despite having empty already existing buildings

empty critical as well as the sprawl caused by that. They wish for a more restrictive area reclassification policy.

- Energy savings: Discussants were surprised to learn, that the increased energy prices impacts the community infrastructure heavily. Discussion therefore circled around suggestions on how to save energy for public infrastructure (like switching off public lights in certain nighttimes or doping christmas lightnings for a shorter period of time).

As in the other neighborhoods, the survey reflected mainly the topics covered in the discussion with a strong emphasis on energy topics. Several people indicated to haven't gathered any new information during the event. People saw the potential of doing things together. Suggestions for next steps circled around expansion of traffic by foot and bike, energy saving in the public infrastructure and a change in the building policy.

4.1.8.2 Methodological results in Admont

The community hall was relatively big for the number of participants. This led to people sitting quite far away from the presentation and the musical performance. This created a less informal atmosphere than for example in the neighborhood café. This disadvantage was probably out-weighted by the fact that- other than in the more urban neighborhoods- people knew each other and were obviously used to talk to each other. This kind of interventions therefore might be even more fitting in rural settings than in urban. Also our fears that the rural neighborhood might be too conservative for this kind of interventions was dispelled by the active contribution of the people and the positive feedback. In terms of promoting the event we got the feedback, that the event wasn't very well known among the locals. This again emphasises the importance of including locals as strongly as possible in the planning of the event, since they know how people can be reached.

4.2 Second intervention in Austria

4.2.1 Description

Representatives of different religions discussed the ethics of climate responsibility with local citizens. The aim of this intervention was to promote a deeper understanding of climate change from an ethical perspective and address questions such as morally appropriate action in times of climate crisis, collective responsibility for climate protection, and humanity's relationship to nature. Speakers' contributions from Christianity, Buddhism, Islam, and Judaism enriched the discussions and contributed to a comprehensive exploration of ethical responsibility in times of the climate crisis.

4.2.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The second intervention incorporates elements of the Transformative Learning Approach as well as of collective efficacy:

The intervention creates a strong disorienting dilemma by showing that preserving climate and nature is understood as a religious duty by all religions- a perspective that typically is not taken by people. The setting also encourages open dialogue since a discussion round between different religions per se requires a certain openness to at least listen to other points of views. It also empowers people to become active, knowing that acting sustainable is appreciated by their religious authority and community (and if they believe in it- even by god).

The setting also is suited to enhance collective efficacy since it jumps on existing community groups, that usually already know how to work together. It also strongly encourages behavioral change by highlighting the for religious people rather strong impact that a sustainable life is in accordance with their religious rules and goals.

4.2.3 Setting in Graz

To reduce the effort for the representatives of the different religions as well as for the moderator (all of them agreed to contribute either for free or for a small allowance for expenses, we decided to do the intervention simultaneously for both Graz neighborhoods. The intervention took place in a meeting room of a museum of the city in close proximity to both neighborhoods. We personally invited the local city council as well as all people who gave us their allowance to contact them per email in the survey. Furthermore, we asked the representatives of the religion to distribute the event information within their communities.

For this event we also asked for a non-binding registration from potential participants to better determine the number of participants to expect.

4.2.4 Planned Setting and Methodology in Admont

In Admont we had to overcome strong obstacles before we got the allowance to hold the event from the village council. Originally they refused to support us, officially because of a fear that the local monastery might not be in favour of the event. To counter this, we adapted the intervention and also invited a representative of the monastery as discussant, who agreed relatively easy. Only then, the village-council agreed to support us. The plan was to again use the community hall for that event. Unfortunately, the moderator got sick on short notice one day before the event should have taken place. Additionally, we had only received one registration beforehand, so we decided to cancel the event.

For a catch-up of this event we decided, that it only makes sense, if we can pair it with an event that takes place anyway in the region and therefore can help us to attract participants. Unfortunately, we were not able to find such an event within a reasonable time horizon.

4.2.5 Intervention result Graz

Without the project team and the representatives, 25 people took part in this intervention. As in the first intervention, to gather feedback, a short questionnaire, asking for the three most important aspects of climate-change, new things learned at the event and next desirable steps at the neighbourhood were asked. Furthermore, we created a flip chart to visualise the most relevant and prevalent statements derived from the discussion

4.2.5.1 Content-related results

The most astonishing result for the participants was that all religions, despite their different approaches, identify preserving nature and saving the climate as a religious duty²⁷ within their own religion. Accordingly, the discussion circled strongly around topics such as that all people on the earth should work together to find a common way into a brider future. The discussants criticised that in the public discoursus emphasis often is strongly set on individual actions, although collective action might be the better approach to tackle this kind of problems. On the individual level the discussants agreed, that there might not be the one "right" way of achieving the desired goal and that it must be accepted, that different people choose different approaches.

4.2.5.2 Methodological results

This intervention turned out to be the most complicated in terms of organisation as well as moderation. In terms of organisation there were some reservations in the rural community, if the event will be positively received by the population. This once again shows the importance of having local actors on board, that are convinced of the planned activities and are advertising for it.

²⁷ Although to clarify according to the buddhist represenative in Buddhism there exist no obvious duties for religious people (as in the other religions defined by religious laws), but there is a strong emphasise on making own experiences. Nevertheless, ,strongly simplified, to live in harmony with all lving beings is one of the goals.

Secondly, such an event also needs an experienced moderator. In Graz, despite the religions generally emphasising their commonalities and the discussion overall being characterised by mutual respect, there was at least one critical point where Islam was associated with terrorism.

Generally the audience also needs some willingness to delve deeper into philosophical and ethical topics, which excludes those not familiar with this kind of thinking.

4.3 Third intervention in Austria

4.3.1 Description

We designed a game to engage children, teens, and their parents in reflecting on climate-friendly behaviours. In a throwing gallery, participants attempt to hit targets that represent climate-friendly decisions (e.g., vegetarian diet, no flying, buying local food); the harder the decision is to implement in daily life, the smaller the target. The children got a "certificate" showing them how many smaller actions add up to a larger impact, especially if more people are trying the same. Furthermore, we used the time in which the children were playing the game, to talk with the parents, naturally climate-change actions was one of the topics touched upon.

4.3.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

Also this intervention is designed to respond to transformative learning as well as increasing collective efficacy:

The game encourages critical reflection by making the children (and parents) think about the actions they are taking in everyday life and reflecting on which of them they potentially can change. Furthermore, it empowers agency, since it was directly visible how different small actions can sum-up to a greater number.

The game also intended to increase social persuasion, since the children cheered each other on and we emphasised the big number of points (respectively CO₂-emission savings) they can achieve together.

4.3.3 Setting in Eggenberg

In Eggenberg we used the game at a local 1st of May (national holiday in Austria) event. The event was situated in a park in the neighborhood. There was music and market stalls for food and drinks as well as a variety of gaming options for younger people. Our stand was part of the children's playground, situated between the playground and the "adult" area. As there were a lot of children involved in the activity, we didn't create an attendance list. However, the stand was frequented by children from the beginning of the event until the end.

4.3.4 Setting in Jakomini

In Jakomini we were part of the school-end celebration of a local primary school, where also the parents were invited. As in Eggenberg, there were many other activities for the children. We again did not use an attendance list. Nevertheless the rush to play the game was very high.

4.3.5 Setting in Admont

In Admont we made our stand in the course of an event of the local monastery (called "Admonter Klostermarkttag"), a three days event with a high number of local businesses selling their products, music, activities for children and information about the monastery itself. We were present on the second day. As in the other neighborhoods attendance was very high.

4.3.6 Intervention result

4.3.6.1 Content-related results

The experience with the climate game showed a high level of enthusiasm and engagement among the – mostly – children who played the game. The incorporation of gamification elements, such as rewards, challenges, and social interaction, contributed to sustained interest and motivation to explore climate-friendly behaviours beyond the game itself. By awarding points in certificates depending on the hit CO2 saving targets, a competitive spirit was perceived by many children. The game also encourages reflection on personal actions, such as "I don't go on holiday" or "I am already a vegetarian".

4.3.6.2 Methodological results

The game was very popular in all three neighborhoods and attended by the kids at a high frequency. This means, that for its supervision, if a dialogue with parents is planned to be initiated, at least three persons are needed: One supporting the kids who are throwing, one issuing the certificates and the third one speaking with the parents. The setting also leads to reaching out to a broader audience, meaning that there will be some opposition regarding climate-mitigation approaches. Supervisors therefore should be prepared to answer to common arguments against mitigation measures (such as "climate-change is not caused by humans", "single persons can't change anything", "the government just wants to trick us into paying more money" etc..).

Also, since the game typically will be an outdoor-event, it is necessary to take precautionary measures in case of rain (we had prepared a tent that in case of rain we could put up over the throwing gallery).

5 Interventions in Finland

5.1 First intervention in Finland

5.1.1 Description

The first intervention was built around fact-based presentation and a theatre performance by a clown (professional actress). The participants were introduced to the topic of climate change and perceptions in the municipality by presenting and discussing the CLEANcultures interviews and survey results. The presentation was "interrupted" by a clown character played by an artist ("Babylon the clown") who gave humoristic "interpretation" of the results and climate topics as a "visiting researcher". The performance of the clown included pondering on the changes needed for climate change mitigation, reflecting to personal climate actions based on fictional storyline of the character. Humoristic, activation elements based e.g. on "Power posing" were included in the clown presentation. Afterwards, the audience discussed with the researchers on the topics over coffee and pastries served.

5.1.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The design of this first intervention responds to transformative learning approaches as well as to attempting to enhance collective efficacy:

With regards to transformative learning theory, it aims to provoke disorienting dilemmas by including information on climate-related problems and challenges topical as well as by providing information on the different opinions of the citizens of the municipalities. This was explicitly mirrored in the theatre presentation with the character pondering on the climate-related choices present in the personal life of the fictional character. Reflecting the example in citizens' own life also provides the opportunity for critical reflection. Furthermore, the informal post-discussion with the researchers arranged, provided the opportunity for an open dialogue and exchange.

With regards to enhancing collective efficacy, the first intervention provides relevant information about climate-relevant topics in the neighbourhood. It secondly provides learning opportunities and allows for skill development by providing examples of climate-action possible or that took already place.

5.1.3 Setting in Pyhäntä

The intervention was arranged in an official administrative space of the municipality used (Auditorium of the municipal administration building). We had announcement in the local information letter of the municipality, municipality webpages and Facebook, flyers in the local buildings with e-version in the project website and social media and linked in the announcements by the municipality. Furthermore, we personally invited interview partners via e-mails, including contacts in the local municipal governance.



Figure 2: Impressions from the first intervention in Pyhäntä.

5.1.4 Setting in Simo

The intervention was arranged in a space used and governed by the municipality, also used for more informal and free time activities ("Toivon tupa", former small elementary school built of timber). We had an announcement in the local information newsletter of the municipality, municipality webpages and Facebook, flyers in the local buildings with e-version in the project website and social media and linked in the announcements by the municipality. Unfortunately, there had been some delivery problems with the paper version of the information newsletter, and thereby this channel for reaching potential participants was unsuccessful. Furthermore, we personally invited interview partners via e-mails, including contacts in the local municipal governance.



Figure 3: Impressions from the first intervention in Simo.

5.1.5 Intervention results in Pyhäntä

The audience was 9 + the organizing team, mostly middle-aged and older people. The participants were approached with an opportunity for a longer post-intervention interview by filling the appropriate consent forms. We also gathered feedback with plastic pearls ("put a red pearl in the bowl for negative, white for positive overall feeling of the event").

5.1.5.1 Content-related results in Pyhäntä

As positive comments from participants, the importance of the topic was recognized. It was told that the intervention inspired thoughts, and the efforts of team to implement the intervention were appreciated. The experience of the intervention was not making the participants to feel guilty but run positively-oriented was liked by the participants. In the development suggestion side, it was commented that there was too much information to digest, making the intervention hard to follow.

Content-wise, participants reflected on the following topics:

- Level of consumption in comparison with the old times
- Importance of wood resources in the neighbourhood
- Differences between sparsely populated countryside and cities (necessity to have a car, heating of large houses)
- Reflecting to the ongoing energy crisis situation (e.g. prices), and challenges in the use of electric vehicles.
- Generations-long presence in the neighbourhood by the families or the participants, and a lot of people knowing each other
- Young generations were told to tend to move from the region, on the other hand, the importance of industrial workplaces as a counterforce was underlined.
- Active village associations and low hierarchies in the municipality were underlined as characteristics of the community.

5.1.5.2 Methodological results in Pyhäntä

The audience was too low to make far-reaching conclusions. Presence of clown in the same space from the beginning of the event seemed to confuse the audience to an extent, causing some tension in the atmosphere. Official administrative space of the municipality used and officially-oriented welcomings might have had an impact of the expectations of the nature of the event by participants, and it appeared that not all the punchlines and humoristic elements in the clown performance were fully understood by the audience.

It proved highly challenging to get people attending to the events organized during the dark late-autumn period in regions with sparse population and long distances. The advantage of low number of attendees was that single people were given a lot of speech time to peacefully reflect even decades-long history backwards and reflecting their thoughts broadly. Based on newspaper article written afterwards, one local citizen had adapted the information on unconventional combination of artistic and informative elements differently than targeted by the CLEANcultures project ("there is nothing to joke about with windmills installed all around the municipality"). This demonstrates the challenge to plan communications thoroughly with a set-up as unconventional as this.

One person was recruited for a post-interview. The visit was mostly appreciated in oral comments given to researchers. The intervention was suggested as suitable to be adapted for school environment / youth audiences in one feedback. Also, the feedback gathered with coloured plastic pearls was only positive (even though not many people gave feedback). The development suggestions related mostly to "overflow of information".

5.1.6 Intervention results in Simo

The audience was 7 + the organizing team, consisting of middle-aged and older people. The participants were approached with an opportunity for a longer post-intervention interview by filling the appropriate consent forms. We also gathered feedback with plastic pearls ("put a red pearl in the bowl for negative, white for positive overall feeling of the event").

5.1.6.1 Content-related results in Simo

The participants reflected on the following topics:

- The position of Simo in the national wind power statistics had been followed up by some actors
- In one statement, fair division of the wind power income was questioned (if the local community gets its fair share).
- Negative comments from neighbouring municipality with a decision to not install wind power had been heard by the Simo people ("shameful to drive through Simo").
- Small-scale nuclear power suggested as an alternative to wind power by opponents.
- A lot of polarizations in opinions ("everything is wrong because of wind power", "again, the blades are not moving"), and suggestions that the opinions of some wind power opponents cannot be changed with argumentation.
- Comments of low hierarchies in the municipality given. Some comments about the sources of data and calculation methods (weather data, tree cuttings needed due to build-up of power transmission lines).
- Activity of municipality in other energy transition areas (solar power, ground source heat pumps, wood chips, joining in HINKU network on climate neutral municipalities).
- The idea presented in the performance of Babylon the clown on getting back to 1960's-70s was echoed in the discussions.
- A lot of nature-related experiences of changes in the discussions (the Simo river freezing over earlier in the autumn, possibilities to ski on the iced river, increased darkness and frightening river due to lack of snow, the mushrooms getting frozen earlier in the autumn).

5.1.6.2 Methodological results in Simo

Based on experiences of the first intervention in Pyhäntä previous day, slow mode of speaking and proper introduction of the topic and people and organizations of the presenting team was paid specific attention to. Sudden appearance of the clown to interrupt the fact-based presentation triggered clear reactions of joy (face expressions, laughs), and the participants seemed to internalize well the common thread developed for the intervention. A venue typically used for more informal events in the municipal community seemed to trigger the audience to more suitable mood for reflecting.

Positive feedback about the event was received from the participants. One person was recruited for a longer post-intervention interview. The feedback gathered with coloured plastic pearls was only positive (even though not many people gave feedback). The intervention was suggested as suitable to be adapted for school environment / youth audiences in one feedback.

It proved highly challenging to get people attending to the events organized during the dark late-autumn period in regions with sparse population and long distances. The audience was lower than hoped to make far-reaching conclusions. Overall, the setting was seen successful to demonstrate the concept developed.

5.2 Second intervention in Finland

5.2.1 Description

The second intervention dealt with introduction of climate change impacts and challenges adapted at local surroundings, aiming at interactive discussion and dialogue. The intervention design was inspired by "Active hope" approach and research on environmental feelings, and it was tested with versions adapted for two different surroundings in different neighbourhoods (1) local library (Pyhäntä), and (2) local market event (Simo).

The library version was built around a presentation on climate change impacts and challenges combined with interactive discussion on environmental feelings and "Active hope" theory. The market version was built around a locally adapted short survey based on CLEANcultures results with a triggering part inspired by Active hope approach on meaningful and beloved things for local residents.

5.2.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The design of this second intervention responds to transformative learning approaches as well as to attempting to enhance collective efficacy:

With regards to transformative learning theory, it aims to provoke disorienting dilemmas by including information on climate-related problems from global to local perspective. Furthermore, discussion building on environmental feelings and "Active Hope" approach with the participants provides the opportunity for an open dialogue and exchange. Building the dialogue starting with things cared and important and for the locals, the aim is to trigger participants to positive solutions rather than directly focusing on problems, with an implicit target of achieving better results with this approach.

With regards to enhancing collective efficacy, the second intervention provides relevant information about climate-relevant topics in the neighbourhood. It secondly provides learning opportunities and allows for skill development by providing examples of climate-action that took already place or can be implemented.

5.2.3 Setting in Pyhäntä

The intervention consisted of presentation on climate change impacts and challenges combined with interactive discussion on environmental feelings and "Active hope" theory. The event was organised in the Pyhäntä library as part of the series of thematic discussion events organised there weekly. In the event organised by us, first a presentation of project topics, focusing particularly on climate change impacts, challenges and solutions both on a global and local level was given. This was then combined with interactive discussion building on environmental feelings and "Active Hope" approach with the participants as "Active Hope is about finding, and offering, our best response when facing concerns about our world situation."



Figure 4: Impressions from the second intervention in Pyhäntä.

5.2.4 Setting in Simo

The intervention was arranged at a lamprey market, a 2-day major annual outdoor market event in Simo with hundreds of visitors daily in parallel with the 3rd intervention (see Figure 4 for surroundings). We had a stand at a tent shared tent with the department of free time and cultural activities of the municipality, with a lot of activities targeted for kids and youth. We had distributed an announcement of our presence through the website and social media of the municipality and CLEANcultures, and also invited the earlier contacts interviewed personally to visit us.

In the set-up, short survey was designed based on CLEANcultures results. Based on Active hope theory, the survey had a triggering part on especial things worth taking caring in the municipality considering the interrelations the market circumstances may trigger. The triggering part was followed by some simple multiple-choice questions on personal climate actions. We also inquired if the participants had heard about the project before. All answers were "rewarded" by liquorice bar and/or toffee candy. Input was collected via two channels: on the market stand and by walks around the market area to collect answers to the questionnaire and reflect.

5.2.5 Intervention results in Pyhäntä

The number of attendees was small (7), and the average age was estimated beyond retirement age (roughly 75). The intervention was promoted through the library channels as a part of the thematic discussions organized weekly.

5.2.5.1 Content-related results in Pyhäntä

The participants reflected on the following topics:

- The participants considered the climate change mitigation as needed and reflected their own actions.
- Nature and clean waters were considered important.
- Wind power was seen mostly positively, and its environmental impacts small in comparison with some alternatives (e.g. peat production areas).

5.2.5.2 Methodological results in Pyhäntä

The library intervention based on presentations succeeded to trigger active discussion on climate change and its impacts, yet, the number of participants was small. However, the proven concept in thematic events of the library managed to create familiar and cozy atmosphere.

5.2.6 Intervention results in Simo

Rather than data collection, the survey was mostly designed to trigger the participants to reflect on CLEANcultures topics and local problems and solutions. 25 answers to the multiple-choice survey were received in addition to oral comments and feedback received in contacts.

5.2.6.1 Content-related results in Simo

Key statements based on results of the survey about the most especial things in Simo and caring and the personal climate actions:

- Nature and landscapes appreciated mostly
- Reindeer herding with quite low ranking
- Electric vehicles are seen challenging from personal actions

In the oral statements inspired by the survey:

- Many of the respondents spoke of recycling, reporting changes in the heating system from electricity to ground heat or plans to do so. Electricity prices were discussed a lot.
- Wind power was seen quite neutrally. Landowners commented the rent contracts for wind power (difficult to understand).
- Some weather-related observations (warmer, much rain, ice lanterns in the Christmas cannot be made anymore, comparisons to e.g. fires in southern Europe or flooding in Norway).
- Animal livestock impacts and behavior also observed (elks, fish, other).
- Children came up with an idea affecting climate change by collecting waste.

5.3 Third intervention in Finland

5.3.1 Description

Oral "quizz" at a local outdoor market event, framed as "guessing competition" about the average CO₂ emissions in the municipalities. All guesses were "rewarded" by liquorice bar and/or toffee candy. Leaflets were prepared for digesting the CLEANcultures results of the municipalities and reflecting them with personal actions. The third interventions were implemented at stands of CLEANcultures set up in a tent in local outdoor markets arranged annually. Colourful visual elements and signs with simple slogans were used to attract people to visit the stand.

5.3.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The design of this third intervention responds to transformative learning approaches as well as to attempting to enhance collective efficacy:

With regards to transformative learning theory, it aims to provoke disorienting dilemmas by including information on climate-related problems and challenges topical, as well as on different opinions of the citizens of the municipalities. The dilemma is explicitly presented in the leaflets prepared to inspire discussions during the intervention: the seemingly high CO₂/capita figure of the rural municipalities in national comparison presents a key piece of information for provoking dialogue. The impacts of wind power as a climate measure topical in the municipality, is another side of the dilemma. Reflecting the split-up of municipal emissions in citizens' own life also provides the opportunity for critical reflection, including debate on characteristics of emission calculation methods. Furthermore, the informal discussion option arranged around funny quiz provided an opportunity for an open dialogue and exchange.

With regards to enhancing collective efficacy, the second intervention provides relevant information about climate-relevant topics in the neighbourhood and contextualizes them with national and global scale. It secondly provides learning opportunities and allows for skill development by examples of climate action possible or that took already place. The role of local actions in national and international climate efforts This also empowers individuals by highlighting the impact of their actions, especially in understanding the wind power as collective action that can make a significant difference in mitigating climate change.

5.3.3 Setting in Pyhäntä

The intervention was arranged during one day at "Pertulinpäivät", significant annual outdoor market event in the municipality of Pyhäntä. It is a typical market event in Finland, arranged by the municipality late summer, with speeches, raffles, competitions, music, food, coffee and drinks sold, with local stakeholders (political parties, school classes, municipality, agricultural organization, local associations, wind power companies) introducing their ongoing activities and interacting with people. We had a stand in a tent managed by us, located between a tent of municipality of Pyhäntä and the local association of pensioners. We had distributed an announcement of our presence on the markets through the website and social media of the municipality and CLEANcultures channels, and also invited personally the earlier contacts interviewed to visit us.



Figure 5: Impressions from the third intervention in Pyhäntä.

5.3.4 Setting in Simo

The intervention was arranged at a lamprey market, a 2-day major annual outdoor market event in Simo with hundreds of visitors daily. We had a stand at a tent shared tent with youth and free time department of the municipality. We had distributed an announcement of our presence through the website and social media of the municipality and CLEANcultures, and also invited the earlier contacts interviewed personally to visit us.



Figure 6: Impressions from the third intervention in Simo.

5.3.5 Intervention results in Pyhäntä

The setting encouraged people to approach, 60+ people visited the tent with diverse age and gender distribution. Emotions were observed - some were provoked by high CO₂/capita figure (typical in the rural neighbourhoods), in the best cases, the argumentation inspired learnings and reflections on own behaviour and actions. The calculational negative CO₂ impact of wind power inspired some laughs and positive mood.

5.3.5.1 Content-related results in Pyhäntä

As a recently introduced technology in the municipality, wind power seemed to trigger debates, as well as the computationally high CO₂/capita the municipality in comparison to national average. This was opened up by the researchers to be mostly due to agricultural, transportation and industrial-based emissions. Whereas the details were for most, the explanation was openly reflected by most and seemed to create new understanding on the topic. The discussions had the following central content results:

- According to a rough estimate, 70% guessed that the local average of CO₂/capita is smaller, 30 % that it is large than the national average. The reality is that it is roughly 2 x the national average due to agricultural and industrial emissions and traffic, caused by long distances in the region. However, the researchers openly recognized that the calculation methods are debatable.
- More critical participants commented on the "correctness" of the calculation method used for CO₂/capita. The researchers acknowledged that there are different calculation methods the suitability of which in different uses can be discussed (e.g. wood products, loss of carbon sinks due to wind power construction).
- Experienced changes in winters compared to 1960's, need to acknowledge the difference between cities and countryside
- At best, the material inspired participants to reflect with their own actions (economic driving habit, electricity savings)

5.3.5.2 Methodological results in Pyhäntä

One of the benefits of the market place implementation in sparsely populated neighbourhoods was clearly in the rare possibility to efficiently engage with a large number of people. On the other hand, the average length of the discussions was often small, leaving these discussions quite superficial.

The participants were often first slightly hesitant/uncertain to give their guess on the average CO₂ emissions/capita. Often, the hint on the scale of local average, and inviting the participants to guess if the local figure is smaller or larger, helped. Some took the number as an attempt to make the locals feel guilty (this was not the meaning). However, spontaneous "shock reaction" of the figure that appeared high inspired people to reflect and learn about the topics. Also, the calculational negative CO₂ impact of wind power was experienced

with "relief" and taken as a fun detail. Getting a "reward", often left the participants with a positive mood. Large majority of the discussions were of good spirit and positive mood, with several cases resulting in fruitful reflections. Many gave positive feedback for the project and assessed the work valuable (e.g. a teacher).

Also, a high share of industrial workplaces in the municipality may had a role in the observation that many of the discussants were familiar with the climate and energy topics. Many people took the leaflets with them, some even explicitly told the about the intention to use them in worklife/debates in the neighbourhood. The overall experience on the intervention was promising.

5.3.6 Intervention results in Simo

During a two-day-event, 39+27 people visited the tent. Typical discussions were quite neutral and short in duration.

5.3.6.1 Content-related results in Simo

During the first day, 14 visitors guessed that the local average of CO₂/capita is smaller, 3 that it is larger (the reality is that it is roughly 60% larger than the national average mainly due to agricultural emissions and traffic, caused by long distances in the region). However, only few participants were inspired to reflect further, and many just commented "ok" and left the intervention area. As an alternative question for the quizz, the emission reduction percentage was tested during the latter part of the intervention, but it did not create too many reflections either. Most people get the direction (reduction) right, but the scale of reduction was often too conservatively assessed.

Often, it required activity from the researchers to get inputs. The most typical substance statements related to:

- Observations in the behaviour and livestocks of animals
- Changes in vanishing differences between seasons of the year
- Difficulty of electric transport in Northern conditions,
- Other environmental impacts than CO₂ emissions.
- Wind power was seen positively by most visitors who commented on it, only a couple of negative comments on its landscape effects.

5.3.6.2 Methodological results in Simo

Typically, the participants were hesitant/uncertain to give their guess on the average CO₂ emissions/capita. Sometimes, the hint on the scale of local average, and inviting the participants to guess if the local figure is smaller or larger, helped.

According to observations by the researchers, information sign signalling the climate change topic of the intervention appeared to even scare some visitors to approach. This suggests the climate change "spearhead" in communications of the intervention might not be most tempting for the locals. Also, shared tent with the local municipality (leisure time and culture department with a lot of programme for kids and youngsters) seemed to confuse some, i.e. the CLEANcultures setting was incorrectly seen as a part of the municipal administration. Also weather, and the already long experience on the central topic (wind power) in the neighbourhood might have contributed to the observations on limited willingness to reflect.

The researchers also noticed the effect of "interest triggering interest" - i.e. if there are some people discussing at the tent, it is easier for the others to follow up for a while and then make a decision to approach. In contrast to empty tent, this generates a positive feedback loop and constant flow of visitors to participate in dialogue.

6 Interventions in Italy

6.1 First intervention in Italy

6.1.1 Description

The first field interventions in Italy took place in the summer of 2023, during the month of July. The intervention involved citizens and stakeholders of two Italian neighborhoods and their surrounding areas. The intervention consisted in informing citizens (with a relevant percentage of young people) about the existence, scope and aims of the project. We were able to reach a good audience, and to elicit discussions and innovative ideas about how to promote more sustainable behaviors and climate-friendly actions among the citizens in the neighborhoods, thanks to the concurrency of some independent public events that were taking place in the neighborhoods, which attracted a relevant number of citizens: these were a rock music festival organized by a local music school (Rome case study) and an independent art exhibition organized by local artists (Sardinia case study).

6.1.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The transformative learning idea behind the first intervention was based around the general concept that, to convey the project main message on the promotion of more sustainable behaviors and climate-friendly actions in real-life contexts such as citizen's neighborhoods, and to present the main features of the CleanCultures project, the chance of exploiting already existing artistic and musical initiative that were occurring spontaneously in the neighborhoods could represent a good opportunity to overcome the typical resistance barriers to persuasion that are frequently encountered in this circumstances: rather than calling for citizens' participation to an ad-hoc event, we preferred to reach citizens while they were already engaged in some emotionally and socially positive activities, such as listening to live music and attending art exhibitions and performances, which made the citizens more prone to receive the main project messages in an open and curious way.

6.1.3 Setting in Marco Simone (Rome metropolitan area)

The setting of the first field intervention for in Marco Simone involved citizens and stakeholders from the neighborhood and from other close areas (such as the Torraccia neighbourhood). The intervention took place on July 14th 2023, and consisted in informing citizens about the project scope and aims, with the purpose of eliciting discussions and innovative ideas on the possible sustainable and climate-friendly actions to be implemented in their own living contexts. The setting was a rock music event that took place in the Torraccia square, located near the case study area. We were able to exploit the contribution of music and the presence of a live rock music concert to disseminate the project ideas and the innovative thinking about sustainability and climate issues in the neighborhood. The intervention was also made possible thanks to the collaboration and support of a local music school and of a local music bar, and most importantly thanks to the kindness and enthusiasm of the rock bands that were playing during the event, which helped us to present to the public some of the key project-related messages to the audience, during the pauses between the different musical performances. This helped us to stimulate the public discussion around the Clean Cultures themes.

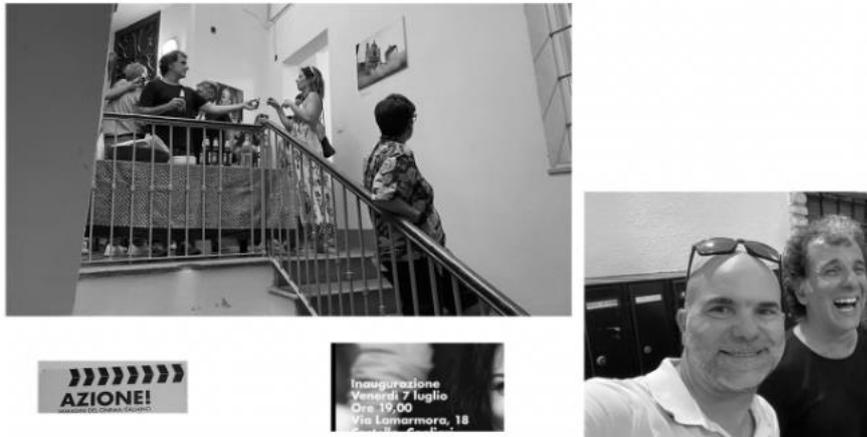
Figure 1: Selected pictures of the first intervention, Rome case study, July 14th 2023



6.1.4 Setting in Macomer (Sardinia)

The setting for the first field intervention in the Sardinia case study in Italy took place on Friday, July 7th 2023. The intervention involved citizens of Macomer and other towns, in Sardinia, and was also devoted to delivering to the citizens the basic information about the existence, scope and aims of the project. We were able to reach a relatively small but extremely committed audience. The intervention took place during an art exhibition and performance, which had the presence of some artists and a good number of general public. This gave us the possibility of discussing with citizens the innovative and provocative potential of visual and field art works, through the presence of the artists themselves. This helped us to elicit discussions and ideas about lifestyle changes and about the promotion of more sustainable behaviors and climate-friendly actions in the neighborhoods.

Figure 2: Selected pictures of the first intervention, Sardinia case study, July 7th 2023



6.1.5 Intervention results in Marco Simone (Rome metropolitan area)

About 30 people attended the first intervention event, from which we could gather some oral informal feedbacks (both during and after the intervention). The young people attending the music concert, (they were mostly adolescent and young adults) were all very positive about the main aims and scope of the CleanCultures project, and they were extremely concerned and sensitive to climate issues and environmental themes: they shared the most of the ideas at the basis of the CleanCultures project. Also, the musicians artists that were present at the event expressed their strong support on the initiative and also their belief about the positive role of art (and music in particular) to mobilize positive local action in the direction of sustainability, especially from local residents communities (young and older people) in peripheral and suburban neighborhoods, which are often pervaded by a sense of helplessness and low self-efficacy in relation to public initiatives related to climate and sustainability.

6.1.5.1 Content-related results

We list here the main contents emerged from the informal interviews we conducted:

- Climate change and sustainability are seen as important issues in the daily life of participants, but not necessarily linked to their personal direct experience: rather, they were perceived as important themes but as a product of young people pro-environmental values that are frequently triggered by the current education and media systems
- Sustainable transport was seen as one of the main problematic issue for the neighborhood, which emerges (with no surprise) as a particular barrier to sustainable lifestyle in areas such as the suburbs of Rome
- The presence of a big landfill and waste treatment plant in the territory of the Municipality of Guidonia is also perceived as a relevant theme in the informal discussions we had, in particular for what it concerns the relations and the power unbalances between center and peripheries of the Roman metropolitan area, and the consequences in terms of procedural justice and democracy.

6.1.5.2 Methodological results

From a methodological point of view, there was a great consensus about the use of music and other artistic events to trigger a mobilization of local communities and citizens around themes such as climate action and sustainable lifestyle in the neighborhoods. It was decided to continue along this methodology also in the forthcoming events that were planned for the autumn 2023 / winter 2024 period. The community-making power of music and musical events was also explicitly mentioned as one of the methodological strengths to be pointed out.

6.1.6 Intervention results in Macomer (Sardinia)

Around 40 people took part to the event. Oral informal feedbacks from the participants were collected during and after the intervention. All the comments we received were very positive. People attending the art exhibition were mostly adults and elder people, with some adolescent and young adults also present. The main messages conveyed by CleanCultures project were all extremely in line with the general feelings of the public.

6.1.6.1 Content-related results

The main contents emerged from the informal interviews we conducted are listed below:

- Climate change and sustainability are particularly present in the informal discourses of the participants, with a specific focus on summer heat waves and wild forest fires occurring during summer in the Mediterranean region; this aspect was probably also triggered by the specific timing of the intervention, as July is the hottest month in the Sardinian summer, with peak temperatures rising up to 48° at the end of July 2023
- The visual landscape impact of renewable energy generation, in particular for what it concerns the issue of wind power turbines was mentioned among the participants, and constitutes a conflictual theme of discussion
- The issue of waste management and household waste-to-energy treating plant was also present, as it has been a relevant theme in the civic discussion for the citizens of Macomer and other Sardinian towns, in relations to issues such as democratic processes, procedural justice and local participation, “NIMBYism” and top-down vs. bottom-up environmental policies.

6.1.6.2 Methodological results

As mentioned, the issue of climate and sustainability emerged from the discussion and was particularly endorsed by one of the artists present at the event, who is an active and well known figure in the Sardinian artistic community, especially for his works pertaining to the recycling of raw material and recovery of abandoned objects and sites. We discussed these issues directly with the artist and we planned to involve him in the ensuing interventions phases that were foreseen in October/November 2023 and February/March 2024. Among the possible methodological approaches we identified for example the organization of some demonstrative art-making workshops with the purpose of stimulating social participation and social inclusion of adults and children, and possibly also marginalized social groups, around the main themes of CLEANCultures.

6.2 Second intervention in Italy

6.2.1 Description

The second field interventions in Italy took place in the autumn 2023, during the month of October. The intervention involved citizens and stakeholders in the same neighborhoods and case study areas of the first interventions. A second round of citizens information activities was carried out, again with a particular focus on young people (e.g., adolescents and families) with the aim of communicating the main features and scope

of the project to the public. We were able to reach a good audience also in this second round, and we tried to stimulate the young citizens to reflect and generate ideas on sustainable lifestyle change and new climate-friendly habits in the neighborhoods. Also in this second round in one case we were advantaged by the concurrency of other public initiatives that were organized by other independent agencies in the neighborhoods, attracting a citizens and families, such as : a free open air movie projection organized by the municipality of Guidonia (Rome case study).

6.2.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The transformative learning intervention in the second round was based around the same general concept of the first round. In particular, we had again the chance of exploiting already existing initiatives (e.g., the open air movie projection and the music event) which were also coherent with the idea of organizing creative art laboratories with the presence of the local artists themselves, to convey the main meaning and aims of the project and to stimulate an informal learning setting without psychological and physical barriers, to create a more meaningful, open and curious citizens' participation.

6.2.3 Setting in Marco Simone (Rome metropolitan area)

The second field intervention for the Rome case study in Italy took place on Saturday, October 14th 2023. The intervention involved citizens and stakeholders of the Marco Simone neighborhood. For this second intervention, we took advantage of a small local entertainment event that was organized by a representative of the Municipal Council of the City of Guidonia, with the aim of promoting community awareness and civic involvement about the general needs of the neighborhood, and strengthening the dialogue between citizen and local institutions. The event consisted in the organization of a free open air movie projection for families and kids and the setting up of some open air market stands and small local artisanal exposition. The event was organized in a central area of the neighborhood, which is the most popular and lively shopping area there (see the picture 3 with the poster of the public initiative).



Figure 3: Facebook post and wall poster of the free open air movie projection in Guidonia

6.2.4 Setting in Macomer (Sardinia)

A second field intervention for the Sardinia case study in Italy took place on Friday, 20th and Saturday 21st of October 2023. The intervention involved citizens of Cagliari and Macomer. On the first day (Friday 20th) we presented the aims and scopes of the project through informal chatting and discussions with citizens, during an evening live music event in a public space in Cagliari, which usually hosts art exhibitions and other cultural events. The discussions were initially focused on the global context in which current lifestyle choices are shaped, and then we tried to make people reflect upon their local contexts, in order to elicit their spontaneous views on the promotion of more sustainable behaviors in the daily life, and climate-friendly actions in the neighborhoods. There was a good reaching of audience in terms of numbers of people, although the intervention was just focused on information providing, given also the particular nature of the event where the intervention took place. On the second day (Saturday 21st), the intervention was implemented in the Santa Maria neighborhood in the city of Macomer, and was based on involving citizens (mostly young adults and some elderly person) into a small informal art laboratory, both in an indoor and outdoor spaces (thanks to the collaboration of a local cooperative). Using the argument of the art laboratory (painting and engraving), we were able to talk about the project and its mission, and also we distributed the project flyers with energy tips (see picture 4). This second day of intervention reached less people in terms of numbers of citizens present, but was more focused in depth in the contents of the discussions and exchange of ideas with the participants, around the topic of sustainability needs and of the climate friendly transition of the neighborhood.

Figure 4: **CLEANCultures** flyers with energy-saving tips distributed to the public



6.2.5 Intervention result in Marco Simone (Rome metropolitan area)

The intervention reached the citizens that have gathered to participate to event, by contacting them and engage them in informal street chats. In particular, we gave a brief description of the CLEANCultures project, explaining its main goals and also trying to raise the citizen's awareness about the sustainability needs of the neighborhood. We also involved some adolescent and young kids of the neighborhood who helped us in the distribution of a small flyer (see figures 5 below) that summarized the main characteristics of CLEANCultures and also contained a list of easy tips to save energy at home.

Figure 5: Selected pictures of the Rome second case study intervention, October 14th

2023 (kids approaching participants and distributing the flyers)



6.2.5.1 Content-related results

In our interaction with the citizens, we focused on discussing three issues in particular, which are very sensitive for the neighborhoods of Marco Simone and Torracchia:

- increasing sustainable mobility and public transport,
- supporting the formation of energy communities and small-scale renewable energy production (e.g., PV panels in domestic roofs, etc.)
- sustainable management of household waste and sustainable consumption (introducing the basic concept of circular economy and zero-waste approach).

6.2.5.2 Methodological results

Overall, we reached a good audience (about 50 people), and we stimulated interesting discussions and also collected citizens' ideas for the promotion of sustainable lifestyles and climate-friendly initiatives in the neighborhood. We collected oral feedbacks from the participants during and after the intervention. In general, we received very positive comments about the CLEANcultures project, especially from young kids and families. Of course, it is very likely that the informal context of the event and the sunny day and warm temperatures of mid-October Central Italy have contributed to induce a positive mood in the people present at the event. However, we also collected some criticism about the current situation of some of the basic services and also the "low sustainability" of the neighborhood (such as the lack of properly managed and accessible green spaces, and the lack of affordable and efficient public transportation, particularly for what it concerns the commuting routes from the neighborhood to the center of Rome and vice versa).

6.2.6 Intervention result in Macomer (Sardinia)

The feedbacks obtained from the participants were again very positive. People attending the music event were mostly adults, middle age and relatively high income. The main messages conveyed by the CleanCultures project were well received, despite the particular carbon-intensive lifestyles that characterize this particular age cohort. In the second day, the issue of climate and sustainability was particularly endorsed by the young adults present at the art laboratory, thanks also to the live presence of the artist, who is active since long time in working around the topics of art performance and exhibitions to promote sustainability and low-carbon societal change. A selection of pictures from the events is displayed in Figure 6

Figure 6: Selected pictures of the second intervention, Sardinia case study, October 20-21, 2023 (evening music event and indoor and outdoor art workshops, with the presence of the artists)



6.2.6.1 Content-related results

The main contents emerged from the informal interviews were very similar to those emerging from the first round of intervention in Sardinia, perhaps also because the audience was partly overlapping, and also because of the particular geographical and cultural characteristics of Sardinian territory, characterized by a hot and dry southern Mediterranean climate.

- Climate change and global warming-related issues, such as summer heat waves and forest fires
- Procedural justice and local participation in cases of renewable energy power plants, such as inshore and offshore wind power turbines
- Circular economy and waste-to-energy power plants.

6.2.6.2 Methodological results

Climate change and sustainability were at the center of the discussion, both from the layperson present at the event also as a consequences of the stimuli presented by the local artists present. We decided to follow up with the same methodological approach that was defined in the first intervention round, and we found that the organization of the demonstrative art-making workshops were a good tool to enhance participation and curiosity of the people present, especially of the young adults. We also planned the inclusion of children and schools in the planned third round of the interventions, to be conducted in Winter-Spring 2024.

6.3 Third intervention in Italy

6.3.1 Description

The third field interventions in Italy took place between the months of December 2023 and March 2024. The intervention involved citizens and stakeholders of the neighbourhoods of Marco Simone and Torraccia (for the Guidonia-Rome case study) and of the Santa Maria neighbourhood (for the Macomer-Sardinia case study). The interventions were focused in involving the citizens and families of the neighbourhoods around the issue of the Clean Cultures project, trying to create a positive and pleasant atmosphere during the event, thanks to the ongoing activities that were set up on purpose during the intervention or that were already taking place in a public event that was already taking place during the intervention. We attracted a good audience, and were able to stimulate the discussions and proposals about how to transform the local neighbourhood in a more sustainable direction and in general on how to promote an sustainable effective lifestyle change in the daily lives of the citizens, in particular for the younger generations, including even small children

6.3.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The transformative learning process was reached mainly through the tool of the spontaneous and free art expression, thus trying to create an inclusive and pleasant atmosphere among the participating citizens, via the enjoyment of live music played by the fellows of a local music school in an outdoor setting (such as the “Sotto i Raggi del Sol” music school located in Torraccia, an urban area adjacent to the Marco Simone neighbourhood) and via the direct involvement in a creative laboratory for the creation of small art pieces made from recycled material art (in the case of the Santa Maria neighbourhood in Macomer). These artistic and musical initiatives made it possible to break the spontaneous barriers and reactance processes that public campaigns for sustainability typically encounter, as they were able to show to the citizens how sustainable lifestyles can be associated to pleasant and relaxed activities and only to personal sacrifice and discomfort. This allowed the citizens to associate the main project messages and the issue of sustainable lifestyle to a positive personal experience, and to stimulate the idea of looking for sustainable solutions in one’s own daily life in a more open and curious way.

6.3.3 Setting in Marco Simone (Rome metropolitan area)

The setting of the third intervention was the annual Christmas exhibition of the “Sotto i Raggi del Sol” music school located in Torraccia, and took place on December 17th 2023 (see figure 7 for a selection of pictures taken during the event). During the music exhibition, the Director of the music school and some of the school fellows alternated their presence on the stage playing their pieces, and conveyed to the public some project-related messages before or after their exhibition, on the basis of a prior briefing received by the research team. This format encountered a good feedback from the citizens present, and stimulated a good deal of reactions and discussions around the Clean Cultures themes.

Figure 7: Project presentation during the Music School Christmas exhibition at the Torraccia area adjacent to the Marco Simone neighbourhood



6.3.4 Setting in Macomer (Sardinia)

The physical setting of the third intervention in Macomer was the main headquarter of local cooperative that have collaborated to the project also in the second intervention (Cooperative Progetto H, with the coordination of the cooperative Soluzioni Professionali). The intervention took place on March 13th, 2024, and consisted in an art making laboratory, which involved the children of a local kindergarten located in the Santa Maria neighbourhood, close to the cooperative, as well as the teachers and the families. A well know local artist,

Davide Volponi, coordinated the art laboratory. The intervention also saw the participation of the local authorities, such as the major of Macomer, Hon. Riccardo Uda, and the leaders of the cooperative. The event had a remarkable echo also in the regional and local media (see Figure 8).

Figure 8: Newspaper article on local authorities and local artist present at the third intervention in Macomer



The laboratory was titled “Little crabs”. Using old, obsolete and abandoned round fence posts , which were previously sliced and sectioned by the artist, the little kids created an object in the shape of a baby crab. The workshop consisted of a few steps, although some of them were skipped to facilitate the children’s work: 1) The claws were nothing more than dried pieces of reeds that were retrieved from a local beach and given to the young participants in the first phase of the workshop using a treasure hunt; 2) The found pieces were then be forged and assembled together with the round pieces of the poles with the help of hot glue and vinyl glue; 3) Acrylic paint was then used to prime and color the assembled pieces orange; 4) Once they are dry, a protective scented wax will then be applied to them and with a permanent marker the eyes will then be drawn on (see figure 9). After the assembling of the little crabs, each kid was asked to fill a form (with the Clean Cultures logo) which represented the Identity Document of the crab, assigning it a name and taking it home as a souvenir, with the task of taking care of the crab they had created (see figure 10).

Figure 9: Kids working at the art laboratory at the third intervention in Macomer



Figure 10: ID card of the crabs that the kids had to fill in to assign a name to their own art object creation

HO PRESO UN GRANCHIO

Progetto II PI - Solida
C'pan C'ci' C'ri' C'ra'

DOCUMENTO UFFICIALE DI IDENTITA'

Granchetto Numero :

Nome :

Cognome :

Data di nascita : 13. Marzo 2024

Segni particolari :

Dove vorresti che ti accompagnasse :

Il genitore :

Lo zio
Davide Volparsi

Macomer - Cooperativa Progetto II 13.05.2024

6.3.5 Intervention results in Marco Simone (Rome metropolitan area)

A remarkable quantity of citizens attended the event (about 50 people), which can be taken as a positive sign, even if the main focus of the event was not the project itself but rather the music exhibition. However, it is important to remark that the music school was enthusiastic since the beginning in offering its collaboration to present the project features and scope during the event. This enthusiasm emerged from the feedbacks and evaluations that we could gather during and after the event, both from the senior personnel of the music school who was organizing the event, the young adults and adolescents who attended the music concert (either as performers or as spectators), and from the families living in the neighborhood. All the feedbacks were extremely positive and participants seemed very sensitive to climate issues and environmental themes.

6.3.5.1 Content-related results

In terms of contents emerging from the informal feedbacks and answers that were gathered from the participants, we detected some similar trends that were already present in the first two interventions and also some new thematical areas, which we summarize before. The reason for this is probably related to the impact of a massive program of public works intervention that occurred in the neighbourhood surroundings between summer and autumn 2023, in relation to a major international sport event that was held in the local golf court (The Ryder Cup 2023), and that were not finished at the time of the first and second interventions:

- The issue of sustainable public transportation and motorized vehicles infrastructure emerged more significantly compared to the first and second interventions;
- The issue of energy communities and domestic renewable energy production, and the related bureaucratic difficulties for individuals and families emerged, in continuity with the first and second interventions;
- The issue of NIMBYism in relation to the local waste management treatment plant, and the ingroup-outgroup discussion about the management of the domestic waste between the different municipalities of Roma and Guidonia was detected, as a new relevant theme compared to the first and second interventions.

6.3.5.2 Methodological results

Actually, from a methodological point of view, there not particularly new elements that emerged as significantly different in comparison with the first and second interventions. However, it is interesting to remark also the continuity that we were able to detect in terms of participation and enthusiasm fro all the stakeholders involved in the vent both at an individual level, as well as the collective and institutional levels. The informal and pleasant contexts represented by the music exhibition, despite the rigid temperatures of the central Italian December were a good tool to attract participants and convey the main project messages to the people, who were probably already in a positive mood also because of the forthcoming Christmas festivities. Compared to the previous interventions, less expression of criticism towards the local institutions were indeed detected, which may be, at least partly, attributed to the positive messages that were presented during the event.

6.3.6 Intervention results in Macomer (Sardinia)

The laboratory was a great success and all the kids showed great enthusiasm and remarkable skills in performing he production of the little art works. However, the manual activities were just a tool for leading the kids to reflect on various issues related to sustainability and lifestyles. The informal and friendly interventions of the Major and the artist gradually lead the kids to reflect (in an appropriate way for their age) on the main issues of the Clean culture project. After the laboratory, the kids and the families present were also lead to visit a sustainable hydroponic greenhouse (low- water and energy consumption greenhouse), managed by the cooperative, where strawberries are grown. This was the occasion to introduce the kids to further sustainable themes (see picture 11).

Figure 11: Kids and families visiting the hydroponic greenhouse of the cooperative



6.3.6.1 Content-related results

In terms of contents, the laboratory was able to stimulate the children the teachers and the families on three main topics, related to the art workshop's activities and to the CleanCultures project more in general, such as:

- Circular economy and recycling, thanks to the workshop's activities of collecting small woods and waste on the local beach and assembling them to create a new object from waste.
- Biodiversity protection, thanks to the issue of the little crabs, which was the occasion to make the kids reflect on issues such as about ecosystem's balance, endangered species, invasive species and climate change.

- Global warming, climate change and sustainable food production and consumption, thanks to the visit to the hydroponic greenhouse.

6.3.6.2 Methodological results

Clearly, from a methodological point of view, the third intervention implied a higher level of challenge to the project because of the involvement of the small children in the environmental educational activities, thus requiring a number of additional precautions compared to the normal interventions with adults. However, such challenges were brilliantly overcome thanks to the collaboration of the school and the staff (school principal, teachers and families) and thanks to the collaboration of the local institutions (the Municipality of Macomer and its Major) and of the local partner cooperatives. This synergies made it possible to deliver a very fruitful intervention which made us able to address a wide range of topics related to sustainability and transition to sustainable lifestyle in the neighbourhood context, which is in line with the main aim and scope of the Clean Cultures project.

7 Interventions in Norway

7.1 First Intervention in Myrsletta (Norway, urban case)

7.1.1 Description

The first intervention in Myrsletta was arranged as a probing event in Myrsletta in the form of a group interview. Before this, we had carried out a number of separate interviews with the leader of the co-ownership board. From this, we knew that the co-ownership board had started to look into the building of new garages as this part of the building stock was run down. We had also carried out a questionnaire that had been shared with the residents prior to this. In order to increase the reply rate for the questionnaire we had also hired local youth who live in the neighborhood to knock on doors. These activities worked as a warm-up for our group interview and offered us a good understanding of the neighborhood and its residents. Hence, when planning for the probing intervention we already knew that there was a need for improvement of the building stock at large and that public transport was not considered ultimate by the residents. We also knew that 80% of the respondents had higher education and that Myrsletta is a relatively close-knit society. Also, we knew that we had no climate-sceptics amongst the respondents.

7.1.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The choice to arrange a probing event in the form of a group interview with local stakeholders discussing what is important to them directly aligns with Transformative Learning Theory, as conceptualized by Mezirow. By creating an environment where stakeholders can share their perspectives, the workshop encourages critical reflection on existing frames of reference—such as cultural norms, belief systems, and habits of mind. When participants are exposed to diverse points of view and challenged to consider different interpretations, they may experience a disorienting dilemma, which is essential for transformative learning. This discomfort prompts them to critically examine their assumptions, leading to shifts in their perspectives and potentially transforming their approach to community issues.

Moreover, the workshop setting promotes open dialogue and the exploration of new ways of thinking, crucial elements of Transformative Learning Theory. As stakeholders critically reflect on the issues they deem important, they engage in a transformative process that may ultimately change their understanding of their roles within the community.

In terms of collective efficacy, such workshops serve as a platform to build group cohesion and shared responsibility. By encouraging dialogue, workshops enable stakeholders to realize that their concerns and goals are often interconnected. The discussions foster a shared belief in the group's ability to enact change, reinforcing their collective efficacy. As they work collaboratively on community initiatives, stakeholders develop

confidence in their combined capabilities, thus empowering them to take coordinated action towards achieving their goals.

7.1.3 Setting

With the help of the board leader, we arranged a group interview in March 2022. We had invited anyone who was interested via the board who sent out an email. In addition, the event was announced on the co-ownerships facebook group. We used the neighborhood activity house for the event. Having access to the neighborhood activity house, "Grendahuset", meant that the residents would be in a – for them – familiar and safe setting. The group interview was semi-structured, and the leader of the board also participated. Coffee and cookies was served during the interview.

A total of 7 (6 males and one female) residents showed up and the group interview was audio recorded. The leader of the co-ownership took part in the discussions. The interview was carried out by using a semi-structured interview guide, which evolved around the topic of climate change and their existing engagement and interests amongst them. We also discussed the future and what changes they would be interested in.

7.1.4 Intervention result

This probing intervention allowed us to identify mobility as a topic of interest. We found that Myrsletta is a very car-dependent neighbourhood where it is not uncommon for a household to have 2, and even up to 5 cars per household. We found that there is a will to use more collective transport and non-motorised means such as bikes and e-bikes. Some of the youth also use e-scooters. We found that safety when biking and walking was a concern, especially when getting kids to school and improved marking of bike paths was suggested by participants. We also found that new garages are being discussed and that a process of achieving a building permit was in process. Even a proposal of mounting solar collectors on the new garages was discussed. The new garages would enable e-car chargers to be implemented. An interest in car sharing was discussed, but it seemed that this would probably be replacing car #2 rather than all private cars. Better bus connections were also discussed and especially the frequency and time-table of buses was a hot topic. The group also discussed the possibility to commute by train and public transport. We managed to form a joint ambition during this probing event and an ambition started to take form. The neighborhood wanted to have a continual growing of ambitions together with the project. One result of the probing intervention was that a local school actually joined the municipality's campaign "to school by foot" and we decided that we should have some kind of event focusing on mobility and that the Mobility week, that was to be arranged by Nordre Follo Municipality in September 2022 would be an excellent opportunity for a second intervention.

7.1.4.1 Content-related results

The probing intervention revealed that Myrsletta is a car-dependent neighborhood, with households often owning multiple vehicles. Despite this, many residents showed interest in shifting toward collective and non-motorized transportation, like biking, e-bikes, and e-scooters. Safety concerns, particularly around biking and walking routes for children, were a major topic, leading to suggestions for better-marked bike paths. Conversations also covered improving bus services, car-sharing to reduce secondary cars, and incorporating sustainability into new garages with solar collectors and e-car chargers. This process sparked a growing collective ambition to rethink local mobility, demonstrated by the local school joining a campaign to promote walking to school and plans to participate in Mobility Week.

7.1.4.2 Methodological results

Methodologically, this intervention successfully brought the community together, fostering a sense of shared purpose. It enabled residents to reflect on their mobility habits and envision change collectively. The discussions helped build a sense of agency, with participants recognizing that, together, they could influence and shape the neighborhood's future mobility solutions. This collective engagement strengthened their belief in their ability to enact meaningful, sustainable change.

7.2 Second intervention in Myrsletta (Norway, urban case)

7.2.1 Description

As a second intervention, we arranged “Myrsletta mobility day”. September 22, 2022. This event was co-arranged with the Municipality who sponsored a free bike-repair workshop. A car-sharing solution was presented by a local business who were interested in setting up some cars for sharing in Myrsletta. Local media was invited and reported from the event. The researcher presented the results from the questionnaire and the probing group interview in plenum and had several spontaneous conversations with residents during the whole event. A drawing competition was arranged for all the children with the theme “Future mobility”. The winners were awarded and announced via the co-ownerships Facebook-page. The sun was shining and turnout was more than 100 persons. Coffee, lighter catering and candy was also served during the event.



7.2.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

A public open day featuring free bike repairs, showcasing a car-sharing solution, and hosting a drawing competition for children aligns with both Transformative Learning Theory and the concept of collective efficacy.

From the perspective of Transformative Learning Theory, the event introduces participants to alternative transportation options, challenging existing beliefs about the necessity of car ownership and reliance on traditional forms of transportation. By providing experiences like bike repairs and demonstrating the convenience of car-sharing, the event encourages critical reflection, prompting individuals to reconsider their habits of mind and assumptions about commuting and sustainability. The drawing competition invites children to imagine future mobility solutions, fostering creativity and encouraging adults to expand their own perspectives by considering these imaginative ideas. These new experiences and opportunities for reflection can lead to a transformation in how participants view mobility and sustainability.

In terms of collective efficacy, the open day cultivates a sense of shared responsibility and belief in the community's ability to achieve sustainable mobility. By offering accessible ways to engage—such as free bike repairs and showcasing car-sharing—the event provides positive experiences that build confidence in the community's collective capabilities. Seeing community members, role models, and leaders actively promoting sustainable practices strengthens group cohesion and inspires others to participate. The inclusion of children in envisioning future solutions reinforces intergenerational involvement, highlighting that everyone has a role in shaping the future of mobility. This enhances the sense of empowerment and belief in the collective capacity to make a difference.

7.2.3 Setting

Again, the setting was in and now also around the neighborhood activity house. Just outside of the neighborhood house there is a football court which was used for the bike repairs. The car-sharing business was parked just outside the entrance of the activity house. The sun was shining and turnout was more than

100 persons. Coffee, lighter catering and candy was also served during the event. The drawing competition and presentation of results from the questionnaire was carried out inside the activity house where PA was As mentioned, the event was co-arranged with the Municipality who sponsored a free bike-repair workshop. A car-sharing solution was presented by a local business who were interested in setting up some cars for sharing in Myrsletta. Local media was invited and reported from the event. The researcher presented the results from the questionnaire and the probing group interview in plenum and had several spontaneous conversations with residents during the whole event. A drawing competition was arranged for all the children with the theme "Future mobility". The winners were awarded and announced via the co-ownerships Facebook-page. The sun was shining and turnout was more than 100 persons. Coffee, lighter catering and candy was also served during the event.

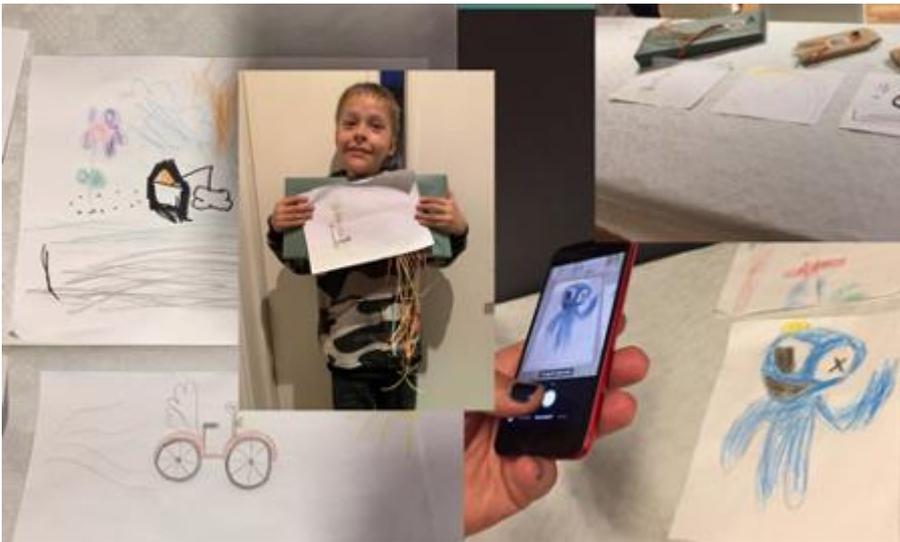
7.2.4 Intervention result

The intervention emanated in a new ambition to cut down personal cars with 50% in the neighborhood. This ambition was also reported in local media who did a piece on the project.



The image shows a screenshot of a Facebook post. At the top, the profile picture and name 'Stort og smått på Myrsletta' are visible. The post is by 'Christopher Sogge Røtnes', a Moderator, dated '24 september kl. 08:36'. The text of the post discusses a local article in 'OBLAD' about environmental plans for a neighborhood, mentioning a large parking lot and the need for alternatives. Below the text is a video thumbnail showing a man in a light blue hoodie pointing towards a residential area, with a woman in a dark jacket standing next to him. The video title is '(+) Nabolag i Ski tar miljøet på alvor – vil halvere bilparken' and the description starts with 'På Myrsletta i Ski bor det mange mennesker og bilparken er stor. Det jobb...'. There is an information icon (i) in the bottom right corner of the video thumbnail.

Also, the plan to mount solar collectors on the planned new garages was solidified. There was a great interest in replacing car #2 with an electric car-sharing option, but there was also a bit of worry for the lack of parking lots in the neighborhood. A problem closely related to the fact that many households have more than 2 cars (even up to 5).



7.2.4.1 Content-related results

The intervention sparked a new ambition in the neighborhood: to cut personal car ownership by 50%. This goal not only brought the community together but also gained local media attention, helping to inspire broader support. The plan to install solar collectors on the new garages became more concrete, and there was significant interest in replacing second cars with an electric car-sharing option. However, concerns about parking remained, particularly given the prevalence of households owning multiple cars.

7.2.4.2 Methodological results

Methodologically, the intervention successfully united residents around a shared vision for sustainable mobility. The media coverage amplified this collective goal, fostering a sense of pride and motivation. The open discussions around car-sharing, solar energy, and parking challenges enhanced a sense of community agency. This process built collective efficacy, showing residents that, together, they could meaningfully transform their neighborhood's approach to mobility and sustainability.

7.3 Third intervention in Myrsletta (Norway, urban case)

7.3.1 Description

Due to the success of our first intervention event "Myrsletta Mobility Day", we agreed with the co-ownership board to offer free bike-repairs and service for all residents again. The project arranged "Myrsletta Environmental Day" on March 24th, 2023. Also, the drawing competition from the mobility day was highly appreciated, and we decided to include a version of this as well. This time, we decided that everyone would be winners, and both children and adults took part. Amongst other ideas, the drawing event resulted in a concept called "the Myrsletta Environmental Crocodile" which is driven entirely by renewable energy (please see photo). We offered refreshments, sandwiches, and cookies and, also, chocolate for everyone who participated in the drawing exercise. We also decided to invite people from nearby neighborhoods, making this event more inclusive. This second intervention was named "Myrsletta Environmental Day" because we wanted to have a more holistic approach to the mobility issue and to include also other environmental aspects into the discussions. To strengthen this holistic approach we invited local politicians, who took part in active discussions with the participants. The researcher also took part in these discussions and made notes on what was said. A hot topic was the process of building new garages and some of the obstacles that had risen along the way. An environmental dance performance by one of the neighborhood children was also given. This was a nice experience and contributed to a more neighborly and informal setting.



7.3.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

To arrange the third intervention in a similar way as the second, with yet another free bike repair event and drawings of the future of Myrselatta and add discussions with local politicians, researchers, and discussions with attendees, aligns well with both Transformative Learning Theory and collective efficacy. This event provided an opportunity for participants to engage with new perspectives on transportation and urban planning. The presence of local politicians and researchers encouraged critical reflection on existing beliefs about mobility, offering participants insights into institutional possibilities for change. Such reflection is key to transformative learning, as it challenges established habits of mind and fosters new ways of understanding neighborhood transportation.

In terms of collective efficacy, inviting local politicians strengthened the community's sense of agency by providing a direct channel for influencing policy. The engagement with researchers offered evidence-based insights, enhancing confidence in proposed mobility solutions. The event fostered a sense of shared responsibility and collective capacity, as community members, experts, and decision-makers came together with the common goal of reimagining future neighborhood mobility.

7.3.3 Setting

Again, we used the neighborhood activity house and offered both cake, coffee, soft drinks, and candy. Even though it was a rainy day, more than 60 people showed up. Again, we offered free bike-repairs, but the provider (a local sports shop) wanted to sponsor the event and did not want to take any payment from us. To our understanding, this speaks to the high level of engagement and shows that we have managed to support and solidify local engagement. The overall mood during the whole event was very positive and optimistic.

7.3.4 Intervention result

During this intervention it was clear that we had been “adopted” as a natural part of the neighborhood and the researcher had many informal discussions with residents, both separate ones and in spontaneously formed groups during mingling. The discussions were largely focused on the neighborhoods’ plans to build new garages, and some perceived hindrances for this process to be successful: Amongst others, the following topics were covered:

- Building permits and the municipality administrations slow timeline for providing this
- The “risk” of the neighborhood becoming a cultural/architectural heritage which would limit the possibility to build new garages

- The problem with some illegal property extensions (made by the municipality) that are now blocking the new garages
- The installation of EV chargers in the new garages

In addition to discussions about the garages, the following discussions were present:

- The number of bus departures and the (high) prices for using public transport
- Installation of solar cells on the neighborhood communal house to power joint neighborhood functions (lighting etc.)



In addition to taking part in the discussions with the residents – with or without the local politicians – the researcher made short individual interviews whenever the opportunity rose. A total of 6 persons were interviewed. From these interviews, it was clear that many residents are considering making positive changes regarding their everyday mobility:

- A car-pool solution is being seriously considered as an option, even though the latest general assembly voted this suggestion down due to lack of neighborhood parking spaces
- Considering selling car nr 2, and replacing it with the car-pool, which would actually free space for neighborhood parking
- Considering replacing the family car nr 1 and/or nr 2 with an electric one once the new garages (and chargers) are in place

In addition to bike-repairs, drawing exercises and discussions with local politicians and the project researcher, a young resident (girl, 11 years) danced for us all inside the communal house. The dance functioned as a perfect framing for the discussions and drawing activities and added a different dimension to the “Myrsletta Environmental Day”.

A short survey was used to get feedback on the event. We received 23 answers to this survey. Among these, the survey showed that:

- over 78% of the participants had taken part in, or heard of, the previous Clean Cultures intervention at Myrsletta.
- 75% are interested in using a bicycle or other non-motorized transport modes for short-distance mobility more than they do today.
- 87% are considering transitioning from a gas/diesel driven car to an EV.
- 39% would be willing to test a car-pool or car-sharing solution if offered.

- 52% are interested in using more public transport in their everyday life
- 43% agree that the total number of private cars in the neighborhood should be less than today.
- 17% agree that it is important to get EV-chargers installed in the neighborhood.
- 26 support the installation of solar cells on the neighborhood communal house to power joint neighborhood functions.

We also had a voluntary open feedback question as part of the survey, and 35 % used the opportunity to give us their open feedback. The comments were overwhelmingly positive, and it is clear we have managed to do something good here:

«It's things like this that makes Myrsletta a great place to live. »

« The researcher from NTNU was very skilled and provided a good fundament for the arrangement. »

« a super initiative, and so great to be able to bring the kids along. »

« SUPER! Likes it! More like this! »

7.3.4.1 Content-related results

During this intervention, it became clear that the neighborhood had “adopted” the project, with the researcher naturally integrated into the community. Informal discussions during mingling focused on the challenges of building new garages—such as slow municipal permits, risks of heritage restrictions, and illegal property extensions—as well as broader sustainability topics, including installing EV chargers and solar cells on community buildings. Conversations also touched on improving public transport, and many residents expressed growing interest in reducing car usage, considering car pools, and switching to electric vehicles.

The survey results confirmed this shift: many participants were interested in using non-motorized transport, public transport, and reducing the number of private cars. There was a strong willingness to explore more sustainable options. The intervention also featured a local 11-year-old girl's dance, which brought warmth and community spirit to the event.

7.3.4.2 Methodological results

Methodologically, the intervention was successful in building trust and a sense of collective purpose. The researcher was embraced by the community, leading to open dialogue on neighborhood challenges. The survey feedback was overwhelmingly positive, emphasizing the value of the event in bringing residents together, fostering a collective ambition for a more sustainable neighborhood, and making participants feel empowered to act collectively.

7.4 First intervention in Driva (Norway, rural case)

7.4.1 Description

An initial probing event was carried out in November, 2021. With the support of Oppdal Municipality, a total of 5 interviews with local businesses were arranged. The researcher has rented a car to enable transport between the different locations in Driva. All these interviews were audio recorded. In addition, a group interview with a local group called “Oase-gruppen” (the Oasis group) was carried out. The total number of participants was 6 in addition to the researcher. This interview was also been set up in collaboration with Oppdal Municipality. For the group interview we used a room in the local school. This was very convenient as everyone in Driva knows this location, and most have a personal relationship to it. Coffee and cookies was served during the group interview, which was audio recorded. After the group interview, an informal spontaneous discussion with the school personnel was carried out in the school lunch room. Participating were the school headmaster

(female), two teachers (female) and a genitor (male). This was not audio recorded as it was not a planned event.

All these interviews were carried out using a semi-structured interview guide, which evolved around the topic of climate change and their existing engagement and interests amongst them. We also discussed the future and what changes they would be interested in.

The community has several key concerns and priorities. Firstly, mobility is a significant issue, particularly the impact of the new E6 road through the valley. There is a pressing need to enhance safety for pedestrians and cyclists, ensuring that walking and biking are safer and more accessible options.

In terms of local business versus centralization, there is resistance to the trend of small, local businesses being pushed aside in favor of larger, centralized enterprises. This shift has sparked criticism of local policymakers for permitting such changes. The planned fish farm offers a counter-narrative by providing new job opportunities and promoting a sustainable, locally-based business model. Additionally, there are concerns about the environmental aspects of centralization, particularly the perceived lack of understanding and fairness from people living in cities.

When considering the future and children, there is a strong emphasis on the benefits of local food production and the value of arts and crafts. Supporting local fairs is seen as a way to nurture these cultural aspects. The community is also focused on educating children about recycling and preserving local heritage, highlighting the importance of passing down these values to the next generation.

Local food production, especially of sheep and potatoes, faces misunderstandings about its benefits. There are logistical challenges, such as the need for transportation for livestock. While electric cars are considered, they are not seen as a fully reliable option due to the local climate, though they are not outright rejected and could serve as a secondary vehicle. Ensuring food supply during crises is also a concern.

Regarding climate change, the community has mixed views. While floods are a long-standing occurrence and is not considered as a major concern for many, there is worry about the loss of local flora and fauna, including endangered species like the Svartkurle orchid. The community is interested in sustainable tourism, preferring that returning tourists become permanent residents. Further, there is notable dissatisfaction with the collective transport system, and opinions on climate change are varied, with a relatively large amount of people are skeptical about the human impact on the climate.

7.4.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The home visits with interviews and the subsequent workshop with locals in a rural community align closely with both Transformative Learning Theory and collective efficacy. The personal interviews provided an intimate setting for residents to reflect on their beliefs about climate change and environmental issues, bringing to light deeply rooted habits shaped by cultural and social contexts. The workshop then built on this by creating a space for collective reflection, where community members could share their perspectives and consider new ideas, challenging their existing viewpoints and fostering potential transformation in their attitudes toward sustainability.

The process also enhanced collective efficacy. The home visits helped establish trust and understanding among residents, while the workshop facilitated open dialogue and collaboration. By discussing environmental issues that affect their community directly, participants developed a sense of shared responsibility and the belief that, together, they could take effective action. This strengthened the community's collective sense of agency and their motivation to address local environmental challenges collaboratively.

7.4.3 Intervention result

7.4.3.1 Content-related results

The probing event revealed several key concerns for the community, particularly around mobility, local business, cultural heritage, and environmental sustainability. The new E6 road raised worries about pedestrian and cyclist safety, and residents voiced resistance to the centralization of businesses, favoring local

enterprises instead. The planned fish farm was a bright spot, seen as a sustainable source of jobs. Preserving local culture was also a major theme, with residents valuing local food production, arts and crafts, and teaching children about sustainability. Although there were mixed opinions on climate change, many were concerned about the loss of local flora and fauna and saw the potential for sustainable tourism. Issues like unreliable public transport and doubts about electric cars due to the local climate were also discussed.

7.4.3.2 Methodological results

Methodologically, the event effectively created space for residents to share their varied perspectives openly. Conversations ranged from skepticism about climate change to frustrations with business centralization, fostering critical reflection and deeper understanding. This process helped build collective efficacy, reinforcing the community's belief that they could address these issues together and make a positive impact. It provided an opportunity for residents to articulate shared goals, strengthening their sense of collective responsibility and agency in shaping their future.

7.5 Second intervention in Driva (Norway, rural case)

CLEANCultures held the second intervention in Driva as part of the annual festival Fjell & Fårikål, on October 7-8, 2022: We had hired an improvisation theatre group who made an intervention during the Mayors festival introduction speech. We interacted with people as part of the festival through the improvisation theatre group, both as part of our joint exhibit festival stand which we shared with Oppdal Municipality (who are case partners) and næringsshagen, who support local businesses and who are also case partners. In addition, we did ambulating contact work with and without the help of the Improvisation Theatre group.

7.5.1 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The intervention at a local festival in a rural area, featuring improv theatre followed by a joint stand with the municipality and a local business incubator, aligns with both Transformative Learning Theory and collective efficacy. The improv theatre creatively presented community and environmental issues, encouraging festival-goers to see familiar challenges from new perspectives. By engaging people in this unexpected way, the performance invited reflection and opened the possibility for shifts in their thinking about sustainability.

The joint stand, co-organized with the municipality and local business incubator, demonstrated the power of collaboration. Seeing these institutions working together showed residents that local change is possible when community members, businesses, and government join forces. This strengthened their collective belief in the community's ability to address shared challenges, enhancing their sense of agency and willingness to act together for the future.

7.5.2 Setting

The setting for the intervention was the Fjell & Fårikål festival which was held in the center part of Oppdal, including official buildings such as the Culture House, also utilising public outdoor areas. The festival offered a festive arena for our activities, and people were generally in a good mood during the festival. Local food was served in different settings, and also local products were on sale as part of exhibits that were open for the festival participants. We had a joint stand together with Oppdal Municipality and Næringsshagen.

7.5.3 Intervention result

At the festival, we kicked things off with an intervention designed to serve both as a discussion-starter and a teaser. During the Mayor's introduction speech for the festival, the Improv group intervened and involved the Mayor in public discussions on sustainability. They also announced Clean Cultures' presence at the festival and encouraged people to come talk to us in a stand we had set up together with Oppdal Municipality and Næringsshagen. We had made our stand highly interactive with various elements like roll-ups and pictures to engage the attendees. This not only helped market the project but also strengthened local engagement by encouraging participation. In addition to the initial improv-stunt, the performers played a crucial role in communicating the project's outcomes and gathering interest from local residents and businesses for the

project's continuation. The performers recruited people to our stand, and gathered interested people for further engagement in Clean Cultures.

While there were attendees from outside Driva at the festival, we focused on recruiting local people, aiming to foster a deeper community connection. We also used this opportunity to network with other exhibitors, particularly local businesses, enhancing our outreach. The interactive improv stunt, led by Improfanteriet, was particularly well-received, generating a lot of laughter and positive energy. The researcher managed to film part of this performance for the project's documentation. Given the success, there was talk of organizing another improv event, potentially even more localized within Driva.

The discussions during the festival helped narrow the focus of the project in Driva. Discussions were mainly focused on the future of mountain agriculture and the crucial role it plays in our society. There was a strong emphasis on the need to "take back the mountains" and highlight how farmers are actually climate heroes. By managing land sustainably, capturing carbon, maintaining the landscape, and reducing transportation needs, farmers contribute significantly to environmental preservation. This is something that the residents of Driva would like to communicate to the outer world.

Further, Driva residents expressed a desire to shift the narrative from climate shame to climate pride, highlighting the positive impact of mountain agriculture. A key part of the discussion was defining what it means to be a mountain farmer and outlining their contributions to the future. The goal is to increase awareness about locally produced food and support it as a positive climate action.

A will to challenge current metrics and policies that often unfairly disadvantage farmers and non-urban areas, such as the concept of area neutrality was a recurring theme of conversation. Living in harmony with nature and using its resources sustainably is seen as a valuable practice. Further, there is a collective wish in Driva to make an effort to break away from the negative "villain" label that farmers have received in the media.

It's important to note the limited use of land for agriculture in Norway—only about 3%—and how few people are involved in ensuring we have locally produced food. This contributes to the country's preparedness and self-sufficiency, allowing people to live off and with nature. The discussions also highlighted the potential for local businesses to supply food, emphasizing the benefits this brings.

7.5.3.1 Content-related results

At the festival, the intervention centered around using improv theatre to engage the community and spark discussions on sustainability. The improv group involved the Mayor in a public conversation about these issues during their opening speech, bringing humor and spontaneity to the event, which resonated well with attendees. This interactive approach, along with an engaging stand set up in collaboration with the municipality and local business incubator, successfully drew interest from festival-goers, particularly local residents and businesses. It provided an opportunity for the community to explore the project, share ideas, and even recruit more participants for the continuation of Clean Cultures.

Content-wise, the discussions focused on the importance of mountain agriculture and the role of farmers in sustainability. The community wanted to change the narrative from "climate shame" to "climate pride," highlighting farmers as climate heroes who sustain the landscape and contribute positively to the environment. There was also a strong emphasis on supporting local food production and challenging policies that disadvantage rural communities. Residents expressed a collective desire to "take back the mountains" and communicate the importance of their work to the broader public.

7.5.3.2 Methodological results

Methodologically, the intervention fostered a sense of unity and empowerment within the community. By engaging residents in meaningful conversations through accessible and fun mediums like improv, the event built trust and sparked a collective ambition. This approach strengthened collective efficacy by reinforcing the community's belief in their power to influence perceptions and advocate for sustainable practices, creating a sense of shared agency for future initiatives.



7.6 Third intervention in Driva (Norway, rural case)

7.6.1 Description

After the second intervention in Driva, it had become clear that the project needed to narrow the focus. Mountain farmers and farming had crystallised as a main topic, and we followed up with meetings and discussions with Oppdal Municipality on where the project should go next. We landed on arranging an intervention that narrowed down the focus to themes such as local food production and the role of mountain farmers. With this new and more narrow focus, we decided to design an intervention that would involve those who are stakeholders in Drivas main development as a neighborhood, and especially focus on the local (mountain) farmers. The Oasis group was a given participant as these had been part of the initial discussions. We also decided to invite the local Agricultural Council (Landbruksrådet). The interventions we arranged was to hold two separate lunch/dinner workshops with participants from these two organisations. The interventions were co-arranged with Oppdal Municipality and took place at a local hotel and restaurant. Local food was served, followed by a workshop discussion. The discussion followed a semi-structured interview guide.

A workshop with the local Agricultural Council was held on Monday June 3rd, 2024 (10 persons) .

A workshop with the OASIS group was held on Tuesday June 4rd, 2024 (9 persons).

Both groups consisted of locals from Driva, and many were themselves (mountain) farmers.

and in taking care of nature, but also provided a solid ground for further cooperation.

7.6.2 How does the design of the intervention respond to transformative learning theory and/or enhance collective efficacy?

The two group lunches featuring local food with farmers and stakeholders, combined with an interview tour on the mountain with local farmers, relate strongly to both Transformative Learning Theory and collective efficacy. Sharing meals created a relaxed setting where people could engage directly with local farmers, sparking conversations that encouraged participants to reflect on their assumptions about food production and sustainability. The tour on the mountain offered an immersive experience, allowing people to see firsthand the challenges and realities of mountain farming. This kind of direct engagement challenged existing beliefs and fostered a deeper understanding of the connections between local agriculture, environment, and community resilience.

These gatherings also bolstered collective efficacy by fostering a sense of community and shared purpose. Connecting with local farmers and discussing issues around their tables and on the mountain built trust and unity among participants. Experiencing these challenges together made the community feel more empowered, reinforcing their belief in their collective capacity to address agricultural and sustainability issues collaboratively.

7.6.3 Setting

The setting for our third intervention was a local hotel in central Oppdal. This hotel has a restaurant that serves local foods, and we arranged two combined lunches and workshops with relevant stakeholders. The setting provided a safe and familiar place for the participants, and the serving of local food was highly appreciated.

7.6.4 Intervention result

The discussions were at times emotional, as many farmers feel misunderstood and misrepresented in the media. Focus was on how to turn the negative identity that (mountain) farmers feel they have been assigned and show how they work. There was a clear consensus amongst the participants of both groups on the need to distance the mountain farmers work to that of large industrial-scale farming. After these lunches, the researcher (EL) was invited to visit 5 different farmers to be able to see how the farmers work. These visits ended up becoming study visits with 4 farmers on their farms, as well as going up on the mountain together with one farmer to visit the sheep who were on their “summer grazing”.

The visits not only solidified the impression from the discussions of how engaged the (mountain) farmers actually are in sustainability.

7.6.4.1 Content-related results

After the second intervention in Driva, it became clear that the project needed to narrow its focus, and mountain farming emerged as the central theme. To build on this, two lunch workshops were held with key stakeholders—the Oasis group and the local Agricultural Council—both consisting of locals, many of whom were farmers themselves. Discussions were passionate, as participants shared their frustrations about being misunderstood and negatively portrayed in the media. There was a strong consensus on the need to redefine the identity of mountain farmers, separating their work from large-scale industrial farming and highlighting their role in sustainable land management. Following the workshops, the researcher was invited to visit five farms, which provided a deeper look into the farmers’ day-to-day activities, including trips to see sheep grazing in the mountains.

7.6.4.2 Methodological results

These workshops were instrumental in fostering **Transformative Learning** by prompting the farmers to critically reflect on how they were perceived and explore ways to reshape their narrative. The small, focused gatherings allowed for open and meaningful exchanges, building a sense of solidarity and collective purpose. The follow-up farm visits strengthened these connections further, enhancing **collective efficacy** by reinforcing the farmers’ belief that, together, they could positively influence both their community’s perception and broader policies affecting their work.

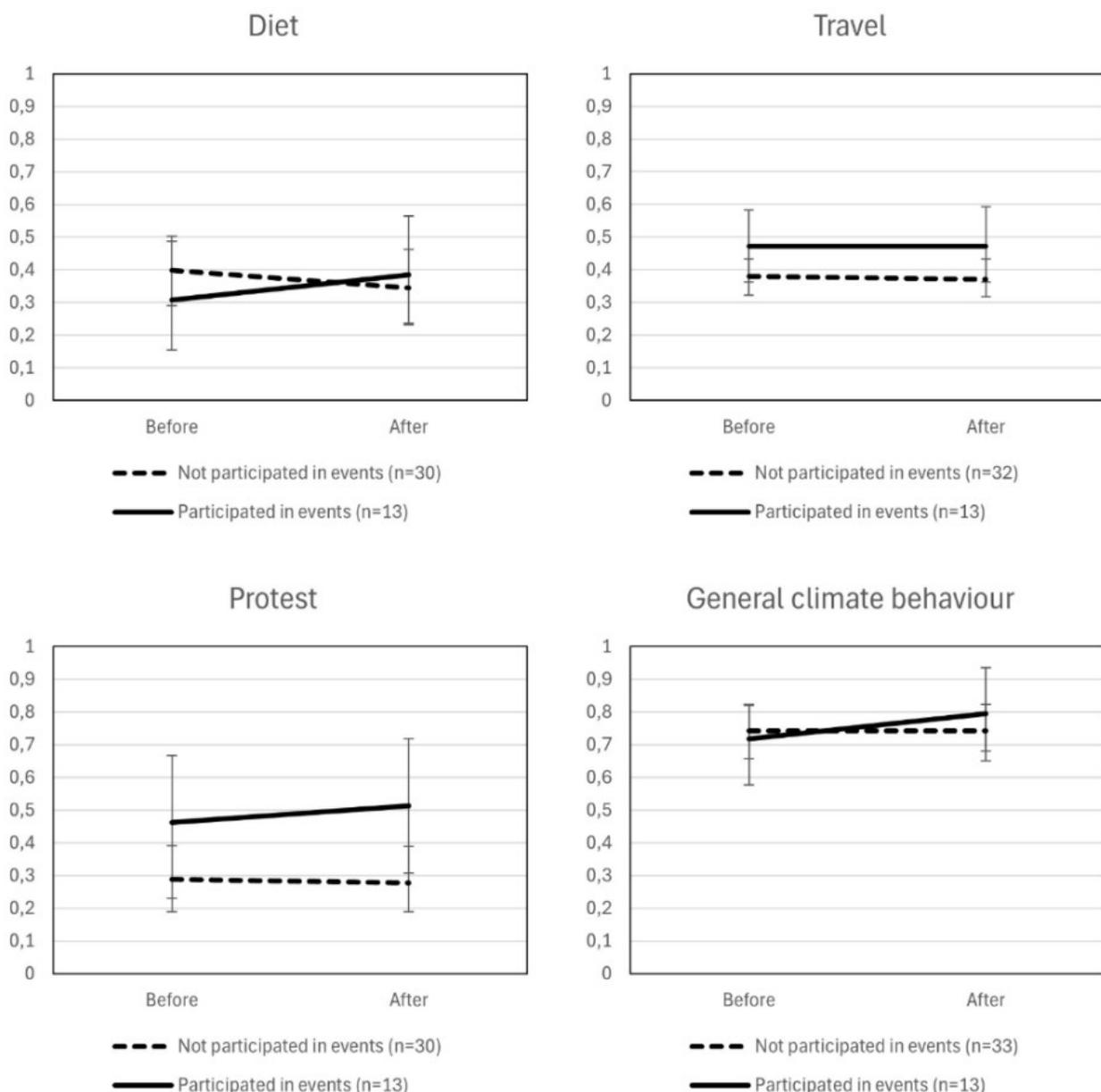


8 Overall Results

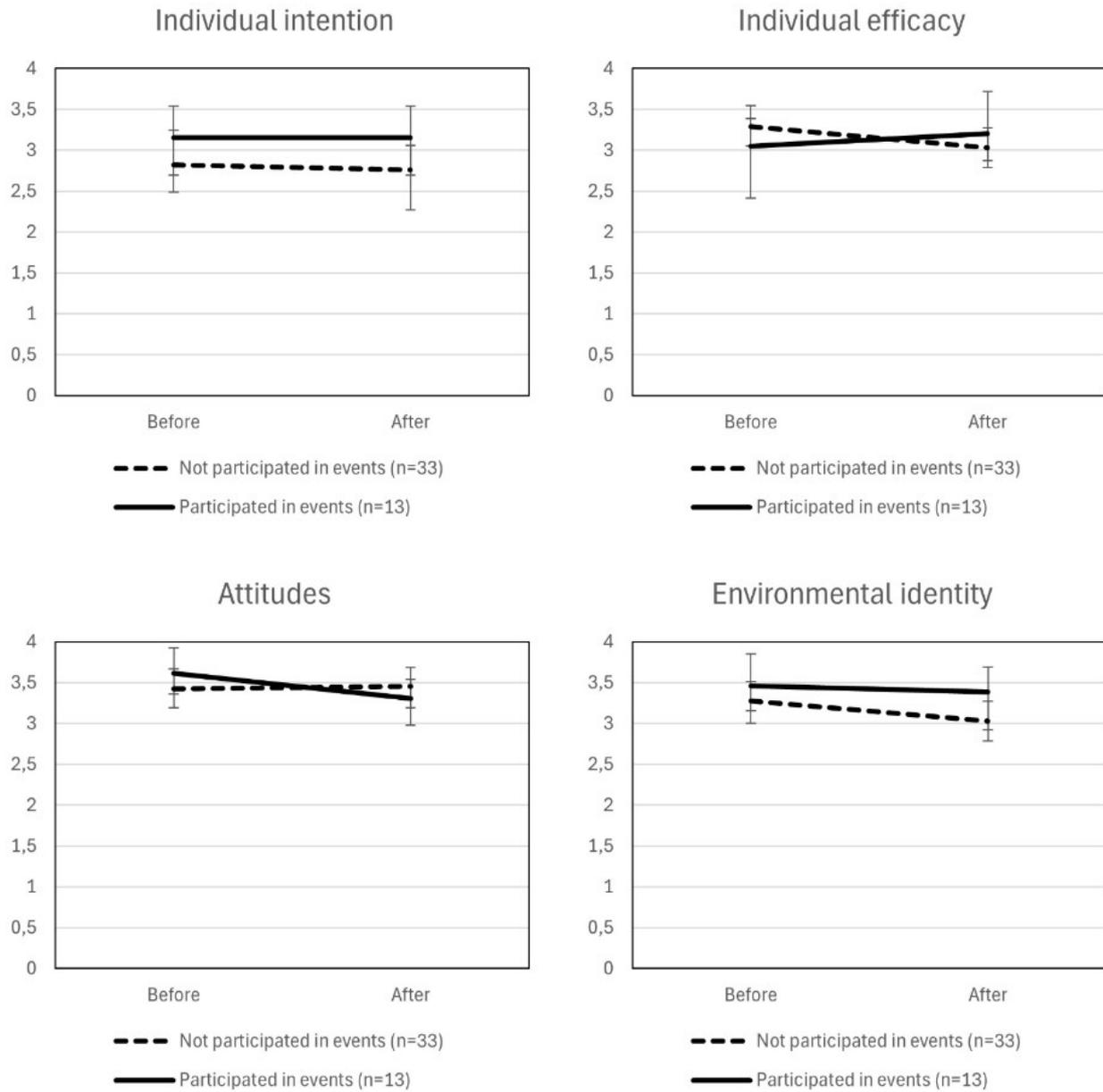
To understand, if the described interventions led to a change in the behaviour of the targeted people, we repeated a questionnaire that was used also at the beginning of the project before the interventions took place. This questionnaire asked for different climate-related behaviours (general climate behaviour, diet, travel, protest) and various potential influential factors (individual intention, climate-related attitudes, individual efficacy, environmental identity, collective intention, collective efficacy, identification with the neighbourhood, social norms, perceived barriers, climate change perception, social capital). We tested if these variables changed by our interventions.

In the second wave, a total of 161 answers were received. Of these, 46 we could match the first and the second wave. Of these 46 participants, 13 indicated to have visited at least one of the intervention events. 33 of the participants were from the Austrian neighbourhoods, 12 from the Italian and 1 from one of the Norwegian neighbourhoods. The sample size is too small to draw robust conclusions, however it gives indications of the potential effect:

Regarding climate-related behaviour a visual inspection of the effects shows that in three out of four behavioural categories, the participants of the neighbourhood events increase their self-reported behaviour frequency, whereas the non-participants remain stable or reduce slightly (see figure below).

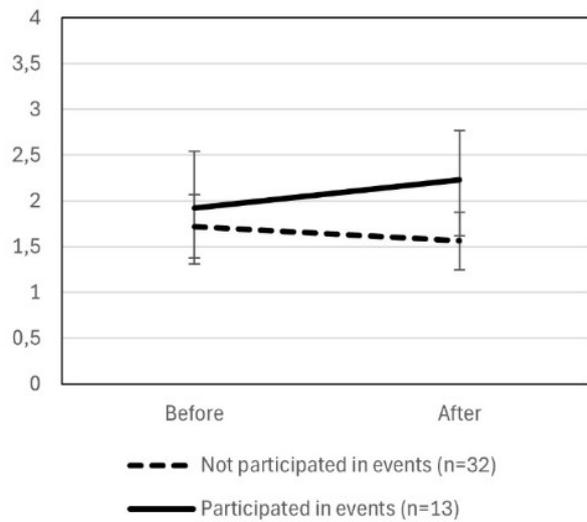


In the next step, the effects of event participation on individual intentions to act against climate change and three drivers of that intention (attitudes, individual efficacy, and environmental identity) were tested. Visual inspection shows no changes in intentions in both groups, as well as small effects in the other variables

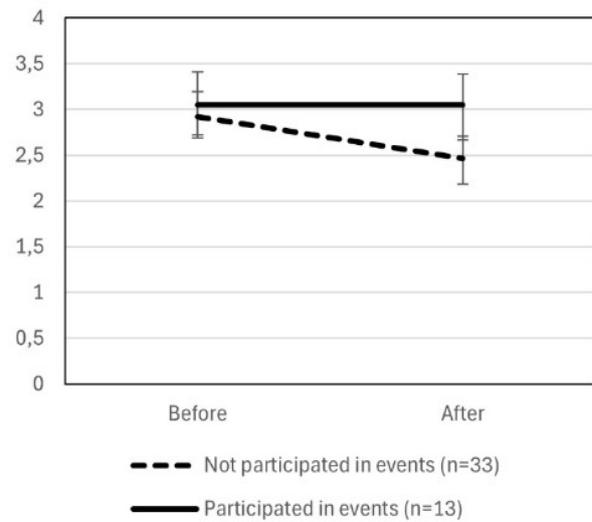


In contrast to the individual drivers of climate change behaviour, the collective drivers show stronger effects in a visual inspection. In all four cases, the difference between participants and non-participants points to an improvement in the collective driver after the events relative to the development for the non-participants.

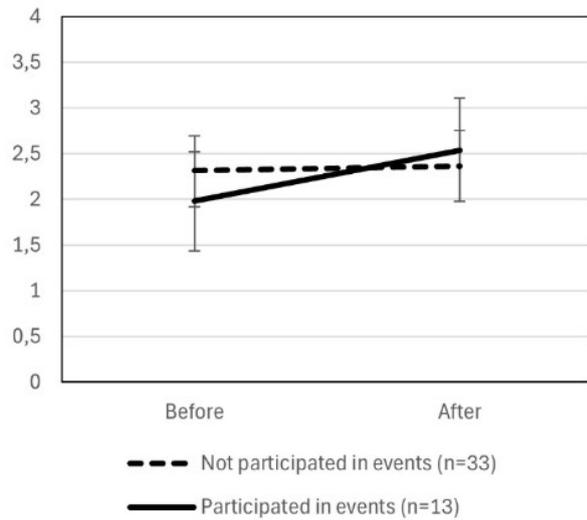
Collective intention



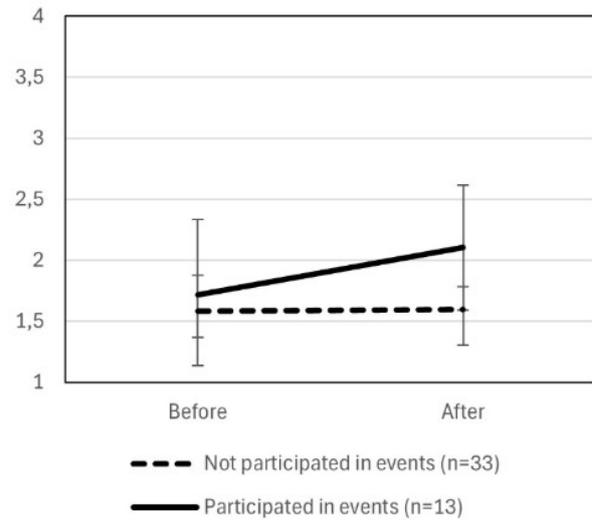
Collective efficacy



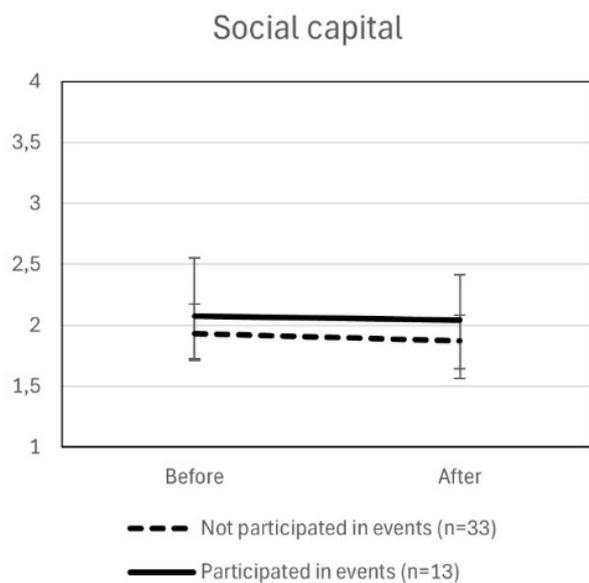
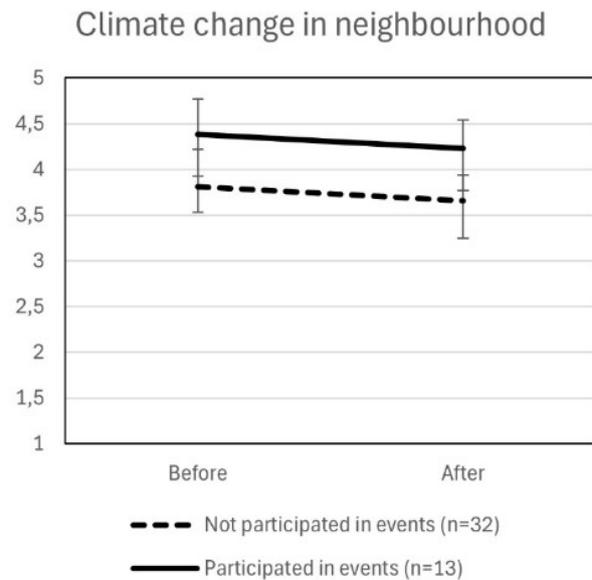
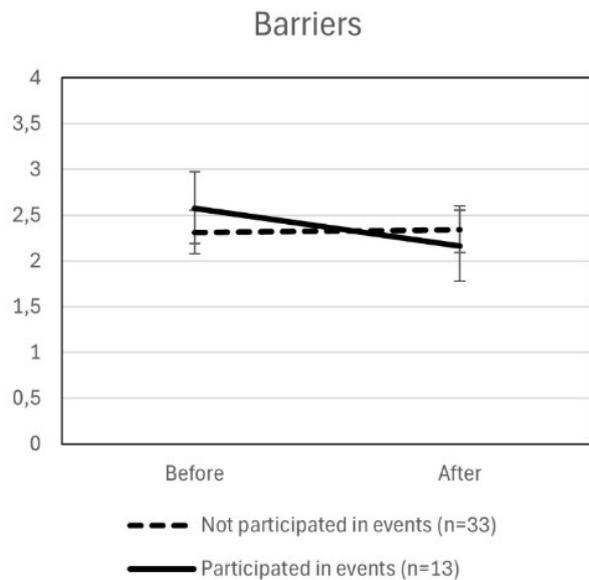
Identification with neighbourhood



Social norms



Finally, an inspection of effects on perceived barriers to climate action in the neighbourhood, local indications of climate change in the neighbourhood, and perceived social capital in the neighbourhood indicate that the only effect seems to show in that barriers are perceived less high



Because of the small sample size, conclusions must be drawn very carefully. However, overall it appears, that our neighbourhood interventions were successful, and with a larger sample we would have been able to demonstrate this with traditional significance. With all caution that the small sample warrants, the results seem to indicate that neighbourhood interventions as a means of stimulating to collective climate action should be studied further as they may be a promising alternative to over-individualized action appeals. Further research is necessary to consolidate the presented effects, but we consider the results interesting enough to justify more research in this new arena of climate communication and action.

9 Conclusion

The CLEANcultures project implemented all together 12 interventions across 9 neighborhoods in Austria, Italy, Finland, and Norway, addressing local climate-related challenges with creative and artistic approaches.

The interventions aimed to engage people from the communities in dialogue and action around environmental issues specific to their areas. Overall, the feedback from the interventions was positive, with participants appreciating the fresh perspectives and opportunities for engagement.

However, local barriers such as mistrust in the meaningfulness of the interventions and difficulties in promoting events had to be addressed. Key lessons learned include the importance of first building trust within the local population and identifying local "carers"—community members who believe in the interventions and support them. These factors are crucial for success.

When trust and local support are established, the interventions not only engage new participants but also foster greater understanding of diverse perspectives within the community. They encourage collective discussion on local climate-change challenges, and thinking about potential co-create solutions at the neighborhood level.

This enhanced discussion and solution-seeking seems, as hoped for, to spillover on the individuals by increasing several characteristics seen as influential on (climate-related) behaviour as well as an increase in these behaviours themselves. Collective climate action as indicated might therefore be a promising way of encouraging more people to behave climate-friendly.

10 Literature

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