



PATH2LC

LEARNING MUNICIPALITY
NETWORKS

D4.11 Report on recommendations for an improvement of the applied approach of Learning Municipality Networks in PATH2LC

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Uta Burghard, Sven Alsheimer & Markus Fritz - Fraunhofer ISI
Catrice Christ, Nico Ulmer & Edith Chassein - IREES

Reviewed by:

Giulia Conforto – e-think



CONSORTIUM PARTNERS

LOGO	PARTICIPANT	COUNTRY	TYPE
 research for future.	Institute for Resource Efficiency and Energy Strategies (IREES)	Germany	Scientific
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 TECHNISCHE UNIVERSITÄT WIEN Vienna Austria	Technische Universität Wien (TU Wien)	Austria	Scientific
 ENERGY RESEARCH	Zentrum für Energiewirtschaft und Umwelt (e-think)	Austria	Scientific
 ENERGYCITIES	Energy Cities (ENC)	France	Scientific
 HESPUL	Hespul (HESP)	France	Communication
 Ufficio Comune per la Sostenibilità Ambientale	Joint Office for Environmental Sustainability (UCSA)	Italy	Local network
 SUSTAINABLE CITY NETWORK	Sustainable City Network (SCN)	Greece	Local network
 OESTE SUSTENTÁVEL AGÊNCIA REGIONAL DE ENERGIA E AMBIENTE DO OESTE	Agência Regional de Energia e Ambiente do Oeste – OesteSustentavel (Oeste)	Portugal	Local network
 CITIES NORTHERN NETHERLANDS	City Northern Netherlands represented by City of Leeuwarden (CNNL)	Netherlands	Local network
 ALTE69 Agence locale de la Transition Énergétique du Rhône	Agence Locale de la Transition Énergétique du Rhône (ALTE69)	France	Local network

THE PATH2LC PROJECT

In the PATH2LC project, public authorities are working together within the framework of a holistic network approach (so-called Learning Municipality Networks) with the aim to achieve low-carbon municipalities.

The core of the project activities are the SE(C)APs (Sustainable Energy (and Climate) Action Plans) or similar climate protection plans developed by the municipalities. The PATH2LC project will foster the exchange of existing knowledge and experiences among municipalities, enhance coordination among different administrative bodies within the municipalities, improve cooperation with local stakeholders and civil society and will equip stakeholders in public authorities with required planning and monitoring tools to develop and implement transition roadmaps for achieving the targets set in the SE(C)APs.

The holistic network approach intends to link stakeholders in public authorities among municipalities enabling peer-to-peer learning and increasing engagement for the energy and climate transition. Policymakers and public authorities at the local level are supported with scientific analysis and expertise to understand and implement their SE(C)AP measures. Five existing networks of municipalities in Italy, Greece, Portugal, the Netherlands and France are participating in the project.

A special interest of the project is to invite other municipalities to replicate the Learning Municipality Network approach and take advantage of the knowledge base collected in the project.

For further information, please see www.path2lc.eu

Project information

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ABBREVIATIONS

CoM	Covenant of Mayors
EU	European Union
H2020	Horizon 2020, the EU funding programme for research and innovation from 2014 to 2020.
PATH2LC	Public Authorities together with a holistic network approach on the way to low-carbon municipalities, a H2020 program.
LMN	Learning Municipality Networks
SEAP	Sustainable Energy Action Plan
SECAP	Sustainable Energy and Climate Action Plan
NECP	National Energy and Climate Plan
LEEN	Learning Energy Efficiency Networks
ICLEI	Local Governments for Sustainability

EXECUTIVE SUMMARY

In the PATH2LC project public authorities are working together within the framework of a holistic network approach (so-called Learning Municipality Networks, LMN) with the aim to achieve low-carbon municipalities. The LMN approach of the PATH2LC project aims to support public authorities in the implementation of climate protection measures. The core of the project activities are the SE(C)APs (Sustainable Energy (and Climate) Action Plans) or similar climate protection plans developed by the municipalities. Five existing networks of municipalities in Italy, Greece, Portugal, the Netherlands and France are participating in the project.

In this deliverable, recommendations and guidelines for an improvement of the applied approach of Learning Municipality Network in PATH2LC are derived. Therefore, the results of the scientific accompanying research in PATH2LC as part of work package 4 are consolidated and recommendations for a future design of the LMN approach are developed.

The results of the socio-scientific evaluation show that the LMN approach was perceived as useful and beneficial for the municipalities. Perceived benefits were the exchanges and collaboration with other municipalities. However, some barriers to participating in the LMN approach, such as lack of time and resources, were stated. The technical monitoring determined total energy savings of 9.1 GWh/year for a total of 115 measures recorded in the specific context of the project period (2020-2023), highlighting the continued dedication of the participating municipalities. The most prominent areas in which measures were implemented include efficiency measures and initiatives related to efficiency, renewable energy and sustainability. The results suggest that there is untapped potential for further savings, particularly in the heating and cooling sector.

A comparison with the literature on energy efficiency networks in companies shows similar positive effects of the network approach as for the LMN approach for municipalities. In principle, this shows that the transfer of the energy efficiency approach from companies to municipalities has worked well. At the same time, the implementation of the approaches in both companies and municipalities also features similar barriers, such as a lack of time and human resources.

Consolidating the results, six guidelines have been developed to further develop the LMN approach: 1) Identify the main contact person for the network in each municipality. 2) Consider the needs of municipalities in planning the network meetings and designing capacity-building measures. 3) Provide additional possibilities for (informal) exchange between municipalities. 4) Provide easily accessible information material to the municipalities. 5) Engage the community. 6) Aim at consolidating the network approach.

The results obtained in this deliverable allow the networks to better align their own work with the needs of the municipalities. The findings also make it possible to tailor future projects with a similar approach even better to the network participants.

1 INTRODUCTION

Municipalities play a crucial role in the transition from a 'conventional' to a low-carbon society. This is not only due to their major contribution to greenhouse gas emissions mainly through the energy consumption of buildings and transportation (Strasser et al. 2018), but also due to the dominant role of urban political actors and decision-makers in the transition process (Cheung and Oßenbrügge 2020; Donnerer and Maraquin 2020; Heinelt 2017; Strasser et al. 2018). In recent years, climate and energy topics have moved more and more into the focus of municipal political agendas. In parallel, even countries with a long tradition of centralized decision-making (e.g. France) recognised the potential of empowering municipalities to decide by themselves on climate adaptation measures, energy provision, and deployment. Big drivers of the energy transition are the EU and global climate goals, National Energy and Climate Plans (NECPs) and networks like the Covenant of Mayors (CoM).

Throughout Europe, there are already a lot of municipal networks aiming to achieve their climate goals with mutual support. Important international networks are CoM, the Climate Alliance, the ICLEI network or Eurocities. Besides that, various national networks exist. These networks benefit from informal exchange and a common understanding of their overall target as well as from supporting instruments and materials. However, the missing piece in most of these networks is close cooperation in the form of regular, well-organised and moderated meetings. Sometimes the geographical distances between members of the network are too far for regular personal exchange or regular common workshops for knowledge and capacity building. There may also be a lack of information and support from experts regarding specific topics.

Learning Energy Efficiency Networks (LEEN) have proven to be an effective instrument for the implementation of energy-efficient measures in companies. Research has shown that by participating in an energy efficiency network, companies double their speed of progress in energy efficiency compared to those not participating in such networks (Bradke et al. 2015). The success of this network approach can be traced back to the standardised process (Dütschke et al. 2018). The PATH2LC project proposed to adapt this concept and apply it to networks of municipalities.

Within the PATH2LC project, we intend to enable decision makers and administration staff of municipalities to obtain the competencies and skills needed regarding the implementation of energy-saving or climate protection measures on a personal and a group level. In PATH2LC, the "The Learning Municipality Network" (LMN) approach is developed and implemented for the first time. The LMN approach of the PATH2LC project aims to support public authorities in the implementation of climate protection measures. As existing networks are the starting point of the project, they benefit from the adaption of the successful LEEN network process supplemented with in-depth capacity building and support energy planning tools. In addition, sharing cross-country experiences among the networks in PATH2LC countries is enabled by the project. The main advantage of this approach is that the municipalities are accompanied in their process to implement measures of their Sustainable Energy and Climate Action Plans (SECAPs) as well as to draft long-term energy transition roadmaps. Based on the concept of innovation research, and in an atmosphere of trust, the exchange of experiences about energy efficient solutions also leads to lower transaction costs of the followers and late applicants compared to the costs of the first movers.

In this deliverable, it is analysed to what extent PATH2LC contributed to enhancing energy efficiency directly by consolidating the data collected during the project. In addition, success factors and barriers to a widespread diffusion of the LMN approach are under investigation. Finally, recommendations and general guidelines to further develop the LMN are derived. The inputs for this deliverable are the evaluation results in the PATH2LC project (work package 4 "Outcome and process evaluation").

1.1 Participating Networks in the PATH2LC project

1.1.1 PATH2LC Project

The overarching objective of the PATH2LC project is to support policymakers and public authorities at the local level in the transition process towards a low-carbon society. Through a holistic network approach, stakeholders in public authorities are linked among municipalities to enable peer-to-peer learning and increase engagement in energy and climate transition. The holistic network approach is described as a Learning Municipality Network (LMN), where several municipalities of a region build a network and work and exchange on common topics. In the present case, the topics are chosen from the field of the transition towards a low-carbon society, more precisely, heating and cooling planning, energy in buildings, renewable energy, stakeholder engagement and financing. The methodology of the LMNs follows a certain concept. This concept addresses the challenges by facilitation of meetings, target setting and commitment, social control processes and mutual motivation. The core piece in these networks is the close cooperation in the form of regular, well-organised and facilitated meetings. Twice a year, the participating municipalities meet to report on their activities in the chosen fields and exchange their experiences and their plans. At these one-day network meetings, a lively exchange between the cities and municipalities will be stimulated by the facilitator. Within the project, we work together with existing networks and municipalities which have already identified measures in their SEAPs or SECAPs. Within the project, we work together with existing networks and municipalities which have already identified measures in their SEAPs or SECAPs.

1.1.2 Participating networks

The PATH2LC project brings together municipalities on regional and international levels to support them in the process of implementing their existing SEAPs or SECAPs. Five existing networks of municipalities in five countries (Portugal, Italy, France, Netherlands, and Greece) take over the implementation part of the project and are supported by scientific and dissemination partners. Table 1 in the Appendix (chapter 9) gives an overview of the networks and associated municipalities as well as the action plans.

In the following, the most outstanding characteristics of the networks are described. This information was collected in internal workshops, bilateral talks with network operators and analysis of documents (e.g., SECAPs). Each network gets a slogan as a kind of summary of our empirical results (see Deliverable 4.9).

French network ‘Arms wide open’: The PATH2LC Rhône network includes 139 municipalities of four Inter-Municipalities of the French Rhône Department (69) and the ALTE 69 (Agence Locale de la Transition Énergétique du Rhône), a local Agency, covering the whole Rhône area that advises and supports local authorities throughout their policies and projects promoting the Energy transition. These four Inter-Municipalities are not members of the CoM and gather around 30-40 municipalities each, making the PATH2LC French network a “network of networks”.

They are all located in a rural area in the Rhône Department, close to Lyon Metropole. Since 2019, setting up a SECAP is compulsory in France for local authorities with over 20,000 inhabitants (Inter-Municipalities included), and this is most often produced by external consultants. During the late 2010s, the 4 inter-municipalities participating in the PATH2LC project decided to be more ambitious by planning to become ‘Positive Energy Territories’ (TEPOS) by 2050: Namely, to halve their energy consumption by 2050 (compared to 2015 approx.), and to produce enough Renewable Energies to cover their remaining energy needs. Becoming a TEPOS was a target set by a strategy launched in July 2012 at the initiative of ADEME (Agence de la transition écologique) and the former Rhône-Alpes region (Doreau et al. 2022). Thus, at that time, there has been a convergent political commitment to plan local energy policies. However, and still nowadays, political consensus about conducting ambitious and concrete measures is still not clear (municipal elections in 2020).

The civil servants working on SECAP (for these 4 Inter-Municipalities) have been involved in energy topics for a few years now and have set up SECAPs that are regularly updated. They wish to receive an assessment of their SECAPs feasibility and effectivity, an overview of the other networks to learn from similar experiences, and training on how to tap funding. The PATH2LC technical expertise for energy planning is expected to contribute to this commitment and help to upscale what they are already doing.

Greek network ‘Blue Promising Sea’: Eight municipalities from a country-wide network participate in the PATH2LC project. They aim at implementing planned SEAP measures, which have been developed jointly by five of the eight municipalities. A special emphasis on the network approach in PATH2LC is put on capacity building for networking processes and capacity building for heating and cooling planning, as well as on updating the SECAPs and making them attractive to investors. Prioritising measures based on available data and expert input was planned to be a first step.

The network is managed by the organization Sustainable City Network (SCN). Few municipalities published SEAP/SECAPs, some were updated, but not published nor shared on the CoM website. Lack of funding and human resources are behind the missing two-year monitoring. SECAPs have been mostly written by external consultants and municipalities do not have a deep understanding of their content, nor own their data. They wish to receive training to enable the network members to better understand the SECAPs’ content, how to implement their measures, tap funding, and achieve their targets, as well as technical assistance on analysis and implementation.

Italian network ‘Better together’: Four municipalities in the Naples region have been working together for several years and now form the first Learning Municipality Network in Italy. Three of the municipalities have developed a joint SECAP. The network is operated by the UCSA, a shared office for four City Councils with a focus on sustainability matters. In addition to providing international exchange, the PATH2LC project is expected to contribute to further developing the knowledge and specific skills of local administrators regarding energy and environmental issues. One of the focus measures of the network is the Energy Community.

The network is managed by the organization Ufficio Comune Sostenibilità Ambientale (UCSA), which has a good overview of the member municipalities. The previous SEAP has been updated by a SECAP covering 3 of its 4 municipalities, with individual detailed analysis, and currently. They wish to learn how to be more effective moving from the SECAP to concrete action, tap funding, prioritize actions, involve and motivate institutional stakeholders and therefore set even more ambitious targets in the future.

Dutch network ‘Forerunners’: Initially, four municipalities of the northern Netherlands (CNNL5) started to participate in the PATH2LC project as a Learning Municipality Network to take advantage of international peer-to-peer learning. In the meantime, new network operators joined the project and in this process, they changed the scope to a more local approach and collaborated with Frisian municipalities only. At this point, they changed from four to 18 municipalities. From the original four, only Leeuwarden stayed. The municipalities are working together on different topics, of which the energy transition is very important. A lot of measures have already been implemented and the municipalities have ambitious targets in their SE(C)APs (e.g. carbon neutrality by 2035 in Groningen). The implementation process in Dutch municipalities benefits from a Sustainable Program Manager. Every municipal department provides one or two people for the Sustainability Program and the team works one or two days per month on the program. The program manager leads the team and has direct contact with the mayor or the ‘wethouders’ (in English: municipal executive). In addition to mandatory regional plans for large-scale sustainable energy production and a regional heat plan (=> SEAPs), all Dutch municipalities had to develop by the end of 2021 a plan for phasing out natural gas, which mainly translates into a heat transition in the built environment. In all municipalities of the network, small action plans with individual targets and measures are planned for each district.

The network is managed by a selection of the member municipalities’ staff and thus has a good overview of its members. The development of a SECAP and specific transition roadmap for phasing out natural gas are required by law for all municipalities by December 2021. They mainly wish to learn how other municipalities address climate issues across Europe, how to involve the local community of citizens and stakeholders, and how to motivate them and make them accept the change.

Portuguese network ‘Big Dreams’: Twelve municipalities from the west coast Portuguese region are organised in a network coordinated by the Regional Energy Agency Oeste Sustentável. This network is now strengthened by the PATH2LC project and its technical experts. The network of this project consists of a mix of small to medium-sized municipalities. This is seen as a challenge for several reasons, highlighting the main ones: Different internal structures among the network municipalities, different capacities for responding to the local challenges, as well as different priorities and paces.

In addition to a variety of measures that have already been implemented, the ambition and motivation to go even further are high. A major goal of the network operator is to disseminate the results and experiences of the first Learning Municipality Network to reproduce it in the entire region. SEAPs that are already available for almost every municipality, are to be updated in the project period and there is willingness to upgrade them to SECAPs.

The network is managed by the dedicated Regional Agency for Energy and Environment of the region Oeste: Oeste Sustentável. Their member municipalities developed a SEAP when joining the CoM several years ago. The analysis of the SEAPs remained with the consultants that developed them, so now the network and its municipalities do not always grasp fully the details of the analyses and the plans. The network wishes to receive capacity building to pass it on to their member municipalities, to better support them in developing transition roadmaps and new SECAPs.

1.2 Aim and content of this report

This Deliverable 4.11 deals with a summary and discussion of the evaluation results in the PATH2LC project (work package 4 "Outcome and process evaluation"). For this purpose, it will analyse to what extent PATH2LC contributed to enhancing energy efficiency directly by consolidating the data collected during the project. Furthermore, success factors and barriers to such a widespread diffusion are under investigation.

In this respect, this report pulls together information from several different activities in the PATH2LC project:

- Annual monitoring reports on the progress of 5 Learning Municipality Networks (Deliverables 4.5, 4.6, 4.7)
- PowerPoint presentations on barriers, success factors and decision process of municipalities within each Learning Municipality Network (5 presentations) (Deliverable 4.8)
- Working paper on barriers, success factors and decision process on the local level (Deliverable 4.9)
- Report on the perception and evaluation of the network approach (Deliverable 4.10)¹

This report is structured as follows: In Chapter 2, the Learning Municipality Network approach developed as part of PATH2LC is described. Chapter 3 describes the results of the evaluation of the LMN approach, based on analyses performed in work package 4 "Outcome and process evaluation" of PATH2LC. Based on this, success factors and recommendations for a broader diffusion of the LMN approach are derived in chapter 4. Finally, chapter 5 presents general guidelines and in chapter 6, an outlook on the future potentials of the LMN approach is given.

2 THE LEARNING MUNICIPALITY NETWORK APPROACH IN PATH2LC

2.1 The Learning Energy Efficiency Network approach in companies and its effects on energy efficiency

The concept of Learning Energy Efficiency Networks (LEEN) is an innovative approach based on a network management system for the operation of regional energy efficiency networks for medium-sized and large companies. Initially, it was developed in Switzerland during the late 1980s, when the first energy efficiency network was founded. It was transferred to Germany with the first pilot network in 2002 and has since been improved, tested and supplemented. The rationale behind this concept is that many companies want to reduce their energy costs through efficient, profitable and environmentally friendly solutions. Networking has proven to be an effective instrument for the implementation of energy-efficient measures in companies.

These projects have been evaluated by research institutes through extensive evaluation processes (Dütschke et al. 2018). Together with other companies in energy efficiency networks, they succeed faster than alone. The success factors are the combined intelligence, the exchange of experience and the mutual motivation. Research has shown

¹ Since the data base has become more extensive compared to the period in time when Deliverable 4.10 was developed, updated information on the data bases can be found in Table 1 in the Appendix.

that companies participating in such an efficiency network doubled their progress in the respective field compared to those not participating (Bradke et al. 2015). An interview study by Paramonova and Thollander (2016) indicates that participation in such networks helps to reduce companies' energy costs. According to the majority of participants in a survey study by Wohlfarth et al. (2017), it also leads to the implementation of measures that would not have been realised otherwise. It has also been shown that the network approach helps to overcome barriers to the implementation of energy efficiency measures, such as information deficits and financial barriers. However, the effect of the network approach on implementing measures is related to the size of the company involved - with smaller companies typically realising fewer measures (Wohlfarth et al. 2016).

The success of the network approach in a corporate setting can be traced back to the standardised process involved (Dütschke et al. 2018). This finding is echoed by other authors (e.g. Köwener et al. 2011 or Jochem and Gruber 2007), who identified similar mechanisms. One relevant driver for the success of corporate energy-efficiency networks is related to the use of audits that make profitable potentials visible (Dütschke et al. 2018). Furthermore, network participation and joint network targets lead to enhanced employee motivation regarding energy issues and knowledge gains through mutual learning and the exchange of experiences during meetings and site visits. However, although network participation reduces transaction costs, the difficulties associated with providing the resources needed for network activities over a longer period, e.g. time, staff and money, are perceived as hampering its effectiveness (Dütschke et al. 2018; Paramonova and Thollander 2016).

Thus, overall, Learning Energy Efficiency Networks (LEEN) have proven to be an effective instrument for the implementation of energy-efficient measures in companies. Based on the success of the LEEN network approach, the PATH2LC project aims to adapt and transfer this concept to municipalities. This is described in the following section.

2.2 Adapting the Learning Energy Efficiency Network approach in companies to municipalities

Throughout Europe, there are already a lot of municipal networks that aim to achieve their climate goals with mutual support. Important international networks are the Covenant of Mayors, the Climate Alliance, the ICLEI network or Eurocities. Regarding climate action in municipalities and similar to the LMN approach implemented in the PATH2LC project, other projects are also seeking to strengthen the exchange between municipalities using a network approach. Projects at the EU level that also focus on climate and energy topics and involve networking and peer-to-peer learning between municipalities include the following: ENERgeewatch (<https://energee-watch.eu/>), CEESSEN (<https://ceesen.org/en/>), ePLANET (<https://www.eplaneth2020.eu/>) and OwnYourSECAP (<https://www.ownyoursecap.eu/>). EU projects that also aim at capacity building among municipal actors within these fields but without a pronounced networking component are Prospect+ (<https://h2020prospect.eu/>), IN-PLAN (<https://fedarene.org/project/in-plan/>) and C-Track 50 (<https://www.c-track50.eu/>). Besides that, various national networks exist. Usually, they benefit from informal exchange and a common understanding of their overall target as well as from supporting instruments and materials. The networks are also helpful for effective communication of their activities.

Overall, municipal networks are thought to play an important role in fostering climate planning at the local level as well as influencing higher levels of government (Gore 2010; Pietrapertosa et al. 2021). In the field of climate change adaptation, Heikkinen et al. (2020) found that network membership is correlated with higher levels of activity. One characteristic of (transnational) municipal networks is that they tend to focus on soft mitigation measures (such as fostering knowledge exchange or capacity building) rather than on quantified mitigation targets (Bansard et al. 2017; Kern and Bulkeley 2009). The networks also function as facilitators of personal networking among local policymakers (Haupt 2019) and enable benchmarking, which has been shown to contribute to knowledge generation within municipal administrations (Askim et al. 2007).

In terms of knowledge exchange, study visits allow policymakers to learn from the experiences of authorities in other municipalities. In this regard, a study by Haupt (2021) indicates that such visits are more successful if the municipalities are quite similar, e.g. of comparable size and with a similar institutional context. The study argues that learning from exchanges among municipalities with similar conditions is more suitable for large-scale implementation of peer-to-peer learning approaches than learning from frontrunners only. However, in many municipal networks, there is a clear split between a core group of the most active municipalities and the other, more passive municipalities (Kern and

Bulkeley 2009). To facilitate learning processes, informal personal connections have shown to be important, as these are one of the main channels of peer-to-peer exchange (Ansell et al. 2017).

The missing piece in most of these networks is very close cooperation in the form of regular and well-organised and moderated meetings, as given in the concept of so-called learning municipality networks (LMNs). The approach of Learning Municipality Networks follows a defined process, very similar to the concept for energy efficiency networks for companies: initiation of the network – identification of climate and energy-related measures – setting a common target by all network participants – regular network meetings on predefined topics with relevant municipal stakeholders – monitoring of progress and success of the network – dissemination of results and experiences - trans-regional and international exchange with other municipalities.

Different to energy efficiency networks in companies (EENs), the target setting process in LMNs is not based on an energy audit, as done in companies. LMNs can choose to define “softer” targets, i.e. not necessarily/only defining how much savings (in terms of energy and CO₂) they want to achieve, but also to set targets focusing on the way they want to cooperate or processes they want to establish. Throughout the project some networks also adapted the concept to make it fit better to their circumstances, for example by hosting shorter but more regular network meetings, i.e. meeting every 2-3 months instead of meeting every 4 months. Further adaptations relate to having bilateral calls or meetings (besides the regular network meetings) with defined stakeholder groups to explain the LMN concept in order to get municipal stakeholders’ commitment. As the project is about the adaptation of the EEN approach, changes like that have been foreseen and are considered to be part of the project’s progress.

3 EVALUATION OF THE LEARNING MUNICIPALITY NETWORK APPROACH

3.1 Overall effects of the Learning Municipality Network approach in terms of efficiency gains and reduction of CO₂ emissions (technical evaluation)

To analyze the results of efficiency gains and reduction of CO₂ emissions, annual monitoring was carried out. All measures were collected in the form of an annual survey. This survey should be completed by the responsible person from the respective municipalities and was structured in such a way that each measure could be entered individually. The following information was recorded for each measure: Short name, implementation status, brief description, whether the measure was part of the SE(C)AP, condition before the measure, category, date of implementation, energy carrier before implementation, energy carrier after implementation, energy consumption before implementation, energy consumption after implementation, and investments and funding. The entries were carefully examined and, if necessary, any missing information was supplemented through a manual review. For instance, the category could often be inferred from the concise descriptions provided for many measures. Measures were evaluated collectively for all LMNs. In total, three monitoring rounds were carried out during the project period (2021, 2022 and 2023). For each monitoring round, a deliverable was created that shows the progress of the respective networks. For data privacy reasons, these deliverables are not publicly available. At the end of the third monitoring round, measures were available from all municipalities.

A total of 485 measures were reported in the survey for the period 2009-2023, showcasing a diverse range of initiatives aimed at promoting sustainable development. In the specific context of the project period (2020-2023), 115 new measures were introduced during the project period (2020-2023), highlighting the continued dedication of the participating municipalities. During the project phase, an average of 4.6 measures per municipality were implemented.

The results show that out of the 485 measures reported in the survey, 351 were part of a SE(C)AP and 86 were not part of a SE(C)AP, while 48 measures could not be assigned to either category. This reveals that in addition to the measures in the SE(C)APs, other measures have also been implemented. Out of the 485 measures reported, 149 measures have been successfully implemented and 252 measures have been partially implemented or are still in the process of being implemented. This shows that work is ongoing, and efforts are still being made to fully realise these measures. Unfortunately, no implementation status information was available for 84 measures. While it is regrettable that details are lacking for these particular measures, this does emphasise the importance of improved data collection

and reporting mechanisms to ensure comprehensive and accurate monitoring.

The results further show a consistent and continuous implementation of measures over the past years. Of particular note is the significant increase in the number of measures implemented each year, especially from 2018 onwards. This upward trend reflects the growing commitment and proactive efforts of the participating municipalities to advance sustainable initiatives. However, it is also apparent that the total number of measures implemented has plateaued since 2019.

Figure 1 illustrates the number and respective savings of the measures in the different categories for all measures reported (485 measures from 2009-2023). The most prominent areas include efficiency measures and initiatives related to efficiency, renewable energy and sustainability. Within the efficiency measures, there is a notable focus on building retrofitting, improving transport systems, promoting renewable energy sources and improving lighting infrastructure. These results are consistent with the findings from Deliverable 4.3, in which the respective SE(C)APs of the municipalities were examined (Conforto 2021). Here it was found that most of the measures from the SE(C)APs can be assigned to the categories building retrofitting, transport efficiency and lighting.

It is important to note, however, that sustainability and quality of life have not been overlooked. Several measures aimed at improving the overall quality of life and promoting sustainability. These measures cover a range of initiatives, including new or improved cycle paths, the creation of new green spaces and waste management measures. These actions reflect a comprehensive approach to creating sustainable communities that prioritise the well-being of residents while minimising their impact on the environment. It can be seen that certain measures, particularly those related to building retrofitting and heating and cooling, have resulted in significant annual savings. These measures have contributed to a total savings estimate of more than 135 GWh/yr. It is important to note that this value represents cumulative savings from 2009 onwards and that not all measures provided information on savings.

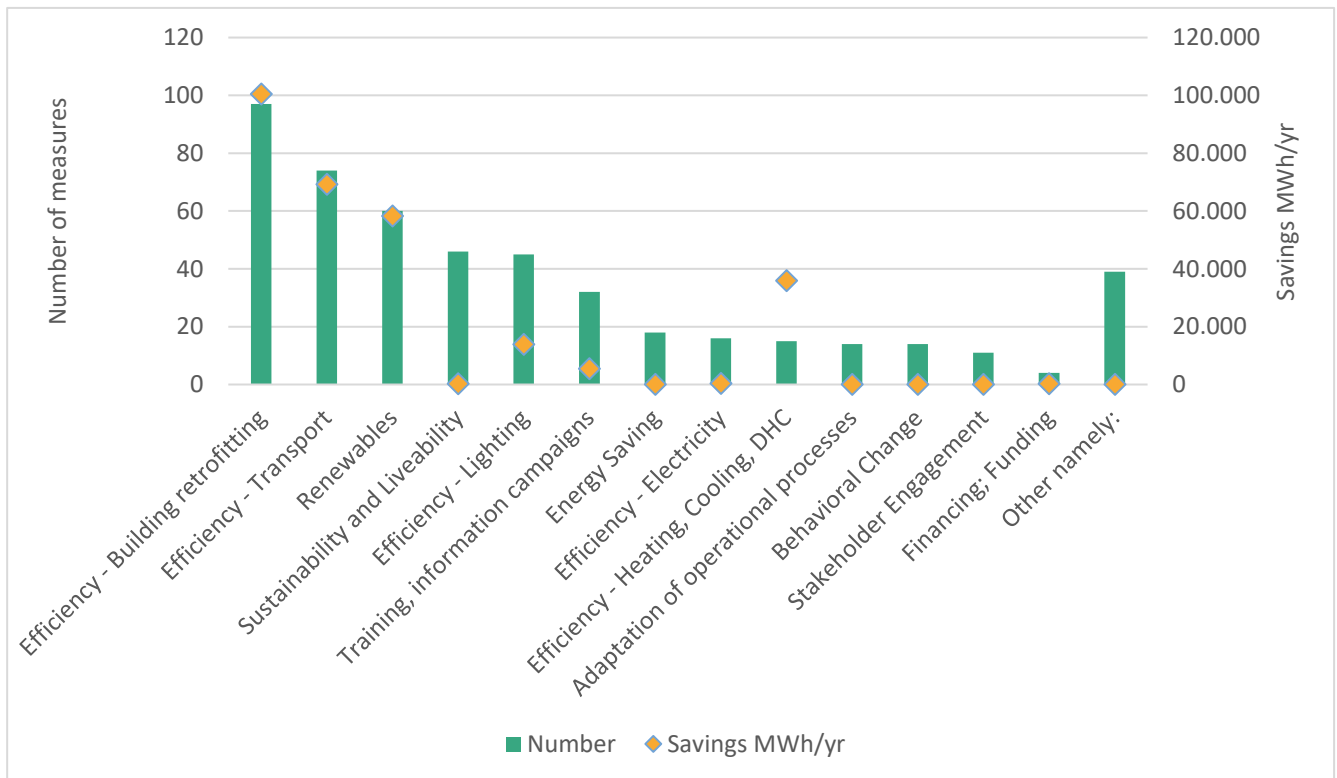


Figure 1: Number and respective savings of the implemented measures in different categories

The results also suggest that there is untapped potential for further savings, particularly in the heating and cooling sector. Despite notable achievements in the renewables and transport sectors, the relative paucity of measures implemented in the heating and cooling sector indicates an opportunity for future initiatives. This area is a promising

avenue for implementing energy-efficient technologies, optimising heating and cooling systems and exploring renewable energy alternatives, since the heating sector accounts for the largest share of energy consumption in Europe.

Of the measures reported, only 48 provided information on both savings and investments. These measures were used as a sub-set for further analysis to gain insights into the financial aspects of the implemented initiatives. In this sample, the median savings were 248 MWh/yr and the median investment was 87,500 euros. When analysing the financial efficiency of these measures, the median abatement cost was 0.58 EUR/kWh. It is important to note that this median financial efficiency is relatively high compared to the average abatement costs in buildings or industries, which typically range from 0.01 to 0.03 EUR/kWh.

Throughout the project period, a total of 115 measures were recorded between 2021, 2022 and 2023. Of these measures, 36 reported savings during the project period, resulting in total energy savings of 9.1 GWh/yr. The median savings of these reported measures were 248 MWh/yr. For the remaining 79 measures, the median savings were used to estimate the total savings of 29 GWh/yr over the project period.

Taking into account the primary energy factor of 1.1 for fuel and 2.4 for electricity, the total primary energy savings achieved by these measures amounted to 36 GWh/yr. When assessing the financial efficiency of the measures, the median efficiency was 0.58 EUR/kWh. Based on this median financial efficiency, the total investment for the project measures was 20.9 million euros.

3.2 The Learning Municipality Network approach to mitigate barriers to the implementation of SE(C)AP measures in municipalities

Different barriers can prevent or slow down the implementation of climate action measures in municipalities. Within the project, we identified six stages where common barriers could be expected: 1) availability of human resources including their motivations and knowledge, 2) decision-making structures and agenda setting of the municipality (governance), 3) financial resources and general regulations, 4) stakeholder involvement, 5) execution of the measure, 6) external factors, such as a pandemic. The perceived local barriers, drivers and decision structures have been elicited through interviews with local partners and representatives of the municipalities at the beginning of PATH2LC.

- 1) The main factor to take action regarding the implementation of SE(C)AP measures is **the availability of human resources**. In the interviews within PATH2LC, especially the small municipalities expressed their need for additional municipal staff working on the topic of energy and climate. Nonetheless, much can be achieved if the available staff is skilled, motivated, and networked.
- 2) When it comes to concrete decisions of taking action, the **underlying administrative structure of city councils and the characteristic of the decision makers is crucial**. A common commitment by municipal stakeholders is conditionally necessary for the successful process of implementing a SE(C)AP. This is why carefully organised decision processes are so important. Political will and support are other important drivers for implementing SE(C)AP measures and reaching sustainability goals.
- 3) In the same vein, **financial resources** (budget limitations or not drafting a budget) **and general regulations** can pose a huge barrier to reaching sustainability goals. Fundraising issues were mentioned in all networks. The organisations which manage the networks in Italy, Portugal and France were founded to support public authorities with public tender processes for example. The Dutch interviewee pointed out as well that local stakeholders need support in 'the jungle of the market regarding available technologies and their respective financing possibilities'. But there was also a call for more national funding or at least better access to national (or European) funds. General regulations, in the form of missing or unfavorable regulations, can present a barrier since the government can prevent energy projects administratively.
- 4) Besides municipal officers and decision-makers from different sectors, **involving stakeholders** such as end-users, experts and intermediaries in SE(C)AP processes is crucial for their development and success. Stakeholders can be involved in setting up a whole SE(C)AP or in planning and implementing a single measure (Bolle, 2019; Cajot et al., 2017). Involvement can reach from mere information to participation methods to work on a solution together.

- 5) At the stage of **the measure execution process** (i.e. the real ‘groundbreaking’) it is important to find skilled craftsmen and technical experts to gain high-quality renovations or guaranteed energy savings (Jekabsone et al., 2019). Due to the innovative character of climate and energy-related technologies and short innovation cycles constant training possibilities are important (Chassein et al., 2017). The lack of skilled technical experts or missing effective technologies might hinder well-planned measures in the end. Another problem might be missing standardizations, for example for infrastructure or regarding the evaluation of the best available technology (Rayner et al., 2018).
- 6) And lastly, with the right technology and skilled technology providers available and after the successful completion of all other stages, there are still **external factors that could hinder the execution of SE(C)AP measures**. These factors might not be under control, but they should be taken into consideration. External factors to the implementation process of SE(C)AP measures were mentioned casually in the interviews. The media or dissemination infrastructure could influence implementation processes. For example, ‘for politicians it’s a key driver to get the media’s attention’ (Portuguese interviewee). In addition, a communication strategy is needed for a successful implementation: ‘Little towns or villages don’t always have a good website and mayor’s secretaries are often overcharged’ (French interviewee). Path dependency was also mentioned in the interviews related to infrastructure or bad experiences in the past that influence decision today. A specific topic of these days is the pandemic situation which brought up a ‘reshuffling’ of municipal priorities towards health care, social and economic issues and slowed down many SE(C)AP activities.

For a more detailed analysis of these six identified barriers, please have a look at the PATH2LC Deliverable 4.9 “SE(C)APs: From municipal planning to concrete action Barriers, success factors and decision processes” (Chassein and Frank 2021).

At the end of the project, in the interviews with network operators and municipalities, we also asked for barriers to the implementation of SE(C)AP measures (see Deliverable 4.10, Burghard and Alsheimer 2023). Here, it was found that a lack of human and financial resources are important barriers from the perspective of the interview partners. This relates to stages 1 and 3 identified at the beginning of the project (Deliverable 4.9). In addition, a lack of information and tools is mentioned; however, PATH2LC has contributed to mitigate this. Furthermore, old data and outdated measures in the SE(C)APs as well as very broad and unspecific SE(C)APs are barriers to implementing the measures that came up in the interviews. Also, the (un)availability of data makes developing and implementing SE(C)APs measures more difficult. In addition, the SE(C)AP may not be known in the municipality. One municipality cited the difficulty of obtaining EU funding as a barrier for municipalities. This again relates to stage 3 identified in Deliverable 4.9 (Chassein and Frank 2021).

That is, there are still barriers to the implementation of SE(C)AP measures in the PATH2LC municipalities. However, the project helped to mitigate some of these barriers, as pointed out in the interviews (Burghard and Alsheimer 2023). That is, a positive influence of PATH2LC on the implementation of the measures was noted. The network approach leads to more involvement with the topic of energy and one’s own municipal goals. Several municipalities pointed out that PATH2LC helps put more focus on SE(C)AP measures already in place as well as on measures that are not currently in focus. That is, the project raises awareness for the measures in the municipality. In addition, the possibility to compare the municipal performance in terms of measure implementation with other municipalities was perceived positively in the interviews because it increased the pressure to push this forward. The monitoring tool in PATH2LC was seen as useful to track the implementation status of the measures in the climate action plans (Burghard and Alsheimer 2023).

However, some interview partners noticed no direct influence of PATH2LC on the implementation of SE(C)AP measures or the fact that a direct influence on the project is difficult to assess. This is also due to the rather short duration of the PATH2LC project. According to the municipal representatives, the project is more helpful in reviewing and, if necessary, correcting the SE(C)APs than in the concrete implementation of individual measures (Burghard and Alsheimer 2023).

3.3 Perceived benefits and effects of the Learning Municipality Network approach (socio-scientific evaluation)

In the following, central results on perceived benefits and effects of the implementation of the LMN approach are summarized. These are the results of the interviews with network operators and municipalities and the analysis of the minutes of the network meetings conducted as part of the socio-scientific evaluation of the LMN approach (Burghard and Alsheimer 2023).

The benefits of the LMN approach were highlighted very positively by the municipalities. Perceived benefits were the exchange and collaboration with other European municipalities and with the municipalities in their network. This can lead to new ideas, increase the inspiration and the motivation to work on these topics and raise the perceived importance of energy issues. In addition, knowledge gains in the following areas were mentioned by several interview partners: energy topics in general, funding opportunities, the feasibility of certain projects, Covenant of Mayors and the process of developing a SE(C)AP.

When it came to the perceived effects of the LMN approach, the interviews showed that PATH2LC had positive effects in particular on the development or update of SE(C)APs as well as on the implementation of measures defined in those SE(C)APs. The LMN approach featured some overarching effects that exceed the specific objectives of the PATH2LC project. The main effect in this regard was that it strengthened networking among the municipalities within the networks, which was perceived as an improvement from the rather informal structure they featured before. Furthermore, it triggered cooperation across departments. In comparison, the positive effects on exchanges with other stakeholders were somewhat weaker.

3.4 Perceived barriers to the implementation of the Learning Municipality Network approach (socio-scientific evaluation)

Whereas barriers to the implementation of climate protection action in municipalities are described in section 3.2, here we present perceived barriers for the implementation of the Learning Municipality Network approach. These were derived from the interviews with network operators and municipalities (Burghard and Alsheimer 2023):

- Lack of time and resources
- Administrative issues of municipalities
- Difficulties in involving external stakeholders
- Limited language skills
- Differences in size between municipalities
- Reluctance to share information between municipalities
- Covid restrictions

A barrier to the implementation of the network approach mentioned very often in the interviews was a *lack of time and resources*. This applies in particular to small municipalities. In the Dutch network it was stated that municipalities were being assigned an increasing number of tasks by the state, and receive funding according to their size; i.e. the burden of participation is higher for smaller municipalities with smaller staff. One consequence of the lack of human resources was low participation rates in the network meetings. One strategy of the networks for dealing with this was to distribute people between meetings.

The *administrative structure in municipalities* in a more vertical form and the changing contact persons due to municipal elections can be further challenges for the implementation of the LMN approach.

Getting stakeholders on board who were not directly involved in the project (such as political representatives and local enterprises) was perceived as another challenge by some interview partners. Possible reasons given by interviewees for this included scepticism about working with municipalities, a lack of information and communication targeted at other relevant stakeholders, changes of contact persons, and maintaining the motivation and enthusiasm of these stakeholders about the project across its entire duration.

A further challenge for the implementation of the LMN approach was *language*. Many representatives were not familiar with important terms from the field of energy or energy policy in English. As a consequence, in some cases, the material provided in English was not read by the representatives.

Differences in size between municipalities in the network were identified as another barrier. Municipalities of different sizes face different challenges and have different issues on their agendas.

Finally, the *reluctance of some municipalities to share information with others* was perceived as challenging. In addition, *Covid restrictions* acted as another barrier: some interviewees felt that cooperation between municipalities would have been easier if there had been more physical meetings.

3.5 How did the transfer of the LMN approach from companies to municipalities work out in PATH2LC?

To evaluate the transferability of the LEEN approach from companies to municipalities, the effects, benefits and barriers identified in PATH2LC are compared with findings from the literature on the implementation of the LEEN approach resp. network approaches to companies.

Concerning the perceived effects of the LMN approach, the interviews showed that PATH2LC had positive effects on developing or updating SE(C)APs, as well as on implementing the measures defined in those SE(C)APs. This indicates that the positive effects on measure implementation observed in company settings were also found here (cf. Bradke et al. 2015).

Barriers in the literature to the implementation of corporate energy efficiency networks relate to providing the resources needed for network activities over a longer period, e.g. time, staff and money. The same barriers to the implementation of the LMN approach were also identified in PATH2LC.

Similar to our findings on the barriers for the implementation of the network approach in municipalities, the literature on corporate energy efficiency networks identifies differences regarding the size (of the companies) to affect the effect of the network approach. In corporate energy efficiency networks, the effect of the network approach on implementing measures is related to the size of the company involved - with smaller companies typically realising fewer measures (Wohlfarth et al. 2016). In municipalities, we also find differences between municipalities of different sizes with smaller municipalities more often affected by a lack of time and resources. However, smaller municipalities might also be able to benefit more from the LMN approach as participation in such a project is seen as more useful for smaller compared to larger municipalities according to some interview partners.

PATH2LC's project lifetime of three years was rather short - in municipalities, processes take a long time. This is different from processes in companies and makes assessing the effect and impact of PATH2LC on the implementation of energy efficiency measures and energy savings in municipalities more difficult.

One relevant driver for the success of corporate energy-efficiency networks is related to the use of audits that make profitable potentials visible (Dütschke et al. 2018). In PATH2LC, similar benefits have been identified by the interview partners in terms of benchmarking, which made it possible to compare one municipality's progress with that of others.

In sum, the comparison with the literature on the effectiveness of energy efficiency networks in companies shows similar positive effects of the network approach as for the LMN approach for municipalities. In principle, this shows that the transfer of the energy efficiency approach from companies to municipalities has worked well. At the same time, the implementation of the approaches in both companies and municipalities also shows similar barriers, such as a lack of time and human resources.

4 SUCCESS FACTORS AND RECOMMENDATIONS FOR A BROADER DIFFUSION OF THE LEARNING MUNICIPALITY NETWORK APPROACH

4.1 Drivers and success factors for a broader diffusion of the Learning Municipality Network approach (socio-scientific evaluation)

The following drivers and success factors for the implementation of the LMN approach were identified in the interviews with network operators and municipalities (Burghard and Alsheimer 2023):

- Experience of the network operators
- Mutual motivation
- Willingness to collaborate
- Commitment of the mayors and the municipal administrations
- Clear communication of goals

One important driving factor identified in the interviews was the *experience of the network operators*. The *motivation* that arises from participating in a network with like-minded people was mentioned as another driver. It was further stated that the municipal representatives had to be *willing to collaborate* and share their knowledge with others instead of expecting to only receive support. This was also valid for the *commitment of the mayors and the municipal administrations* to the project. Furthermore, *clear goals and communication about them* were important according to one municipality. This means that the participants in the network must be clear about what they want to achieve.

4.2 Recommendations for a broader diffusion of the Learning Municipality Network approach (socio-scientific evaluation)

In this section, we present the recommendations for a broader diffusion of the LMN approach, as identified by the interviewed network operators and municipalities. These findings were not yet reported in Deliverable 4.10 (Burghard and Alsheimer 2023). The recommendations are addressed to network operators or coordinators of projects with a network approach for municipalities.

The following recommendations for a broader diffusion of the LMN approach were provided by the interviewed network operators and municipalities:

- Take composition of the network into account
- Clear communication and well-defined network goals
- Considerations of financial and human resources constraints
- Aim for tangible results to foster commitment
- Involvement of external stakeholders
- Securing political support
- Increased exchange between municipalities across Europe
- Organisational aspects (design of the network meetings, expert input, translation services)

As recommended by the interviewed network operators and municipalities, future implementation of the LMN approach should take into account the composition of the network. Some of the interviewed municipalities and network operators expected it to be beneficial to bring together municipalities with similar characteristics or challenges to facilitate exchange and collaboration. A network comprising a homogeneous group with shared experiences and characteristics can identify common problems and develop targeted solutions. However, some of the interviewed municipalities perceived diversity among municipalities to also be beneficial. After all, this allows for the exchange between less and more advanced municipalities, offering valuable insights and inspiration. Finding the right balance between homogeneity and diversity is an important factor in aligning the network's goals with the scopes and objectives of the participating municipalities. Careful consideration should also be given to the size of the network, as smaller groups may facilitate manageability and productive exchanges, while larger networks may include a wider

range of municipalities. Active involvement of staff from different departments within the municipality is recommended to ensure full participation and engagement in the network process.

A strategic approach to address the specific needs and characteristics of participating municipalities is recommended by the interview partner for future implementation of similar network processes. This includes clear communication and well-defined network goals, tailored to the objectives of each municipality while considering the financial and human resources constraints of smaller municipalities in particular. In addition, delivering tangible results, such as joint projects or funding proposals, and combining theoretical knowledge with practical tools can enhance the sense of accomplishment and foster commitment. To this end and to ensure the continuity and success of the network, involving external stakeholders and securing political support are critical. Finally, promoting success stories and sharing insights from other municipalities across Europe can stimulate interest and participation in future network projects.

Organisational aspects also play a key role in facilitating effective networking. Face-to-face meetings are essential to build personal relationships and improve communication. In regions with large distances between municipalities, a combination of face-to-face and online meetings is considered the most effective approach. Increasing the frequency of meetings, while keeping their duration short, can foster collaboration according to the interview partners. Involving experts with a holistic approach who spend more time with each municipality can provide valuable perspectives that may not be apparent to those directly involved. In networks made up of individuals who are not fluent in English, the provision of translation services for documents and discussions is essential to facilitate communication and information sharing.

5 GENERAL GUIDELINES TO FURTHER DEVELOP THE LEARNING MUNICIPALITY NETWORK APPROACH

To derive generalised guidelines to further develop the network approach it is important to identify the most relevant network elements and how these can be optimised for maximum impact. For example, what is most important about the network meetings—technical input or informal exchange or a combination of both? A more thorough investigation of these topics could also contribute to defining minimum standards for efficiency networks.

- 1. Identify the main contact person for the network in each municipality:** This should be done right in the beginning as the (frequent) change of contact persons can act as a barrier to the implementation of the network approach. Ideally, the main contact person for the network is a civil servant and not an elected representative to prevent the change of contact persons due to municipal elections. Defining a proxy ensures a continuous exchange and flow of information when the main contact person is absent.
- 2. Consider the needs of municipalities in planning the network meetings and designing capacity-building measures:** Drafting the network meetings' agenda together with the municipalities helps consider municipalities' needs. In addition, enough time should be foreseen for (informal) exchange with the other municipalities and best practice examples and practical content should be provided. Site visits can serve to demonstrate solutions applied in certain municipalities. Establishing informal sub-groups in the network meetings that work on the same topics is another possibility to design network meetings in an efficient and useful way.
- 3. Provide additional possibilities for (informal) exchange between municipalities:** Regular contact was deemed necessary for a network to function well and to continue to keep the network together, enabling informal exchanges and cooperation. Additional meetings and opportunities to stay in touch help with getting to know each other and being able to contact each other also outside of the regular meetings.
- 4. Provide easily accessible information material to the municipalities:** If possible, the material should be provided in the local language as language barriers exist in some municipalities, i.e. many representatives are not familiar with important terms from the field of energy or energy policy in English.
- 5. Engage the community:** Getting stakeholders on board who are not directly involved in the project and keeping them enthusiastic about the project throughout its entire duration can be challenging. Providing

information and communication targeted to relevant stakeholders, especially at the beginning of the project is important to overcome this barrier.

6. **Aim at consolidating the network approach:** Longer timeframes beyond three years should be considered when implementing similar network approaches. Sustainable change often requires longer periods, especially in municipalities, and longer timeframes may allow for more comprehensive and impactful outcomes, leading to successful energy transition initiatives.

6 OUTLOOK ON FUTURE POTENTIALS OF THE LEARNING MUNICIPALITY NETWORK APPROACH

The LMN approach has demonstrated promise in increasing the networking among municipalities, and provided a framework for exchange, collaboration, and knowledge sharing in the field of energy and climate. This was shown by the socio-scientific evaluation of the network approach: the LMN approach was perceived as useful and beneficial for the municipalities. Perceived benefits were the exchanges and collaboration with other European municipalities and with the municipalities in the own network. However, some barriers were mentioned that made participation in the project complicated. Frequently mentioned barriers were a lack of time and resources, in particular in small municipalities. By leveraging the learnings from the evaluation and building on the strengths highlighted in the findings of our evaluation, the LMN approach has the potential to aid municipalities in advancing their climate activities.

Due to the temporarily dramatic energy price increases all over Europe in 2022 after the Russian invasion of Ukraine and the ensuing, ongoing uncertainties, European municipalities have arguably more pressure than ever to transform their current energy systems to a more sustainable system. Time is pressing and many approaches are needed. The Learning Municipality Network approach proved as one successful way of pushing the energy transition by supporting municipalities to implement parts of their SE(C)APS. Instead of reinventing the wheel, participating municipalities profited by the exchanging experiences since most are facing similar challenges. This approach can be adjusted rather easily and adopted by other (European) regions as well. Therefore, it is crucial to address barriers, such as a lack of time and resources. One way to achieve this is to provide more funding possibilities and to make them more accessible to municipalities, for example by removing bureaucratic hurdles or simplifying the application processes.

Future projects with a similar approach could take even more account of the needs of the participating municipalities in the design of the network work and further increase the practical orientation of the content.

In conclusion, the project has contributed to increasing the consortium's expertise in climate action at the municipal level and has supported the participating municipalities in the process towards a sustainable society. For the EU level, indications and recommendations could be given on how a network approach in municipalities can advance climate protection on the ground.

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9 APPENDIX

Table 1: The participating networks and municipalities (sources: Conforto 2021 and own research)

NETWORK NAME AND COUNTRY	LOCAL ADMINISTRATIONS	ACTION PLAN FORMAT	PUBLICATION YEAR
Rhône Network (ALTE69) - France	CCMDL - Communauté de Communes (CdC) des Monts du Lyonnais (32 municipalities)	SECAP	2018
	CCSB - CdC Saône-Beaujolais (35 municipalities)	SECAP	2020
	COR - Communauté d'agglomération de l'Ouest Rhodanien (31 municipalities)	SECAP	2019
	SOL - Syndicat de l'Ouest Lyonnais (41 municipalities) ²	SECAP	2020
SCN - Greece	Oichalia	SEAP	2017 (1st monitoring 2019)
	Ierapetra (Crete)	SEAP	2015
	Korinth	SEAP	2014
	Vari-Voula-Vouliagmeni	Decarbonization Plan (C-TRACK 50)	2021
	Messini	SEAP	2013
	Dodoni	-	-
	Pella (Edessa)	-	-
	Xylokaastro	SECAP	2021
UCSA - Italy	Palma Campania	SECAP	2020
	Striano		
	San Giuseppe Vesuviano		
	San Gennaro Vesuviano	-	-
CNL - Netherlands	Achtkarspelen	SECAP	2020
	Ameland	SEAP	2019
	Dantumadeel / Dantumadiel	SECAP	2012-2016
	De Friese Meren / De Fryske Marren	SECAP	2019
	Harlingen	SEAP	2022
	Heerenveen	SECAP	2019
	Leeuwarden	SEAP	2016
	Noardeast-Fryslân	SEAP	2017
	Ooststellingwerf	SECAP	2021
	Opsterland	SEAP	2019
	Schiermonnikoog	SECAP	2019
	Smallingerland	SECAP	2016
	Súdwest-Fryslân	SECAP	2022
	Terschelling	SECAP	2018
	Tietjerksteradeel / Tytsjerksteradiel	SECAP	2020

² The Syndicat de l'Ouest Lyonnais is composed of four Inter-Municipalities: Communauté de Communes de la Vallée du Garon (5 municipalities), Communauté de Communes du Pays Mornantais (11 municipalities), Communauté de Communes du Pays de l'Arbresle (17 municipalities), Communauté de Communes des Vallons du Lyonnais (8 municipalities).

	Vlieland	SECAP	2017
	Waadhoeke	-	-
	Weststellingwerf	SECAP	2021
	Provincie Fryslan	SEAP	2019
Oeste	Alcobaça	SEAP	2014
Sustentável	Alenquer	SEAP	2014
-			
Portugal	Arruda dos Vinhos	SEAP	2014
	Bombarral	SEAP	2014
	Caldas de Rainha	SEAP	2014
	Nazaré	SEAP	2014
	Óbidos	-	-
	Peniche	SEAP	2014
	Torres Vedras	SEAP	2013

Table 2: Minutes database

MINUTES DATA BASE				
ID	NETWORK	DATE(S) OF THE NETWORK MEETING	TYPE OF MEETING	DURATION
GR_MI_1		02.04.2021	Online	9:50 am - 2:15 pm
GR_MI_2		17.12.2021	Online	9:50 am - 2:15 pm
GR_MI_3	Greece	26.05.2022 & 27.05.2022	Online Online	n.a. n.a.
GR_MI_4		18.11.2022	Online	9 am - 1 pm
GR_MI_5		26.04.2023	Online	10 am – 1:30 pm
FR_MI_1		20.05.2021 & 30.06.2021	Online Face-to-face	9:30 am - 1 pm 2 pm - 6 pm
FR_MI_2		27.09.2021 & 02.12.2021	Face-to-face Face-to-face	9 am - 2 pm 9 am - 1:30 pm
FR_MI_3	France	04.03.2022	Face-to-face	9 am - 5 pm
FR_MI_4		11.07.2022 & 12.07.2022	Face-to-face	9 am - 6 pm 9 am - 1 pm
FR_MI_5		19.01.2023	Face-to-face	9 am – 5:30 pm
FR_MI_6		10.07.2023	Face-to-face	9 am - 5 pm
PT_MI_1		12.05.2021	Online	10 am - 3 pm
PT_MI_2		10.11.2021	Online	11 am - 6:30 pm
PT_MI_3	Portugal	09.05.2022	Online	10 am - 1 pm
PT_MI_4		16.09.2022	Online	10 am - 1 pm

IT_MI_1		08.03.2021 & 26.03.2021	Online Face-to-face	10:30 am - 1 pm 10:30 am - 1 pm
IT_MI_2	Italy	11.02.2022	Face-to-face	10:30 am - 1 pm
IT_MI_3		01.06.2023 & 02.07.2023	Face-to-face	11 am - 1 pm
NL_MI_1		03.06.2021	Online	11 am - 12:30 pm
NL_MI_2		10.02.2022	n.a.	1 pm - 3 pm
NL_MI_3		22.03.2022	Online	1 pm - 3 pm
NL_MI_4	Netherlands	09.06.2022	Online	1 pm - 3 pm
NL_MI_5		29.11.2022	Online	10 am - 11:30 am
NL_MI_6		31.01.2023	Face-to-face	10 am – 1 pm
NL_MI_7		18.04.2023	Face-to-face	10 am – 12 pm

Table 3: Interview database network operators

INTERVIEW DATABASE NETWORK OPERATORS					
ID	No.	NETWORK	INTERVIEW DATE	TYPE OF INTERVIEW	DURATION (IN MINUTES)
GR	1	Greece	02.12.2022	Video	60
FR	2	France	06.12.2022	Video	71
PT	3	Portugal	16.12.2022	Video	52
IT	4	Italy	16.12.2022	Video	51
NL	5	Netherlands	06.12.2022	Video	63

Table 4: Interview database municipalities

INTERVIEW DATABASE MUNICIPALITIES					
ID	No.	NETWORK	INTERVIEW DATE	TYPE OF INTERVIEW	DURATION (IN MINUTES)
GR	1	Greece	19.01.2023	Video	46
	2		20.01.2023	Video	25
	3		24.01.2023	Video	27
	4		24.01.2023	Video	30
	5		27.01.2023	Video	24
	6		30.01.2023	Video	24
	7		13.02.2023	Video	23
	8		24.02.2023	Video	24
FR	1	France	24.01.2023	Video	90
	2		24.01.2023	Video	60
	3		27.01.2023	Face-to-face	90
	4		16.02.2023	Video	90
PT	1	Portugal	24.03.2023	Face-to-face	60
IT	1	Italy	30.01.2023	Face-to-face	30
	2		24.03.2023	n.a.	12
	3		28.03.2023	n.a.	18
NL	1	Netherlands	22.12.2022	Video	60
	2	(including one interview with a province and one interview with two municipalities)	16.01.2023	Face-to-face	
	3		30.01.2023	Video	
	4		17.04.2023	Video	