
D4.10 Report on the perception and evaluation of the network approach

02/06/2023



Uta Burghard & Sven Alsheimer - Fraunhofer ISI

Reviewed by:

Catrice Christ & Nico Ulmer - IREES



CONSORTIUM PARTNERS

LOGO	PARTICIPANT	COUNTRY	TYPE
	Institute for Resource Efficiency and Energy Strategies (IREES)	Germany	Scientific
	Fraunhofer Institute for Systems and Innovation Research ISI (Fraunhofer)	Germany	Scientific
	Technische Universität Wien (TU Wien)	Austria	Scientific
	Zentrum für Energiewirtschaft und Umwelt (e-think)	Austria	Scientific
	Energy Cities (ENC)	France	Scientific
	Hespul (HESP)	France	Communication
	Joint Office for Environmental Sustainability (UCSA)	Italy	Local network
	Sustainable City Network (SCN)	Greece	Local network
	Agência Regional de Energia e Ambiente do Oeste – OesteSustentavel (Oeste)	Portugal	Local network
	City Northern Netherlands represented by City of Leeuwarden (CNNL)	Netherlands	Local network
	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 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 to increase the engagement for the energy and climate transition. Policy makers and public authorities at local level are supported with scientific analysis and expertise in order 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

Proposal number: 892560

Acronym: PATH2LC

Title: Public Authorities together with a holistic network approach on the way to low-carbon municipalities

Years of implementation: September 2020 - August 2023

Client: EASME

Acknowledgement



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 892560.

Legal Notice

The sole responsibility for the contents of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission is responsible for any use that may be made of the information contained therein.

All rights reserved ; no part of this publication may be translated, reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the written permission of the publisher. Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. The quotation of those designations in whatever way does not imply the conclusion that the use of those designations is legal without the consent of the owner of the trademark.

Contents

CONSORTIUM PARTNERS	2
THE PATH2LC PROJECT	3
Project information	3
Acknowledgement	3
Legal Notice	3
ABBREVIATIONS	6
EXECUTIVE SUMMARY	7
1 INTRODUCTION	8
2 PARTICIPATING NETWORKS IN THE PATH2LC PROJECT	9
2.1 PATH2LC Project	9
2.2 Participating networks	9
3 METHODOLOGICAL APPROACH	12
3.1 Minutes of the network meetings	12
3.2 Interviews with municipalities and network operators	14
4 FINDINGS: PERCEPTION OF THE LEARNING MUNICIPALITY NETWORK APPROACH	17
4.1 How is the PATH2LC LMN approach evaluated?	17
4.2 Motivations and expectations regarding the participation in the project PATH2LC	27
4.3 Effects of the LMN approach on the implementation of climate protection measures	30
4.4 Differences between municipalities + networks in the perception of the LMN approach	36
4.5 Look into the future: What are expectations for the networks?	39
5 SUMMARY AND DISCUSSION	40
5.1 Summary of key findings	40
5.2 Discussion	41
6 CONCLUSION AND OUTLOOK	42

7	ACKNOWLEDGEMENT	42
8	REFERENCES	43
9	APPENDIX	44
9.1	Interview guideline network operators	44
9.2	Interview guideline municipalities	47
9.3	Informed consent form	53
9.4	List of codes	56



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 project
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, the perception of the network approach by the network operators and the participating municipalities during the project period is analysed. In addition, it is investigated if participating in the network had an influence on the implementation of SE(C)AP measures in the municipalities. Based on this, recommendations for a continuous improvement of the LMN approach are developed. The inputs for this analysis are 16 minutes of the network meetings and 20 interviews conducted with network operators and municipalities.

The findings indicate that the learning network approach was evaluated positively by the network operators as well as by the municipalities. That is, the 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 their own respective network. In addition, knowledge gains in several areas were mentioned by the interview partners. When it comes to the evaluation of certain elements of the LMN approach, municipalities in particular evaluated the capacity building elements such as trainings very positively. In addition, the network meeting organisation was positively assessed by many municipalities.

Although PATH2LC brings many benefits to the municipalities, 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. When it comes 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. Some barriers for measure implementation were identified, such as missing human and financial resources, a lack of awareness of the SE(C)APs in the municipalities, old data or the limited availability of data as well as outdated measures in the SE(C)APs. Finally, the expectations on the future development of the network were mainly positive, in particular from the perspective of the municipalities.

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. The upcoming Deliverable 4.11 Report on recommendations for an improvement of the applied approach of learning municipality network in PATH2LC will consolidate the results of the scientific accompanying research in PATH2LC and develop recommendations for a future design of the LMN approach.

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 a 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 by 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 participating in an energy efficiency network, companies double their speed of progress in the 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). This process can be adapted and applied to municipalities.

With the PATH2LC project we intend to enable decision makers and administration staff of municipalities to obtain the competences and skills needed regarding the implementation of energy-saving or climate protection measures on a personal and a group level. In PATH2LC, the approach of learning energy efficiency networks is adapted to municipalities: The Learning Municipality Networks (LMN). The LMN approach of the PATH2LC project aims to support public authorities in the implementation of climate protection measures. Within the PATH2LC project, the approach of LMN is being implemented for the first time. 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 longterm 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, the perception of the network approach by the network operators and the participating municipalities during the project period is analysed. In addition, it is investigated if participating had an influence on the implementation of SE(C)AP measures in the municipalities. Based on this, recommendations for a continuous improvement of the LMN are developed. The inputs for this analysis are the minutes of the network meetings and interviews conducted with network operators and municipalities.

2 PARTICIPATING NETWORKS IN THE PATH2LC PROJECT

2.1 PATH2LC Project

The overarching objective of the PATH2LC project is to support policy makers and public authorities at local level in the transition process towards a low carbon society. Through a holistic network approach, stakeholders in public authorities are linked among municipalities in order to enable peer-to-peer learning and increase the engagement in energy and climate transition. The holistic network approach is described as Learning Municipality Networks (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, exchange on 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.

The approach of Learning Municipality Networks follows a defined process: 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. Within the project we work together with existing networks and municipalities which have already identified measures in their SEAPs or SECAPs.

2.2 Participating networks

The PATH2LC project brings together municipalities on regional and international level 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. The following table gives an overview on the networks and municipalities and the action plans.

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) ¹	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	-	-
CNNL - 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
	Vlieland	SECAP	2017
	Waadhoeke	-	-
	Weststellingwerf	SECAP	2021
Provincie Fryslan	SEAP	2019	
Oeste Sustentável - Portugal	Alcobaça	SEAP	2014
	Alenquer	SEAP	2014
	Arruda dos Vinhos	SEAP	2014
	Bombarral	SEAP	2014
	Caldas de Rainha	SEAP	2014
	Nazaré	SEAP	2014
	Óbidos	-	-
	Peniche	SEAP	2014
	Torres Vedras	SEAP	2013

¹ 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).

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 a SECAPs is compulsory in France for local authorities over 20,000 inhabitants (Inter-Municipalities included), most often produced by external consultants. During the late 2010s, the 4 inter-municipalities participating in the PATH2LC project have decided to be more ambitious by planning to become ‘Positive Energy Territories’ 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. 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 for 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 develop 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, to 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 the 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 the 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 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 capacity for responding to the local challenges, different priorities and pace.

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 wish to receive capacity building to pass it on to their member municipalities, to better support them in developing transition roadmaps and new SECAPs.

3 METHODOLOGICAL APPROACH

To monitor the perception and evaluation of the network approach during the project period, the minutes of the network meetings are collected and analysed. At the end of the network phase, municipalities as well as network operators were interviewed regarding their perception of the network approach.

3.1 Minutes of the network meetings

The perception of the network approach by the participating municipalities during the project period is assessed based on the minutes of the network meetings.

3.1.1 Data collection

Minutes were created for the network meetings during the project period. The minutes were issued by the network operators, who were provided with a template and instructions prior to the start of the network process. The aim of the collection of the minutes was to capture a comprehensive overview of the decisions made during the meetings, as well as the discussions that took place.

In order to ensure that the minutes contained all the relevant information for our evaluation, the network operators were instructed to not only document the topics covered in the presentations, but also the contents of the discussions. In the guidelines we emphasised that the information should be presented in a well-organized format using whole sentences or well understandable bullet points. Additionally, the network operators were encouraged to include a feedback section in the meeting agenda, and they were provided with a list of topics to ask for feedback on.

The minutes of the network meetings included basic information such as the date, time and location of the meetings, as well as the number and affiliations of the participants. Furthermore, the minutes gave an overview on the main topics of each meeting and summarised the main contents and the corresponding discussions for each agenda item. Finally, many minutes also included feedback sections in which network operators incorporated input provided by the participants, e.g. on their perception of the network approach and of the starting phase of the network process, and their evaluation of the organisation of the network meetings.

3.1.2 Data base

Sixteen documents entered our evaluation of the minutes of the network meetings. They include documents from 2021 - the year in which the regular network meetings within the PATH2LC project started - and 2022. We stopped collecting data for our evaluation in April 2023: by that time, no network meetings had taken place in 2023 or the minutes had not been made available to us despite sending frequent reminders.

The following table gives an overview of the minute's database for each network. It lists the ID for each document and the date, type and duration of the respective network meeting. In case a network meeting consisted of two parts, the dates of both meeting parts is given.

Table 2: Minutes data base

MINUTES DATA BASE ²				
ID	NETWORK	DATE(S) OF THE NETWORK MEETING	TYPE OF MEETING	DURATION
GR_MI_1	Greece	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		26.05.2022 & 27.05.2022	Online Online	n.a. n.a.
GR_MI_4		18.11.2022	Online	9 am - 1 pm
FR_MI_1	France	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
PT_MI_1	Portugal	12.05.2021	Online	10 am - 3 pm
PT_MI_2		10.11.2021	Online	11 am - 6:30 pm
PT_MI_3		09.05.2022	Online	10 am - 1 pm
PT_MI_4		16.09.2022	Online	10 am - 1 pm
IT_MI_1	Italy	08.03.2021 & 26.03.2021	Online Face-to-face	10:30 am - 1 pm 10:30 am - 1 pm
IT_MI_2		11.02.2022	Face-to-face	10:30 am - 1 pm
NL_MI_1	Netherlands	03.06.2021	Online	11am - 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		09.06.2022	Online	1 pm - 3 pm

3.1.3 Data analysis

The network operators provided the minutes of each network meeting in English to Fraunhofer. The minutes were analysed with the help of MaxQDA.

3.2 Interviews with municipalities and network operators

In order to assess the perception of the LMN approach, interviews were conducted with the five network operators and the municipalities in each network.

² At the time of analysis, we did not receive minutes of all the network meetings yet. That's why the statements in the interviews can differ from the actual data base of the minutes.

3.2.1 Data collection interviews with network operators

Interviews with the network operators were conducted on their perceptions of the process as a whole, perceived satisfaction of the participating municipalities, organisational processes and practices, potential effect of the networks on the implementation of measures related to energy issues as well as the extent of cooperation in each network. The network operators were contacted via email to ask them about their willingness to take part in an interview. For the interviews, an interview guideline was developed. The main topics in the interview guideline are perceptions about the initial phase of the LMN approach, a general evaluation of the network approach, perceived effects of the approach and an outlook and further remarks. The interview guideline for the interviews with network operators is included in the Appendix. The interviews were conducted in English via MS Teams.

For data protection, an informed consent form was developed. This form gives the interview partners information about the study (e.g. aim of the project, contribution of the interview partners, risks of participation etc.) so that they can make an informed decision about their participation in this research. The form has to be signed by the participants. The informed consent form is included in the Appendix. The interviews lasted between 51 and 71 minutes.

3.2.2 Data collection interviews with municipalities

The network operators conducted interviews with the municipalities in their networks. Guiding questions are the perception of the LMN approach, in how far their expectations have been fulfilled or have changed during the participation of the network and if participating in the network leads to a knowledge increase in relation to energy issues. In addition, it was analysed if participating had an influence on the implementation of SE(C)AP measures and if the barriers for measure implementation identified in task 4.4 are still in place or if there are barriers. The interview guideline for the interviews with municipalities can be found in the Appendix.

Ideally, one interview is conducted in every network member municipality with stakeholders that take an active part in the network. The interviews were conducted by the local partners in the national languages.

For data protection, a similar informed consent form compared to the one for the network operators was developed and handed to the local partners. The interviews lasted between 12 and 90 minutes.

3.2.3 Data bases

The interview data base for the network operators consists of five interviews, one in each network (Table 3). In the municipalities, 20 interviews were conducted (Table 4) - eight interviews in Greece, four in France, one in Portugal, three in Italy and four interviews were conducted in the Netherlands.

Table 3: Interview data base network operators

INTERVIEW DATA BASE 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 data base municipalities

INTERVIEW DATA BASE 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	

3.2.4 Data analysis

All interviews - with the network operators as well as with the (inter-)municipalities - were recorded. From the recordings, interview summaries were developed. A template was provided to prepare the interview summaries, which was structured according to the interview guideline. The partners who interviewed the municipalities provided an interview summary of each interview in English to Fraunhofer.

The interviews were analysed with the help of MaxQDA. First of all, a code system was created based on the interview guidelines. During the subsequent coding, new codes and sub-codes were added if topics arose that had not yet been mapped in the code system. The code system is included in the Appendix.

4 FINDINGS: PERCEPTION OF THE LEARNING MUNICIPALITY NETWORK APPROACH

In this section the results of the interview and minutes analysis are presented. At first, the evaluation of the LMN approach is described. The next section describes the motivations and expectations regarding the participation in the project. Afterwards, the perceived effects of the approach on the implementation of climate protection measures in the municipalities are described. After that, we look at differences between (inter)municipalities and networks and at the end of this chapter, expectations of the interview partners regarding a further rollout of the LMN approach are described.

4.1 How is the PATH2LC LMN approach evaluated?

First, the overarching evaluation of the LMN approach is presented, followed by perceived benefits, shortcomings, barriers and drivers of the approach. After that, the perception of certain elements of the LMN, e.g. network meetings, is reported. Finally, we present the findings on the evaluation of the starting phase of the PATH2LC project.

4.1.1 Overall evaluation of the LMN approach

Overall, the LMN approach was evaluated positively - by the interviewed network operators as well as by the interviewed (inter)municipalities: "The network approach is a real added value.", as a French interview partner stated. That is, the approach was perceived as useful and beneficial by all network operators as well as by the majority of the (inter)municipalities. Some (inter)municipalities in particular liked the exchange and collaboration with other European municipalities and with the municipalities in the own network.

In Figure 1, the overall evaluation of the LMN in relation to the sentiments (positive or negative sentiments) phrased in the interviews and minutes is depicted. Therefore a MAXQDA code-relations-browser is used. The size of the boxes shows how often two codes overlap in a text passage in a respective document. It can be seen that the overall evaluation of the LMN is positive - this applies for the network operators and even more for the (inter)municipalities.³ The boxes for a negative evaluation of the LMN approach are significantly smaller in both groups, i.e. the approach is less often rated negatively.

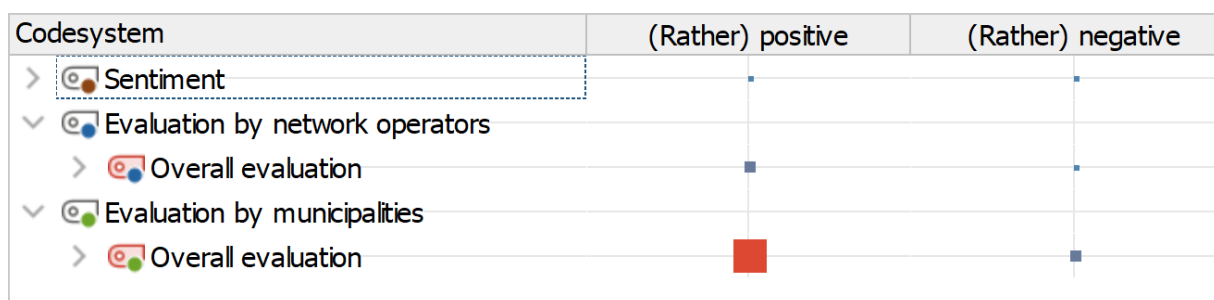


Figure 1: Overall evaluation of the LMN approach

³ However, this result is also partly due to the fact that more (inter)municipalities than network operators were interviewed.

4.1.2 Perceived benefits, shortcomings, drivers and barriers of the LMN approach

Figure 2 gives an overview on the codes in relation to the sentiments expressed in the interviews and minutes in relation to a certain topic resp. code (positive or negative). Again, a MAXQDA code-relations browser is depicted. It turns out that the boxes in the column of positive sentiments for most codes are larger than the boxes in the column of negative sentiments. In particular, the benefits of the LMN approach were highlighted very positively by the (inter)municipalities.

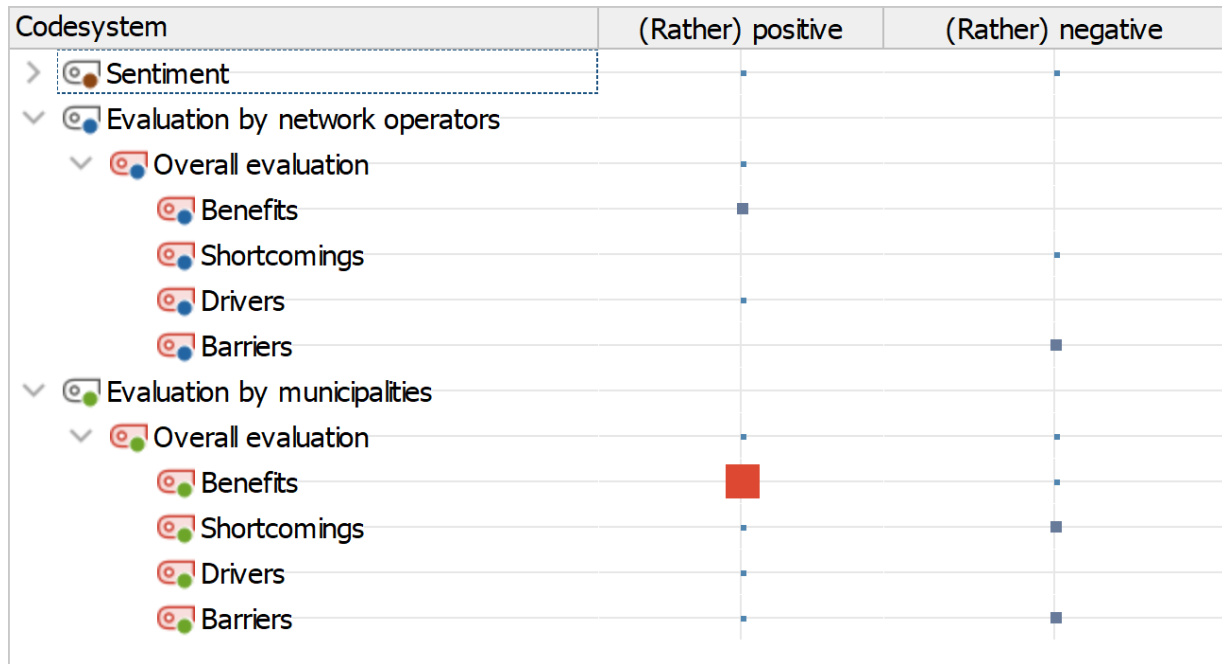


Figure 2: Benefits, shortcomings, drivers and barriers of the LMN from the perspective of network operators and municipal representatives

In the following, the coded segments for the codes mentioned are examined and interpreted in more detail.

Benefits that were mentioned in several networks are knowledge gains regarding energy topics in general, regarding funding opportunities and regarding the feasibility of certain projects, as well as related to CoM and the process of developing a SE(C)AP: "The participation of the Municipality of [name of municipality] in PATH2LC, triggered the necessity and opportunity of reactivating back the CoM process." (PT)

A further benefit from the point of view of the majority of interview partners was the exchange with other municipalities. This can lead to new ideas, increase inspiration and raise motivation to work on these topics as well as increase the perceived importance of energy issues: "Everyone was more motivated and perhaps more committed than if they had worked or operated individually" (IT). Even within a municipality, participation in the project can lead to more exchange and attention. Also, the project gives the agencies more assertiveness, in the sense that it leads to a higher perceived commitment on the part of the municipalities to actually participate in the meetings.

Joint participation in a network was seen as useful by all networks because municipalities that are close to each other or municipalities with similar ambitions often have similar issues that are important to them. The exchange with more advanced municipalities can also be very helpful and inspirational to others. The network offers the framework to discuss and work on these common issues and serves as an institutionalization of the former rather informal networking. The form of a network with joint meetings for exchange leads to a greater openness towards sharing their own issues and problems with the other (inter)municipalities. According to the networks, the municipalities learn from each other, which was seen as very useful by them.

"We learn a lot from it ourselves but knowing people in other municipalities is also useful. This allows us to get knowledge and experiences from other municipalities. In the end, we all face the same obstacles and then it is nice

to exchange knowledge." (NL)

In addition, the open exchange of problems was named as another benefit of the network approach for the municipalities.

Good practice examples help in developing an own strategy for decarbonization and can make one's own work more efficient and faster, as possible errors can be avoided. The municipalities can jointly obtain expertise from outside and draw on this jointly. In addition, examples from other municipalities can help to better classify and evaluate one's own projects and, if necessary, to correct them. The project thus allows to compare one's own progress with the other municipalities as noted in several networks. Furthermore, the possibility to receive continuous feedback, i.e. over the project lifetime, was seen as very valuable.

"Because in their municipality, they know what they do, [...] they know how much budget they have for everything, but when they see another municipality do the same project, e.g. with a much lower budget, or from another financial scheme that they applied to, [...] this is very important for them." (GR)

As far as the exchange with other municipalities is concerned, an interview in the French network showed that this exchange with the municipalities in their own network is perceived as more useful than the exchange with the other European municipalities: "Rather useful, the network approach, especially locally with the other territories of the Rhône." (FR). However, there was also the opposite view, for example in the Italian and in the Greek network, namely that an exchange with European municipalities can also be very helpful.

"[...], because we feel that a country like ours, a country in the South of the Campania Region, can network with countries in the other member states of the European Community with which an interaction, a remarkable comparison can arise, in order to then be able to create projects that can be put in place by each municipality." (IT)

However, according to some interview partners, sometimes it is hard to identify the direct benefits of the PATH2LC project against the background of changing context factors, e.g. the energy crisis that raised the importance of energy topics.

Apart from these benefits, only a few overall **shortcomings** of the LMN approach were stated. In three networks it was mentioned that participating in the project is time-consuming. However, the benefits outweigh the time invested from the perspective of the interviewed actors: "The negative effect is that it always seems to take too much time, but in fact, when you take it, you realise that it is useful." (FR)

Some (inter)municipalities stated that some of the contents presented correspond well to the specific needs of the municipalities while others do not. The methodology of the project was perceived as rather abstract and therefore sometimes difficult to adapt to local needs and circumstances. Several interview partners further mentioned that the time of the project is too short to really move a lot. A municipality stated that they lacked examples from concrete projects. This would promote inspiration and ideas to implement projects themselves. Another municipality noted that for municipalities that are already well advanced and have had a SECAP for some time, some of the topics in the project are of little interest. This heterogeneity, however, e.g. in terms of the size of municipalities in a network, can also be seen as an advantage, as this makes it possible to learn from different projects of bigger cities.

"I liked the heterogeneity that existed in the Greek network. If our municipality was talking to the municipality of Messina, for example, we would exchange the same views and ideas. A big urban municipality with more experience offers us more experiences." (GR)

Further perceived shortcomings of the LMN approach related more to certain specific elements of the LMN approach and are described in the next section.

Various **drivers** were mentioned for the implementation of the network approach. Experience of the network operator was stated as an important driver. The motivation that arises from participating in a network with like-minded people was mentioned in some networks as another driving factor. In the two networks, it was stated that the representatives' minds in terms of cooperation are important, in the sense that they have to be willing to collaborate and share their knowledge with others instead of expecting to only receive support. According to the

interview partners, such a change in mind occurred during the project lifetime in some networks. In the Portuguese and the Dutch network, the commitment of the mayors and the municipal administration to the project was seen as an important driver for the success of PATH2LC.

"This was one aspect, it was very clear and we felt that that really happens with mayors and municipalities where you have the toplevel commitment, you will have definitely the staff commitment as well." (PT)

Furthermore, clear goals are important according to a municipality; this means that the participants in the network must be clear about what they want to achieve or whether it is just a matter of exchanging information. In the Greek network the topic of energy to tackle the climate crisis was named as a driver. Motivation to participate in the project, however, is also drawn from providing a service to the municipality.

Barriers that can hinder the implementation of the network approach are a lack of time and resources. This challenge was mentioned in several networks.

"The idea to give tools and to give trainings and those tools will be absorbed by the local authorities directly means that behind you have human beings' availability of working with those tools. And typically, those people have no time. [...] Because I mean, there, in the best place, there is one person who is working full time for that. But that is an exception." (FR)

This challenge in particular applies to small municipalities. In the Netherlands, it was added that municipalities are being given more and more tasks by the state, which makes participation in projects like PATH2LC even more difficult. In addition, Dutch municipalities receive money according to their size; i.e. the burden for participating is higher in smaller municipalities with less staff. At the same time, the smaller municipalities may also be able to draw more benefit from PATH2LC. According to the Italian network, the consequence of this lack of human resources is that at many meetings only half of the registered participants are present. An Italian municipality confirms this: Meetings are difficult to hold due to lack of staff, especially in small municipalities. In this network, the lack of time was counteracted by dividing the people between the meetings, i.e. only the person with the greatest level of knowledge regarding a certain topic attends the respective meeting and afterwards informs the others on the new developments in the project, therefore making use of a train-the-trainers approach.

The administrative structure in municipalities can be another challenge according to the French network, because it is often organised vertically. Since energy topics are situated at the intermunicipal and not at the municipal level in the French network, implementing the LMN approach proves more difficult. This means that it is not possible to communicate directly with the other networks, making it harder for the French network to compare and exchange information with the other PATH2LC networks. On the other hand, according to the French interview partners, this structure can make communication easier because fewer people are involved in the meetings.

Another challenge for the PATH2LC project is the change of contact persons due to municipal elections. Interviewees from two networks pointed out this challenge. According to the Greek network, most of the contact persons from the municipalities are elected representatives. That is, if elections take place within the project period, this may pose a risk to the project. In the French network it was noted that the project is more abstract for the elected representatives compared to the civil servants: "For the elected representatives, it's more abstract, but as long as the agents (civil servants) are happy with it and it doesn't cost anything to my Intercommunality, it's fine." (FR)

In several networks, getting stakeholders on board who are not directly involved in the project (such as political representatives and local enterprises) was mentioned as another challenge. A possible reason from the perspective of the Italian network is scepticism when it comes to collaborating with municipalities. According to a French interview partner, a lack of information and communication targeted to other relevant stakeholders especially at the beginning of the project was one reason for this. In the Dutch network the frequent change of contact persons makes collaboration with these further stakeholders difficult. An additional challenge was keeping these stakeholders enthusiastic about the project throughout its entire duration.

Another barrier, according to some networks, was the language. Many people are not familiar with important terms from the field of energy or energy policy. As a consequence, in the Italian network, material in English in many cases was not read by the representatives.

In the Dutch and the Greek network, it was stated that the municipalities in the network differ regarding their size and thus have different challenges and topics on their agendas.

Another barrier mentioned in a network was the unwillingness of certain municipalities to exchange information with others.

“Some, like the idea of sharing information and are open to discussing topics that do not apply to themselves. These find it more useful and those are also the ones that are then also involved in other projects with this approach. For some, this is not the case. They are there because they are pushed by the network operators, since the project asks for the meetings to be done in this way rather than applying a strategy that is chosen nationally.”
(IT)

Finally, in several networks, the Covid restrictions were named as a challenge. Two interviewees expected that with more physical meetings collaboration between the municipalities would have been easier.

Evaluation of elements of the LMN approach

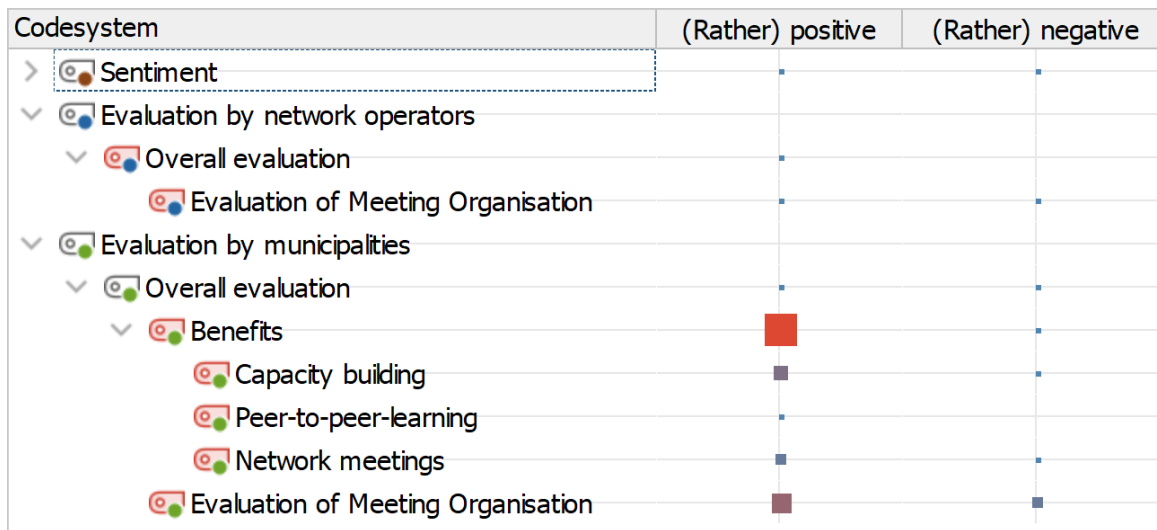


Figure 3: Evaluation of elements of the learning municipality network approach from the perspective of network operators and municipal representatives

gives an overview of the codes in relation to the sentiments expressed in the interviews and minutes with the help of a MAXQDA code-relations-browser. For the municipalities, the codesystem is more differentiated because the interview guideline was more detailed for these topics. In addition, more interviews were conducted which leads to a broader spectrum of perspectives.

The municipalities in particular assessed the capacity building very positively. In addition, the network meeting organisation was positively evaluated by many municipalities. However, there was also a need for improvement perceived - both from the point of view of the network operators and the municipalities.

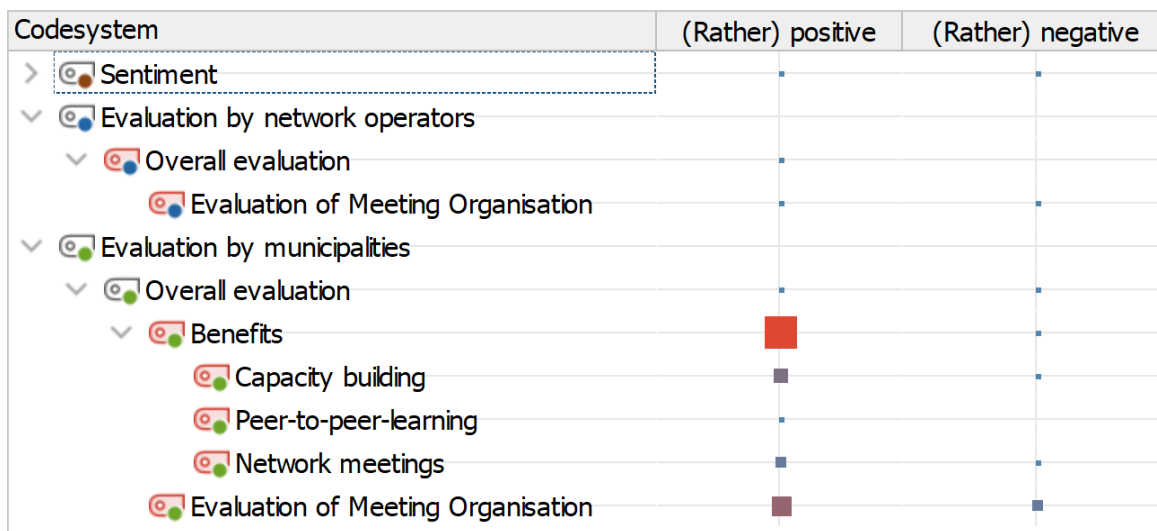


Figure 3: Evaluation of elements of the learning municipality network approach from the perspective of network operators and municipal representatives

Looking at the developments in the perception of the LMN approach over time, the evaluation of the municipalities' feedback in the minutes revealed that throughout the whole network process, the municipalities perceived the LMN approach as positive. Figure 4 gives an overview on the codes in relation to the sentiments expressed in the minutes with the help of a MAXQDA code-relations-browser.

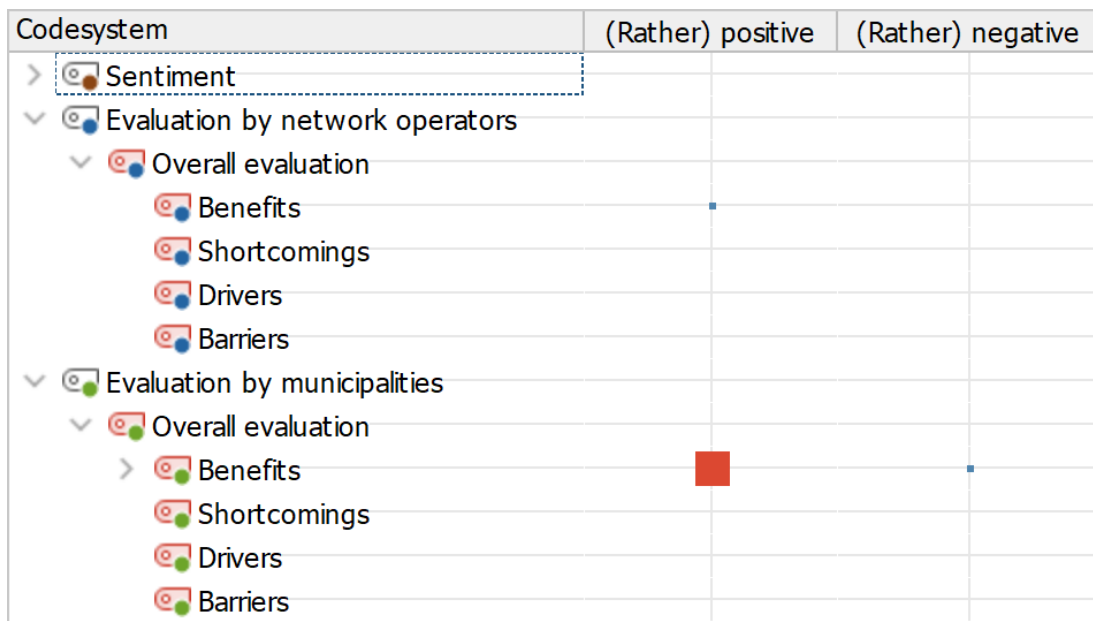


Figure 4 Evaluation of the LMN approach during the project period as assessed in the minutes of the network meetings

Network meetings

The network meetings were positively evaluated by the network operators and the (inter)municipalities. The municipalities stated that the time spent on the project was well invested and that the meetings gave the municipalities the feeling they are not alone with their respective challenges.

“It’s always a precious time to spend, to be allowed to spend time with the others and to discuss projects but also to get to know each other and to share concerns about their everyday professional life etc.” (FR)

Throughout the whole project period, the LMN approach was perceived to provide motivation and to keep the subject

of energy issues on the agenda, which contributes to counteract the barrier of the high workload of the municipal representatives.

"It is very positive that meetings take place at regular intervals, thus having this mobilisation permanently. Due to our workload we switch tasks, but this mobilisation helps us to get back to the subject." (GR_MI_2)

Some (inter)municipalities in particular appreciated the exchange with the other municipalities, the best practice examples, the feedback by the network operators and the material provided. In the French intermunicipalities, the possibility for a follow-up was evaluated positively, i.e. a specific project can be accompanied from planning to implementation.

"Having feedback on projects, with follow-up: feedback at the start of the project, feedback during the implementation phase, which changes: sharing feedback in concrete terms." (FR)

In the Netherlands, the meetings have become more practice-oriented over the project lifetime. Because of this and because the participants got to know each other better, the meetings were now seen as very helpful, for example because informal sub-groups have been formed that work on the same topics.

Some (inter)municipalities, however, stated that the meetings should focus more on the needs of the specific regions and municipalities and more practical content and examples should be provided. In addition, some of the content was difficult to understand for people dealing with these issues for the first time. According to the municipalities, the interpretations have helped, in particular when it comes to technical terms. As far as the number of participants in the network meetings is concerned, some municipalities considered it to be too high, others considered it to be appropriate, because then diverse perspectives can be integrated and considered. In the Dutch network there was also a desire for a strengthened cooperation between the participating municipalities across the different networks.

Regarding the organisation of the network meetings, municipalities in Italy and Portugal evaluated the efforts of the network operators positively. Barriers for the application of the LMN approach were identified in the French network in the differences between municipalities, e.g. regarding the size of the municipalities, limiting the comparability of the municipalities. In the beginning, this was perceived as a shortcoming, which subsequently improved over the course of the project.

In terms of the adequate number of meetings, some network operators stated that the two to three network meetings per year foreseen in PATH2LC are sufficient. The Greek municipalities also evaluated the number of meetings as sufficient. From their perspective, constant meetings help to stay on topic. More meetings would be of no use, as there would be too little time to make progress with the projects and therefore little new information could be reported in the meetings. On the other hand, however, there are enough meetings to monitor the progress of the municipalities over the course of the project. In Portugal, France and Italy, the number of network meetings was assessed positively as well. However, from the perspective of the Italian network, a few more meetings would have been good as well to make the municipalities feel more involved.

"In my opinion yes because although I believe that progress has been made, in short, contacts have been initiated, so conferences and dialogues between the various countries, however, the time has been a bit too long between meetings, because I have participated in some of the meetings and I believe that from this moment of participation we have received information that has been useful, with a positive spillover on what can be future planning." (IT)

When it comes to the length of meetings, several network operators opted for half day instead of full day meetings. For example, in the Italian network, instead of one full day meeting, meetings consisting of two half days were set up. Similarly, in the Portuguese network, half day online meetings have been conducted. The Dutch network switched to shorter and more frequent meetings (once a month) in an online format to keep the barriers to participation low. This was evaluated positively by the Dutch municipalities, because the high frequency allows the participants to get to know each other better and consequently work better together and share their problems openly. Another measure to raise participation and commitment reported from the Dutch network is to draft next network meetings' agenda together with the municipalities. Something similar was also reported in the French network, where the needs of the participants are strongly considered when planning the network meetings. In Italy, too, the municipalities were positively emphasising the fact that material was provided in advance to the meetings. With this, municipalities not

able to attend a meeting stay up to date.

Most of the network meetings were held online due to Covid restrictions. In the Greek network, further reasons for choosing online meetings or for having a mix between face-to-face and online formats are long distances between the municipalities. Online communication offers the advantage that information is easily accessible. However, several municipalities criticized online meetings because they complicate exchanging information and getting to know each other. In addition, face-to-face meetings could have been valuable in terms of best practices, e.g. visiting municipalities which implemented an innovative project.

"I would like the meetings, where the mayors talk about what they have done in their cities, to take place there, so that there is face-to-face communication, and you can really see what difference it has made to a place." (GR)

In the Netherlands and in France, some or all network meetings have been held in person. In France, the meetings took place in all participating territories a full day each, which is evaluated positively.

"It is once a month for 2 hours. That's perfect. It's a physical meeting, which is a big plus. I feel there is more interaction then. Also outside the meeting is very important, informal networking sometimes you learn more outside the meeting." (NL)

The issue regarding the lack of human resources came up again when discussing the network meetings in the interviews. This can complicate work, because many participants are missing or the people change between the meetings. Some also reported that the municipalities hardly continue working after the network meetings or hardly read the material provided. In Italy, the language barrier is one reason for that (i.e. the material is only provided in English).

Trainings, capacity building measures and peer-to-peer learning workshops

The trainings and capacity building measures (for network operators) were evaluated positively in the Greek network. These are designed in such a way that even newcomers can understand them well. When it comes to the trainings and capacity building measures designed for municipalities, Greek municipalities saw them as useful, too. Interesting topics from their perspective were energy efficiency in buildings, heating and cooling planning, community participation, stakeholder involvement and financing of energy efficiency actions (especially European funding mechanisms), among others. These trainings and good practices have improved assessing the feasibility of a particular project for the municipalities.

"All the representatives of the Municipalities find the events of the project very interesting and all expressed their desire to acquire know-how in the implementation of energy efficiency actions in municipal buildings, water supply and irrigation, as well as in the utilization of energy from waste management (district heating application for the production of biogas produced from the Waste Treatment Plant of Ioannina)." (GR_MI_2)

In the French network, the feedback as well as the training sessions, e.g. ELENA training in January 2023, were evaluated as useful. Interesting topics in the trainings are community engagement, heating and cooling planning, lighting and financing of energy efficiency measures. In addition, the local TEPOS (Energy Positive Territories) meetings were perceived as interesting.

In the Italian network, the input from technical experts was assessed positively. In this network, too, the topic of financing was seen as one of the most important issues. In addition, energy efficiency of buildings was another important topic for the municipalities in this network.

"Definitely the funding available, because then of course the problem is always the same: that is, if there is no money, you can hardly carry out these projects. Obviously, given the situation we have (of scarce financial resources available), there are more necessary and pressing things so with this funding, which we can use, we can then carry out such projects." (IT)

The different tools provided, e.g. the webinar and dialogue tool, were evaluated as helpful in the Italian network. In the Dutch network, the most interesting topics are engagement of residents and collaboration with NGOs. In the Portuguese network the technical training sessions on building renovation strategy and stakeholder management

were perceived positively.

Overall, the capacity building measures in the PATH2LC project were perceived as interesting and helpful in many municipalities throughout the whole project period and were thought to help in gaining knowledge and skills in new areas, either for the municipalities themselves or their subcontracting partners. In the French and the Greek network, it was expected that the trainings and tools will be helpful in the future. One intermunicipality also envisioned a specific use case.

"The SECAP have to be renewed every six years, with an interim review after three years. The subcontracting energy design/engineering office that subcontracts with local authorities to help them to realise the 'interim review' could charge this work while this data recovery work could possibly be done thanks to free European software."
(FR_MI_2)

However, in some (inter)municipalities, it was noted that some of the input was not tailored enough to the specific needs of the municipalities.

"The only negative effect was that the project imposed some external interventions (...) which were difficult to take advantage of for our territory, whereas we could have discussed or continued to discuss issues that spoke to us." (FR)

Greek municipalities stated that the technical tools are very useful, but could have been more specific and more related to practical implementation. One tool could be used in schools to determine the required energy upgrading.

In the French network the expert input was partly assessed critically: Some of the content was not suitable for municipalities, such as the development of a roadmap, because some municipalities already had such a roadmap. In addition, the given examples were targeted to bigger cities; instead, examples for small villages are needed as well. When it comes to the technical assistance as part of the network meetings in the French network it was stated that this input is not tailored enough to municipalities, but strongly resembles input for companies. Municipalities follow different logics than companies though, e.g. they need more time to identify what are their needs and processes may take longer.

In addition, in the French intermunicipalities, it was stated that the training sessions were hard to follow. Reasons are too many participants and too few interactions. However, the representatives stated that the sessions got better with time. In addition, in the French intermunicipalities the digital format was perceived as difficult and the amount of information was also considered too much.

"About European videoconferences: no interaction. Too many of them. A not suitable format. Too much effort to get the information. Feeling of frustration. Blended into a mass of stuff. But with an improvement recently, thanks to the work of ALTE." (FR)

The peer-to-peer learning workshops were evaluated positively in the Greek, the Portuguese, the French and the Italian network. The Greek municipalities in particular appreciated the presentations held by small municipalities in other countries. However, they also assessed some meetings at the EU level to be rather advanced and thus less applicable. In the Italian network, it was particularly valued that peer-to-peer learning makes projects really visible and tangible.

Common target setting

In two networks the common target setting process was perceived positively. A common goal leads to more motivation and a sense of belonging on the part of the participating municipalities. Even if the goal is located on a rather abstract level, so that all municipalities can find themselves in it, it is important to have a common goal.

"In addition, setting a common goal is important and useful. In this, the abstraction level of the goal is important though. In a network, you have different people connected to each other. It is an illusion that everyone has the same goal, even if it has been agreed beforehand. In a network, you need to know well what the underlying and underlying goals of partners are. Partners may have different goals but all within the same themes. The goals are then an extension of each other. Then working together within the network approach is very valuable." (NL)

4.1.3 Evaluation of the starting phase of PATH2LC

Figure 5 gives an overview of the codes in relation to the sentiments expressed in the interviews and minutes with the help of a MAXQDA code-relations-browser. Despite mentioning some shortcomings, the municipalities in particular assessed the starting phase of the project very positively. The network operators, however, offered mixed evaluations of the starting phase.

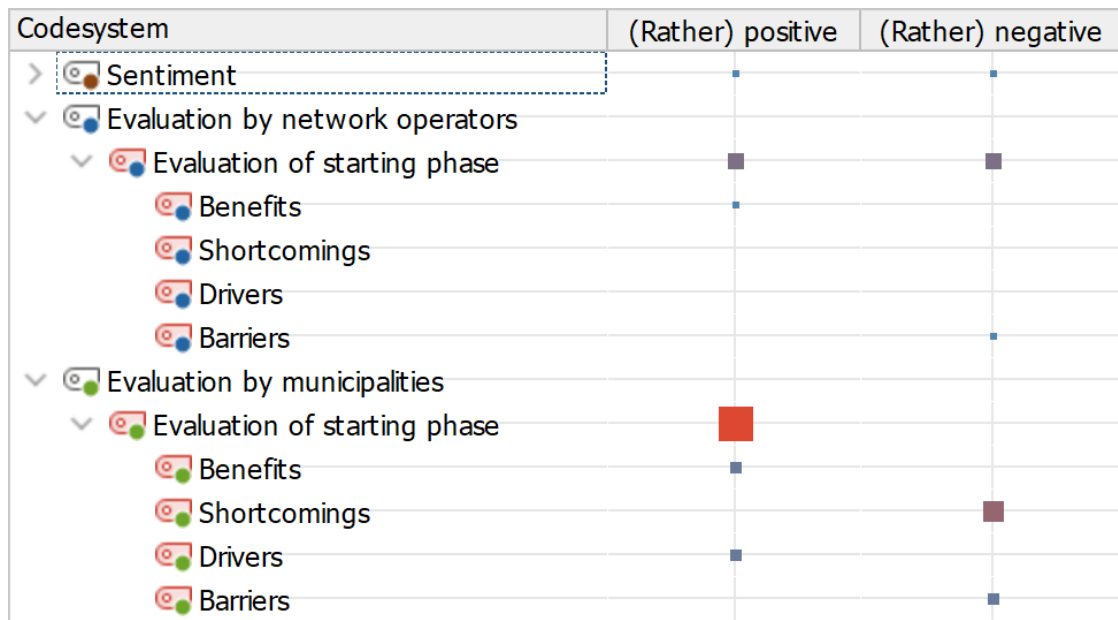


Figure 5 Evaluation of the starting phase

How did the collaboration in the networks start?

In general, participation in the learning municipality network approach was initiated by the operators of the networks. While in the beginning of the implementation of the LMN approach in Greece an elected official was strongly involved, this task was subsequently delegated to a municipal representative with expertise in energy issues. Prior to PATH2LC, some municipalities already acquired experiences with EU projects: "It was not the first time that the municipality [...] participated with some other Greek cities in a European project." (GR). But according to the aforementioned municipality, the project did not incorporate the aspect of networking with other municipalities: "However, no relations between the municipalities have been developed in the other project." (GR). A Dutch municipality elaborates that they had only limited experience in cooperating at such a large scale and in such an intensive manner. In other projects, however, the practice of networking among municipalities was already incorporated: "We have had networking experiences with other municipalities in this kind of project." (GR).

Perception of the LMN approach in the starting phase

The objectives and the approach of the project were quite clear to most participating municipalities and networks: "It was easy to get along at the beginning of the project." (GR). This is partly attributed to the fact that, in certain instances like the Dutch network, the project was initiated and established in collaboration with the municipalities themselves. Moreover, the lack of prior experience in implementing similar initiatives in the networks did not seem to have a detrimental effect on the comprehension of the LMN approach's objectives: "It was a totally new thing - the things of sharing and combining resources and doing things together". (IT). However, some interview partners perceived the PATH2LC project and its starting phase as complex. Furthermore, in some municipalities, especially in the period before the first network meetings, there was a lack of clarity about the LMN approach, its content and their respective roles: "It was complicated to get hold of this project, and to see what was behind it: we were waiting to have a first local meeting to better understand what it was all about." (FR).

Many of the municipalities felt that the networking process already brought some benefits in the early stages of the project, such as improved collaboration among the municipalities and the generation of knowledge. They further perceived that the initial communication and cooperation with the network operators was good. However, the success of the initial phase of the PATH2LC project within the networks was hampered by the limitations caused by Covid restrictions and the largely virtual nature of the network meetings (see also 4.1.2 on perceived benefits, shortcomings, drivers and barriers of the LMN approach). Also, in many networks, it took some time for the municipalities to get used to networking with each other, as they were unaccustomed to such a high degree of cooperation and had to learn to adapt. From an organisational perspective, there were some aspects in the Dutch and the Greek network that needed to be improved, which were subsequently addressed in the early phases of the project.

"In the initial phase, the notification time for the meetings was not enough. It was not easy to schedule the time, but this was quickly addressed, and the organization improved so there was nothing negative from there on." (GR)

The overall coordination of the PATH2LC project and the support provided to the network operators by the project coordinators and the project partners were generally perceived as helpful. However, the network operators in the Dutch network would have expected to receive more guidance on how to implement the LMN approach, as they joined the project at a later stage and thus had difficulties in understanding the objectives of the project. They received information material early on, but still found the bilateral exchange with the project coordinators more helpful in fully understanding the project and their tasks: "[...] in the beginning it was difficult to get up to speed, because you are jumping on a train, which already left the station." (NL). The difficulties the Dutch network faced in the starting phase were also reflected in the evaluation by the municipalities in the network. According to them, at the beginning, there was some uncertainty about the goals and the allocation of responsibilities in the project, which became clearer over time as the project progressed.

4.2 Motivations and expectations regarding the participation in the project PATH2LC

4.2.1 Motivations to take part in the project

The municipalities and network operators interviewed stated multiple reasons for the municipalities' commitment to the learning municipality network approach.

As described in 0 on the evaluation of the starting phase of PATH2LC, in the majority of the networks, the (inter)municipalities already cooperated in regional networks. In the Italian and the Portuguese network, the interview partners stated that they had good experiences with their prior networking activities, which ultimately motivated them to participate in the LMN approach. In the French network, the hope of reviving past activities was one of the reasons for their involvement in the PATH2LC project.

"The reason actually why they considered it could be an added value for the four territories to work together was to boost the dynamic. That local dynamic was very active years ago and with the time and the change of local politicians this type of project (energy positive territory) - the dynamic behind it - did lose some of its initial dynamic. And therefore it was a way to reboot that type of dynamic." (FR)

Municipalities in the Dutch network also participated in networking activities before the start of the project, as required by a national directive.

"This work group, it is part of a bigger, much larger collaboration and [...] started partly because of social structure and partly because our national government forced all of our municipalities to work together." (NL)

The municipalities in the Dutch network hoped that participating in the LMN approach would lead to a positive effect on cooperation in the network in the long term, and eventually a more consolidated network. This was echoed by other municipalities and network operators, who were motivated by the prospect that the LMN approach could strengthen the cooperation between network member municipalities. One municipality in the Greek network also mentioned the possibility of using the network approach to jointly bid for EU or national projects.

Secondly, some municipalities stated that they perceived the approach as interesting. They assessed the scope and the topics of the PATH2LC project as relevant to their municipality and anticipated to gain knowledge related to areas

such as the energy and heat transition. Additionally, they expected to benefit from the exchange with external experts and to receive technical support on energy issues and related programmes, as well as with developing their SE(C)APs.

"They do not have qualified staff to develop this kind of work; so in normal conditions they would subcontract or they would ask the agency to develop it as we have developed it in the past. So having PATH2LC project with the scope and with the aim of supporting municipalities in developing these documents - this would be the perfect scenario for them." (PT)

A further driver for the municipalities to participate in the LMN approach was their commitment to emission reduction targets and their expectation that participation in the PATH2LC project could help to achieve them. Those municipal targets were partly influenced by EU directives or by their commitment to the CoM. In municipalities in the Dutch network that were already part of a regional network before committing to the PATH2LC project, the municipal targets were influenced by the targets set in their network.

In addition, some municipalities were motivated by the prospect that networking with municipalities from other countries would bring benefits such as the exchange of views and best practices.

"[...] we feel that a country like ours [...] can network with countries in the other member states of the European Community with which an interaction, a remarkable comparison can arise, in order to then be able to create projects that can be put in place by each municipality." (IT)

Finally, a reason for some municipalities to engage in the LMN approach was that they expected collaboration to help them achieve their goals more effectively, thus compensating for the lack of staff within their (inter)municipality, which is qualified in terms of energy issues.

"Because we are convinced that we have everything to gain from going to see what our peers are doing, these other territories involved in our subjects; that we learn from their successes and failures, to not reproduce the same failures and duplicate the successes." (FR)

This is particularly relevant for smaller municipalities, which stated that they were motivated to participate because they expected the LMN approach to be well suited for smaller municipalities, allowing them to exchange experiences with other smaller municipalities. Furthermore, participating in such a project is not common for smaller municipalities and was generally seen as a good opportunity gain experience in an EU project.

4.2.2 Expectations regarding the LMN approach

Figure 6 gives an overview of the codes in relation to the sentiments expressed in the interviews and minutes with the help of a MAXQDA code-relations-browser.

While the network operators had positive as well as negative expectations before the start of the project, the municipalities predominantly had very positive expectations towards the LMN approach.

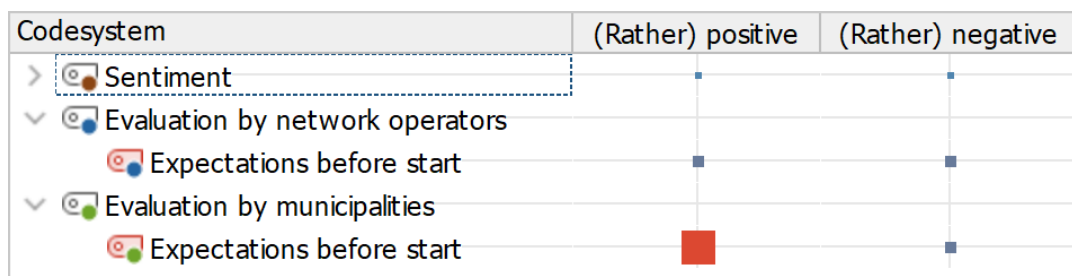


Figure 6 Expectations regarding the LMN approach before the start of the PATH2LC project

When asked about their expectations before the start of the PATH2LC project, in the interviews both network operators and (inter)municipalities named aspects that are in line with some of the previously described reasons to commit to the LMN approach. Before their participation in the LMN approach, they expected to be able to network with municipalities in their network and across Europe, as well as to exchange views, experiences and best practices.

"Good opportunity [...] to have time for exchanges with other territories, while we do not always agree in the conduct of our respective projects, as well as to learn from other experiences [...] from other European municipalities." (FR)

Closely connected to the reasons for committing to the LMN approach, some of the interviewees further expected to receive technical support, which would ultimately aid in compensating for the lack of qualified staff within their municipality. Furthermore, interviewees anticipated to gain knowledge in energy-related topics as well as experiences in participating in EU projects. Some municipalities also expected benefits for smaller municipalities in particular: "By networking, smaller municipalities obtain a benefit in terms of capacity and resources." (IT).

Some of the municipalities interviewed already had experiences in EU projects and municipal networks. However, in comparison to other networks and projects, they expected the LMN approach to be more structured and to enable better communication between the participants: "I expected the same context with more interaction between the participants." (GR). Additionally, they expected a push for energy-related issues, a gain in knowledge in drafting SE(C)APs and in implementing the respective measures. Further, some (inter)municipalities anticipated to be enabled to use their learnings to set up and start projects and to get to know people with relevant experiences in order to be able to contact them if needed: "And then, the creation of a people network, so that the day when I have needs, I have the contacts." (FR). A municipality in the Greek network also stated that they expected the PATH2LC project to allow for the development of a common pilot project for all participating municipalities and that participating in the LMN approach would lead to receiving some additional funding: "Last and most importantly we expected that we would have the opportunity for some additional funding." (GR). Finally, some participants also had low expectations regarding the level of cooperation among the participating municipalities, as indicated by interviewees in the Greek network.

"[...] it is really common for the municipalities to have a very defensive behavior, when they meet other people from other municipalities to talk. Cooperation is not that common, so we did not know if that experiment is going to work or not." (GR)

In addition to the interviews with network operators and (inter)municipalities, we used the minutes of the first network meetings to assess the expectations before the start of the PATH2LC project. This was done by means of feedback questions. In the first network meetings, similar expectations as described above were mentioned and municipalities expressed that they expected the LMN approach to benefit them by offering them inspiration, gains in know-how and support in pursuing their work in energy-related issues. However, the intermunicipalities in the French network also expressed that they lacked a clear understanding of the LMN approach: "A bit of worrying because at the beginning they did not understand very precisely yet what the project would be made of." (FR_MI_1). French intermunicipalities have also been concerned that the approach might be hampered by barriers such as language and might involve a lot of extra work: "The staff is already overloaded so they would like to avoid having too much extra administrative load for the project, as they are already involved in many projects." (FR_MI_1). Further, they voiced concerns of a disconnectedness between projects and their local needs. In terms of SE(C)AP implementation, municipalities in some networks expected support in drafting and updating their SE(C)APs as well as monitoring their measure implementation and emission reductions, while intermunicipalities in France expected the effects of the LMN approach to come through more strongly in the long-term: "Effect on SECAP measure implementation will be rather long term as the exchanges will benefit the knowledge and culture of municipality staff." (FR_MI_1). Finally, in the Italian network municipalities expected the network process to help them with communicating their strategies to the local community.

As 4.1.2 on perceived benefits, shortcomings, drivers and barriers of the LMN approach and the next section show, many of these expectations have been met.

4.3 Effects of the LMN approach on the implementation of climate protection measures in the municipalities

Figure 7 shows the codes in relation to the sentiments expressed in the interviews with the help of a MAXQDA code-relations-browser. It can be seen that PATH2LC has positive effects especially on the development or update of SE(C)APs as well as on the implementation of measures from the perspective of the interview partners. However, also some barriers for measure implementation were identified, but these seem to not have big negative effects.

The common target setting was assessed positively, too. However, further effects, such as knowledge creation and overarching effects, were evaluated even more positively.

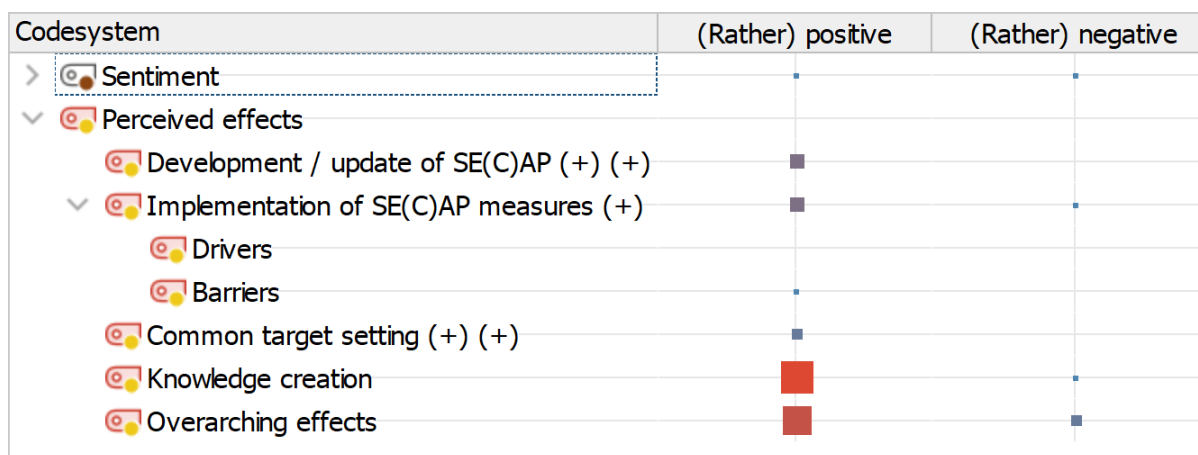


Figure 7: Perceived effects of the LMN approach on the implementation of climate protection measures in the municipalities

4.3.1 Effects of the LMN approach on the development or update of SE(C)APs

In several networks, not all municipalities have a SECAP yet. The Portuguese, the Greek and the Italian network operators perceived PATH2LC as an important boost for developing or updating the SE(C)APs. In the Portuguese network, PATH2LC has helped to examine the measures planned in the present SEAPs to see whether they fit the characteristics of the municipalities. The Greek network emphasised the importance of PATH2LC when it comes to updating existing SE(C)APs with current data, because many plans use data from ten years ago. In addition, the project helps to raise awareness for existing SE(C)APs.

"Almost every municipality in Greece hires external consultants to draft their SE(C)AP plan. So, we realized that in some municipalities there is a plan, but no one in the municipality knows about it. But if [...] you don't have a general idea, you don't implement the measures that are in the SE(C)AP." (GR)

When it comes to the perspective of the municipalities, several (inter)municipalities acknowledged the support of PATH2LC in the sense that the project contributes to creating knowledge on and pushing or reactivating the process of developing or updating the SE(C)AP. For example, it enhances knowledge on the measures to be included in the plans or on the stakeholders to collaborate with in the process. In addition, the support on drafting the monitoring report for the SECAP for the CoM was mentioned positively.

"The training on the SECAPs has helped us to understand that it is now necessary and that there is no more room for postponement. When you go through the process of comparing yourself to someone else, listening to someone who is involved in the subject, you understand that it is a necessity and it is definitely a positive boost." (GR)

Several municipalities without a SECAP started to develop and aim for approving one. In this context, in the Greek network it was emphasized how important PATH2LC is to motivate municipalities to create a SECAP. A municipality emphasised the support of PATH2LC in developing their own SECAP:

"Currently we have started to do the SEAP, and I think within a few, also because of the information we have received through these meetings and this project, I think we will shortly complete it. We are half, or more than half

way through and obviously without these meetings it would have been much more difficult, almost impossible."
(IT)

The municipalities in the Portuguese network leveraged the network gatherings as a means to strategize their progress in setting targets and upgrading their SEAPs, which they had developed jointly with the network operators prior to the adoption of the LMN approach, to SECAPs:

"Through this project, we have the opportunities to exchange also in terms of difficulties/barriers in order to reach the targets for 2030 and the possibility to identify a common target and transition to the SECAP." (PT_MI_2)

According to some municipalities, PATH2LC allows to compare one's own SECAP and its implementation status with the one of other municipalities. A Greek municipality stated that PATH2LC can be helpful to increase knowledge and awareness of climate plans in the municipality. However, as two municipalities highlighted, more trainings and knowledge - maybe as part of PATH2LC - could have helped to develop a SE(C)AP on their own, instead of outsourcing its development. Barriers for developing a SECAP are a lack of specialized staff.

4.3.2 Effects of the LMN approach on the implementation of SE(C)AP measures

Italian, Greek and Dutch municipalities pointed out that PATH2LC helps putting more focus on SE(C)AP measures already in place as well as on measures that are not currently in focus. Another municipality emphasised the possibility to compare the municipal performance in terms of measure implementation with other municipalities positively:

"I feel that PATH2LC has helped in accelerating the implementation of heat visions. Municipalities learn from each other and share best practices. Colleagues from other municipalities then know what works well so they can also try to apply that in their context. We also learn by sharing negative experiences, which other municipalities can then avoid." (NL)

Greek and French (inter)municipalities saw the monitoring of SECAPs as part of PATH2LC as positive. They evaluate the monitoring tool as useful to track the implementation status of the measures in the climate action plans. Even if a municipality is already quite advanced regarding the implementation of measures, participating in the projects is helpful:

"When we joined the network we were too far along with the implementation of the SECAP, but it helped to some extent, because we came into contact with new information and examples from other cities." (GR)

In some of these (inter)municipalities, however, no direct influence of PATH2LC on the implementation of SE(C)AP measures was noticed. This is also due to the rather short duration of PATH2LC project. According to the municipal representatives, the project is more helpful in reviewing and, if necessary, correcting the plans than in the concrete implementation of individual measures. However, this was seen differently by the French, the Italian and the Greek network operators. A positive influence of PATH2LC on the implementation of the measures was noted here. The network approach leads to more involvement with the topic of energy and one's own municipal goals in this regard. The continuous comparison with other municipalities regarding the implementation of measures increased the pressure to push this forward. But in this group too, it was also noted that a direct influence of the project is difficult to assess.

"It was a mechanism that pushed the things to happen. The fact that regularly you meet, that you report, or you face the others, or you discuss about the issue. And also the fact that you have the training on some issues. Then even in that situation you have to face what you are doing. And again you are forced to stay on the spot and not lose the attention towards such type of activities." (IT)

Barriers for the implementation of SE(C)AP measures are, according to several networks, a lack of human and financial resources. At best, one person in the municipality should be responsible for the SECAPs and their implementation: "Due to understaffing and workload, there are problems with this transfer. We see interesting things that we cannot implement, we sort out what we can achieve." (GR_MI_2) In addition, tools and information are lacking, but here, PATH2LC has made a contribution to mitigate this.

Furthermore, old data and outdated measures in the SE(C)APs can act as a barrier. Also, the (un)availability of data

makes developing and implementing SE(C)APs measures more difficult. Very broad and unspecific SE(C)APs are further barriers for implementing the measures. In addition, the SE(C)AP may not be known in the municipality: "But if [...] you don't have a general idea, you don't implement the measures that are in the SE(C)AP." (GR). One municipality cited the difficulty of obtaining EU funding as a barrier for municipalities. A barrier specifically applicable to Italy is the recovery fund. The mechanism leads to municipalities competing for funds and consequently wanting to collaborate less.

On the other hand, drivers for measure implementation are a strong political will according to an intermunicipality.

4.3.3 Effects of the LMN approach on common target setting

Some network operators and municipalities emphasised the positive effects of the common target setting. These effects are for example raising commitment, promoting more target-oriented exchange, strengthening the sense of community and promoting collaboration between the municipalities. "[If one municipality was working on this all alone] the problem would feel much bigger. It is also a shared burden." (NL)

In the French network, for example, four common targets have been set. One intermunicipality described that all four objectives have positive effects:

"It was useful for us. For the CEPOS⁴ - clearly linked to us: it was an opportunity to exchange ideas. About Biennial: if this 1st edition works, it will be an opportunity to highlight our territory and its actions in the future. On SEAP: even if our follow-up method is "good", that doesn't mean that there is no room for improvement, and here I am referring to the exchanges/reflections that I had when I arrived in charge. On the link between urban planning and energy: a subject that has not been much explored.." (FR)

Such common goals also help to carry out larger actions together: "The Biennial's objective: it will allow us to organize an event of departmental scale that we could not have done otherwise." (FR)

In Greece, developing or updating SE(C)APs is a common goal. Another one is finding funding for retrofitting municipal buildings. At first, however, there were no specific common targets in this network.

"We didn't have specific targets at the beginning of this whole approach, because we weren't sure how this will unroll in the first months. So, our main goal was just to bring them together to talk." (GR)

In terms of the process, in the Netherlands and in France, individual objectives of the municipalities were combined into common objectives: "Setting joint goals was fine. We all already had individual goals and we ended up adding them together." (NL). According to the Greek network this can be a challenge since data is missing to define specific emission reduction targets that apply for all municipalities. In the Portuguese network, no common targets have been set besides the target to develop SE(C)APs. This is due to different characteristics of the municipalities in the network:

"It will be difficult to have a common target ... and this is because the nature of the municipalities is quite different. As I mentioned before we have some more urban municipalities, other more rural municipalities. And the economical activity developed in these territories are completely different, so it will be very difficult to reach a common target." (PT)

4.3.4 Effects of the LMN approach on knowledge creation

Overall, the learning municipality network approach was perceived to **benefit** the creation of knowledge in municipalities in all networks: "If I think about my case, I went from a knowledge of elementary notions to a more in-depth level, with a particular focus on local authority issues." (IT)

In the interviews, network operators and (inter)municipalities in the Greek and the French network perceived the trainings offered in the PATH2LC project to be particularly helpful. This applies both to the trainings provided to the municipalities as well as the trainings of the network operators: "With the seminars it has organised, it gives us

⁴ Commune à énergie positive.

technical tools, a mechanism that we can apply in the future." (GR_MI_2)

With regards to the contents of the trainings, a municipality in the Dutch network highlighted the diverse range of topics. To municipalities in the majority of networks, particularly relevant contents were energy issues, such as heating and cooling, information on the financing and funding of projects, and on community participation. Intermunicipalities in the French network further perceived the trainings on Hotmaps and the ELENA program (European Local ENergy Assistance) to contribute to the creation of knowledge.

The network operator in the Greek network perceived the capacity building measures in the PATH2LC project as a means to overcome the barrier of the otherwise limited capacities of the municipal staff to participate in trainings. Within the LMN approach, the municipal representatives participated in trainings of which they did not know beforehand whether they would be relevant for them. A Greek municipality further added that the trainings provided knowledge, which would have been hard to acquire outside of the LMN approach, as they would not know where to look for such information. Furthermore, the trainings offered motivation to further learn about the presented topics: "Some of these issues motivate you to study them beyond the network." (GR).

In addition to the formalised capacity building measures, knowledge creation was also achieved through the network meetings, as mentioned by (inter)municipalities in the Dutch and the French network. Interviewees in all networks perceived the peer-to-peer learning in the network as beneficial and interesting, and evaluated the possibility to share experiences among the participants positively. As municipalities in the Dutch and the Greek network explained, the shared experiences could either be best practice or negative examples, from which the other municipalities could learn about relevant drivers and barriers to consider for their own activities: "[...] to become part of a group, to see what my colleagues in other cities are doing, to copy the other person who is better than me, to see the mistakes of others [...]." (GR). In particular, when the peer-to-peer learning was done among municipalities in the same country, the applicability of the presented experiences and measures in the own municipality was perceived to be rather high.

"The positive thing is that you were looking at the average level of Greek cities, so you were taking some ideas that you thought if they had been successful in other municipalities they would be accepted in your local community, because the Greek mentality would not vary so much from city to city." (GR)

The knowledge acquired in the network meetings was perceived to help with learning about measures that can be included in the SE(C)APs, as mentioned by a Greek municipality. Further, the approach also contributed to knowledge gains regarding methods to monitor the implementation of SE(C)AP measures: "(...) it allowed me to reflect on the follow-up of the SECAP, to survey the other territories." (FR).

The learnings from the participation in the PATH2LC project did not only benefit the participating municipal representatives, the knowledge was also transferred within the municipality: "For our part, as political representatives, we gain by transferring the acquired knowledge to officers, to staff." (GR_MI_2).

Overall, an intermunicipality in the French network concluded that in the LMN approach more skills and knowledge were created than in standard training formats with a more frontal approach: "In fact, and as a conclusion: I found out that it made me increase my skills much more than a three-days training [...]." (FR)

As **shortcomings**, the interview partners in the Portuguese network explained that in terms of knowledge gain, there were no visible effects, it was rather more intangible. One municipality in the Dutch network further did not articulate any effects of the LMN approach on knowledge creation. An intermunicipality in the French network stated that they did not gain knowledge in the process, beyond the exchange of best practices. However, in the French network, not all trainings have yet been held at the date of the interview, limiting the validity of the evaluation of the capacity building measures in this particular network.

Some interview partners also identified **barriers** to the LMN approach fully realising its potential in terms of knowledge creation among the participants. In the Italian network, it was pointed out that some of the topics presented in the course of the LMN approach were perceived as rather complex and thus might be discouraging. This is because the capacity building aimed at supporting the municipalities in gaining knowledge in areas where they had the biggest knowledge gaps beforehand. Furthermore, the technical input was partly perceived as not understandable and

interview partners in the Greek and the Italian network were uncertain about the ease of applicability of the technical tools presented in the trainings and whether the municipalities might have to reach a higher level of understanding to get to use this knowledge. Instead, they would expect the technical tools to be even more useful and to offer more immediate benefits, if they were more specific. The effort and time investment necessary to do this, would have been worth it, according to municipalities in the Greek network. In the French network, language and the sometimes missing comparability of the best practice examples were also mentioned as barriers.

"[...] especially at the beginning of the project, it was a little difficult to follow the training courses because they were done in English; and due to the fact that the best practice examples were at too large scale." (FR)

4.3.5 Overarching effects of the LMN approach

Besides its impacts on the implementation of SE(C)AP measures, common target setting and knowledge creation, the LMN approach also featured some overarching effects that exceed the specific objectives of the PATH2LC project. One of the main effects was that it initiated and strengthened the networking among the municipalities within the networks. This was highlighted by interview partners in all networks: "The many national meetings helped to develop more familiarity with other municipal employees." (GR). In some municipalities this was the most appreciated aspect of the LMN approach: "Me, what I liked the most were the times between us." (FR). According to Dutch and Greek municipalities, it helped by getting to know each other better and learning who is working on which topic and thus, who to call in order to get more information on certain issues: "Now, I know the person who is in that particular department, and I know that she / he can help me in that area. I haven't utilized it yet, but I know that it is an option for me." (GR). Further, according to interview partners in the Dutch and the Italian network, the municipalities started to cooperate and work together to achieve their targets and were more willing to communicate and share experiences, also with regards to specific projects.

"Yes, the fact that we are able to compare ourselves with other realities is positive, and [...], compared to before, [...], I gained more knowledge, also because before we were more closed." (IT)

In general, the LMN approach helped them to open up towards each other and to be more receptive towards input provided by external experts: "People [...] became more open minded about also using expert input, and maybe using each other as well." (NL)

All the networks existed before participating in the PATH2LC project, although partly in different constellations and with a different structure. During the project period, the Dutch network underwent the most changes. When comparing the initial situation with the status quo, the interview partners in the Dutch network noted that before joining the PATH2LC project, the collaboration between the municipalities missed a goal: "There was a lot of collaboration with the network already, but it was a bit [...] vague." (NL). While in the French network, there were only limited activities between the different territories within the network before the start of the LMN approach, the Greek network on the other hand already had annual meetings. As most of the Greek network members are smaller municipalities, they encountered similar difficulties and hence used these meetings to exchange on the issues they all faced. The Italian network already designed a structure on how to strengthen the networking across the municipalities. At the core of their approach was the interaction on the political level with monthly to bimonthly mayor meetings. The activities themselves were approached by each municipality individually. The same goes for the Portuguese network, where the municipalities did also not collaborate strongly.

In comparison to the LMN approach, the networking before the start of the PATH2LC project was done in a rather informal and unstructured manner. According to an intermunicipality in the French network, participating in the LMN approach structured the network and added an EU dimension. A municipality in the Italian network further described that it led to the creation of a new and more interesting work environment. In the Dutch and the French network, it is wished for a continuation of this kind of networking: "There were already exchanges before, but now it's well established. And if in the future we want to meet again, we will. We have developed working habits." (FR)

Although not all municipalities were already making use of it, municipalities in the majority of networks thought that they will now be able to utilise the contacts they established to exchange in a bilateral manner, if necessary.

"One representative from one municipality just called the other one to ask him something about what we were

discussing during the national meeting. For us, this is a huge success. I do not think, that we would have achieved that with another approach." (GR)

Furthermore, networking with other municipalities within the network was perceived to also help with acquiring funding.

"Of course, we still thought that we could network with other municipalities, since also in recent years, for any kind of design, we know very well that being in a network to have a lead municipality and being able to design in a common way on some important project, allowed us to have a higher score so that this also allowed us to be able to succeed in getting useful funding for designs. Unity is strength." (IT)

Regular contact was deemed necessary for a network to function well and to continue to keep the network together, enabling informal exchanges and cooperation. It was perceived to help with getting to know each other and to be able to contact each other also outside of the regular meetings. In the Dutch network, this is especially pronounced as they established monthly meetings taking place more often than the standard two meetings a year the other networks had.

While in general, participation in the LMN approach was perceived to help the networking between the municipalities in the network, one municipality in Greece expressed to not be certain about the extent yet. In the French network, it is further stated that the LMN approach did not foster the internal exchanges between the network and the intermunicipalities, but still allowed to deepen the existing exchanges by structuring the networking.

Besides the internal exchanges, interview partners in the Greek network also pointed out the increased networking with other municipalities from across Europe: "We met people from other countries in Europe and we still keep in touch and we are also entering into projects with other cities." (GR). Additionally, the relationship with the network operators was intensified and they got familiar with other partners in the PATH2LC project as well: "I know who to call if I need some expertise and it helped in the relationship with [the network operators]." (GR). In the French network, where the intermunicipalities consist of multiple municipalities, this is also the case. Here, it was perceived as beneficial that they get to know more staff members than just the project managers.

"As there is also a lot of turnover of project managers in our territories, it allows us to forge links with staff members that I would not necessarily come across, because they are restricted to a particular subject, or because they are not very active." (FR)

The municipalities in the majority of networks also perceived that the LMN approach triggered cooperation across departments. It initiated discussions with other departments, elected officials and energy officials. According to the interview partners, the LMN approach increased familiarity between staff members in the municipalities. In the Dutch network the strengthened cooperation was seen as a product of increased social capital.

"The way I perceive social capital is the ability to use your network to get things done. And I think, that might not really be a capacity of one person, but more of a network and I think that has definitely grown and definitely increased a lot within the people of our network - the participants of the meetings - but also the people in the municipalities that they represent and that they worked together with." (NL)

In addition to the strengthened networking, the interview partners in the majority of networks also emphasised that they perceive the experiences of the LMN approach as inspiring. By learning from other municipalities that already achieved aspects that the municipalities in their network still aim to achieve, they realised that they share common objectives and can create similar results, when they continue their path: "It worked very well in that sense that it raised their motivation to develop the work, because when you see that other municipalities are doing this you feel more stimulated to do yours." (PT). This also applies to contexts where the initial dynamic was gone in the years before participating in the LMN approach.

"The reason actually why they considered it could be an added value to work those four territories together - in order to boost that dynamic. That local dynamic was very active years ago and with the time and the change of local politicians this type of project (energy positive territory) - the dynamic behind - did lose some of its initial dynamic. And therefore it was a way to reboost that type of dynamic." (FR)

All in all, participating in the LMN approach was perceived to lead to new ideas for potential next steps and activities. Furthermore, exchanging with other municipalities and the pressure to regularly report to peers in the network meetings led to a reinforced commitment of decision makers, also in terms of committing to the development of SE(C)APs: "The fact that other municipalities have moved forward with the development of the SECAPs, helps to push decision makers into more decisions." (PT)

Regarding the exchanges with other stakeholders outside the municipality, some interviewed municipalities reported that the LMN approach contributed to stronger networks with these actors. Here, they specifically mentioned businesses and local initiatives. Other interview partners, however, did not perceive any overarching effects on the exchanges with external stakeholders.

4.4 Differences between municipalities and networks in the perception of the LMN approach

4.4.1 Differences between municipalities

The networks participating in the learning network approach consisted of municipalities of various sizes. While in the Dutch network there were also larger municipalities with more than 100,000 inhabitants, others only consisted of small to medium sized municipalities, meaning those with inhabitants up to 50,000 inhabitants. In Italy, for example, the size of the municipalities ranged from 8,000 to 30,000 inhabitants.

Overall, as can be seen in Figure 8, the evaluation of the LMN approach did not differ much in relation to the size of the municipalities. The figure depicts a MAXQDA code-matrix-browser with the size of the boxes symbolising the number of codes assigned in the respective document group. For the small and medium sized municipalities with 5,000 - 20,000 inhabitants and 20,000 to 50,000 inhabitants, the boxes tend to be somewhat larger, as most of the interviewed municipalities belong to these groups and consequently more codes were assigned. As only one municipality has more than 100,000 inhabitants, the size of the boxes in this category is rather small. The participants in the French network are not municipalities, but so-called intermunicipalities, thus they were not classified by size. The same goes for the one province that was interviewed in the Dutch network.

It can be seen that the municipalities across all size categories up to 50,000 inhabitants as well as the intermunicipalities and provinces saw benefits of the LMN approach. This also applied when further differentiating the benefits. In comparison, shortcomings seem to be less frequently identified.

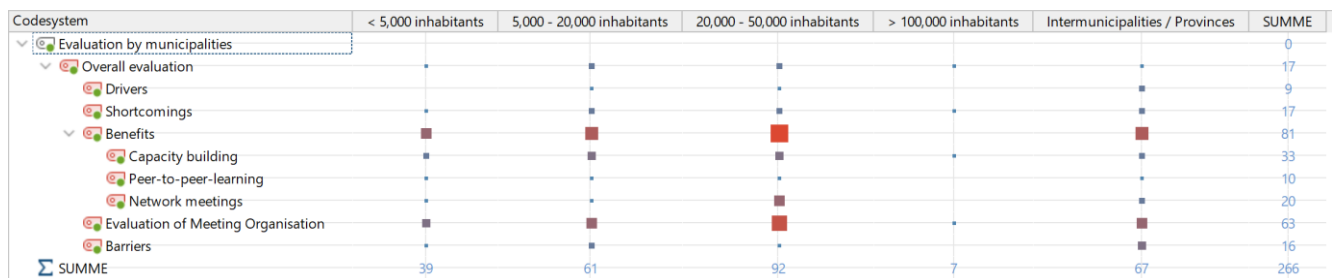


Figure 8: Perception of the LMN approach by size of municipalities

The MAXQDA code-matrix-browser in Figure 9 shows the perceived effects of the LMN approach in relation to the size of the municipalities. In general, it can be observed that the intermunicipalities and provinces appeared to have perceived a rather high number of effects of the LMN approach, when compared with the other groups. Among the municipalities, the most effects of the LMN approach seem to be perceived among the municipalities with 20,000 to 50,000 inhabitants, with knowledge creation and overarching effects being the most prominent ones.

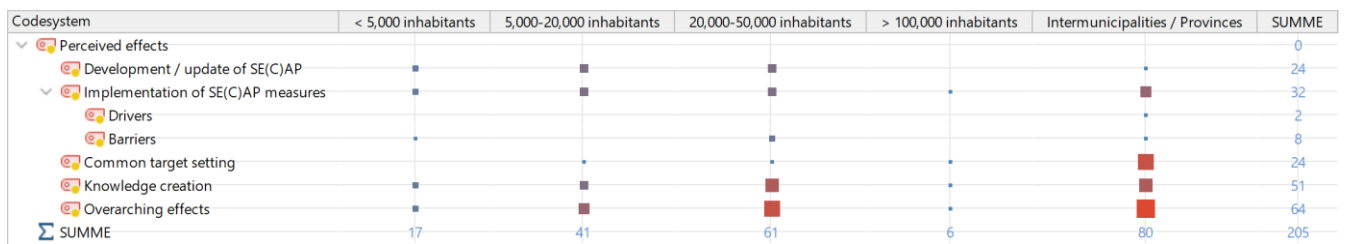


Figure 9: Perceived effects of the LMN approach by size of municipalities

Although the quantitative comparison of the municipalities did not show pronounced differences between the municipalities, the interviews still provided some further insights on the differences between the municipalities regarding the evaluation of the LMN approach. One of the smaller municipalities perceived the approach to not have contributed much, because its low number of employees did not allow to organise meetings as needed. On the other hand, some interview partners pointed out that networking can also be beneficial for smaller municipalities as it compensates the lack of human and financial resources by optimizing the use of available resources.

"In Italy, there has not been the possibility to have new staff added to do new activities on new areas of work, like energy or climate. So it was a need to group together municipalities so that they can share the benefit of having an energy manager or someone who takes care of climate issues or other important environmental issues that were not able to be managed at the single municipality level." (IT)

In fact, interview partners from Greece and Portugal perceived the network approach to be more useful for smaller municipalities, compared to larger ones. Bigger cities can rely more often on own resources: "For me it was a very interesting experience and I hope it will continue because I believe that such networks help, especially the smaller municipalities." (GR)

Besides the size of the municipalities, other contextual factors were also relevant for the perception of the LMN approach. Firstly, the activity level of the participating municipalities, as e.g. some municipalities in the Dutch network were already well advanced, which is why certain topics of the project were very relevant to them. Furthermore, the expertise of the network operators and the commitment of the municipal representatives, the mayors and the municipal administration were of importance. Finally, the administrative structure of the municipalities was important. This especially applies to France, where the network consisted of intermunicipalities and not municipalities themselves, which makes it less comparable to the other networks.

4.4.2 Differences between networks / countries

In Figure 10 the overall evaluation of the LMN approach in relation to the five networks respective countries depicted. It shows a MAXQDA code-matrix-browser. The size of the boxes symbolises the number of codes assigned in the respective document group. In Greece, the boxes tend to be somewhat larger, as most interviews were conducted here and consequently more codes were assigned.

It can be seen that all network operators in all countries saw benefits of the LMN approach. In Greece, however, less benefits are perceived. However, when it comes to the perception of the municipalities, all representatives in all networks noticed benefits of the project. This code was further differentiated for the perspective of the municipalities. Especially in Greece and France, capacity building was perceived as an important benefit. Shortcomings seem to be more prominent in the interviews with municipalities than in the interviews with network operators.

In both groups - network operators as well as municipalities - more barriers than drivers were observed. This applies to all countries. Most barriers were perceived in Portugal from the perspective of the network operator compared to the other networks. From the municipal perspective, however, more barriers were seen in Italy and France. Drivers were perceived more strongly in Portugal from the network operator perspective; from the perspectives of municipalities most drivers were identified in France.

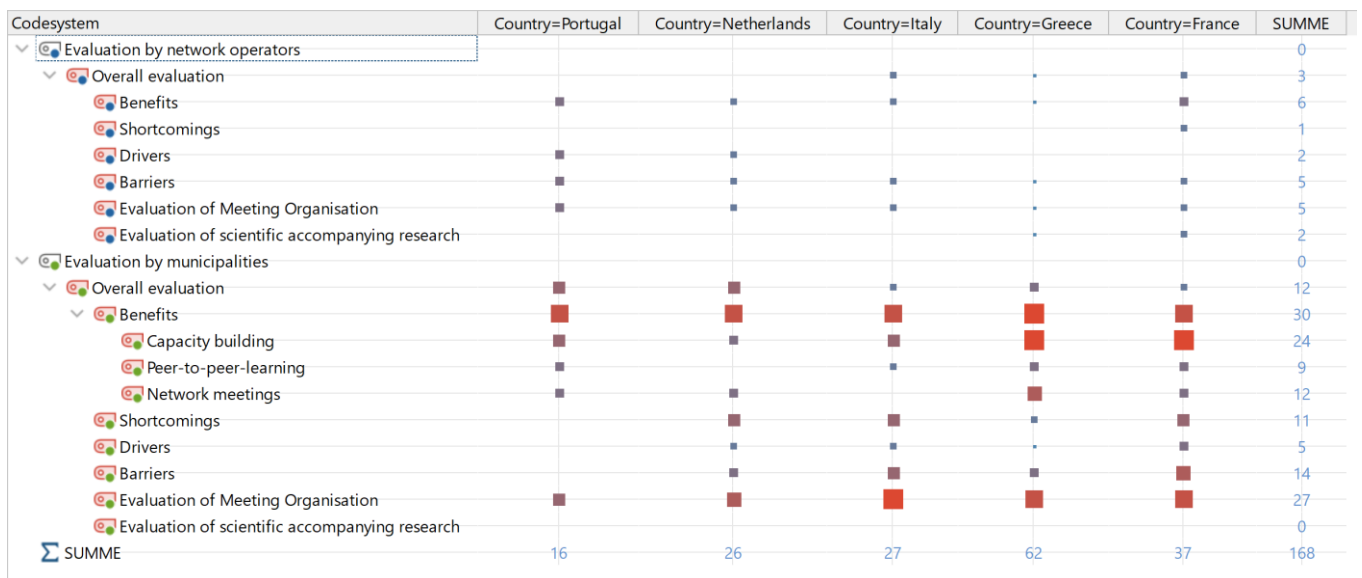


Figure 10 Perception of the LMN approach by network / country

The MAXQDA code-matrix-browser in Figure 11 shows the perceived effects of the LMN in relation to the five networks respective countries. Especially in Greece and Italy the PATH2LC project effected the development or update of SE(C)APs. In all countries, the approach also effected the implementation of SE(C)AP measures from the perspective of the interview partners. However, in all countries also, except for Portugal, barriers for measure implementation were identified.

In terms of the common target setting, all networks perceived effects of PATH2LC - in Greece these effects were perceived as smaller compared to the other countries. Knowledge creation was also mentioned as an important effect of PATH2LC in all countries. Finally, overarching effects of the projects were identified in all networks and their respective countries.

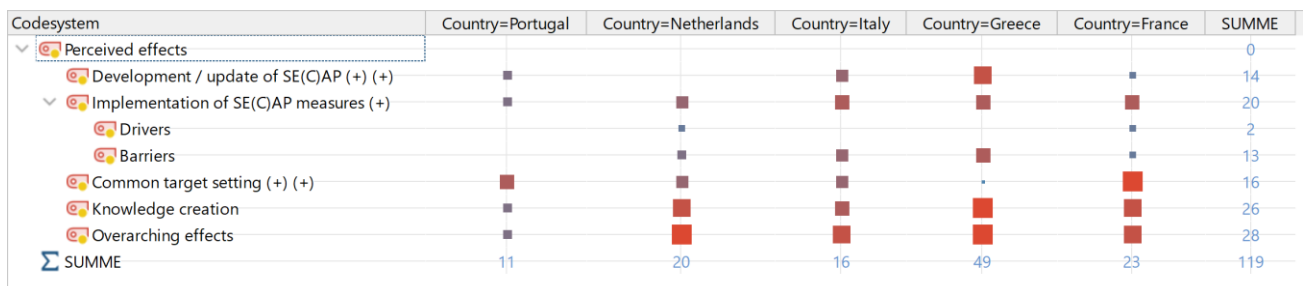


Figure 11 Perceived effects of the LMN approach by country

4.5 Look into the future: What are expectations for the networks?

Figure 12 shows codes in relation to the expectations on the future development of the network with the help of a MAXQDA code-relations-browser. The figure shows that the expectations are mainly positive, in particular from the perspective of the municipalities.

Codesystem	(Rather) positive	(Rather) negative
> Sentiment	■	■
<ul style="list-style-type: none"> <ul style="list-style-type: none"> <ul style="list-style-type: none"> ■ Evaluation by network operators ■ Expectations on future development of network <ul style="list-style-type: none"> <ul style="list-style-type: none"> ■ Evaluation by municipalities ■ Expectations on future development of network 	■	■

Figure 12 Expectations on the future development of the network from the perspective of network operators and municipal representatives

In the French network it was hoped that the feeling of trust and sense of belonging created as part of PATH2LC will continue to last even after the official end of PATH2LC. One way to achieve this could be further meetings on a regular basis. Several French intermunicipalities also hoped that the network will continue once the project ended.

"We have created a fairly strong local network. We will continue at the local level on all the joints projects/Actions that have been highlighted thanks to the European project. This is the beginning and not the end. And there are so many other joint projects/actions to tackle ..." (FR)

Some French intermunicipalities stated that they will continue working on their SE(C)APs as well as on achieving the common goals set as part of PATH2LC, in particular the Biennial.

One network operator considered using the approach of PATH2LC for similar projects in the future. The approach could be applied to projects on a local or national level. This transfer is already practised in the Italian network. Here, the LMN approach is already transferred to another H2020 project on energy communities. They also consider to apply the approach to another project which is currently set up. However, the recovery fund is mentioned again as a potential structural barrier to continue the collaboration in the network. Despite this barrier, the municipalities themselves would like to continue further cooperation. Also, some are very committed to keep on working on the decarbonisation of their municipality.

"Let's say that we consider projects that may also seem ambitious, however, we would like our own country to become eco-sustainable, in the sense that we would like to, I don't know to be able to consider car columns, so make the cars all electric, make the buses that move around electric. I don't know, maybe make our offices and all our municipal buildings, even our private ones, make them efficient [...]." (IT)

The hope is that the successes achieved by the municipalities in PATH2LC will also motivate other municipalities to become more involved in the topic of energy and climate protection.

In the Greek network it was also stated that the majority of the network municipalities are willing to continue the work. That is, some municipalities plan to further continue working on developing their SE(C)APs. In addition, Greek municipalities are willing to participate in a similar project in the future.

"For me it was a very interesting experience and I hope it will continue because I believe that such networks help, especially the smaller, municipalities." (GR)

Furthermore, Greek municipalities considered using tools presented in PATH2LC in the future, e.g. to use them for schools to determine the need for renovation. However, a future challenge might be changing municipal representatives due to elections, possibly leading to other priorities and lack of continuity of once established

priorities or projects.

In the Netherlands, the heterogeneity of the network municipalities in terms of size and cultural differences will remain a challenge for continuing the collaboration. In addition, in such a big network, communication will remain another challenge. In this network, too, the municipalities hope that the cooperation will continue after the end of PATH2LC. For this, it is important that personal meetings, like the network meetings, continue to take place. These meetings were much appreciated by the participants of the Dutch network. In addition, the establishment of institutions that can promote further cooperation between the municipalities was being examined, e.g. supra-municipal organisations or teams working on a specific theme. At the same time, municipalities want to continue to pursue their own goals, i.e. to work on implementing and updating their SE(C)APs.

In the Portuguese network, it is expected that the commitment of municipalities will decrease after the end of the project, because participation in PATH2LC increased the commitment to get involved on the part of the municipalities. Especially with regard to the motivation to develop the SECAPs, the end of the project is expected to have a negative impact - although in 2023, i.e. still during part of the project period, all municipalities want to submit a SE(C)AP. However, the Portuguese network will continue to motivate municipalities to work on their SE(C)APs and the implementation of the measures.

5 SUMMARY AND DISCUSSION

5.1 Summary of key findings

Overall, the learning network approach was evaluated positively by the interviewed network operators as well as by the interviewed municipalities. That is, the approach was perceived as useful and beneficial for the municipalities.

In particular, 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 own 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
- feasibility of certain projects
- CoM and the process of developing a SE(C)AP

When it comes to the evaluation of certain elements of the LMN approach, municipalities in particular evaluated the capacity-building elements such as trainings very positively. In addition, the network meeting organisation was positively assessed by many municipalities. At the same time, some overall shortcomings of the LMN approach were stated: Some interviewees reported that participating in the project was time-consuming. Further mentioned disadvantages referred to the project's content not being well suited to the needs of the municipalities, and that the approach was partly perceived as too abstract.

Although PATH2LC brings many benefits to the municipalities, some barriers were mentioned for participating in the project. Frequently mentioned barriers were a lack of time and resources, in particular in small municipalities. Further barriers were the administrative structure in municipalities and the change of contact persons due to municipal elections. Also, language can act as a barrier as some material was only provided in the English language. Finally, the Covid restrictions that started in early or mid 2020 were named as a challenge in some networks, i.e. digital meetings made the collaboration between the municipalities more difficult.

The municipalities' participation in the LMN approach was driven by the hope that it would have a positive long-term effect on the cooperation within the network, leading to a more consolidated network. The municipalities were motivated by the prospect of gaining knowledge and believed that the approach could assist them in achieving their emission reduction targets. They also expected the LMN approach to facilitate the exchange of experiences, best

practices, and technical support, thus further enhancing their knowledge. During the early stages of the project, many municipalities already experienced benefits from the networking process. They expressed satisfaction with the overall coordination of the PATH2LC project and the support provided by the project coordinators and partners. However, the success of the initial phase of the PATH2LC project faced challenges due to Covid restrictions and the predominantly virtual nature of network meetings. Additionally, some municipalities were unaccustomed to such a high degree of cooperation with other municipalities and had to learn to adapt. The evaluation of the municipalities' feedback in the minutes showed that throughout the whole network process, the municipalities perceived the network approach as positive.

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. Some barriers for measure implementation were identified, such as a lack of human and financial resources, a lack of awareness of the SE(C)APs in the municipalities, old data or the availability of data as well as outdated measures in the 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.

Finally, the expectations on the future development of the network were mainly positive, in particular from the perspective of the municipalities. That is, the municipalities hoped that the cooperation will continue after the end of PATH2LC. Also, several municipalities were deeply committed to keep on working on the decarbonisation of their municipality, stating they will continue working on their SE(C)APs as well as on achieving the common goals set as part of PATH2LC. When it came to the network operators, some of them considered to or already applied the approach of PATH2LC for similar projects.

5.2 Discussion

In the interviews, we asked about the perceived effects of the LMN on the climate protection activities in the municipalities. Oftentimes, a positive influence was reported. However, some interviewees reported that it is difficult to distinguish between the direct benefits of PATH2LC project and the changing context factors (e.g. the energy crisis against the background of the Ukraine war) that raised the importance of energy topics in general. Due to the so-called social desirability bias, the interview partners might also have had a tendency to answer questions in such a way as to present themselves in socially acceptable terms. Thus, they might have been inclined to give more positive than negative feedback. Cultural differences might have further been relevant, as interviewees from different cultural backgrounds might have been more or less inclined to voice positive or negative aspects in their evaluation.

As far as barriers or success factors for PATH2LC are concerned, it appears that success often depended on individual persons in the municipalities: It was frequently mentioned in the interviews that it was important that the top management of a municipality supported the project. The commitment of the person in the municipality who is responsible for PATH2LC was further important for the success of the project. Because of the limited resources in the municipalities, the administrations often lack structures that facilitate the anchoring of the project. In addition, PATH2LC's project lifetime of three years was rather short - processes often take a long time, especially in municipalities.

Lastly, methodological points need to be taken into account when interpreting the results: The interviews with the network operators were conducted by two interviewers of the scientific project team, while the interviews with the municipalities were conducted by the network operators themselves. Interviewers might influence interviewees, i.e. how an interviewer behaves in the interview and how the person arranges the interview can have an influence on the responses. Moreover, outsourcing the interviews with the municipalities to the network operators makes it impossible to assure the quality of the interviews, because the network operators may have different levels of experience in conducting interviews. Another limitation is that the data collection for this analysis was finalised in April 2023, which is four months before the end of the project period. Consequently, in some networks, not all capacity-building measures had already been carried out at the time of the interviews. This was further exacerbated

by schedule shifts in the project resulting from the effects of the Covid pandemic. Finally, personnel changes occurred in the network operators and the municipal representatives involved in the LMN approach throughout the project period. As a result, some interview partners lacked in-depth insights into certain time segments of the project.

6 CONCLUSION AND OUTLOOK

The PATH2LC project is not finished yet, but it is already clear that the LMN approach is viewed very positively and brings many benefits to the municipalities. In addition, many municipalities and network operators would like to see the cooperation in the network continue.

The increasing pressure to tackle climate change at the local level may also lead to further municipal involvement in the future. Not only the increasingly noticeable effects of climate change, but also the energy crisis may have led to the issues of climate and energy becoming more important at the local level.

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 specific network participants. However, it is important to take into account existing barriers and challenges at the municipal level.

The upcoming Deliverable 4.11 report on recommendations for an improvement of the applied approach of learning municipality networks in PATH2LC will consolidate these results, compare them with the further work in WP4 and develop recommendations for a future design of the LMN approach.

7 ACKNOWLEDGEMENT

This work has been performed in the course of the Horizon 2020 project PATH2LC (project number 892560) funded by the European Commission, to which we convey our deepest appreciation for providing the funding to carry out the present investigation. We would like to express our sincere thanks to the local partners Raphaëlle Gauthier of ALTE69, Penny Kazaki of SCN, Luigi Acquaviva of UCSA, Charlotte de Boer and Dorinda van der Veen of CNL, and Rogerio Ivan of Oeste Sustentável for their great support in interviewing the municipalities and providing the interview summaries as well as the minutes of the network meetings to us. This work has greatly benefited from the discussions within the project consortium and especially with the colleagues Catrice Christ and Nico Ulmer of IREES.

8 REFERENCES

Bradke, H., Jochem, E., Mielicke, U., Ott, V., Mai, M., Köwener D., Idrissova, F., Weissenbach, K., Bauer, J., Meier, N., Hack, M., Diemer, R., Feihl, M., Bergmann, K., Berger, R., Ernst, C., Kubin, K. (2015): Lernende Energieeffizienz- und Klimaschutz-Netzwerke. 30 Pilot-Netzwerke und Entwicklung von Investitionsberechnungshilfen. Abschlussbericht an das Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit und an den Projektträger Jülich. Karlsruhe, Pfedelbach, Stuttgart, Berlin, Fraunhofer ISI, 2015.

Cheung, T. T. T.; Oßenbrügge, J. (2020): Governing urban energy transitions and climate change. Actions, relations and local dependencies in Germany. In *Energy Research & Social Science* 69 (7), p. 101728. DOI: 10.1016/j.erss.2020.101728.

Conforto, G. (2021): Working Paper on the analysis and assessment of the SEAP/SECAPs measures. D4.3 of PATH2LC EU Project. With assistance of Edith Chassein, Marcus Hummel, Markus Fritz, Uta Burghard.

Donnerer, D.; Maraquin, T. (2020): National Energy and Climate Plans. Is the key role of local authorities acknowledged? Policy Paper Energy Cities. Edited by Energy Cities (ENC). Available online at https://energycities.eu/wp-content/uploads/2020/10/Role-of-local-authorities-in-final-NECPs_October-2020_final.pdf, checked on 05/26/2023.

Dütschke, E.; Hirzel, S.; Idrissova, F.; Mai, M.; Mielicke, U.; Nabitz, L. (2018): Energy efficiency networks - what are the processes that make them work? In: *Energy Efficiency*, 11 (5), pp. 1177-1192.

Heinelt, H. (2017): The role of cities in the institutional framework of the European Union. Study for the AFCO committee. European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs. Available online at <https://www.europarl.europa.eu/committees/en/supporting-analyses/sa-highlights>, checked on 05/26/2023.

Strasser, H.; Kimman, J.; Koch, A.; Am Mair Tinkhof, O.; Müller, D.; Schiefelbein, J.; Slotterback, C. (2018a): IEA EBC annex 63. Implementation of energy strategies in communities. In *Energy and Buildings* 158, pp. 123–134. DOI: 10.1016/j.enbuild.2017.08.051.

9 APPENDIX

9.1 Interview guideline network operators

Hello/Good morning.

As you know, the learning network approach of the PATH2LC project is being evaluated. The aim is to find out what worked well and what didn't work well in order to learn for the future. Thus, we are interested in your opinion and experiences.

Thank you for taking the time for this interview. It will last about 20-30 minutes. As mentioned in our email, we will not attribute anything you say to you personally, or to the organisation you work for.

Before this interview, I have sent you a consent form, [which you have already signed and sent back to me]. As outlined there, I would like to make an audio recording of our conversation so that no important information gets lost. The recording will be deleted once the analysis is complete. *[If they hesitate, offer to send analysis afterwards for their approval; in extreme cases do without recording]*

Should you have any further questions or would like to take back parts of your consent, you can let me know immediately or up to two weeks after the interview. Due to the anonymisation and integration with other data in our analysis, a later withdrawal of information from the scientific analysis will not be possible.

Do you have any questions or remarks before we start the interview?

Then I am going to start the recording.

Background information [To be filled in beforehand]

[Please fill in relevant background information in the template for the summary of interview results.]

Initial phase of the learning network approach

1. When and how did the collaboration with the [insert name of the network] network start?
 - a. Were you involved in initiating the network? If yes, why did you decide to become active as an initiator of the network?

In September 2020 the PATH2LC project started. The regular network meetings are a central element of the so-called "learning network approach". These meetings started a few months after the beginning of the project and are organised by the network operators.

2. In your opinion, what are the reasons why municipalities committed to PATH2LC's learning network approach?
 - a. Against this background, which recommendations do you have for future initiators?
3. Before its start, what were your expectations of the learning network approach of the project?
 - a. How do you rate the learning network approach compared to how the network was organised before?
4. How do you evaluate the starting phase of the learning network approach as part of the PATH2LC project?
 - a. [If no idea, give examples:] Communication with the coordinators, clear understanding of the overall idea and aims of the project, ...

General evaluation of the learning network approach

5. In general, how do you evaluate the learning network approach of the project?
 - a. [if not addressed by itself, ask for the following elements]: Capacity building of network operators, network meetings.
6. What worked well or did not work well in organising the network meetings as part of the PATH2LC project?
 - a. Do you think the number of regional network meetings was suitable? (e.g. too high - too low)
 - b. Do you think the length of the network meetings was suitable? (e.g. too long - too short)
 - c. How do you assess the added value of the content of the network meetings for the municipalities? (e.g. very valuable - not valuable at all)
 - d. In your experience, did the training of network operators within the PATH2LC project help you in moderating the network (e.g. in terms of moderation, communication...)? If yes, how?

7. How is the learning network approach perceived in the municipalities of your network (both in the administration and by other stakeholders in the municipality, e.g. companies or citizens)?
 - a. From your point of view, did participating municipalities benefit from the learning network approach of the project? If yes, how?
 - b. In your opinion, which negative effects of participating in the learning network approach emerged for the municipalities? *[If the interviewee has no idea about negative effects, you can give examples such as: use of personnel and time...]*
 - c. Are there differences between the municipalities in terms of benefits or costs of participating in the learning network approach? If so, what are they? Do you have any explanations for these differences (e.g. due to different population sizes, differences in available financial or human resources, structure of the administration, other actors in the community, etc.?)

Perceived effects of the learning network approach

Perceived influence on the implementation of SE(C)AP measures:

8. How much has participating in the learning network approach within the PATH2LC project influenced the implementation of SE(C)AP measures in the network municipalities?
 - a. At the beginning of the project, barriers to implementing SE(C)AP measures were identified. To what extent has the learning network approach helped overcome (some of) these barriers to the implementation of SE(C)AP measures in the municipalities?

Perceptions regarding the common target setting:

[Only ask the following questions, if common targets have been set in the network]

9. Which common targets, i.e. targets regarding emission reduction, have been set for your network? Have the common targets been set as part of the PATH2LC project?
 - a. In your opinion, how do the municipalities benefit from the common target setting of the network?
 - b. Are the common targets of the network more ambitious/ less ambitious than the targets of the individual municipalities?

Perceived effects on knowledge creation:

10. If at all, how has participating in the PATH2LC learning network approach led to an increase in knowledge in the municipalities in relation to energy issues?

Outlook and further remarks

11. Do you have any recommendations regarding the learning network approach and its implementation?

12. In your opinion, how will your network develop after the end of the project?

- a. Where do you see particular challenges for the future of the network? (e.g. in terms of implementing SE(C)AP measures, ...)

13. Are there any further remarks or comments you would like to share?

Conclusion of the interview

Thank you for taking the time to participate in our interview. The PATH2LC project will use the (anonymized) results for the development of project reports.

9.2 Interview guideline municipalities

General information

Thank you for supporting us in conducting the interviews with representatives of the municipalities involved in PATH2LC!

How do you arrange interviews?

At first, the potential interviewee is contacted by sending him/her an E-Mail or calling them.

Please contact the person who has most frequently participated in the network meetings and who is the (current) contact person on the part of the municipality.

In this first contact you inform the (potential) interviewee on the objective of the study and on the interviews planned (duration, conducted face-to-face/by phone, confidentiality), explain to him or her why their participation in the study is essential, potential benefits for him/her (results etc.) and ask him/her on his/her willingness to take part. A template for this is provided (see PATH2LC_Interview contract_Evaluation.docx).

The interview can take place face-to-face or by telephone; face-to-face is preferred.

If more than one person from the municipality wishes to participate, this is possible. Ideally, however, only one person should take part in the interview, namely the person who is most involved in the project and the learning network approach within the PATH2LC project.

How do you conduct interviews?

Please translate this guideline into your local language. Please also remember to translate the notes on data protection and data processing and address them at the beginning of the interview.

Please record the interview so that you can listen to it again and take down notes later. This way, you can concentrate on the interview itself while conducting it and nothing will get lost.

Before audio recording, it is essential to obtain consent first. If the interview partner is unsure if he/she wants to agree to a recording of the interview, please explain that

- recording is for his/her benefit in terms of accuracy, as it is usually not possible to take note as extensively as necessary and via the audio recording it is ensured that the information provided will be complete
- the audio recording will be used for no other purpose than creating an interview summary and that it will be deleted at the end of the project
- confidentiality is guaranteed
- recording is state of the art in scientific projects to ensure data quality

If these arguments do not work, offer that the interview partner may have a look at the interview summary.

Do never record the interview if the interview partner does not give his/her consent! If recording is not possible, take as many notes as possible and complete them directly after the interview.

How do you document interviews?

After conducting the interviews, please provide us with an English (or German) summary of the interview. A template for this is provided (see PATH2LC_Evaluation_Interview_Results_Municipalities_template.docx). Listen to the recording of the interview to do the summary. Please add some original quotes at important points, verbally transcribing in the original language what the interview partner has said (please add an English translation for these quotes).

[information in brackets and yellow background]: Instructions for the interviewer

PATH2LC: Interview with Municipalities

Hello/Good morning.

As you know, the learning network approach of the PATH2LC project is being evaluated. The aim is to find out what worked well and what didn't work well in order to learn for the future. Therefore, we ask you as a member of a municipality that participates in this project to give us more information about how you experienced the learning network approach of the project.

Thank you for giving your time for this interview. It will last about 30-45 minutes. As mentioned in our email, we will not attribute anything you say to you personally, or to the organization you work for.

Before this interview, I have sent you a consent form, [which you have already signed and sent back to me]. As outlined there, I would like to make an audio recording of our conversation so that no important information gets lost. The recording will be deleted once the analysis is complete. *[If they hesitate, offer to send analysis afterwards for their approval; in extreme case do without recording]*

Should you have any further questions or would like to take parts of your consent back, you can let me know immediately or up to two weeks after the interview. Due to the anonymisation and integration with other data in our analysis, a later withdrawal of information from the scientific analysis will not be possible.

Do you have any questions or remarks before we start the interview?

Then I am going to start the recording.

Background information [To be filled in beforehand]

[Please fill in relevant background information in the template for the summary of interview results.]

Initial phase of the learning network approach

14. When and how did the collaboration of your municipality with the network [insert name of the network] start?

In September 2020 the PATH2LC project started. A central element of the so-called "learning network approach" are the regular network meetings. These meetings started a few months after the project began and are organised by the network operators.

15. Why did your municipality commit to PATH2LC's learning network approach?

16. Before its start, what were your expectations for the learning network approach of the project?

a. How do you rate the learning network approach compared to how the network was organised before?

17. How do you perceive the starting phase of the learning network approach as part of the PATH2LC project?

a. [If no idea, give examples:] Communication with the coordinators, clear understanding of the overall idea and aims of the project, ...

General evaluation of the learning network approach

18. How do you perceive the learning network approach of the project? (e.g. very helpful - not helpful at all)

a. Did your municipality benefit from the learning network approach of the project? If yes, how?

b. Which negative effects of participating in the learning network approach have you experienced, if there are any? [If the interviewee has no idea about negative effects, you can give examples such as: use of personnel and time, ...]

c. How is the learning network approach perceived by further actors in your municipality (both in the administration and by other stakeholders in the municipality, e.g. companies or citizens)?

19. What did you like or dislike about the organisation of the network meetings as part of the PATH2LC project?

a. Do you think the number of regional network meetings was suitable? (e.g. too high - too low)

b. Do you think the length of the network meetings was suitable? (e.g. too long - too short)

c. How do you assess the added value of the content of the network meetings? (e.g. very valuable - not valuable at all)

Perceived effects of the learning network approach

Perceived influence on the implementation of SE(C)AP measures:

20. How much has participating in the learning network approach within the PATH2LC project influenced the implementation of SE(C)AP measures in your municipality?
- a. At the beginning of the project, barriers to implementing SE(C)AP measures were identified. To what extent has the learning network approach helped overcome (some of) these barriers to the implementation of SE(C)AP measures?

Knowledge and perceptions regarding the common target setting:

[Only ask the following questions, if common targets have been set in your network]

21. *[Question of knowledge:]* Which common targets, i.e. targets regarding emission reduction, have been set for your network?

[Only ask the follow-up-questions below, if the interviewee has a good idea of the common targets in your network]

- a. How does your municipality benefit from the common target setting of the network?
- b. Are the common targets of the network more ambitious/ less ambitious than the targets of your municipality?

Perceived effects on knowledge creation:

[Ask the initial question open-ended first, then follow up with questions 8a and 8b.]

22. If at all, how much has participating in the learning network approach led to an increase in knowledge in relation to energy issues?

- a. Which elements of the capacity building were most useful for your municipality?
 - i. Peer-to-peer learning workshops
 - ii. Training on tools and methods
 - iii. Input of external technical experts on specific topics as part of the network meetings
 - iv. Webinars
 - v. Online knowledge base for local authorities
 - vi. Others (that we might not think of)
- b. Which topics were most interesting for your municipality?
 - i. Heating and cooling planning
 - ii. Energy in buildings
 - iii. *[Omit, when the interview is done before 10 January 2023:]* Financing of energy efficiency measures
 - iv. Community, consumer and stakeholder engagement
 - v. Other topic / topics (e.g. mobility, lighting)

Overarching effects:

23. Did the learning network approach contribute to foster the exchange with other stakeholders in your municipality in the field of energy? If so, how?

24. To what extent has participating in the project helped to strengthen your exchange with other municipalities in the network in the long term?



Outlook and further remarks

25. Do you have any recommendations regarding the learning network approach and its implementation? What could be done better?
- a. What do you think could make other municipalities committing to it?
26. How do you expect your municipality to proceed with achieving your targets and implementing the measures after the end of the PATH2LC project?
27. Are there any further remarks or comments you would like to share?

Conclusion of the interview

Thank you for taking the time to participate in our interview. The PATH2LC project will use the (anonymized) results for the development of project reports.

9.3 Informed consent form

Invitation

You have been invited to take part in an interview study related to the perception and evaluation of the learning network approach within the EU project PATH2LC. Please read the following document carefully to make your decision whether to participate in the interview. If in doubt about individual items of this form, you can contact the responsible person for this activity or the coordinator of the project.

About this form

This form is called a Consent Form. It will give you information about the study so you can make an informed decision about participation in this research.

This consent form will give you the information you will need to understand why this study is being done and why you are being invited to participate. It will also describe what you will need to do to participate and any known risks, inconveniences or discomforts that you may have while participating. We encourage you to take some time to think this over and ask questions now and at any other time. If you decide to participate, you will be asked to sign this form and you will be given a copy for your records.

Project Information	
Study Title:	Evaluation of the learning network approach of the EU project PATH2LC
Researchers:	Uta Burghard, Sven Alsheimer (Fraunhofer ISI)
Funding Agency:	This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 892560.
Project Website	https://www.path2lc.eu/
Purpose of the Research	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.
Purpose of the specific research activity	The interview study will explore your perceptions and evaluation of the network approach applied in the PATH2LC project.
Data protection officer	Ralph Harter (Fraunhofer-Gesellschaft), datenschutz@zv.fraunhofer.de .

Participation	
Voluntary participation	Your participation in the interviews is completely voluntary, and you can choose to stop participating at any time.
Participation requirements	Adult persons of at least 18 years old only are permitted to participate. In addition, only participants being able to give informed consent themselves shall participate.
Task Description	If you agree to take part in this study, you will be asked to evaluate the network approach of the PATH2LC project. You may skip any question you feel uncomfortable answering.
Risks	We do not foresee any particular risks related to your participation in this study - as detailed below, your answers will be treated in confidence.
Benefits	You may not directly benefit from this research; however, we hope that your participation in the study will provide valuable insights for the design and implementation of network approaches in future projects.

Privacy and Confidentiality	Privacy and confidentiality have been carefully considered in the PATH2LC project to meet legal requirements as well as ethical considerations. Only data that is necessary for the development of the project will be collected.
Data Protection	<p>The interviewee agrees to the recording and scientific evaluation of the interview. After the recording is completed, sections of the interview can be deleted at the request of the interviewee.</p> <p>Recording the interview is necessary to assure accuracy of the interview summaries. The recordings will only be used for the development of the interview summaries. The recording is stored safely by Fraunhofer ISI and is only accessible to the employees mentioned above. The recording is deleted at the end of the project.</p> <p>If access to the data is given to other persons – e.g. for follow-up examinations within the research project PATH2LC – they are obliged to treat the data strictly confidential as well.</p> <p>The results of the interviews will be published in an anonymized and aggregated form. In any presentation of the results all personal data (name, address and all other personal details that could help with identifying the interviewee and further passages in consultation with the interviewee) are made illegible.</p>
Withdrawal information	You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may resign until 14 days after the interview took place.
Further questions	Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the researcher(s), Uta Burghard, uta.burghard@isi.fraunhofer.de , and Sven Alsheimer, sven.alsheimer@isi.fraunhofer.de .

SUBJECT STATEMENT OF VOLUNTARY CONSENT

When signing this form I am agreeing to voluntarily enter this study. I have had a chance to read this consent form, and it was explained to me in a language which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. I understand that I can withdraw at any time. A copy of this signed Informed Consent Form has been given to me.

Place, Date

Interviewer

Interviewee



9.4 List of codes

List of Codes	Frequency
Codesystem	1612
Sentiment	0
(Rather) positive	309
(Rather) negative	82
Developments in the network	0
Reasons for initiating network	4
Start of collaboration with the network	14
Information on network meetings	7
General comments on network	9
Organisational structures within network	7
Developments in the municipalities	0
Information on SE(C)APs	36
Information on common targets	27
Information on individual municipal targets	21
Reasons for collaborating with network	16
Start of collaboration with the network	12
Developments that lead to committing to project	14
General comments on network	12
Evaluation by network operators	0
Expectations before start	13
Expectations during network process	3
Recommendations during network process	6
Evaluation of starting phase	19
Shortcomings	0
Benefits	2
Drivers	2
Barriers	3
Overall evaluation	5
Benefits	20
Shortcomings	3
Drivers	6

Barriers	17
Evaluation of Meeting Organisation	17
Evaluation of scientific accompanying research	2
Recommendations for future implementation	11
Expectations on future development of network	18
Evaluation by municipalities	0
Reasons for municipalities to commit	29
Expectations before start	84
Expectations during network process	6
Expectations for meeting organisation	1
Expected content of network approach	3
Recommendations during network process	7
Evaluation of starting phase	43
Shortcomings	12
Benefits	6
Drivers	5
Barriers	4
Overall evaluation	19
Benefits	104
Capacity building	49
Peer-to-peer-learning	11
Network meetings	23
Evaluation of Meeting Organisation	73
Evaluation of scientific accompanying research	0
Shortcomings	18
Drivers	9
Barriers	26
Recommendations for future implementation	56
Expectations on future development of network	32
Perceived effects	0
Development / update of SE(C)AP (+) (+)	32
Implementation of SE(C)AP measures (+)	45
Drivers	3

Barriers	21
Common target setting (+) (+)	49
Knowledge creation	71
Overarching effects	87
Further remarks	5

