EUROPEAN CITY FACILITY
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Summary Report for Call 3 (Public)

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Purpose:

The purpose of "summary report for the call 3" is to provide an overview of the EUCF third call results and outcomes. This report brief the readers on the details of the third EUCF call's application and evaluation phases containing the statistics of registered applicants, submitted applications and selected applications within three geographical regions and also per each country.

Abbreviations:

CINEA – European Climate, Infrastructure and Environment Executive Agency

EUCF – European City Facility

EEA-EFTA States – States of Iceland, Liechtenstein and Norway

CEE - Central and Eastern Europe

IC - Investment Concept

NC&WE - Nordic Countries and Western Europe

SE - Southern Europe

Disclaimer:

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Table of Contents

1. Introduction

This document briefs on the third EUCF call outcomes and presents key information on the third call application and evaluation phases.

The document contains information on the number of registrations to the EUCF Website User Zone with an overview per region and country, number of submitted/non-submitted applications per region and country, type of applicants, type of sectors targeted by the applicants, expected investment size and expected energy savings reported by the applicants.

This report also contains information on the number of "submitted applications", "unsuccessful applications during document check", "non-selected applications during evaluation phase" and "selected applications" per region and per country, as well as information on the final selection of municipalities/local authorities, groupings of municipalities/local authorities or local public entities aggregating municipalities/local authorities and the sectors in which the successful applicants will develop their investment concepts is also provided.

Executive summary of the EUCF report for call 3

The public summary provides an overview of the EUCF third call results and outcomes, which was open from **15th October to 17th December 2021**. The document is divided into several sections starting from the number of registered potential applicants and ending with the evaluation results, where the selected applicants of the EUCF 3rd call and the planned measures of their envisaged project(s) are presented. This document aims to introduce the reader to the journey of EUCF's call 3 and to provide a better understanding of the evaluation process, especially for interested future applicants.

Thus, Section 2 – **Registration to the EUCF Website User Zone,** presents the number of registered applicants in the EUCF Website User Zone per region and per country in the EUCF call 3. A total of 184 applications were registered in the EUCF Website User Zone, out of which 81 were registered from Central and Eastern Europe (CEE), 45 from Nordic Countries & Western Europe (NC&WE) and 58 applicants from Southern Europe (SE).

Section 3 shows the results of the **Application process**, which is the process by which registered applicants can prepare, complete and submit the EUCF application form. The number of submitted and non-submitted applications per region and country are presented in this section. A total of 166 applications were submitted within the third EUCF call. The largest number of submitted applications came from the CEE region (68), where the largest number of 19 submitted applications were submitted in Poland. A total of 58 applications were submitted in the SE region, where Italy stood out with the largest number of 20 submitted application in the SE region and in all EUCF region. Within the NC&WE region were submitted 40 applications, where the largest number of applications were submitted in Netherlands (9). Within all EUCF regions, 35 applications were non-submitted during the 3rd EUCF call.

Section 4 provides an overview of the applications submitted within each EUCF region and presents more detailed information on **Submitted applications,** including population, expected investment size and expected energy savings/renewable energy production reported by the applicants and type of submitted applications per region and country. Local public entities aggregating municipalities/local authorities were made eligible too for EUCF support from the second EUCF call. Within the 3rd EUCF call, 128 applications were submitted by municipalities/local authorities, 23 by their groupings and 15 applications were submitted by local public entities aggregating municipalities/local authorities.

Section 5 – **Main investment sectors of submitted applications** provides a summary of the main investment sectors targeted by submitted applications per region and within the third EUCF call. Among the main investment sectors targeted by the EUCF applicants are public buildings, residential buildings, building-integrated renewables, district heating, smart grids, sustainable urban mobility and innovative energy infrastructure. Applicants could also specify other sectors e.g. innovative micro-scale liquefaction systems, e-mobility and charging facilities, waste management, public lighting, solar thermal plants etc. The results presented in this section show that the district heating sector is targeted the most in the NC&WE (40%) and CEE (27%) regions. In the SE region, the public buildings sector has been selected with a share of 30%.

The **Evaluation results** are presented in the following Section 6. This section provides information on how many applications were submitted, rejected in the document check, non-selected due to a score below the quality threshold or due to a lower final score and selected for EUCF support per region and country. Overall, 166 applications were submitted within the 3rd EUCF call. Out of them, 14 applications were unsuccessful in the documents check and 152 applications have been evaluated based on the five evaluation criteria. Within the 3rd EUCF call, 67 successful applicants were selected for support in all 3 regions. Successful applications from 23 out of the 26 participating countries have been selected for the EUCF grant within the third call. In addition, an overview of identified reasons for unsuccessful submission of applications during the document check and the evaluation results per criteria of submitted applications that passed the document check were presented.

The final section 7 presents the **Selected applications** within the three EUCF regions, including a map of selected applications by countries from all EUCF regions and maps of successful applications including information on the population of selected applicants per region and per country. Out of 67, 26 applications were selected in the CEE region, 22 applications in the NC&WE region and 19 applications in the SE region. Additionally, this section presents the expected impacts in terms of energy efficiency and renewable energy production within the regions, main targeted sectors and the intended measures stated by each selected applicant.

2. Registration to the EUCF Website User Zone

After successfully passing the eligibility check the applicant receives login details to the EUCF website user zone for getting access to the online application form.

2.1 Registered applicants to the EUCF Website User Zone per region

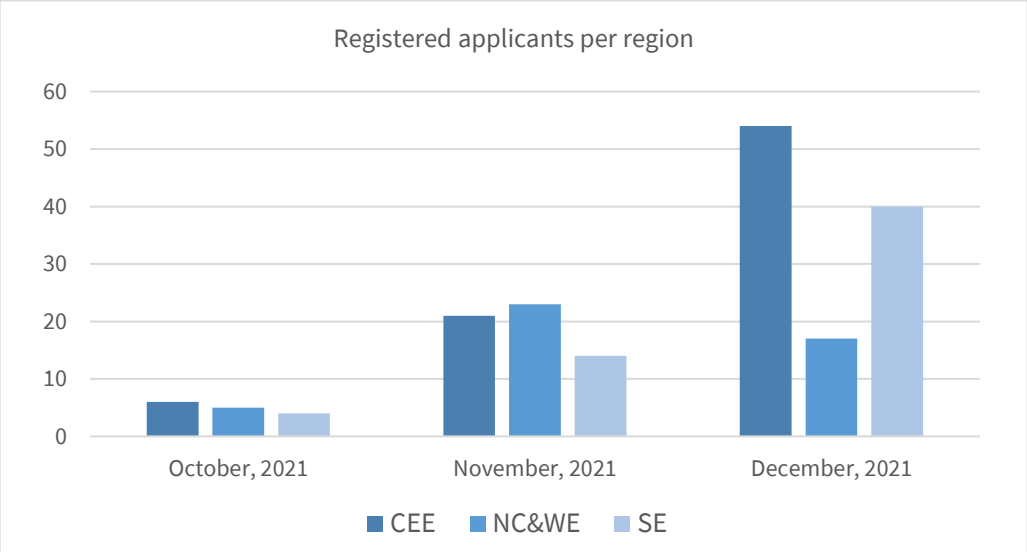
Table 1 presents the registered applicants status to the EUCF website user zone during the third EUCF call between 15th October to 17th December 2021 within the three EUCF regions. Starting from the second EUCF call, applicants from the EEA-EFTA States of Iceland, Liechtenstein and Norway can apply for the EUCF support. The EEA-EFTA States together with the UK are part of the Nordic countries & Western Europe EUCF region.

Table 1. Registered applicants to the EUCF

Region	October 2021	November 2021	December 2021	Total
Central and Eastern Europe	6	21	54	**81**
Nordic countries & Western Europe	5	23	17	**45**
Southern Europe	4	14	40	**58**
Total	**15**	**58**	**111**	**184**

Figure 1 shows the number of registered applicants in the EUCF website user zone during the months in which the third EUCF call was open.

Figure 1. Registered applicants to the EUCF



2.2 Registered applicants to the EUCF Website User Zone per country

Table 2 presents the number of registered applicants to the EUCF website user zone between 15th October to 17th December 2021 per country.

Table 2. Registered applicants to the EUCF third call per country

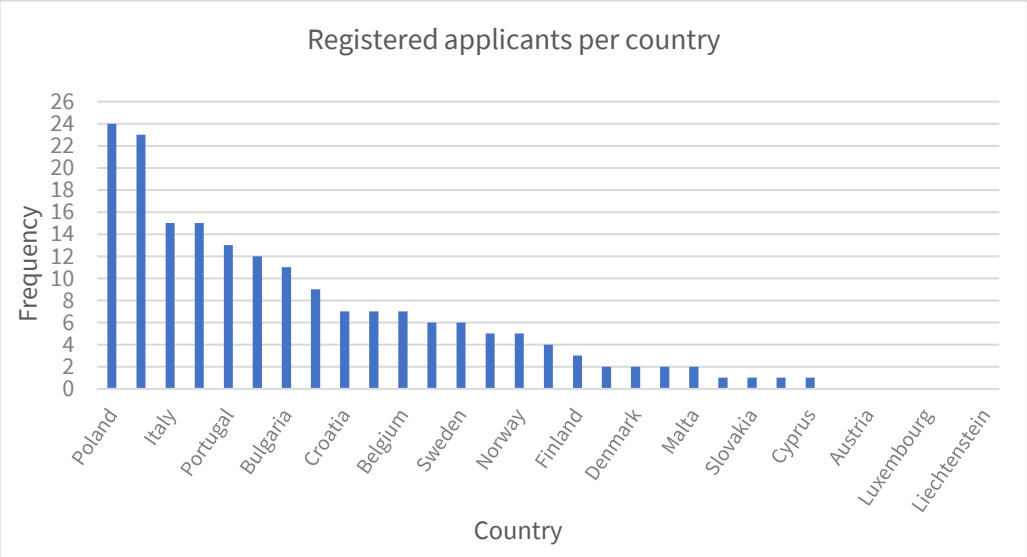
Registration to the EUCF website user zone is possible to be done after finishing the actual EUCF call. Registered applicants cannot fill an application form when the call is not running.

CEE		NC & WE		SE	
Country	**N° of Registered applicants**	**Country**	**N° of Registered applicants**	**Country**	**N° of Registered applicants**
Bulgaria	11	Austria	0	Cyprus	1
Croatia	7	Belgium	7	Greece	12
Czechia	2	Denmark	2	Italy	15
Estonia	1	Finland	3	Malta	2
Hungary	7	France	6	Portugal	13

Latvia	4	Germany	0	Spain	15
Lithuania	0	Iceland	0		
Poland	24	Ireland	2		
Romania	23	Liechtenstein	0		
Slovakia	1	Luxembourg	0		
Slovenia	1	Netherlands	9		
		Norway	5		
		Sweden	6		
		United Kingdom	5		
Total	**81**	**Total**	**45**	**Total**	**58**

Figure 2 shows the number of registered applicants to the EUCF website user zone per country within the third EUCF call.

Figure 2. Registered applicants to the EUCF per country



3. Application

Registered applicants to the EUCF website user zone can complete the full application form, prepare the supporting documents and submit them via the EUCF website user zone.

3.1 Submitted/Non-submitted aplicantions to the EUCF User Zone per region

Table 3 presents the statistics of non-submitted and submitted applications to the EUCF website user zone within the third EUCF call between 15th October to 17th December 2021 per region.

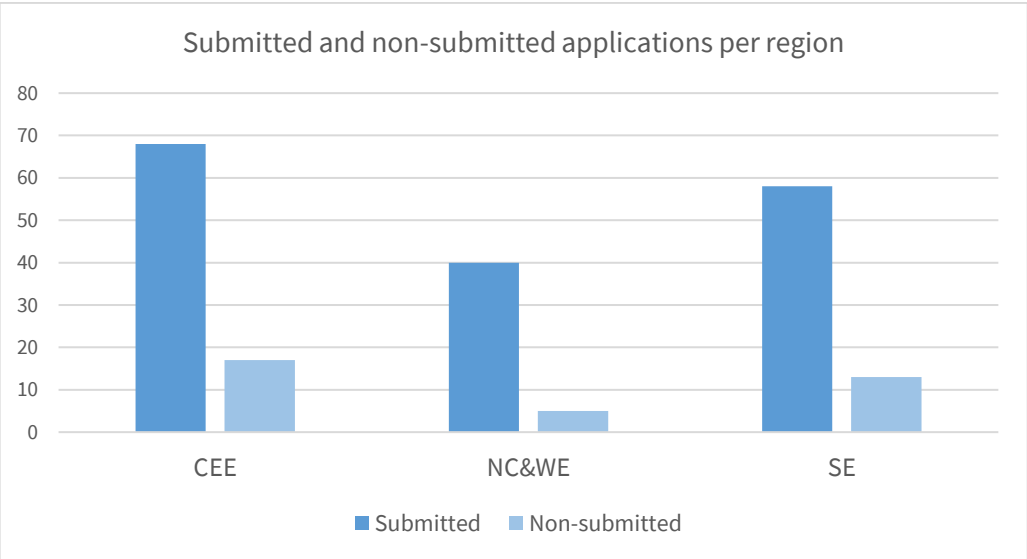
Table 3. Submitted & non-submitted applications

Region	N° of Submitted	N° of Non-submitted	Total
Central and Eastern Europe	68	17	**85**
Nordic countries & Western Europe	40	5	**45**
Southern Europe	58	13	**71**
Total	**166**	**35**	**201**

Applicants who have previously registered in the EUCF website user zone can directly submit an application within the current EUCF Call.

Figure 3 presents the number of submitted and non-submitted applications to the EUCF website user zone during the third EUCF call per region.

Figure 3. Submitted & non-submitted applications



3.2 Submitted / Non-submitted applications to the EUCF Website User Zone per country

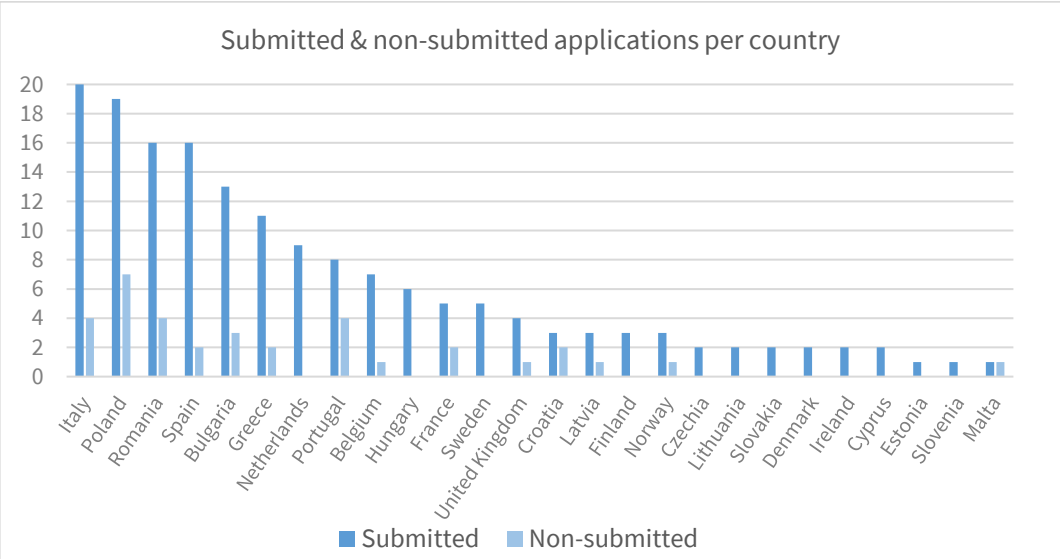
Table 4 presents the number of submitted and non-submitted applications to the EUCF website user zone during the third EUCF call between 15th October to 17th December 2021 per country.

Table 4. Submitted and non-submitted applications

CEE			NC & WE			SE		
Country	**Submitted**	**Non-submitted**	**Country**	**Submitted**	**Non-submitted**	**Country**	**Submitted**	**Non-submitted**
Bulgaria	13	3	Belgium	7	1	Cyprus	2	0
Croatia	3	2	Denmark	2	0	Greece	11	2
Czechia	2	0	Finland	3	0	Italy	20	4
Estonia	1	0	France	5	2	Malta	1	1
Hungary	6	0	Germany	0	0	Portugal	8	4
Latvia	3	1	Ireland	2	0	Spain	16	2
Lithuania	2	0	Netherlands	9	0			
Poland	19	7	Norway	3	1			
Romania	16	4	Sweden	5	0			
Slovakia	2	0	United Kingdom	4	1			
Slovenia	1	0						
Total	**68**	**17**	**Total**	**40**	**5**	**Total**	**58**	**13**

Figure 4 presents the number of submitted and non-submitted applications to the EUCF website user zone within the third EUCF call per country.

Figure 4. Submitted and non-submitted applications trend



4. Submitted applications

This chapter provides information of submitted applications including the type of applicants, country and municipality/local authority, groupings of municipalities/local authorities as well as local public entities aggregating municipalities/local authorities, population, targeted sector/s, expected size of investment and expected impact within the three regions.

4.1 An overview of submitted applications per region

Table 5 shows the information on submitted applications within the third EUCF call per region.

Table 5. Submitted applications per region

Region	Number of submitted applications	Population	Expected investment size (EUR)	Expected energy savings/ RES production (GWh/y)	Number of applications by groupings	Number of applications by public entity aggregating municipalities/local authorities
CEE	68	3 861 408	1 907 251 030	1 868.7	5	1
NC&WE	40	8 231 672	2 623 617 836	2 536.2	4	7
SE	58	5 217 231	2 281 993 657	4 134.2	14	8
Total	**166**	**17 310 311**	**6 812 862 523**	**8 539.1**	**23**	**16**

4.2 An overview of submitted applications per country

Table 6 shows the information on submitted applications within the third EUCF call per country.

Table 6. Submitted applications per country

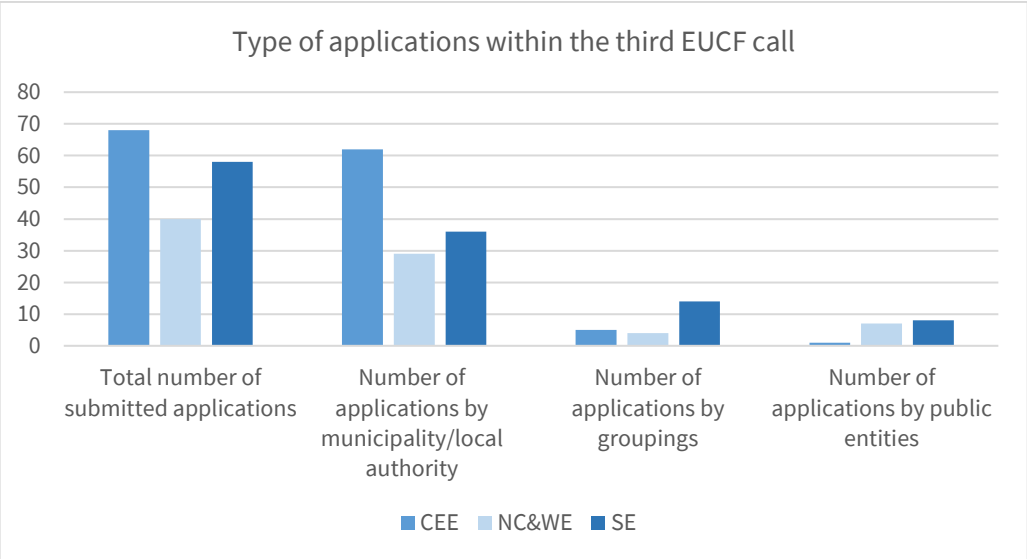
Country	Number of submitted applications	Population	Expected investment size (EUR)	Expected energy savings/ RES production (GWh/y)	Number of Applications by groupings	Number of Applications by public entities
CEE						
Bulgaria	13	565 967	185 574 040	138.2	0	0
Croatia	3	52 277	311 654 373	172.4	2	0
Czechia	2	52 000	45 442 600	51.2	0	0
Estonia	1	450 000	8 229 167	3.3	0	0
Hungary	6	430 232	442 388 189	485	0	0

Country	Number of submitted applications	Population	Expected investment size (EUR)	Expected energy savings/ RES production (GWh/y)	Number of Applications by groupings	Number of Applications by public entities
Latvia	3	124 942	87 530 411	52.2	0	0
Lithuania	2	121 657	21 026 747	30.2	0	0
Poland	19	979 479	476 444 163	750.3	2	0
Romania	16	512 230	158 276 430	168.0	0	0
Slovakia	2	476 948	153 560 000	9.2	0	1
Slovenia	1	95 676	17 124 910	8.7	1	0
Total	**68**	**3 861 408**	**1 907 251 030**	**1 868.7**	**5**	**1**
NC&WE						
Belgium	7	881 016	96 063 310	122.7	1	2
Denmark	2	260 181	100 233 176	248.0	1	0
Finland	3	120 611	65 066 130	373.0	0	0
France	5	1 087 459	75 205 600	101.9	0	3
Ireland	2	588 639	29 029 695	58.1	1	1
Netherlands	9	898 375	1 697 730 725	1 338.6	1	0
Norway	3	142 239	9 246 933	18.0	0	0
Sweden	5	319 477	514 605 537	218.5	0	0
United Kingdom	4	3 933 675	36 436 730	57.5	0	1
Total	**40**	**8 231 672**	**2 623 617 836**	**2 536.2**	**4**	**7**
SE						
Cyprus	2	129 177	69 053 123	61.9	2	0
Greece	11	610 465	260 134 184	1 095.0	2	1
Italy	20	2 266 642	1 095 718 737	1 564.5	7	3
Malta	1	14 592	2 000 000	3	0	0
Portugal	8	573 084	476 021 620	798.1	2	0
Spain	16	1 623 271	379 065 993	611.7	1	4
Total	**58**	**5 217 231**	**2 281 993 657**	**4 134.2**	**14**	**8**
Overall	**166**	**17 310 311**	**6 812 862 523**	**8 539.1**	**23**	**16**

Figure 5 presents the number of submitted applications by municipality/local authority, the number of groupings of municipalities/local authorities, the number of local public entities

aggregating municipalities/local authorities and the total number of submitted applications per region.

Figure 5. Type of submitted applications within the 3rd EUCF call



5. Main investment sectors of submitted applications

This chapter provides a summary of the main investment sectors targeted by submitted applications.

5.1 Targeted investment sectors per region

Figures 6, 7 and 8 illustrate the share of the main investment sectors within the three regions. Applicants were asked to select the sectors targeted by their proposed investment project and indicate the main sector. Among the main investment sectors targeted by the EUCF are public buildings, residential buildings, building-integrated renewables, district heating, smart grids, sustainable urban mobility and innovative energy infrastructure. Applicants can also specify other sectors e.g. innovative micro-scale liquefaction systems, e-mobility and charging facilities, waste management, public lighting, solar thermal plants etc.

Figure 6. Targeted main investment sectors by submitted applications in CEE region

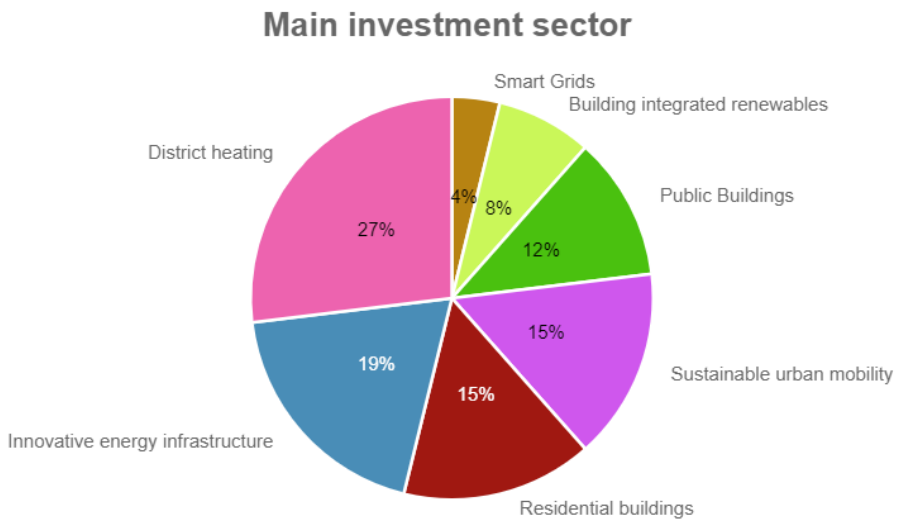


Figure 7. Targeted main investment sectors by submitted applications in NC&WE region

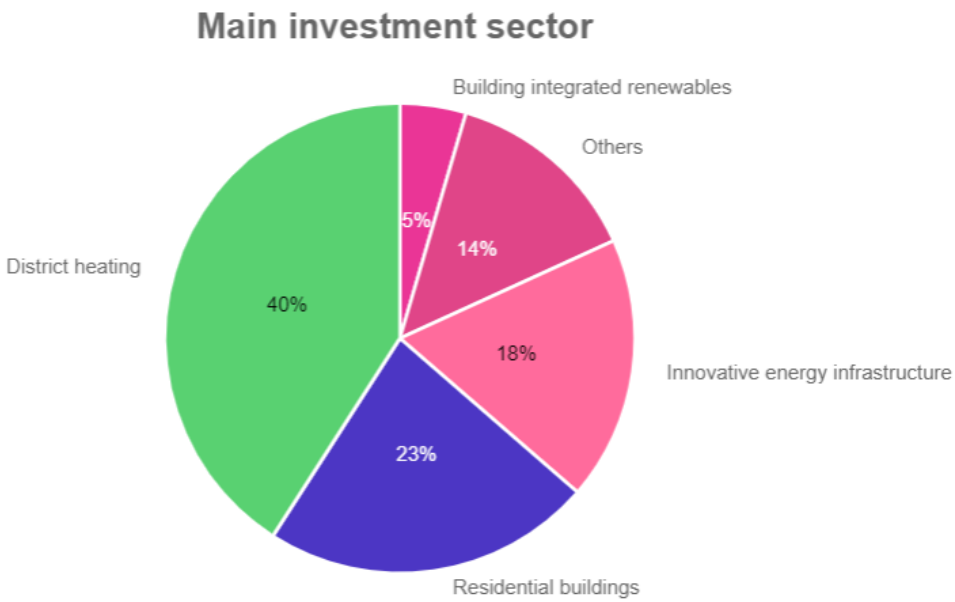
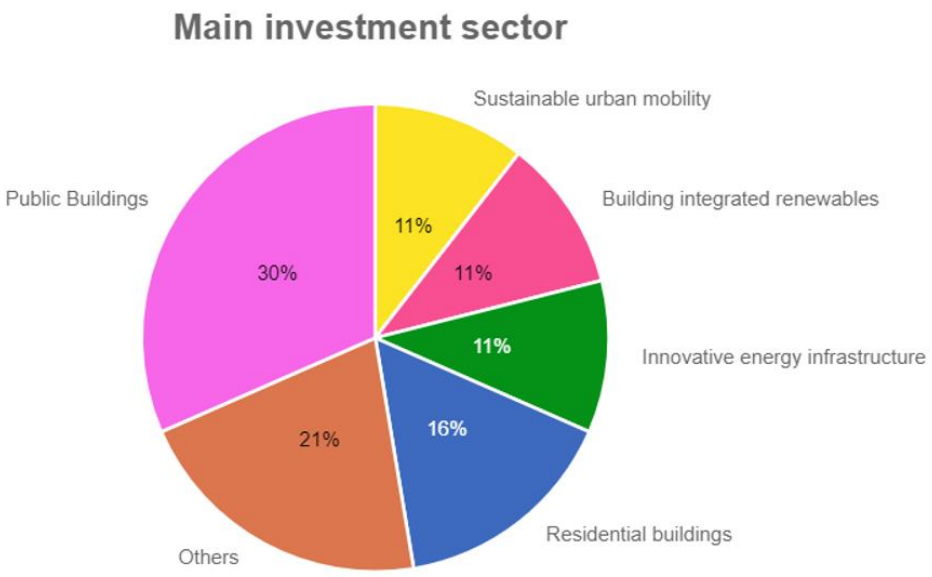


Figure 8. Targeted main investment sectors by submitted applications in SE region

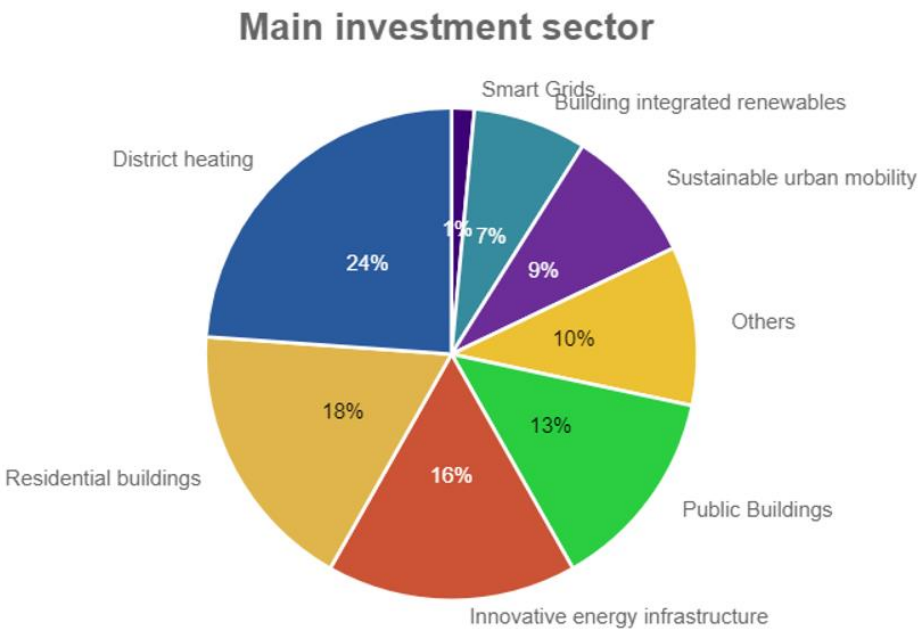


From the pie charts, it is clear that the district heating sector is targeted the most in the NC&WE (40%) and CEE (27%) regions. In the SE region, the public buildings sector has been selected the most by the applicants with a share of 30%.

5.2 Targeted investment sectors of submitted applications within the EUCF 3rd call

Figure 9 summarizes the targeted main investment sectors of submitted applications within the third EUCF call. Overall, the residential buildings sector was selected the most in the submitted applications, followed by building integrated renewables, sustainable urban mobility sectors and innovative energy infrastructure sector.

Figure 9. Targeted main investment sectors



*Others refer to innovative micro-scale liquefaction system, e-mobility and charching facilities, waste management, public lighting, solar thermal plants etc.

6. Evaluation result

Overall, 166 applications were submitted within the 3rd EUCF call. Out of them, 14 applications were unsuccessful in the documents check and 152 applications have been evaluated based on the five evaluation criteria. Within the 3rd EUCF call, 67 successful applicants are selected for support in all 3 regions. The evaluation result is detailed per region and country below.

6.1 Evaluation result per region

Table 7 presents the number of "submitted applications", "rejected applications in the documents check", "non-selected applications due to score below the quality threshold", "non-selected applications due to lower final score" and "selected applications" per region.

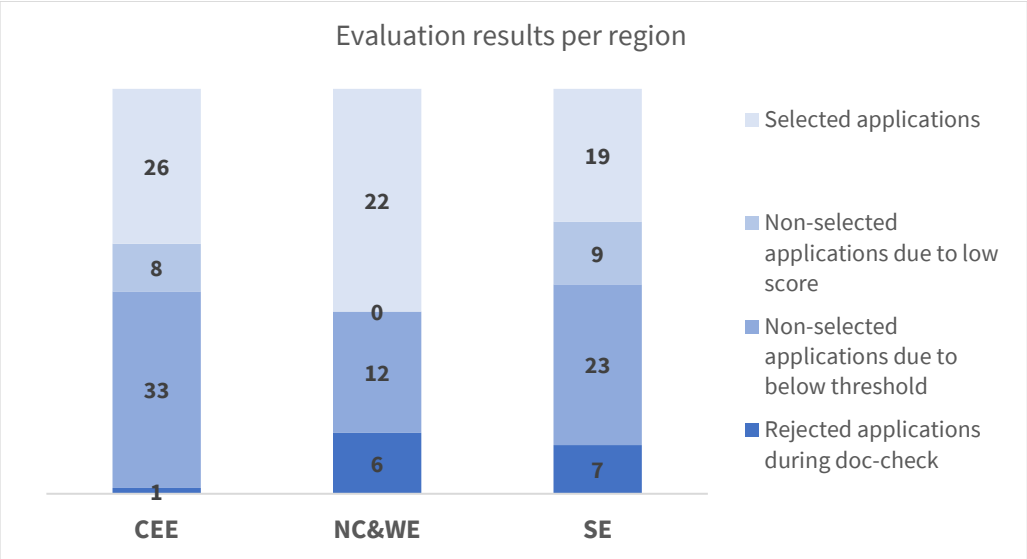
Table 7. Evaluation result per region

Region	Submitted applications	Rejected applications in the documents check	Non-selected applications due to score below the quality threshold	Non-selected applications due to a lower final score	Selected applications
CEE	68	1	33	8	26
NC&WE	40	6	12	0	22
SE	58	7	23	9	19
Total	**166**	**14**	**68**	**17**	**67**

Figure 10 presents the number of "submitted applications", "rejected applications in the documents check", "non-selected applications due to score below the quality threshold", "non-selected applications due to lower final score" and "selected applications" per country. Overall, 8.4% of submitted applications did not pass the document check.

Successful applications from 23 out of the 26 participating countries have been selected for the EUCF grant within the third call.

Figure 10. Evaluation result per region



6.2 Evaluation result per country

Table 8 shows the number of “submitted applications”, “rejected applications in the documents check”, “non-selected applications due to score below the quality threshold”, “non-selected applications due to lower final score“ and “selected applications” per country.

Table 8. Evaluation results per country

Country	Submitted applications	Rejected applications in the documents check	Non-selected applications due to score below the threshold	Non-selected applications due to a lower final score	Selected applications
CEE					
Bulgaria	13	0	8	2	3
Croatia	3	0	0	1	2
Czechia	2	0	1	0	1
Estonia	1	0	1	0	0
Hungary	6	0	1	0	5
Latvia	3	0	0	0	3
Lithuania	2	0	0	1	1
Poland	19	0	9	2	8
Romania	16	1	12	1	2
Slovakia	2	0	1	1	0
Slovenia	1	0	0	0	1
Total	**68**	**1**	**33**	**8**	**26**
NC & WE					
Belgium	7	1	3	0	3
Denmark	2	0	0	0	2
Finland	3	1	0	0	2
France	5	1	3	0	1
Ireland	2	0	0	0	2
Netherlands	9	1	1	0	7
Norway	3	1	1	0	1
Sweden	5	1	1	0	3
United Kingdom	4	0	3	0	1
Total	**40**	**6**	**12**	**0**	**22**
SE					
Cyprus	2	0	0	1	1
Greece	11	2	5	1	3
Italy	20	2	7	5	6
Malta	1	0	1	0	0

Country	Submitted applications	Rejected applications in the documents check	Non-selected applications due to score below the threshold	Non-selected applications due to a lower final score	Selected applications
Portugal	8	1	1	0	6
Spain	16	2	9	2	3
Total	**58**	**7**	**23**	**9**	**19**
Overall	**166**	**14**	**68**	**17**	**67**

6.3 Resons for rejected applications during Document check

Table 9 presents a detailed overview of the most common reasons for rejected applications during the documents check. The table is organized according to the occurrence of the reason.

Table 9. Reasons for rejection of applications during the document check

Document	Identified issues
Annex A – SEAP, SECAP or plan of similar ambition and summary	The submitted plan does not include climate and energy targets at least for the year 2020.
	Annex A - SEAP, SECAP or plan of similar ambition - Summary was not submitted with the application.
	The submitted summary of the SEAP, SECAP or plan of similar ambition does not correspond to the EUCF template.
Annex E -Calculation log for investment size	The calculation log on the expected investment size was not submitted with the application.
	Estimation of investment size: The submitted calculation log on the expected investment size does not correspond to the EUCF template.
	The submitted calculation log on the expected investment size was not submitted in English language.
Annex D -Calculation log for energy savings	The submitted calculation log on the expected energy savings/renewable energy production does not correspond to the EUCF template.
	The calculation log on the expected energy savings and/or renewable energy production was not submitted with the application.
	The calculation log is only partially filled and therefore it is not possible to assess the plausibility of the figures.
Annex B - Letter of support	The submitted letter of support was not signed by the Mayor or other political representative.
	A letter of support to the project by the Mayor or other political representative was not submitted with the application.
Annex C - Self-declaration form	The submitted self-declaration form was not signed by the representative of the municipality/local authority or local public entity.
	The submitted self-declaration form was not submitted with the application.

6.4 Evaluation result- score per criterion

Applications were evaluated based on the following five evaluation criteria:

A1: Investment Size

A2: Energy savings

B1: Governance structure

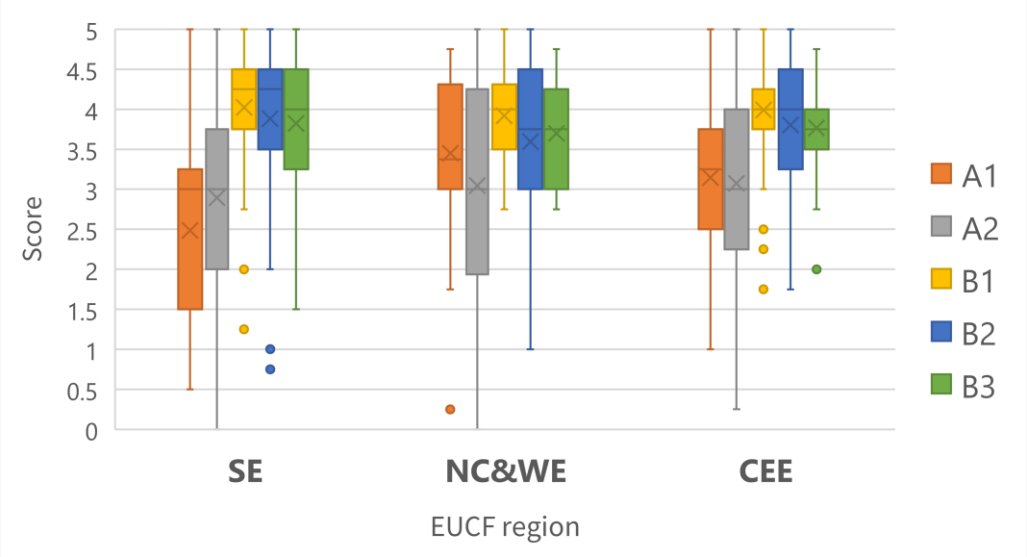
B2: Stakeholder engagement

B3: Alignment with EUCF objectives.

Figure 12 shows the score per criterion within three regions. For each of the five criteria, a score ranging from 0 to 5 (half point scores may be given) was awarded by the evaluators. The quality threshold of each criterion was 3 out of 5.

Overall, the results demonstrate that category A criteria received lower scores in comparision to other category B criteria.

Figure 12. Score per criterion



6.5 Evaluation of criteria- justification for scoring

6.5.1 A1 criterion – Investment size

Table 10 shows the absolute figures of submitted applications that passed the document check, including the maximum, median and minimum investment size within three regions.

Table 10. Absolute figures of submitted applications that passed the document check

	General (EUR)	CEE	NC&WE	SE
Max. investment size	762 363 510	291 800 023	603 987 050	762 363 510
Median of the respective call	13 050 000	8 876 250	20 663 097	15 665 000
Min. Investment size	31 590	170 000	31 590	50 000

6.5.2 A2 criterion – Energy savings

Table 11 shows the absolute figures of submitted applications that passed the document check, including the maximum, median and minimum energy savings within three regions.

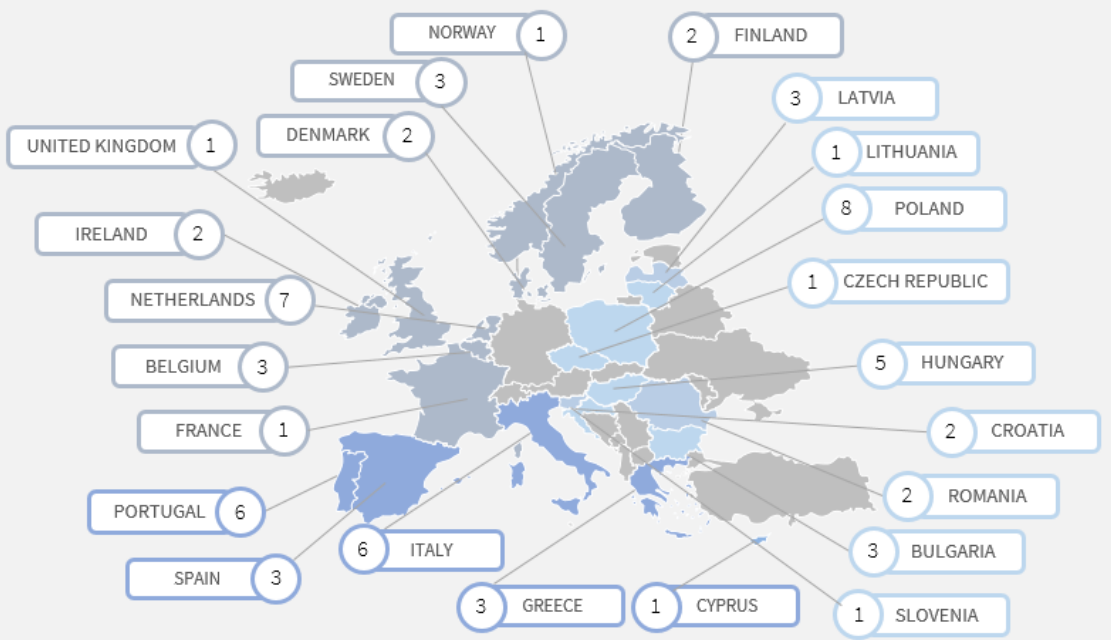
Table 11. Absolute figures of submitted applications that passed the document check

	Overall (GWh/y)	CEE	NC&WE	SE
Max. energy savings	800.0	230.1	400.0	800.0
Median of the respective call	12.6	8.4	13.0	17.1
Min. energy savings	0.0	0.1	0.0	0.1

7. Selected applications

Figure 13 presents a map of selected applications by countries from the EUCF regions.

Figure 13. Map of selected applications



Successful applications from 23 out of the 26 participating countries have been selected for the EUCF grant within the third call.

Figures 14 to 16 present maps of selected applications including the number of population of the selected applicants within the three EUCF regions.

Figure 14. Map of selected applications in CCE region

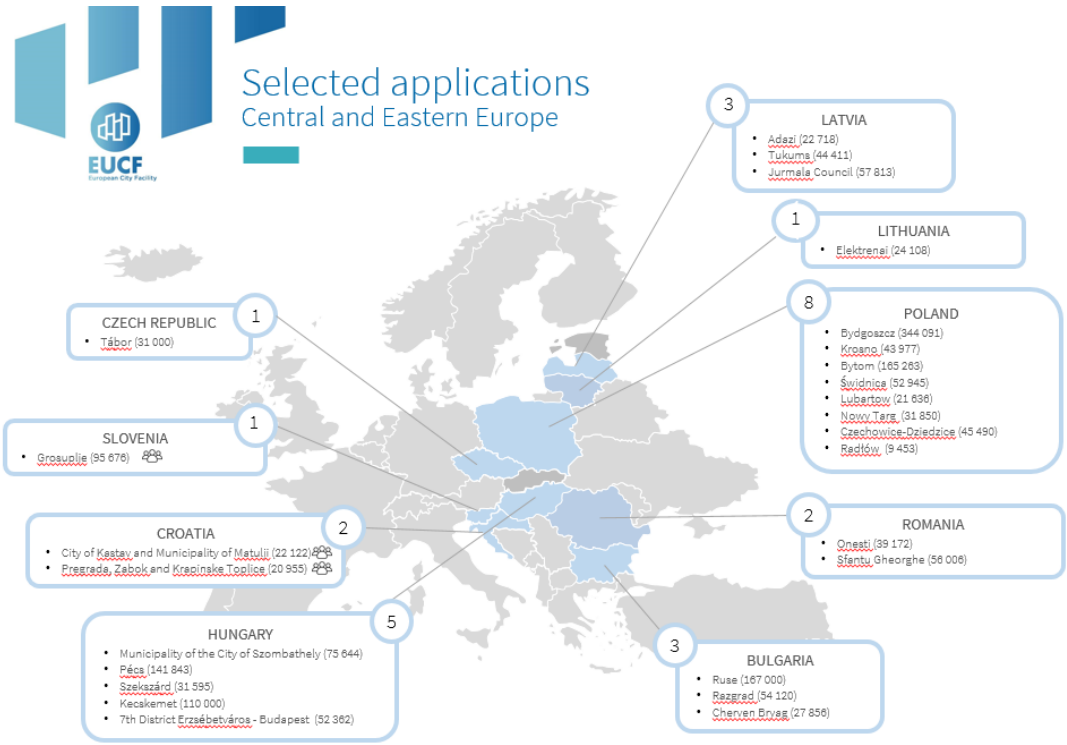


Figure 15. Map of selected applications in NC&WE region

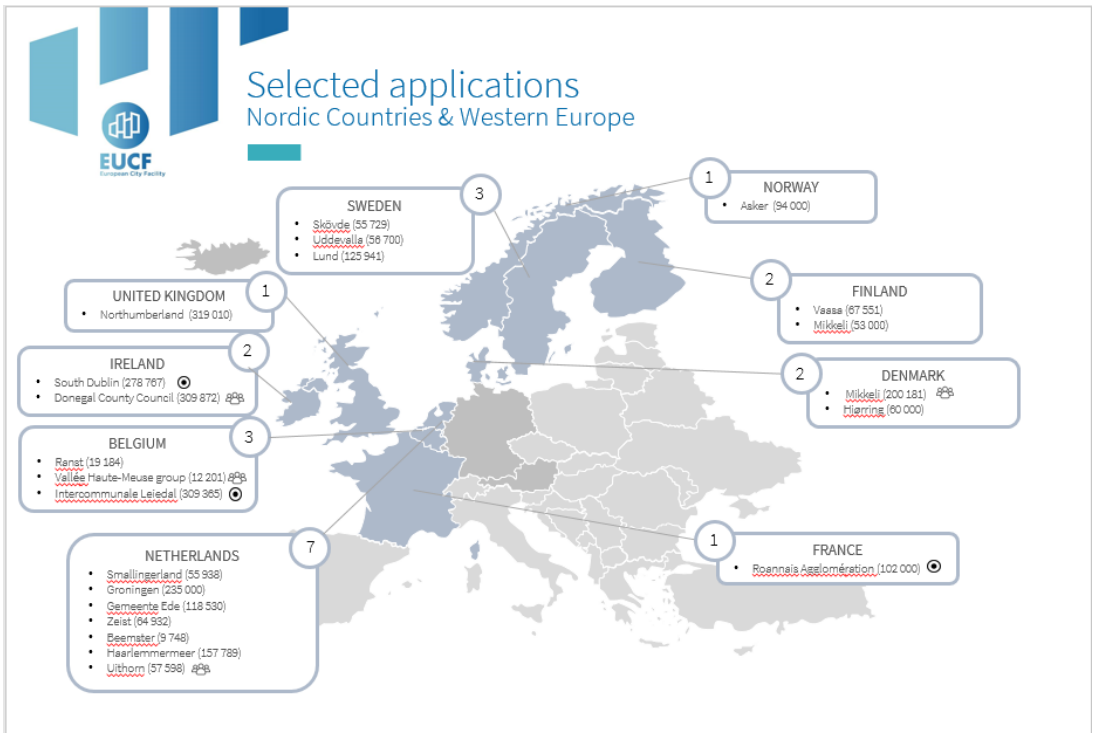
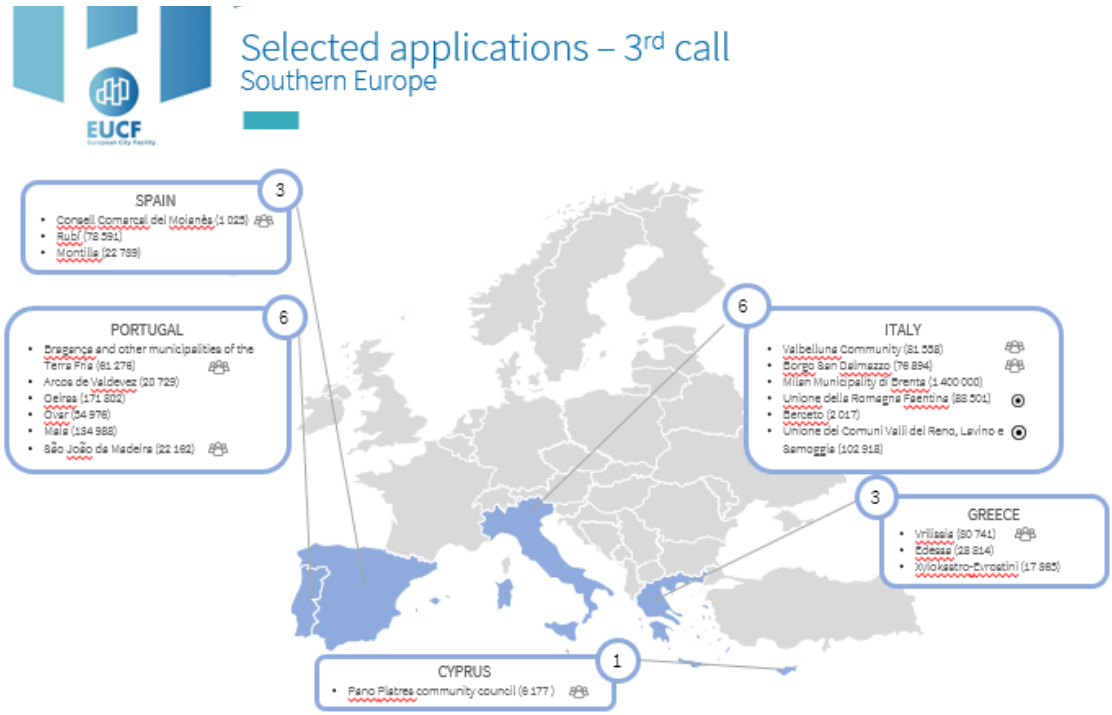


Figure 16. Map of selected applications in SE region



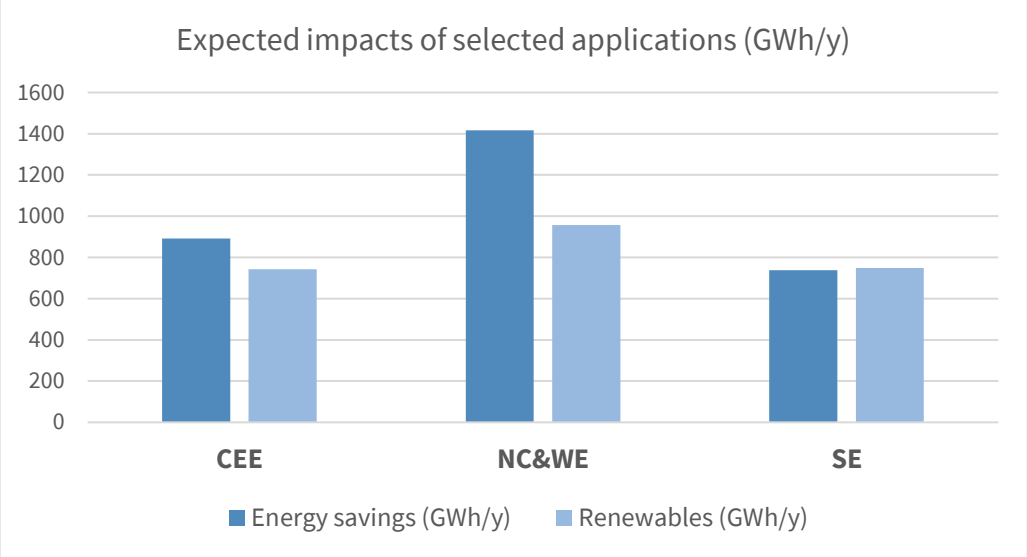
Out of 67, 26 applications were selected in the CEE region, 22 applications in the NC&WE region and 19 applications in the SE region .

Out of 67 applications, 14 selected applications are groupings of municipality/local authorities and 4 selected applications are local public entities aggregating municipalities/local authorities.

7.1 Expected impact of selected applications

Figure 17 shows the expected impact (GWh/y) of selected applications differentiated in terms of energy efficiency (EE)/energy savings and renewable energy (RE) production within the three regions.

Figure 17. Expected impacts per region



7.2 Main trageted sectors and intended measures

Table 13 presents the main sectors targeted by the investment project and intended technical measures stated by successful applicants.

Table 13. Intended measures by country/detailed overview

Municipality/local authority or grouping, public entity aggregating municip./loc. auth.	Main targeted sectors	Intended measures to be financed
Belgium		
Vallée Haute-Meuse group	Innovative energy infrastructure	The investment concept's goal is to help finance the creation of solar-power electricity production sites, by way of photovoltaic panels. The precise technology to be used may vary depending on technical studies for each site. Depending on technical data, the electricity produced could be self-consumed, injected in the network or stocked in batteries. Where applicable, higher panel structures might be needed (above roads, parking lots …). Some sites might be used directly to provide power for electrical vehicles charging stations.
Intercommunale Leiedal	District heating	The project is about 5th generation, low temparature district heating & cooling (5GDHC), fed with heat from riothermia, which contains: - district heating pipes from the sewage water plant to the city of Menen and within the city of Menen: a 2-pipe system with insulated pipes and delta T of 20°C due to upgrading the temperature at the sewage water plant with a central heat pump; - heat pump systems to upgrade very low temperature (10-20°C) to useable heat (regime of 65/45°C); - heat exchanger to extract heat from effluent water; - adapted heating systems of end-users, including individual heating concepts and systems of the end-users (buildings), to connect to 5GDHC, including booster heat pumps in buildings; - energy efficiency measures in the buildings of end-users, to reduce heat demand and peak demand. 20% "low hanging fruit" at least. Engagement of ESCO to unburden the end-users.
Ranst	District heating	The municipality of Ranst wants to lower its CO_2-emissions by replacing the current heat source (natural gas) with a sustainable alternative: a citizen owned district heating network based on aquathermal and waste energy. The project area consists of the centre of Oelegem (submunicipality of Ranst) and the business park Ter Straten. Two separate networks will be installed: North network, delivering heat to the centre of Oelegem, and South Network, delivering heat to the business park. The North Network consists of 900 meters of piping and can deliver heat to 120 buildings of which the majority are individual houses. The source of heating will be a large-scale heat pump using surface water from the canal as its heat source. The South Network consists of a 2000 meter network and can deliver heat to 30 industrial buildings. The source of heating will be either a large-scale aquathermal heat pump or waste energy from a large chemical plant in the business park or a combination of both.
Bulgaria		

Ruse	Sustainable urban mobility	The IC is aiming at enhancing a four-component investment project: 1) Acquisition of 20 hydrogen powered buses and a hydrogen refueling station. 2) Building a solar PV plant for production of "green" hydrogen involving the following components: i) solar PV panels; ii) solar inverters; iii) mounting structure; iv) complementary PV system equipment such as combiner boxes, surge arresters, monitoring equipment, cables, etc. 3) Renovation of the envelope of 50 residential buildings with financial support of National EE program or RRF: i) thermal insulation of walls; ii) thermal insulation of floors and ceilings; iii) replacement of windows. 4) Renovation of over 26,000 sq.m. of public buildings (schools and kindergartens). Measures will include: i) improvement of heating systems; ii) thermal insulation of walls, floors and ceilings; iii) replacement of windows iv) improvement of the building lighting systems.
Razgrad	Innovative energy infrastructure	Intended investment as per Programme for energy efficiency of Municipality of Razgrad (2021 – 2030) cumulative goals (p.39-43) and Municipality Letter of Support to the European Clean Hydrogen Alliance for EC project approved for project pipeline includes: - construction & putting in exploitation 25MW solar park for municipal needs (to replace 3250MWh/a from grid) and industrial zone needs, and clean H2 production for industrial zone; - construction & putting in exploitation 10MW electrolyser H2 production facility using solar park energy to produce clean H2 (714t/a) per definition by EU Hydrogen Strategy; H2 to be used for Industrial zone-Razgrad. - upon negotiations with local gas supplier, inspection and renovation of existing pipelines to inject H2 to partially substitute gas for industrial zone; H2 to be supplied in trailers for other industry needs. Industrial zone businesses will be consulted on needs and investment readiness at start to make business case and secure market.
Cherven Bryag	Innovative energy infrastructure	The investment concept project includes three strands with technology measures: Strand 1: Integration of on-site hydrogen fuel producing electrolyser systems to the heating systems of at least 10 public buildings. The Municipality of Cherven Bryag already has one pilot integration of a hydrogen-fuel-producing electrolyser system to the heating system of the public school "Dr. Petar Beron". Strand 2: Construction and putting in exploitation 20MW solar park to substitute grid with renewable electricity used by the municipality, power H2 production, and for sale. Strand 3: Construction and putting in exploitation of H2 production facility powered by the solar park, which will produce clean hydrogen (0 emissions) to be compressed and bottled for sale or/and municipal use.

Croatia		
City of Kastav and Municipality of Matulji	Sustainable urban mobility	The innovative transport system, in interaction with internal subsystems and connections to the wider area, will enable a paradigm shift in mobility from ownership to a sharing economy rather than mere electrification, to make municipalities a model for multimodal zero-emission solutions. Technology showcase space in a multimodal green hub, EV fleets as smart charging mobile storage to support RES penetration, efficient on demand public transport complementary to sharing systems to optimize resources, park&ride services, zero-emission last mile solutions, will result in energy optimization, emission reduction, reducing traffic congestion and financial savings. Innovative infrastructure in private and public locations will be a focal point for synergy between the transport and energy systems, enabling the operation of the Microgrids and Smart Grid. By placing citizens at the heart of the green transition, this multidisciplinary approach to sustainability would support their active participation.
Pregrada, Zabok and Krapinske Toplice	Sustainable urban mobility	Urban mobility measures which are planed for analysis in the Integrated urban mobility plan for all three municipalities are as follows: Introduction of public bus line transport on the route Pregrada-Zabok with electric buses, introduction of special transport for people with special needs and people with disabilities, construction of bicycle route, construction of pedestrian paths, interventions in road infrastructure to address critical points in traffic, implementation of the Park & Ride and Bike & Ride systems, implementation of Bike Share system, implementation of infrastructure for charging electric passenger cars at multiple locations, implementation of Car Share system, development of a traffic tracking application for web and mobile devices, synchronization of transport systems and implementation and integration of info points with timetables and other information. With larger accent on e-mobility te project is heading closer to sustainable and more efficient transport.
Cyprus		
Pano Platres community council	Sustainable urban mobility	The project for the Communities in Troodos includes the following measures aligned with EIB energy lending policy: - Unlocking Energy Efficiency (for public buildings including community centres, universities, schools, elderly care centres and sport centre); - Decarbonising Energy Supply (using solar PV and/or micro hydro, green hydrogen production and storage); - Supporting innovative technologies and new types of energy infrastructure (solar integrated with electric vehicle charging, micro hydro with electric charging, battery storage/demand response, decentralised energy distribution); - Securing the enabling infrastructure (distributed energy, integration with renewables , decarbonisation of heat in public buildings).
Czechia		

Tábor	District heating	The project has 5 pillars of technological measures: 1) Production of solar electricity on the roofs of city buildings for use directly in the building. In the case of Czech Republic, it is desirable to displace carbon electricity with a high emission factor. 2) Replacement of inefficient lighting sources with LED in public buildings (schools, offices and others). 3) Thermo-insulation of public and residential buildings incl. others measures on the building envelope. 4) Replacement of old heat distribution routes (high energy losses) with new efficient district heating routes. These are the backbone distribution routes, about 10 km across the city of Tábor. 5) Change of the fuel base of the central heat source for district heating. It is planned to reduce the share of coal by 100%, in favor of wood-chips (89%) and natural gas (11%). The result is a very significant reduction in the share of fuels with a high emission factor and a reduction in the cost of emission allowances.
Denmark		
Randers	District heating	The TERMUN (Termonet in MUNicipalities) investment concept (IC) aims to accelerate the transition from fossil heating to heat pumps in Termonet solutions (TS) but will not consist of one technical solution for all TS. TERMUN IC works across the different technically solutions possible for establishing TS A 'thermometer' is a supply network that transports thermal energy from different types of energy sources. The network runs across many homes/buildings with a typical temperature of between 0 and 10 degrees. Investment needed to build a TS contains but is not limited to: • Tendering and analysis of potential; • Pipes and pumps in a horizontal or vertical system for the brine system; • Heat pumps in private houses; • Service and billing systems.
Hjørring	District heating	The expansion of the district heating grid and utilization of surplus can be accomplished with existing technology. The planned new expansion of the Port of Hirtshals however, is planned to include a Power-to-X plant that will utilize electricity produced by local wind turbines and convert this into hydrogen fuel for large ferries. The investment case aims at enabling energy decarbonization through low or zero carbon technology, while increasing financing for decentralized energy production at the port. The Municipality of Hjørring wants to make sure that sufficient grid investment will take place since it is essential for new, intermittent energy sources like wind and solar. The intricacy of Danish taxation opens for a unique opportunity to install solar panels on all existing building on the port, as these can be considered one parcel, while leased to individual companies, which, under Danish law, makes it favorable to produce and sell electricity via solar panels.
Finland		

Vaasa	Innovative energy infrastructure	Currently there is a huge battery manufacturing ground being developed near the Vaasa airport, called GigaVaasa (https://www.gigavaasa.fi). The total acreage reserved for the two first actors is about 140 hectares, which would be good for about 100.000 battery units for electric vehicles annually. The plan is to use a quarry that is no longer in use as a combined heat storage and process water pit. The quarry is about 3 kilometers away from the actual area producing, and further using, most of the stored heat. The quarry is to be covered in its entirety with a floating, isolated cover that allows expansion and minimises aereation. The storage volume of the quarry pit altogether would be 1200000 cubic meters. By utilising this volume and one cycle per year, the actors of the city of Vaasa would avoid annually the production of about 53 GWh (see appendix 2, tab "flow calc") which would further equal to a reduction of 42.870 tons -of CO2 equivalent.
Mikkeli	District heating	The planned investment will include a heat pump plant and a capacity increase of the existing district heating network. The heat pump plant receives waste heat from a data center and converts it into district heat. The capacity increase of the existing district heating network allows the transferring of heat from a data center to the city center. The intended measures include: 1. Prefeasibility study and development of an investment plan, 50 000 €, 2 person-months (engineering consultancy company, sourced via public tendering process) · Prefeasibility study on heat pump plant and required revisions of the existing district heating network to receive waste heat form a data center. · The technical solutions studied will represent BAT technology. 2. Project coordination, 10 000 €, one person-month (Miksei) · Coordination, reporting and communication activities · Relations to project partners and stakeholders · Tendering and management of purchasing services procurement.
France		
Roannais Agglomération	Innovative energy infrastructure	The public entity wants to develop deep geothermics to produce renewable heat and electricity. Geophysical and geotechnical studies need to be conducted, including measurement campaigns and data treatment. Once these studies are done, it will be possible to define more precisely where to drill, the drilling depth, and the applicant will have a better idea of the amount of heat and electricity it will be able to produce. It will then proceed to the drilling, and the construction of the geothermal power station and the associated heating network.
Greece		

Xylokastro-Evrostini	Public Buildings	The investment concept focuses on the energy upgrade of buildings and public lighting, the installation of building-scale renewables as well as the electrification of the municipal fleet. The following interventions will be considered: - Buildings: Thermal insulation of the envelope of the buildings (walls, roof, windows), energy upgrade of HVAC systems and lighting systems; - Installation of building-integrated renewables in order to meet the remaining energy demand with non-fossil fuel energy; - Electrification of municipal fleet; - Upgrade of public lighting from conventional lamps to LEDs; - Development of local "Green" Recycle Corners in each district across the entire municipal geographical boundaries.
Edessa	Others	The investment project will promote energy efficiency and RES with the most cost-effective projects. Firstly, 95 public buildings (40 offices and 55 schools), 100 private offices and 1,000 buildings of the residential sector constructed before 2000 will be renovated. The combination of the interventions will include the insulation of the building envelope (external walls, roof and windows with double glazes), the installation of heat pumps, the installation of energy efficient lighting systems and the production of electricity from photovoltaics. Moreover, 7 MW of RES stations will be installed (5 MW photovoltaic, 1 MW biomass and 1 MW small hydro stations) through the energy community. Moreover, the energy for waste-water treatment and irrigation will be reduced, the e-mobility will be promoted (520 vehicles) and in 1000 households energy poverty will combated. The planned investments will be economic and social profitable ensuring the cost-benefit achievement of the climate targets.
Vrilissia	Innovative energy infrastructure	The proposed system consists of a hydrogen production unit combined with a PV (800 kW) unit (local and virtual net metering). The hydrogen (consumed directly or stored in a pressurized tank) will be produced by an electrolyser fed solely by PV electricity. The system will be connected with one H2 refuelling station, equipped with a Fuel Cells and Hydrogen (FCH) storage system to provide stability in supply. Four (4) such systems will be deployed (one in each municipality). The produced H2 in the refuelling stations will be fed in the new FCH municipal fleet (sweepers, bikes, mini-buses, garbage trucks, etc.), as well as the private vehicles with FCH technology. The new FCH municipal vehicles will cover both the authority's and the citizens' mobility and transportation needs. The private FCH vehicles are also a market segment targeted by the stations for refuelling services. One FCH train is also expected to be deployed by Agioi Anargyroi-Kamatero municipality, for intra-municipal mobility needs.
Hungary		

Municipality of the City of Szombathely	District heating	1/3 of Szombathely's apartments are provided with heat energy and hot water by the municipal district heating company. Goal is to have the district heating's carbon emission decreased to half. For this, we increase the efficiency of the district heating line system, we combine the independent district divisions and increase to 50% the renewables from 9%. In case of public buildings, we develop energy monitoring smart grid systems and make the city's public building energy deep renovation complete. We will achieve that public buildings generate for themselves 20-50% of their energy demand with the locally available renewables, and with installation of solar panels and heat pumps. In the case of transport we increase the ratio of bicycles, exchange the city's bus fleet to electrical and establish the necessary storage and solar power plant for the capacity needed for charging, furthermore we assist the spread of private electrical cars by improving the electrical charging network.
Pécs	Sustainable urban mobility	The investment project contains the following measures: Preparation of the feasibility study based on EU templates: This document will contain situation analysis, forward analysis, strategic and operative objectives, detailed scenarios, planned activities and (public) procurements, project schedule. The feasibility study will be prepared by an external expert. Cost-benefit analysis (CBA): This document will be prepared based on EU templates just like the feasibility study. Taking into account that the CBA template contains very special financial details and information, the document will be prepared by an external financial expert. Decarbonisation plan: It's one of the most important documents which will be prepared within the project, because it contains the bus fleet replacement's expected impacts, the replacement schedule and also the expected impacts and results of CO_2 emissions reduction.
Szekszárd	District heating	It is necessary to prepare a development plan containing a development strategy, based on which the district heating supply in Szekszárd and the city itself can be put on an energetic development trajectory, promoting the long-term competitiveness of district heating services, the economical operation of existing systems, environmental protection and energy management. All the heat sources in the district heating system in Szekszárd are currently based on natural gas, so it is necessary to reduce the dependence on fossil fuels and promote renewable energy supply in order to increase carbon neutrality. For that reason a study design-level research of three basic developments is required: - geothermal based heat source; - woodchip biomass boiler plant; - and the installation of several solar parks. The geothermal power plant and the biomass boiler plant could be connected to the Southern Heating Plant. The solar plant could be built from 2-6 solar parks with a capacity of less than 500 kVA.

Kecskemet	Innovative energy infrastructure	The intended technology measures are: - Renewable energy production from solar systems installed on the roofs of urban buildings and other areas; -Development and implementation of a complex electromobility infrastructure, which will use the produced renewable energy; - Development of a bus fleet with battery-powered buses; - Electrical charging network installation; - Expand the photovoltaic production capacity with new installations; - Hybrid energy management units with management system - Upgrade the district heating system with a geothermal power plant development by installing an electric boiler involved in tertiary control; - Establishment of a photovoltaic distributed power generation system with elements operating as a category 'b' unit; - Small scale smart city projects (intelligent traffic control system, intelligent public lighting system, local sensor based IoT network. The further plan of the city is to prepare an ELENA application - the IC is the first step and the basis of the ELENA project.
7th District Erzsébetváros - Budapest	Residential buildings	A prerequisite for achieving the district's energy targets is the renewal of the predominantly apartment houses building stock, of which 90% was built before 1945 and is privately owned. The energy performance of these buildings heated almost exclusively with natural gas is very poor. Spearheading this change, the Municipality intends to renovate 31 buildings. The planned measures include thermal insulation, replacing windows and doors, installing solar panels on roofs and upgrading the grid (smart grid). Innovative solutions for thermal insulation in inner-city apartment buildings are needed to protect the cityscape. In addition, Erzsébetváros aims to include around 300 privately owned buildings in the longer term. As part of the financing strategy of the investment concept, a revolving building renovation fund model will be developed. That fund could accelerate the renewal of properties and allow owners to finance the cost of renewal from their energy efficiency savings.
Ireland		

Donegal County Council	Residential buildings	Intended measures to be implemented by 2030: • Deep retrofit of 33,000 dwellings to achieve a Band B2 BER/EPC or better, Thermal insulation €990m, Replace 26,000 oil fired burners with renewable energy sources €390m; • Solar PV Installation: Public, Commercial and Domestic Buildings totalling c. €106.8m; • Replacement of 53,000 passenger vehicles with EVs, Installation of Fast chargers to facilitate 53,000 electric vehicles; • 20 separate citizen engagement campaigns to address consumer confidence, behavioural change & disseminate results; • Smart grids: investigate opportunities to build & operate microgrids; • Over 9,000 Commercial Buildings c. 10% installing solar PV & 20% installing LED lighting; • Public Buildings: LED lighting upgrades €656k, Heating system upgrades to renewable sources €18.8m, Thermal insulation €673k ; • Commercial Buildings heat pumps €540m, thermal insulation €14.8m; • 38 zero-emission battery electric buses €35m by 2023; • District Heating projects planned €5.5m.
South Dublin	District heating	This project suggests utilization of a local heat resource through local District Heating Network (DHN). Expansion of the DHN based on waste heat from a datacentre connecting both existing buildings and planned new buildings is foreseen (both public and apartment buildings). The heating source in the area today is gas, so in the evaluation of GHG emissions we compare to using natural gas boilers. A substantial energy saving is expected when going from gas boilers to waste heat using heat pumps (where the measured energy input is electricity). The local hospital has made an agreement on investing in a local CHP plant using natural gas and, in this project, will be analysed options of using this plant as back-up to the waste heat-based system and therefore potentially linking the hospital DHN with the new DHN for Tallaght.
Italy		

Berceto	Others	The IC will include the following measures: - Creation of two mixed public/private Renewable Energy Communities (RECs), which will be open to the whole territory; - Purchase of machinery and equipment for forest maintenance; - Design, installation and operation of 3 biomass gasification plants of around 100 kWp each. The electricity produced will be consumed by all of the associated parties, whilst the thermal energy will be used to power an artisanal area. - Assessment and feasibility studies for other RES sources (mini hydro in old mills); - Redevelopment of the public lighting network (876 lighting points); - Replacement of LPG boilers with Heat Pumps in residential buildings (678); - Purchase of 6 electric cars, to transport students and commuters; - Installation of 1 e-car charging station for each hamlet (10); - Technical and administrative coordination of the 2 RECs; - Training activities aimed at promoting behavioural changes and energy efficiency measures.
Valbelluna Community	Others	Given the broad approach of the IC, several RES technologies and EE measures will be considered at different scales and in different sectors, depending on the needs brought by the users to the one-stop-shop, with a focus on those included in the national incentive schemes, more likely to be implemented. Regarding renewables, the priority solutions will be photovoltaic, solar thermal and biomass boilers. As for energy efficiency, building integrated renovation measures (window frames, insulations, plants renovation and revamping) will be included. Despite this wide approach, some segments will be most likely addressed, namely the residential and the tertiary private sectors, also because of their relevance in the SEAPs and their higher potential for reducing energy consumption and CO_2 emissions. This prioritization is also reflected in the way the size of investment and the expected impacts were calculated, since higher shares were assigned to these two sectors.
Borgo San Dalmazzo	Sustainable urban mobility	The measures that will be considered are completely aligned with EIB energy lending policy and contribute to achieve the 2030 EU target. Planned are integrated renewable power plants (PV or hydroelectric) on public/private buildings or aqueduct networks connected with recharging networks for e-vehicles (EV) within Renewable Energy Communities (RECs), increasing the power system smartness. Storages, bidirectional EV chargers, replacement of bus and municipality vehicles with new EV or hydrogen vehicles (HV), new sustainable goods transport for urban city centre as EV or sloping elevator (mainly in Cuneo), new EV or HV for goods transport from production site to intermodal centres. Green hydrogen production systems and refuelling stations for HV. All these measures will be included in new mobility services to be defined within the IC and co-designed with local companies. The services will concern, for example, shared and sustainable mobility for employees and tourists and for goods to and from the mountain valleys and historical centres.

Unione della Romagna Faentina (URF)	Public Buildings	The project foresees the implementation of synergic actions in 6 cities of the URF to promote the deep retrofit in 56 public buildings and 20 private condominiums, and installation of renewable generation systems on the basis of collective energy schemes, considering Renewable Energy Communities (REC) and Collective Self-Consumption (CSC) legal forms. The contract with EUCF will support the following investment and services: -Feasibility studies to support the implementation of deep energy retrofits; -Feasibility studies to support the installation of photovoltaic panels, battery storage with EV charging socket and smart devices to monitoring the energy production and consumption in real time and renewable energy installation, based on collective energy schemes (REC and CSC); -Business model development to perform the retrofit interventions and system deployments; -Communication activities. The technology measures launched with the technical assistance are designed according to the new European Investment Bank(EIB) energy lending policy.
Unione dei Comuni Valli del Reno, Lavino e Samoggia	Residential buildings	RES integrated in buildings: Based on the regulatory framework, a maximum of 200 kWp PV (with related storage and energy boxes and energy management) will be installed in each city, grouping 3 condos and 1 public building each, for a total of 15 residential buildings and 5 public buildings. 5 Energy Parks with 1MWp of PV in each city. Energy efficiency of residential and public buildings: retrofitting interventions such as thermal insulation, windows replacement, heating system/HVAC revamping and internal lighting substitution are also foreseen on the same 20 buildings (15 residential buildings and 5 public buildings). Sustainable urban mobility: 2 e-shelters charging stations will be installed in the 5 parking lots (one in each municipality), 10 overall, fed by 5 PV plants of 40 kW plus storage each, for EV charging. The technology measures launched with the technical assistance are aligned with the new European Investment Bank energy lending policy, adopted in Nov. 2019.
Milan Municipality	Public Buildings	Technology measures have been estimated based on a real case, the Natural History Museum (200 years old; 77.000 m3), scaled up to its museum district and then to all four cultural districts in Milan (approx.. 880.000 m3), with respect to public buildings. Type of technology measures to be financed: - Thermal insulation of building shell: new windows (same style), insulation of roof and a portion of walls (internal insulation – external being unauthorized); - Retrofit of HVAC system: retrofit of existing fossil fuel (e.g. diesel) heating system with eversible electric water-water heat pumps (and removal of the previous AC system); - Ventilation units retrofit (possibly with heat recovery) and radiators; - New interior lighting system with LED - BEMS: automatic control and modulation of lighting and HVAC systems (based on occupancy as well as hygrometric levels to be observed due to existing natural materials within the museum); - Roof photovoltaic.
Latvia		

Adazi	District heating	Within the framework of the project it is planned to develop a feasibility study, assessing the feasibility of a number of measures related to RES throughout the Adazi district. One of the issues raised by the Technically Economic Justification (TEJ) relates to the deployment of RES in Carnikava parish, with the current 14 gas boiler houses to be replaced with a centralized system using RES. In the village of Kadaga, Adazi parish (population around 2200), it is planned to find a justification for the introduction of RES in the already existing district heating system. The TEJ will be used to justify future decisions and the development of applications for investment projects. Measure "Promotion of the use of renewable energy resources in district heating" will be the subject of an application for credit from the European Investment Bank. Both the municipality and heating operators and the population will be able to obtain an economic justification for the efficiency and benefits of the deployment of RES.
Tukums	Public Buildings	Tukums intends to reduce heat energy consumption by 40% and electricity by 30% in selected 10 buildings. It is planned to ensure comprehensive reconstruction of the selected public municipal buildings, which will ensure a significant reduction of energy usage in the buildings. These measures usually include insulation of the building facade, refurbishment of the heating and hot water systems, change of windows, insulation of roof and basement, installation of solar PV panels and other measures. In case of the Ice Hall, technical measures would be installation of a new freezing system and heat recovery system, replacement of the lighting, installation of solar PV panels, construction of snow melting pit, installation of a new ventilation system and renovation of the building. These measures are crucial as these buildings consume a lot of energy and have not been refurbished since their construction 20-30 years ago.
Jurmala Council	Innovative energy infrastructure	Deep retrofit of public buildings (insulation, replacement of the ventilation system, replacement of doors and windows, replacement of the heating supply system, LED lighting). Development of a solar park, with 5400 new PV panels, reconversion of DH boilers from natural gas to wood chip and replacement of more than 8 000 public street lights from mercury vapour and high pressure sodim vapour technology to LED.
Lithuania		
Elektrenai	District heating	Measure 1: District heating measure which relies on use of biomass (primarily wood pellets) for central heating of buildings and offers significantly lower air pollution and carbon emissions than using natural gas as a fuel. Measure 2: CNG-powered public transport. The measure relies upon replacing public transport vehicles (buses) which use diesel fuel to compressed natural gas (CNG) powered vehicles in order to reduce carbon emissions. Furthermore, the measure is feasible and consistent due to the fact that the ncity of Elektrenai at the time of application already has a CNG fueling station eliminating the need for additional investments in equipment to fuel the vehicles.
Netherlands		

Groningen	District heating	For phase 1 residual heat from 2 datacentres on nearby Zernike Campus are used as heat sources. Solar heating collectors (Dorkwerd) will also provide heat. For the next phases residual heat from Solidus (producing fibre-based packaging) and Cosun Beet Company (sugar beet processor), located in Hoogkerk, are studied as heat sources. On a regional scale, more potential residual heat sources are available from industry in Delfzijl/Eemshaven. Feasibility of these potential heat sources are also currently studied. We continue to monitor developments of other potential future heat sources, including low local temperature sources, such as aquathermia or ground source heat/residual heat from local businesses, as well as geothermal energy. The market for heat sources is dynamic. This requires maximum flexibility. In phase 1 it was decided to construct a network that can handle high temperatures (90 °C). This reduces the costs and disruption in case a change of heat source will be made in the future.
Haarlemmermeer	Others	The focus is PV technologies. Regular large-scale PV systems require roof reinforcement measures to strengthen the bearing capacity. This problem mainly concerns large utility buildings. Because of the additional costs, the business case becomes less profitable, and the PVs are not purchased. Therefore, this investment concept promotes the use of innovative lightweight solar panels. Because the panels are lighter reinforcement is not necessary. Hence, the technical feasibility study. In the solar park projects, we endorse PV systems that benefit landscape integration and soil quality. For example, regular PV lets less light through what causes soil degradation. New bifacial PV panels overcome this problem by not having a dark back panel on which the solar cells are. Instead, it has glass on both sides and captures the light that passes through the back panel. As a result, the power output is significantly higher, and the soil quality is maintained.
Uithoorn	District heating	Intended measures comprise the establishment of a heating grid of approximately 30 km between the greenhouse clusters in Greenport Aalsmeer, including 'T' sections where local heat sources and residential neighborhoods and business parks can collectively connect to the grid. The technical scope includes: - 30 km heating grid including T-sections for business parks and neighborhoods; - Pumps, filters and civil works; - Connection to the Greenhouses heating system of up to 300 hectare of greenhouses, including heat exchanger units; - Connection to geothermal heating projects in greenhouse area's PrimA4a and De Kwakel-Kudelstaart; - Monitoring and control systems; - Installation and commissioning; - Development costs including engineering, contracting and permits; The development of geothermal wells (PrimA4a and Kudelstaart) is expected in the area but is not included in the scope of this investment concept. The wells have their own business case, which does not cover district heating grids.

Beemster	District heating	After making an inventory of the (needed) adjustments and engineering analysis, an investment plan is drawn up. This creates clarity regarding the financial feasibility of switching from individual central heating boilers in residential buildings to sustainable district heating. To achieve this, adjustments to the public space (infrastructure) and adjustments to the residential buildings will be made. The latter will be done through consultation with the owners/citizens. The residential buildings are located in two different districts in the municipality of Purmerend and Beemster. In district Middenbeemster (municipality of Beemster), approximately 600 houses need to be inspected in order to draw up an investment plan. In order to draw up an investment plan for the second district, Overwhere- Zuid (municipality Purmerend), 470 houses need to be inspected.
Gemeente Ede	Others	Large scale solar energy (on the ground and on roofs) and wind energy development is being planned throughout the Foodvalley region. The development processes up to financial closure are the main bottle-necks for regional energy communities. The initial planning stages, the involvement of stakeholders (land owners, owners of the roofs and stakeholders), research (e.g. the Environmental Impact Assessment), negotiations with the grid company up to the process for the permits create a risk which energy communities (minimal capital position) cannot take. The unprofitable top is around 10% of the total development capital needed. After financial closure, this 10% risk leverage can – in time – be earned back and put in as revolving capital for the region. Through PPAs with local and regional stakeholders the price differences between local Guarantee of Origins and the levy of 10 Euro/MWh will be used as contribution to the Development Fund.
Zeist	Residential buildings	The focus of the ESCo is to reduce energy consumption and, if convenient, implement heat and renewable energy solutions. The project focusses on renovation of housing to a higher energy standard: insulation, restoration, and it may include integrating renewables (e.g. solar panels) and the heating system as an integral part of the energy system of residential buildings, or buildings for small businesses. The research mainly focuses on the needs and demands of the dwellers, as it may differ per area or house. An ESCo should be accepted as a solution by residents and therefore be able to meet their needs. Increasing energy standards coincides with an increase of comfort, healthy living programmes, poverty reduction and generation-proof housing, aking business cases viable. In Austerlitz (a village in Zeist) as a pilot, a particular focus is on generation-proof housing, as many of the residents are elderly people.
Smallingerland	Residential buildings	Several analyses in 2021 (for the Transitievisie Warmte) have shown that for the township heat pump systems are the best option for 84% of the (existing) houses (ca. 21,000 houses) towards fossil-free heating. In the 'Transitievisie Warmte', 3 scenarios of heating were calculated for 3 different types of houses. This is a first indication of the needed measures and costs. On average, it can be said that the following measures are needed towards making households fossil-free: insulation, heat pumps, radiators (or underfloor heating), induction cookers and ventilation. NB: Many inhabitants are sceptical about heat pumps, due to stories about them making a lot of noise and not sufficiently warming the house (often due to bad installation and explanation/guidance). Therefore, the pump itself may not be the real problem. The attitude of inhabitants towards transition is maybe even more important. Therefore, there will be a focus on the physical part of making this transition.
Norway		

Asker	Building integrated renewables	The analysis will advise whether Asker should maintain and modernize the bioenergy district heating plant or replace it with other innovative and sustainable energy solutions, e.g. thermal energy from geothermal heat wells, potentially in combination with solar collectors and solar panels - centrally controlled by an expanded energy central control system. Analyzing opportunities, risks and costs is necessary to advance a political process for determining which investments Asker should approach to become self-sufficient with zero emission energy for its buildings and facilities in the area. Perspectives for the analysis: cost and energy-effective emission-reducing alternatives. Environmental elements: emissions, production, transport & logistics. Financing / investment, societal perspectives / responsibilities in energy supply to other actors (public and private residents), and timeline calculations for prospect systems. Grid electricity is zero emission hydropower.
Poland		
Bydgoszcz	Innovative energy infrastructure	The project consist of the construction of PV farms with demonstration hydrogen storage on the brownfields: unused land and landfill. The planned farms are maintenance-free installations. The operation of the PV farm consists of the production of electricity from generators, photovoltaic and conversion to alternating power through inverters. The basic element is the solar panel. The panels will be attached to a steel structure, anchored directly in the ground. Approx. 1600 panels with a peak power of 0.4 kW each are estimated. The farm will consist of the following: PV panels, internal roads, above-ground and underground infrastructure, energy-fiber cable lines, power connections, trafostation, inverters, other necessary elements, monitoring. The surplus energy will be stored in a demonstration H2 storage. The stored H2 will be converted back into electricity and sold in time of higher price or to power the City during the night valley periods.
Krosno	Residential buildings	Krosno intends to implement the Green Deal and achieve climate neutrality by 2050. The town works around a development map for carbon neutrality. Bearing in mind these plans, two stages are planned: 2021-2030 and 2030-2040. Phase I will be carried out in order to simultaneously create components that complement each other within phase I, but phase II will also be built complementarily. Investments will be implemented on public, private, and housing resources, taking into account preparatory and analytical works. They will require appropriate financial outlays as well as the involvement and consent of stakeholders. Phase I and phase II take into account the development of RES and "green" energy islands, hydrogen technologies, or local low-temperature heating networks and the concept of distributed and civic energy. All these are being aligned with EIB energy lending policy.

Bytom	District heating	Implementation of the concept will allow the transformation of a district heating plant, producing district heat exclusively on the basis of fine coal, into a combined heat and power plant that will produce heat and electricity on the basis of RES sources and low-emission technologies. The implementation of the investment measures will make it possible to achieve the following technological indicators: - approx. 10.5 MWt and 3.5 MWe - power obtained from the Thermal Waste Processing Installation; - 2.8 million m^3/year of biogas - estimated amount of biogas produced; - 1.6 mln m3/year of landfill gas obtained; - 75,000 GJ/year and 27,600 MWh/year - amount of clean energy obtained from co-firing biogas and biomethane in a gas engine (and also hydrogen in the long term); - approx. 25,000 Mg/year - the amount of obtained, hydrated, digestated to be reused in the Waste Incineration Plant - Instalacja Termicznego Przekształcania Odpadów (ITPO) installation.
Świdnica	Building integrated renewables	1) Public buildings: • Thermal insulation of building partitions, 15 buildings; • Mechanical ventilation with recuperation, 23 buildings; 2) Residential buildings: • Thermal insulation of building partitions, 16 buildings; • Mechanical ventilation with recuperation, 16 buildings; 3) Renewable energy sources - public buildings: • Photovoltaic installations on roofs, ∑1,64 Mwe, 21 pcs.; • Wind microturbines, ∑0,03 Mwe, 16 pcs. ; • Removal of fossil fuel sources, heat pumps with internal installations of the building, 7 pcs.; • Energy management system in buildings, 25 pcs. 4) Renewable energy sources - residential buildings: • Photovoltaic installations on roofs, ∑0,58 MWe, 14 pcs.; • Wind microturbines, ∑0,02 Mwe, 9 pcs.; • Removal of fossil fuel sources, heat pumps with internal installations of the building, 16 pcs.; • Energy management system in buildings, 16 pcs. 5) Smart grids: • Software and hardware for the municipal decentralized intelligent energy management system (VMES).
Lubartow	Building integrated renewables	The concept of the city's energy balance is based on several pillars. They will be implemented by the city and municipal companies, depending on the component. The municipal waterworks and sewage system company will implement a part with photovoltaic farm and energy storage, public transport and the re-use of renewed water in accordance with Regulation (EU) 2020/741 of the European Parliament and of the Council on minimum requirements for water reuse. Another component, based on cogeneration of heat and energy and its distribution to end users, will be implemented by the municipal heating company. The companies will also provide a financial own contribution at the stage of project implementation. The component related to the construction of photovoltaic installations in public buildings and residents' homes will be implemented by the City of Lubartow, and the financial contribution will come from the city budget and the participants of the task.

Nowy Targ	Residential buildings	In the first phase, investment activities are planned aimed at public utility facilities and improving their energy efficiency and the use of renewable energy sources: - thermomodernization of facilities - replacement of heat sources with ecological ones - use of renewable energy (photovoltaic panels, heat pumps) - ecological modernization of lighting - systems energy management. In the case of residential buildings, the activities will focus mainly on: - thermal modernization of buildings - replacement of heat sources with low-emission ones - use of renewable energy sources (photovoltaic panels, heat pumps, biomass boilers, solar collectors) - educational and promotional activities promoting energy efficiency and energy management, and raising environmental awareness.
Czechowice-Dziedzice	District heating	The amount needed to prepare the feasibility study for the construction of an energy complex in Czechowice-Dziedzice may exceed the grant amount. Due to fact that the energy complex is at a preliminary stage, the Commune cannot define the source and amount of financing. One of the essential parts of the feasibility study is the financial analysis of the project, which can indicate the possible activities and financial resources to be involved. The development of the feasibility study for the energy complex will allow to set directions for action and indicate the activities needed to complete the investment.
Radłów	Residential buildings	In the first phase, investment activities are planned aimed at public utility facilities and improving their energy efficiency and the use of renewable energy sources: - thermomodernization of facilities - replacement of heat sources with ecological ones - use of renewable energy (photovoltaic panels, heat pumps) - ecological modernization of lighting - systems energy management In the case of residential buildings, the activities will focus mainly on: - thermal modernization of buildings - replacement of heat sources with low-emission ones - use of renewable energy sources (photovoltaic panels, heat pumps, biomass boilers, solar collectors) - educational and promotional activities promoting energy efficiency and energy management, and raising environmental awareness.
Portugal		
Bragança and other municipalities of the Terra Fria	Residential buildings	The intended measures on this investment concept to be financed are the deployment of a wind farm in combination with a smart grid for its management and heat pump installation for heating and cooling. These measures shall be applied to the 5 municipalities of Terra Fria. The Wind Farm shall have an installed capacity of 57MW that will produce renewable energy for different end uses: (1) for powering with the heating pumps and generating heat and cooling for buildings with an approximate coefficient of performance (COP) of 3; (2) for powering the municipalities electricity grids with local green energy; (3) for injecting power in the grid. The heat pumps allow not only to increase efficiency in the heating and cooling systems but also to replace old wood, heating oil & gas combustion and plug in electric heaters in buildings that have a very low efficiency. In addition, the heat pumps have the capacity to replace fans and other non-efficient cooling methods during warmer seasons.

Maia	Public Buildings	Maia, within its SEAP 2030 and Living Lab vision, identified the following key measures: • Public buildings renovation: EE in public buildings and facilities (143 buildings), such as lighting and HVAC systems renovation; • Residential buildings: Social housing renovation - EE in buildings reducing energy poverty (2 447 dwellings), such as thermal insulation of facades and roof, solar panels for domestic hot water production; • Solar: Implementation of an addition 470 kWp of self-consumption in municipal buildings (PV); • Renewable energy communities: creation of EC in 45 social housing districts (2 MW); • Street lighting: Remote management system in the city streetlighting (24 476 LED); • District heating: Residual thermal energy recovery in the Waste Management plant to support neighbourhood heating needs (airport and industrial facilities).
Ovar	Public Buildings	Energy Community of Ovar (ECO) will serve as the territory's framework for: - Widespread investment on energy efficiency and renewable energy solutions aiming to reach municipal carbon neutrality in 2030, through collective procurement for: energy efficiency and building renovation actions; installation of 20 MW of solar PV, 10 electric chargers, e-bikes and related systems, 5000 m2 of solar hot water panels. - Energy management within the community, with particular emphasis on electricity, allowing citizens to sell potential electricity production surplus to other members of the community and fostering the provision of flexibility by building users. - Enabling community members converting credits obtained from the sale of energy surpluses into goods and services provided within the community (e.g. local grocery shops or markets, public transportation), which will promote local businesses.
Oeiras	Public Buildings	There is a case study for schools in the Oeiras municipality that is intended to be replicated in other public facilities and industry and business parks, which includes measures that will bring significant energy savings and emission reductions. They would be part of the Investment Plan that will be developed, namely: • Wall and roof insulation and windows replacement; • Monitoring consumption system installation; • Interior and exterior lighting substitution; • Replacement of all electric radiators with direct expansion split-type units; • New solar roof-top PV installation for self-consumption.

Arcos de Valdevez	Innovative energy infrastructure	- Collection and processing of aerial image data for calculation of biomass potential, considering factors such as susceptible areas, vegetation species, fauna and history of forest fires; - Obtaining spectral data of municipality biome and processing RGB (Red, Green, Blue colour composites) images to calculate the vegetation index; -Make a sampling network in various parts of the municipality, and thus complement with concrete results the measurement of biomass through laboratory analysis;-With the combination of aerial image data and laboratorial analyses, a map will be created to easily assess the most appropriate locations to make the collection of biomass, as well as a database with all the values measured;-Viability study for implementation of a biomass central and its energy efficiency, considering the quantities estimated to be available as fuel in the municipality and other close biomass providers;-Planned strategy to gather partners to manage, operate and distribute energy produced from the central, in the future.
São João da Madeira	Building integrated renewables	The investment concept will focus on three main areas: 1. Public Lighting; 2. Renewable Energies; 3. Energy Poverty. The objective of the first is to substitute inefficient lighting by LED and incorporate a smart management system. For this to be possible, the municipalities will need to obtain the grid management, a possibility foreseen in the future legislation to be released. Having this in mind, a Smart-City approach will then be possible to develop along with electrical vehicles charging systems supported in the public lighting grid, along with other strategies for financing purposes (publicity, city internet, etc.). The second investment area will focus on renewable energy communities supported by photovoltaic systems. This being implemented in municipal or private buildings. The third and last investment area will focus on the needs of a specific population in order to tackle energy poverty, focusing on building envelop improvement and PV integration.
Romania		
Onesti	Public Buildings	The investment concept targets 3 main measures to increase the energy efficiency, enhance the renewable energy production and reduce the GHG emissions. (1) Creation of a green hydrogen ecosystem through the following investments: - building a heavy & light duty traffic Hydrogen Refuelling Station (HRS), a green H2 production unit connected to a mixed solar & wind power generation system, and a H2 compression and storage facility; - replacing the current diesel buses and public cleaning & maintenance trucks (>20 years old) with hydrogen fuelled vehicles (FCEV); - utilization of green H2 for heating in the public buildings included in the renovation program. (2) A set of residential and public building retrofits (> 40 years old), incl. the representative municipal sports facilities, for increased energy efficiency including integrated PV roof system & energy storage and installation of H2 suitable heating system. (3) Installation of intelligent LED street lighting and traffic lights.

Sfantu Gheorghe	Smart Grids	Energy goals: 1. Support for the modernization of energy produced by private and public owners/economic actors through special technical and financial government support programs; 2. Determining key point for a city wide intelligent traffic management system that enables scaling up the e-traffic; 3. Preparation of the procurement of low CO2 urban electric vehicle fleet; 4. Local regulation to support the proposed goals and develop new ones; 5. Local energy production from renewable energy sources; 6. Creating an effective system for observation and regular monitoring of results; 7. Realization of an investment concept for application for loans to specialized banks for instruments applicable to energy efficiency, government funds, structural funds, RRNP. The savings are twofold: 1. the energy produced by solar car parks, 2. the use of managed parking spaces reduces congestion and energy consumption. E-bus fleet reduces congestion generated in urban traffic, and reduces GHG emissions.
Slovenia		
Grosuplje	Public Buildings	1) PUBLIC BUILDINGS The following measures are envisaged to increase energy efficiency in 37 public buildings: Users' awareness raising of energy efficiency, thermal insulation of the building envelope (17,613 m2; 150 mm insulation thickness) and replacement of 14,090 m2 windows and doors (U-value 1,1). 2) BUILDING INTEGRATED RENEWABLES Solar PV installation on 53 public buildings: New solar roof-top PV installation 2,814.4 kWp. Replacement of old heating boilers with RES systems in 20 public buildings: With replacement of old heating oil, liquid gas, natural gas boilers and numerous electric convector heaters, a switch from fossil fuel generated heat to more energy efficient renewable systems in the form of wood biomass (wood chips) and heat pumps (air-source or geothermal) technology is nvisaged. 3) PUBLIC LIGHTING Public lighting optimization and replacement of 865 poles, 850 lamps (LED technology), replacement of 20 km cables and conversion of lighting stations 40 pcs.
Spain		

Montilla	Building integrated renewables	The following measures are foreseen to setup a local energy community (LEC) in the municipality to develop a set of actions to improve the energy efficiency and reduce the local energy demand: - Installation of solar PV integrated in public and private buildings to reduce their demand and share with others: 7.500 kW; - Installation of solar PV in the municipal grid (or closest grids) to benefit the overall municipal RES production, reducing local energy demand, improving grid efficiency and supporting the smart city concept: 8.000 kW. Storage will be assessed; - These two PV installation measures are the basis for the Local Energy Community, including social and environmental benefits; - Renovation of 10.000 m2 of public buildings to reduce their energy demand, average 50% energy savings reached; - Increase the EVs fleet with 75 more vehicles in the municipality; - Install 1.000 LED luminaries in streetlighting with sensors, aimed at reducing on average 60% of the electric demand.
Consell Comarcal del Moianès	Others	The project purpose is to transform the way citizens access energy, encouraging the production of renewable energy, electric mobility and efficient consumption; make the energy transition a reality. The project seeks to develop an investment concept for different energy efficiency actions. Specifically: -Legal, Technical & Economic analysis: Smart Energy Communities creations with photovoltaic installations (in municipal and private facilities) for collective self-consumption; -Technical & Economic analysis: Sustainable mobility (strategic charging points, change of municipal and private fleet); -Technical & Economic analysis: District heating with 100% renewable models; -Technical analysis: Wind & biomass capacity in the region; - Technical & Economic analysis: Submetering and remote management; -Social involvement action plan; -Agrivoltaic photovoltaic plants; -The role of forest action as a carbon sink, applying sustainable forests management according LifeforestCO2 EU Project results.
Rubí	Residential buildings	The energy rehabilitation of residential buildings (detached and semi-detached houses, and apartment buildings) will comprise: the improvement of the building skin insulation (Exterior Insulation and Finish System (EIFS), cellulose injection, double-glazed windows, thermally broken window frames, etc.), the efficiency increase of the energy production systems (such as high-efficiency heat pumps) and the implementation of renewable energy systems (photovoltaic installations for individual or shared use). Furthermore, photovoltaic installations will be built on all municipal building roofs, when technically possible, with the goal of providing renewable energy for the municipality's own consumption and share the energy surplus with residencies which lack enough surface to fulfill their own demand with renewable energy.
Sweden		

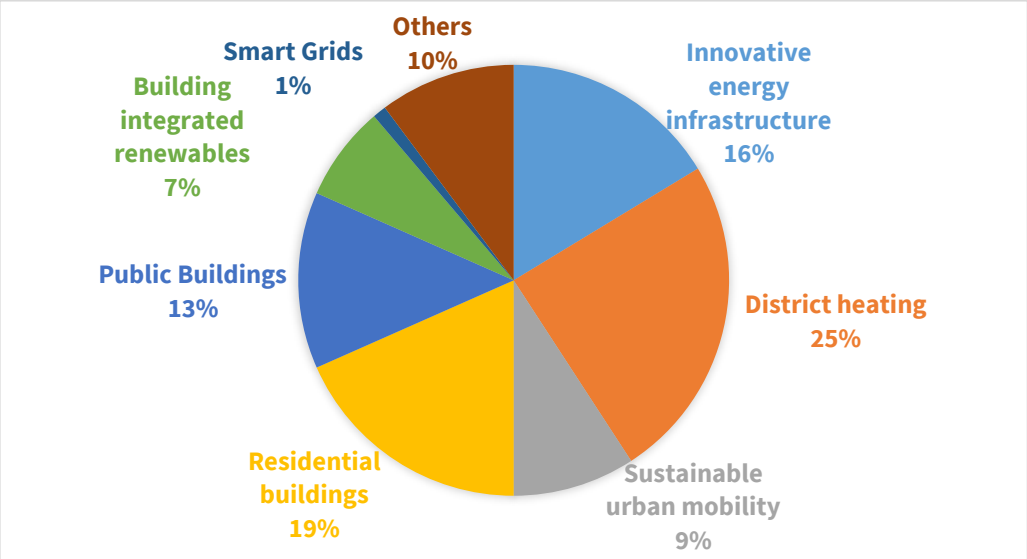
Uddevalla	Innovative energy infrastructure	• Development of Uddevalla port: - Sustainable link in a sustainable supply chain that supplies the western part of Sweden - and meets customer demands on sustainability; - Provide fossil free electricity to ships in the Port - replacing Marine Diesel Oil; - Contributing to fulfill regulations/emission limits in the Skagerrak Sea; - Reducing health effects when replacing Marine Diesel Oil used close to inhabitants; - Manage organisational and structural challenges to transform to a sustainable port system; - Sustainable mobility in port - 55 trucks and machines (electrical and hydrogen/fuel cell vehicles); - PV 14MWp, wind power 15 MW, batteries 20MW; - Hydrogen production, storage and filling station, first out of five hydrogen filling stations in Uddevalla; - Sustainable energy infrastructure established from start in the new part of the port. Good example of a sustainableport and facilitate transformation and know-how to enable sustainable transformation for other ports in the EU.
Skövde	Residential buildings	• Energy efficiency measures in public and residential buildings. Measures include insulation, windows, ventilation, lighting, heating etc. Methodology: BELOK Total Concept. • Switch to energy efficient street lighting and installation of weather and motion activated automatic regulation. The goal is to go from 30% LED to 100% LED. (Estimated yearly energy use: 3 400 MWh). • Installation of solar PVs on appointed flat unshaded roofs in e.g. shopping areas. Battery storage solutions for peak shaving will also be investigated. • Charging infrastructure for electric vehicles with installation of approximately 1 900 charging posts for the tenants' vehicles at residential buildings owned by the local public real estate company and 600 charging posts (of which 60 fast-chargers) for public use. Tailored information and education for the citizens on for example energy efficient behavior in buildings and the increased possibility to use electric vehicles will also be included in the project.

Lund	Others	Hydrogen production facility, including integration with the existing energy system. New bio-CCS and a new bio-char plant. For the charge-as-you-drive electric road: road integration of charging rail, charging infrastructure at end-points, transformer stations, and heavy vehicle adaptation. Small scale district heating using geothermal heat and low-temperature technology. A diversity of energy renovation measures in existing building stock including new installation of PVs (hardware and software, to be decided depending on individual building status).
United Kingdom		
Northumberland	Residential buildings	The properties of HVO are extremely similar to kerosene and diesel meaning it can be used as a drop in fuel in existing oil boilers; however, to support this some modifications are needed including changes to the spray nozzle, increasing fuel pressure and adjusting the air intake. The estimated conversion costs for making these changes is £500 per boiler which is relatively low when compared to the average cost of heat pump installation (£10,000). Not only would the switch to HVO have an impact on local residents in the area but also for local supply chains. This is one of the gap areas that would be analysed in the creation of an investment concept. Within Humshaugh, there is an oil buying group that operates in the area – it would be essential to understand how the pilot would affect their supply chain and if they could be involved in distribution of HVO. Currently there are no manufacturers of HVO in the UK - this project would explore manufacturing capabilities in Northumberland.

7.3 Main sectors targeted by successful applicants

Amongst the main sectors in which the successful applicants will develop their investment concept, “district heating” is targeted most, followed by “residential buildings” and “innovative energy infrastructure”. Figure 18 presents the main sectors targeted by successful applicants.

Figure 18. Main sectors targeted by successful applicants



*Others refer to innovative micro-scale liquefaction systems, e-mobility and charging facilities, waste management, public lighting, solar thermal plants etc.