Methodology note regarding the publication *Human capacity in local governments: the bottleneck of the building stock transition*

This methodology note has the goal to explain the actions taken, the calculations and data sources presented in the publication Human capacity in local governments: the bottleneck of the building stock transition. For any question, please contact: julien.joubert@energy-cities.eu.

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels

1) Overall methodology and actions taken

Desk research

What constitutes the basis of this publication on human capacity for the buildings' decarbonisation is a Dutch study on the Implementation costs of the Climate Agreement for local and regional authorities in 2022 – 2030, published in September 2020. It has given the frame for the division of the different actions to be carried out by city staff linked to the decarbonisation of the built environment and heating systems. The details of tasks included in each action can be found below.

ACTION 2.1 – Drafting neighbourhood implementation plans	
○ Mapping the heat options for each district ○ Coordinating with homeowners and energy companies at district level ○ Drafting and discussing a note of principles ○ Draw up an implementation plan for each district, including a timeframe	○ Take decisions on the district implementation plan ○ Considering opportunities ○ Developing a vision on heat networks and source strategy

ACTION 2.2 – Implement neighbourhood implementation plans & guide residents	
○ Informing about subsidy schemes and loan funds ○ Informing about the granting of permits ○ Streamlining permit granting ○ Possibly setting up, granting, and providing loans and / or subsidies yourself ○ Approaching residents ○ Organise information meetings and/or information markets	○ Having conversations with individual residents ○ Determination of DHC concessions ○ Conducting feasibility study, for instance for heat networks ○ Drawing up a technical design for the heat solution ○ Appointing a heat supplier to implement the solution in the district

ACTION 2.3 – Collaborate with housing corporations & owners associations	
○ Contact and coordination with corporations and large landlords ○ Inventorying wishes and plans of the corporation ○ Elaboration of joint plans	○ Exploring possibilities together to (accelerated) start with sustainability ○ Providing information to Owners' Associations ○ Make agreements about conditions for the supply of heat (geothermal energy, waste heat, solar heat, biomass, etc...)

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels

ACTION 2.4 – Implementing permits, supervision, and enforcement	
○ **Updating Licensing, supervision and enforcement policies (procedures, standards, criteria)** ○ **Receiving permit applications**	○ **Assessing and handling permit applications** ○ **Monitoring implementation, including compliance with permits** ○ **Enforce (impose sanctions and collect fines)**

ACTION 2.5 – Provide municipality-wide communication (including energy counter)	
○ Communicating about the usefulness and necessity of the energy transition ○ Giving a place to vision on participatory approach in spatial frameworks ○ Informing owners and residents about the technical possibilities	○ Advising owners and residents on the measures ○ Development and provision of unburdening sustainability packages ○ Advising residents on the use of solar panels

ACTION 2.6 – Making own real estate more sustainable (public buildings)	
○ Developing a vision on making your own real estate more sustainable ○ Integrating the heat transition into a multi-year maintenance plan ○ Report on progress every two years	○ Recalibrating roadmaps every two years and establishing a link with a neighbourhood-oriented approach ○ Organising tenders to select suppliers and following the works

ACTION 2.7 – Making social real estate more sustainable	
○ Providing information about the heat transition in social real estate ○ Consult with owners and representatives	○ Developing a vision on making social real estate more sustainable ○ Supervising compliance with legal standards by building owners

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

ACTION 2.8 – Making other non-residential construction more sustainable	
○ Consult with owners and representatives ○ Executing incentive projects for making business and shopping areas more sustainable	○ Supervising compliance with legal standards by building owners ○ Powering solar panels on the roofs of companies and institutions

ACTION 2.9 – Monitoring and recalibration of heat vision.	
○ Consult with urban partners on progress ○ Output transition vision heat monitoring ○ Preparation of an annual report on the heat transition	○ Update the heat transition vision every five years ○ There must also be a line in the approach between neighbourhoods in a city

To enrich those data with elements from other countries, especially from Germany, France, Italy, Poland, and Spain, contacts have been established with national networks and organisations (see table below).

Country	Stakeholder
France	AMORCE (city network) I4CE (Institute for Economics and Climate)
Germany	Deutscher Städte- und Gemeindebund (association of representatives of municipalities)
Italy	AESS Modena (energy agency)
Poland	PNEC (Polish Network Energie-Cités)
Spain	ECODES (national organisation)

If all agreed that this question is a crucial one for cities, none of them had pre-existing data on staff capacities working on the topic. ECODES flagged the existence of the "Ayunamientos por el clima" initiative, but such a work on collecting data has not been done so far.

Only in France a similar initiative has been running. In December 2021, AMORCE published a study on "Organising competences and services in local authorities to support the energy transition". The current deployed staff has been mapped, and future needs have been estimated. However, the study doesn't focus specifically on the buildings sector. In addition, I4CE is running a study on the local and regional authorities' expenditures to achieve carbon neutrality. The results should be published in Summer 2022. Energy Cities has joined the stakeholder committee, to follow the developments of the study.

Interviews

We interviewed a number of cities about their needs and their staff capacities. Most of them underlined that the increase of capacities at local level are lagging behind the increase of climate target goals, and more should be done to achieve radical changes. Among others, we discussed with Aberdeen (UK), Dijon (FR), Heerlen (NL), Lyon (FR), Modena (IT), Munich (DE), Rotterdam (NL), and Valencia (ES).

Since the above-mentioned study serves as basis to collect data and compare different situations in Member States, Energy Cities contacted the city of Delft, in the Netherlands, to compare the numbers in the study with the reality of the ground. The Deputy-Mayor being involved in the discussion on how to implement the

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels

Climate Agreement signed by cities, he could confirm that the estimations provided by the study coincide with cities' experiences. This discussion also gave more insights into the complexity of what lies behind the numbers. Indeed, three main elements were highlighted:

1. To reach those numbers implies to have the right budget to hire people and keep them on the long run.
2. Those numbers must also reflect positions which are not directly linked to climate or energy goals, but transversal ones. For instance, some FTEs in social departments are also part of the necessary tasks to be carried out, when aiming at decarbonising the built environment and heating systems.
3. Last but not least, having the right budget does not necessarily mean that cities will be able to recruit people with the right skills and training.

We also had an interview with the city of Stuttgart, in Germany. In the last two years, Stuttgart has already doubled its staff capacity in the field of energy. In total, forty FTEs are involved in topics such as: heating in the public building, power in the public building, heat and power for all. Four people are exclusively dedicating their time to district heating matters. This allowed to set up a benchmark of "good examples" to get inspired from. It seems that bigger cities and front-runners have already started to strengthen their capacities already, but if this is not possible for the majority of them yet.

Survey

In parallel, Energy Cities ran a survey, targeting cities in the membership of our network and core partners. This survey is composed of a set of 56 (closed or open) questions, each of them targeting specific actions identified in the above-mentioned Dutch study. This survey will stay open until end of June 2022, if you are a municipality, don't hesitate to share your inputs with us. End of April 2022, 28 answers were collected. These preliminary answers confirmed that all cities need to perform the actions defined in the above-mentioned Dutch study. While their implementations and the technical solutions can differ from one city to another, all cities in all countries are either by law or voluntarily (partially) implementing them, and all of them would like to implement them in a more consistent way and at the required scale, if they had the adequate capacities.

Challenges encountered

As mentioned above, **there are very little pre-existing data on the topic of staff capacities in cities, even less when looking at the built environment and heating systems.** This absence of original studies is also a hurdle for cities to be able to provide precise data on those topics. In most countries, there are no national statistics about the competences and fields of intervention of employees of local governments at a precise level, and no monitoring of the capacities directly contributing to the energy transition. This seems to indicate a certain lack of interest of national organisations and governments about this topic.

In addition, these kinds of data are difficult to gather as different departments are involved, it is not always easy to spot who is involved in which topic and which real part of the job it represents. **Thus, national studies fit for each national context are needed and we call for national governments and national institutes to dedicate resources to this topic.**

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels

2) Methodology for the estimation of local staff needs at EU-level

The estimation of needs of employees of local governments is based on an extrapolation of the results of the Dutch study, because other EU cities indicated the relevance of these results. This extrapolation is based on the following elements:

a. the number of additional employees needed per city according to their size,
b. The number of local authorities in the different EU countries, and their size,
c. The costs of staff employees in EU countries.

Number of additional employees needed per city

The Dutch study *Implementation costs of the Climate Agreement for local and regional authorities in 2022 – 2030* estimates the needs of additional employees (in full-time equivalent – FTE) for each sector, including the building sector, according to their size. This study defined four sizes of cities, indicated in the table below.

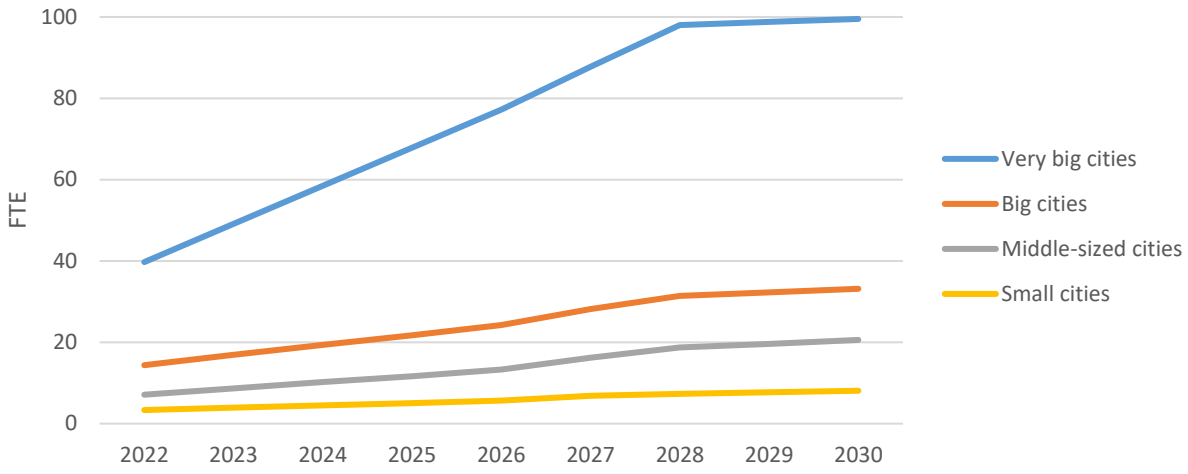
Category	Criteria	Number Dutch of municipalities in the category	Average number of inhabitants
1 - Very big cities	4 biggest (above 350,000 inhabitants)	4	600 000
2 - Big cities	40 biggest (above 80,000 inhabitants)	40	126 000
3 - Middle-sized cities	Above 40 000 inhabitants	87	54 000
4 - Small cities	Below 40 000 inhabitants	224	22 900

The needs in terms of additional employees varies according to the municipalities' size but also increases from 2022 to 2030 due to the necessity to increase the renovation rate and the needs to retrofit more buildings per year to achieve the 2030 Dutch targets (see figure below).

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels



ADDITIONAL LABOUR FORCE NEEDED FOR BUILDINGS' DECARBONISATION IN DUTCH MUNICIPALITIES, ACCORDING TO THEIR SIZE[1]

In average over the period 2022 – 2030, this study estimates the following needs of additional staff required for the different Dutch municipalities:

Category	Additional FTE needs per city – Upper estimation	Additional FTE needs per city – Average estimation	Additional FTE needs per city – Lower estimation
1 - Very big cities	93,6	75,2	56,7
2 - Big cities	30,6	24,6	18,6
3 - Middle-sized cities	17,5	14,0	10,5
4 - Small cities	7,2	5,8	4,5

Table 1: Estimations of additional FTE needs in Dutch municipalities according to their size for the buildings' decarbonisation[2]

These average estimations over the period 2022-2030 are the figures used for the extrapolation of the results to the entire EU. The chronological estimations have not been reproduced for the EU here as this study aims at giving an overall picture of the needs, and more precise estimations should be done country by country. It is important to notice that the study concludes that they are higher needs in smaller cities proportionally to their sizes, which is reflected in the ratio additional FTE needs per 100 000 inhabitants:

Category	Ratio average FTE needs for 100 000 inhabitants
1 - Very big cities	12,5
2 - Big cities	19,1
3 - Middle-sized cities	26,4
4 - Small cities	25,4

[1] Source: Implementation costs of the Climate Agreement for local and regional authorities in 2022 – 2030
[2] Source: *Idem*

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

Number of local authorities in the different EU countries, and their size

The sizes of the EU cities and municipalities vary dramatically depending on the EU countries, due to different histories of local governments' developments. Below are gathered the number of municipalities per EU country in 2019, the population of the country in 2019 and the average size of municipalities. **All data considered in this study are for the year 2019, unless stated otherwise.**

Country	Number of municipalities in 2019	Population - 2019	Average population per municipality
CZ	6 258	10 649 800	1 702
SK	2 927	5 450 421	1 862
FR	34 970	66 977 700	1 915
CY	407	880 600	2 164
HU	3 155	9 772 756	3 098
AT	2 096	8 858 775	4 227
ES	8 131	47 026 208	5 784
LU	102	613 894	6 019
RO	3 182	22 213 553	6 981
MT	68	493 559	7 258
DE	11 087	83 019 213	7 488
IT	7 926	60 359 546	7 615
HR	556	4 284 889	7 707
SI	212	2 080 908	9 816
PL	2 478	38 411 148	15 501
LV	119	1 919 968	16 134
EE	79	1 323 401	16 752
FI	311	5 517 919	17 743
BE	589	11 431 406	19 408
BG	265	7 000 039	26 415
EL	331	10 816 286	32 678
PT	308	10 562 178	34 293
SE	290	10 230 185	35 277
LT	60	2 794 184	46 570
NL	355	17 282 163	48 682
DK	99	5 806 081	58 647
IE	31	4 761 865	153 609

Table 2: Number of municipalities, total population and average size of municipality in EU countries

The main source for the number of municipalities, and their populations is Eurostat data about local administrative units. However, municipalities are sometimes composed of several local administrative units, thus each municipality population has been calculated based on aggregation of data of local administrative units, when needed.

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

Other data source has been used for **Ireland,** as local administrative units don't match with municipalities. Thus, population and list of municipalities for Ireland have been taken from Wikipedia, which indicates population from 2016.

For the countries with in average less than 5,000 inhabitants per municipality (CZ, SK, FR, CY, HU, AT), we considered that the size of municipalities is too far from the situation of the Netherlands (where the average size of municipalities is 48 682 inhabitants). Because the Dutch study estimates that proportionally to their size, smaller cities need more additional FTE than bigger cities, the distribution of the cities according to their sizes has an impact on the total estimation of additional staff needed. To avoid a too important bias because of this difference of distribution of municipalities according to their size depending on the countries, other local government levels have been considered for the estimations of FTE needs for CZ, SK, FR, CY, HU, AT. Some of these levels are effective levels for implementing decarbonisation policies, like in France where the intercommunal structures are already in charge of developing Sustainable Energy and Climate Action Plans; some of them are not adequate in practice but are used as statistical data for the estimation. Number and size of local government levels, as well as data source, considered for this study are indicated in the table below.

Country	Government level considered	Nb of units in category 1 (very big)	Nb of units in category 2 (big)	Nb of units in category 3 (middle-sized)	Nb of unites in category 4 (small)	Data source
CZ	Administrative territories of municipalities with extended powers[3]	2	27	50	127	Czech Statistical Office
SK	Districts (*okres* in Slovak)	0	26	32	21	Wikipedia – Population for 2020
FR	Intercommunalities[4]	18	139	188	914	INSEE – Population 2016
CY	Districts	-	4	1	-	Statistical Service of Cyprus Republic (tab C1)
HU	Districts (in Hungarian *járások* outside Budapest, *kerületek* in Budapest)	-	34	52	112	Wikipedia: Districts in Budapest and in the rest of HU
AT	Districts (in German: *Bezirk*)	1	34	41	18	Wikipedia

[3] In Czech: *Počet obyvatel ve správních obvodech obcí s rozšířenou působností*
[4] In French : *Etablissement Public de Coopération Intercommunale*

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

For the other countries, the number of municipalities per size category according to Eurostat data (except for Ireland) is indicated in the table below.

Country	Nb of municipalities in category 1 (very big)	Nb of municipalities in category 2 (big)	Nb of municipalities in category 3 (middle-sized)	Nb of municipalities in category 4 (small)
ES	9	83	81	7 958
LU	-	1	-	101
RO	2	30	25	3 125
MT	-	-	-	68
DE	17	86	177	10 807
IT	8	62	134	7 722
HR	1	3	10	542
SI	-	2	3	207
PL	8	37	81	2 352
LV	1	1	3	114
EE	1	1	2	75
FI	1	10	15	285
BE	1	16	28	544
BG	1	13	18	233
EL	1	24	58	248
PT	2	26	44	236
SE	2	25	37	226
LT	1	6	7	46
NL	4	40	87	224
DK	1	14	45	39
IE	1	21	8	1

Estimation of additional FTE needs at EU-level

The calculation of additional FTE needs at EU level is done by multiplying the number of municipalities of each size category by the number of additional FTE needs per size category according to the Dutch study (see Table 1).

To counterbalance the fact that the average size of municipalities and their distribution according to the different categories vary according to countries and are not similar as the Dutch case, the following choice has been made:

- For CZ, SK, FR, CY, HU, AT, the upper estimations of FTE needs per city indicated in the Table 1 (2nd column) have been chosen. Because the number of administrative units considered for these countries is drastically lower than the real number of municipalities, it is more probable that the upper estimation of FTE needs is closer to the real needs.
- For ES, LU, RO, MT, DE, IT, HR, SI, the lower estimations of FTE needs per city indicated in the Table 1 (4th column) have been chosen. In these countries, the average size of municipalities is lower than 10,000 inhabitants (see Table 2), thus a high number of them are in the size category 4 (below

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

40,000 inhabitants), for which the FTE needs are proportionally higher. This fact tends to overestimate the total FTE needs for these countries. To reduce this bias, the lower estimation of FTE needs per city have been chosen for the calculation.

- For PL, LV, EE, FI, BE, BG, EL, PT, SE, LT, DK, the average estimations of FTE needs per city indicated in the Table 1 (3rd column) have been chosen, because the average sizes of municipalities in these countries (from 15,000 inhabitants to 59,000 inhabitants) are in the same order of magnitude as the Dutch case and their distribution in the four size categories stays similar.
- For IE, the upper estimations of FTE needs per city indicated in the Table 1 (2nd column) have been chosen, as the average size of municipalities (153 609 inhabitants) is way above the Dutch one.

Country	**Needs per municipality (FTE) for category 1 (very big)**	**Needs per municipality (FTE) for category 2 (big)**	**Needs per municipality (FTE) for category 3 (middle-sized)**	**Needs per municipality (FTE) for category 4 (small)**
CZ	93,6	30,6	17,5	7,2
SK	93,6	30,6	17,5	7,2
FR	93,6	30,6	17,5	7,2
CY	93,6	30,6	17,5	7,2
HU	93,6	30,6	17,5	7,2
AT	93,6	30,6	17,5	7,2
ES	56,7	18,6	10,5	4,5
LU	56,7	18,6	10,5	4,5
RO	56,7	18,6	10,5	4,5
MT	56,7	18,6	10,5	4,5
DE	56,7	18,6	10,5	4,5
IT	56,7	18,6	10,5	4,5
HR	56,7	18,6	10,5	4,5
SI	56,7	18,6	10,5	4,5
PL	75,2	24,6	14,0	5,8
LV	75,2	24,6	14,0	5,8
EE	75,2	24,6	14,0	5,8
FI	75,2	24,6	14,0	5,8
BE	75,2	24,6	14,0	5,8
BG	75,2	24,6	14,0	5,8
EL	75,2	24,6	14,0	5,8
PT	75,2	24,6	14,0	5,8
SE	75,2	24,6	14,0	5,8
LT	75,2	24,6	14,0	5,8
NL	75,2	24,6	14,0	5,8
DK	75,2	24,6	14,0	5,8
IE	93,6	30,6	17,5	7,2

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

The summary of the values used for each country for the additional FTE needs per municipality according to its size category is summarised in the table above (these values are rounded numbers). These values have been multiplied by the number of municipalities for each size category to establish the total needs of additional FTE for each EU country.

The margin of error for these estimations are estimated as follow:

- For PL, LV, EE, FI, BE, BG, EL, PT, SE, LT, DK, considered similar as the Dutch case, the margin of error can be considered similar as the one estimated by the original Dutch study, i.e. around 23%.
- For the other countries, for which the above-mentioned hypotheses have been taken, the margin of error is probably around 50%.

Analysis of results and limits of the estimation of FTE needs

The results per country of the estimation of additional workforce in EU municipalities is summarised in the table below. In total, around 214 000 FTE would be needed. However, despite the hypotheses explained in the paragraph above, we can consider that the figures for Spain, Luxembourg, Romania, Malta, Germany, Italy, Croatia, and Slovenia are probably overestimated, due to the high number of small municipalities in these countries. And figures for Czechia, Slovakia, France, Cyprus, Hungary, and Austria are maybe underestimated, due to the use of other government levels than municipalities. This is reflected in the ratio FTE needs per hundred thousand inhabitants which are notably higher for countries in which the estimation is probably overestimated (Spain, Luxembourg, Romania, Malta, Germany, Italy, Croatia, and Slovenia).

Other main limits of this study are:

- Although all municipalities in the EU work on buildings' decarbonisation, there are some differences in terms of competences of municipalities depending on the countries. This study should not strictly be considered as an estimation of the additional needs of municipalities' staff, but as an estimation of needs of local governments and their related bodies, like local energy agencies, in general. Each country should define the adequate local government levels in charge of one or several actions needed for the decarbonisation of buildings, although, as explained in the publication, it seems clear that there is a need for additional local civil servants to carry out the decarbonisation in the field.
- By taking data from of FTE needs from a Dutch study, implicitly this estimation considers that the decarbonisation target of the buildings' sector (and thus the needs) of each country is similar as the one of the Netherlands. While there are differences regarding the current level of decarbonisation of the building stock in the different EU countries, one could argue that the building sector is widely recognised as a sector with an important decarbonisation potential in EU, and that the current renovation rate of buildings is clearly lagging behind the needs to follow the EU decarbonisation target, which is why the European Commission launched the Renovation Wave in 2020.

All these limits call for in-depth studies done for each EU country, taking into national specificities, because municipalities and local governments have a key role to play in the buildings' decarbonisation, and they can't carry out the necessary actions to scale the decarbonisation at the required level without the adequate workforce.

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

In particular, in-depth studies should be conducted in Spain, Germany, Italy, and France as they are the countries with a high influence on the overall estimation at EU-level, due to their population sizes.

Country	Total additional FTE needs	Number of municipalities	Population 2019	Average FTE needs per municipality	FTE needs per hundred thousand inhabitants
CY	140	407	880 600	0,3	16
IE	884	31	4 761 865	28,5	19
LT	589	60	2 794 184	9,8	21
DK	1 277	99	5 806 081	12,9	22
NL	3 807	355	17 282 163	10,7	22
AT	1 979	2 096	8 858 775	0,9	22
FR	15 768	34 970	66 977 700	0,5	24
SE	2 599	290	10 230 185	9,0	25
CZ	2 796	6 258	10 649 800	0,4	26
PT	2 780	308	10 562 178	9,0	26
EL	2 921	331	10 816 286	8,8	27
SK	1 505	2 927	5 450 421	0,5	28
HU	2 751	3 155	9 772 756	0,9	28
BG	2 003	265	7 000 039	7,6	29
BE	4 027	589	11 431 406	6,8	35
FI	2 190	311	5 517 919	7,0	40
LV	805	119	1 919 968	6,8	42
PL	16 334	2 478	38 411 148	6,6	43
EE	564	79	1 323 401	7,1	43
SI	996	212	2 080 908	4,7	48
MT	304	68	493 559	4,5	62
HR	2 645	556	4 284 889	4,8	62
IT	37 599	7 926	60 359 546	4,7	62
DE	52 823	11 087	83 019 213	4,8	64
RO	14 929	3 182	22 213 553	4,7	67
LU	471	102	613 894	4,6	77
ES	38 545	8 131	47 026 208	4,7	82
EU 27	**214 030 (total)**	**86 392 (total)**	**450 538 645 (total)**	**2,5 (average)**	**48 (average)**

Labour costs in EU countries

To estimate the costs of these additional workforce for EU municipalities, one labour cost per FTE for each country has been considered. The first data used are the ones provided by Eurostat which are the annual labour costs (including charges paid by employers, wages and salaries, and bonuses and other allowances) per employee in full-time equivalents, per year in the sector "Public administration and defence; compulsory social security". This data can be downloaded here on Eurostat data browser and concern the year 2016 (no latest data from "labour costs and salaries surveys" are available on Eurostat website).

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

However, data for some countries are missing. For them, the labour cost index (LCI) provided by Eurostat and measuring the cost pressure arising from the production factor "labour" was used. This indicator is available for all countries for the sector "Industry, construction and services" (accessible here) and allow to compare their labour costs. To estimate the labour costs of one FTE employee for municipalities in the countries with missing data, their labour cost indexes have been multiplied by 1968 (rounded number), which is the average of the ratios annual total labour costs per FTE employee in 2016 divided by their labour cost indexes for the countries with available data (see table below).

According to the Dutch study "*Implementation costs of the Climate Agreement for local and regional authorities in 2022 – 2030*", labour costs of employees in Dutch municipalities range from 82,000€ to 128,000€ per FTE annually depending on their salary steps (cf. p.103 of the publication). In this study, it is considered that people who have to work on the different actions for the building's decarbonisation are mostly entitled to the higher salary steps, as these positions require highly-skilled workers. Among others, their profiles are architects, engineers in different domains, energy analysts, data managers, communication and project managers. To simplify the calculations and for our estimation, the average total labour cost of 115,000€ per FTE has been used for the Netherlands for the buildings' sector, although the Dutch study did more precise calculations with different labour costs per FTE for the different tasks to be carried out, according to the profiles of employees needed for each task. What the Dutch study shows is that the average labour cost of one FTE in the sector "Public administration and defence; compulsory social security" provided by Eurostat cannot be used as such to estimate the costs of the decarbonisation: these data need to be corrected due to the high-skilled profiles needed. The estimation of labour cost of 115,000€ per FTE per year from the Dutch study for buildings' decarbonisation is 59% higher than the average labour cost in the sector "Public administration and defence; compulsory social security" in the Netherlands provided by Eurostat (72,399€ per FTE). Thus, the Eurostat data (or the estimations coming from the labour cost index for countries with missing data) have been multiplied by 1.59 to estimate the labour costs per FTE for municipalities to perform the required tasks to decarbonise the built environment.

All data are summarised in the Table below.

This estimation of labour costs per FTE presents some limitations, and the following actions could be done to improve the accuracy of the estimation of the total costs for municipalities:

- Data from the year 2019 should be used, as this is the reference year taken for the scope and population of municipalities.
- Specific data for municipalities should be used, instead of data for the entire sector "Public administration and defence; compulsory social security". In addition, national data should be used from other data sources that Eurostat when data are missing in the Eurostat database.
- Different labour costs for the different job positions needed, coming from national surveys and databases, could be used, as done in the Dutch study.

Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

Country	Total labour costs per FTE (excluding apprentices) in 2016 (€) (Eurostat)	Labour cost index (LCI) in 2016 (€) (Eurostat)	Ratio LCI divided by labour costs per FTE employee (2016)	Estimation of total labour costs per FTE for municipalities (€)	Estimation of total labour costs per FTE for buildings' decarbonisation for municipalities (€)
AT	:	32,5		63 949	101 578
BE	:	38,6		75 952	120 644
BG	8 704	4,5	1 934	8 704	13 826
HR	17 503	9,5	1 842	17 503	27 802
CY	:	15,7		30 892	49 070
CZ	19 429	10,3	1 886	19 429	30 861
DK	:	41,3		81 265	129 082
EE	22 491	10,8	2 083	22 491	35 725
FI	:	33,7		66 310	105 329
FR	:	34,6		68 081	108 142
DE	:	32,8		64 540	102 516
EL	:	15,2		29 909	47 507
HU	17 517	7,8	2 246	17 517	27 824
IE	59 815	30,6	1 955	59 815	95 011
IT	:	27,6		54 308	86 263
LV	16 661	7,7	2 164	16 661	26 465
LT	14 510	7,4	1 961	14 510	23 048
LU	:	38,7		76 149	120 956
MT	:	14,2		27 941	44 382
NL	72 399	34,5	2 099	72 399	115 000
PL	:	8,7		17 119	27 192
PT	26 069	13,6	1 917	26 069	41 409
RO	11 634	5,3	2 195	11 634	18 480
SK	16 804	10,2	1 647	16 804	26 692
SI	30 637	16,8	1 824	30 637	48 664
ES	38 060	21,2	1 795	38 060	60 455
SE	:	37,7		74 181	117 831
: = not available					

The labour costs per FTE for buildings' decarbonisation have been multiplied by the estimation of the number of FTE needed per year in average over the period 2022-2030 to calculate the annual average costs for municipalities of this additional workforce (see section above). The results per country are summarised in the table below. An estimation of the margin error as explained previously (50% for some countries, around 23% for others) allow us to consider that **€9 to €23 billion per year (average: €16 billion) is a fair estimation of what EU municipalities will need to expend in order to give us a chance to reach the decarbonisation target of the building sector by 2030.**

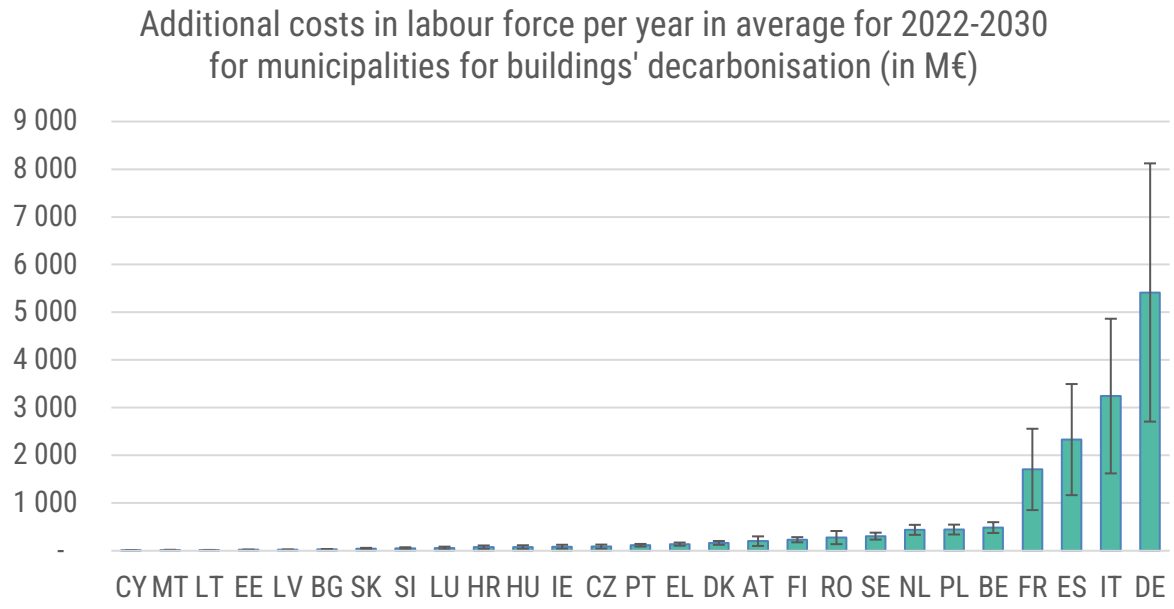
Main Office
2B chemin de Palente
FR - 25000 BESANÇON

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 BRUSSELS

These values can be compared with the employees expenditure of local governments in 2019, provided by Eurostat here, considering all employees and only the employees working in the economic subsectors "Fuel and energy", "Environmental protection" and "Housing and community amenities", which are the sectors in which people working on buildings' decarbonisation are already recorded. This allows to estimate the additional costs for municipalities in the different countries, compared to their existing workforce in general and in the departments in charge of the buildings' decarbonisation.

The related costs of additional workforce for municipalities (16 billion EUR per year in average) represent 3% of the €493 billion spent by local governments in employee expenditures in 2019. At EU-level, this additional cost would represent an increase of 53% of the employee expenditures of local governments in 2019 for the 3 subsectors "Fuel and energy", "Environmental protection" and "Housing and community amenities". Results at national levels regarding these 3 subsectors should be taken with caution as these data are highly dependent on the scope of the competences that local governments have in different countries. For instance, Malta has a very specific context due to the very small size of the country, and its important centralisation. In the case of this country, the estimations are probably not relevant, but due to the country size, the impacts on the overall results at EU-level are marginal.



Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels

Country	Additional costs for municipalities - Upper estimation (M€ per year)	Additional costs for municipalities - Central estimation (M€ per year)	Additional costs for municipalities - Lower estimation (M€ per year)	Employees expenditure by local governments (M€) - 2019 - Eurostat	Employees expenditure increase for local governments (%)	Employees expenditure by local governments in 3 subsectors* (M€) - 2019 - Eurostat
AT	302	201	101	10 358	1,9%	159
BE	599	486	372	18 824	2,6%	1 048
BG	34	28	21	2 155	1,3%	102
CY	10	7	3	132	5,2%	57
CZ	129	86	43	11 317	0,8%	302
DE	8 123	5 415	2 708	70 576	7,7%	5 537
DK	205	165	125	33 797	0,5%	354
EE	25	20	15	1 310	1,5%	21
EL	172	139	106	2 493	5,6%	566
ES	3 495	2 330	1 165	24 982	9,3%	1 545
FI	285	231	177	22 060	1,0%	320
FR	2 558	1 705	853	83 038	2,1%	10 443
HR	110	74	37	3 051	2,4%	103
HU	115	77	38	3 299	2,3%	113
IE	126	84	42	1 918	4,4%	762
IT	4 865	3 243	1 622	67 086	4,8%	2 271
LT	17	14	10	2 218	0,6%	24
LU	85	57	28	1 041	5,5%	130
LV	26	21	16	1 500	1,4%	63
MT	20	14	7	13	101%	:
NL	543	438	333	40 128	1,1%	3 957
PL	548	444	341	29 369	1,5%	721
PT	143	115	88	4 281	2,7%	495
RO	414	276	138	7 006	3,9%	272
SE	379	306	233	45 996	0,7%	852
SI	73	48	24	1 897	2,6%	8
SK	60	40	20	3 628	1,1%	97
EU27	**23 461**	**16 063**	**8 666**	**493 472**	**3,3%**	**30 321**
: = not available						

*"Fuel and energy", "Environmental protection" and "Housing and community amenities"

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels

Sources of other data

The source of the other data presented in the publication Human capacity in local governments: the bottleneck of the building stock transition are:

- Eurostat data available here for the employee expenditures of local governments in % of GDP in 2019;
- Eurostat data available here for the number of medical doctors (excluding nursing and caring professionals) per hundred thousand inhabitants;
- Eurostat data available here for the number of teachers in primary and secondary education in EU countries.

Consultation date of data sources

All Eurostat data used were extracted from Eurostat data browser in April 2022. Data might change according to Eurostat updates and change of methodologies in data calculations.

Main Office
2B chemin de Palente
FR - 25000 Besançon

www.energy-cities.eu
+33 381 65 36 80
info@energy-cities.eu
@energycities @energycities.eu

Brussels Office
Mundo Madou
Avenue des Arts 7-8
BE - 1210 Brussels