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Covenant of Mayors: Monitoring Indicators

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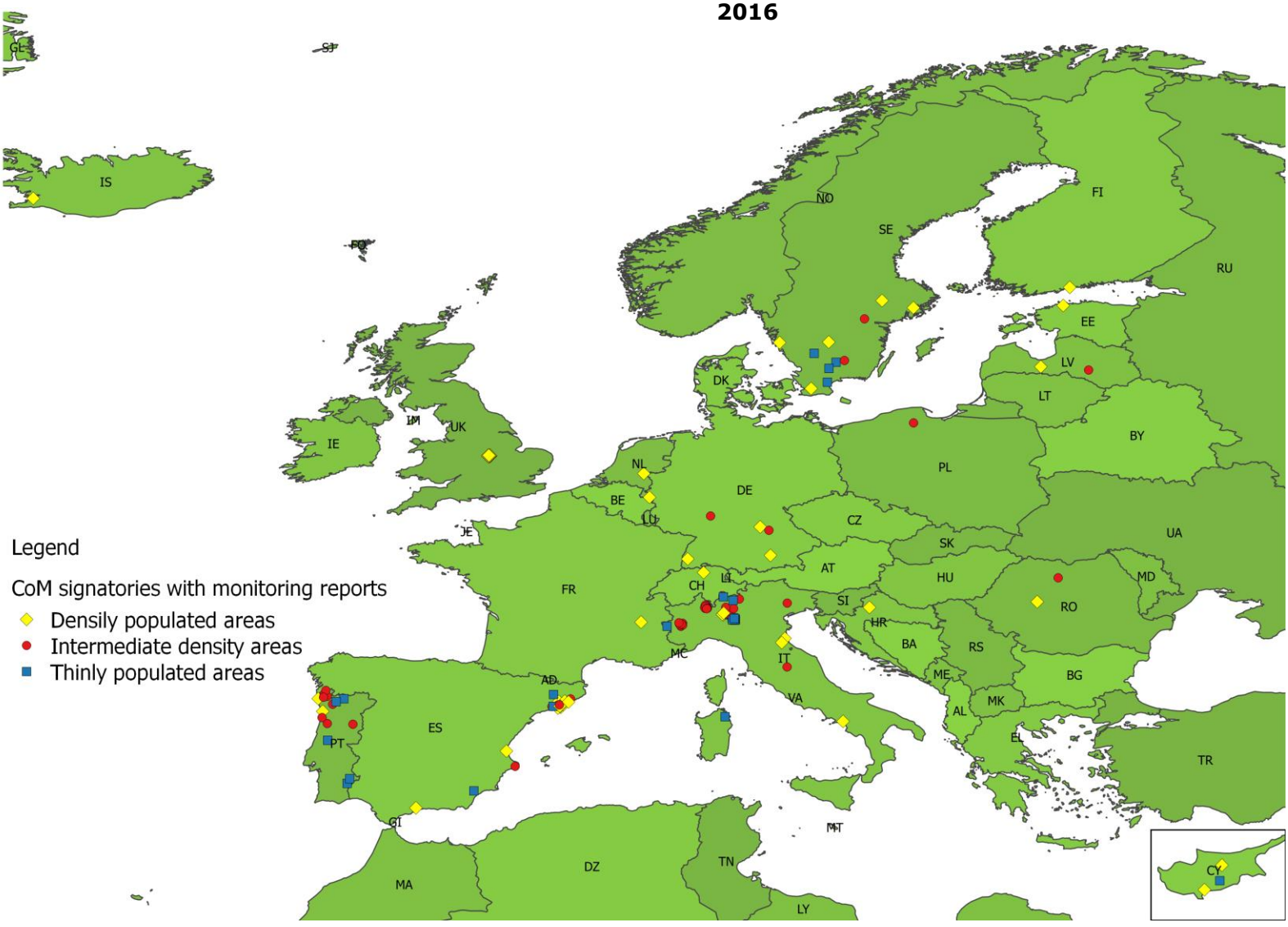

Joint Research Centre

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Covenant of Mayors: Monitoring Indicators

Progress report of monitoring phase as of September 2015

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Abstract

Launched in 2008 by the European Commission, the Covenant of Mayors (CoM) is the mainstream European movement involving cities and towns in the development and implementation of local sustainable energy and climate policies.

Covenant of Mayors' signatories can benefit from support at different levels: from European institutions to national and regional governments and to fellow signatories sharing best practises through the CoM platform.

Featured by multilevel governance models and bottom up actions, the CoM platform paves the way for local and regional governments to contribute to EU's climate and energy objectives.

By signing up to the Covenant of Mayors, local authorities commit to submit:

I. action plan: based on the inventory of energy consumptions/production and greenhouse gas emissions in the local authority's territory, identifies actions to be implemented for reaching the CO2 reduction target.

II. monitoring reports: including status of the implementation of actions and - at least every fourth year - a monitoring inventory which allows to measure progress toward the targets set in the action plan[1].

As of September 2015, almost six thousand local authorities have signed the CoM, for a total of ca. 208 million inhabitants in the whole initiative. More than 4500 local authorities have submitted an action plan (Sustainable Energy Action Plan) for a total of ca. 166 million. Out of these, 122 signatories, representing 3% of the signatories with an action plan, have submitted a monitoring report including inventories for a total ca. 11 million inhabitants. Only 45 out of 418 signatories (11%) required submitting a monitoring report as of September 2015 have reported the full progress report.

Monitoring inventories enable to track the evolution of GHG emissions in local authorities territories as well as changes in energy consumptions patterns, and to compare estimated impacts of the actions against actual results.

This report illustrates main statistical indicators based on data provided by signatories in the monitoring reports submitted as of September 2015.

[1] The full description of the CoM commitments can be found in the CoM website: http://www.covenantofmayors.eu/index_en.html

1. Introduction

The "Covenant of Mayors: Monitoring Indicators" report provides an assessment of progress made by local authorities, signatories of Covenant of Mayors initiative as of September 2015 towards their climate mitigation target.

By joining the CoM initiative, signatories commit themselves to submitting to the European Commission the following reports (Bertoldi et al. 2010):

Action plan: called Sustainable Energy Action Plan (SEAP), has to be submitted within one year after the adhesion to the initiative and includes:

- the inventory: it is based on the data collection of energy consumptions /production and greenhouse gas emissions in the local territory. The starting point against which the target is set is called Baseline Emission Inventory (BEI).
- the action plan for 2020: it is based on the inventory results, identifying the actions to be implemented for reaching the CO2 reduction target.

Monitoring: the monitoring process is an important part of the Covenant of Mayors commitments, which allows to measure progress toward the targets set in the action plan. It can be of two types:

- a qualitative monitoring report, at least every second year after submission of the action plan.
- a full quantitative implementation report, at least every fourth year after submission of the action plan, for evaluation, monitoring and verification purposes.

Both action and monitoring reports are submitted via on-line templates available on the CoM web-site signatory's restricted area. All the indicators presented in this document are elaborated based on data reported by the signatories as of September 2015. The Joint Research Centre (JRC), in charge of the scientific support of the CoM initiative has started to publish a series of yearly assessment reports on the initiative, which may be downloaded from the website: http://iet.jrc.ec.europa.eu.

Based on the analysis of data submitted by local authorities as of September 2015, in the following chapters are reported their progress towards '20-20-20' climate and energy targets.

- Chapter 2 analyses the main statistics of CoM signatories with a submitted progress report in terms of population coverage/region, main drivers of the trends. In addition, taking into account the harmonized definition of degree of urbanization of Local Administrative Units for Europe based on (Dijkstra L. & Poelman, 2012), by OECD – European Commission 2012, CoM signatories in the data set were classified into categories according to those definitions.
- Chapter 3 provides detailed information on current progress towards GHG emission targets. All the GHG emission occurred in the local territory, with the exception of the industry, are recommended to be included in the baseline emission inventory. The industry sector comprises only small industry, not included in the European Emissions Trading scheme.
- Chapter 4 analyses progress towards reducing energy consumption and contribution of local authorities in achieving the national energy efficiency objectives for 2020. Furthermore, in this chapter are provided detailed information on local electricity and heat/cold production.
- Chapter 5 analyses progress made towards increasing the renewable energy sources usage in local authorities.

The annex provides detailed information on the monitoring signatories with the harmonised related information on Local Administrative Units 2 code, name, geographical coordinates, area and degree of urbanization with Eurostat

2. General Statistics on Covenant of Mayors Monitoring phase

As of September 2015, 5 951 local authorities signed the Covenant of Mayors (CoM), for a total of ca. 172 million inhabitants in the EU-28, and ca. 208 million inhabitants in the whole initiative.

Table 1 shows the number of CoM signatories with the related population per region. 76% of these, i.e. 4 542 local authorities have submitted a Sustainable Energy Action Plan, representing ca. 166 million of inhabitants (80% of the total signatories population).

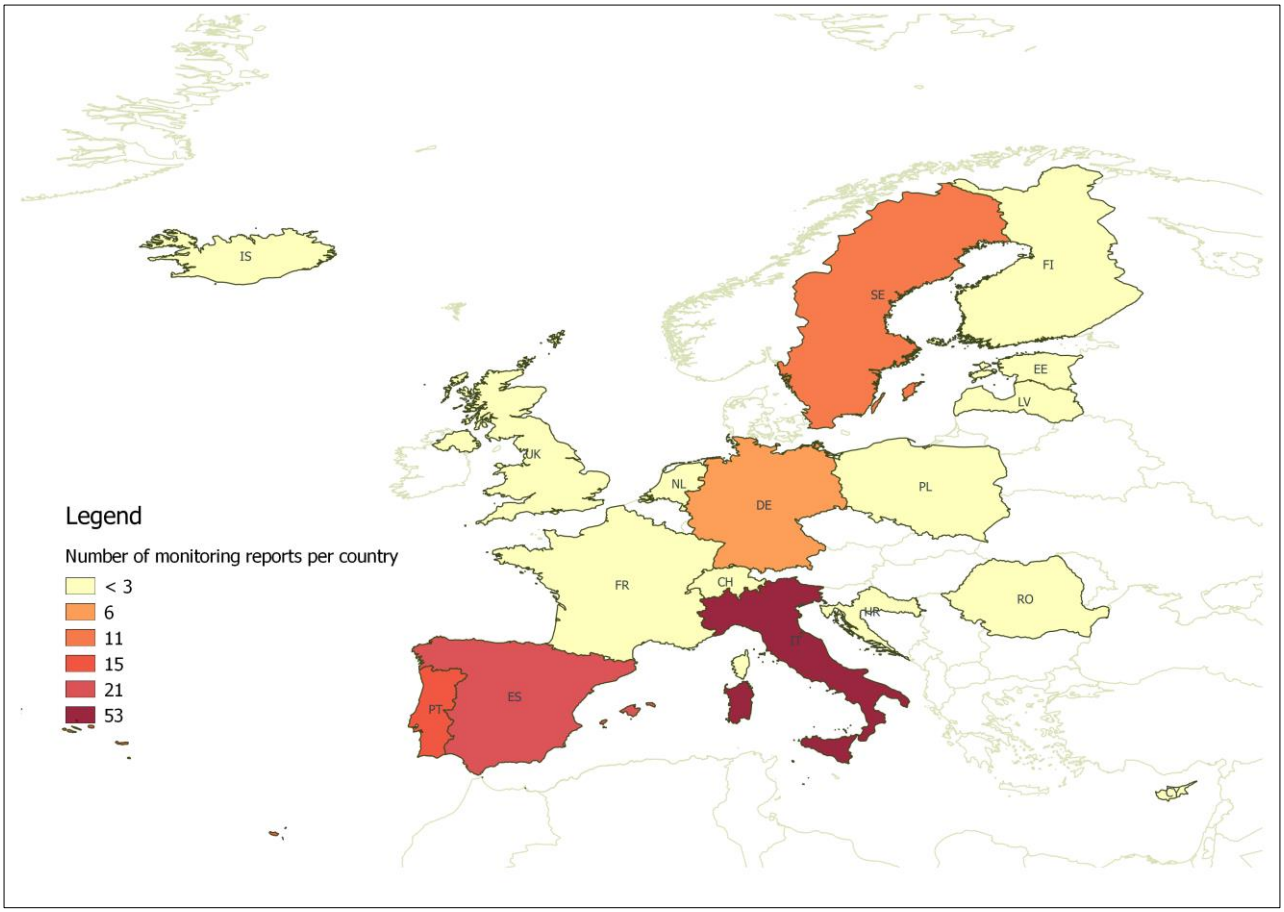
Table 1. CoM signatories and submitted SEAPs per region

region	Number of signatories	Signatories inhabitants	Number of signatories with SEAP submitted	Inhabitants of signatories with SEAP submitted
EU-28	5,712	172,111,832	4,441	149,739,937
Europe-non EU[2]	60	15,305,436	41	8,251,853
Central Asian[3]	8	1,403,685	2	377,486
Eastern partnership[4]	141	14,594,610	56	6,653,986
Southern Mediterranean Countries[5]	27	4,026,541	1	903,485
Rest of the World	3	711,712	1	360,000
Total	**5,951**	**208,153,816**	**4,542**	**166,286,747**

The following figure (fig. 1) shows the number of CoM signatories per country with a monitoring report submitted as of September 2015.

[2] Switzerland, Norway, Iceland and non EU Balkan countries
[3] Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
[4] Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova, Ukraine
[5] Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia

Figure 1. Covenant of Mayors signatories with a monitoring report per country



As of September 2015, 122 signatories have submitted a full monitoring report (table 2), representing 3% of the signatories with an action plan (SEAP), for a total ca. 11 million inhabitants (7% in terms of population). Only 45 out of 418 signatories (11%) obliged to submit a monitoring report as of September 2015 have reported the full progress report.

Local Authorities in nine countries (Switzerland, Estonia, Finland, France, United Kingdom, Croatia, Island, Netherland and Poland) have submitted only one monitoring emission inventory. Latvia and Romania have submitted two monitoring emission inventories, while Cyprus three.

Countries with a higher number of monitoring reports are Germany with six, Sweden with eleven, Portugal with fifteen, Spain with twenty-one and Italy with fifty-three monitoring reports.

By comparing the number of full monitoring reports with the number of submitted SEAPs, there is a different feature coming up. As it is shown in figure 2, countries like Italy, France and Spain have a share of 3% of monitoring reports on number of SEAPs submitted, while Romania, Portugal and United Kingdom have a share of 10%.

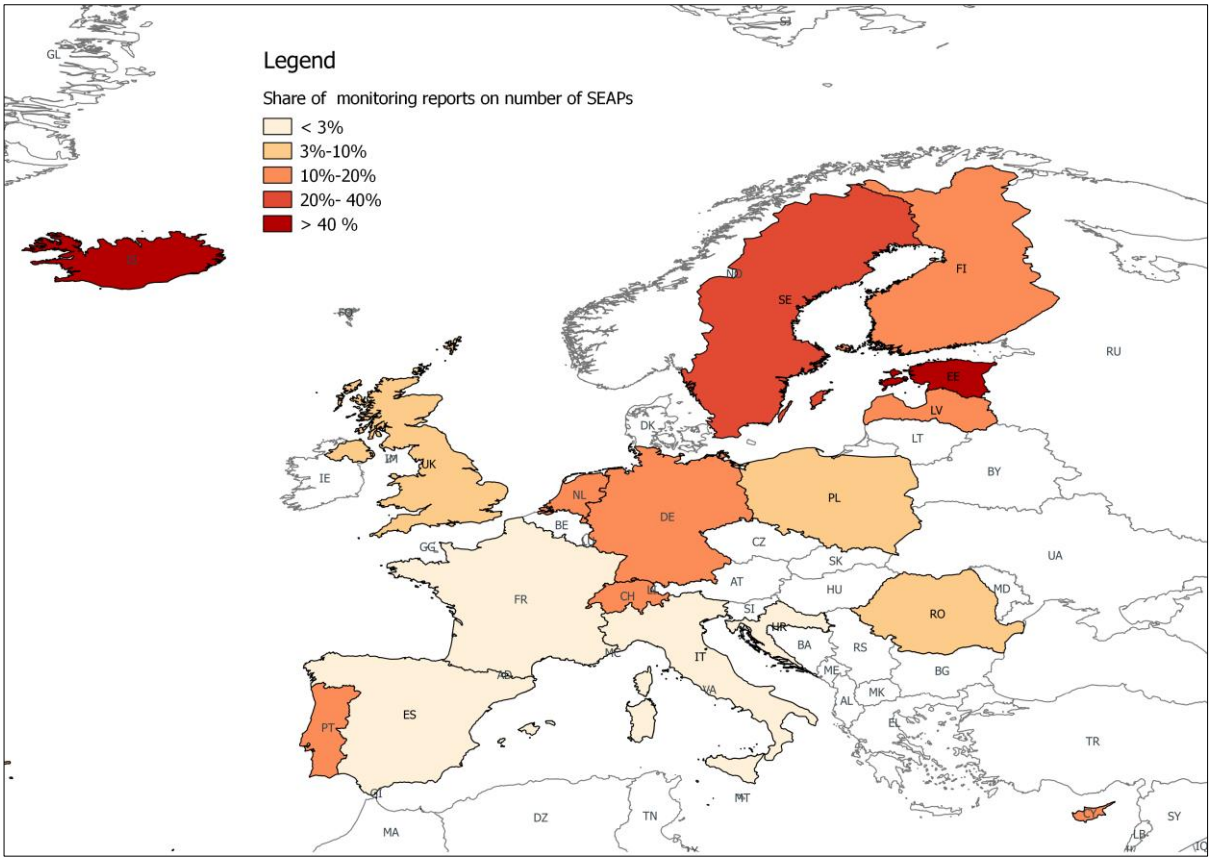
Table 2. CoM signatories with a submitted baseline and monitoring emission inventory

region	Country code	Number of signatories with a submitted Baseline Emission Inventory	Population of signatories with a submitted Baseline Emission Inventory	Number of signatories with a submitted Monitoring Emission Inventory	Population of Signatories with a submitted Monitoring Emission Inventory
EU-28	DE	57	17,419,470	6	2,539,079
	EE	2	429,842	1	400,000
	ES	1,144	24,510,410	21	2,276,673
	FR	75	14,774,435	1	34,566
	HR	57	1,907,944	1	788,850
	IT	2,469	30,673,018	53	826,336
	CY	21	462,376	3	82,900
	LV	19	1,097,101	2	96,087
	NL	15	3,339,002	1	161,286
	PL	31	3,474,133	1	22,916
	PT	89	4,511,253	15	742,266
	RO	45	3,020,830	2	150,417
	FI	8	1,818,313	1	490,872
	SE	50	4,159,732	11	1,657,796
	UK	31	16,649,223	1	281,500
	EU other	357	24,838,111	-	-
Europe non EU	CH	8	795,181	1	366,809
	IS	1	118,427	1	116,642
Other		92	15,633,202	-	-
Total		**4,542**	**166,286,747**	**122**	**11,034,995**

There are 11 monitoring reports submitted by Swedish signatories, out of 44 SEAPs, representing 25%.

There are two signatories from Estonia with a SEAP submitted, and one monitoring report, therefore the share of monitoring is 50%. The only signatory from Iceland (Reykjavik) has submitted both the SEAP and the corresponding monitoring report.

Figure 2. Share of monitoring reports on number of SEAPs submitted



Taking into account the harmonized definition of degree of urbanization of Local Administrative Units for Europe based on (Dijkstra L. & Poelman, 2012), by OECD – European Commission 2012, CoM signatories in the data set were classified into categories according to those definitions.

Table 3 shows the number of signatories with a monitoring report and the relative information on degree of urbanization, region and country.

The elaboration of the data has been as follows:

1. Extraction from Covenant of Mayors database of signatories with monitoring reports
2. Harmonization with the databases extracted from Eurostat website (http://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units) of Commune centroids 2010
3. Harmonization with databases extracted from Eurostat (http://ec.europa.eu/eurostat/ramon/miscellaneous/index.cfm?TargetUrl=DSP_DEGURBA of Degree of Urbanisation (DEGURBA) - Local Administrative Units)

The degree of urbanisation (DEGURBA) creates a classification of all LAU2s (Local Administrative Units - Level 2/municipalities) into the following three categories:

- Densely populated area: (alternate name: cities or large urban area): Contiguous grid cells of 1km^2 population grid with a density of at least 1 500 inhabitants per km^2 and a minimum population of 50 000.
- Intermediate density area (alternate name: towns and suburbs or small urban area): clusters of contiguous grid cells of 1km^2 population grid with a density of at least 300 inhabitants per km^2 and a minimum population of 5 000.
- Thinly populated area (alternate name: rural area): More than 50% of the population lives in rural grid cells.

34% of the CoM signatories with a submitted monitoring report as of September 2015 are densely populated areas i.e. cities or large urban areas, representing 85% of the CoM signatories population. Spanish large urban areas are the most active cities in the monitoring process, with a share of 27 % of large urban areas.

The majority, 44%, in terms of numbers of the CoM signatories with a submitted monitoring report as of September 2015 are intermediate populated areas i.e. small urban areas, representing 11% of the CoM monitoring signatories' population. Italian signatories are the most active small urban areas in the monitoring process, with a share of 59% of signatories categorized as small urban areas. On the other hand, CoM signatories classified as thinly populated areas i.e rural areas represent a small share either in terms of numbers (22% of the total monitoring signatories), or 4% in terms of population. Italian signatories are the most active rural areas in the monitoring process, with a share of 52% of monitoring signatories.

Table 3. Degree of urbanization of CoM signatories with a monitoring report submitted

region	Country code	Densely populated area / cities or large urban area	Intermediate density area/ towns and suburbs or small urban area	Thinly populated area/ rural area	Total of monitoring reports
EU-28	DE	4	2	-	6
	EE	1	-	-	1
	ES	11	7	3	21
	FR	1	-	-	1
	HR	1	-	-	1
	IT	7	32	14	53
	CY	2	-	1	3
	LV	1	1	-	2
	NL	1	-	-	1
	PL	-	1	-	1
	PT	2	8	5	15
	RO	1	1	-	2
	FI	1	-	-	1
	SE	5	2	4	11
	UK	1	-	-	1
Europe non EU	CH	1	-	-	1
	IS	1	-	-	1
Total		**41**	**54**	**27**	**122**

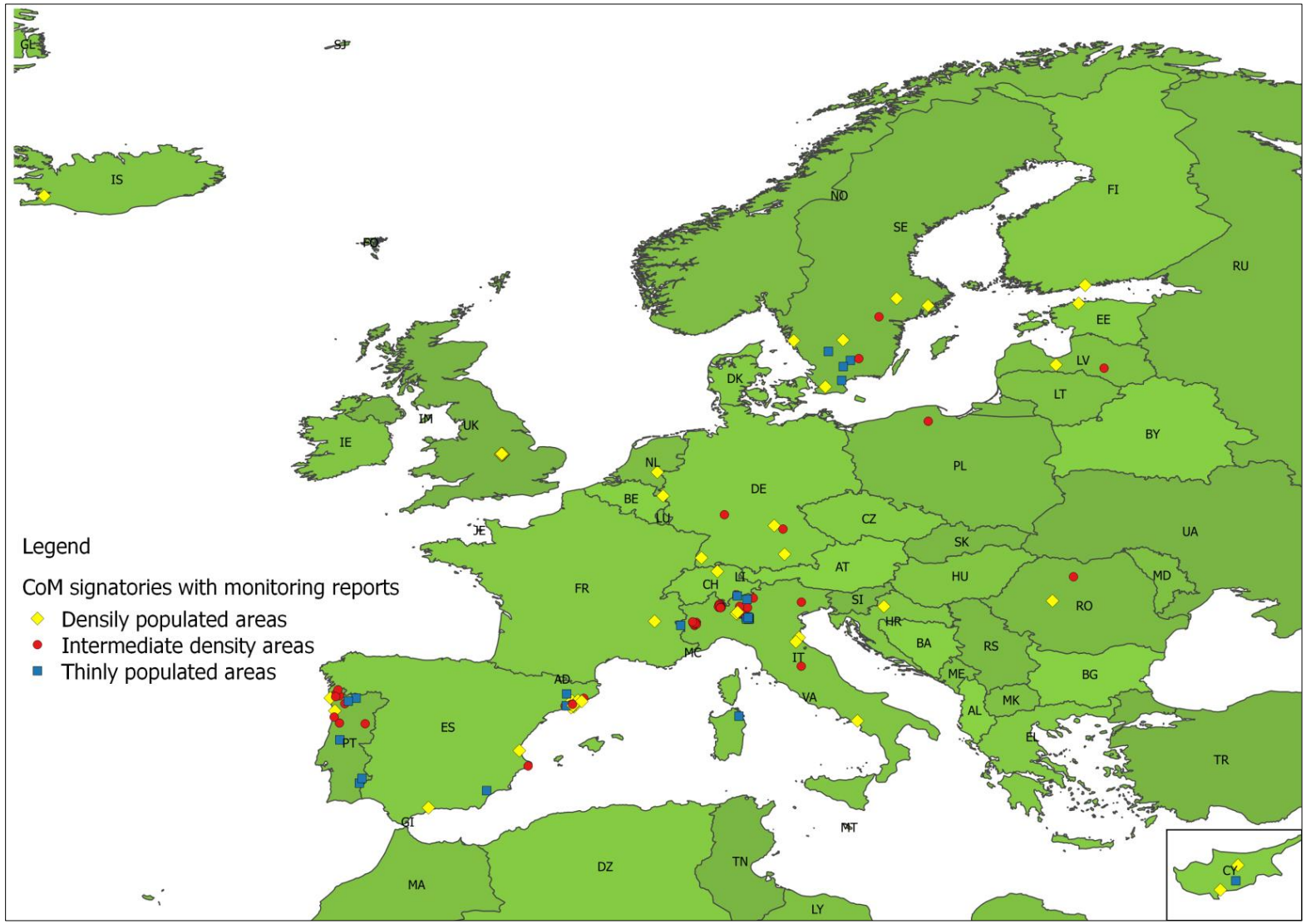
The Annex lists all the monitoring signatories with the harmonised related information on Commune ID code or Local Administrative Unit 2 code, name, geographical coordinates, area and degree of urbanization with Eurostat. The following figure (fig 3) shows the number of signatories with a monitoring report submitted as of September 2015 and the related information on the degree of urbanization.

Monitoring energy consumption and CO2 emissions allows understanding whether signatories are on track to reach the target and to identify factors that affect results, such as population changes. In table 4, the overall population of signatories in the inventories is compared to the overall population of the same signatories with full submitted monitoring reports. On average there is an increase of 8% of population from baseline to monitoring emission inventories.

Table 3. Dynamics of population from baseline to monitoring emission inventories

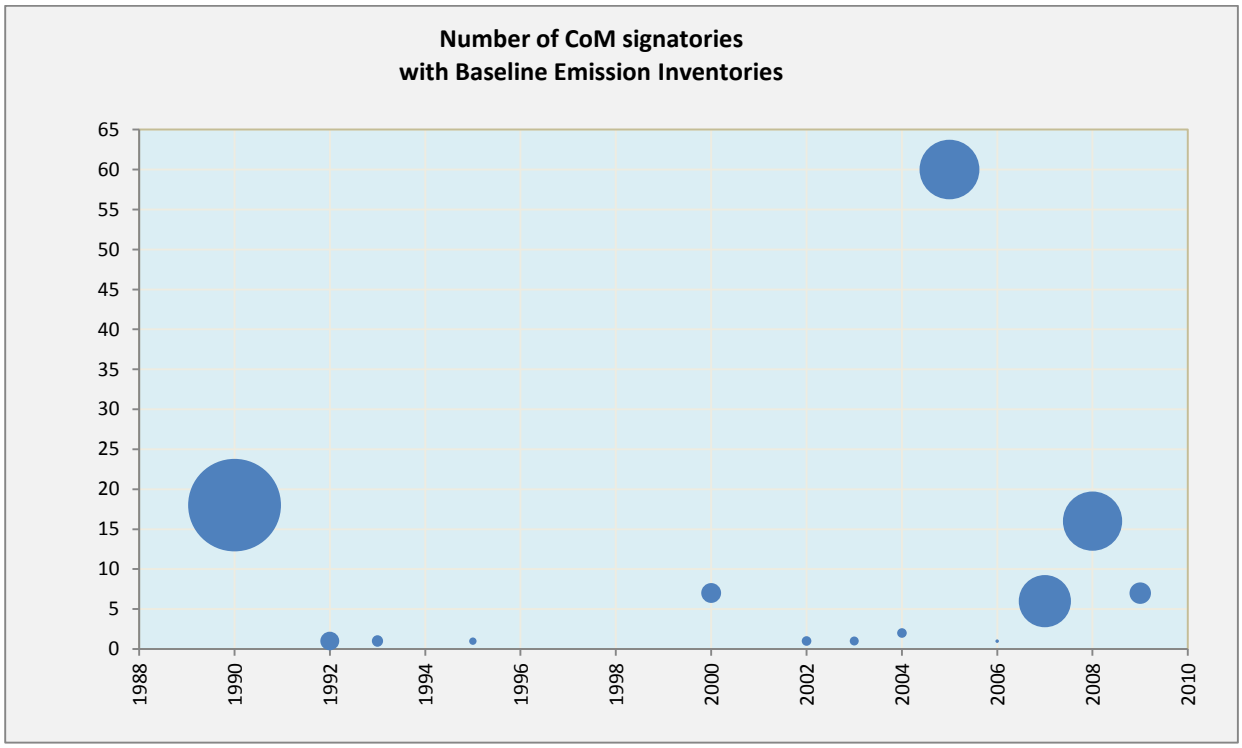
Region	Countries	Population of signatories in Baseline Emission Inventory	Population of signatories in Monitoring Emission Inventory	Change in population from Baseline to Monitoring Emission Inventory
EU-28	DE	2,539,079	2,749,721	8%
	EE	400,000	411,980	3%
	ES	2,276,673	2,334,467	3%
	FR	34,566	35,900	4%
	HR	788,850	792,000	-0,4%
	IT	826,336	859,979	4%
	CY	82,900	87,331	5%
	LV	96,087	82,553	-14%
	NL	161,286	166,443	3%
	PL	22,916	23,701	3%
	PT	742,266	730,416	-2%
	RO	150,417	149,100	-1%
	FI	490,872	612,594	25%
	SE	1,657,796	2,039,048	23%
	UK	281,500	331,600	18%
Europe non EU	CH	366,809	394,012	7%
	IS	116,642	121,116	4%
Total		**11,034,995**	**11,921,961**	**8%**

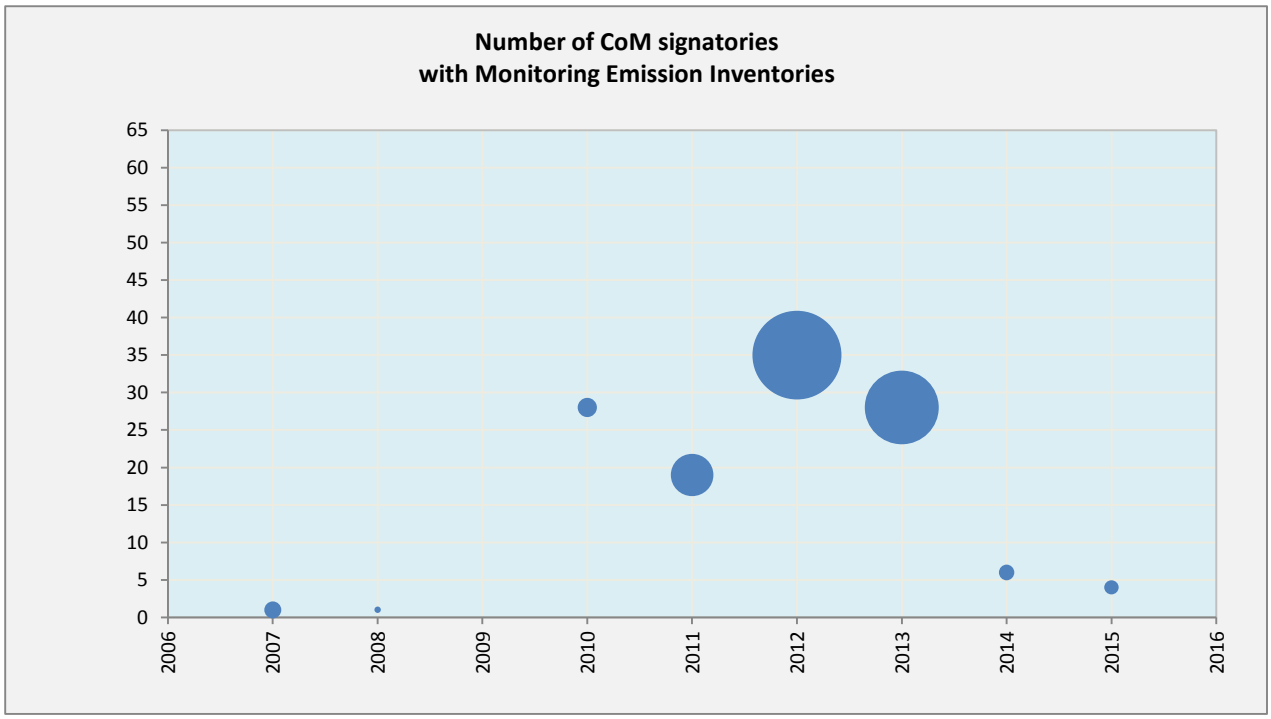
Figure 3. Covenant of Mayors signatories with monitoring reports and degree of urbanization



In the guidebook "How to develop a Sustainable Energy Action Plan", (Bertoldi P., 2010) a general recommendation was made to use 1990 as the year for the BEI reference; nevertheless signatories are able to choose the closest subsequent year for which reliable data could be gathered. As a result, different years have been chosen as baseline years for inventories. The majority of population (46%) in CoM signatories have chosen as BEI inventory year 1990 (19/122), while 45% (34/122) of population MEI inventory years 2012 as shown in figure 4.

Figure 4. Reference years in baseline and monitoring emission inventories





3. Progress towards GHG emission targets

Based on the report 'Trends and Projections in Europe 2015: Tracking progress towards Europe's climate and energy target' (EEA, 2015) the EU is on course to meet the 2020 targets for GHG emissions. In 2014, the estimates reported by Member states indicate that GHG emissions reductions reached 23% compared to 1990 levels. Most of the savings in GHG emissions are expected to take place in the EU ETS, which currently represent 45% of the total emissions.

Local Authorities in Covenant of Mayors initiative are putting in place with a bottom-up approach the 2020 targets for GHG emissions. The focus of the Covenant of Mayors inventories are the main non ETS sectors under the direct influence of the local authority (such as households, transport, services). In addition to the non-ETS sectors, the CoM inventories also account for indirect emissions associated with consumption of electricity and heat/cold (as final product delivered to the final consumer). As a consequence, a certain share of emissions arising from power generation by plants included in the EU ETS scheme are computed in the inventories and addressed via the SEAPs.

Although the minimum commitment was to reduce the current emissions by 20% by 2020, CoM signatories who have already submitted the progress report, i.e. a monitoring inventory reached an overall reduction of 23% (table 5) compared to the baseline inventory.

Table 4. Per capita reduction of GHG emissions from baseline to monitoring emission inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
GHG emissions inventories [tCO2-eq/y]	63,331,717	48,980,985
Absolute reduction of GHG emissions from baseline to monitoring emission inventories	**23%**	
Per capita GHG emissions [tCO2-eq/p y]	5.74	4.11
Per capita reduction of GHG emissions from baseline to monitoring emission inventories	**28%**	

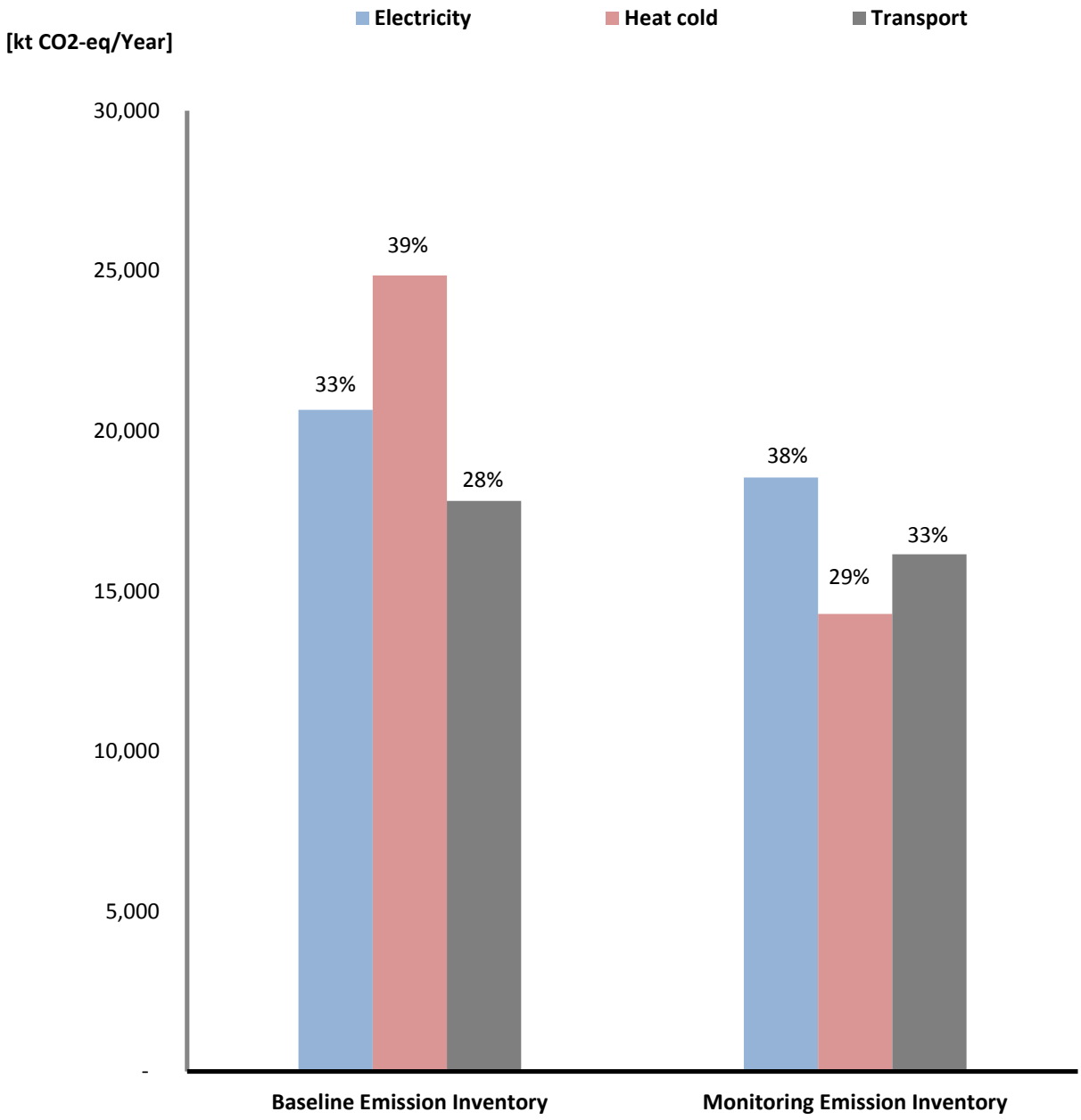
The CoM average monitoring results on GHG emissions reductions seem particularly consistent with the EEA's report 'Trends and Projections in Europe 2015: Tracking progress towards Europe's climate and energy target' (EEA, 2015), despite the differences on CoM sectors coverage and different inventory years.

These results underline the interconnected nature of Climate and Energy mitigation actions adopted at local level. The CoM signatories adopted a range of policies and measures in improving energy efficiency though building regulations, increasing of renewable energy share, and a gradual transformation to more efficient transportation.

The 23% decrease in GHG emissions between baseline and monitoring years was driven by (figure 5):

- GHG emission due to electricity consumption decreased by 10% from baseline to monitoring years.
- GHG emission in buildings for heating and cooling decrease by 46% from baseline to monitoring years.
- GHG emission in the transport sector decrease by 9% from baseline to monitoring years.

Figure 5. Evolution of GHG emission per sector from baseline to monitoring emission inventories



Note: the percentages in Figure 5, refers to the shares of GHG emissions of the sector on total GHG emissions.

The drop of GHG emissions between baseline and monitoring emission inventories resulted from the combination of several factors as energy efficiency improvement, increase of renewables, demographic growth, variation on weathers conditions , economic growth etc. The relative effects of energy efficiency improvement and the progress on renewables are treated separately in the chapters 4 and 5, while the demographic growth is taken into account in the calculation of the per capita indicators.

4. Progress on Energy Efficiency

Local Authorities in Covenant of Mayors initiative are putting in place with a bottom-up approach the targets of Energy Efficiency Directive. The Energy Efficiency Directive (Energy Efficiency Directive 2012/27/EU , 2012) specifically acknowledges the Covenant of Mayors initiative and the role of local governments in achieving significant energy savings, and calls for Member States to encourage municipalities and other public bodies to adopt integrated and sustainable energy efficiency plans (SEAPs) (preamble 18).

The Covenant of Mayors signatories have been reducing their final energy consumptions since 1990. Compared to the baseline inventories, final energy consumptions have dropped by 14% on absolute value (table 5). Taking into account that signatories' population has changed from baseline to monitoring inventory year, the per capita final energy consumptions have dropped by 20%.

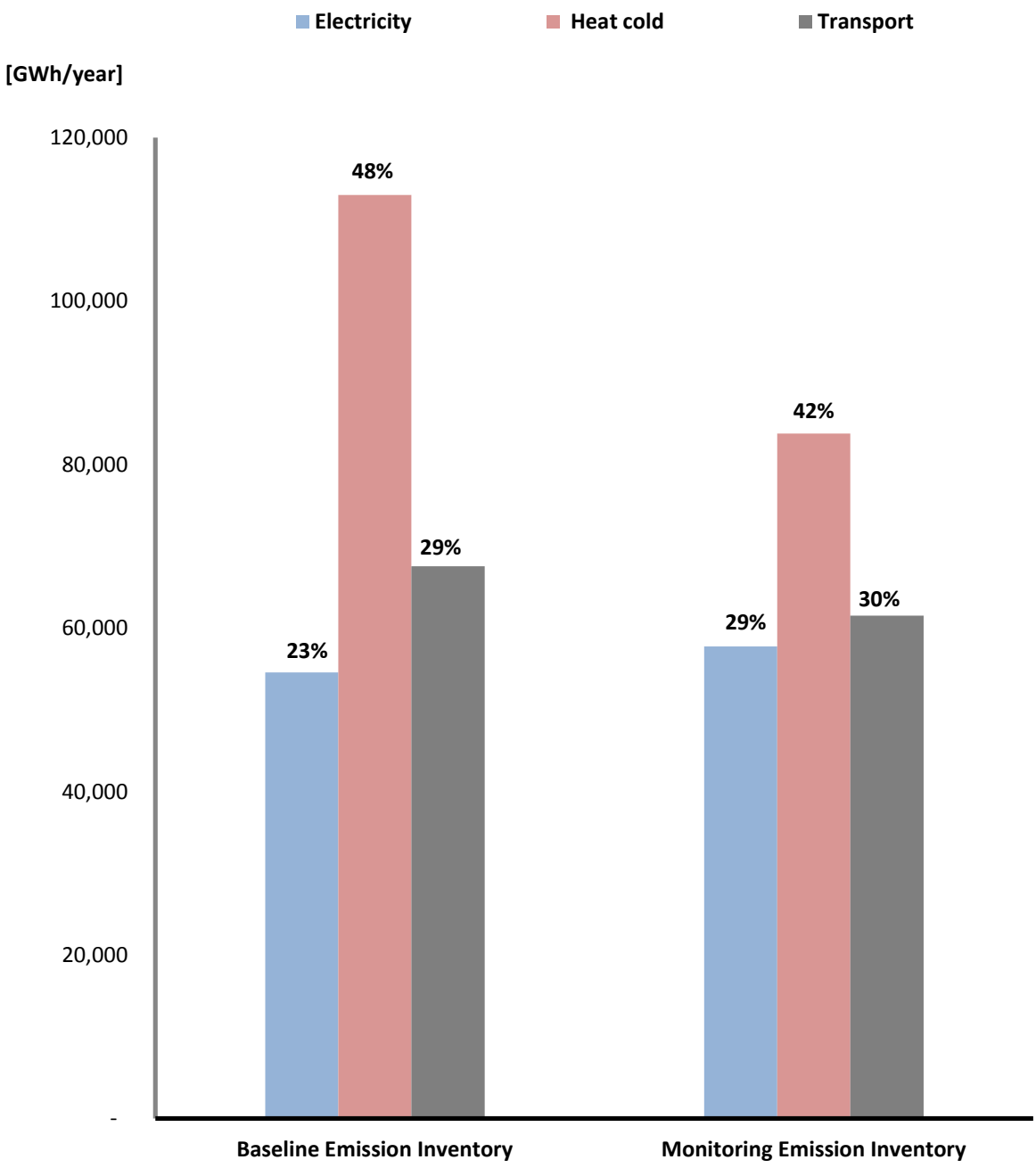
Table 5. Evolution of final energy consumptions from baseline to monitoring emission inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
Final energy consumptions in Inventories [MWh/y]	233,974,612	201,897,758
Absolute reduction of final energy consumption from baseline to monitoring inventories	**14%**	
Per capita final energy consumption [MWh/p year]	21.20	16.93
Reduction of per capita final energy consumption from baseline to monitoring inventories	**20%**	

The 14% decrease in final energy consumptions between baseline and monitoring years was driven by (Figure 6):

- Electricity consumption increase by 6% from baseline to monitoring years.
- Final energy consumption in buildings for heating and cooling decrease by 26% from baseline to monitoring years.
- Energy consumption in the transport sector decrease by 9% from baseline to monitoring years.

Figure 6. Final energy consumptions per sector in baseline and monitoring emission inventories



Note: the percentages in Figure 6, refers to the shares of final energy consumption of the sector on total final energy consumption.

4.1. Electricity

Electricity consumption

In CoM signatories electricity consumption increased by 6%, from a share of 23% on final energy consumption in baseline inventories to 29% in monitoring inventories (table 6). This trend can be explained by higher living standards and a growing demand for electrical appliances.

Table 6. Evolution of electricity consumption from baseline to monitoring emission inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
Electricity consumption [MWh/year]	54,586,797	57,761,130
Increase of electricity consumption	**6%**	
Final energy consumptions [MWh/y]	233,974,612	201,897,758
Increase of electricity consumption on final energy consumption	23%	29%

Electricity production

In comparison to baseline emission inventories the local electricity production increased of 45% (table 7), from a share of 16% on electricity consumption in baseline inventories to 21% in monitoring inventories.

Table 7. Evolution of local electricity production from baseline to monitoring emission inventories

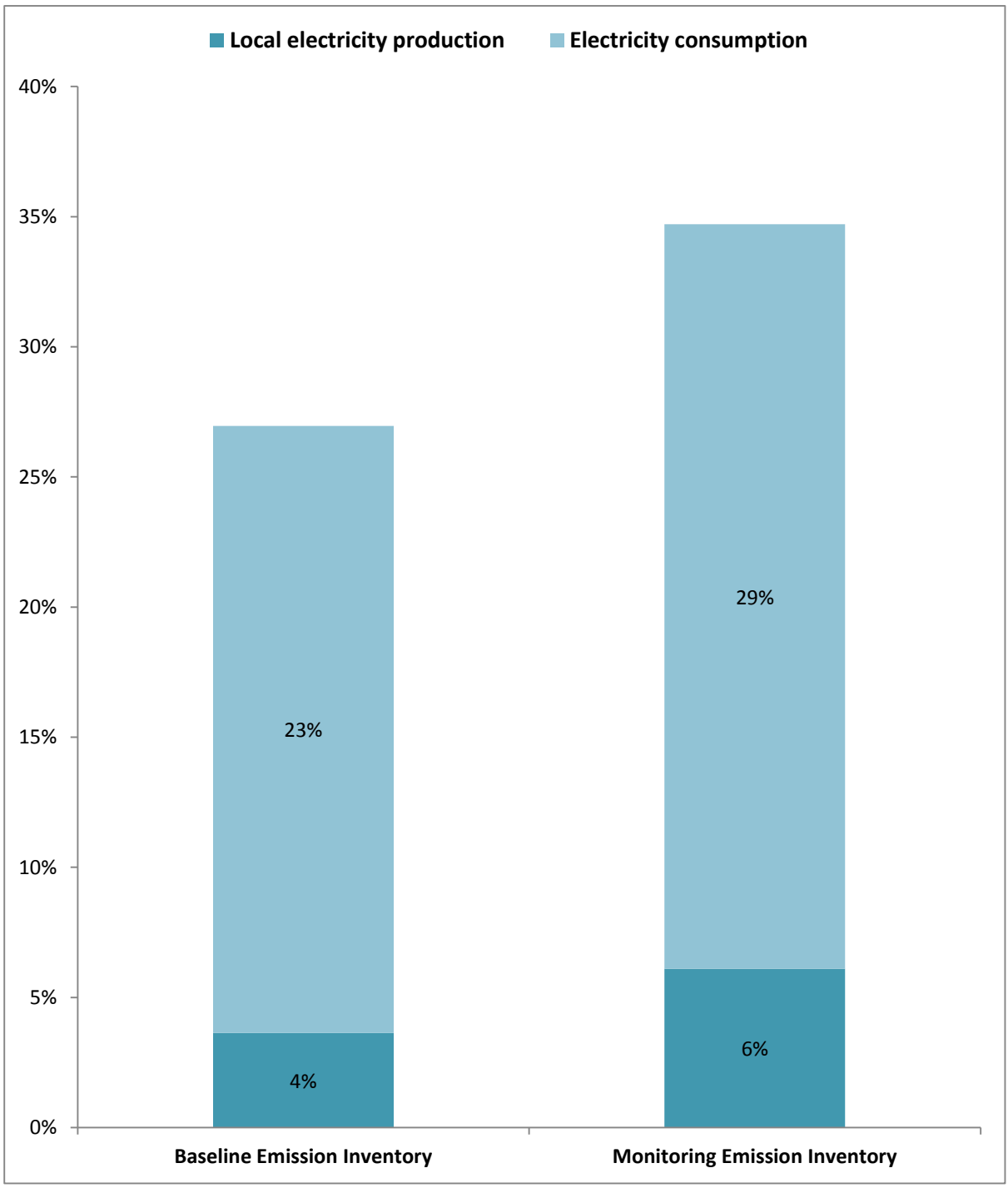
	Baseline Emission Inventory	Monitoring Emission Inventory
Local electricity production [MWh/y]	8,496,069	12,321,761
Increase of local electricity production	**45%**	
Electricity consumption [MWh/year]	233,974,612	201,897,758
Shares of local electricity production on on final energy consumption	4%	6%

The Energy Efficiency Directive asks Member States to take adequate measures for efficient district heating and cooling infrastructure to be developed and/or to *accommodate the development of high-efficiency cogeneration* ... (article 14).

CoM signatories, in close collaboration with local utilities for sustainable energy systems in their territories, have been able to implement measures related to development of high-efficiency cogeneration power plans.

The 6% increase of electricity consumption between baseline and monitoring years was mainly produced by the increase of local production of electricity from CHP power plants (Figure 7):

Figure 7. Shares of electricity consumptions and production on final energy consumption in baseline and monitoring emission inventories



4.2. Heating and cooling

Heating and cooling consumption

Heating and cooling consumption has dropped in Covenant of Mayors signatories Compared to the baseline inventories, heating and cooling consumptions has dropped by 26% on absolute value (table 8), from a share of 48% on final energy consumption in baseline inventories to 42% in monitoring inventories.

Table 8. Evolution of final energy consumptions for heating and cooling from baseline to monitoring emission inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
Final energy consumption for heating and cooling [MWh/y]	112,979,666	83,807,310
Reduction of heating and cooling consumptions	**26%**	
Final energy consumptions [MWh/y]	233,974,612	201,897,758
Shares of heating and cooling consumptions on final energy consumption	48%	42%

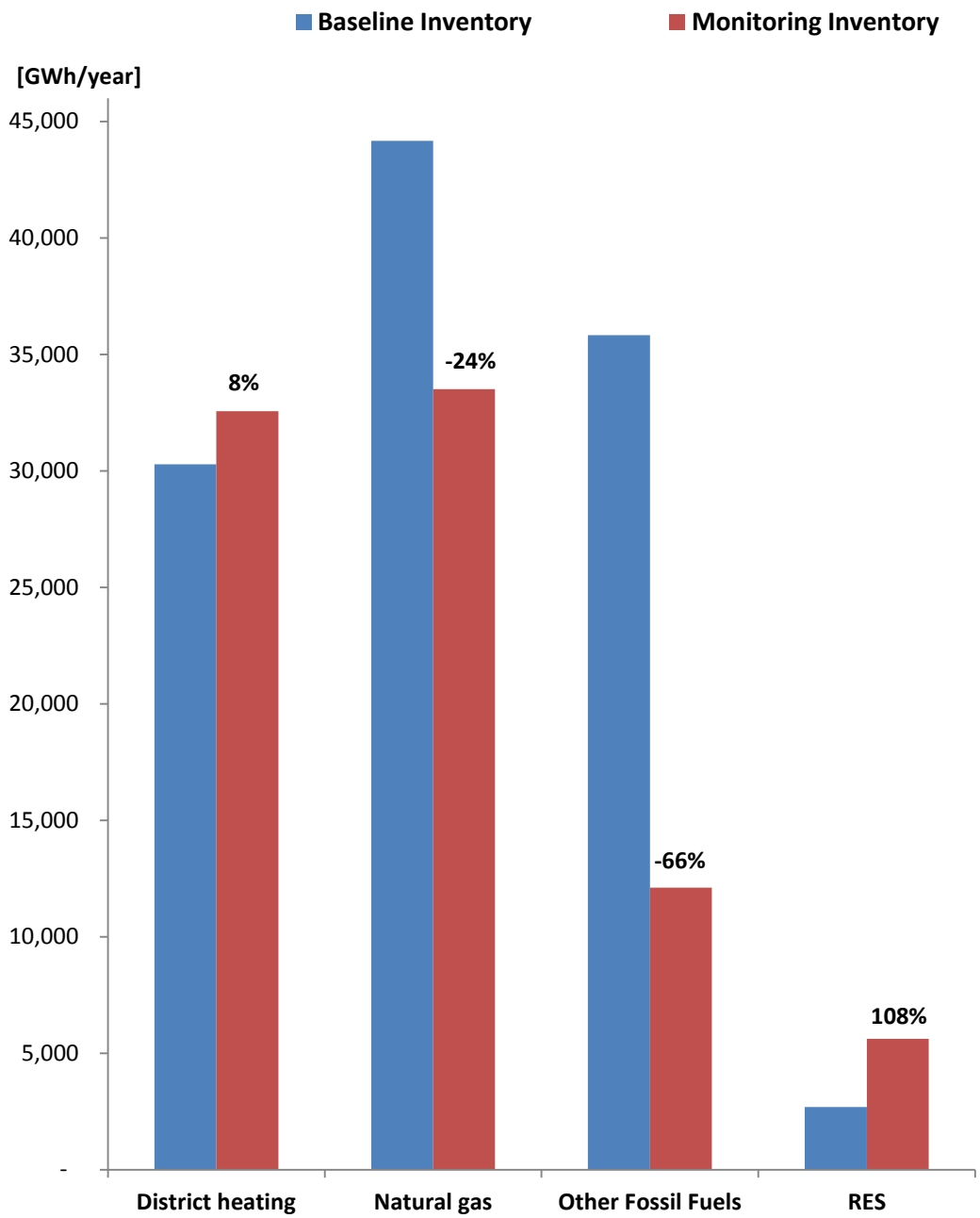
The 26% decrease in heating and cooling consumption between baseline and monitoring years was mainly driven by energy efficiency measures in the building sector (Figure 8):

- Heating and cooling consumption using natural gas in buildings decreased by 24% from baseline to monitoring years;
- Heating and cooling consumption using other fossil fuels (different from natural gas) in buildings decreased by 66% from baseline to monitoring years.

While, there is an increase of

- Heating consumption from district heating networks by 8% from baseline to monitoring years;
- Heating consumption using renewable sources by 108% from baseline to monitoring years.

Figure 8. Heating and cooling consumption in Building sector per type of fuel/carrier in baseline and monitoring inventories



Note: the percentages in Figure 7, refers to the variations from baseline to monitoring Inventories.

Sustainable energy action plans can yield considerable energy savings, especially if they are implemented by energy management systems that allow the public bodies concerned to better manage their energy consumption.

In the monitoring phase the energy management systems is the major policy instrument used by local authorities to reach the 2020 energy and climate targets. Furthermore, some Covenant signatories use building code to impose more stringent energy performance requirements than those applicable at national level. In the monitoring phase the building code is the second policy instrument used by local authorities to reach the 2020 energy and climate targets.

The city of Växjö in Sweden is a representative case of implementation of these policies (City Växjö).

Växjö (SE)

Strategy A: Energy efficient renovation of existing building stock
To reach the energy efficiency targets in the environmental programme, large-scale actions must be carried out in existing building stock, since it is here the largest part of energy in real estate sector is used… we therefore strive to reduce energy use in our existing building stock. Action example: refurbishment of municipal buildings (20% more efficient).

Heating and cooling production

In comparison to baseline emission inventories the local heat production in CoM signatories increased by 16% on absolute value (table 9), from a share of 29% on heating and cooling consumption in baseline inventories to 46% in monitoring inventories.

Table 9. Evolution of local heating and cooling production from baseline to monitoring emission inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
Local district heat production from DH [MWh/y]	30,280,483	32,562,144
Local decentralized heat production from solar, geothermal and biomass [MWh/y]	2,699,110	5,620,640
Total Local heat production [MWh/y]	32,979,593	38,182,783
Increase of Local heat production	**16%**	
Final energy consumption for Heating and Cooling [MWh/y]	112,979,666	83,807,310
Shares of local heat production on heating and cooling consumption	29%	46%

The 16% increase in local heat production between baseline and monitoring years was mainly driven by:

- Local District Heating production increase of 8% from baseline to monitoring years;
- Local decentralized heat production from solar, geothermal and biomass almost doubled from baseline to monitoring years.

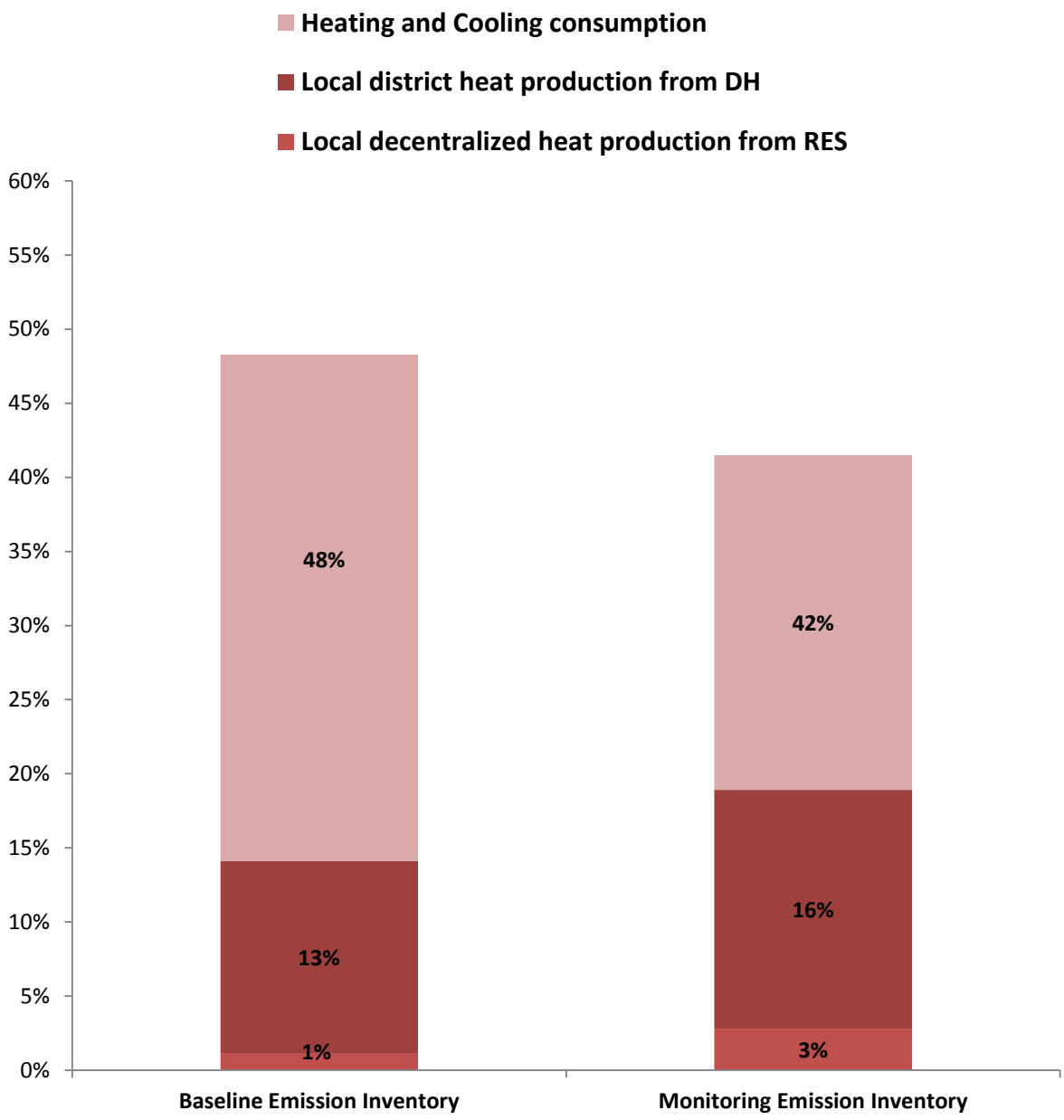
The Energy Efficiency Directive asks Member States to take adequate measures for efficient district heating and cooling infrastructure to be developed and/or to accommodate the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources. (article 14).

In conclusion CoM signatories, in close collaboration with local utilities for sustainable energy systems in their territories, have been able to implement measures related to efficient district heating and cooling infrastructures.

The 26% decrease of Heating and Cooling consumption between baseline and monitoring years was mainly produced by (Figure 9)

- lower energy consumption levels and less carbon intensive fuel mix in the building sector, from a share of 48% on final energy consumption in Baseline Inventories to 42% in Monitoring Inventories;
- increase of local district heat production from a share of 13% on final energy consumption in Baseline Inventories to 16% in Monitoring Inventories;
- increase of decentralised heat production from Solar, geothermal from a share of 1% on final energy consumption in Baseline Inventories to 3% in Monitoring Inventories;

Figure 9. Shares of heating and cooling consumption and production on final energy consumptions in baseline and monitoring inventories



4.3. Transport

The transport sector to be fully effective, a gradual transformation of the entire system is required towards greater integration between modes, innovation and deployment of alternative fuels, and improved management of traffic flows through intelligent transport systems.

In the transport sector the gradual transition towards more efficient vehicles is one of the major areas of intervention in CoM local authorities (27% of the total share of actions in the transportation): this is probably not a direct area of intervention for local authorities, but could be indirectly influenced through local mobility planning practices such as limited traffic zones, low emissions zones, designated parking spaces for low emission vehicles, etc..This is followed by modal shift to walking and cycling (17% of the total share) and by modal shift to public transport (13% of the total share).

The trend of energy consumption in the transport sector has dropped in Covenant of Mayors signatories. Compared to the baseline inventories, final energy consumption for transportation has dropped by 9% on absolute value (Table 10).

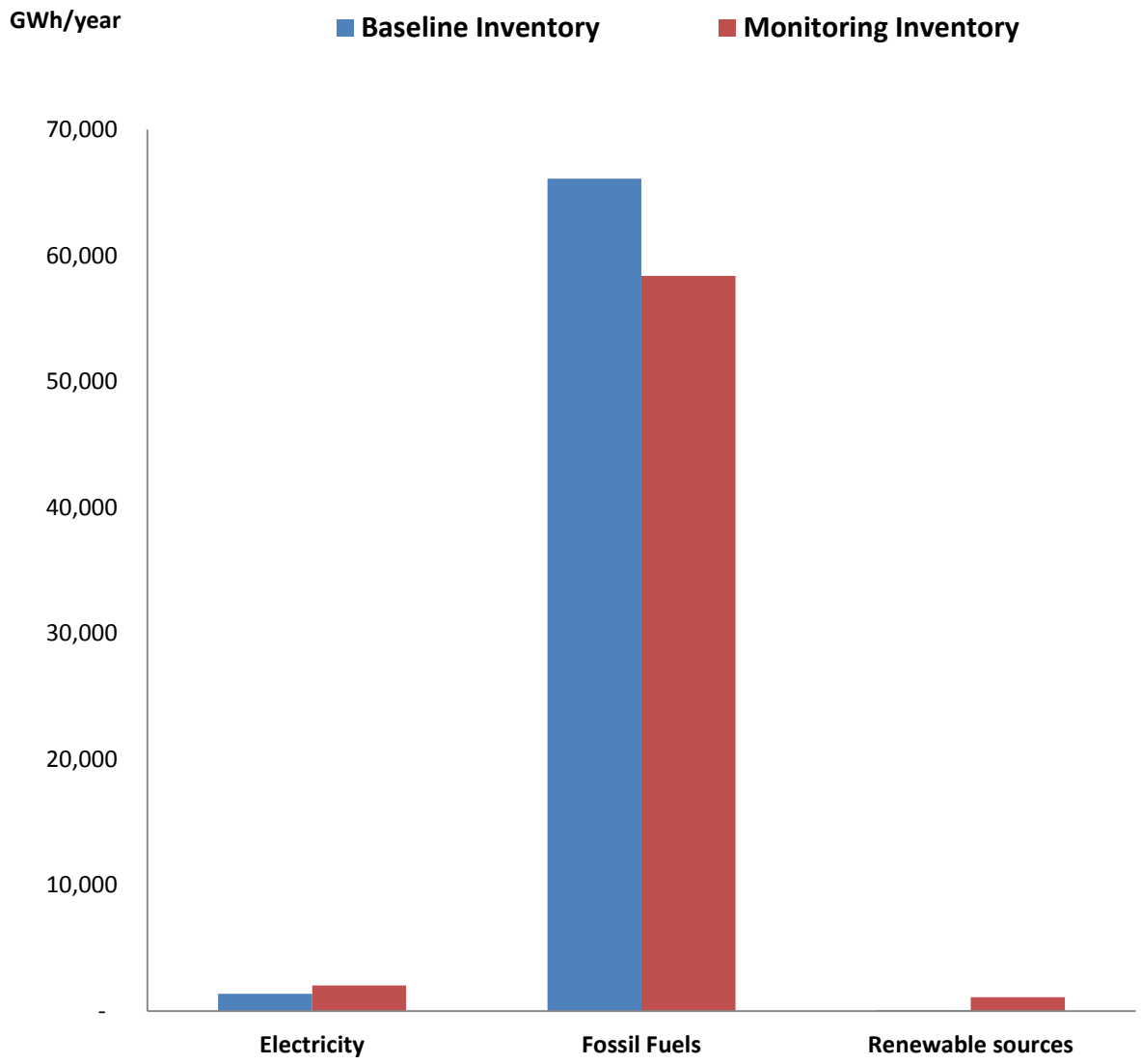
Table 10. Energy consumption in transport sector in baseline and monitoring emission inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
Electricity consumption in transport [MWh/y]	1,359,178	2,029,821
Fossil Fuels consumption in transport [MWh/y]	66,110,386	58,380,413
RES consumption in transport [MWh/y]	79,336	1,099,716
Total energy consumption in transport [MWh/y]	67,548,900	61,509,950
Decrease of energy consumption in transport	**9%**	

The 9% decrease in energy consumption in Transport between baseline and monitoring years was mainly driven by (Figure 10):

- Lower energy consumption from non-renewable sources (12% of reduction on absolute value)
- Increase of Electricity consumption (49% in comparison to baseline consumptions)
- Increase of renewable sources (around 13 times in comparison to baseline inventories)

Figure 10. Energy consumption in transport sector per type of fuel/carrier in baseline and monitoring inventories



5. Progress on renewable energy

Based on the report 'Trends and Projections in Europe 2015: Tracking progress towards Europe's climate and energy target' (EEA, 2015) the share of renewable energy in the EU's gross final energy consumption in 2013 is 13%.

In CoM signatories the final energy consumption using renewable sources has increased around 2.5 times from baseline to monitoring inventories (Table 11).

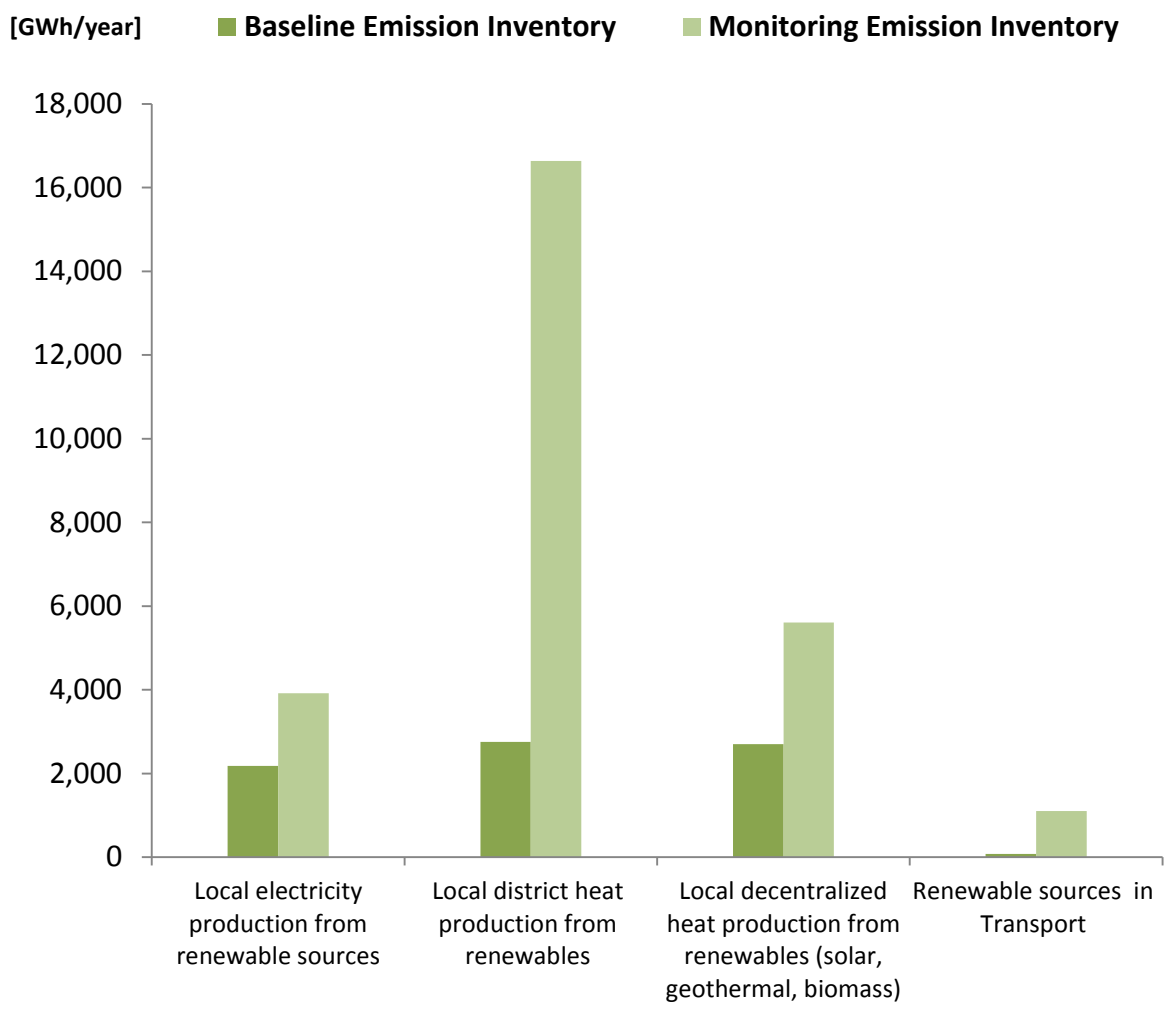
Table 11. Progress on renewable sources from baseline to monitoring inventories

	Baseline Emission Inventory	Monitoring Emission Inventory
Local electricity production from renewable sources [MWh/y]	2,182,003	3,913,353
Local district heat production from renewables [MWh/y]	2,752,317	16,635,427
Local decentralized heat production from renewables (solar, geoth. ,biomass) [MWh/y]	2,699,110	5,609,383
Renewable sources in transport sector [MWh/y]	79,336	1,099,716
Total Local energy production from renewables [MWh/y]	7,712,766	27,257,879
Increase of Local energy production using renewables from baseline to monitoring inventory	**253%**	

The steady increase of the share of renewables in the Covenant of Mayors signatories reflects the following combining trends (Figure 11):

- Local electricity production from renewables increased 79% in monitoring years in comparison to inventory years;
- Local district heat production from renewables increased around five times in monitoring years in comparison to inventory years;
- Local decentralized heat production from renewables (solar, geoth. ,biomass) increased around two times in monitoring years in comparison to inventory years;
- Renewable energy in transport sector increased around 13 times

Figure 11. Evolution of renewables sources in baseline and monitoring inventories

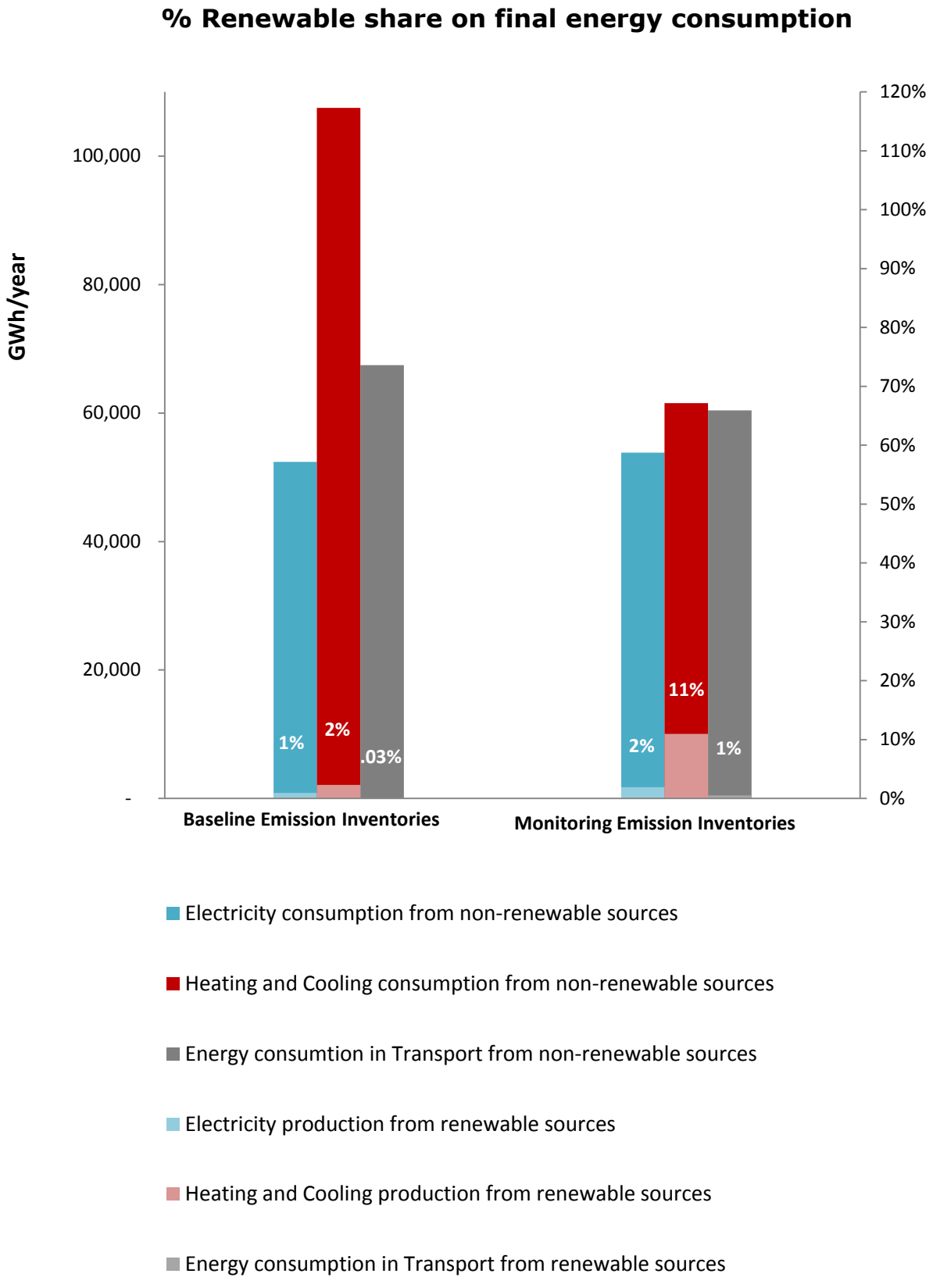


In CoM signatories the share of renewables on final energy consumption increased from 3% in baseline emission inventories to 14% in Monitoring Emission Inventories (Figure 12).

The steady increase of the share of renewables in the Covenant of Mayors signatories reflects the following combining trends:

- Decrease of final energy consumption by 14% on absolute value in monitoring years in comparison to baseline years;
- Electricity consumption from renewables sources increased from a share of 1% on final energy consumptions in Baseline Emission Inventories to 2% in Monitoring Emission Inventories;
- Heating and cooling using renewable sources increased from a share of 2% on final energy consumptions in Baseline Emission Inventories to 11% in Monitoring Emission Inventories;
- Renewable energy in transport sector increased from a share of 0.03% on final energy consumptions in Baseline Emission Inventories to 1% in Monitoring Emission Inventories.

Figure 12. Final energy consumption of renewable and non-renewable energy sources per sector in baseline and monitoring emission inventories



Conclusion

The "Covenant of Mayors: Monitoring Indicators" report provides an assessment of progress made by local authorities, signatories of Covenant of Mayors initiative as of September 2015 towards their climate mitigation and energy targets.

As of September 2015, almost six thousand local authorities have signed the CoM, for a total of ca. 208 million inhabitants in the whole initiative. More than 4 500 local authorities have submitted an action plan (Sustainable Energy Action Plan) for a total of ca. 166 million. Out of these, 122 signatories, representing 3% of the signatories with an action plan, have submitted a monitoring report including a monitoring emission inventory for a total ca. 11 million inhabitants. Only 45 out of 418 signatories (11%) required submitting a monitoring report as of September 2015 have reported the full progress report.

Taking into account the harmonized definition of degree of urbanization of Local Administrative Units for Europe by OECD and European Commission (2012), CoM signatories in the data set were classified into categories according to those definitions. This harmonised dataset allows enhancing the understanding of key factors that affect urban energy and environmental systems such as climate, population density, economic factors etc.

More than a third of the CoM signatories with a submitted monitoring report as of September 2015 (34%) are densely populated areas i.e. cities or large urban areas, representing 85% of the sample in terms of population. While the majority, 44%, in terms of numbers of the CoM signatories with a submitted monitoring report as of September 2015 are intermediate populated areas i.e. small urban areas, representing 11% of the sample in terms of population.

Monitoring inventories enable to track the evolution of GHG emissions in local authorities' territories as well as changes in energy consumption patterns, and to compare estimated impacts of the actions against actual results. Main statistical indicators based on data provided by Covenant of Mayors signatories in the monitoring reports submitted as of September 2015 are reported in the following:

GHG emissions: although the minimum commitment was to reduce the current emissions by 20% by 2020, CoM signatories who have already submitted the progress report, i.e. a monitoring inventory reached an overall reduction of **23%** between baseline and monitoring emission inventories. Progress towards the GHG target is substantial and more pronounced than for the renewable energy and energy efficiency.

- lower energy consumption levels and less carbon intensive fuel mix in the building sector (46% absolute reduction for heating and cooling encouraged in part by energy efficiency improvement and increase of renewable shares);
- more efficient and less carbon intensive fuel mix of national electrical grids (although the electricity consumption increased by 6% in absolute value, the related emissions drop by 10%);
- more efficient and less carbon intensive transportation (emission in the transport sector decrease by 9% from baseline to monitoring years).

Energy efficiency: The Covenant of Mayors signatories have been reducing their final energy consumptions. Compared to the baseline inventories, final energy consumptions have dropped by **14%** on absolute value. The decrease in final energy consumptions between baseline and monitoring years was driven by:

- energy efficiency improvement in buildings for heating and cooling (26% of decrease). In the monitoring phase the energy management systems is the major policy instrument used by local authorities to reach the 2020 energy and climate targets. Furthermore, some Covenant signatories use building

code to impose more stringent energy performance requirements than those applicable at national level. In addition, thanks to a close collaboration between utilities and local governments for the development sustainable energy systems, CoM signatories have been able to implement measures related to energy efficiency in district heating networks;

- more efficient transportation, i.e. energy consumption in transport sector decrease by 9% from baseline to monitoring years. In the transport sector the gradual transformation to more efficient vehicles is one of the major area of intervention in CoM local authorities, followed by modal shift to walking and cycling and by modal shift to public transport.

Renewable energy: In CoM signatories the final energy consumption using renewable sources has increased around 2.5 times from baseline to monitoring emission inventories, while the share of renewables on final energy consumption increased from 3% to **14%**. The steady increase of the share of renewables in the Covenant of Mayors signatories reflects the following combining trends:

- increase of electricity production from renewables (79% in absolute values);
- increase of renewable sources in district heating using (around five times);
- doubling of local decentralized heat production from renewables (solar, geothermal, biomass);
- increase of biomass in transport sector;
- lower final energy consumptions (by 14% in monitoring years in comparison to inventory years).

The fact that CoM climate and energy progress indicators are compatible with values from international datasets at national level (EEA), despite the differences on sectors coverage and different inventory years, confirm the consistency of the "CoM database".

These main findings underline the interconnected nature of climate and energy mitigation actions adopted at local level. The CoM signatories adopted a range of policies and measures in improving energy efficiency though building regulations, increasing of renewable energy share, and a gradual transformation to more efficient transportation. The positive effects of these policies outweighed factors generally responsible for emissions such as the demographic growth of 8% on absolute value between baseline and monitoring years.

Our analysis, using the Covenant of Mayors dataset, representing all city sizes in Europe, demonstrates that strong urban energy policies and increased coordination between national and local governments is of a vital importance in the potential of urban mitigation of global climate change.

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List of abbreviations and definitions

BEI	Baseline Emission Inventory
CH4	Methane
CHP	Combined Heat and Power
CO2–eq	CO2 – equivalents
CoM	Covenant of Mayors
EU	European Union
GHG	Greenhouse gases
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LCA	Life Cycle Assessment
MS	Member States
PV	photovoltaic
RES	Renewable Energy Source
SEAP	Sustainable Energy Action Plan
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme

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The following table (Table 12) lists the CoM signatories which have submitted a monitoring report (incl. monitoring emission inventory), together with harmonised information on Local Administrative Unit - country code, CoM signatory's name, commune name in Eurostat, commune id in Eurostat, NUTS3 code, geographical coordinates, population as reported in CoM, area and degree of urbanization[6].

Table 12. Harmonised dataset of CoM signatories with monitoring reports submitted as of September 2015

CNTR CODE	CoM Signatory's NAME	COMMUNE NAME	COMM_ID/ LAU2 NAT Code	NUTS3 code	LAT	LON	Population	Area [m^2]	DEURB
DE	Aachen	Aachen	DE053034000002	DEA2D	50.77	6.09	244,509	160,852,941	1
DE	Freiburg im Breisgau	Freiburg im Breisgau	DE083011000001	DE131	47.99	7.82	220,000	153,059,400	1
DE	München	München	DE091062000001	DE212	48.15	11.54	1,464,962	310,695,700	1
DE	Münster	Münster	DE064032000015	DE716	49.93	8.85	298,518	27,731,900	2
DE	Neumarkt i.d. OPf.	Neumarkt i.d. OPf.	DE093073000147	DE236	49.28	11.47	39,246	79,008,500	2
DE	Nürnberg	Nürnberg	DE095064000001	DE254	49.44	11.08	503,263	186,372,800	1
EE	Tallinn	Tallinn	EE370784	EE001	59.41	24.73	413,727	158,270,000	1
ES	Calp	Calp	ES7703047	ES521	38.65	0.04	29,550	23,509,119	2
ES	Castelldefels	Castelldefels	ES6908056	ES511	41.28	1.97	60,572	12,812,345	1
ES	Cornellà de Llobregat	Cornellà de Llobregat	ES6908073	ES511	41.36	2.08	86,519	6,819,648	1
ES	Prat de Llobregat, El	Prat de Llobregat, El	ES6908169	ES511	41.31	2.10	63,418	31,527,310	1
ES	Granollers	Granollers	ES6908096	ES511	41.59	2.28	60,658	14,967,428	1
ES	Málaga	Málaga	ES6129067	ES617	36.78	- 4.42	568,305	395,133,771	1
ES	Mataró	Mataró	ES6908121	ES511	41.55	2.45	121,746	22,301,688	1

[6] For signatories from Portugal and United Kingdom are reported also the communes LAU2 level

ES	Molins de Rei	Molins de Rei	ES6908123	ES511	41.42	2.03	24,067	15,851,496	2
ES	Navàs	Navàs	ES6908141	ES511	41.89	1.77	6,243	80,756,760	3
ES	Pellejà	Pellejà	ES6908157	ES511	41.42	1.99	11,134	8,437,859	2
ES	Puerto Lumbreras	Puerto Lumbreras	ES7330033	ES620	37.55	- 1.82	14,000	144,806,897	3
ES	Sant Adrià de Besòs	Sant Adrià de Besòs	ES6908194	ES511	41.42	2.22	33,761	3,779,054	1
ES	Sant Celoni	Sant Celoni	ES6908202	ES511	41.69	2.54	16,860	65,493,622	2
ES	Sant Cugat Sesgarrigues	Sant Cugat Sesgarrigues	ES6908206	ES511	41.36	1.75	932	6,296,103	3
ES	Sant Joan Despí	Sant Joan Despí	ES6908217	ES511	41.37	2.06	32,030	5,577,319	1
ES	Santa Coloma de Cervelló	Santa Coloma de Cervelló	ES6908244	ES511	41.37	2.02	7,996	7,494,108	2
ES	Santa Coloma de Gramenet	Santa Coloma de Gramenet	ES6908245	ES511	41.46	2.21	119,717	7,088,222	1
ES	Terrassa	Terrassa	ES6908279	ES511	41.58	2.01	210,941	70,291,574	1
ES	Valencia	Valencia	ES7746250	ES523	39.34	- 0.35	810,064	136,682,455.00	1
ES	Vallirana	Vallirana	ES6908295	ES511	41.37	1.92	14,674	23,813,396	2
ES	Vilafranca del Penedès	Vilafranca del Penedès	ES6908305	ES511	41.35	1.70	39,035	19,912,483	2
FR	Échirolles	Échirolles	FR8238195151	FR714	45.15	5.72	35,037	7,860,000	1
HR	Zagreb	Grad Zagreb	HR2101333	HR011	45.81	16.00	788,850	641,273,052	1
IT	Albosaggia	Albosaggia	IT103014002	ITC44	46.13	9.86	3,188	34,346,900	3
IT	Almese	Almese	IT101001006	ITC11	45.12	7.42	6,378	17,875,900	2
IT	Angera	Angera	IT103012003	ITC41	45.78	8.59	5,694	17,723,100	2
IT	Annicco	Annicco	IT103019003	ITC4A	45.25	9.88	2,097	19,198,600	3
IT	Azzanello	Azzanello	IT103019004	ITC4A	45.31	9.92	744	11,121,200	3
IT	Beinasco	Beinasco	IT101001024	ITC11	45.02	7.59	18,185	6,734,400	2
IT	Besozzo	Besozzo	IT103012013	ITC41	45.85	8.66	9,192	13,945,300	2
IT	Brebbia	Brebbia	IT103012017	ITC41	45.83	8.64	3,360	6,868,500	2

IT	Bregano	Bregano	IT103012018	ITC41	45.82	8.69	842	2,292,500	2
IT	Bruino	Bruino	IT101001038	ITC11	45.01	7.47	8,520	5,570,200	2
IT	Buttigliera Alta	Buttigliera Alta	IT101001045	ITC11	45.07	7.44	6,537	8,097,400	2
IT	Cadrezzate	Cadrezzate	IT103012028	ITC41	45.80	8.64	1,779	4,728,100	2
IT	Cappella Cantone	Cappella Cantone	IT103019013	ITC4A	45.25	9.83	590	13,147,300	3
IT	Caravaggio	Caravaggio	IT103016053	ITC46	45.49	9.65	16,112	33,388,800	2
IT	Casalbuttano ed Uniti	Casalbuttano ed Uniti	IT103019016	ITC4A	45.25	9.96	4,112	22,875,300	3
IT	Casalmorano	Casalmorano	IT103019022	ITC4A	45.29	9.91	1,681	12,282,500	3
IT	Castelvisconti	Castelvisconti	IT103019027	ITC4A	45.30	9.95	333	9,757,200	3
IT	Chiavenna	Chiavenna	IT103014018	ITC44	46.33	9.40	7,342	10,774,300	2
IT	Collegno	Collegno	IT101001090	ITC11	45.09	7.59	50,185	18,099,600	2
IT	Cittiglio	Cittiglio	IT103012051	ITC41	45.91	8.66	4,012	11,107,500	2
IT	Comabbio	Comabbio	IT103012054	ITC41	45.77	8.68	1,181	4,687,500	2
IT	Corciano	Corciano	IT310054015	ITI21	43.13	12.29	15,256	63,724,000	2
IT	Forlì	Forlì	IT208040012	ITH58	44.23	12.05	117,928	228,200,800	1
IT	Gaverina Terme	Gaverina Terme	IT103016110	ITC46	45.76	9.88	940	5,196,300	2
IT	Genivolta	Genivolta	IT103019047	ITC4A	45.34	9.88	1,188	18,573,500	3
IT	Gessate	Gessate	IT103015106	ITC4C	45.56	9.43	8,723	7,759,500	1
IT	Gorgonzola	Gorgonzola	IT103015108	ITC4C	45.53	9.41	19,864	10,580,300	1
IT	Laveno-Mombello	Laveno-Mombello	IT103012087	ITC41	45.91	8.61	9,053	23,528,000	2
IT	Leggiuno	Leggiuno	IT103012088	ITC41	45.87	8.60	3,582	13,187,300	2
IT	Liscate	Liscate	IT103015122	ITC4C	45.47	9.41	4,080	9,406,900	1
IT	Madone	Madone	IT103016131	ITC46	45.65	9.55	4,010	3,068,900	2
IT	Mercallo	Mercallo	IT103012101	ITC41	45.75	8.67	1,816	5,481,700	2
IT	Monvalle	Monvalle	IT103012104	ITC41	45.85	8.62	1,991	4,540,300	2
IT	Mozzanica	Mozzanica	IT103016142	ITC46	45.47	9.69	4,615	9,464,800	3

IT	Olbia	Olbia	IT520104017	ITG29	40.89	9.50	54,873	383,642,000	3
IT	Osmate	Osmate	IT103012111	ITC41	45.79	8.66	764	3,517,500	2
IT	Paderno Ponchielli	Paderno Ponchielli	IT103019065	ITC4A	45.23	9.93	1,499	23,962,300	3
IT	Prata Camportaccio	Prata Camportaccio	IT103014054	ITC44	46.28	9.42	2,933	27,938,600	3
IT	Ranco	Ranco	IT103012116	ITC41	45.80	8.58	1,371	6,763,700	2
IT	Ravenna	Ravenna	IT208039014	ITH57	44.41	12.19	142,035	653,822,000	1
IT	Rivoli	Rivoli	IT101001219	ITC11	45.07	7.52	49,683	29,500,200	2
IT	Salerno	Salerno	IT415065116	ITF35	40.68	14.81	139,579	59,852,800	1
IT	Sant'Omobono Terme	Sant'Omobono Terme	IT103016192	ITC46	45.81	9.53	3,505	11,051,600	2
IT	Sestriere	Sestriere	IT101001263	ITC11	44.96	6.88	892	25,916,200	3
IT	Soresina	Soresina	IT103019098	ITC4A	45.29	9.85	9,345	28,568,500	2
IT	Taino	Taino	IT103012125	ITC41	45.76	8.62	3,798	7,631,200	2
IT	Treviglio	Treviglio	IT103016219	ITC46	45.53	9.59	28,970	32,220,200	2
IT	Trigolo	Trigolo	IT103019110	ITC4A	45.33	9.82	1,772	16,061,300	3
IT	Varano Borghi	Varano Borghi	IT103012132	ITC41	45.77	8.70	2,383	3,332,100	2
IT	Vignate	Vignate	IT103015237	ITC4C	45.50	9.38	9,138	8,552,800	1
IT	Villa di Tirano	Villa di Tirano	IT103014078	ITC44	46.19	10.14	2,950	24,739,600	2
IT	Vittorio Veneto	Vittorio Veneto	IT205026092	ITH34	46.00	12.30	28,944	82,803,500	2
IT	Volvera	Volvera	IT101001315	ITC11	44.96	7.51	8,622	20,983,000	2
CY	Agios Athanasios	Agios Athanasios	CY5012	CY000	34.72	33.06	15,500	34,187,300.00	1
CY	Pano Lefkara	Pano Lefkara	CY4311	CY000	34.87	33.31	794	62174400	3
CY	Strovolos	Strovolos	CY1012	CY000	35.13	33.35	67,565	24,893,000	1
LV	Jekabpils	Jekabpils	LV110000	LV009	56.50	25.87	26,468	25,451,983	2
LV	Jelgava	Jelgava	LV090000	LV009	56.65	23.72	66,034	60,498,363	1
NL	Nijmegen	Nijmegen	NL250268	NL226	51.84	5.84	163,036	57,600,000	1
PL	Koscierzyna	Koscierzyna	PL2206011	PL635	54.12	17.98	23,138	15,860,000	2

PT	Águeda	União das freguesias de Belazaima do Chão, Castanheira do Vouga e Agadão	010123	PT16D	40.54	- 8.30	1,611	88,090,300	3
PT	Águeda	União das freguesias de Águeda e Borralha	010121	PT16D	40.55	- 8.42	13,576	36,029,300	2
PT	Águeda	União das freguesias de Barrô e Aguada de Baixo	010122	PT16D	40.53	- 8.46	744	10,036,500	2
PT	Águeda	União das freguesias de Barrô e Aguada de Baixo	010122	PT16D	40.51	- 8.45	3,209	10,190,100	3
PT	Águeda	Aguada de Cima	010103	PT16D	40.52	- 8.41	4,013	28,393,100	3
PT	Águeda	Fermentelos	010109	PT16D	40.56	- 8.53	3,258	8,582,000	2
PT	Águeda	Macinhata do Vouga	010112	PT16D	40.67	- 8.43	3,406	31,954,400	3
PT	Águeda	União das freguesias do Préstimo e Macieira de Alcoba	010127	PT16D	40.62	- 8.27	808	41,726,400	3
PT	Águeda	União das freguesias de Recardães e Espinhel	010124	PT16D	40.56	- 8.46	6,036	19,917,800	2
PT	Águeda	União das freguesias de Travassô e Óis da Ribeira	010125	PT16D	40.59	- 8.50	2,305	11,121,900	3
PT	Águeda	União das freguesias de Trofa, Segadães e Lamas do Vouga	010126	PT16D	40.61	- 8.47	4,630	16,068,100	3
PT	Águeda	Valongo do Vouga	010119	PT16D	40.63	- 8.41	4,877	43,201,100	2
PT	Vila Nova de Gaia	Arcozelo	131701	PT11A	41.06	- 8.64	12,840	3,436,800	2
PT	Vila Nova de Gaia	Avintes	131702	PT11A	41.11	- 8.55	11,497	8,821,400	1
PT	Vila Nova de Gaia	Canelas	131703	PT11A	41.08	- 8.60	1,649	11,818,100	3
PT	Vila Nova de Gaia	Canidelo	131704	PT11A	41.31	- 8.64	27,769	8,930,800	3
PT	Vila Nova de Gaia	Madalena	131709	PT11A	41.11	- 8.65	10,040	4,690,100	1
PT	Vila Nova de Gaia	Oliveira do Douro	131712	PT11A	41.13	- 8.59	22,383	7,536,200	1
PT	Vila Nova de Gaia	São Félix da Marinha	131717	PT11A	41.03	- 8.63	12,706	7,929,000	1
PT	Vila Nova de Gaia	Vilar de Andorinho	131723	PT11A	41.10	- 8.57	18,155	7,065,100	1
PT	Vila Nova de Gaia	União das freguesias de Grijó e Sermonde	131725	PT11A	41.03	- 8.58	11,938	12,989,600	3
PT	Vila Nova de Gaia	União das freguesias de Gulpilhares e Valadares	131726	PT11A	41.08	- 8.64	22,019	10,612,300	1

PT	Vila Nova de Gaia	União das freguesias de Mafamude e Vilar do Paraíso	131727	PT11A	41.11	- 8.60	52,422	10,575,000	1
PT	Vila Nova de Gaia	União das freguesias de Pedroso e Seixezelo	131728	PT11A	41.07	- 8.56	20,426	20,878,100	1
PT	Vila Nova de Gaia	União das freguesias de Sandim, Olival, Lever e Crestuma	131729	PT11A	41.03	- 8.50	17,168	34,156,000	1
PT	Vila Nova de Gaia	União das freguesias de Santa Marinha e São Pedro da Afurada	131730	PT11A	41.13	- 8.62	33,714	6,914,300	3
PT	Vila Nova de Gaia	União das freguesias de Serzedo e Perosinho	131731	PT11A	41.05	- 8.61	14,250	11,969,700	1
PT	Moura	Amareleja	021001	PT184	38.20	- 7.23	2,564	108,557,200	3
PT	Moura	União das freguesias de Moura (Santo Agostinho e São João Baptista) e Santo Amador	021009	PT184	38.10	- 7.41	8,831	287,418,300	3
PT	Moura	Póvoa de São Miguel	021002	PT184	38.25	- 7.34	888	187,079,300	3
PT	Moura	União das freguesias de Safara e Santo Aleixo da Restauração	021010	PT184	38.11	- 7.23	1,871	237,204,900	3
PT	Moura	Sobral da Adiça	021008	PT184	38.03	- 7.28	1,013	138,195,800	3
PT	Ovar	União das freguesias de Ovar, São João, Arada e São Vicente de Pereira Jusã	011509	PT16D	40.85	- 8.65	29,765	86,396,700	2
PT	Alvaiázere	Pelmá	100205	PT16F	39.78	- 8.44	736	30,394,900	3
PT	Alvaiázere	Alvaiázere	100208	PT16F	39.83	- 8.40	2,049	38,516,900	3
PT	Alvaiázere	Maçãs de Dona Maria	100204	PT16F	39.87	- 8.34	1,835	24,542,600	3
PT	Alvaiázere	Almoster	100201	PT16F	39.84	- 8.45	674	25,840,400	3
PT	Alvaiázere	Pussos	100209	PT16F	39.80	- 8.37	1,993	41,182,800	3
PT	Cabeceiras de Basto	Abadim	030401	PT119	41.56	- 7.98	571	15,136,400	3
PT	Cabeceiras de Basto	União das freguesias de Alvite e Passos	030418	PT119	41.49	- 8.01	1,184	12,189,200	3
PT	Cabeceiras de Basto	União das freguesias de Arco de Baúlhe e Vila Nune	030419	PT119	41.48	- 7.95	2,048	9,038,600	3
PT	Cabeceiras de Basto	Basto	030404	PT119	41.48	- 7.99	938	5,576,100	3
PT	Cabeceiras de Basto	Bucos	030405	PT119	41.58	- 8.03	554	17,798,500	3

PT	Cabeceiras de Basto	Cabeceiras de Basto	030406	PT119	41.56	- 8.02	711	24,522,400	3
PT	Cabeceiras de Basto	Cavez	030407	PT119	41.52	- 7.90	1,268	26,791,200	3
PT	Cabeceiras de Basto	Faia	030408	PT119	41.47	- 7.98	558	5,149,600	3
PT	Cabeceiras de Basto	União das freguesias de Gondiães e Vilar de Cunhas	030420	PT119	41.58	- 7.84	421	41,384,700	3
PT	Cabeceiras de Basto	Pedraça	030413	PT119	41.50	- 7.95	760	12,168,200	3
PT	Cabeceiras de Basto	União das freguesias de Refojos de Basto, Outeiro e Painzela	030421	PT119	41.51	- 7.99	6,755	28,952,600	3
PT	Cabeceiras de Basto	Rio Douro	030415	PT119	41.56	- 7.94	942	43,114,200	3
PT	Boticas	Alturas do Barroso e Cerdedo	170217	PT11B	41.70	- 7.81	544	56,639,800	3
PT	Boticas	Ardãos e Bobadela	170218	PT11B	41.76	- 7.61	579	37,122,500	3
PT	Boticas	Beça	170203	PT11B	41.69	- 7.72	843	29,858,800	3
PT	Boticas	Boticas e Granja	170219	PT11B	41.69	- 7.67	1,510	22,665,000	3
PT	Boticas	Codessoso, Curros e Fiães do Tâmega	170220	PT11B	41.66	- 7.71	298	35,167,000	3
PT	Boticas	Covas do Barroso	170208	PT11B	41.62	- 7.79	262	29,577,600	3
PT	Boticas	Dornelas	170210	PT11B	41.64	- 7.85	508	3,386,200	3
PT	Boticas	Pinho	170213	PT11B	41.66	- 7.63	401	22,369,500	3
PT	Boticas	Sapiãos	170215	PT11B	41.71	- 7.62	488	21,100,000	3
PT	Boticas	Vilar e Viveiro	170221	PT11B	41.67	- 7.74	487	30,879,600	3
PT	Serpa	Brinches	021302	PT184	38.04	- 7.59	1,039	92,401,800	3
PT	Serpa	Pias	021303	PT184	38.08	- 7.52	2,852	163,861,600	3
PT	Serpa	Vila Verde de Ficalho	021307	PT184	37.92	- 7.31	1,459	105,394,400	3
PT	Serpa	União das freguesias de Serpa (Salvador e Santa Maria)	021308	PT184	37.89	- 7.52	6,233	443,727,800	3
PT	Serpa	União das freguesias de Vila Nova de São Bento e Vale de Vargo	021309	PT184	37.86	- 7.41	4,040	300,247,800	3
PT	Paredes de Coura	Agualonga	160501	PT111	41.88	- 8.61	295	5,322,900	3

PT	Paredes de Coura	Castanheira	160503	PT111	41.88	-	8.55	345	24,641,200	3
PT	Paredes de Coura	Coura	160505	PT111	41.88	-	8.65	374	6,587,500	3
PT	Paredes de Coura	Cunha	160507	PT111	41.88	-	8.58	529	9,976,100	1
PT	Paredes de Coura	Infesta	160510	PT111	41.90	-	8.59	450	5,889,600	3
PT	Paredes de Coura	Mozelos	160513	PT111	41.93	-	8.55	347	3,360,300	2
PT	Paredes de Coura	Padornelo	160507	PT111	41.93	-	8.53	437	6,660,600	3
PT	Paredes de Coura	Parada	160515	PT111	41.92	-	8.52	298	5,900,700	3
PT	Paredes de Coura	Romarigães	160519	PT111	41.86	-	8.63	246	7,132,500	3
PT	Paredes de Coura	Rubiães	160520	PT111	41.90	-	8.63	512	9,081,700	3
PT	Paredes de Coura	Vascões	160521	PT111	41.90	-	8.50	223	6,218,100	3
PT	Paredes de Coura	União das freguesias de Bico e Cristelo	160522	PT111	41.88	-	8.52	783	11,680,400	3
PT	Paredes de Coura	União das freguesias de Cossourado e Linhares	160523	PT111	41.92	-	8.63	517	9,638,200	3
PT	Paredes de Coura	União das freguesias de Formariz e Ferreira	160524	PT111	41.92	-	8.58	998	19,539,400	2
PT	Paredes de Coura	União das freguesias de Insalde e Porreiras	160525	PT111	41.96	-	8.52	459	17,592,900	3
PT	Paredes de Coura	União das freguesias de Paredes de Coura e Resende	160526	PT111	41.91	-	8.56	2,099	5,840,600	2
PT	Ponte de Lima	Anais	160701	PT111	41.70	-	8.53	1,073	8,063,000	3
PT	Ponte de Lima	Arcos	160703	PT111	41.70	-	8.53	640	15,053,200	2
PT	Ponte de Lima	Arcozelo	030209	PT111	41.79	-	8.60	12,840	3,436,800	2
PT	Ponte de Lima	Beiral do Lima	160707	PT111	41.76	-	8.48	558	7,315,200	3
PT	Ponte de Lima	Bertiandos	160708	PT111	41.76	-	8.63	414	2,266,800	2
PT	Ponte de Lima	Boalhosa	160709	PT111	41.74	-	8.48	163	2,187,000	3
PT	Ponte de Lima	Brandara	160710	PT111	41.79	-	8.57	442	2,576,900	2
PT	Ponte de Lima	Calheiros	160713	PT111	41.81	-	8.57	991	8,499,300	3
PT	Ponte de Lima	Calvelo	160714	PT111	41.68	-	8.55	685	5,264,200	3
PT	Ponte de Lima	Correlhã	160716	PT111	41.75	-	8.61	2,936	8,655,400	2

PT	Ponte de Lima	Estorãos	030708	PT111	41.80	-	8.66	1,508	5,904,400	2
PT	Ponte de Lima	Facha	160718	PT111	41.71	-	8.62	1,529	15,307,700	3
PT	Ponte de Lima	Feitosa	160719	PT111	41.75	-	8.58	1,363	2,693,800	2
PT	Ponte de Lima	Fontão	160721	PT111	41.75	-	8.66	1,101	4,825,400	2
PT	Ponte de Lima	Friastelas	160724	PT111	41.68	-	8.58	450	3,919,900	3
PT	Ponte de Lima	Gandra	131011	PT111	41.78	-	8.50	6,974	11,755,200	2
PT	Ponte de Lima	Gemieira	160727	PT111	41.78	-	8.52	598	4,248,600	3
PT	Ponte de Lima	Gondufe	160728	PT111	41.76	-	8.51	450	5,574,000	3
PT	Ponte de Lima	Labruja	160729	PT111	41.84	-	8.60	439	14,564,600	3
PT	Ponte de Lima	Poiares	040406	PT111	41.66	-	8.63	411	40,735,400	3
PT	Ponte de Lima	Rebordões (Santa Maria)	160744	PT111	41.73	-	8.58	1,056	7,073,000	3
PT	Ponte de Lima	Rebordões (Souto)	160747	PT111	41.72	-	8.56	1,127	7,409,400	3
PT	Ponte de Lima	Refóios do Lima	160737	PT111	41.80	-	8.54	2,169	16,447,300	3
PT	Ponte de Lima	Ribeira	031012	PT111	41.77	-	8.55	242	2,245,200	3
PT	Ponte de Lima	Sá	160740	PT111	41.78	-	8.62	420	2,798,200	3
PT	Ponte de Lima	Santa Comba	160742	PT111	41.77	-	8.61	834	11,825,200	3
PT	Ponte de Lima	Santa Cruz do Lima	160743	PT111	41.79	-	8.48	480	2,233,400	3
PT	Ponte de Lima	Seara	160745	PT111	41.73	-	8.61	714	3,634,700	2
PT	Ponte de Lima	Serdedelo	160746	PT111	41.75	-	8.52	464	6,512,400	3
PT	Ponte de Lima	Vitorino das Donas	160750	PT111	41.73	-	8.65	1,051	4,465,300	3
PT	Ponte de Lima	Arca e Ponte de Lima	160752	PT111	41.76	-	8.57	3,756	4,006,000	2
PT	Ponte de Lima	Ardegão, Freixo e Mato	160705	PT111	41.64	-	8.60	1,754	10,717,500	3
PT	Ponte de Lima	Associação de freguesias do Vale do Neiva	160754	PT111	41.73	-	8.65	1,075	10,273,200	3
PT	Ponte de Lima	Bárrio e Cepões	160706	PT111	41.84	-	8.57	921	9,712,300	3
PT	Ponte de Lima	Cabaços e Fojo Lobal	160756	PT111	41.69	-	8.57	951	9,265,500	3
PT	Ponte de Lima	Cabração e Moreira do Lima	160757	PT111	41.80	-	8.63	987	27,340,200	3

PT	Ponte de Lima	Fornelos e Queijada	160758	PT111	41.74	- 8.54	1,912	13,011,400	2
PT	Ponte de Lima	Labrujó, Rendufe e Vilar do Monte	160730	PT111	41.85	- 8.54	417	11,255,500	3
PT	Ponte de Lima	Navió e Vitorino dos Piães	160760	PT111	41.67	- 8.61	1,768	13,603,100	3
PT	Ponte da Barca	Azias	160601	PT111	41.77	- 8.34	377	8,441,400	3
PT	Ponte da Barca	Boivães	160602	PT111	41.76	- 8.46	289	3,530,700	3
PT	Ponte da Barca	Bravães	160603	PT111	41.79	- 8.45	629	4,171,600	3
PT	Ponte da Barca	Britelo	160604	PT111	41.84	- 8.27	485	12,899,800	3
PT	Ponte da Barca	Cuide de Vila Verde	160606	PT111	41.77	- 8.40	344	3,819,800	3
PT	Ponte da Barca	Lavradas	160611	PT111	41.78	- 8.46	875	6,755,600	3
PT	Ponte da Barca	Lindoso	160612	PT111	41.84	- 8.20	427	46,032,600	3
PT	Ponte da Barca	Nogueira	160924	PT111	41.74	- 8.74	495	12,071,300	1
PT	Ponte da Barca	Oleiros	031330	PT111	41.47	- 8.40	1,169	3,779,000	1
PT	Ponte da Barca	Sampriz	160619	PT111	41.78	- 8.38	342	6,557,900	3
PT	Ponte da Barca	Vade (São Pedro)	160623	PT111	41.77	- 8.42	264	2,654,100	3
PT	Ponte da Barca	Vade (São Tomé)	160624	PT111	41.78	- 8.41	287	1,572,100	3
PT	Ponte da Barca	União das freguesias de Crasto, Ruivos e Grovelas	160626	PT111	41.78	- 8.43	882	9,917,500	3
PT	Ponte da Barca	União das freguesias de Entre Ambos-os-Rios, Ermida e Germil	160627	PT111	41.81	- 8.30	612	38,671,600	3
PT	Ponte da Barca	União das freguesias de Ponte da Barca, V.N. Muía, Paço Vedro Magalhães	160616	PT111	41.81	- 8.42	4,372	8,835,500	2
PT	Ponte da Barca	União das freguesias de Touvedo (São Lourenço e Salvador)	160629	PT111	41.80	- 8.37	377	6,090,600	3
PT	Ponte da Barca	União das freguesias de Vila Chã (São João Baptista e Santiago)	160630	PT111	41.79	- 8.32	623	16,759,300	3
PT	Monção	Abedim	160401	PT111	41.98	- 8.51	205	7,721,000	3
PT	Monção	União das freguesias de Anhões e Luzio	160434	PT111	41.99	- 8.43	260	14,377,400	3
PT	Monção	Barbeita	160404	PT111	42.06	- 8.40	1,016	6,883,300	3
PT	Monção	Barroças e Taias	160405	PT111	42.00	- 8.50	319	2,719,400	3

PT	Monção	Bela	160406	PT111	42.07	-	8.43	698	3,792,200	3
PT	Monção	Cambeses	160407	PT111	42.04	-	8.47	1,300	3,311,800	2
PT	Monção	União das freguesias de Ceivães e Badim	160435	PT111	42.07	-	8.38	670	8,947,800	3
PT	Monção	Lara	160410	PT111	42.04	-	8.53	266	4,929,800	3
PT	Monção	Longos Vales	160411	PT111	42.05	-	8.43	989	13,996,400	3
PT	Monção	União das freguesias de Mazedo e Cortes	160436	PT111	42.06	-	8.49	3,377	12,131,200	3
PT	Monção	Merufe	160415	PT111	42.01	-	8.40	1,097	28,510,200	3
PT	Monção	União das freguesias de Messegães, Valadares e Sá	160437	PT111	42.08	-	8.37	658	8,248,800	3
PT	Monção	União das freguesias de Monção e Troviscoso	160438	PT111	42.07	-	8.48	3,535	8,676,100	2
PT	Monção	Moreira	160418	PT111	42.02	-	8.49	615	3,727,700	2
PT	Monção	Pias	160420	PT111	42.01	-	8.52	2,852	163,861,600	3
PT	Monção	Pinheiros	160421	PT111	42.04	-	8.50	345	2,132,600	3
PT	Monção	Podame	160422	PT111	42.04	-	8.37	278	3,649,000	3
PT	Monção	Portela	160423	PT111	41.98	-	8.48	242	8,117,600	3
PT	Monção	Riba de Mouro	160424	PT111	42.03	-	8.32	964	14,045,600	3
PT	Monção	União das freguesias de Sago, Lordelo e Parada	160439	PT111	42.03	-	8.46	448	8,333,700	3
PT	Monção	Segude	160427	PT111	42.05	-	8.38	356	2,368,500	3
PT	Monção	Tangil	160428	PT111	42.01	-	8.34	768	22,881,500	3
PT	Monção	União das freguesias de Troporiz e Lapela	160440	PT111	42.06	-	8.52	497	3,962,900	3
PT	Monção	Trute	160431	PT111	42.01	-	8.47	277	6,018,000	3
PT	Guarda	Adão	090766	PT16J	40.46	-	7.17	284	28,321,700	3
PT	Guarda	Aldeia do Bispo	090703	PT16J	40.49	-	7.27	220	13,169,300	3
PT	Guarda	Aldeia Viçosa	090704	PT16J	40.58	-	7.32	341	7,439,300	3
PT	Guarda	Alvendre	090705	PT16J	40.59	-	7.26	210	12,937,300	3
PT	Guarda	Arrifana	090706	PT16J	40.57	-	7.21	6,551	5,294,700	2

PT	Guarda	Avelãs da Ribeira	090708	PT16J	40.67	- 7.22	196	11,300,600	3
PT	Guarda	União das freguesias de Avelãs de Ambom e Rocamondo	090761	PT16J	40.62	- 7.24	158	13,336,700	3
PT	Guarda	Benespera	090709	PT16J	40.43	- 7.26	297	18,064,000	3
PT	Guarda	Casal de Cinza	090711	PT16J	40.54	- 7.18	561	17,968,300	3
PT	Guarda	Castanheira	090712	PT16J	40.57	- 7.07	345	24,641,200	3
PT	Guarda	Cavadoude	090713	PT16J	40.59	- 7.29	324	6,647,900	3
PT	Guarda	Codesseiro	090714	PT16J	40.65	- 7.21	205	9,622,000	3
PT	Guarda	União das freguesias de Corujeira e Trinta	090762	PT16J	40.51	- 7.33	524	12,469,900	3
PT	Guarda	Faia	030408	PT119	40.56	- 7.30	558	5,149,600	3
PT	Guarda	Famalicão	090717	PT16J	40.44	- 7.38	615	16,016,400	3
PT	Guarda	Fernão Joanes	090718	PT16J	40.47	- 7.38	269	25,064,600	3
PT	Guarda	Gonçalo	090757	PT16J	40.41	- 7.35	1,167	27,104,400	3
PT	Guarda	Gonçalo Bocas	090721	PT16J	40.58	- 7.17	227	6,443,800	3
PT	Guarda	Guarda	090758	PT16J	40.55	- 7.26	26,565	37,656,300	2
PT	Guarda	Jarmelo São Miguel	090759	PT16J	40.60	- 7.15	295	17,062,700	3
PT	Guarda	Jarmelo São Pedro	090760	PT16J	40.59	- 7.13	311	31,079,700	3
PT	Guarda	João Antão	090722	PT16J	40.46	- 7.24	160	8,782,400	3
PT	Guarda	Maçainhas	090723	PT16J	40.53	- 7.31	356	18,206,500	3
PT	Guarda	Marmeleiro	090724	PT16J	39.75	- 8.07	361	29,627,600	3
PT	Guarda	Meios	090725	PT16J	40.49	- 7.37	197	4,834,000	3
PT	Guarda	União das freguesias de Mizarela, Pêro Soares e Vila Soeiro	090763	PT16J	40.56	- 7.34	246	14,017,900	3
PT	Guarda	Panoias de Cima	090728	PT16J	40.50	- 7.23	608	11,389,600	3
PT	Guarda	Pega	090729	PT16J	40.43	- 7.15	161	10,634,800	3
PT	Guarda	Pêra do Moço	090730	PT16J	40.61	- 7.21	831	20,597,600	3
PT	Guarda	Porto da Carne	090732	PT16J	40.61	- 7.29	385	1,983,600	3

PT	Guarda	União das freguesias de Pousade e Albardo	090764	PT16J	40.54	- 7.13	270	16,887,700	3
PT	Guarda	Ramela	090734	PT16J	40.47	- 7.26	218	10,158,600	3
PT	Guarda	União das freguesias de Rochoso e Monte Margarida	090765	PT16J	40.52	- 7.09	300	23,659,200	3
PT	Guarda	Santana da Azinha	090738	PT16J	40.46	- 7.21	459	15,943,800	3
PT	Guarda	Sobral da Serra	090744	PT16J	40.62	- 7.28	242	11,202,500	3
PT	Guarda	Vale de Estrela	090746	PT16J	40.49	- 7.31	394	13,938,000	3
PT	Guarda	Valhelhas	090747	PT16J	40.40	- 7.40	396	20,177,100	3
PT	Guarda	Vela	090748	PT16J	40.44	- 7.31	490	21,000,400	3
PT	Guarda	Videmonte	090749	PT16J	40.51	- 7.42	478	53,920,800	3
PT	Guarda	Vila Cortês do Mondego	090750	PT16J	40.61	- 7.31	298	4,383,900	3
PT	Guarda	Vila Fernando	090751	PT16J	40.49	- 7.16	491	16,269,500	3
PT	Guarda	Vila Franca do Deão	090752	PT16J	40.66	- 7.25	153	12,991,100	3
PT	Guarda	Vila Garcia	090753	PT16J	40.79	- 7.24	320	15,327,300	3
PT	Fafe	União das freguesias de Aboim, Felgueiras, Gontim e Pedraído	030737	PT119	41.54	- 8.09	826	25,678,400	3
PT	Fafe	União das freguesias de Agrela e Serafão	030738	PT119	41.54	- 8.19	1,180	9,193,300	3
PT	Fafe	União das freguesias de Antime e Silvares (São Clemente)	030739	PT119	41.44	- 8.17	2,046	5,574,700	2
PT	Fafe	União das freguesias de Ardegão, Arnozela e Seidões	030740	PT119	41.40	- 8.13	1,083	9,783,000	3
PT	Fafe	Armil	030705	PT119	41.42	- 8.19	735	4,648,200	3
PT	Fafe	União das freguesias de Cepães e Fareja	030741	PT119	41.43	- 8.20	2,265	7,389,600	3
PT	Fafe	Estorãos	030708	PT119	41.48	- 8.14	1,508	5,904,400	2
PT	Fafe	Fafe	030709	PT119	41.45	- 8.18	15,703	7,969,900	2
PT	Fafe	Fornelos	030234	PT112	41.47	- 8.18	803	4,291,800	2
PT	Fafe	União das freguesias de Freitas e Vila Cova	030742	PT119	41.51	- 8.22	804	11,477,800	3
PT	Fafe	Golães	030714	PT119	41.46	- 8.20	2,135	4,699,200	2

PT	Fafe	Medelo	030716	PT119	41.47	-	8.16	1,602	2,517,100	2
PT	Fafe	União das freguesias de Monte e Queimadela	030743	PT119	41.54	-	8.15	801	20,372,400	2
PT	Fafe	União das freguesias de Moreira do Rei e Várzea Cova	030744	PT119	41.48	-	8.09	2,025	29,168,400	3
PT	Fafe	Passos	030719	PT119	41.46	-	7.26	1,076	4,096,400	3
PT	Fafe	Quinchães	030722	PT119	41.43	-	8.14	2,278	10,608,500	2
PT	Fafe	Regadas	030723	PT119	41.39	-	8.15	1,661	5,902,400	3
PT	Fafe	Revelhe	030724	PT119	41.49	-	8.16	849	4,910,700	2
PT	Fafe	Ribeiros	030725	PT119	41.48	-	8.13	640	4,958,000	3
PT	Fafe	Arões (Santa Cristina)	030726	PT119	41.44	-	8.22	1,538	3,950,500	2
PT	Fafe	São Gens	030728	PT119	41.45	-	8.10	1,703	14,797,200	2
PT	Fafe	Silvares (São Martinho)	030729	PT119	41.41	-	8.17	1,325	6,292,900	3
PT	Fafe	Arões (São Romão)	030730	PT119	41.46	-	8.22	3,295	5,721,300	2
PT	Fafe	Travassós	030733	PT119	41.50	-	8.19	1,539	8,142,200	3
PT	Fafe	Vinhós	030736	PT119	41.48	-	8.18	642	2,877,900	3
PT	Viana do Castelo	Afife	160901	PT111	41.77	-	8.85	1,632	13,028,400	1
PT	Viana do Castelo	Alvarães	160902	PT111	41.64	-	8.75	2,623	9,106,900	1
PT	Viana do Castelo	Amonde	160903	PT111	41.78	-	8.76	293	6,245,400	1
PT	Viana do Castelo	Anha	160904	PT111	41.66	-	8.80	2,415	9,400,500	1
PT	Viana do Castelo	Areosa	160905	PT111	41.72	-	8.84	4,853	14,111,800	1
PT	Viana do Castelo	Carreço	160908	PT111	41.75	-	8.85	1,759	14,204,600	1
PT	Viana do Castelo	Castelo do Neiva	160910	PT111	41.62	-	8.80	2,930	6,944,900	1
PT	Viana do Castelo	Chafé	160940	PT111	41.65	-	8.80	2,841	7,850,900	1
PT	Viana do Castelo	Darque	160911	PT111	41.68	-	8.80	7,817	9,014,900	1
PT	Viana do Castelo	Freixieiro de Soutelo	160914	PT111	41.79	-	8.81	511	11,775,700	1
PT	Viana do Castelo	Lanheses	160915	PT111	41.75	-	8.69	1,645	9,595,700	1
PT	Viana do Castelo	Montaria	160920	PT111	41.80	-	8.73	549	22,431,400	1

PT	Viana do Castelo	Mujães	160922	PT111	41.66	- 8.71	1,550	4,898,600	1
PT	Viana do Castelo	São Romão de Neiva	160923	PT111	41.63	- 8.77	1,225	7,023,300	1
PT	Viana do Castelo	Outeiro	160925	PT111	41.76	- 8.79	301	40,932,100	3
PT	Viana do Castelo	Perre	160926	PT111	41.73	- 8.79	2,956	13,088,200	1
PT	Viana do Castelo	Santa Marta de Portuzelo	160928	PT111	41.71	- 8.77	3,805	7,412,200	1
PT	Viana do Castelo	Vila Franca	160935	PT111	41.68	- 8.74	1,757	7,146,000	1
PT	Viana do Castelo	Vila de Punhe	160938	PT111	41.66	- 8.73	2,273	6,026,700	1
PT	Viana do Castelo	União das freguesias de Barroselas e Carvoeiro	160941	PT111	41.65	- 8.70	5,031	18,675,400	1
PT	Viana do Castelo	União das freguesias de Cardielos e Serreleis	160942	PT111	41.71	- 8.74	2,312	7,681,000	1
PT	Viana do Castelo	União das freguesias de Geraz do Lima (Santa Maria, Santa Leocádia e Moreira) e Deão	160943	PT111	41.70	- 8.68	3,339	19,060,600	1
PT	Viana do Castelo	União das freguesias de Mazarefes e Vila Fria	160944	PT111	41.68	- 8.77	2,670	10,281,000	1
PT	Viana do Castelo	União das freguesias de Nogueira, Meixedo e Vilar de Murteda	160945	PT111	41.74	- 8.74	1,597	27,409,400	1
PT	Viana do Castelo	União das freguesias de Subportela, Deocriste e Portela Susã	160946	PT111	41.69	- 8.72	2,552	17,101,500	1
PT	Viana do Castelo	União das freguesias de Torre e Vila Mou	160947	PT111	41.72	- 8.72	1,181	6,354,500	3
PT	Viana do Castelo	União das freguesias de Viana do Castelo (Santa Maria Maior e Monserrate) e Meadela	160948	PT111	41.70	- 8.83	25,375	14,324,900	1
RO	Alba Iulia	Alba Iulia	RO11001017	RO121	46.06	23.56	66,369	103,650,000	1
RO	Bistrita	Bistrita	RO16032394	RO112	47.14	24.50	84,850	145,470,000	2
FI	Helsinki	Helsinki#Helsingfors	FI101091	FI1B1	60.22	25.02	622,240	715,480,000	1
SE	Älmhult	Älmhult	SE0765	SE212	56.57	14.18	15,570	890,780,000	3
SE	Alvesta	Alvesta	SE0764	SE212	56.85	14.50	18,757	974,190,000	3
SE	Finspång	Finspång	SE0562	SE123	58.80	15.78	20,733	1,055,280,000	2
SE	Göteborg	Göteborg	SE1480	SE232	57.74	11.95	506,100	447,760,000	1

SE	Gislaved	Gislaved	SE0662	SE211	57.25	13.51	29,212	1,137,080,000	3
SE	Jönköping	Jönköping	SE0680	SE211	57.76	14.17	126,331	1,480,360,000	1
SE	Kristianstad	Kristianstad	SE1290	SE224	55.95	14.11	78,000	1,246,250,000	3
SE	Lund	Lund	SE1281	SE224	55.67	13.37	116,000	427,230,000	1
SE	Stockholm	Stockholm	SE0180	SE110	59.31	17.98	829,417	187,170,000	1
SE	Västerås	Västerås	SE1980	SE125	59.63	16.57	140,000	957,890,000	1
SE	Växjö	Växjö	SE0780	SE212	56.93	14.87	86,000	1,665,510,000	2
UK	Leicester	Braunstone Park and Rowley Fields	UK12FN00NK	UKF21	52.62	- 1.17	18,173	4,387,326	1
UK	Leicester	Spinney Hills	UK12FN00NZ	UKF21	52.63	- 1.11	25,571	2,224,782	1
UK	Leicester	Rushey Mead	UK12FN00NY	UKF21	52.66	- 1.10	15,962	5,452,285	1
UK	Leicester	Latimer	UK12FN00NW	UKF21	52.65	- 1.12	12,457	1,523,779	1
UK	Leicester	Westcotes	UK12FN00PC	UKF21	52.63	- 1.15	11,644	1,440,587	1
UK	Leicester	Freemen	UK12FN00NS	UKF21	52.61	- 1.13	10,949	2,693,479	1
UK	Leicester	Thurncourt	UK12FN00PB	UKF21	52.64	- 1.06	10,596	2,027,836	1
UK	Leicester	Belgrave	UK12FN00NJ	UKF21	52.66	- 1.11	11,558	1,333,799	1
UK	Leicester	Eyres Monsell	UK12FN00NQ	UKF21	52.59	- 1.15	11,520	2,321,207	1
UK	Leicester	Castle	UK12FN00NL	UKF21	52.63	- 1.13	10,069	22,161,939	1
UK	Leicester	Western Park	UK12FN00PD	UKF21	52.63	- 1.17	10,609	2,331,201	1
UK	Leicester	Knighton	UK12FN00NU	UKF21	52.61	- 1.11	16,805	4,151,040	1
UK	Leicester	Fosse	UK12FN00NR	UKF21	52.64	- 1.15	13,072	1,776,704	1
UK	Leicester	Aylestone	UK12FN00NG	UKF21	52.60	- 1.15	11,151	3,808,609	1
UK	Leicester	New Parks	UK12FN00NX	UKF21	52.64	- 1.19	17,128	4,782,107	1
UK	Leicester	Evington	UK12FN00NP	UKF21	52.63	- 1.07	11,133	4,290,174	1
UK	Leicester	Coleman	UK12FN00NN	UKF21	52.64	- 1.09	14,669	1,856,485	1
UK	Leicester	Humberstone and Hamilton	UK12FN00NT	UKF21	52.65	- 1.07	18,854	5,236,788	1
UK	Leicester	Beaumont Leys	UK12FN00NH	UKF21	52.67	- 1.16	16,480	8,896,922	1

UK	Leicester	Stoneygate	UK12FN00PA	UKF21	52.62	- 1.10	20,390	1,842,595	1
UK	Leicester	Charnwood	UK12FN00NM	UKF21	52.64	- 1.10	13,291	1,568,660	1
UK	Leicester	Abbey	UK12FN00NF	UKF21	52.66	- 1.14	12,786	1,280,307	1
CH	Zürich	Zürich	CH01120261	CH040	47.38	8.53	390,082	n.a	1
IS	Reykjavík	Reykjavíkurborg	IS0001	IS001	64.23	- 21.66	118,427	n.a	1

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