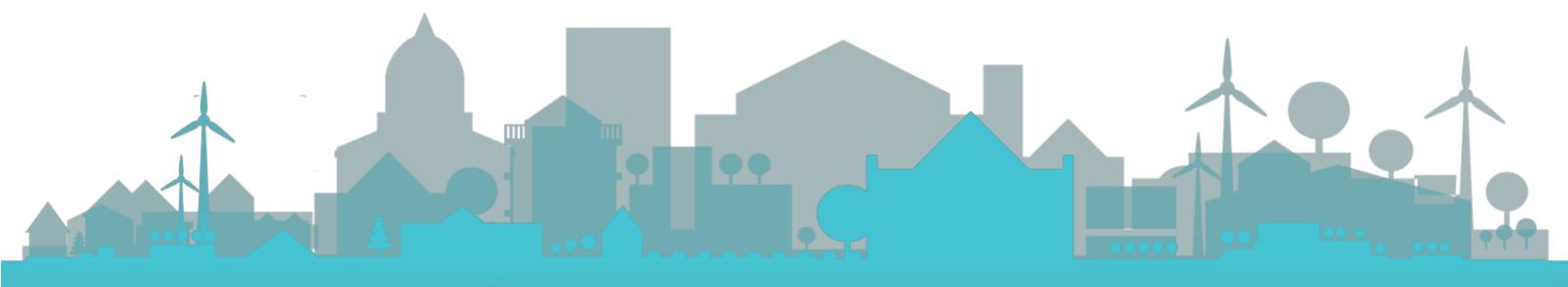


URBAN AGENDA FOR THE EU

ENERGY TRANSITION PARTNERSHIP

DRAFT ACTION PLAN

31 JANUARY 2019



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Table of Acronyms

ACRONYM	COMPLETE NAME
CEMR	Council of European Municipalities and Regions
CO2	Carbon Dioxide
CHP	Combined Heat and Power
CoR	Committee of the Regions
DE	District Energy
DG	European Commission's Directorate General
DG ENER	European Commission's Directorate General for Energy
DG ENVI	European Commission's Directorate General for Environment
DG REGIO	European Commission's Directorate General for Regional and Urban Policy
DSO	Distribution Network Operations
EC	European Commission
EEA	European Economic Area
EEFIG	Energy Efficiency Financial Institutions Group
EIB	European Investment Bank
ELENA	European Local Energy Assistance
EPBD	Energy Performance of Buildings Directive
ESCO	Energy Services Company
ESIF	European Structural and Investment Funds
ETS	Emission Trading System
EU	European Union
EUKN	European Urban Knowledge Network

JPI	Joint Programming Initiative
JRC	European Commission's Joint Research Centre
LT	Long Term
MFF	Multiannual Financial Framework
OP	Operational Programme
PoA	Pact of Amsterdam
PPP	Public Private Partnerships
R&D	Research and Development
RFSC	Reference Framework for Sustainable Cities
SDGs	Sustainable Development Goals
TG	Task Group
UA	Urban Agenda
UAETP	Urban Agenda Energy Transition Partnership
UDN	Urban Development Group
UN	United Nations
WG	Working Group

1 INTRODUCTION

On 30 May 2016, during the Dutch Presidency of the Council of the EU, Ministers responsible for Urban Matters adopted the Pact of Amsterdam¹. This Pact established the Urban Agenda for the EU, recognising the importance of effective urban policy and the benefits of incorporating cities in policymaking and the implementation processes. This decision came at a time when over 70% of Europeans lived in urban areas, stressing the need to foster sustainable urban development.

Today, urban areas are the drivers of the European economy and policy innovation. However, they are also the battleground for many of the societal struggles of the 21st century. The Urban Agenda for the EU was created to establish a new working approach for thematic partnerships, to support the sustainable growth of cities by also addressing social and environmental challenges.

The Urban Agenda is composed of 12 priority themes that are considered essential to the sustainable development of urban areas². Each of the 12 priority themes has a dedicated thematic partnership and these partnerships bring together cities, Member States and European institutions. They aim to implement the Urban Agenda by finding workable ideas focused on the topics of EU legislation and policy, funding, and knowledge sharing. One of these partnerships is the Urban Agenda Energy Transition Partnership (UAETP)³.

In line with the EU 2020 Strategy for Smart, Sustainable and Inclusive Growth, the Pact of Amsterdam defined the energy transition as one of the Priority Themes to be addressed by the Urban Agenda. This is because around 75% of EU citizens now live in urban areas. Consequently, urban areas generate the majority of our energy demand and are the place where most of our carbon emissions are produced. A strengthened EU Agenda on the energy transition is crucial for the sustainable future of Europe. In this regard, the Partnership will also have an important role in helping the EU meet its commitments to both the United Nations' Paris Agreement on Climate Change and the United Nations Sustainable Development Goals⁴.

The development of a smart integrated energy system within urban areas must deal with both heat and power. Only this approach will ensure that cities are able to effectively mitigate climate change and meet their decarbonisation targets. Thus, taking such action will support the sustainable development of cities and improve the quality of life of their citizens. It will also ensure the Urban Agenda for the EU is able to influence and support the global 'New Urban Agenda' as part of the Habitat III process⁵.

The energy transition, and the ultimately the decarbonisation of the energy system, is a huge challenge that will require fundamental changes to how we produce, store, distribute, manage and consume our energy, both heat and power. The solutions will be innovative and complex, and delivered by a multitude of stakeholders over the long-term.

¹ http://ec.europa.eu/regional_policy/sources/policy/themes/urban-development/agenda/pact-of-amsterdam.pdf

² <https://ec.europa.eu/futurium/en/urban-agenda>.

³ <https://ec.europa.eu/futurium/en/energy-transition>

⁴ https://unfccc.int/sites/default/files/english_paris_agreement.pdf

⁵ http://ec.europa.eu/regional_policy/sources/policy/themes/urban-development/agenda/pact-of-amsterdam.pdf.

This Action Plan has been prepared by the Energy Transition Partnership to consider the important role played in enabling and delivering the energy transition by different administrative levels in cities, Member States and the EU. There are a huge range of actions that will be ultimately needed. Many of these were highlighted and discussed by the Partnership, but the capacity and resources available to the Partnership meant that it had to concentrate on identifying a manageable number of catalytic Actions. These Actions focus on policy, finance, and knowledge sharing. If supported and delivered, the Partnership believes that these Actions will significantly strengthen the effective collaboration of the three administrative levels (local, national and the EU) in addressing and delivering the energy transition.

1.1 Objectives

Objective of the Partnership

The Working Programme of the Urban Agenda for the EU defines the main focus of the Energy Transition Partnership:

“The objective is to initiate and support a structural change in how energy systems operate by creating a far smarter and more integrated energy system, from a European down to a local level, that is zero carbon and demand led. Our energy systems will be pro-active in how they use, manage, recover and store energy so they no longer just default to increasing generating capacity to meet increasing energy demand. The focus will be on:

- *Improving energy efficiency at a city-level through the recovery and use of waste heat and at a building level through retrofitting for energy efficiency and energy management;*
- *Fostering innovative approaches to energy storage and supply (e.g. local systems);*
- *Increasing the amount of local and renewable energy.”*⁶

The Partnership has also identified some key objectives for the energy system that should guide activity and be delivered through the energy transition. Those are:

- **Security and Resilience** – An energy system is best able to consistently meet the energy demand of its consumers when that energy demand is minimised, and the remaining peak demand is managed. Such a situation allows for the remaining energy demand to be met by a diverse range of primary and secondary energy sources coupled with significant storage capacity. This requires a smarter and more integrated energy system that is better able to mitigate risks to energy availability, as well as ensuring that energy is consistently available to as many consumers as possible.
- **Affordability, Fairness and Equitability** – An energy system must make effective use of energy, utilising it efficiently and helping to insulate consumers from the inevitable fluctuations in the energy markets. Energy should then be supplied to all of its consumers at the same level of service and at a fair price, a level that people can afford, and which allows business to maintain their competitiveness.
- **Clean and Sustainable Energy** - A smart integrated energy system uses energy effectively by minimising demand, minimising wasted energy, and then maximising the use and reuse of secondary

⁶ Urban Agenda for the EU – Pact of Amsterdam, B Initial list of Priority Themes

and renewable energy sources to meet its remaining energy demand. This approach will also help improve air quality in cities by minimising harmful gases and particulate emissions to the atmosphere.

Objectives of the Action Plan

The overarching aim of the Action Plan is to make recommendations and propose Actions that, if successfully implemented, will help cities, national-governments, and the EU institutions to work effectively together and deliver the energy transition.

This Action Plan will:

1. Propose concrete short-term Actions in the areas of 'Better Regulation', 'Better Funding', and 'Better Knowledge' aimed at providing a more supportive regulatory, funding, and networking structure;
2. Identify partner institutions and organisations to work with and a mechanism for implementing the proposed Actions;
3. Propose a timeline for the implementation of each Action;
4. Provide the basis for monitoring the Action Plan by defining outputs for each Action;
5. Make recommendations for future Actions in areas that would continue to support the energy transition.

1.2 Governance of the Partnership

Coordinators: London, Gdansk and Roeselare

London is a leading world capital, a centre for finance, business and innovation and it aims to play a leading role in the global transition to a low carbon, circular economy. It is also a leader in climate change initiative as the city has ground-breaking energy and climate change mitigation policies and programmes that support the Mayor's commitment to London being a zero-carbon city by 2050.

Gdańsk, together with its metropolitan region, is one of the leading research, manufacturing, and innovative centres of new energies in Poland. Energa, Gdansk's public energy company, has the highest share of renewable energy sources in Poland. This new and smart energy is one of the major strategic specialisations of the Pomeranian region.

Roeselare produces renewable energy and has a significant heat network in the city that delivers waste heat to houses, buildings, and companies. But the city believes there is a more in-depth approach possible and necessary for a radical and successful energy transition. The region and the city have the crucial building blocks to build up a smart energy region and so want to be a positive driver in the energy transition of the Flanders region and in Europe.

Members

The Energy Transition Partnership consists of 24 different member organisations who represent Member States, regions, city authorities, stakeholder organisations and the European Commission. The members are listed below in Table 1.

Table 1: Members of the Energy Transition Partnership

Member States	Local/Regional Authorities	European Commission	Other EU Organisations/ Observers/ Stakeholders
Germany	Gdansk (PL)	DG REGIO	EIB
France	London (UK)	DG ENER	EUROCITIES
	Roeselare (BE)	DG CLIMA	URBACT
	Gothenburg (SE)	DG RTD	CEMR
	Navarra-Nasuvinsa (ES)		Euroheat and Power
	Udine (IT)		Energy Cities
	Tilburg (NL)		CELSIUS Project
	Groningen (NL)		
	Vaasa (FI)		
	Vidzeme Region (LV)		
	Warsaw (PL)		

Figure 1: Map of Energy Transition Partnership Members



Three Working Groups (WGs) were established that represented the different elements of the energy system, as set out by the Partnership. These WGs each worked to identify the challenges and opportunities that they represented for the energy transition. Each partner participated in at least one WG, and the WGs included a mix of members representing different administrative levels, as well as diverse geographical locations. Each WG was led by one of the Coordinators and they covered the following areas of the energy system:

- **Working Group 1: Energy Supply, Generation & Storage**

This WG looked at primary and secondary energy sources and production, storage, and distribution. The objective was to identify opportunities to maximise the use of renewable and secondary energy (waste heat), as well as optimising the role of storage (including thermal, electrical and hydrogen) in the energy system. It also looked at the transmission and distribution networks, and how to create a fully integrated energy (heat and power) system which, ultimately, delivers affordable zero carbon energy for its consumers.

- **Working Group 2: Energy Masterplanning and Energy Management**

This WG looked at the importance of understanding the energy infrastructure, energy resources, and energy demand in a city or urban environment. It also looked at smart technologies and approaches for driving demand-side management and demand response at both a system and building-level. The overall objective was to empower cities to undertake their own energy masterplanning at a local level and give citizens an active, rather than passive, role in the energy system.

- **Working Group 3: Consumers & Consumption**

This WG looked at the actual use of energy across the system, as well as citizens' relationship with energy, including measures to reduce their energy demand and be able to generate their own renewable energy. It also explored the cross-cutting area of financing the energy transition.

Table 2: Working Group Composition and Roles of its Members

	Supply, Generation Storage	Management & Planning	Consumers & Consumption
Leader	London (UK)	Roeselare (BE)	Gdansk (PL)
Partners	Gothenburg (SE)	Germany	France
	Udine (IT)	Groningen (NL)	Navarra Nasuvinsa (ES)
	Tilburg (NL)	Warsaw (PL)	Vidzeme (LV)
	Navarra Nasuvinsa (ES)	Energy Cities	Vaasa (FI)
	Udine (IT)		EUROCITIES
	Tilburg (NL)		CEMR
	Euroheat and Power		



Sources of Information and Expertise

In the process of developing the Action Plan, a broad range of research was undertaken, and expertise was consulted. These included:

- 1 - **Expertise of the Energy Transition Partnership members** – Members include urban municipalities, regional and national authorities, EU institutions, research bodies, city networks and initiatives, and funding organisations.
- 2 - **Background reports and literature reviews** - Including EU bodies and agencies, international organisations, and research institutions.
- 3 - **Sustainable Energy Week Event** – The ideas, thoughts, and early action areas of the Partnership were presented at the EU's Sustainable Energy Week in June 2018. Feedback and comments were provided by the audience and informed the work of the Partnership.
- 4 - **Consultations** – Ad-hoc consultations with relevant stakeholders during the Action Plan development phase, broad public consultation online, and intra-service consultation within the European Commission.
- 5 - **Expert advice** – A number of university experts and practitioners were contracted to carry out in-depth research into various elements of a city's capacity to promote the energy transition.

Working Method for the Partnership

The working method of the Partnership is set out below, as defined in the Pact of Amsterdam and the Scoping and Orientation Papers of the Energy Transition Partnership. The overall process follows 5 steps divided in 2 stages, as illustrated in figure 2 below. Steps 1 to 3 have been completed and the product is this draft Action Plan that is available for public feedback. Steps 4 and 5 form the second phase of the Partnership and are yet to be carried out.

Figure 2: Partnership Work Process



Step 1 Stocktaking

The work in this step initially involved the Partnership familiarising itself with the topic, its members and its members' interests before identifying the range of existing EU-level work and activities that exist around the Energy Transition. It then finalised the Orientation Paper and defined the scope of the Partnership and the three Working Groups. It also considered the resource requirements of the Partnership and what external expertise may be needed. At the first Meeting in Gdansk September 2017, the Partnership established the overall structure for their work, identified key stakeholders, and agreed the location and topics for the next meeting.

Step 2 Preparatory Actions

During this step, the Working Groups researched their relevant topics and identified and analysed the main bottlenecks and opportunities for the local delivery of the energy transition across Europe. A survey was also

conducted among other local governments in Europe to collect more information which would better inform the work of the Partnership. The second and third Partnership Meetings, in Tilburg and London respectively, were then held to identify the key bottlenecks, challenges, and opportunities which then provided the focus on where Actions were needed, and what those Actions should be.

Step 3 Defining the Actions, their objectives and their deliverables

In the third step, the members of the Partnership proposed and agreed upon a large set of Actions that addressed a selection of the key bottlenecks that had been identified during step 2. The next meeting, held in Pamplona, served to develop the list of Actions. These were with accompanied with the rationales for the selection of the specific Actions, as well as gathering commitment among the Partnership for the drafting and implementation of the Actions.

Partnership Meetings

There has been a total of five face-to-face Partnership meetings, as well as a number of virtual meetings among the specific Working Groups. Much work has been done in these meetings, which has ultimately led to the production of this draft Action Plan. The face-to-face meetings have taken place in 5 different Member States, each hosted by a member of the Partnership. These meetings have not only provided opportunities to personally meet and develop the Actions, but they have also allowed visits to renewable energy research centres and urban sustainable energy schemes existing in the given host municipality. The meetings of the Partnership were as follows:

1st Partnership Meeting: Gdansk (Poland)

- **Host:** City of Gdansk
- **Dates:** 13th – 14th September 2017

2nd Partnership Meeting: Tilburg (Netherlands)

- **Host:** Tilburg Municipality
- **Dates:** 6th – 7th December 2017

3rd Partnership Meeting: London (United Kingdom)

- **Host:** Greater London Authority
- **Date:** 14th February 2018

4th Partnership Meeting: Pamplona (Spain)

- **Host:** Regional Authority of Navarra Nasuvinsa
- **Dates:** 2nd – 3rd May 2018

5th Partnership Meeting: Brussels (Belgium)

- **Host:** ECORYS (Technical Secretariat)
- **Date:** 18th January 2019

Figure 3: A Number of the Members of the Energy Transition Partnership at the National Renewable Energy Centre in Pamplona, Spain (May 2018).



2 CITIES AND THE ENERGY TRANSITION

2.1 Introduction

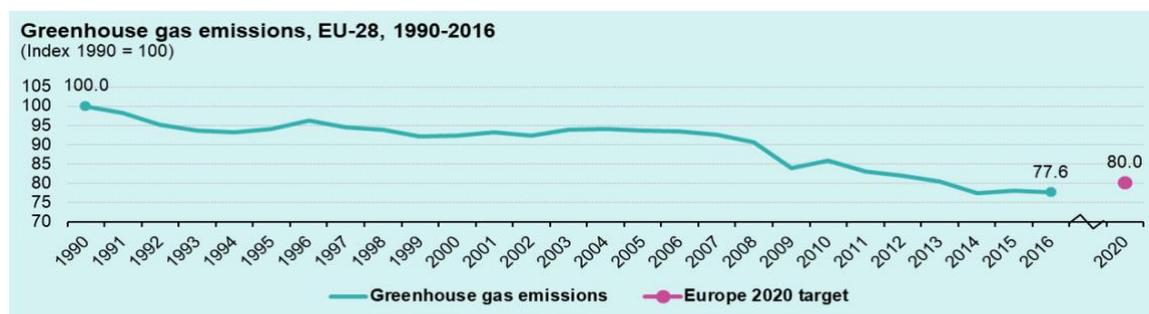
A smart integrated energy system is crucial not only for tackling climate change, but also for the future prosperity and liveability of European cities. The energy system needs to be able to meet a city's energy demand in the most sustainable way. The word 'transition' alludes to the change from a present state to a future one. Therefore, the energy transition – the path to zero carbon - will require a radical change in how we design, build, and operate our energy systems.

Greenhouse Gas Emissions and Primary Energy Demand in the EU

The Paris Agreement and the EU's energy policy objectives clearly set out the urgent need to address climate change. It is clear that the EU has an important leadership role in this, both within Europe but also internationally. This is the rationale for the energy transition and indeed the Urban Agenda's Energy Transition Partnership. As stated earlier, 75% of Europeans now live in cities and urban areas, thereby cities are responsible for the majority of the EU's energy demand and consequently greenhouse gas emissions.

The EU wants to be climate neutral by 2050 and the energy transition will establish how that will happen. This will be a real challenge, as illustrated by the graph⁷ below. The target is the pink dot, a 20% reduction by 2020. But to be climate neutral, we need to see a reduction as close as possible to 100% by 2050, with the remaining emissions addressed by carbon capture and storage and/or other carbon positive measures.

Figure 4: Greenhouse Gas Emissions in the EU-28, 1990-2016 (Eurostat, 2018)

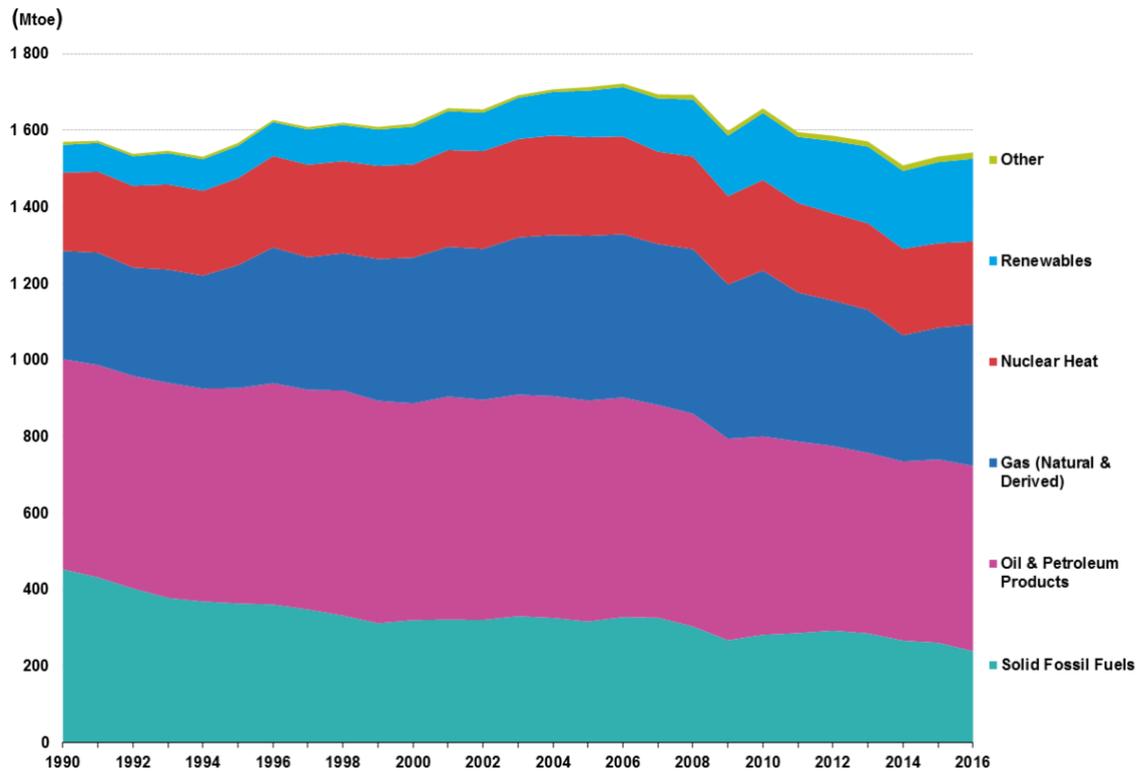


Note: total emissions, including international aviation and indirect CO₂, but excluding emissions from land use, land use change and forestry (LULUCF).

⁷ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Greenhouse_gas_emissions_EU-28_1990-2016_\(Index_1990_%3D_100\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Greenhouse_gas_emissions_EU-28_1990-2016_(Index_1990_%3D_100).png)

The graph below⁸ highlights the amount and makeup of the primary energy consumed within the EU between 1990 and 2016. It shows that the primary energy demand is very similar in 2016 as it was in 1990. To compound this, whilst the proportion of fossil fuel sources in the overall mix has decreased since 1990, approximately two thirds of primary energy demand is still met from fossil fuel sources.

Figure 5: EU28 Primary Energy Consumption 1990-2016 (Eurostat, 2018)



2.2 The Energy Transition

The energy transition will create systems that produce, store, distribute, manage, and supply both heat and power. These systems will be more decentralised, flexible, demand-led, and ultimately zero carbon. This presupposes that demand is minimised, managed, and manipulated to reduce the amount of primary and secondary energy generating capacity that will be needed to meet the residual system demand. This is a major shift away from the historical generation-led approach, where primary energy generating capacity was built to meet the projected peak demand in the system.

⁸ <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:EU28-Primary-energy-consumption-1990-2016-chart.png&oldid=372465>

It leads to the creation of a more circular energy system, one that:

- **Reduces** energy use;
- **Reuses** available waste (secondary) energy sources;
- Generates **renewable** energy to meet remaining energy demand.

A city's energy demand includes the everyday choices and activities pursued by its citizens and businesses, as well as the operation of its supporting infrastructure that allows the city to operate effectively. The energy transition needs to address all these challenges within the city and provide solutions that will allow the city to become climate neutral.

The energy transition will deliver a long-term structural change in the energy system. This change will aim to develop a more flexible system which is better able to manage and balance the dynamic patterns of supply and demand. These dynamic patterns are being experienced not only at the European and national-level, but also at a regional and city-level. This evolution must ultimately enhance both national and European energy security, decarbonise the system, and support energy equality: affordable energy that is accessible to all citizens and businesses.

The energy transition will help deliver the EU's 2030 European Climate and Energy Framework, but its ultimate goal is for the EU to be climate neutral by 2050.

2.3 The Fundamental Role of Cities in the Energy Transition

With 75% of Europeans now living in urban areas, cities are at the forefront of climate action both in terms of mitigation and adaptation. Whether it is decarbonising heat, retrofitting buildings, using local and renewable energy, or promoting ultra-low emission vehicles, cities are the actors that are instigating action. They are also taking action to facilitate behavioural changes that contribute to a more sustainable lifestyle. This is done by working with their citizens, businesses, and communities to explain to these actors the important role each of them has to play in supporting to the creation of sustainable cities.

Everyone uses energy to some degree. Therefore, everyone has an interest in and a role to play in the energy transition and the creation of a more sustainable society. Large consumers and producers of energy, including cities and large urban and industrialised regions, need to be the pioneers of the energy transition. To play this role, cities need to be supported by innovative and ambitious energy policies, as well as smart funding both at a European and national-level. In order for cities to become climate neutral, stakeholders from across the energy sector need to be encouraged and supported to exploit the opportunities that smart integrated energy systems provide for cities.

Only strong and ambitious national and European legislative frameworks can support the range of activities that need to be delivered in cities as part of the energy transition. In turn, the energy transition will help to stimulate growth in the local economy and create good jobs for local people. A smart integrated energy system has a fundamental role to play in the transition to a low carbon economy.

The 'Clean Energy for All Europeans' EU framework package creates an excellent step towards enabling the energy transition, but it is crucial that the transposition of these directives by Member States is ambitious and consistent. It should identify good practices at a Member State level, showing how the interpretation and

delivery of the Directives is catalysing the energy transition, to thereby promote such interpretation and delivery among all Member States.

In summary, the energy transition needs to support a smarter, more integrated, and flexible system-level approach that will:

- Minimise energy demand;
- Diversify energy sources, maximising renewable, and local secondary energy sources;
- Maximise affordable combinations of storage options, including thermal, electrical, and hydrogen;
- Deploy smart energy platforms, technologies, controls, and management systems to:
 - Create a more integrated, smarter, and more decentralised energy system
 - Maximise demand-side management and the use of storage to manage the quantum and timing of energy consumption
 - Provide affordability and choice to consumers, including through new time-of-use tariff structures
 - Enable customers to be energy prosumers - both consumers and producers of energy

Some issues that were considered very important for the energy transition by the Partnership, for which we did not develop into Actions as part of this draft Action Plan. This was due to the Partnership lacking the resources to develop and implement appropriate Actions, as well as the short timeframes required to deliver certain Actions which would have taken a more extended amount of time. Examples of these important issues included:

- The structure and functioning of the energy market does not currently support stakeholders to make low carbon choices that can actively drive the energy transition;
- An EU-level carbon tax for non-EU Energy Trading Scheme (ETS) sectors;
- Creating a level-playing-field for all technologies and energy sources to compete, so that the optimum solutions are arrived at for each specific situation;
- Help to create 'local markets' for electricity consumed and generated in urban areas. This would allow consumers and producers of electricity, along with providers of storage and demand-side management, to easily access and benefit from these 'local markets'.

The **5 proposed Actions** of the Partnership were all considered **deliverable** and essential for supporting cities to play a full and active role in the energy transition. These five actions are listed and explained in sections 3 and 4.

3 SUMMARY TABLE OF ACTIONS

	NAME	LEADER	CONTRIBUTOR(S)	AIM(S)
DISTRICT ENERGY				
1	'Financing for District Energy' Task Group	Groningen	Navarra, CEMR, Gothenburg, Tilburg, Roeselare, Germany, EIB	EEFIG Subgroup (Better Funding)
2	Maximising Use of Waste Heat in Cities	Euroheat & Power	Tilburg, Roeselare, Udine, Groningen, Gothenburg, CEMR & CELSIUS Project.	Position Statement (Better Regulation + Better Knowledge)
ENERGY MASTERPLANNING				
3	Energy Masterplanning for Cities	Warsaw Germany, Roeselare	Energy Cities, Tilburg, Gothenburg, CEMR, Eurocities, Udine.	Support Document (Better Regulation + Better Knowledge)
ENERGY EFFICIENCY				
4	'Deployment Desks' for City Retrofitting	Navarra	Vidzeme, Vaasa, Eurocities, CEMR	Concept Paper (Better Knowledge)
MAKING EU FUNDING WORK BETTER FOR CITIES				
5	Closer Co-operation with EU Bodies to Promote Energy Transition Funding	Tilburg	Vidzeme, Eurocities, Germany	Position Paper (Better Funding)



4 DESCRIPTION OF ACTIONS

4.1 Action 1: CREATION OF 'FINANCING FOR DISTRICT ENERGY' TASK GROUP

LEADER	CONTRIBUTORS	AIM
Groningen	Navarra, CEMR, Gothenburg, Tilburg, Roeselare, Germany, EIB	EEFIG Subgroup (Better Funding)

A) What is the specific problem?

For cities and towns in the European Union, one of the major challenges in becoming zero carbon is supporting their buildings with the transition to a sustainable heating system. This is particularly challenging because of the various building typologies, the different models of ownership, and the different characteristics of the buildings. In the future, sustainable heating systems will often be developed for multiple consumers and buildings at a neighbourhood or district-level. These will subsequently form an integral part of a wider smart integrated energy system. Thus, the district level is a useful and manageable scale for citizens to be engaged.

District energy has an important part to play in creating smart integrated energy systems that minimise primary energy demand, optimise effective use of energy through use and re-use of waste heat, and keep the costs of energy affordable. Unfortunately, these large capital projects have a risk profile. The risk is particularly high early on during the capital-intensive development, construction, and the early operational years. However, this risk profile rapidly reduces as the network is established, customers are connected, and income starts to flow back into the project through the heat and electricity supplied to customers.

The combination of a risk profile, high upfront costs, and long steady returns means that it can be very difficult to source affordable finance for delivering district energy projects. If they are to be delivered at a large scale, they require low-cost patient capital that is structured to accommodate for the risk profile of the projects. This means that traditional private sector finance is often not appropriate due to the high cost of capital, the low returns expected for the accommodated risk profile, and the inflexible nature of the re-payment profile.

B) What action is needed?

This Action is designed to bring district energy and financing experts together to share experiences, collaborating to identify potential funding mechanisms, and to identify the most appropriate sources of finance. The present Action will identify and address issues such as:

- The key risks and opportunities in developing and delivering these projects;
- How to mitigate such risks;
- How to structure financing support – from the development activity through to construction and ultimately operation – to enable commercially viable projects to be developed and delivered in a quick and easy manner.

A paper will be developed and presented to the European Commission (DG ENER). The goal of this will be to explore and identify existing forums, such as the Energy Efficiency Financial Institutions Group (EEFIG), to start an open dialogue on how cities can become engaged on the topic at the European-level. The outcomes of this dialogue will then be used to raise awareness on the topic across EU institutions, so to specifically identify the most appropriate existing forum in which to develop possible solutions to the challenge faced.

C) How to implement the action?

Short term

A paper will be developed to explain the challenges of financing district energy projects. This will be presented to the European Commission (DG ENER). The goal being to explore, identify, and engage with existing forums, such as EEFIG, to start an open dialogue for mapping potentials and exploring how cities can be engaged. Consequently, this dialogue will be shaped to inform the policy making process, which will help to address financing challenges.

Medium term

The outcomes of this dialogue will then be used to raise awareness on the topic across EU institutions. This will help to identify the most appropriate existing forum in which to address these relevant issues, and to identify possible solutions to the challenges.

Long term

These dependent on the short and medium term.

D) Which partners are involved in the action?

Lead Partner – Groningen

Contributor Partners – Gothenburg, Tilburg, Roeselare, Germany, EIB

Other Partners – Euroheat & Power; CELSIUS 2 Project,

Other Potential Partners - District energy stakeholders, including: cities, district energy companies, ESCO, Euroheat & Power, storage providers, transmission and distribution network/system operators, financial institutions and investors, research institutions

F) Does it link to other elements of the Energy System or specific Actions that we have identified?

It links closely to:

- Action 5: EU Funding Action for Energy Transition - This Action is separate to the present one, which it is very specific to district energy, whereas Action 5 covers all elements of the energy transition.
- Action 3: Energy Masterplanning in Cities – This will support the funding of the district energy projects that will be identified through the energy masterplanning process.

4.2 Action 2: MAXIMISING USE OF WASTE HEAT IN CITIES

LEADER	CONTRIBUTORS	AIM
Euroheat & Power	Tilburg, Roeselare, Udine, Groningen, Gothenburg, CEMR & CELSIUS Project	Position Statement (Better Regulation + Better Knowledge)

A) What is the specific problem?

Currently, the EU produces more waste heat than the heat demand of its entire building stock. Thus, waste or secondary heat source could displace a significant amount of the primary energy demand in cities, and consequently form an essential component of a cost-effective energy transition.

To decarbonise and create greater resilience in district heat networks, these networks need to be able to easily recover a diverse range of waste or secondary heat sources within their city and its environs. This is essential as cities implement their long-term strategy for the decarbonisation and expansion of their heat networks. At present, this is difficult for a number of reasons. Firstly, due to the inconsistent implementation of relevant Directives, including the Renewable and Energy Efficiency Directives. Secondly, the accessibility and financial value of waste heat, to engage with and persuade the producers of waste heat to work with heat network operators to make their waste heat readily available to the heat network.

As an example, Article 14 of the Energy Efficiency Directive 2012/27/EU is designed to guarantee that waste heat from power generation and industry is utilised for space heating whenever practically and financially viable. Despite the best intentions of this Directive, very little of the waste heat potential of these sources is currently being used in heat networks in Europe.

B) What action is needed?

There needs to be a presumption created around the active utilisation of both existing and new waste heat sources that actively supports the incorporation of waste heat into existing and future heat networks. The barriers to its limited use need to be investigated, from both a heat network operator and waste heat producer's perspectives. Solutions need to be produced in light of these barriers that would make it easier for heat network operators to access and use available waste heat sources. Additionally, incentives must be created that would actively encourage organisations that produce waste heat to make it readily available to heat network operators.

The Action would be to develop a Position Paper setting out a suite of solutions. The solutions would largely be responses to barriers identified through consultation and workshops with heat network operators and waste heat producers. Such solutions would make use of existing policy and regulatory levers, whilst suggesting new ideas, policies and viable financial incentives that would be promoted to EU, national, and local governments.

The aim would be to simultaneously enable more comprehensive and consistent implementation of elements of the Clean Energy Package that relate to waste heat and heat networks; whilst developing consensus and support between these stakeholders in order to maximise the amount of waste heat that is utilised in heating systems across the EU.

As an example:

The possible explanation for the meagre outcome of Article 14 is the framing and subsequent implementation by Member States. The Article comes into effect when a new plant of industrial facility of some sort is being planned. In this situation, the investor and developer must assess whether it would be economically and practically feasible to utilise any waste heat, or install a CHP unit, both of which would require building a heat network.

This creates a significant additional capital cost for the project. Therefore, in most cases, it is not likely that investing in waste heat utilisation purely for the facility will be deemed profitable. At least not when assessed as a sole investment, without assuming that the heat network will grow and allow other potential producers of waste heat to supply into the system.

On the other hand, if the assessment was made from an existing or future heat network's perspective, with a broader scope - encompassing a larger geographical area and so the anticipated development of that area over time – then it makes more sense to build a new or extending an existing heat network in that area.

This clearly lies beyond the responsibility, capacity and interest of the original investor or developer of the facility and should actually be a strategic decision for the heat network operator. As an example, the municipality could be the main actor in such a process, and this would link into city-wide energy masterplanning.

Therefore, the strategic role for developing district heat networks and incorporating waste heat into them should also be an integral part of the city energy masterplanning process. This strategic approach will then be complemented by the very important need for catalysing the process by which heat network operators are able to engage with the producers of waste heat. Ultimately, through such negotiations, access to low and zero carbon waste heat sources for their heat network will be secured.

C) How to implement the action?

Short Term

Establish a Working Group of stakeholders from across the sector to look at the barriers to accessing and utilising waste heat in cities. This Working Group will then run a number of workshops and engagement sessions with both heat network operators and waste heat producers. This is to understand the real and perceived barriers to using waste heat in district heating networks. The Working Group will then use this intelligence to develop a Position Paper that sets out a range of recommendations for how these barriers could be addressed for the mutual benefit of the heat network operator, the waste heat producer and the associated energy system.

In parallel, Action 3 on Energy Masterplanning would work with this Working Group to ensure that the opportunities provided by waste heat for contributing to the decarbonisation of heat are realised. Standards should be developed for assessing waste heat potential in city planning and ensuring that it is undertaken.

Long Term

This component of city planning may need to be prescribed in national legislation. If so, these can be recommended for future Actions if the Partnership continues to operate and grow. Experience and knowledge of this can be drawn from Member States, cities and EU projects such as Celsius.

D) Which partners are involved in the action?

Lead Partner - Euroheat&Power

Contributing Partners – Tilburg, Roeselare, Udine, Groningen, Gothenburg and CELSIUS 2 Project

Promotional Partners – EuroCities and CEMR and Energy Cities

Additional Partners and those to be consulted could include cities involved in developing heat networks, heat network operators, trade and representative bodies for heat networks, waste heat producers, technology companies, Member States and EU Institutions.

E) Does it link to other elements of the Energy System or specific Actions that we have identified?

Close links with the:

- Action 3: Energy Masterplanning in Cities – It is necessary to know what type and where the waste heat sources are in a city or urban environment;
- Action 1: Financing for District Energy – This will enable networks to be built that will distribute the heat from where it is produced to where it is consumed;
- Action 4: 'Deployment Desks' for City Retrofitting – This will allow energy efficiency and energy supply projects to be developed together to provide the cost optimum solution for decarbonisation of neighbourhoods and districts.

4.3 Action 3: GUIDANCE ON ENERGY MASTERPLANNING FOR CITIES

LEADER	CONTRIBUTORS	AIM
Germany, Roeselare & Warsaw	CEMR, Energy Cities, EUROCITIES, Gothenburg, Udine.	Support Document (Better Regulation + Better Knowledge)

A) What is the specific problem?

In the EU’s vision for a long-term strategy for 2050 (“Clean Planet for all: A European Strategic long-term vision for a prosperous, modern, competitive and climate neutral economy”), Member States are asked to work together with all local and regional authorities towards becoming carbon neutral by 2050. Although this is not formally adopted by the Member States, the strategic vision shows how Europe can lead the way to climate neutrality by investing in realistic technological solutions, empowering citizens, and aligning action in key areas such as industrial policy, finance, or research. All this is to be done in parallel to ensuring social fairness for a just transition. This vision for a climate-neutral future covers nearly all EU policies and is in line with the 2015 Paris Agreement’s objectives. Therefore, the role of the sub-national level will be fundamental to help to decrease global emissions. Also, it is often necessary for multiple municipalities to work together on one single energy masterplan with the cooperation of a regional authority.

Energy systems have historically been relatively simple and centralised. They have been based on matching supply and demand, transmitting energy through a distribution system, and ensuring that users have a reliable supply. However, the energy transition demands a more complex, decentralised, dynamic system that requires a more interventionist approach from cities and municipalities in planning their system. Energy masterplanning is a spatial, and sometimes also temporal, approach to determining the energy needs of a locality. It explores how those needs will be met through a variety of power and heat sources. This approach needs to consider future growth and changes in the locality, dynamic demand, new technologies, and new energy production. It also necessitates the involvement of a wide group of local actors for input.

As we are increasingly moving towards decentralised energy infrastructures and technologies, we also need to adapt the governance of the energy system. This will mean that the local and regional authorities, who actually stand at the forefront of this transition, are able to contribute towards energy planning and scenarios which are still predominantly discussed at the national level.

Energy masterplanning needs to be tailored to local conditions, as well as to future development and growth plans. To ensure that the local energy system is integrated into the larger energy system, energy masterplanning will often require close cooperation with neighbouring and regional authorities, Member States, etc.

To move from the singularity of the project-based approach towards a successful energy transition, it is necessary to empower cities and municipalities to develop and implement their own energy masterplanning (which for purposes of this Action includes both aspects of energy planning as such and energy aspects of other related municipal planning processes like spatial planning). This integrated and territorial approach should be linked to wider urban development, particularly in relation to the density and the climate conditions of the specific region. The tools developed should therefore also be usable for different sized cities and municipalities.



Currently, the European Commission, the Member States and the European Parliament are negotiating the next programming period for the European Structural and Investment funds. The members of the Partnership welcome the requirement of allocating at least 6 % of the ERDF resources on national-level sustainable urban development. This gives the chance to invest more funds in an integrated urban development, where the energy transition plays a crucial role on the local and regional level. Member States and regions in the EU should therefore make use of the ERDF funds for sustainable urban development, including energy efficiency, by defining adequate measures in the Operational Programmes in the period after 2020.

B) What action is needed?

Energy masterplanning is a complex activity, and there is currently limited support available to enable cities and municipalities to develop a masterplan for their local energy system. There is also a strengthening movement across Europe towards decentralising energy infrastructure and technologies. As part of this movement, there is an inherent need to adapt the governance of the energy system as well. This Action will therefore develop a supporting document that will try to assist and enable cities and municipalities to accommodate for energy masterplanning processes.

The proposed action:

Develop structured, practical support materials for cities and municipalities through the collection of lessons learned and the provision of guidance and recommendations. This is designed to empower cities or municipalities of different sizes in the EU's Member States to undertake energy masterplanning, as an integrated part of sustainable urban development. These support materials will include:

- Recommendations on various issues, such as a criteria for selecting an appropriate spatial area, thematic objectives of an integrated approach, a strategy for implementation, suggestions for an approach for the establishment of a governance system between governmental and non-governmental organisations, data sources and the role of data, targets for the energy transition, action-oriented urban transition agenda on district scale, actor activation and options for financing;
- Emphasis that a structural approach must also be explored, whereby the need for a stronger contribution and involvement of cities towards national-level energy planning is promoted;
- Support for the implementation of the energy transition through EU funding resources;
- Awareness raising and knowledge dissemination for local authorities and relevant stakeholders.

C) How to implement the action?

Short term:

Through the Partnership Working Group, good practices related to energy masterplanning will be collected from all involved partners, city networks and relevant European funded projects into a support document.

Medium and longer term

This Action can be implemented via the “Reference Framework for Sustainable Cities (RFSC)”. The RFSC is a very appropriate and user-friendly tool that helps cities and municipalities to improve the integrated approach of local development strategies. In this particular case, also to contribute towards the mainstreaming of energy planning in all dimensions of urban development.

D) Which partners are involved in the action?

The implementation should be supported by the following partners:

Best practice and dissemination

- CEMR (climate and energy expert group, RFSC);
- Covenant of Mayors;
- Energy Cities;
- EUROCITIES (Environment Forum of City Experts);
- URBACT;
- EUKN.

Funding and implementation of projects

- European Commission;
- EU Member States and regions.

E) What is the timeline for the action?

Preparation (collection of best practices):

- 6 months after publication of the Action Plan.

Integration of materials in support document (dissemination of good practice, guidance and recommendations, conferences, webinars, etc.):

- 12 months after publication of the Action Plan.

The long-term implementation of the Action will also cover the drafting and implementation of measures related to planning aspects of energy transition in Operational Programmes with the assistance from EU funds (e.g. Structural and Investment Funds, Cohesion Fund). It will require a proper coordination of actions, especially on the EU level, which includes a certain amount of online and offline engagement with decision-makers, stakeholders and the partners of the Energy Transition Partnership. Conference participation by the Partnership could also play a role in this.

F) Does it link to other elements of the Energy System or specific actions that we have identified?

Energy masterplanning is a crucial tool to implement a successful energy transition in Europe and is therefore linked to the other Actions of the Action Plan. In more concrete terms, the contributions will be as such:

- Action 2: Maximising use of Waste Heat - A role in developing district heat networks and incorporating waste heat (for example to enable cascading) into them is subject of the city energy masterplanning process.
- Action 5: Financing District Energy – This will help to realise the planning process which energy masterplanning can give.

4.4 Action 4: 'DEPLOYMENT DESKS' FOR CITY RETROFITTING

LEADER	CONTRIBUTORS	AIM
Navarra	Vidzeme, Vaasa, Eurocities, CEMR	Concept Paper (Better Knowledge)

A) What is the specific problem?

In the EU, buildings are responsible for 40% of total energy consumption and 36% of CO2 emissions. More specifically, households are responsible for around 68% of the energy use in European buildings. Approximately 70% of the energy consumption in homes is used for heating water and spaces. The fact is that most houses require retrofitting to increase their energy efficiency. Additionally, it is estimated that 11% of Europe's population suffer from energy (fuel) poverty. This a consequence of a combination of poor building quality, especially thermal efficiency, and the low incomes of their inhabitants.

The energy efficiency challenge is immensely significant. There are around 250 million homes in the EU which will need to be retrofitted to achieve the energy transition before 2050. This translates to an extraordinarily high rate of retrofits which need to be carried out each and every day. The retrofitting needs of these buildings include improving the insulation of the building envelop, renovating their heating and cooling installations and installing smart meters, and controls and management systems consistent with energy transition objectives. These can be undertaken in conjunction with addressing other structural issues and social objectives, such as the universal accessibility of energy.

This big challenge highlights the need to deliver large-scale retrofitting in cities, which are ideally to be accompanied by potential funding mechanisms. The creation and operation of 'Deployment Desks', which would function mainly as projects development units as well as providers of advice (for the municipalities and the property owners), offers a potential solution to this challenge.

Deployment Desks are to be dedicated public offices, at local or regional level, to impulse urban regeneration and energy retrofitting (mainly dwelling buildings but other typologies could be included in their targets). This is done by promoting retrofitting among property owners, as well as helping them with the process. Its functions would also require coordination between public administrations and the integration of private agents for a successful urban renewal process aimed at reducing CO2 emissions and other co-benefits. Helping property owners might include mediation to reach agreements (dwelling buildings with different property owners), advice on technical solutions, management of public subsidies, quality control of works, help obtaining favorable bank loans, etc.

B) What action is needed?

For Deployment Desks to be effective, they need to be created and operate at a local/regional level. They need to be based in and led by public bodies, whereby professionals are hired with a range of different skills, so that that an integrated service is offered in order to facilitate the retrofitting of existing buildings and districts. Technical staff are required to have more than just technical skills, thus also possessing administrative, legal, social, and financial skills. This is due to the fact that one of the key challenges for home energy retrofit is a weak or non-existent coordination between advice on technical and financial issues. Additionally, there is a need for social mediation when agreements are sought in collective housing or multi-family buildings and administrative support for paperwork to get grants and licenses.



Projects in Navarra, like Lourdes Renove (<https://www.youtube.com/watch?v=9MbUa-d8H1E>), financed by EU Program CONCERTO, and Efidistrict (<https://www.efidistrict.eu/>), financed by EU Program MLEI-PDA / CIP-IEE-2013, have been particularly useful for creating an organisational structure at the regional level. These have led to the integrated retrofitting of an entire neighborhood and this can be considered to already function as a kind of Deployment Desk.

Other examples in Europe have focused on promoting housing energy retrofitting by providing integrated support solutions. These have sought to coordinate the relevant elements in order to make the home-owners' retrofitting processes easier. Examples include *Picardie Pass* in France or *One Stop Shops* in Sweden. The for seeds developing these projects can be considered as very similar to the seeds required for the Deployment Desks, as they have different contexts but provide similar solutions.

When establishing Deployment Desks, the cities or regions also need to have Public Master Plans for Building Renovation. These allocate financial resources and establish management models that are delivered by the Deployment Desks. Such plans could initially focus on public buildings (dwellings) and also on districts with urgent regeneration needs. Later, they can also extend their activities, for instance to impulse and project development of urban regeneration projects, or to privately owned buildings, such as communities of owners, which is the most common property model in Europe.

Considering the general social benefits of housing retrofitting, as well as its specific focus on energy efficiency improvements, one key activity is to ensure coordination between different policies and departments at a local and regional level. These include Housing, Climate Change and Energy Transition, Environment, Transport and Social

C) How to implement the action?

Short term (Year 1)

The Action will develop a guidance document that will be delivered in the first semester. The guidance document will set out how to create, develop and operationalise the 'Deployment Desk' concept in cities and regions. This will include:

- Identification of already existing structures which could be considered as Deployment Desks, and thereby study how they function (regional/local, public/private cooperation, allocation, retrofitting plans, etc.);
- Defining the contents of Public Master Plans for Building Renovation at a city or regional level;
- Identifying the types of training (for example technical, financial and engagement support) needed by the Deployment Desk teams and awareness raising programs for households;
- Identifying the kind of partnerships and agreements, including innovative Public-Private-Partnerships, that will be necessarily made to support the successful activity of Deployment Desks. These are likely to include utilities, Energy Service Companies (ESCO), and financial bodies;
- During the second semester, this guidance document will be distributed among EU regional and local governments, through existing structures and networks in the EU related to energy transition and urban regeneration.

Medium term

- Establishment of investment funds linked to energy efficiency and specifically for housing retrofitting and urban regeneration (regional level, local level);
- Searching for European and national funds to develop renovation plans;
- Promoting flexibility and adapting the urban regulations to make it feasible for energy retrofitting, allowing for the implementation of bioclimatic technical solutions;

- Increasing European, national and regional funds allocated to deep renovation and urban regeneration (including acquisition of privately-owned housing buildings by public entities for their renovation and subsequent provision to the market as social housing);
- To get know-how and sharing best practices in terms of technical, financial, legal, regulatory and management solutions from different Member States. This is in order to replicate good practices and increase, year by year, the number of residential buildings retrofitted. Completed projects which have included EU funding such as EU-GUGLE can provide recommendations and information on good practices (<http://eu-gugle.eu/es/>);
- Promoting technical assistance and information exchange among Deployment Desks by EU instruments such as TAIEX (https://ec.europa.eu/neighbourhood-enlargement/tenders/taix_en) including workshops, expert missions and study visits.

Long term

- Harmonising the application of the regulation and building codes, from European directives to municipal legislation;
- Continuing the allocation of funds to energy refurbishment and urban regeneration, as a way to drastically reduce CO2 emissions and to strengthen the economic sectors related to building and retrofitting;
- Continuing to search for and sharing best practices, as well as promoting technical assistance and information exchange.

D) Which partners are involved in the action?

These are partners that will be required both for the initial Action identified, as part of the Action Plan, but also for the medium and long-term activities that could be undertaken to further develop the Action Plan:

- Municipalities and Public Companies (local or regional)
 - Leading the creation and improvement of Deployment Desks (allocation, managing, and resources);
- Public administrations at different levels (local, regional, national, European)
 - Providing subsidies, activating funds, establishing agreements, developing joint projects and adapting legislation;
- Financial institutions and banks
 - Financing retrofitting (loans for building companies and household owners);
- Public and private investment funds focused on energy efficiency
 - Providing funds for Deployment Desks activities and Integrated Projects;
- Building companies specialised on deep renovation of buildings
 - Guaranteeing high performance of building renovations;
- Energy service companies (ESCO)
 - Guaranteeing high performance of heating and cooling renovations and providing financial schemes based on energy savings. CITYnvest project, in which CEMR was involved, provide recommendations that can be considered as a starting point (<http://www.citynvest.eu/>);
- Electric utilities and distribution network operators (DSO)
 - Providing financial schemes based on energy savings;
- Private companies (e.g. real estate)
 - Where and when the market can be mature and profit from energy retrofitting could be possible, they could support Deployment Desks activities;
- Housing companies, both public and private
 - Investments, dynamization and involvement in management of deep renovation and urban regeneration projects with energy efficiency criteria;



- Association of home owners
 - Promotional activities.

E) What is the timeline for the action?

- **Months 1 to 6:** The Guidance Document is to be elaborated;
- **Months 7 to 12:** The Guidance Document should be distributed among EU regional and local governments and the recommendations included for their creation and development should be spread as much as possible;
- **Month 12 onwards:** Promoting the creation or development of Deployment Desks. (It could be useful if National Contact Points for EU Programs could provide advice on this in the different EU countries, also for coordination purposes). Additionally, the creation of a Deployment Desks Network could assure exchange of best practice as well as expert missions, technical assistance, information exchange and dissemination of activities and process results as a EU observatory.

F) Does it link to other elements of the Energy System or specific Actions that we have identified?

This Action can benefit from the development of other actions. These include:

- Action 1: Financing for District Energy - Due to the possible links with district large-scale retrofitting.
- Action 3: Energy Master Planning - Due to potential synergies as urban renovation and energy retrofitting would be one of the most relevant strategic lines in masterplans.
- Action 5: Cooperation with EU for funding Energy Transition - Due to the high demand of financial sources for retrofitting.

4.5 Action 5: CLOSER CO-OPERATION WITH EU BODIES TO PROMOTE ENERGY TRANSITION FUNDING

LEADER	CONTRIBUTORS	AIM
Tilburg	Vidzeme, Germany, Eurocities	Position Paper (Better Funding)

A) What is the specific problem?

Large scale investments for the energy transition in urban areas require tremendous amounts of funding. As of this moment, there is no dedicated work programme in EU funding schemes that funds large-scale investments for the energy transition in urban areas. Currently, the initiatives that cities can fund and implement using EU funds are those which are pilot/demonstration projects that test (new) technological/organisational applications. Many projects also cope with the State Aid Regulation, which limits the extent of widely implementation of energy transition measures (e.g. indirect State Aid in relation to investments for house owners).

B) What action is needed?

By 2021, there will be a dedicated funding stream for large-scale energy transition investments in urban areas. This funding stream will be part of a work programme in one of the upcoming European funding instruments, such as Horizon Europe or LIFE (Climate Action). This funding stream will also take into account more flexible exemption rules regarding (indirect) State Aid. This is because the energy transition also consists of services that are of general interest⁹. The paper will function as an opening for negotiations with the EIB to determine the extent to which it is possible to provide more flexible energy transition finance constructions. Additionally, it will even explore the multiple usage of EIB funding such as ELENA.

C) How to implement the action?

Short term

By Q3 2019, a fully-fledged position paper will have been brought to the attention of relevant stakeholders (DG RTD, DG COMP, DG ENV, DG REGIO, EIB, etc.) that determines the work programme formulation for EU funding programmes and EIB finance constructions. This paper is to be formulated with input from existing organisations/working groups active across the EU. Effective use of for a, such as the EUROCITIES Environment Forum Working Groups and Energy Cities, will be necessary. Through cities fora, requests will be made to provide inputs regarding:

- 1) The energy transition investments that they are planning for the upcoming years;
- 2) The level of financial investments required;
- 3) Experiences with EU funding to finance elements of such investments (pro's / cons).

⁹ Quality Framework for Services of General Interest (2011)

Medium term

By the end of 2020, there will be a (concept) work programme that includes dedicated energy transition funding for urban areas. This funding stream will also have more flexible exemption rules regarding (indirect) State Aid. This funding stream will also take into account new insights and evaluation results of State Aid rules¹⁰.

Long term

By 2022, the first cities will have opted for funding from the dedicated funding stream via calls for proposals. The first urban energy transition projects are to be funded and they will be subject to audits in accordance with new (indirect) State Aid exemption rules.

D) Which partners are involved in the action?

Table 3: Stakeholders and Roles in Action 5

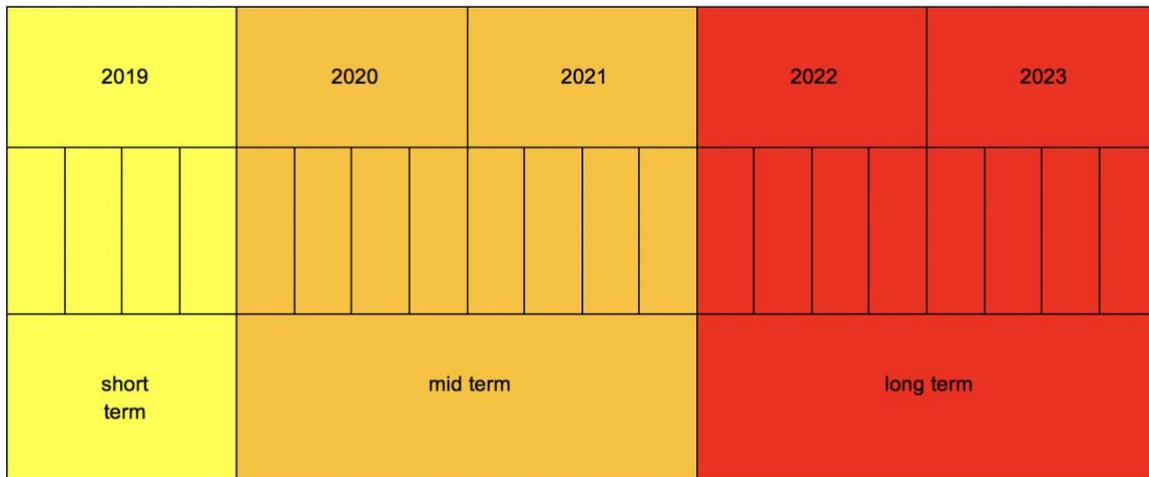
Stakeholder	Role
EUROCITIES	Source for input and lobby instrument
Energy Cities	Source for input and lobby instrument
CEMR	Source for input and lobby instrument
Covenant of Mayors	Source for input and lobby instrument
European Commission (DG RTD, DG COMP, DG REGIO)	Influence on future work programme's
EIB	Influence on financing instruments

¹⁰ http://europa.eu/rapid/press-release_IP-19-182_en.htm

E) What is the timeline for the action?

Implementation timeline for section C

Figure 6: Timeline for Action 5



F) Does it link to other elements of the Energy System or specific Actions that we have identified?

This Action links directly to the other actions since it is a about funding the Energy Transition. All other Actions are linked with the means to fund them via EU funding or other financial sources:

- Action 1: District Energy Financing;
- Action 2: Maximising use of Waste Heat in Cities;
- Action 3: Energy Masterplanning for Cities;
- Action 4: 'Deployment Desks' for City Retrofitting.

5 LINKS WITH OTHER COMMITMENTS

5.1 Links with Cross-Cutting Issues

If energy was the only challenge, then cities would be energy companies. In that case, the energy transition would most probably be relatively simple. But as stipulated by Andy van den Dobbelsteen, Professor of Climate Design and Sustainability at TU Delft, cities are not meant to control essential flows of energy, water, food, and goods. Municipalities are designed to provide living spaces for people using these flows. The goal is providing safe, healthy, comfortable spaces for a high-quality living. If we want to get the energy transition into the mind of citizens, politician, officials, etc. and gain their full support for the work that is necessary, then the energy transition will only be possible and successful when connected to improvements in the quality of citizens' lives. So even as we only look here to the spatial, technical, procedural and financial aspects of the energy transition, we are aware it should always be coupled to other goals that also support improvements in a city's liveability.

The Pact of Amsterdam also stipulates that “the complexity of urban challenges requires integrating different policy aspects to avoid contradictory consequences and ensure interventions in Urban Areas are more effective”¹¹. As illustrated here, energy flows connect with every building block of the city. Therefore, the Partnership could formulate specific cross-sectoral issues and Actions with all of the 12 Urban Agenda topics.

The Energy Transition topic has inherent synergies with Climate Adaption, Circular Economy, Digital Transition, Urban Poverty, Jobs & Skills, Air Quality, Mobility, Land Use Partnerships, etc. But during this process, it is key to maintain the identity of the Partnership, while at the same time contributing to the Urban Agenda from a 'big picture' perspective. The Partnership will take into account policy developments and proposed Actions from across the other Partnerships.

Climate Adaptation

As the energy transition focuses on reducing the emission of greenhouse gases, the objectives of climate adaptation are to anticipate the adverse effects of climate change and take appropriate action to prevent or minimise the damage it can cause to Urban Areas. Both actions are needed and require an integrated approach to ensure cities have a resilient future.

Mobility

City planning, safe cycling and walking paths, clean local public transport, the introduction of new delivery technologies such as drones, car and bike sharing services, will alter mobility. Combined with the transition to carbon-free transport technologies, reducing air pollution, noise and accidents, this will result in large improvements in the quality of urban living. With the shift towards electrification of mobility in the EU, battery technology could play a key role in helping to balance and provide flexibility to the energy system.

Air Quality

As the burning of fossil fuels is one of the key factors which reduces air quality in cities, the shift towards more renewable energy sources and ultra-low emission vehicles can have a big impact on ensuring good air quality

¹¹ <https://ec.europa.eu/futurium/en/urban-agenda>.

for human health. The Air Quality Partnership has also highlighted the need for improvements in legislative and technical aspects of a wide range of polluting sources. These include cars, industries, agricultural activities, and energy production in order to achieve air quality improvements.

Circular Economy

The objective of the circular economy is to increase the re-use, repair, refurbishment and recycling of existing materials and products. The energy transition will encourage the move towards a more circular or cascading energy system. This will be done by encouraging a reduction in energy use, as well as the use, re-use, and cascading of energy within the energy system. As an example, heat networks provide a great opportunity to use and re-use waste heat.

5.2 EU Climate and Energy Targets and the Paris Agreement

The so-called 20-20-20 target was set by the EU to achieve 20% energy saving, 20% increase in production of renewables, and 20% carbon emission reductions by the year 2020. This ambition was followed up by the EU Energy Performance in Building Directive, which stated that by 2020, all newly constructed buildings need to be 'nearly' zero carbon energy. This goal led to a new plan in the UN Paris Agreements, which aimed for a carbon-neutral built environment by 2050. Yet a great challenge still exists in the search for solutions to make this shift to a carbon-neutral built environment.

To ensure that EU's energy policy is fit for the 21st century, 'the Clean Energy for All Europeans' provides an updated energy policy framework and is designed to facilitate the clean energy transition. Finalising and implementing this package of changes should mark a big step towards the creation of the Energy Union¹² and the EU's ability to deliver on its Paris Agreement commitments.

The central aim of the UN Paris Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. This set new levels of ambition across the world to mitigate climate change and the Agreement has shown that cities can come together to plot a path towards a lower carbon future.

If fully implemented in the whole EU, these policies should lead to steeper emission reductions than otherwise anticipated. It would also give the regulatory certainty that industry needs, deliver integrated national energy and climate plans (2021 to 2030), encourage investments, and drive energy efficiency measures in the building sector etc. These targets are aimed at improving Europe's industrial competitiveness, boosting growth and jobs, reducing energy bills, helping tackle energy poverty, and improving air quality.

These new targets also played an important part in the Commission's long-term vision for a climate neutral Europe by 2050: A Clean Planet for all¹³. This is a strategy that shows how Europe can lead the in this field by decarbonising to climate neutrality through investing in technological solutions, empowering citizens, and aligning action in key areas such as industrial policy, finance and research. This is all done whilst ensuring social fairness for a just transition.

¹² https://ec.europa.eu/commission/priorities/energy-union-and-climate_en

¹³ <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy>

Member States have also adopted National Renewable Energy Action Plans¹⁴, showing what Actions they intend to take to meet their renewables targets. These plans include: sectorial targets for electricity, heating and cooling, and transport; planned policy measures; the different mix of renewables technologies they expect to employ; and the planned use of cooperation mechanisms¹⁵.

In this sense, the energy transition plays a key role in creating a resilient future for the EU, its Member States, and its cities. Within this, the citizen will play a key role in achieving the short, medium, and long-term goals that have been set through to 2050.

5.3 New Urban Agenda and the UN Sustainable Development Goals

The Action Programme¹⁶ aims to co-realise the New Urban Agenda (NUA) of the United Nations. This was adopted in 2016 at the HABITAT III Conference, which set a shared strategic vision for sustainable urban development globally.

The Sustainable Development Goals (SDGs)¹⁷, adopted in 2015 by the United Nations General Assembly, set an even broader global perspective for a sustainable, fair, and inclusive future. Examples of Goals that relate to the energy transition include:

- **Goal 7** – Affordable and clean energy: “ensure access to affordable, reliable, sustainable and modern energy for all”
- **Goal 9** – Industry, innovation and infrastructure: “Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation”
- **Goal 11** – Sustainable cities and communities: “Make cities and human settlements inclusive, safe, resilient, and sustainable”
- **Goal 12** – Responsible consumption and production: “Ensure sustainable consumption and production patterns”
- **Goal 13** – Climate Action: “Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy”

¹⁴ <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy>

¹⁵ <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy>

¹⁶ <http://habitat3.org/the-new-urban-agenda/>

¹⁷ <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>