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## **Deliverable 2.3**

### **Brief Summary Report about the lessons learned and recommendations to other planning organizations in Europe to revise the planning guidelines**

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Dissemination level		
PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services)	<b>X</b>

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# 1. EXECUTIVE SUMMARY

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The collection and analysis of the main urban planning guidelines with special focus on sustainability issues and particularly the integration of energy efficiency, renewable energies, DHC and CHP technologies has led to the compilation of ten relevant documents from the partner countries. ,

The collected planning guidelines are representing different levels of planning and fields, from National Planning Policy Statements to be taken into account from regional spatial strategies to local authorities' development documents (UK), to technology specific guidelines issued by regional governments as the basic guide on DHC issued by the Catalan Energy Agency and up to a municipal guideline of the city of Augsburg (Germany) on Climate Protection and Urban Planning.

In this sense, the here compiled guidelines give a wide overview of different relevant documents but even though reviewed under common criteria are only comparable to a certain extend.

- All guidelines report the climate change and the obligation to counter act to reduce emissions of greenhouse gases - except the two Spanish guidelines where this argumentation seems to be considered as already known frame for having issued the guidelines.
- All analysed guidelines report that dense urban structures, concentration and mixture of uses but with sufficient green spaces and well operating public transport contributes to an optimization of resources and quality of life.
- Energy efficiency is reported in all guidelines, except UK Planning Policy Statements on transport and on housing.
- Most guidelines report increased use of renewable energies as solutions to be put into practise to counter climate change and reduce fossil fuel consumption.
- The most references to renewable energies are concerning solar systems (except in Finnish guidelines), then biomass and wind energy (both absent from German guidelines), and finally geothermal energy (only cited in the specific DHC Spanish guideline).
- The transport issue is developed especially in UK specific Planning Policy Statement on transport but without mention of integration of renewable energies for transportation.
- District Heating and Cooling is reported in three guidelines (Finnish Ministry of the environment Competitiveness, welfare and eco-efficiency, German Guideline for climate protection and urban planning in Augsburg, and Spanish basic guide for District Heating & Cooling).
- Combined Heat and Power is reported also in three guidelines (UK Planning Policy Statements on Sustainable Development and on Renewable Energy, and Spanish basic guide for District Heating & Cooling).

The here collected guidelines and its analysis will directly influence the short and long course preparation and delivery (WP 3 and 4) as representing in some cases the existing national framework on urban planning. In other cases the guidelines - as elaborated for specific municipalities - will not be binding but interesting to be taken as reference for own new urban developments and revitalisation projects. Finally, some of the more technical guidelines will directly provide input for the training in the sense of taking into account the used methodology or reported case studies for specific modules.

In WP4 – Long training courses design and delivery - it will be decided which guidelines or chapters of guidelines are considered of interest to be translated to English for making use of it in the UP-RES programs.

## 2. INTRODUCTION

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### 2.1 Purpose

This deliverable is a collection and analysis of planning guidelines from partner countries with the purpose to have knowledge of the existing material concerning the integration of RES, DHC and CHP into Urban Planning in each partner country when designing the short and especially long term courses. Furthermore, the comparison of the different planning guidelines allows giving some short recommendations to other planning organizations in Europe to revise the planning guidelines.

### 2.2 Contribution of partners

WP2 leader SaAS initiated and coordinated activities and summarized the results.

AALTO PRO as coordinator and responsible of WP4 prepared a template for the guidelines analysis.

All partners' responsibilities were as follows:

- Conducting national Planning guidelines review
- Collecting 2 or 3 national Planning guidelines related to UP-RES issues and of use to UP-RES program elaboration (WP4)
- Conducting selected national guideline's analysis
- Evaluating the Brief summary Report and recommendations under common criteria, providing feedback on the results

SaAS finally elaborated the Brief Summary Report and the recommendations to other planning organizations in Europe.

### 2.3 Relations to other activities in the project

This deliverable is directly linked to workpackage 4 of the UP-RES project as the collection of guidelines is clearly allocated in Task 4.1, Material collection (Annex I to the Contract, page 32):

*"The training material includes also collection of urban planning guidelines and best practices in terms of RES H/C and energy efficiency from partner countries. These examples of guidelines will be collected from cities and regional planning organizations in Germany, Spain, Finland, U.K. and Hungary. Each partner is responsible of collecting guidelines and best practices from their own country and utilizing those in the training. As the local material will be translated into English, the partners will be responsible for sufficient quality of English. BRE will look over the final materials to ensure quality of the language."*

In this sense, the elaboration of this deliverable was directly dependent on the input received by all partners in the frame of task 4.1.

Also in WP4 it will be decided which guidelines or chapters of guidelines are considered of interest to be translated to English for making use of it in the UP-RES programs for short and long term courses.

## 3. PLANNING GUIDELINES COLLECTION AND DETAILED ANALYSIS

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### 3.1 Preparation, samples collection, and university/CPD programs samples analysis

General organization was defined on the second general meeting in Frankfurt, under initiative of WP2 leader SaAS. The following procedure has been followed:

- Each partner was supposed to make a review of national Planning guidelines and to make a selection of 2-3 national guidelines related to environmental planning with renewable energy skills or with an emphasis on DHC (District Heating and Cooling) or CHP (Combined Heat and Power) issues.
- M5: AALTO PRO provided a template of Planning guidelines analysis (as WP4 leader)
- M6-7: Each partner conducted his national Planning guidelines collection (in national language) and analysis, submitted summary and results in English and uploaded the analysis in Optima intranet.
- M7: General D2.3 Brief summary Report and Recommendations for other European guidelines (see 4.3) was elaborated by SaAS, completed and commented by all partners.

### 3.2 Planning guidelines collection and analysis

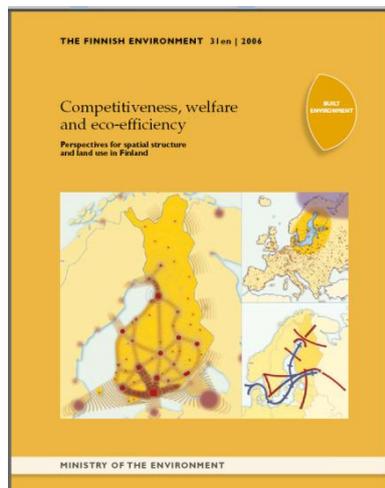
In the following a short abstract of every collected planning guideline is given. All analysed planning guidelines are available in the optima intranet in pdf in the national language.

It has to be mentioned that the collected planning guidelines are representing different levels of planning and fields, from National Planning Policy Statements to be taken into account from regional spatial strategies to local authorities' development documents (UK), to technology specific guidelines issued by regional governments as the basic guide on DHC issued by the Catalan Energy Agency and up to a municipal guideline of the city of Augsburg (Germany) on Climate Protection and Urban Planning.

In this sense, the here compiled guidelines give a wide overview of different relevant documents but are that are only comparable to a certain extend.

### 3.2.1 Finland

#### FINLAND Guideline 1



Ministry of the environment

#### Competitiveness, welfare and eco-efficiency

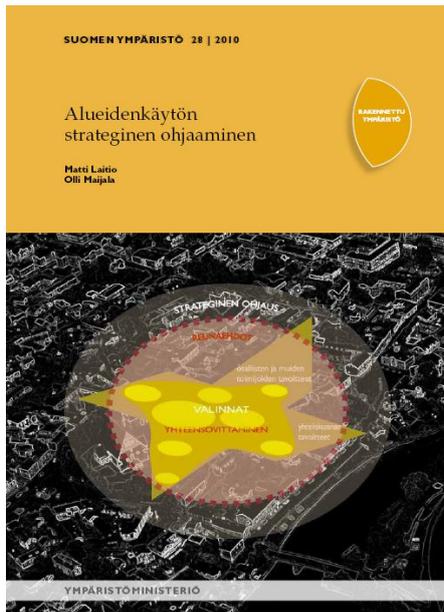
The Finnish environment 31en | 2006

40 pages

This document presents the Ministry of the Environment's views on the long-term development of land use and spatial structure in Finland. The aim is to give these a sustainable direction by supporting Finland's competitiveness and eco-efficiency, as well as the well-being of the citizens.

<b>Analysis</b>			
<b>Competitiveness, welfare and eco-efficiency - Perspectives for spatial structure and land use in Finland, MoE, 2006</b>			
Dense urban structures	The engine pulling this growth is to be found in the largest urban regions, a fact which stems from their know-how density: as cities grow larger, the advantages offered by specialisation, the advantages of scale, and the joint use of resources will create good prerequisites for continued growth.	We should prepare for the climate change by seeing to it that people, natural environments, spatial structure and various functions will be as little disturbed as possible.	Outdoor recreation should particularly be developed in the more densely populated areas, where the demand for such is biggest.
Climate change	For ecological sustainability, it is essential that (i) The existing built environment and infrastructures are used extensively; (ii) Regional and community structures are geared by decrease transport need; (iii) Energy consumption for transports is reduced by means of environmentally less harmful modes of transport and through technological development; (iv) Good preconditions are created for the use of renewable energy sources; (v) The loss of biological diversity is stopped and a favourable environmental state is created in co-operation with adjacent areas.	The pressures for changes in energy generation will become stronger, since the energy sector is the foremost single generator of greenhouse gases. Efforts are being made to stave off greenhouse gases emissions by greater use of renewable energy sources.	Staving off the climate change is coupled to the obligation to reduce emissions of greenhouse gases and to the local effects of this reduction.
Renewable energy	Land use in Finland will also be influenced by the efforts towards increased use of bioenergy and wind power.	Efforts are being made to stave off greenhouse gases emissions by greater use of renewable energy sources.	
Biomass	Land use in Finland will also be influenced by the efforts towards increased use of bioenergy and wind power.	Forests are important for the regional economy, including the utilisation of renewable natural resources.	
Solar		N.m.	
Wind	Land use in Finland will also be influenced by the efforts towards increased use of bioenergy and wind power.		
Geothermal		N.m.	
RES in transport	In transports, a more general use of bioenergy may contribute to reducing emissions.		
Energy efficiency	Taken together, the climate change and the rise in oil prices will require better energy performance and improved ecological efficiency, as well as a well-developed capacity for risk management.		
District heating	A coherent community structure makes it possible to use a wide palette of environmentally sound policies and means: missions from transport can be decreased, district heating is feasible alternative, the need for very extensive municipal engineering networks diminishes.		
CHP		N.m.	

**FINLAND Guideline 2**



Ministry of the environment

**Strategic control of land use**

The Finnish environment 28en | 2010

58 pages

**Analysis**

	<b>Strategic control of land use, Ministry of Environment, 2010 (in Finnish)</b>
Dense urban structures	The studies to be prepared for urban plans should provide sufficient knowledge in order for us to assess both direct and indirect impacts of plan implementation on ... district and urban structure, urban economy and energy economy as well as on traffic.
Climate change	It is essential to realize as well that by means of planning of urban structure and traffic systems one can prevent counter-acting development of Climate Change, but decisions are needed in the regions regarding energy production and energy efficiency.
Renewable energy	N.m
Bio mass	N.m
Solar	N.m
Wind	N.m
Geothermal	N.m
RES in transport	N.m.
Energy efficiency	It is essential to realize as well that by means of planning of urban structure and traffic systems one can prevent counter-acting development of Climate Change, but decisions are needed in the regions regarding energy production and energy efficiency.
District heating	N.m.
CHP	N.m.

### 3.2.2 Germany

#### GERMANY Guideline 1: Climate protection and integrated urban development – Guideline for planners

Ministerium für  
Bauen und Verkehr  
des Landes Nordrhein-Westfalen



**Klimaschutz in der integrierten Stadtentwicklung**  
Handlungsleitfaden für Planerinnen und Planer

The ministry for construction and traffic of Nordrhein-Westfalen identifies two types of measures that show the possibilities of urban planners to influence the process of climate saving.

Firstly, they have to constitute energetic standards for new buildings equal as for the restoration of old buildings.

Secondly, they have to start to restore public buildings like schools, hospitals etc. as demonstration projects with ambitious aims. This is said to be very important for the public perception.

Cities and municipalities can create their own standards concerning the construction of new housing areas. Well known in Germany is the so called Frankfurt's Passive house standard.

Communication and information are decisive for a successful energy strategy. Above all house owners have to be reached and convinced to invest in their houses for higher energy efficiency.

The ministry provides a checklist with measures for urban planners who are willing to improve the energy efficiency of their town:

- Development and realization of climate protection and energy saving methods in municipality owned buildings to be a good public model
- Formulation of standards in the land use plans
- Integration of district heating options into energy concepts
- Making information available
- Provision of consulting services for external target groups
- Organization of competitions > public relations
- Fundraising for restoration projects

	<b>Climate protection and integrated urban development - Guideline for planners (Ministry of construction and traffic in Nordrhein-Westfalen)</b>
Dense urban structures	N.m.
Climate change	climate protection via reduction of emissions --> energy saving via higher efficiency
Renewable energy	municipal energy management should integrate renewable energies
Biomass	N.m.
Solar	best practice "50 Solarsiedlungen in NRW"
Wind	N.m.
Geothermal	N.m.
RES in transport	N.m.
Energy efficiency	key factor
District heating	N.m.
CHP	N.m.

GERMANY Guideline 2:  
Guideline for climate protection and urban planning in Augsburg



A team of 30 engineers, architects and planners defined two central strategies for Augsburg:

- Reducing the use of heat
- Optimize the energy supply

For the aim of reducing the use of heat, they propose the construction of passive houses which need until 16 times less energy for heating than old houses. The components of an energy efficient passive house are:

- optimized windows
- optimized insulation
- controlled air ventilation
- use of solar energy
- compact design
- air-proof construction
- heat recovery

Urban planners can mostly influence new housing areas.  
Their approach should include the following aspects:

1. Definition of compact design, shading, orientation, solar energy use and energy standards in land use plans
2. Request of an energy concept (reduce of energy demand, ecological and economic reasonable energy supply, quality standards)
3. Development of realization strategies
4. Monitoring the realization

Finally, they inform about some best practices in other German cities, like the “Sun-Village” in Esslingen / Neckar:



<b>Analysis</b>	
	<b>Guideline Climate Protection and Urban Planning in Augsburg</b>
Dense urban structures	urban planners have to force compact structure of settlements
Climate change	main part of the guideline --> title. Reduction of green house gaz emissions via high energy efficiency in urban structures
Renewable energy	
Bio mass	N.m.
Solar	Solar energy can be used in every parts of a city, important component of the passive house
Wind	N.m.
Geothermal	N.m.
RES in transport	N.m.
Energy efficiency	key factor
District heating	Options of district heating solutions have to be considered above all planning new housing areas
CHP	N.m.

### 3.2.3 Hungary

There is no Planning guidelines related to environmental planning with renewable energy skills, or an emphasis on DHC (District Heating and Cooling), and CHP (Combined Heat and Power) issues in Hungary.

### 3.2.4 Spain

#### SPAIN Guideline1 :



ICAEN (Institut Català d'Energia)

#### **Guia bàsica de xarxes de districte de calor i fred**

(Basic guide of DH and DC). October 2010  
79 pages

The object of this guide is to encourage, to promote and disseminate technology on District Heating and Cooling, and to advise potential developers that type of facilities, based on a methodology that establishes the criteria to consider when planning DHC networks

<b>analysis</b>		
	<b>Basic guide of District heating and cooling , 2010 (in catalan)</b>	
Dense urban structures	The fundamentals for DH/c implementation is new urban planning, a new industrial estate or in general a complex of various buildings.	Density of heat and cold demand is a determinant factor for DH/C viability
Climate change	N.m.	
Renewable energy	RES sources can be classified between those that are completely renewable, like solar energy, which can be integrated in the DHC circuits, and biomass or geothermal energy	Other RES sources to be considered come from heat recovery from waste facilities, power generation plants, o other industrial processes with high energy residual heat,
Bio mass	Various type : forest origin or coming from wood residuals, and used as main fuel, biogas coming from a water deperation central, a landfill or a waste treatment plant (urban, agricultural or livestock waste)	
Solar	the possibility of integrating solar energy in the circuits. Usual solution is solar thermal production consumed directly by the building without being exported to the network.	It would be logic that buildings connected to DHC were not forced to have solar thermal facilities for hot water, as the Spanish building code imposes.
Wind	Wind energy can be considered a primary energy	
Geothermal	Direct profit of geothermal enery (close to an heat source) is a highly efficient application	
RES in transport	N.m.	
Transport	N.m.	
Energy efficiency	DHC networks are an energy efficient alternative to reduce global CO2 emissions,	Centralization of energy facilities allows for superior transformation efficiency, and the global system is more efficient.
District heating	The object of this guide is to encourage, to promote and disseminate technology on District Heating and Cooling ,,,	
CHP	If CHP is added to DHC, enery savings can reach 25%	Energy efficiency of CHP systems is higher than separate production of heat and electricity

## SPAIN Guideline 2



Ministry of industry, tourism and commerce and IDEA (Institute for energy diversity and savings) IDAE

### Guía del planeamiento urbanístico energéticamente eficiente

(Energy efficient urban planning guide), 2007

95 pages

The main aim of this guide is to propose measures and criteria for urban planners to drive the construction sector to high energy efficiency and to minimum levels of sustainability.

#### Summary:

- Sustainability as reference
- Land management process
- Energy efficiency in the process of urban planning
- Recommendations for sustainable urban planning

<b>analysis</b>			
	<b>Energy efficient urban planning guide, Ministry of industry, tourism and commerce and IDEA (Institute for energy diversity and savings) 2007 (in Spanish)</b>		
Dense urban structures	Large city models increase transport, thus increase energy consumption and pollution. Furthermore, growth of the city in fuzzy models involves the destruction of landscape and disruptions in the hydrological cycle, to a loss of quality of leisure	Dense urban distributions free more land for green spaces and concentrate the cost of urbanization and infrastructure	Areas on south slope allow higher density development than flat urban areas, since the obstructions between buildings are smaller.
Climate change	The characteristics of urban microclimate condition energy needs for future urban developments. Therefore, soil classification and allocation of floor area, density, and types and characteristics of settlement will take into account the conditions of the microclimate	Planning should aim to praise the wise use of natural resources for water conservation and environmental preservation	
Renewable energy	For very dense areas, such as renovation of old towns, where implementation of passive climate control in buildings usually presents major difficulties, it is necessary to prioritize the use of renewable energy facilities on the premises.		
Bio mass	N.m.		
Solar	In collective housing must be guaranteed at least the public use of an area that would require the production facility of hot water by solar collectors (collectors and accumulators). Community use of the cover to include installation of solar collectors hot water must be at least 20%.	The installation of photovoltaic solar collectors shall not exceed the housing gauge line established by planning. The installation should be integrated into the entire building.	
Wind	N.m. in terms of energy, but mentioned as wind conditions to be taken in consideration when planning, as well as the necessity of crossed ventilation, etc		
Geothermal	N.m.		

RES in transport	N.m.		
Transport	Urban planning and transport policy for reducing CO2 emissions and noise pollution, promote walking and public transport.		
Energy efficiency	Highlighted solutions and measures to be taken into account in the territorial planning to enhance Building Energy Efficiency / Set targets for energy savings in urban planning: It is necessary to analyze all urban intervention from an environmental and energy perspective and consider the impact of the main alternatives. We need to establish environmental goals and set minimum energy performance for interventions and account the developed urban planning on the basis of these objectives.	District facilities, such as heating or solar fields require a percentage of land in the mapping stage uses. If not taken into account, this type of centralized facilities will be limited to building solutions or individual.	
District heating	Locate the central district services (heating, cooling, collection, pneumatic waste) in response to the impact they produce on their own and the surrounding neighborhood, and serve when its characteristics permit, energy-deficient areas.		
CHP	N.m.		

### 3.2.5 United Kingdom

The here stated guidelines are Planning Policy Statements (PPS) that set out the Government's national policies on different aspects of land use planning in England, need to be taken into account by regional planning bodies in the preparation of regional spatial strategies and by local planning authorities in the preparation of local development documents.

#### Analysis guideline 1- UK

PPS 1 - Delivering Sustainable Development			
Dense urban structures	<p>Efficient land use (Section 27 viii) Promote efficient use of land through higher density, mixed use development and the use of suitably located previously developed land and buildings.</p> <p>Planning should seek actively to bring vacant and underused previously developed land and buildings back into beneficial use to achieve the targets the Government has set for development on previously developed land.</p>	<p>Delivering Sustainable Development (Section 38) Design policies should avoid unnecessary prescription or detail and concentrate on guiding the overall scale, density, massing, height, landscape, layout and access of new development in relation to neighbouring buildings and the local area more generally.</p>	
Climate change	<p>Key principles (Section 13 ii) Regional planning bodies and local planning authorities should ensure development plans contribute to global sustainability by addressing the causes and potential impacts of climate change – through policies which reduce energy use, reduce emissions (for example by reducing the need to travel) and promote the development of renewable energy as well as ensuring climate change impacts are accounted in the location and design of development.</p> <p>(Section 20) Development plan policies should avoid new development in areas at risk of flooding and sea-level rise, and as far as possible, by accommodating natural hazards and the impacts of climate change</p>	<p>Local Planning Authority development plans (Section 20) Local Authorities should:</p> <ul style="list-style-type: none"> <li>- Take into account mitigation of the effects of, and adaptation to, climate change through the reduction of greenhouse gas emissions and the use of renewable energy; air quality and pollution; land contamination; the protection of groundwater from contamination; and noise and light pollution</li> <li>- Address, on the basis of sound science, the causes and impacts of climate change, the management of pollution and natural hazards, the safeguarding of natural resources, and the minimisation of impacts from the management and use of resources.</li> </ul>	
Renewable energy	<p>KEY PRINCIPLES (Section 13 ii) Regional planning bodies and local planning authorities should ensure that development plans policies...reduce energy use, reduce emissions... promote the development of renewable energy resources, and take climate change impacts into account in the location and design of development.</p>	As above	<p>Minimizing the use of resources (Section 22) Development plans should...seek to promote and encourage, rather than restrict, the use of renewable resources (for example, the development of renewable energy).</p>
Biomass	N.m		
Solar	N.m		
Wind	N.m		
Geothermal	N.m		
RES in transport	N.m		
Energy efficiency	<p>Spatial Plans (Section 30) Planning policies should not replicate, cut across, or detrimentally affect matters within the scope of other legislative requirements, such as those set out in Building Regulations for energy efficiency.</p>		

District heating	Regional planning authorities and local authorities (Section 22) should promote resource and energy efficient buildings; community heating schemes, the use of combined heat and power, small scale renewable and low carbon energy schemes in developments; the sustainable use of water resources...		
CHP	As above		

<b>Analysis guideline 2- UK</b>			
<b>PPS 3 - Housing</b>			
Dense urban structures	Achieving high quality housing (Section 16) Design quality includes the extent to which the proposed development is integrated with, and complements, the neighbouring buildings and the local area more generally in terms of scale, density, layout and access.	<p>Efficient use of land (Section 45) Should be a key consideration in planning for housing, and Regional Spatial Strategies should set out housing density policies, including any target.</p> <p>(Section 46) Local Planning Authorities should develop housing density policies having regard to:</p> <ul style="list-style-type: none"> <li>– The spatial vision and strategy in their area, including housing demand, need and land availability.</li> <li>– Current and future infrastructure, services and facility capacity</li> <li>– The desirability of efficient land use that reduces and adapts to climate change.</li> <li>– The current and future levels of accessibility, particularly public transport accessibility.</li> <li>– The characteristics of the area, including the current and proposed mix of uses.</li> </ul> <p>(section 47) Local Planning Authorities may wish to set out a range of densities across the plan area rather than one broad density range.</p>	<p>Density (Section 50) The density of existing development should not dictate that of new housing by stifling change or requiring replication of existing style or form. If done well, imaginative design and layout of new development can lead to a more efficient use of land without compromising the quality of the local environment.</p> <p>Defines Density and Net dwelling density</p>
Climate change	<p>Achieving high quality housing (Section 15) Design quality include the extent to which the proposed development facilitates efficient use of resources, during construction and in use, and seeks to adapt to and reduce the impact of, and on, climate change</p> <p>(Section 16) Local Planning Authorities should develop housing density policies having regard to the desirability of using land efficiently and reducing, and adapting to, the impacts of climate change</p>	<p>Efficient use of land (Section 46) sets out the strategic role of planning in delivering sustainable development. Sustainability Appraisals are key to ensuring housing policies deliver sustainable development objectives, in particular, seeking to minimize environmental impact, taking account of climate change<sup>8</sup> and flood risk.</p>	

Renewable energy	Suitable locations for housing development (Section 37) New developments can cut carbon emissions through locating in areas with good public transport accessibility... and where decentralized energy via renewable and low-carbon forms of energy supply are readily available or where there is clear potential for this to be realized.	
Biomass	N.m	
Solar	N.m	
Wind	N.m	
Geothermal	N.m	
RES in transport	N.m	
Energy efficiency	N.m	
District heating	N.m	
CHP	N.m	

**Analysis guideline 3- UK**

<b>PPS 22 Renewable Energy</b>			
Dense urban structures	N.m		
Climate change	Government position on Renewable Energy P.6 Development of renewable energy resources is vital to facilitating the delivery of the Government's commitments on both climate change and renewable energy	Government position on Renewable Energy P.6 Effective protection of the environment – by reductions in emissions of greenhouse gases and thereby reducing the potential for the environment to be affected by climate change;	
Renewable energy	Covered throughout the guidance document.  (Section 1 v) Regional planning bodies and local planning authorities should not make assumptions about the technical and commercial feasibility of renewable energy projects	(Section 22) Local planning authorities should ensure that renewable energy developments have been located and designed in such a way to minimise increases in ambient noise levels. Plans may include criteria that set out the minimum separation distances between different types of renewable energy projects and existing developments	(Section 18) Local planning authorities and developers should consider the opportunity for incorporating renewable energy projects in all new developments. Small scale renewable energy schemes utilising technologies such as solar panels, Biomass heating, small scale wind turbines, photovoltaic cells and combined heat and power schemes can be incorporated both into new developments and some existing buildings
Biomass	Small Scale Renewable Energy Developments (Section 18) Biomass heating and combined heat and power schemes can be incorporated both into new developments and some existing buildings.	Biomass Projects and Energy Crops (Section 24) the need to transport crops to the energy production plant does have the potential to lead to increases in traffic. Local planning authorities should make sure that the effects of such increases are minimised by ensuring that generation plants are located in as close a proximity as possible to the sources of fuel that have been identified.	

Solar	Small Scale Renewable Energy Developments (Section 18) Solar panels...photovoltaic...can be incorporated both into new developments and some existing buildings.		
Wind	<p>Key Principles (Section 1 v) Regional planning bodies and local planning authorities should not make assumptions about the technical and commercial feasibility of renewable energy projects (e.g. identifying generalised locations for development based on mean wind speeds)</p> <p>(Section 18) Small scale wind turbines...can be incorporated both into new developments and some existing buildings</p>	Scope of technologies (Section 4) Offshore renewable generation projects (such as offshore wind, offshore wave and tidal stream), are not covered by the land-use planning system.	<p>Landscape and Visual effect (Section 19) wind turbines are likely to have the greatest visual and landscape effects</p> <p>(Section 21) Planning authorities should also take into account the cumulative impact of wind generation projects in particular areas. Such impacts should be assessed at the planning application stage and authorities should not set arbitrary limits in local development documents on the numbers of turbines that will be acceptable in particular locations.</p>
Geothermal	N.m		
RES in transport	N.m		
Energy efficiency	Government position on Energy Efficiency P.6 The development of renewable energy, alongside improvements in energy efficiency and the development of combined heat and power, will make a vital contribution to [Government aims]		
District heating	Biomass Projects and Energy Crops (Section 24) For biomass projects, the need to transport crops to the energy production plant does have the potential to lead to increases in traffic. Local planning authorities should make sure that the effects of such increases are minimised by ensuring that generation plants are located in as close a proximity as possible to the sources of fuel that have been identified. But in determining planning applications, planning authorities should recognise that there are other considerations (such as connections to the Grid and the potential to use heat generated from the project) which may influence the most suitable locations for such projects.		
CHP	(PPS22) policies do not apply to...combined heat and power (CHP) developments, although, given that some CHP projects are fuelled by a renewable resource, a number of the policies set out here may be relevant.	Small Scale Renewable Energy Developments (Section 18) combined heat and power schemes can be incorporated both into new developments and some existing buildings	Government position on CHP P.6 Government's Energy White Paper aims to put the UK on a path to cut its carbon dioxide emissions by some 60% by 2050, with real progress by 2020, and to maintain reliable and competitive energy supplies. The development of renewable energy, alongside improvements in energy efficiency and the development of combined heat and power, will make a vital contribution

**Analysis guideline 4 - UK**

	<b>PPS 13 Transport</b>		
Dense urban structures	Transport policy context (Section 3) Land use planning has a key role in delivering the Governments integrated transport strategy. By shaping the pattern of development and influencing the location, scale, density, design and mix of land uses, planning can help to reduce the need to travel, reduce the length of journeys and make it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking, and cycling.	Park and ride schemes (Section 62) [Parking] at main line stations may discourage travellers from using local bus or train services to connect to longer distance services. Parking may result in lower density development in the immediate vicinity of the station.	Walking (Section 75) In preparing their development plans and in determining planning applications, local authorities should promote high density, mixed use development in and around town centres and near to major transport interchanges
Climate change	Alternative fuels and technologies (Annex B Section 15) A number of clean road transport fuels and technologies are now available that can offer air quality and climate change benefits compared to conventional petrol and diesel. Examples include electricity, liquefied petroleum gas and compressed natural gas.		
Renewable energy	N.m		
Biomass	N.m		
Solar	N.m		
Wind	N.m		
Geothermal	N.m		
RES in transport	N.m		
Energy efficiency	N.m		
District heating	N.m		
CHP	N.m		

## 4. RECOMMENDATIONS TO OTHER PLANNING ORGANIZATIONS

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### 4.1 Main recommendations

Energy issues are included in nearly all of the areas of urban planning, starting from considerations concerning the optimum density of a city to minimize carbon intensive daily mobility but at the same time being sufficiently attractive to avoid weekend mobility to second homes, up to the choice of low energy intensive materials for urban equipment and buildings. Efficient land use, encouraging the use of previously developed land and increasing the occupation of existing land and buildings, also has an important impact on energy, at the same time as the height and distance of buildings influences the public space and the energy consumption of the buildings themselves, just to give some examples of the complexity of relations between energy and urban planning. Socio-economic data and demographic tendencies are also of crucial importance in urban energy planning, as several examples from Germany show, where in some areas the decrease of population led to a reduction of energy efficiency and influenced the economic sustainability of district energy networks substantially.

In order to conduct municipalities towards the 20/20/20 goals established by the European Directive and in consequence to implement an energy reduction and climate change mitigation policy, it is very much advised to elaborate a holistic local energy audit to identify the reduction potential. This is already done in an immense number of municipalities in the frame of the covenant of mayors and the elaboration of a SEAP - Sustainable Energy Assessment Program. Nevertheless, specific guidelines are convenient to step from analysis to action and to bring the change to a broad number of Municipalities.

In Spain, some very positive examples of local initiatives spreading to other municipalities, regions and even up to State level legislation, show the importance and possible success of such guidelines. The most recognized is the Solar Thermal Ordinance approved in Barcelona in 1999 and implemented after one year of moratorium to convince the main stakeholders and avoid social rejection. This isolated initiative spread in the first years to other Catalan municipalities, then some Spanish cities and in 2007 the installation of Solar Thermal Systems for domestic hot water production became State level obligation for every new building and mayor refurbishments. An important step towards this generalization was done by the Province of Barcelona Government in providing a standardized by-law draft to communities and giving support in the adaptation to local particularities, being based on climate, political ambition in promoting RES integration or others.

As a result of the analysis, it is suggested to revise the planning guidelines on local level concerning energy and urban planning – where existing – or elaborate some. The main topics to be included can be deduced from the above analysed documents as well as from specific labelling systems such as *LEED for Neighbourhood Development* or *BREEAM Communities*, and usually are: land-use, energy efficiency, integration of RES, district energy supply and transport.

- Integration of RES. Local planning authorities and developers should consider the opportunity for incorporating renewable energy projects in all new developments and wherever possible in urban revitalization projects. Small scale renewable energy schemes utilizing technologies such as solar thermal, solar photovoltaic, small scale wind turbines where feasible, and combined heat and power schemes with waste heat/cold or biomass fired heat and cold production can be incorporated both into new developments and existing buildings, even if investment costs in the latter case use to be higher and consequently economic return is less attractive.
- District energy supply. Wherever possible, district energy supply has to be considered as decreasing carbon emissions significantly compared to decentralized production of heat and cold. The environmental impact reduction is dependent on the heat and cold source used in the production process. For biomass projects, the need to transport raw material to the energy production plant does have the potential to lead to increases in traffic. Local planning authorities should make sure that the effects of such increases are minimised by ensuring that

generation plants are located in as close a proximity as possible to the sources of fuel that have been identified.

- Transport. A transport assessment should be elaborated for new developments wherever it is likely to have significant transport, and for all revitalisation projects. The study area for a transport assessment should be determined in discussion between the developer and appropriate authorities. The baseline transport data should include parking facilities available in the vicinity of the site, current traffic flows and capacities at links/junctions, identification of current peak periods on the adjacent road network, levels for air quality, etc. Improvement of public transport proposals should be done in order to reduce the environmental impact of fuelled transport to a minimum.

## 5. CONCLUSIONS

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### 5.1 Main conclusions

All guidelines report the climate change and the obligation to counter act to reduce emissions of greenhouse gases - except the two Spanish guidelines where this argumentation seems to be considered as already known frame for having issued the guidelines.

All analysed guidelines report that dense urban structures, concentration and mixture of uses but with sufficient green spaces and well operating public transport contributes to an optimization of resources and quality of life.

Energy efficiency is reported in all guidelines, except UK Planning Policy Statements on transport and on housing.

Most guidelines report increased use of renewable energies as solutions to be put into practise to counter climate change and reduce fossil fuel consumption.

The most references to renewable energies are concerning solar systems (except in Finnish guidelines), then biomass and wind energy (both absent from German guidelines), and finally geothermal energy (only cited in the specific DHC Spanish guideline).

The transport issue is developed especially in UK specific Planning Policy Statement on transport but without mention of integration of renewable energies for transportation.

District Heating and Cooling is reported in three guidelines (Finnish Ministry of the environment Competitiveness, welfare and eco-efficiency, German Guideline for climate protection and urban planning in Augsburg, and Spanish basic guide for District Heating & Cooling).

Combined Heat and Power is reported also in three guidelines (UK Planning Policy Statements on Sustainable Development and on Renewable Energy, and Spanish basic guide for District Heating & Cooling).

As a result of the analysis, it is suggested to revise the planning guidelines on local level concerning energy and urban planning – where existing – or elaborate some. The main topics to be included can be deducted from the above analysed documents, being mainly land-use, energy efficiency, integration of RES, district energy supply and transport.

### 5.2 Impacts to other WPs and Tasks

The here collected guidelines and its analysis will directly influence the short and long course preparation and delivery (WP 3 and 4) as representing in some cases the existing national framework on urban planning. In other cases the guidelines - as elaborated for specific municipalities - will not be binding but interesting to be taken as reference for own new urban developments and revitalisation projects. Finally, some of the more technical guidelines will directly provide input for the training in the sense of taking into account the used methodology or reported case studies for specific modules.

Last but not least, the direct contact to some of the institutions responsible for the published guidelines will also establish links to relevant stakeholders, may provide students and teachers and in most cases support dissemination activities for promoting the UP-RES courses.

