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## **Deliverable 3.2**

### **Short course: Towards development plans**

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# 1. INTRODUCTION

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The UPRES short and long courses have been delivered in towns and cities across the five participant countries. For most countries, both types of course were carried out, with the exception of the UK where only short courses were delivered.

The target audiences have focused primarily on planners, but it is recognised that successful local initiatives involve a range of players. Consequently, a mix of delegates was sought, to include other local authority personnel with whom planners would have to liaise, together with other actors external to the municipalities. This has been in evidence in the audiences attending these courses.

One of the original aims of the short courses was to stimulate the attendees to produce a development plan that they could use as a template for further action. For a variety of reasons this proved to not be practical:

- While the primary target audience for the short courses was planners, it was recognised that a range of players are involved when trying to develop an energy strategy. While this stimulated good discussion, many attendees had limited knowledge that made it impractical to expect them to produce such plans. Nevertheless, generic and case study situations were presented and discussed.
- Many of the short courses were attended by people from a number of different local authorities, each with their own individual circumstances. It soon became apparent that the most fruitful approach was to stimulate discussion and compare experiences. In the UK, for example, the advent of the DECC Heat Mapping Tool provided a visual focus for discussing the potentially best areas for initiating a heat network, and those areas where individual building solutions would be favoured.
- Delegates from local authorities were at quite distinct stages in their plans for RES systems. This ranged from some who had not started such a process but were intending to, and also included those at fairly advanced stages of masterplanning. The courses provided them with information helping them to proceed to the next stage. However, to move towards a full development plan on the basis of a 2-day course was impractical, and trying to force the issue likely to be counter-productive in that it would have incurred significant council time and taken the focus away from the very specific areas they needed to address next (and in which respect the courses certainly helped).
- Engaging with the delegates, it did prove possible to respond to their questions about how to proceed, and direct them towards sources of further information. The practical experience of the presenters, and mutual experience exchange between delegates proved valuable.
- The short courses were originally planned in all countries to be of three days duration with a practical session on the last day. However, with the shortening of these training sessions to two, one or even half day, there was not time to run the full practical workshop. However, the courses were laced with practical examples and discussion.

It was therefore decided to apply the development plan concept to the long courses. However, here too it turned out to be over-ambitious. Delegates again benefited greatly from the course-work and gave good feedback, but not all were from local authorities and in some countries the audience was comprised of students with no practical experience.

Hence, in practice, for the majority of delegates it was the case study, workshop and discussion elements that strengthened the understanding among delegates of the materials presented, and gave them a firmer understanding of how to integrate RES concepts at the design and planning stages.

The project team attempted to determine some information regarding progress towards a strategic plan and plans for development, by devising and distributing a questionnaire. The original full draft questionnaire with attached introductory information is included (Appendix A) as is the abridged suggested questionnaire (Appendix B) that was subsequently developed. Countries also then made their own adjustments according to their own individual priorities and requirements.

This report now sets out the results emerging from those countries who have run long courses and who therefore have meaningful questionnaire returns.

Specifically, this information has been gathered from delegates attending courses in Finland and from Spain, where long courses have been carried out.

Conversely, Germany has only just completed the first module for their long course, and in Hungary the long courses were delivered only to students who were not therefore in a position to comment on the local authority issues.

Finally, since the UK was not delivering the long course, a separate solution was devised whereby an extra workshop right at the end of the project would be held at BRE with all previous delegates invited.

## 2. COUNTRY ANALYSIS OF SHORT COURSES

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### 2.1 UK

Near to the end of the UPRES project, BRE contacted the delegates who had attended courses. This arose as follows:

- BRE had asked delegates if they would like to see a network established in order that information could be shared. BRE had consequently sought funding to carry this out, but the proposal had been rejected. However, the Local Authority Vanguard network at which UPRES courses and opportunities were presented, offers an already existing forum.
- BRE had resolved to offer a final workshop session near to the end of the UPRES project at the BRE site in Watford, and invite former delegates, in order to gauge their progress and maintain contact. This would also be carried out in place of the original idea of D3.2 to seek individual development plans. As mentioned previously this would have been impractical for several reasons: the high number of local authorities attending (70 overall), and their mixed level of knowledge. They probably would not have had time either, so a more practical way forward was to offer assistance for their next stages via the workshop.

Only a few delegates took up the offer. Some were in touch and pointing out that they would not be allowed the travel budget to attend. Some requested further assistance if that would be possible. Some sent information about the current status regarding RES and heat networks. Those who did attend the workshop found it very useful, sharing their progress on developing their relevant policies, and making contact since the workshop with further questions and suggestions for future sessions.

Information arising from this is as follows, and is derived from feedback from 7 local authorities:

All those local authorities have in place at least some strategic measures related to energy and climate change targets, and half claiming a specific energy strategy. All have planning policy documents that integrate energy related and climate change policies.

The key points that are addressed include carbon emissions factors (in all) and renewable energy targets (in half).

Firm enabling measures were not so common, but are beginning to emerge. Here, the UPRES course was able to give guidance arising directly from lecturers' experiences with assisting the implementation of the London Plan.

Examples of progress being made include one authority specifically referring to RES measures for council housing stock initiatives and through heat networks assisted by funding bids, and another developing policy statements to drive a low carbon approach for all new developments.

This is clearly an important currently emerging area with one major city replying 'We are reviewing our planning policies over the next 6 months and there may well be some changes, so interested in any findings or best practice examples from other Local Authorities.'

All respondents cited an understanding of local energy needs although none had initiated any formalised inventory of current energy supplies that would assist the formulation of an effective energy strategy. All have access to GIS tools, but are at an early stage of practical mapping activities that would assist strategic thinking. However, the emergence of the Department of Energy and Climate Change (DECC) Heat Mapping Tool can give local authorities a good head start.

Attention is given sporadically to planned energy use in new developments, but there is little evidence so far of full integration at the masterplanning stage of energy requirements from renewable energy sources.

As well as the need to meet with defined targets, future activities seem likely to focus on enhancing energy security and providing affordable energy.

Encouragingly, all of the respondents were committed to future appropriate policy updates to try to bring forward the integration of renewable energy in the building stock, together with heat network solution where the heat demand density justifies.

## 2.2 Finland

According to the questionnaire responses from attendees of the Finnish long courses, there is some progress towards energy policy and strategy that can drive forward implementation of RES, but it is rather patchy in nature.

Of the respondents only about 30% claimed that there was already a strategic vision in place for medium and long-term climate change and energy targets. Within these, the main focus has been control of carbon emissions, although renewable energy targets are also referenced.

For most (though not all) instances where there is some form of municipal development strategy, there is coherence between energy and climate change aspects, and there is in these cases integration in the local policies of the national RES target.

The most popular energy sources included in existing policy statements was for wind energy, transportation, and biomass.

Most of the respondents are able to cite progress collection or existence already of an evidence base to inform and support the implementation of RES sources. This may reflect that there has been a strong focus in Finland on energy, and there is a much greater penetration of heat networks than in any of the other partner countries.

In particular, most confirm an understanding of local energy requirements, and which energy sources are available. They are also able to confirm they have knowledge of the characteristics of the local area, and there are GIS maps that represent this information.

However, there remains more to be achieved because the extent of this knowledge becomes much more patchy in the case of specific renewable energy sources, with only about half having carried out a local renewable energy assessment with potential low carbon and renewable energy sources displayed.

It is not surprising that the same picture arises for the nature of the master planning strategy. Only around half have developed a strategy that matches energy demand with potential local supplies of renewable energy sources.

Encouragingly, this situation appears to be changing with several respondents citing relevant work in progress. This leads to statements of intention that focus on further actions to be

taken, with more attention to be paid to energy consumption during urban planning and building processes.

## 2.3 Spain

In Spain, eight long course delegates working for - or close to - public administrations from seven different municipalities. The questionnaire was returned by seven delegates, working for six municipalities, Sabadell (208,000 inhabitants) and five smaller towns or cities. As well as the summary below, Appendix C displays some specific development plans from course attendees.

Sabadell, Begues (a municipality of 6,000 inhabitants 25km from Barcelona) and Arenys de Munt – (8,000 inhabitants at a distance of 45km from Barcelona) all count on strategic visions with medium and long-term climate change and energy targets, while the other three report on some strategic energy measures.

In Sabadell, capital of the district Vallés Occidental, the Municipal Strategy for Climate Change Mitigation 2008-2012, defined a total of 25 projects or initiatives and 8 complementary projects with the aim of reducing the city's contribution to the phenomenon of climate change. They are primarily linked to rational use of energy in industry and the tertiary sector, mobility and waste management,

Other important issues are energy efficiency measures in public buildings to demonstrate good practice and an important communication effort to raise awareness among the population and involve all stakeholders to change energy performance habits.

The participation in the long course has motivated the two delegates coming from this municipality to review and modify the recently approved plan for a new development under energy and environmental criteria. During the last module of the course they presented an advanced proposal integrating the main issues tackled.

Begues has signed the covenant of mayors in July 2010 and approved the local Sustainable Energy Action Plan in March 2012. The main focus is on the installation of biomass boilers for heating and domestic hot water preparation in public buildings. The raw material is provided by the public and private forest land of the area.

There is more focus than in the other countries on issues other than energy, that nevertheless have important environmental impact, and therefore cropped up in the questionnaire responses.

Unsurprisingly these are connected with water, very important in the Mediterranean climate. Both the availability of water and, in its absence, fire risk are cited. Thus the harvesting of rainwater for use (except drinking) in every new building promotion and major refurbishment is compulsory.

Goats are used to keep the forests free from dry ground vegetation, especially in the areas where high voltage lines are passing, by this means reducing the risk of fire.



The improvement of public lighting has started and the main challenge for reducing carbon emissions is seen to be the high dependence on private transport due to the low density of the municipality. For the same reason, urban energy networks are not seen to be feasible.

The other towns and cities also mainly promote the use of biomass as well as energy efficiency measures in public buildings. This is due to particular subsidies given in the last years by the Catalan Government for improving the energy performance and increasing the share of renewable energy supply in public buildings.

Some delegates were aware of which energy sources are used to provide local energy needs (electricity, gas, gas-oil, solar, geothermal), but none of them report an existing GIS, except Igualada, a 33,000 inhabitants city at 60 km distance from Barcelona. However, they do not have any register of energy data or plans.

Furthermore, the massive use of private cars is seen as global problem, but evidently linked to the fact that except Sabadell all of the answered questionnaires are from small and low density municipalities with the consequent difficulty of making public transport cost efficient.

### 3. CONCLUSIONS

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The UPRES project has developed a wide range of materials for use in course of different lengths, generically divided into long (university module) and short (typically two-day) courses. These courses have been delivered quite intensively in the partner countries, with very positive feedback from the attendees.

There is clearly a need for these courses to continue and to become an established part of education provision for planners and related disciplines. Accordingly, plans exist in the partner countries for future activities with some future courses already scheduled.

The need for the courses spanned each of the partner countries despite their very different climates and existing extent of penetration of RES technologies and heat networks. Consequently, the UPRES project team encourages those in other countries to consider using the materials developed during the project.

An important element of the courses has been to be able to gather some evidence for local authority action, and it was originally felt the collection of formalised development plans would be the way forward. These were originally planned for the short courses, but the activity was transferred to the long courses.

The information collected so far has been patchy, partly because the long courses have not been firmly established in all countries. It is clear that levels of existing knowledge can be quite limited and that different municipalities are at different stages.

It is recommended that future activities are devised so that:

- The UPRES material is delivered to students undertaking urban planning courses and related subject areas so that they emerge with a better overall understanding of energy issues.
- Local authority personnel would benefit from ongoing (eg through CPD) RES seminar initiatives that address the wide range of technical, organisational, financial and legal issues that they are confronted with.
- Responsiveness to specific issues that arise at any stage is more important than a specific course requirement for a development plans.
- The questionnaire developed by the UPRES project is a good way to capture progress that is being made. This is attached in Appendix A.

# APPENDIX A ORIGINAL QUESTIONNAIRE TEMPLATE

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- *UP – RES: template for D3.2*

## Template questionnaire – an introduction

### Background to the EU directive on renewable energy

The European Union has established climate and energy targets to be met by 2020. Commonly referred to as the 20-20-20 targets, they entail:

- A reduction in EU greenhouse gas emissions of at least 20% below 1990 levels
- 20% of EU energy consumption to come from renewable resources
- A 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency

With buildings accounting for nearly half of the carbon dioxide emitted in Europe, the role of municipalities in general and of urban planners in particular will be crucial in supporting and enabling the mass scale deployment of renewable energy systems in our towns and cities if we are to achieve a long term low carbon energy vision.

### Course objective

Achieving this vision presents many obstacles and planners will require new skills and understanding to assist them in sustainable energy planning. This course has been developed to provide planners with the knowledge and skills they need in order to overcome and eliminate non-technological barriers currently impeding the market penetration of renewable energy systems. In particular the course aims to help planners to:

- Understand the potential for renewable energy generation through the use of district energy systems
- Understand how to develop and integrate sustainable energy policies into the planning process
- Translate these policies into their day-to-day work

### Template questionnaire

This template has been devised to assist planners and their colleagues to include RES requirements in their normal planning operations smoothly and broadly..

## Planning for Renewable Energy: a systematic approach

With the above in mind, the template has 4 sections:

- Setting aspirations and commitments
- Interaction between sustainability policies and the municipality
- Planning for sustainable energy policies: how can it be addressed?
- Day-to-day roles for implementing sustainable policies

### 1. Setting the LA aspirations and commitments

Whilst this course focuses on the required knowledge to adhere to and achieve EU renewable targets, it is also important to set such targets within a wider framework.

Such a framework could be laid out in the form of either a strategic vision or an overarching climate change and energy strategy which lays out a specific set of policies and actions to address climate change mitigation. As a minimum, targets should be aligned with EU policies and with national objectives.

Attention should also be given to the links between climate mitigation policies and:

- Security of energy supply
- Providing affordable energy
- Creating opportunities for economic growth

Either in the form of a strategic vision or an overarching strategy such a document should set out carbon emission targets and address the energetic vector contributing to carbon emissions. These include energy supply for buildings, infrastructure and transportation. An increase in the renewable energy share would be a key element to achieving local carbon reduction targets.

The strategic document should be endorsed at a senior level and should clearly state the agreed targets (e.g. carbon reduction, renewable energy etc). It will be fundamental that such strategy is devised for the longer term and therefore needs if possible to be, immune from future changes in political direction.

## **2. Interaction between sustainability policies and the LA**

Once the commitment to carbon mitigation has been formalised in the form of an overarching strategy or strategic vision, policies should be developed to:

- Increase renewable energy share of total energy supply
- Create required investment for the transition to a low carbon based economy
- Alleviate fuel poverty through the retrofitting of the existing building stock
- Support lower carbon transportation

These high level policies could be used as the foundation for more specific actions and policies. In this sense, the planning process has to be seen as a tool that is available to the municipality to help achieve the overall strategic vision.

The planning process can shape the growth and regeneration of an area and influence its carbon impact through defining urban layout, density, building form (shape and orientation) and landscaping. For instance dense urban areas can:

- Offer better transport, reduce infrastructure and allow communal heating and cooling
- Make natural ventilation and day-lighting opportunities more difficult to realise.

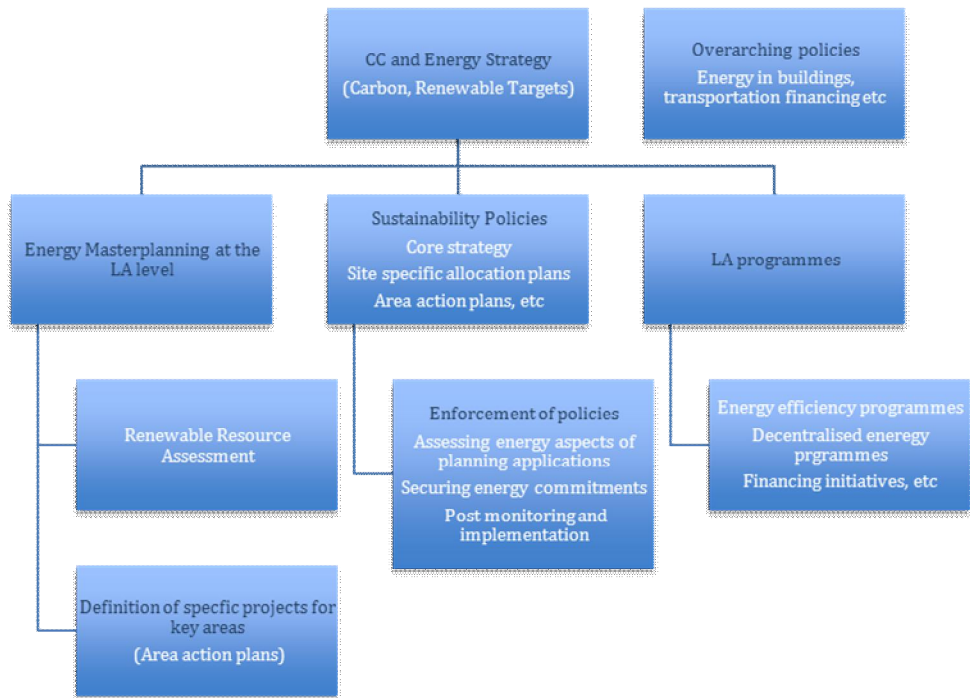
Sustainability policies should develop out of technical studies and reports to allow them to be defended and enforced. They should focus on long-term environmental, social and economic benefits.

Successful implementation of sustainable urban energy initiatives requires financial resource. Municipalities are ideally placed to identify and develop mechanisms to access these resources, which are likely to include allocated internal budgets and funding or support from private and third sector agents.

## **3. Planning for sustainability policies: how can it be addressed?**

In order to inform the content of specific policies, an energy master plan will be required. For instance, the establishment of a policy setting a target of 20% renewable energy will be

of little use if there does not exist evidence based studies demonstrating how this could be achieved or even that the target is a viable one.



**Figure 1: Possible interaction between Sustainability Policies and LA Structure**

## Urban Planning and Sustainability Policies: A framework

### 1. Defining the strategic vision

*Align vision with National Policy and objectives, i.e. carbon emissions reduction, renewable energy share, etc.*

| Questionnaire  |  |
|--|--|
| Does your LA have a strategic vision or overarching Climate Change and energy strategy with medium and long-term climate change and energy targets?  | <input type="checkbox"/> <i>A strategic vision</i><br><input type="checkbox"/> <i>An overarching strategy</i><br><input type="checkbox"/> <i>The Authority has neither of these in place</i> |
| 1. If so, what are the key points that such document addresses? This could include: <ul style="list-style-type: none"> <li>• Energy Efficiency targets</li> <li>• Renewable Energy targets</li> <li>• Energy supply issues</li> <li>• Energy demand targets</li> <li>• Carbon emissions</li> <li>• Data collection and reporting requirements</li> <li>• Timescales – short, medium and long term</li> <li>• Scale – town or city-wide, neighbourhood, regeneration</li> </ul> |  |

## 2. Sustainability policies and the municipality

*Sustainability Policies can be integrated within the wider municipality plans.*

| Questionnaire  |  |  |  |   |   |  |  |
|--|--|--|--|---|---|--|--|
| <p>Has the municipality established high level climate change and energy policies that cover all relevant energy vectors?</p>  | <p><i>Please tick below:</i></p> <p><input type="checkbox"/> <i>Yes all relevant vectors have been addressed</i></p> <p><i>I know that the following have been addressed:</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input type="checkbox"/> <i>Transportation</i></td> <td style="width: 50%;"><input type="checkbox"/> <i>Solar energy</i></td> </tr> <tr> <td><input type="checkbox"/> <i>Wind energy</i></td> <td><input type="checkbox"/> <i>Waste heat source</i></td> </tr> <tr> <td><input type="checkbox"/> <i>Biomass availability</i></td> <td><input type="checkbox"/> <i>Others (please state):</i></td> </tr> </table> | <input type="checkbox"/> <i>Transportation</i> | <input type="checkbox"/> <i>Solar energy</i> | <input type="checkbox"/> <i>Wind energy</i> | <input type="checkbox"/> <i>Waste heat source</i> | <input type="checkbox"/> <i>Biomass availability</i> | <input type="checkbox"/> <i>Others (please state):</i> |
| <input type="checkbox"/> <i>Transportation</i>   | <input type="checkbox"/> <i>Solar energy</i>   |  |  |   |   |  |  |
| <input type="checkbox"/> <i>Wind energy</i>  | <input type="checkbox"/> <i>Waste heat source</i>  |  |  |   |   |  |  |
| <input type="checkbox"/> <i>Biomass availability</i>   | <input type="checkbox"/> <i>Others (please state):</i>   |  |  |   |   |  |  |
| <p>Does your municipality development strategy integrate climate change policies and energy related policies?</p>  | <p><input type="checkbox"/> <i>Yes</i></p> <p><input type="checkbox"/> <i>No</i></p> <p>If yes please list these policies below:</p>   |  |  |   |   |  |  |
| <p>A municipality development strategy should be supported with technical based studies such as:</p> <ul style="list-style-type: none"> <li>- Renewable energy resource assessments</li> <li>- Supportive energy strategy studies for area action plans</li> <li>- Site specific allocation plans for renewable energy infrastructure</li> </ul> | <p><i>Please tick if:</i></p> <p><input type="checkbox"/> <i>A renewable resource assessment has been completed?</i></p> <p><input type="checkbox"/> <i>Specific action areas (SAA) have been created that include either large regeneration areas or planned extensions?</i></p> <p style="padding-left: 20px;"><input type="checkbox"/> <i>Any SAAs have energy strategies</i></p> <p style="padding-left: 20px;"><input type="checkbox"/> <i>These energy strategies include energy supply options?</i></p> <p><input type="checkbox"/> <i>Land has been allocated for energy infrastructure</i></p>  |  |  |   |   |  |  |
| <p>How is your national RES target integrated into municipality policy?</p> <p>Does your municipality have any enabling mechanisms for RES projects? These mechanisms could be financial, technical or organisational.</p>   |  |  |  |   |   |  |  |

### 3. Evidence base - area wide energy master planning studies

Once the main vision has been established information should be collected to provide the evidence base to develop adequate energy policies. These policies will be the basis for achieving long-term carbon reduction and renewable targets.

| <b>Guidelines</b>  |   |
|--|---|
| <b>A. Energy assessment</b>  |   |
| Do you have an understanding of local energy needs?                        | <i>At this stage this information needs to be collected to have an understanding of local energy requirements.<br/>As an example of such an exercise heat maps could be developed showing areas with high heat demand density with potential for district heating schemes.</i>  |
| Do you know which energy sources are used to provide local energy needs?   | <i>In order to understand the carbon emissions associated with current provision of energy, it is necessary to understand the different sources of energy that are being used to supply local energy consumers</i>  |
| Has a greenhouse gas inventory been developed for current energy supplies? | <i>A greenhouse emissions inventory due to energy use is necessary in order to develop adequate energy plans to reduce emissions to the required levels</i>   |
| <b>B. Characterisation of local area</b>                                   |   |
| Do you have a clear understanding of the characteristic of the local area? | <i>Before considering the energy strategy it is necessary to have a clear understanding of the area including geomorphology of the territory, location of industrial activities, character areas, areas of new planned development, regeneration areas etc.<br/><br/>A character area is widely defined as an area whose unique and recognisable character makes it different from other adjacent areas, e.g. housing age and style, land use, etc.<br/>Character areas across a city/town should be identified as a starting point upon which energy planning policies can be developed<br/>For energy purposes, character areas should:</i> <ul style="list-style-type: none"> <li>- <i>Be identified by type, mix and use of buildings, building and heating densities</i></li> <li>- <i>Include both existing and future planned development</i></li> </ul> |
| Do you have GIS maps containing the information above?                     | <i>GIS maps could be created that, for instance, identify areas with high density</i>   |



|  |   |
|--|---|
|  | <i>developments, suburban and industrial areas, planned developments</i>  |
| <p>Has a renewable energy assessment been undertaken, at either a regional or municipal level, showing the potential low carbon and renewable energy sources that are available to supply the local area?</p> <p>If so, what does this assessment include, e.g. have you created energy resource GIS maps?</p> | <p><i>In order to be able to match energy needs with available energy sources, a study is required that identifies available low carbon and renewable energy sources including:</i></p> <ul style="list-style-type: none"> <li>- <i>Existing sources of heat and cooling (if any) including district heating networks</i></li> <li>- <i>Potential waste heat and cooling sources</i></li> <li>- <i>Suitable areas for DH</i></li> <li>- <i>Location of biomass resource</i></li> <li>- <i>Potential locations for medium/large wind turbines</i></li> <li>- <i>Existing waste treatment facilities (waste to energy potential)</i></li> </ul> <p><i>This resource assessment should include resources available beyond municipality boundaries, e.g. establishing a supply chain of biomass sources from beyond municipality boundaries</i></p> |
| <b>C. Energy master planning strategy</b>  |   |

Have you developed an energy master planning strategy by matching energy requirements and availability of low and renewable sources of energy?

Have you considered energy as a factor in the decision to locate new developments? If so, in which way has this been done?

*At this stage we will have an understanding of:*

- *Different character areas*
- *Available and potential energy sources*
- *Energy demand requirements – e.g. heat maps*

*All this information can be combined to develop energy maps.*

*Energy maps can be useful for:*

- *Informing the master planning stage of new developments*
- *Aiding developers in making good decisions*
- *Identifying potential areas for implementing DH in regeneration areas*
- *Informing the location of new development plans*

*Such Energy maps will also be useful to define energy character areas i.e. areas that can be defined by having similar characteristics that means they will have similar energy solutions, for instance*

- *High density city centres are likely to be areas suitable for district heating*
- *Industrial areas can offer the opportunity for installing medium and large wind turbines*
- *Less densely populated suburban areas are more likely to use heating solutions at the individual building level such as heat pumps and solar thermal*

*Energy maps can be seen as the result of city wide energy master planning*

*Energy maps and the information behind them can be used as the starting point to the:*

- *Development of energy planning policies at the city level and in particular for different energy character areas*
- *Development of more detailed energy strategies at smaller scales, e.g. district level*

#### 4. Energy Planning Policies

*Once the necessary information has been collected, it can be used to support the development of energy planning policies.*

*In the first instance, city wide energy polices should be developed, but for identified energy character areas, specific polices should be added*

| <b>Guidelines</b>   |  |
|---|--|
| <p>Have specific energy policies been developed that guide energy approach for planning applications? If so, what are these policies?</p>   | <p><i>These policies should guide new developments and address a range of energy related issues including;</i></p> <ul style="list-style-type: none"> <li>- <i>Energy efficient construction</i></li> <li>- <i>Energy infrastructure – developing heat networks in high heat density areas</i></li> <li>- <i>Share of renewable energy</i></li> <li>- <i>Sustainable mobility – promote clean transport</i></li> <li>- <i>Programmes for dissemination</i></li> </ul>  |
| <p>Have specific action areas been created that include either large regeneration areas or planned extensions?<br/>If so, how has energy been addressed for these areas?<br/>Does a strategy for the energy supply for these areas exist?</p> | <p><i>Specific energy action plans should be developed for key areas that are informed by energy studies</i></p> <p><i>For instance for a new urban extension of high density development the focus of the policy could be:</i></p> <ul style="list-style-type: none"> <li>- <i>Specifying space for an energy centre</i></li> <li>- <i>Ensuring that all apartments and commercial buildings are designed to be capable of easy connection to district heating networks</i></li> <li>- <i>Providing renewable energy electrical charging points vehicles</i></li> </ul> |

## 5. Implementation

*Aided with findings of area wide energy master planning, energy opportunities across the region of study can be identified*

*As a first step for the implementation stage, it will have to be decided which are the key projects that will govern energy actions. Projects may be diverse ranging from installation of small wind farms to developing a district heating scheme to supply a specific neighbourhood with heat*

### Guidelines

Have you established and defined specific energy projects for your municipality?

If so, can you illustrate some of these

*Priority should be given to key projects.*

*Each of these specific projects will be in line with the overarching vision and long term objectives:*

- *Carbon reduction targets*
- *Enhancing energy security and quality of supply*
- *Providing affordable energy*
- *Cost effectiveness*

*Although the nature of projects will be different, in general, the following steps will be required:*

- *Detailed data gathering and project definition*
- *Appraisal of options*
- *Feasibility study*
- *Financial and business modelling*
- *Procurement and delivery*
-

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|---|--|
| What further initiatives are you now planning as a result of attending the UP-RES course? |  |
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## APPENDIX B      SUGGESTED FINAL QUESTIONNAIRE TEMPLATE

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### QUESTIONNAIRE FOR UP-RES LONG COURSE DELEGATES

To course delegates: the UP-RES team would be very grateful if you would read the questions in the first column, and provide answers in the second column, then return the questionnaire.

#### Urban Planning and Sustainability Policies: A framework

#### 6. Defining the strategic vision

*Align vision with National Policy and objectives, i.e. carbon emissions reduction, renewable energy share, etc.*

| Questionnaire  |   |
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| Does your LA have a strategic vision medium and long-term climate change and energy targets? | <input type="checkbox"/> YES, SPECIFIC STRATEGY FOR ENERGY<br><input type="checkbox"/> NO SPECIFIC ENERGY STRATEGY, BUT SOME STRATEGIC ENERGY CONTENT IN OTHER POLICIES<br><input type="checkbox"/> NO STRATEGIC MEASURES AT ALL FOR ENERGY |

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| <p>2. If so, what are the key points that such document addresses? This could include:</p> <ul style="list-style-type: none"><li>• Energy Efficiency targets</li><li>• Renewable Energy targets</li><li>• Energy supply issues</li><li>• Energy demand targets</li><li>• Carbon emissions</li><li>• Data collection and reporting requirements</li><li>• Timescales – short, medium, long-term</li><li>• Scale – town or city-wide, neighbourhood, regeneration</li></ul> |  |
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## 7. Sustainability policies and the municipality

*Sustainability Policies can be integrated within the wider municipality plans.*

| Questionnaire   |   |
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|   |   |
| Has the municipality established high level climate change and energy policies that cover all relevant energy vectors?                  | <p><i>Please tick below:</i></p> <p><input type="checkbox"/> <i>Yes all relevant vectors have been addressed</i></p> <p><i>I know that the following have been addressed:</i></p> <p><input type="checkbox"/> <i>Transportation</i>                      <input type="checkbox"/> <i>Solar energy</i></p> <p><input type="checkbox"/> <i>Wind energy</i>                              <input type="checkbox"/> <i>Waste heat source</i></p> <p><input type="checkbox"/> <i>Biomass availability</i>                      <input type="checkbox"/> <i>Others (please state):</i></p> |
| Does your municipality development strategy integrate climate change policies and energy related policies? If yes please list them.     | <p><input type="checkbox"/> <i>Yes</i></p> <p><input type="checkbox"/> <i>No</i></p>  |
| How is your national RES target integrated into municipality policy?  |   |
| Does your municipality have any enabling mechanisms for RES projects? These mechanisms could be financial, technical or organisational. |   |



## 8. Evidence base - area wide energy master planning studies

*Once the main vision has been established information should be collected to provide the evidence base to develop adequate energy policies. These policies will be the basis for achieving long-term carbon reduction and renewable targets.*

| <b>Guidelines</b>   |   |
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| <b>D. Energy assessment</b>   |   |
| Do you have an understanding of local energy needs? For example, heat density maps could be developed showing areas with potential for district heating schemes.  |   |
| Do you know which energy sources are used to provide local energy needs?  |   |
| Has a greenhouse gas inventory been developed for current energy supplies? This helps the development of energy plans to reduce emissions to the required levels  |   |
| <b>E. Characterisation of local area</b>  |   |
| Do you have a clear understanding of the characteristic of the local area? For example, the location of industrial activities, specific character areas, areas of new planned development, regeneration areas.  | - |
| A character area is distinct from other adjacent areas, e.g. in terms of housing age and style. Character areas can: <ul style="list-style-type: none"> <li>- be a starting point for developing energy planning policies</li> <li>- be identified by type, mix and use of buildings, building and heating densities</li> </ul> | - |

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| <p>- include both existing and future planned development</p>  |          |
| <p>Do you have GIS maps containing the information above?<br/>GIS maps could be created that identify areas high density areas, suburban and industrial areas, planned developments</p>  |          |
| <p>Has a renewable energy assessment been undertaken, at either a regional or municipal level, showing the potential low carbon and renewable energy sources that are available to supply the local area?<br/><br/>If so, what does this assessment include, e.g. have you created energy resource GIS maps?</p> |          |
| <p><b>F. Energy master planning strategy</b></p>   |          |
| <p>Have you developed an energy master planning strategy by matching energy requirements and availability of low carbon and renewable sources of energy?<br/><br/>Have you considered energy as a factor in the decision to locate new developments? If so, in which way has this been done?</p>                 | <p>-</p> |

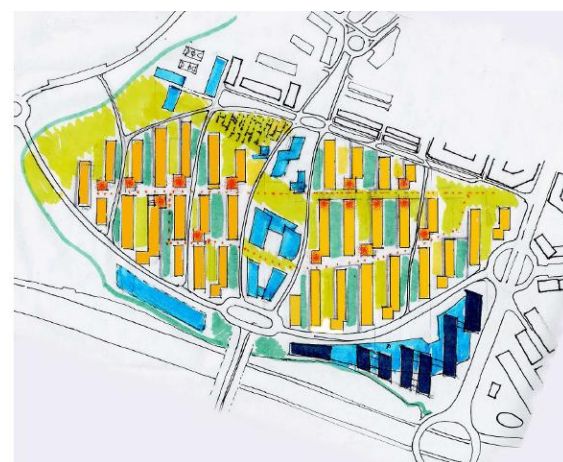
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## APPENDIX C      ADVANCED      PLANNING      CASES      IN CATALONIA, SPAIN

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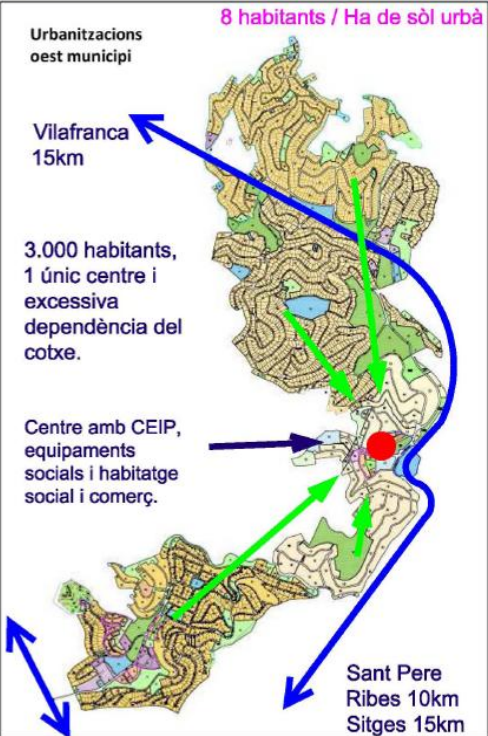

### Advanced Planning Cases in Catalonia, Spain

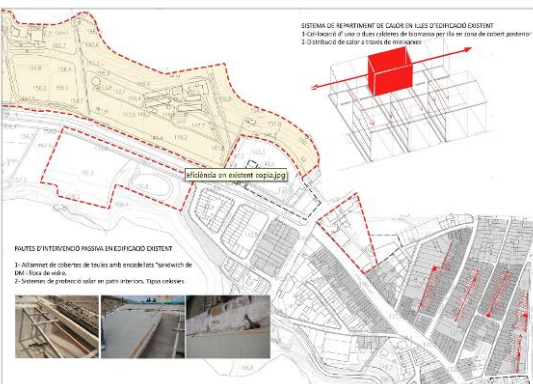

In Spain, four major project works were delivered in groups of three participants, focussing on the issues of energy renovation of buildings, sustainable urban planning and DHC. The fourth and final group-work was found to be particularly useful, as the participants themselves were asked to come up with real cases from their working environment. Compulsorily, the groups were to be established with at least one participant from public administration, and the aim was to improve an existing urban plan to implement district energy networks, small scale networks, or to focus on whatever seems to save most energy in the municipality. The results were highly satisfactory and interesting. Ambitious works were presented, where the acquired competences and aptitudes got obvious. In all cases, a detailed analysis of the existing urban fabric, the socio-economic context and the availability of RES was done. A part from some “conventional” DHC networks dimensioned and traced, the following examples can be remarked:



**Example 1.** In the municipality of Sabadell, the participants belonging to the Municipal Social Housing Development Agency, focussed on the improvement of an urban development plan actually under review. The original plan was elaborated with their own participation years ago, so they had deep knowledge of the site and its specific requirements. The ideas and competences developed in the long course brought them to raise issues and concerns that were not at all a point of discussion previously. Their proposal of a review of the actual urban development plan modifies the foreseen road hierarchy and tracing, building uses and height, questions the privacy of the subsoil in view of the need of common infrastructure, and includes centralised low enthalpy heat production and distribution.

The feedback received from their Director who appointed the two senior experts to the long term course: “Before the long term course, I had to pull my staff towards ambitious goals and ideas, now they caught me up and even overtake !” Currently, the entity is looking for financing mechanisms to implement deep renovation pilot activities to promote energy efficient refurbishment in their neighbourhoods.

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| <p><b>Estat actual</b></p> <p>Urbanitzacions oest municipi</p> <p>8 habitants / Ha de sòl urbà</p> <p>Vilafranca 15km</p> <p>3.000 habitants, 1 únic centre i excessiva dependència del cotxe.</p> <p>Centre amb CEIP, equipaments socials i habitatge social i comerç.</p>  <p>Sant Pere Ribes 10km<br/>Sitges 15km</p> | <p><b>Example 2.</b> The energy diagnosis elaborated for the very low density municipality of Olivella, South of Barcelona, led the urban planning team to identify the private mobility to be the main issue to tackle, as no centralised thermal energy distribution would be feasible and incentives for improving the decentralised systems are already existing. Apart from energy efficiency improvement proposals especially for public lighting, the project team made an exhaustive analysis of the daily and weekly mobility scheme of the inhabitants and designed an economically attractive public transport system based on electric micro-busses and a fixed tariff scheme. The main objective is to avoid CO<sub>2</sub> emissions by reducing the private fossil fuel driven car park without diminishing tax income for the municipality, offering high mobility standards to the inhabitants.</p> |
|   | <p><b>Example 3.</b> One project team focussed on centralised biomass fired CHP and DH in compact villages of Central Catalonia. The working group established links to half a dozen neighboured villages and analysed their heat demand but also the offer of biomass raw products within their own scope, coming from forest or agricultural exploitation of the more than 12 000 ha belonging to the analysed cluster of villages. The results are a convincing plan they presented already during the long term course to the main stakeholders within the area and the project of a service company enhancing the management of the entire value chain, from raw materials up to the delivery of heat.</p>  |

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|  <p>SISTEMA DE REPARTIMENT DE CALOR EN LES S'EDIFICACIÓ EXISTENT<br/> 1. Col·locació d' col·lectors solars de biomassa per als usos de calent posterior<br/> 2. Distribució de calor a través de les canonals</p> <p>PLANS D'INTERVENCIÓ PASSIVA EN EDIFICACIÓ EXISTENT<br/> 1. Allotjament de cobertes de teules amb encastats "torre dels sants" de B&amp;B i filles de vidre.<br/> 2. Sistema de producció solar en parts interiors. Tipus col·lectors.</p> | <p><b>Example 4.</b> For Arenys de Munt, a coastal town North of Barcelona with 8 500 inhabitants, two different types of district energy supply were proposed, one meeting the demand for a new urban development including several public buildings and a sports centre, the other consisting of a number of small scale networks in the existing urban fabric. Dimensioning is done and urban plots for implementing the production plants are reserved. The biomass supply is foreseen to be met through the neighbouring forest area Montnegre-Corredor.</p>  |
|   | <p><b>Example 5.</b> For the small scale city of El Vendrell, with 38 000 inhabitants, that already started different actions to improve sustainability aspects within the municipality, three main interventions were proposed: To increase density, agricultural land foreseen for new urban developments is re-qualified to be maintained (A), several neighbourhood district energy networks are dimensioned, mainly in residential areas as more than half of space heating is actually delivered by mobile electric heaters and 75% of the dwellings are cooled (B), and a mobility plan is proposed for the dense historic city centre (C).</p> |