

## **INTENSSS-PA: a Governance Approach for Integrating Energy and Spatial Planning. Its Results in Castilla y León (Spain)**

Miguel FERNÁNDEZ-MAROTO, University of Valladolid, Spain  
Juan Luis DE LAS RIVAS SANZ, University of Valladolid, Spain  
Sergio CANTERO CELADA, University of Valladolid, Spain

### **Synopsis**

The INTENSSS-PA project has developed and implemented an institutional capacity building approach related to energy and spatial planning, addressed to public authorities and societal stakeholders in order to support them to enter in a new era of holistic planning through a participatory, multi-level, interdisciplinary decision-making process.

### **1. Introduction**

Planning energy matters in relation to their spatial and socio-economic context is normally very complex. This is because it involves and affects a whole range of participants who often have objectives or points of view that do not coincide, or even are diametrically opposed. Consequently, there is a need to explore innovative decision-making processes that cut across boundaries and encourage participation. The intention would be to ensure that energy plans and projects are feasible, viable and acceptable from technical, financial and social angles.

In the light of this, the project entitled INTENSSS-PA (*A systematic approach for INspiring & Training ENergy-Spatial-Socioeconomic Sustainability to Public Authorities*) implemented a process of training aimed primarily at those engaged in public administration. The reason was that they have the competences for setting standards and the greatest capacity to coordinate and lead both energy and space planning. Hence, they can encourage participation by others associated with such matters.

The final objective of this process was to build up a new method for designing and for decision-taking based on creative collaboration and participation by all those concerned with this question. It was not so much a case of telling public administrations what they should do, more a question of completing a training process that would lead to new institutionalized decision-making models. These should be innovatory, involve a wide range of social and business participants, and be integrated into any institutional agenda in a way running across bounds.

The project received funding from the European Commission within the Horizon 2020 framework programme. It ran between February 2016 and July 2018, and comprised a consortium of seventeen partners from seven countries in the European Union (Greece, Italy, Spain, The Netherlands, Denmark, Slovenia and Latvia). These partners included various public administrations at regional and local levels, academic institutions, professional associations, and businesses in both the public and the private sector.

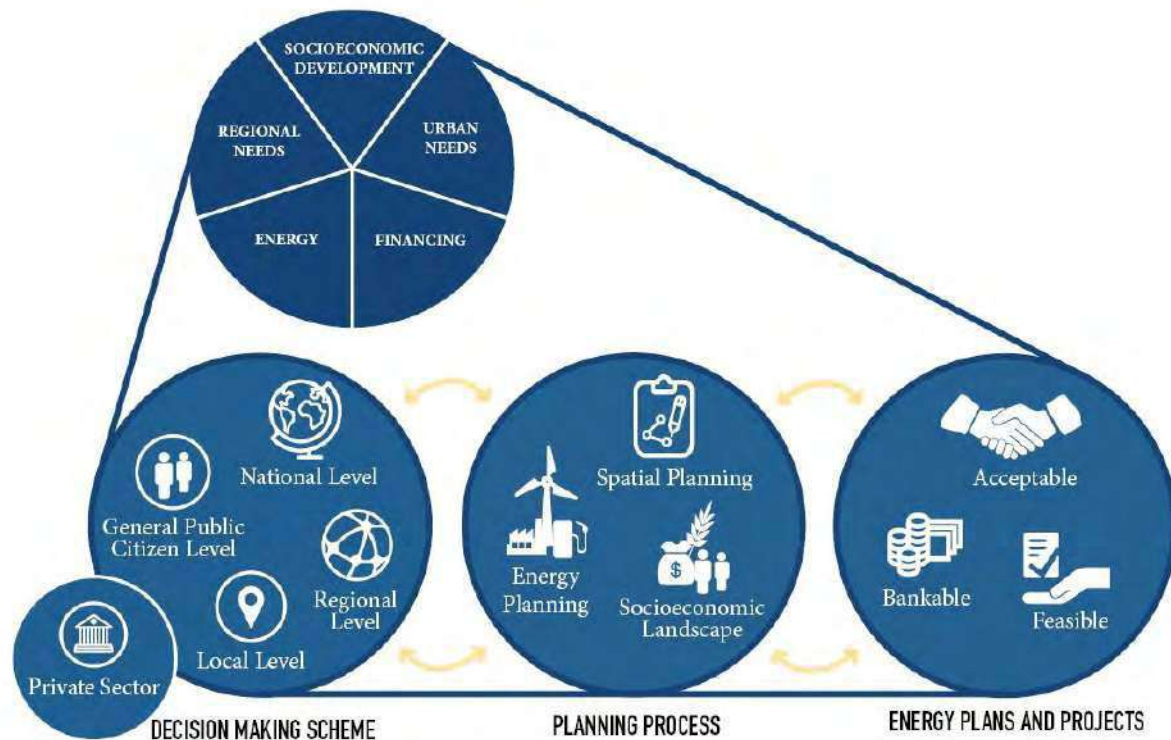


Figure 1: INTENSSS-PA Conceptual Model. Source: INTENSSS-PA.

## 2. The INTENSSS-PA Project: Objectives and Stages

The INTENSSS-PA project was organized around the following objectives:

### 2.1 Creating a Cluster of Local Regions and Communities

INTENSSS-PA took as its reference framework for development one region or municipality in each of the seven European countries participating in the project. This was intended to reflect both the particularities of their various systems for energy and spatial planning, and the diversity of their socio-economic characteristics. This variety, combined, however, with a shared working method, allowed continuous exchanges of experiences, advances made, and results obtained in each country.

Specifically, the seven work areas were the peripheral zone of Karditsa (in Greece, within the region of Thessaly), the Calabria Region (Italy), the Autonomous Community of Castilla y León (Spain), the Municipality of Groningen (The Netherlands, lying within the Province of the same name), the Municipality of Middelfart (Denmark, within the so-called Triangle Region), the Pormurje Statistical Region (Slovenia) and the Zemgale Planning Region (Latvia).

### 2.2 Building up an Online Database of Materials and Reference Cases

The work undertaken within INTENSSS-PA was intended to be supported by all the knowledge already existing with regard to the integration of the energy variable into spatial planning. It was also necessary to take into account related socio-economic variables and the end purpose of contributing to the objectives of energy sustainability (use of renewable sources, efficiency of utilization, and the like) envisaged by the European Union. All these prior experiences were considered from two angles: training materials (publications, methods, tools, and so forth) and instances taken as examples.

Consequently, the first phase of the project, co-ordinated by the *Instituto Universitario de Urbanística* of the University of Valladolid, comprised the carrying out of research procedures and the organized gathering of references useful for the later development of activities specific to INTENSSS-PA. This search for materials and cases was to concentrate essentially on the seven countries participating, so as to remain close to the real context of the regions involved in the project. Nonetheless, efforts were made to incorporate references corresponding to third countries, or of a European or international nature, as well.

To ensure easy interchange and consultation of the materials and cases, a model entry format was adopted for identifying, classifying and briefly analysing each of them. This included the basic data for the material or instance under consideration. It also classified them thematically into three large groups (each split into four sub-groups, with a total of 71 variables established). Finally, it contained short texts describing their content, characteristics and usefulness. Overall, in this first phase of the project 189 items of training material and 134 cases of good practice were analysed.

The screenshot displays the INTENSSS-PA database interface. The top section, labeled 'TRAINING MATERIAL', shows details for 'Certificación del urbanismo ecológico' (Certification of Ecological Urbanism) from the Spanish Ministry of Development. It includes the title in both original and English, the source (Ministerio de Fomento, Agencia de Ecología Urbana de Barcelona), the country (Spain), a link to the publication, and keywords like 'Ecological Urbanism; certification; indicators'. A 'Type of material' dropdown menu is set to 'Training material'. Below this, a grid of 'THEMATIC TOPICS' is shown, with sub-groups A, B, C, and D. Each sub-group contains a list of variables with checkboxes, many of which are checked. The sub-groups are: 1. ENERGY (plans, programs, projects, sources & technologies...), 2. SPACE (milieu, spatial planning, scales, geographical constraints...), 3. SOCIOECONOMICS (administration, governance, socioeconomic landscape...), and 4. DIVERSITY (urban forms, urban systems, urban processes, urban systems, urban systems, urban systems). The right side of the interface shows a preview of the training material's content, including a title, a brief description, and a list of indicators.

Figure 2: Example of a recorded training material. Source: INTENSSS-PA.

To make consultation of this information simpler for all those taking part in the development of the project in each country, and also to put such information at the disposal of anyone interested in these topics, all the entries were incorporated into a database available from a website permitting open access at no charge. In later phases, as the project progressed, this on-line database continued to be expanded with new materials and cases, both from external sources and generated by the INTENSSS-PA project itself. Similarly, the database remains available for collaborative contributions from third parties wishing to add materials and instances, which will thus carry on enhancing the amount of information it contains.

### 2.3 Establishing, Co-ordinating and Putting into Operation Seven Regional Living Labs (RLL)

The implementation of new design and decision-making processes, constituting the main aim of the INTENSSS-PA project, was supported by use of the *Living Lab* method, first put forward at M.I.T. in the 1980s. This allowed the building up of an ecosystem based on collaboration between the government and private sectors, and the general public (*public-*

*private-people partnership*). This was directed towards the resolution of a complex problem (the integration of energy into its spatial and socio-economic framework) in a real context, by means of a specific product, intended to be the outcome of a process permanently open to innovation.

In practical terms, a Regional Living Lab (RLL) was set up in each of the seven regions or municipalities enumerated above, so as to allow trialling of this innovative method of decision-making. The establishment of these RLLs required the bringing together of all those concerned with matters of energy and space planning in each region or municipality taking part, thus defining the panel of participants. To this end, the aim of contributing to the training of public administrators in these matters also being kept in mind, each RLL was co-ordinated by the corresponding regional or local authority, assisted in its work by the other associates in the project.

From here onward, the effective putting into operation of the RLLs consisted of squaring up to the real problem of integration of energy into spatial planning by following a working method comprising four fundamental phases: 1) *Context Analysis*: Consideration of the aspects that in each region proved to be key in making progress in the sustainable integration of energy and space planning, while taking into account socio-economic features. This implied detecting strengths, weaknesses, opportunities and threats (*SWOT analysis*) and defining the specific weighting for each element evaluated (*materiality assessment*). 2) *Co-decision*: The formulation of a problem (*planning focus*) incorporating the needs and expectations expressed by participants in the RLL on the basis of previously completed analyses, such that it could lead to a specific product directed at it and aimed at resolving it. This also required the identification of possible training needs (*gap analysis*). 3) *Co-planning*: The drawing up of a holistic energy plan, that is, the joint defining within the RLL of a plan for solving the problem envisaged in the previous phase, all needful information being provided (*experiential training*). 4) *Evaluation*: An assessment by each RLL of the planning process undertaken.

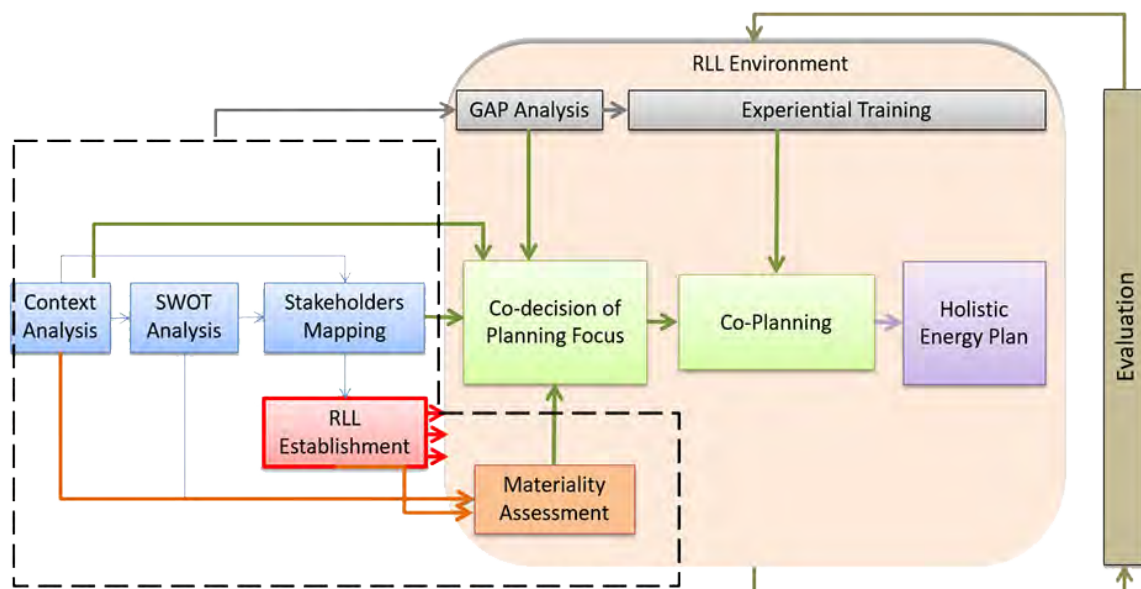


Figure 3: RLL Operation and Work Phases. Source: INTENSSS-PA.



#### **2.4 Designing an Integrated Sustainable Energy Plan**

As has just been noted, the planning process carried out in each RLL had as its ultimate objective the designing of an energy plan that would be both sustainable and integrated (*The Integrated Sustainable Energy Plan*). This was intended to respond to the conditions and needs in each region and reflect a consensus between the varying points of view of participants. In this way the plan should be workable, feasible, financially viable, and acceptable, and thus represent a contribution to attaining the aim of energy sustainability in the European Union. Simultaneously, it could constitute proof of the effectiveness of RLLs as a method for designing and for taking decisions.

Hence, the RLL of the Calabria Region concentrated on rural contexts, energy efficiency in public buildings and integrated management of water and waste. The Slovene Pormurje Region the plan attempted to achieve increased exploitation of biomass and hydro-electric energy, offering great potential in this zone. The RLL at Karditsa in Greece also focused on taking advantage of local biomass resources as a positive contribution to its economy. In the case of the Latvian Zemgale Planning Region, the RLL proposed a plan for encouraging use of alternative energy sources for more sustainable transport. As for the city of Groningen in The Netherlands, the RLL allowed the development of new co-operative working methods bringing in the various local agents concerned. The Danish Municipality of Middelfart involved the other municipalities in the Triangle Region in the development of joint actions, mostly aimed at the exploitation of geothermal resources, such as to contribute to the achievement of Danish national objectives for the use of renewable sources of energy. Further details of the approach taken by INTENSSS-PA and the results obtained in Castilla y León in Spain will be provided next.

#### **2.5.2.5 Publicizing Results Achieved and Assessing Incorporation of the RLL Method into the Institutional Framework of the Countries Participating**

Once integrated sustainable energy plans had been developed, the INTENSSS-PA project envisaged the possibility of incorporating the planning method constituted by RLLs into the institutional planning and decision-taking frameworks of the seven participant countries.

This first involved an assessment of RLLs as a method, investigating to what degree and in what form it might be possible to include them in the day-to-day processes of design and decision-making in the area of energy and space planning within the various public administrations co-ordinating the RLL in each region. For this purpose, the evaluations made by all of the participants were available. This permitted advantage to be taken of the networks that had been generated and use to be made of their potential to continue contributing to the objectives of energy sustainability in these regions or municipalities.

Furthermore, the INTENSSS-PA project also envisaged that it would be of interest to demonstrate this planning process and the results obtained to other regions in each participating country. This was to be done by putting the public administrations involved in touch with their counterparts in other areas so as to exchange experiences and facilitate possible adoption of the RLL method in contexts initially outside the work of the project.

Similarly, the project put in train a plan for publicizing and communicating the work done and results achieved. This included publications (in various formats), the organization of, and attendance at, events (whether at regional, national or international levels), which comprised informative seminars, open days, trade shows, and international academic conferences, and the creation of an extensive network of contacts to be kept up to date on developments within the project (such as members of other research projects on similar topics, those responsible for public administration in other regions or municipalities, and the like).

### 3. INTENSSS-PA in Castilla y León: Approaches and Results

Castilla y León is one of the seventeen Spanish regions (termed Autonomous Communities). It lies in the interior of the Iberian Peninsula and is one of the most extensive regions in the European Union. However, it is sparsely populated, having just over 2.5 million inhabitants, and a population density barely more than 25 people per square kilometre. In fact, half of the population of the region is concentrated in its fifteen urban areas exceeding 20,000 residents, whilst its extensive rural zones have for decades been suffering from an ageing and declining population. With these basic data in mind, an explanation can now be given of the approach taken by INTENSSS-PA in this region and the results obtained:

#### 3.1 Structure of the Castilla y León RLL

In accordance with the project guidelines, the Castilla y León RLL was organized to reflect the energy, town-planning and socio-economic panorama of the region, covering three crucial areas: local authorities, the private sector and the general public. The structure of the Castilla y León RLL was also shaped as a function of four main roles. Firstly, co-ordination work was undertaken by the Directorate General of Housing, Architecture and Town Planning [*Dirección General de Vivienda, Arquitectura y Urbanismo*] of the Office for Development and the Environment [*Consejería de Fomento and Medio Ambiente*] of the Regional Government of Castilla y León [*Junta de Castilla y León*], the regional authority that was a partner in the project and responsible for town and country planning policies in the area. Secondly, technical support for the RLL was provided by the *Instituto Universitario de Urbanística* of the University of Valladolid, the other Spanish associate in the project.



Figure 4: Structure and members of the RLL Castilla y León. Source: INTENSSS-PA Castilla y León.

Thirdly, in view of the project's focus, it was decided to take as associates collaborating with the RLL two further departments of the regional government directly involved in the matters addressed by the project. The first was EREN, the Castilla y León Regional Energy Board [*Ente Regional de la Energía de Castilla y León*], charged with energy policy in the region. The second was SOMACyL, the Castilla y León Public Infrastructure and Environment Corporation [*Sociedad Pública de Infraestructuras y Medio Ambiente de Castilla y León*], which has a department for energy efficiency and renewable energy responsible for designing, putting into operation and managing a large number of energy projects in the area.

Finally, the RLL was rounded out with a range of participants, corresponding to six large groupings: local authorities and municipal public companies, businesses working in the areas of energy and engineering, associations of various sorts (of ecologists, consumers, neighbourhoods, and similar), professional bodies (of architects, for example), research organizations and foundations (linked to the energy field) and co-operatives.

### 3.2 Guidelines for Integrated Energy and Space Planning

The Castilla y León RLL had two fundamental benchmarks when drawing up the contents of its integrated sustainable energy plan. These corresponded to the main lines taken by regional policies, firstly in energy matters and secondly in town and country planning.

Of the two, the first is ETR, the Renewable Heat Strategy [*Estrategia Térmica Renovable*] for Castilla y León covering 2016 to 2030. On the basis of an assessment of the demand for heating in the region, this document aims to encourage the production of thermal energy for this purpose from renewable sources, as against the current predominance of fuels such as natural gas, at present accounting for 50% of heat generation. The strategy lays special stress on the role that can be played in this matter by three alternatives: solar power, bio-energy and geo-thermal heat. With regard to the second of these, the document points out the great potential the region enjoys, in the light, for example, of its extensive areas of woodland. At present only a tiny portion of the potential for the production of biomass is exploited for energy, yet this would be an economic activity which would render rural areas in Castilla y León more dynamic, creating new employment possibilities.

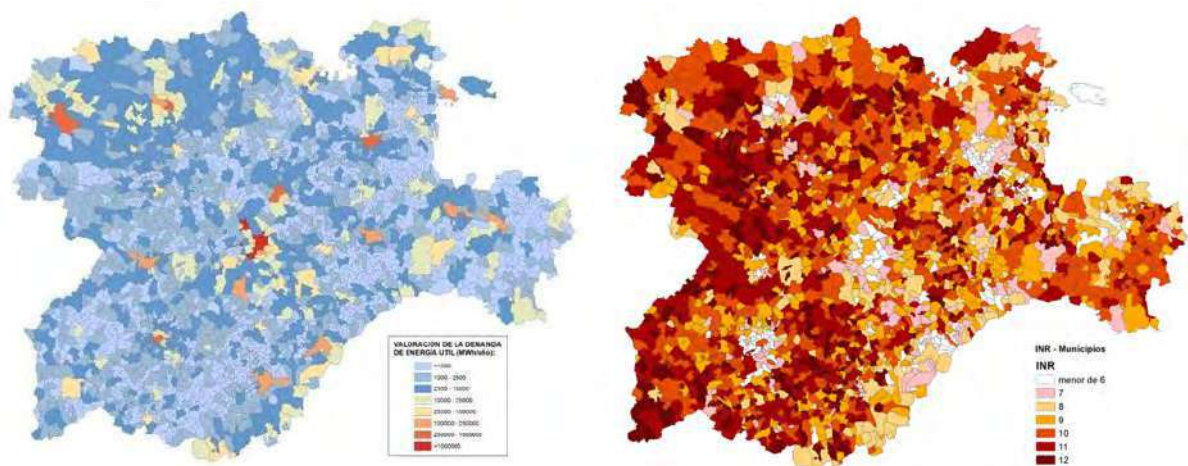


Figure 5: On the left, evaluation of the thermal energy demand in Castilla y León, according to ETR. On the right, index of regeneration needs of the municipalities of the region, according to ERUCyL. Source: Junta de Castilla y León.

The second benchmark is ERUCyL the Castilla y León Urban Regeneration Strategy [*Estrategia de Regeneración Urbana de Castilla y León*], which was adopted in 2016 and marked an orientation of town-planning policies in the region towards urban rehabilitation, regeneration and renovation. After a period dominated by town planning of an expansionist nature, the aim of this strategy is to encourage improvement of existing urban areas by ensuring they are functionally, environmentally and socially appropriate. With this purpose, the strategy focuses on the outer suburbs of towns in the region built between 1950 and 1980. This is because a large part of the population lives in such areas and they are where the greatest problems of urban vulnerability are concentrated, linked to aspects of demographics, such as ageing, of the economy, such as unemployment, or to the very nature of the housing stock, which suffers from considerable deficiencies, for instance with regard to accessibility or to energy efficiency. For its implementation, the strategy has first built up a system for evaluating regeneration needs in every local government area in the



region and in all of the quarters of its fifteen cities, so as to concentrate efforts (investment of public funds) at those points where these are greatest. Likewise, it has established a set of criteria for orienting rehabilitation, regeneration and renovation actions, so that they will incorporate an integrated approach that will increase their efficacy. This includes aspects directly connected with energy, whether passive features, such as improving building insulation, or active measures (installations supplied with energy from renewable sources).

### **3.3 Definition of Objectives for the Integrated Sustainable Energy Plan**

The Castilla y León RLL took these two benchmarks as a starting point. On the basis of consideration of the context and of strengths, weaknesses, opportunities and threats it proved easy to decide to orient its integrated sustainable energy plan for the region towards pressing for urban heating networks fuelled with biomass.

In the first place, an increase in the use of biomass to produce energy offers advantages for the extensive rural environment of Castilla y León. This is because it would boost economic activity and employment, as well as facilitating better management of the woodlands in the region, with positive effects such as a reduction in the risk of forest fires. Moreover, biomass is a resource native to the region and a renewable fuel that can easily replace imported fossil fuels such as natural gas.

A combination of utilization of a local renewable fuel like biomass and encouragement of centralized production of thermal energy through heat networks is aimed at achieving both environmental and financial benefits. On the one hand, centralization facilitates optimization of resources and hence increases energy efficiency. On the other, this brings about a reduction in costs together with beneficial effects from a social viewpoint. This is because a reduction in customers' bills provides a contribution to solving problems such as energy poverty, as well as enhancing the level of comfort in homes served by this type of solution.

From the viewpoint of town and country planning, there is also an interesting synergy, since the installation of heating networks can be combined with the urban renewal actions which the regional government wishes to promote. This allows centralization of production to be effected in tandem with complementary measures reducing demand, for example by improvements in the insulation of walls and roofs, normally included in operations of this sort.



*Figure 6: Visit of the members of the RLL of Castilla y León to the DH of the University of Valladolid.  
Source: INTENSSS-PA Castilla y León.*

Similarly, an additional factor kept in mind was the fact that the regional government, through SOMACyL, had already initiated a policy of rolling out urban heating networks which could thus be reinforced and supported. On this point, the members of the Castilla y León RLL had the opportunity to visit several of these networks. In doing so, they gained first-hand information about the obstacles met by their promoters when attempting to set them up, measures that might aid in managing them, and also good practice that could be learnt from



them. Among these visits one highlight was the heating network serving a large part of the buildings of the University of Valladolid, currently among the most extensive networks in Spain. Complementary learning activities were also organised, such as a seminar on the possible contributions from urban planning to energy transition.

### **3.4 Guidelines for Sustainable Development and Integrated Management of Urban Heating Networks in Castilla y León**

Once the work had been given a focus, and as a consequence of the learning activities and later discussions, the Castilla y León RLL decided that its integrated sustainable energy plan should take the shape of Guidelines for the sustainable development and integrated management of urban district heating networks in Castilla y León. The intention was to draw up a document that in itself would represent an integrated and action-oriented approach. In other words, it would be directed towards the putting into practice of specific measures facilitating the rolling out and the most effective operation possible of urban district heating networks in the region.

<b>1. Improvement of Regulatory Framework</b>	<ul style="list-style-type: none"> <li>1.1 - Develop a regional strategy to promote district heating</li> <li>1.2 - Promote forest management facilitating sustainable energy use</li> <li>1.3 - Elaborate specific local ordinances on district heating</li> <li>1.4 - Regulatory consideration of district heating as an urban service</li> </ul>
<b>2. Guidance for energy projects</b>	<ul style="list-style-type: none"> <li>2.1 - Compulsory participatory localization studies for thermal plants</li> <li>2.2 - Achieve the critical mass of consumption through public buildings</li> <li>2.3 - Compulsory completion of feasibility studies</li> <li>2.4 - Energy optimization and inclusion of complementary solutions</li> <li>2.5 - Promote bioclimatic solutions in buildings</li> </ul>
<b>3. Spatial Planning Strategies</b>	<ul style="list-style-type: none"> <li>3.1 - Incorporate district heating in municipal urban planning</li> <li>3.2 - Promote to incorporate district heating in urban regeneration</li> <li>3.3 - Promote to incorporate district heating in new urban areas</li> <li>3.4 - Application of good practice criteria in the design and development of district heating</li> <li>3.5 - Promote a more sustainable design of the public space</li> </ul>
<b>4. Good practice of governance of management of projects</b>	<ul style="list-style-type: none"> <li>4.1 - Adoption of the Living Lab approach in the design and development of projects</li> <li>4.2 - Creation of interdepartmental working teams in Public Administrations</li> <li>4.3 - Promotion of the mixed management (public / private) of district heating</li> <li>4.4 - Advanced use of ICT in the management of district heating</li> </ul>
<b>5. Actions of communication and participation</b>	<ul style="list-style-type: none"> <li>5.1 - Organization of participatory processes during the design and development of each specific project</li> <li>5.2 - Organization of information and training activities oriented to technicians</li> <li>5.3 - Organization of informative and training activities oriented to the citizenship, with special attention to the young population</li> </ul>

*Figure 7: Guidelines for the sustainable development and integrated governance of urban district heating in Castilla y León. Source: INTENSSS-PA Castilla y León.*

To this end, a total of 21 guidelines were drawn up, grouped into five main fields of action. These were improvements in the regulatory framework, guidance for energy projects, strategies for spatial planning, good practice in governance and management, and actions aimed at better communication and participation. Each guideline, presented in a record-card-like format, proposed a set of actions to be put into practice. These ran from modifications to certain standards to recommendations for projects or management, based on tried and tested experiences. They also included a number of general considerations, explaining the nature and aims of the measures proposed, the resources and tools affected by them, and an indication of which agents should be responsible for their application. The Castilla y León RLL deemed that effective application of the measures incorporated within the guidelines would boost the number of projects for heating networks in the region over the short and medium term. This would be an outcome of facilitation of services for residential use and the entry of the private sector into promotion and management of such networks. Finally, the guidelines were presented through three roadshows that took place in different cities of the region, and a book was edited to summarise the work and result of Castilla y León RLL.

#### 4. Conclusions

The progress of the INTENSSS-PA project, especially in the case of Castilla y León, demonstrated the advantages of an innovative approach to mechanisms for designing and decision-making within public administration, based on bringing in all those involved in, or affected by, the decisions taken. From the viewpoint of public administrations, the setting up of a participatory forum from the very start of projects guarantees to a large extent the adoption of solutions that are consensual and shared, as well as being technically better informed and more finely tuned, since they are worked out within a framework of collaboration, and of transparent and open debate. In this way, there is a noteworthy reduction in the risk of rejection of, or social protest against, the projects emerging (such as NIMBY). In the specific field of energy, such problems are habitually encountered, very often as an outcome of a lack of any precise understanding of the socio-economic context in which these projects must be undertaken. Similarly, the importance of including spatial, town-planning and territorial variables was made clear, if an overall understanding is to be achieved of the consequences that every project must have in its field of application.

With regard to those actors and agencies involved in the RLL, it was clear that they were strongly motivated to participate, and derived much satisfaction from the fact that their points of view and interests were valued and taken into account. The members of the Castilla y León RLL also rated very positively the training activities occurring as the plan progressed, such as visits to heating networks, and stressed that the principal result of the project was not just the plan drawn up, but also the RLL itself as a forum for participation which also allowed them to get to know one another and compare ideas.

However, incorporation of this method for designing and decision-making into the day-to-day functioning of public administration requires profound changes in the current administrative and institutional structure, no simple matter. First of all, it implies changes in the working philosophy of the administration, which would be obliged to cede part of its prime role and its control, and to open up its operations in a very clear and unrestricted way to the society it serves. From that starting point, there would also be a need to provide some form of structure for choosing, and ensuring participation by, the various members of whatever forums were established, which might be either of a permanent nature, directed towards the production of wide-ranging plans, or linked to the drawing up of specific targeted projects.

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#### References

Cantero Celada, Sergio, and Fernández-Maroto, Miguel, eds. (2018) El Proyecto INTENSSS-PA en Castilla y León: una experiencia de planificación energética y espacial sostenible e integrada, Valladolid: INTENSSS-PA Castilla y León. Available from: <http://www3.uva.es/iuu/es/publicaciones/otras-publicaciones/el-proyecto-intenssss-pa-en-castilla-y-leon-una-experiencia-de-planificacion-energetica-y-espacial-sostenible-e-integrada/> [Accessed 05/07/2018].

De las Rivas Sanz, Juan Luis, dir. (2016) Estrategia de Regeneración Urbana en Castilla y León, Junta de Castilla y León. Available from:  
[http://vivienda.jcyl.es/web/jcyl/OficinaVivienda/es/Plantilla100/1284583550798/\\_/\\_/\\_](http://vivienda.jcyl.es/web/jcyl/OficinaVivienda/es/Plantilla100/1284583550798/_/_/_)  
[Accessed 05/07/2018].

Giannouli, I; Christidou, C; Marinero Peral, A.M.; Cantero Celada, S.; de las Rivas Sanz, J.L.; Fernández Maroto, M.; Zuidema, C.; Salemik, K.; Gugerell, K.; Blathra, S.; Leonhart Petersen, K.; Tasopoulou, A.; Papaioannou, A., and Koutsomarkos, N. (2017) "A Co-planning Approach for Area-Based Holistic Energy Planning: The Experience of INTENSSS-PA project". In Proceedings of the International Conference on Changing Cities III: Spatial, Design, Landscape & Socio-economic Dimensions: Syros, Delos, Mykonos Islands, Greece, 699-709.

INTENSSS-PA project (2017) Regional Living Labs Context and Potentials for Innovation, European Commission. Available from: [https://cordis.europa.eu/project/rcn/200069\\_en.html](https://cordis.europa.eu/project/rcn/200069_en.html)  
[Accessed 05/07/2018].

Schumacher, Jens, and Niitamo, Veli-Peeka, eds. (2008) European Living Labs: A New Approach for Human Centric Regional Innovation, Berlin: Wissenschaftlicher Verlag.

Tira, Maurizio; Giannouli, Ioanna; Sgobbo, Alessandro; Brescia, Carmine; Cervigni, Chiara; Carollo, Lisa, and Tourkolias, Christos (2017) "INTENSSS PA: a Systematic Approach for Inspiring Training Energy-Spatial Socioeconomic Sustainability to Public Authorities", UPLanD-Journal of Urban Planning, Landscape & environmental Design, Vol. 2 No. 2, 65-84.