



## **SPECIAL Expert Paper 5**

SPATIAL PLANNING and ENERGY for  
COMMUNITIES IN ALL LANDSCAPES



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# New energy for spatial planning in the province of Styria (Austria)



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**Implementation of sustainable energy in  
spatial planning in Styria**



**Das Land  
Steiermark**

→ Umwelt und Raumordnung

**By Christine Schwabegger**



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## About SPECIAL

Spatial planning has a key part to play in creating urban environments that support less energy-intensive lifestyles and communities, and spatial and urban planners have a pivotal role in developing energy strategies and action plans. The SPECIAL (Spatial Planning and Energy for Communities In All Landscapes) project has been set up to help bridge the gap between climate change/energy action planning and spatial and urban planning.

SPECIAL is funded by Intelligent Energy Europe and is an exciting partnership between eight Town Planning Associations (TPAs) and planning authorities from across Europe. It is a three-year programme with a focus on spatial planning for the deployment of local energy efficiency and renewable energy solutions. The Town and Country Planning Association (TCPA) is the lead partner, with partner TPAs and planning authorities in Austria, Germany, Greece, Hungary, Ireland, Italy, and Sweden.

The project has been set up to help the TPAs and planning authorities of the partner countries meet the EU's challenging energy and climate change targets for 2020. It has several objectives relating to exchanging best practice and experience; promoting integrated renewable energy strategies; and building the capacity of the partner planning associations and authorities in the planning and delivery of renewable energy solutions. Most importantly, the partners must then share that learning through their professional networks and maximise the dissemination of their training to others, in a multiplier effect.

### The SPECIAL partnership:

-  Provincial Government of Styria, Department of Spatial Planning Law, Austria
-  German Institute of Urban Affairs, Germany
-  Organisation for the Master Plan and Environmental Protection of Thessaloniki, Greece
-  Hungarian Urban Knowledge Centre, Hungary
-  Irish Planning Institute, Ireland
-  National Centre for Town Planning Studies, Italy
-  Swedish Society for Town and Country Planning, Sweden
-  Town and Country Planning Association, UK

The SPECIAL project runs from March 2013 to March 2016, with a final conference held in London to disseminate the project outcomes, including a pan-European Guide on Spatial Planning and Sustainable Energy.

Visit the SPECIAL website at <http://www.special-eu.org>  
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# New energy for spatial planning – Implementing sustainable energy through spatial planning in the Province of Styria

By Christine Schwabberger

## Contents

- 2 **1 Introduction**
- 3 **2 Spatial planning law in Styria**
  - 2.1 Styrian spatial planning instruments
  - 2.2 Sustainable energy issues in Styrian planning law
- 5 **3 Case studies**
  - 3.1 Combining an 'energy certificate for settlements' with a zoning map in Leibnitz, Styria
  - 3.2 Energy zone mapping in Freistadt, Upper Austria
- 9 **4 The way forward – planning for sustainable energy in Styria**

*Cover illustration by Christine Schwabberger*

# 1 Introduction

This SPECIAL project Expert Paper highlights the potential to implement sustainable energy solutions through existing planning regulations in Styria. It also investigates new opportunities for delivering sustainable energy planning in the Austrian province.

The Department of Spatial Planning and Building Law in the Provincial Government of Styria is one of the eight partners in the Intelligent Energy Europe supported SPECIAL project. The Department is responsible for checking (controlling or giving a proof of) spatial planning at the municipal level for the whole province of Styria, which includes 287 municipalities. It consults with communities concerning the development of their land use maps, zoning plans, masterplans and local development concepts, which have to be prepared in accordance with Styrian spatial planning law.

The Department also deals with the ongoing development of planning law and policy implementation. Integrated planning is an essential part of this work, as is the co-ordination of urban and spatial planning with other disciplines, mainly sustainability (such as climate change measures) and the management of transport and housing. Through such collaborations and interventions, spatial planners have important inputs to make to the overall process of municipal development.

Styria has much experience with zoning plans, masterplans and legal regulations, and can draw on experience in other Austrian provinces. A number of good practice examples of low energy use communities and regions can be found in Styria. The province has also run a project – ‘Energy Efficient Settlements in Styria’ – in which the masterplans of one municipality were tested for energy efficiency. The masterplan with the best combination of low energy use and low costs was subsequently supported by the Department.

The Provincial Government of Styria has great interest in integrating new methods of working into its functions, and in learning from examples dealing with spatial planning and sustainable energy.

During the course of the SPECIAL project it became clear that existing planning law and regulations in Styria provide opportunities to promote sustainable energy. In a way, it is ‘simply’ the task of those who undertake spatial planning within the municipalities, on one hand, and Styria’s Department of Spatial Planning and Building Law, on the other, to control and implement existing planning instruments in a more ‘energy-spatial’ way.

## 2 Spatial planning law in Styria

Spatial planning in Austria is not governed by a national planning act. The nine federal states of Austria each have their own spatial planning laws, which determine the rules for the municipalities in each state.

In 2010 Styria updated and amended its spatial planning law, which dated back to 1974. These changes included an increased focus on tackling climate change through planning.

### 2.1 Styrian spatial planning instruments

In Styria each municipality is in charge of spatial planning; every ten years they must produce a new local development concept – setting out the long-term development of the municipality – and a land use map.

The local development concept sets out the preferred local centres of settlements and future development areas, taking account of regional zones for agriculture, green belts and extraction of raw materials where the development of settlements is forbidden.

The next step is to develop the land use map, which has to be in accordance with the development concept. The map determines the building areas, open spaces and traffic zones within the municipality's area.

Between the development of land use plans every decade, municipalities are permitted to change certain elements of the development concept and land use map. These changes are checked by the Department of Spatial Planning and Building Law for compliance with existing regulations, and must be approved by the Styrian Government. Detailed, smaller-area masterplans and zoning maps must be in accord with the land use maps.

### 2.2 Sustainable energy issues in Styrian spatial planning law

Through Styria's participation in the SPECIAL project it became increasingly clear that the existing Styrian Spatial Planning Law (StROG 2010) already provides the potential to link sustainable energy planning with spatial planning. However, until now the municipalities have not been exploiting existing possibilities. There is much awareness-raising among planners to be done, but through its involvement in the SPECIAL project Styria is now the right path to convince those involved – especially planners, through Styria's 'multiplier' groups

#### **2.2.1 Basic principles in spatial planning (§ 3 Abs. 1 and 2 StROG 2010 i.d.g.F.)**

These basic principles of the law require spatial planning to ensure that:

- the quality of natural living standards will be kept; and
- sustainable development in terms of saving natural resources like water, air and soil will be achieved.

They also require that spatial planning should develop the settlement structure:

- in the light of energy saving aspects and using sustainable energy; and
- in the light of consideration of the climate protection aims.

### **2.2.2 Determinations under the development concept (§ 21 Abs. 3 Ziff. 5, § 22 Abs. 8 StROG 2010 i.d.g.F.)**

As a part of the Local Development Concept it is necessary to meet the aims of developments in creating different expert concepts, in particular adding energy concepts to reach the aims of the energy business.

Every municipality which is situated in an urban renewable area for air (particulate matter) has to develop communal energy concepts with emphasis on the district heating areas.

### **2.2.3 Content of zoning maps and masterplans (§ 41 Abs. 2 Ziff. 10 StROG 2010 i.d.g.F.)**

Zoning maps are made for bigger areas to try to give more structure to planning. They give the municipality the possibility of implementing energy issues to deliver sustainable planning.

Zoning maps *can* determine environmental issues such as noise, microclimate, heating methods, and so on.

In this step there is a major need to convince owners and investors that sustainable planning is needed.

## 3 Case studies

As part of its participation in the SPECIAL project the Department of Spatial Planning and Building Law looked for best practice examples in the Province of Styria and elsewhere in Austria. This Expert Paper describes two case studies:

- a 'energy certificate for settlements', used with a zoning map, in Leibnitz, Styria; and
- energy zone mapping, in Freistadt, Upper Austria.

### 3.1 Combining an 'energy certificate for settlements' with a zoning map in Leibnitz, Styria

#### 3.1.1 Context and background

The energy certificate for settlements is one of a range of different tools for promoting sustainable energy in spatial planning that was issued by the Federal Ministry for Agriculture and Forestry, Environment and Water Management in 2013.<sup>1</sup> They provide a selection of ways for municipalities to determine the energy consumption, energy costs, and the potential for using sustainable energy in their area.

One of these tools is the energy document or certificate for settlements. Energy certificates for buildings (similar to those issued for electronic household items such as refrigerators) have been required in Austria for a number of years. However, these certificates do not consider the surrounding area: the wider settlement, the level of densification, public infrastructure, and so on. To overcome this shortcoming software has been developed using Microsoft Excel that enables these wider considerations to be calculated and used in a simple zoning map. By factoring in other elements such as whether the building is located in a built-up area the tool provides greater details to the overall sustainable energy picture. For example, it may show that it is uneconomical to build a zero-energy house in a certain context. The original idea, and the software development, has been led by Emrich Consulting ZT-GmbH, Vienna.<sup>2</sup> The software helps to calculate the suitability of a location for a settlement based on:

- the potential for using public transport or cycling;
- distances to the local centre, schools, shops and other important places;
- the amount and locations of shaded areas (and, conversely, sunny areas); and
- levels of noise.

In spatial planning the relevant elements in the zoning plan include:

- building density;
- the quantity of green space per dwelling;
- building type;
- energy;
- the amount of infrastructure costs for every dwelling per year;
- dwelling size; and
- carbon dioxide emissions per dwelling.

The software produces a rating similar to those developed for electronic devices. The ratings, from A to G, classify developments against the ratings for an ideal settlement.

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1 *Tools für Energieraumplanung: Ein Handbuch für deren Auswahl und Anwendung im Planungsprozess.* Gernot Stöglehner, Susanna Erker, Georg Neugebauer, im Auftrag des Bundesministeriums für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, Jänner 2013

2 Further information is available from the Emrich Consulting website, at <http://www.emrich.at>

### 3.1.2 Experience of using the tool in Leibnitz

In 2010 the Department of Spatial Planning and Building Law in the Provincial Government of Styria commissioned Heigl Consulting in Graz to apply this software/tool to a test area.<sup>3</sup> The small city of Leibnitz, south of Graz, was chosen as the test area, and the tool was applied to a number of zoning maps. Heigl Consulting is also the spatial planner in this municipality.

### 3.1.3 Key lessons

Combining the zoning map with the findings from the energy tool enabled planners to compare the energy costs associated with the development of new dwellings. The information generated by the tool allowed them to identify places which achieved the best balance between cost and energy efficiency.

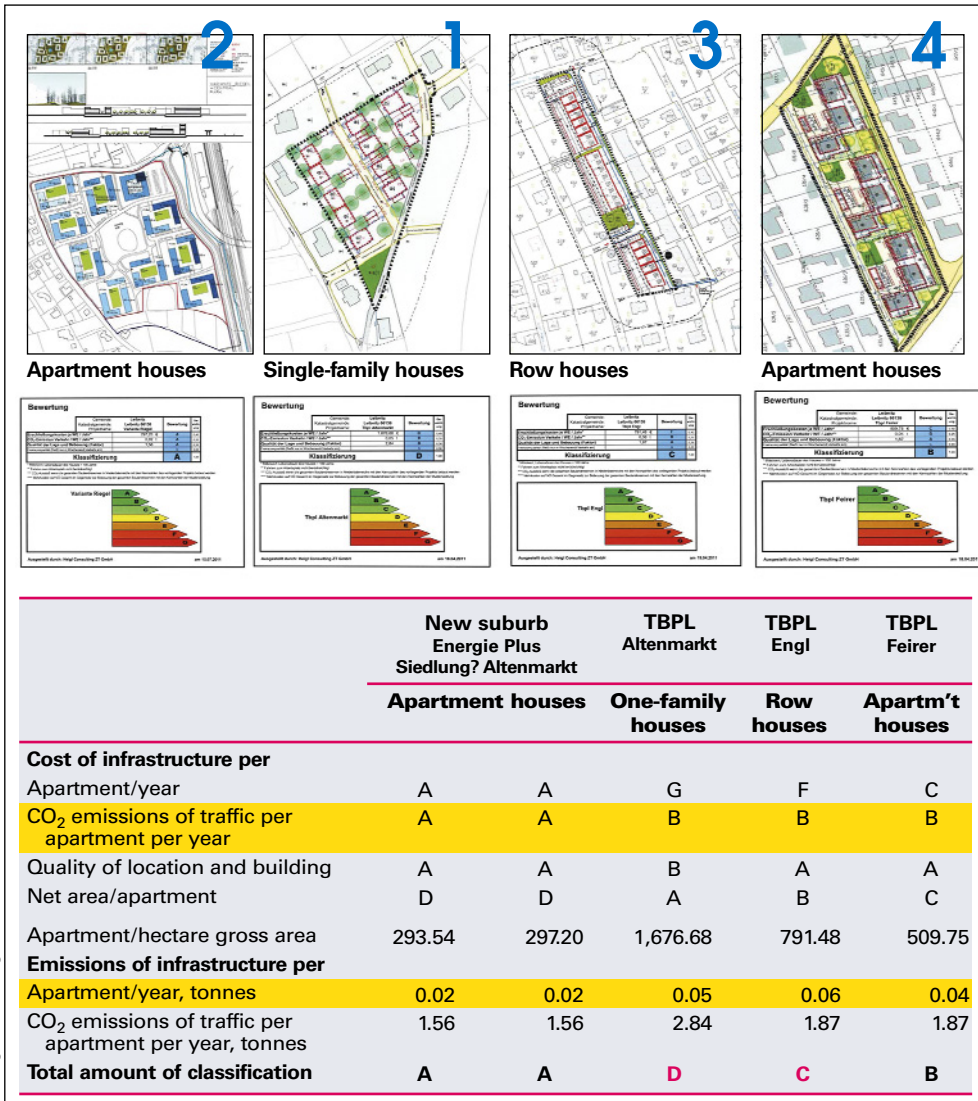


Fig. 1 Results and ratings generated by the Leibnitz test programme

3 *Energieausweis für Siedlungen*. Kompetenzzentrum für Raumplanung und Umwelt. Heigl Consulting ZT-GmbH, 2011



The planner who carried out the tests had great confidence in the results and was able to convince the Mayor of Leibnitz to use the tool. This is crucial, as the use of this kind of tool will very much depend on political decision-making and priorities. The test programme revealed that Styria's existing Styrian Spatial Planning Law (StROG 2010) provides a good platform for implementing sustainable energy practices through spatial planning. It is now up to the planners, the municipalities and of course Styria's Department of Spatial Planning and Building Law to ensure that this happens.

### 3.2 Energy zone mapping in Freistadt, Upper Austria

#### 3.2.1 Context and background

Energy zone mapping is a tool that was developed by the PlanVision project<sup>4</sup> to determine energy demand, the potential for energy-saving, and the potential to supply an urban neighbourhood with biomass-based district heating. The aim in using the mapping tool is to supply all areas of the municipality with district heating where it is economic and resource-efficient to do so, or to find alternative sustainable energy solutions. Energy zone mapping was developed by the PlanVision planning team together with the City of Freistadt, a small town in Upper Austria with 7,500 inhabitants.<sup>5</sup> The results were incorporated in the development concept and land use map for the municipality.

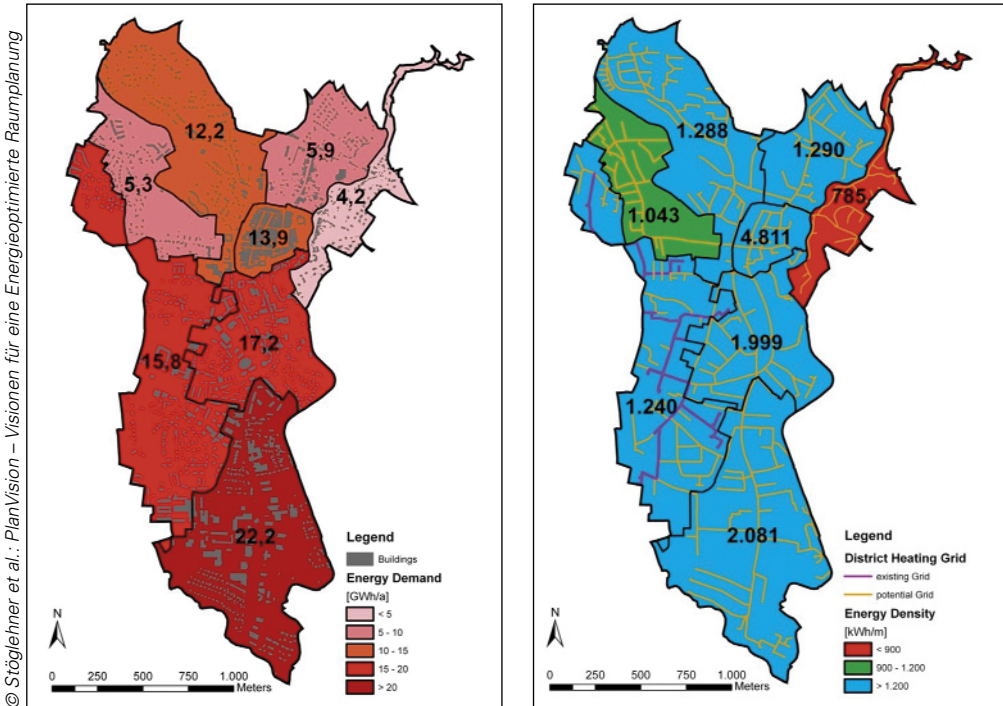


Fig. 2 Freistadt study - energy demand (left) and district heating grid (right)

4 G. Stöglehner, M. Narodoslawsky, H. Steinmüller, K. Steininger, M. Weiss, H. Mitter, G.C. Neugebauer, G. Weber, N. Niemetz, K.H. Kettl, M. Eder, N. Sandor, B. Pflüglmayer, B. Markl, A. Kollmann, C. Friedl, J. Lindorfer, M. Luger and V. Kulmer: *PlanVision – Visionen für eine Energieoptimierte Raumplanung (PlanVision – Visions for an Energy Optimised Spatial Planning System)*. Projektbericht. Gefördert aus Mitteln Klima- und Energiefonds. Vienna, Austria, 2011. [http://www.boku.ac.at/fileadmin/data/H03000/H85000/H85500/materialien/planvision/Endbericht\\_PlanVision.pdf](http://www.boku.ac.at/fileadmin/data/H03000/H85000/H85500/materialien/planvision/Endbericht_PlanVision.pdf)

5 *Ibid.*

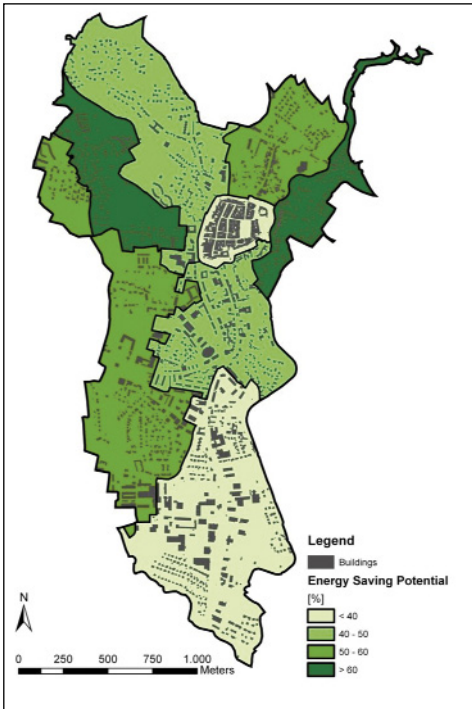


Fig. 3 Freistadt study - energy-saving potential

### 3.2.2 Key lessons

Freistadt's experience of using energy zone mapping demonstrates that sustainable energy solutions can be incorporated into spatial planning. For example, the findings helped the municipality to determine that its development concept should make provisions for further building development in district heating zones.

## 4 The way forward – planning for sustainable energy in Styria

As noted above, existing planning regulations in Styria already provide opportunities to promote sustainable energy. Wider changes to existing law is therefore not required. Under current law there is no obligation on municipalities to draw up an energy concept. However, involvement in the SPECIAL project has stimulated the Department of Spatial Planning and Building Law to consider how it can further emphasise planning for sustainable energy within the Styrian planning process. Ideas that are already being put into action or whose implementation will be starting soon include:

- promoting planning for sustainable energy within structural and planning reforms within Styria – on 1 January 2015, 539 municipalities were reduced to 287, and these merged municipalities have to renew their local development concepts and land use maps within the next five years, which presents opportunities to incorporate sustainable energy into spatial planning in Styria;
- following up on the awareness-raising among planners (and politicians and wider audiences within municipalities) made possible through the SPECIAL project workshops and study visits, in the near future, the Department of Spatial Planning and Building Law will commission the production of a guidebook on communal energy concepts in spatial planning in Styria, linked with a test area;
- arranging a certificate or degree course in ‘energy spatial planning’ as a collaboration between the Department of Spatial Planning and Building Law and the Department of Energy; and
- implementing the Climate Change Adaptation Strategy of Styria 2050, which was launched in September 2015 – the strategy, produced by the Department of Energy and endorsed by the Government, includes a range of measures to implement sustainable energy solutions through spatial planning which will have to be implemented within the next two-three years.

In summary, there is, in Styria, now enough energy for adopting new ways in spatial planning.

**SPECIAL Project – Spatial Planning and Energy for Communities In All Landscapes**  
**SPECIAL Expert Paper 5: *New Energy for Spatial Planning in the Province of Styria (Austria) – Implementation of Sustainable Energy in Spatial Planning in Styria***  
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