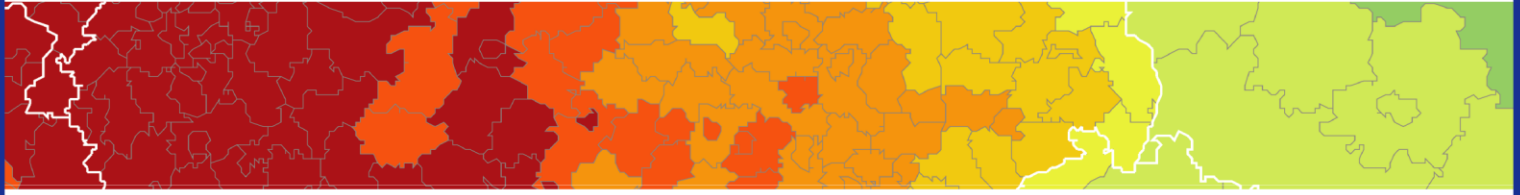


Inspire policy making by territorial evidence



Territories and low-carbon economy (ESPON Locate)

Applied Research

Executive Summary

Version 14/03/2018

This applied research activity is conducted within the framework of the ESPON 2020 Cooperation Programme, partly financed by the European Regional Development Fund.

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This delivery does not necessarily reflect the opinion of the members of the ESPON 2020 Monitoring Committee.

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Territories and low-carbon economy (ESPON Locate)

Executive summary

Making full use of European region's low-carbon potential needs considering regional prerequisites, combining forces and aligning governance-levels

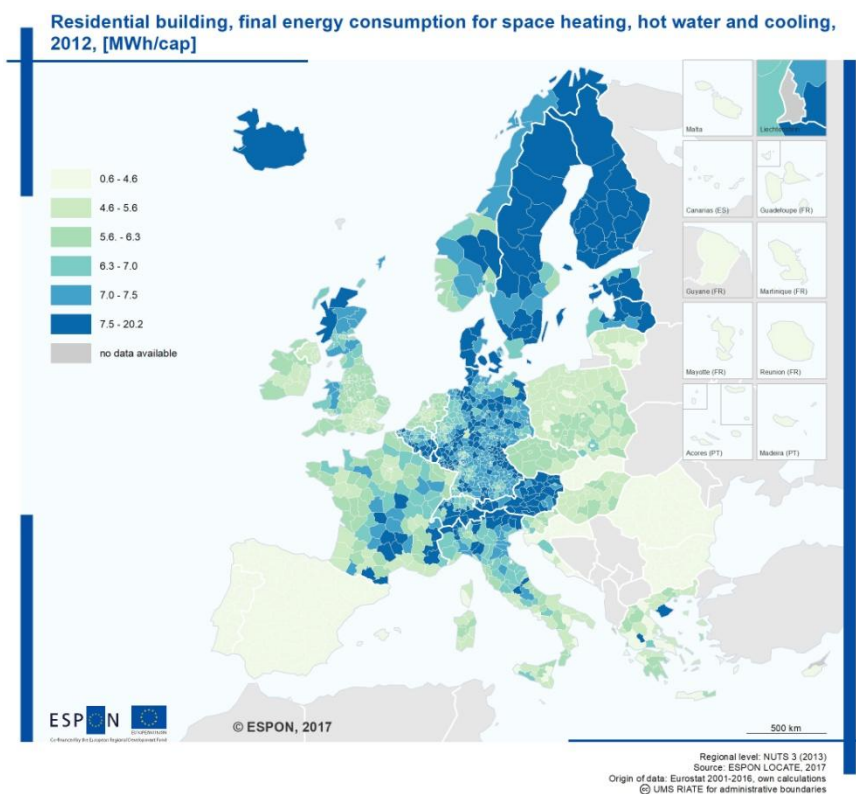
The project "Territories and low-carbon economy" demonstrates that unleashing regional low-carbon potential needs strategies making use of specific regional strengths and involving the regions' stakeholder networks. In order to support such regional-level policy making, national framework conditions, EU directives and EU Cohesion Policy need to be designed in a way to better allow regions to use their potentials in the two main development strands, increasing energy efficiency and the production (plus distribution) of renewable energies.

Scope of the project

The project seeks to investigate the territorial dimension of the transition to a low-carbon economy. The project uses a more detailed methodology, specifically conducting the analysis at NUTS 3 level. Using a quantitative approach, the research focuses on energy consumption patterns and the potential to produce (and use) renewable energy sources. Energy-relevant regional policy competencies and regional level interaction with national and EU levels of legislation and policy making are analysed in a qualitative research approach. Combining these research's tiers, the study finally brings together the views and needs from different research fields and policy levels and formulates insights and recommendations for successful transition policies.

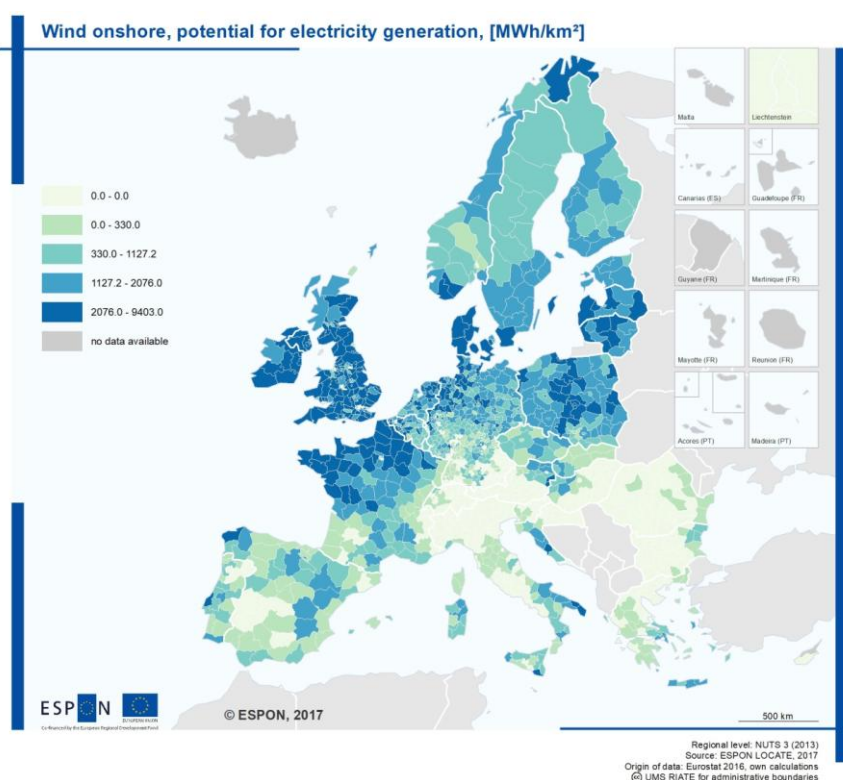
Regional patterns of energy consumption, renewable energy potential and exploitation

Energy consumption and renewable energy potentials are as diverse as the regional conditions encountered in the transition to a Low Carbon Economy (LCE): Climate conditions, topography, built environment and economic profiles as well as legal frameworks, governance structures and stakeholders show great variety.



For example, the regional pattern of *energy consumption for space heating, hot water and cooling* overall shows higher consumption in Central and northern European countries and mountainous regions with rather cold climate conditions. However, other factors are also important. For eastern European countries, which are located in similar climatic conditions, the economic wealth of the regions is decisive. Between 2002 and 2012 most western and northern European regions showed decreasing final energy consumption for this sector, mainly due to building retrofitting and increasing efficiency of heating systems. In contrast, many southern and eastern European regions experienced increasing final energy consumption in this end-use sector. Here, the main reason is an adjustment of comfort levels along with economic growth, especially in eastern European countries. The renewable energy shares of residential energy consumption for space heating, hot water and cooling are high for both types of regions, high consuming (mainly the Scandinavian countries) and low consuming (specifically in Bulgaria, Romania and Lithuania). Urban regions tend to have lower residential energy demand per capita, due to the higher density of functions and work places and a higher share of the service sector than in rural areas.

Regional patterns of renewable energy potential highlight considerable variances mainly due to geographic and climatic differences within Europe. For the example of *wind energy*, it can



be clearly shown that regions in the areas of the North and Baltic Seas, in Northern France, Germany, Netherlands, Denmark, United Kingdom, Poland as well as in the Baltic countries and Southern Scandinavia have a privileged location with high wind energy potential compared to other regions.

Solar energy, on the other hand, shows highest potential in southern European regions, especially in Portugal, Spain, Southern France and Italy, Romania, Bulgaria, Greece, Cyprus, Malta and the countries of Western Balkan.

At the same time patterns of energy generation, exploitation rates and their change in the past 10 years differ widely between these two renewable energy sources: Considerable incre-

ase of wind energy generation largely took place in regions with high and very high potential. Contrastingly, PV generation shows considerable dynamic development in high potential (e.g. Italy) but also in less privileged solar regions, as especially in Germany, Belgium and partly Switzerland while hardly any change is observed in some areas with high solar potential. These findings highlight the importance of legal and aid frameworks and the contribution from regional stakeholders in their ambition to exploit renewable energy sources.

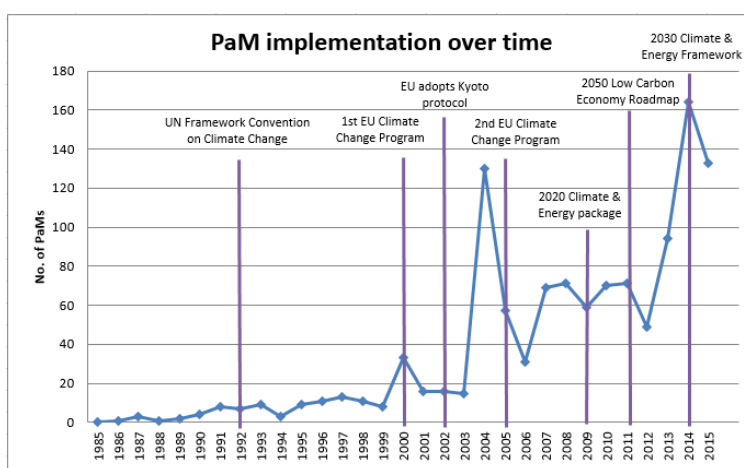
Regarding the preconditions for renewable energy generation in urban regions, mainly solar energy (roof top use), the use of organic waste and geothermal energy (if available) provide the highest potential for cities and densely built up urban areas.

It is not just the natural endowment of a region which is important, it is this combined with the socio-economic and governance conditions of that region that are critical in making an impact.

The analysis of patterns regarding energy consumption and renewable energy throughout Europe highlight the complexity and interdependencies between the legislative and the governance capacity of regions and their potential to exploit their renewable energy resources and improve energy efficiency: The ability for a region to exploit its renewable energy potential depends on its ability to mobilise socio-economic change in that region using both its governance powers and its ability to stimulate bottom-up informal initiatives through partnership and collaborative working.

The *studies on regional policies and measures* (PaMs) at the higher regional level (mainly NUTS 2) have sought to understand the relationship between international initiatives on climate change and the transition to a low carbon economy at the national and sub-national levels. It has been shown that there is a strong link between global initiatives, such as the Kyoto Protocol and the

UNFCCC, and their translation into EU legislation, and in-turn their adoption by Member States and transposition into national policy (and regional implementation). As parties to the UNFCCC and its Kyoto Protocol, the EU and its Member States are re-



Source: Author based data provided by EEA

quired to report to the UN annually on their greenhouse emissions and regularly on their climate change policies and measures. As part of this process and under the Monitoring Mechanism Regulation (MMR), the EU has its own internal reporting rules based on which Member States are required to monitor their emissions and PaMs performance annually and submit them via completion of a questionnaire to the European Environment Agency (EEA).

The first set of data was published in 2015; the analysis included in this report are based on the latest data (unpublished at the time of writing) (2016), which was made available to the research team by the EEA. The analysis of the 2016 data emphasises the importance of the subsidiarity principle within the process, with Member States tailoring policies and measures to their national circumstances. It also shows an impressive growth of PaMs at the national level over the past decade, most likely in response to an increase in international and European climate change-related policy initiatives and to the enlargement of the EU in 2004, 2007 and 2013. By 2016 there was a reported total of 1323 individual PaMs across the 28 EU Member States.

Selected illustrative examples have highlighted that the *influence of international initiatives extends to the regional level*. In countries with strong multi-level governance structures, the principle of subsidiarity ensured regions are able to work with national governments to deliver the transition to a low carbon economy. In countries with weaker multi-level governance structures, there is evidence of the influence of international bottom-up peer to peer initiatives, for example, the Covenant of Mayors and the C40. It seems that regions are therefore seeking to look to their peers as well as their respective national government for inspiration for their initiatives on the low carbon economy.

With respect to the regional level of policy implementation, the findings are:

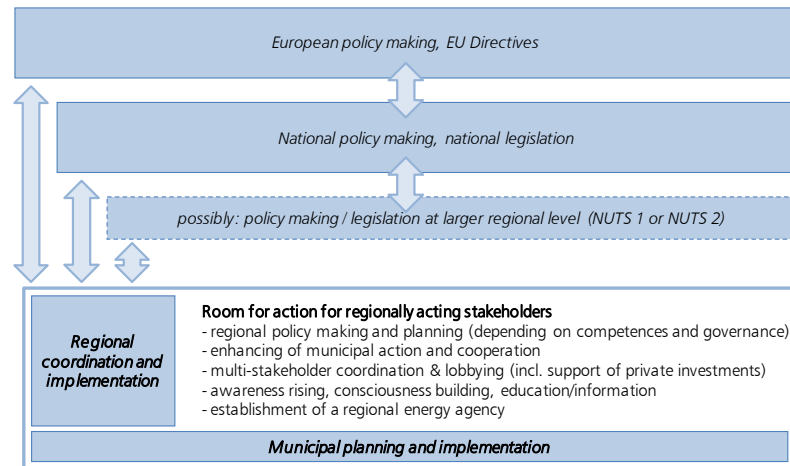
- In general, the *historic and evolving relationships* between the regional and local levels and the national level of governance have played an important role in determining regional contributions to the transition to a low carbon economy.
- The statistical analyses further indicates that there is a *strong statistical relationship between the level of regional autonomy (at NUTS 2 level) and progress towards a low carbon economy*. Whilst this does not indicate causality, it does show a strong correlation between the two factors.
- Concluding from a deeper look into a selection of *concrete illustrative examples*, within this sample there seems to be a *tension* between the process of implementing top-down policies and the ability of regional governments and institutions to have a meaningful say on the process.
- To have an impact on the elements of the low carbon economy that are important, i.e. renewable energy, low-carbon transport and energy efficiency, *regions need appropriate governance powers* in those areas to implement the necessary PaMs. Particularly so that a regions' unique physical, social and economic conditions can be accommodated.
- In *regions with lower levels of autonomy* (and perhaps less institutional capacity), it has been the *implementation of EU level policies driving the transition to a low carbon economy*.

Finally, there is also an interesting link between these transition processes and regional discourses around greater autonomy. The need to move away from a reliance on imported energy is seen as a strong driver for additional policies and measures whilst at the same time bolstering the calls for *greater autonomy*. The findings from the illustrative examples therefore show the power of building a narrative of political autonomy linked to the *idea of energy self-sufficiency*.

Effective LCE transition requires strong regional and local action

Experience from implementation derived from the case studies at a lower regional level (roughly NUTS3 regions) shows a great variety of relevant themes and of potential partners (municipal authorities, enterprises and businesses, public service providers, NGOs, households), who are facing different challenges from region to region. The case studies show that the regional level is an important factor in bringing the transition

Low carbon implementation – room for action at regional level



towards a low carbon economy on the ground. Active and well-resourced regions make a difference in terms of scope and speed of such a transition. Furthermore, the regional level can have a holistic, cross-sectional perspective and is able to work as transition promotor in an integrated way. Successful regions cooperate with the municipal level intensively, contribute added value by pooling of resources and finding synergies, and provide important linkage between national and European frameworks and the local level actors. Concluding, in order to stimulate bottom-up activities and motivate the local public and economic sector as well as private households in all European regions, strengthening and supporting the regional level as active transition promotor seems significant. Hence, a general formal responsibility of regional level institutions (including at least human, if not financial resources) would strengthen regional authorities/actors aiming at implementing transition strategies.

The following *regional actions and policies* have been identified as most *successful*:

- To combine regional with local implementation and to make use of synergies of competences and resources.
- To develop tailored implementation strategies for different economic sectors, energy sources and spheres of everyday life.
- To consider regions' vastly different geographic and economic prerequisites and actor constellations by developing individual strategies.
- To exchange experiences and good practices between regions and to make use of the impetus of international low-carbon initiatives at regional level.
- To join resources at regional level in order to be able to apply for funding, financial investment aids and research funds.
- To make use of regional actors' presence in the region and regional knowledge.
- To collaborate with the economic sector as a key partner in successful regional low carbon transition strategies.
- To collect relevant information and inform regional stakeholders.

The role of European Cohesion Policy for supporting European regions towards low-carbon economy

Cohesion Policy is supposed to play a strong role in delivering the Energy Union on the ground, through projects that bring real benefits to citizens. Under the broad theme of “Low-Carbon Economy”, the European Structural and Investment Funds (ESI funds, i.e. including EAFRD and EMFF) invest in a range of investment priorities and union priorities to support the shift towards a low-carbon economy in all sectors. In the current period a special focus is put on low-carbon relevant activities, as explicit contribution to EU 2020 targets: LCE-relevant CP-allocations for 2014-2020 have been raised substantially compared to the previous programming period – for energy efficiency from € 6 to 18 billion, for renewable energy projects from € 3.8 to 4.3 and for smart energy infrastructure from € 1.5 to about 3.6 billion.

The allocation strategies, however differ widely between Member States, but in some new MS the increase has been substantial, as in Poland, Bulgaria, Romania, Slovakia, Croatia, Latvia, Lithuania (where low-carbon-allocated funds more than doubled); also in Spain and Germany.

Cohesion Programme implementation experience from regional agencies, managing authorities and involved stakeholders show that

- the potential contribution of Cohesion Policy to foster more stringent and effective regional energy strategies is seen as very important; even if the resources deployed are minimal in highly developed regions it acts as a thematic guidance to regional policy makers,
- because it has a clear impact on agenda setting, gives priorities in a European context and leads to innovative search for other financing sources to realize energy/resource-related projects, as in R&D, innovation or capital investment support schemes.

Based on practitioners' experience, recommendations to increase the impact of Cohesion Policy focus mainly on the national/regional governance, where a number of *essential prerequisites* have to be provided. These include an all-stakeholder process in the region, research groundwork, establishing a regional Energy Agency as key institution and better coherence with national support schemes – only then, good quality projects and a wider economic impact can be delivered.

A further impulse for increasing the impact of Cohesion Policy would be the integration with relevant thematic policy fields, such as RTD and Energy. A methodological guideline to foster the regions' knowledge base and innovative capacity by using all support mechanisms (EU and national) is the Smart Specialisation approach. Following the S3PEnergy approach regions set priorities in order to build competitive advantage by developing and matching their own research and innovation (R&I) strengths with business needs. By addressing emerging opportunities and market developments in a coherent manner regions also avoid duplication and fragmentation of efforts and support regional economies in their transition to low carbon economy. It seems particularly apt for regions lagging behind in economic development, but showing potential in either renewable energy generation or in energy efficiency measures.