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## **Landscape and Renewable Energy Policies toward Territorial Transformation**

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This text considers renewable energy and Landscape in the same topic to analyse territorial transformation. The sharp increase in the use of renewable technology in energy production calls for a new method to conceive the energy mechanism of territories in order to design new landscapes. The main hypothesis is that energy policies are capable of designing territorial transformation. Thus an energy transition from the fossil fuel system to a more sustainable one, is also a landscape transition. The identified core problem is the existing gap between energy policies and design. Landscape design is the proposing process and method to inform energy policies. The aim of this text is to figure out if and how, the landscape issue could be integrated in energy policies by landscape design. Landscape design is defined and is put into services from a punctual scale perspective. The diffusion of renewable energies is largely connected to peri-urban areas. They could be the experimental places to test the relationship among energy policies, energy plants design and landscape design.

## Energy and Landscape in territorial transformation

Energy production and Energy consumption are closely related to landscape structure and functioning. Indeed landscape, which is described as a closed system, and energy, which is conceptualised as a flow, deal with technologies development and Land Use. It could be possible to summarise the relationship between energy and landscape in a few sentences: energy production involves natural processes and secondly, the extraction of fossil sources; energy distribution handles infrastructure and spatial organisation and finally energy consumption tackles settlements' shape and technology in building construction. Therefore energy, which is not a visible object, needs a lot of space (Ghose, 2010) and landscape could be envisioned as a visible part of energy. Nevertheless the energy issue and the landscape issue could be considered two different aspects of the same topic, these concepts together are often neglected in spatial planning both at the regional and local scale. Thus a call for an integration of energy consciousness in spatial planning and design is arising in spatial planning and landscape architecture. Indeed energy and landscape could be framed by a spatial and ecological lens.

Energy and Landscape could be envisioned also from the policies point of view: energy policies are capable of structuring landscape processes and landscape patterns because of the connection between energy policies and decision making at the regional and local scale. The political dimension of landscape, which is a polity and people place (Olwig, 2007), could be found in energy functioning and power organization of a region (Olwig & Mitchell, 2007). Therefore it is possible to consider the relationship between energy and landscape from the point of view of the territorialisation of policies process. The phenomenon of territorialisation of sectoral policies, here energy policies, is the process with which these policies take shape in space. This depends on how they are implemented and adapted by institutions and people (Raffestin, 1981; 2012) and by designs in a specific place. The policies structure the space because they build private and public choices. At this point, the gap between policies and projects are identified (Sgard et al., 2010). Indeed, energy policies take landscape process and the rules of transformation into account.

The sharp increase in diffusion of the renewable energy, in particular is caused most of all by policy decision to implement renewable technology at the European and national level. The dissemination of renewable plants occurred in particular in the urban diffusion places. Renewable energy transition is the mechanism allowed by the policies. It consists in the gradual transfer from one resource to another in energy production for human activities. This phenomenon is understood as a progressive change in individuals' and communities' behavior, in public and private choices and also in spatial settlements of territories. Consequently, a lot of European landscapes have changed in a short time. In this sense the renewable energy transition, promoted by renewable energy policies, is also a landscape transition. What was the relationship between renewable energy policies and renewable energy design in this transition project?

This point represents the beginning of the analysis in the territorial energy-related changes, resulting from energy policies and conceiving projects. The initial question is what might be the contribution of the landscape idea in this process? The main hypothesis analysed in this text, is that landscape design could inform renewable energy policies and thus it could be a useful tool to integrate landscape issue in energy policies and to go beyond the policies-design gap. The frame of this assumption is that Landscape could be considered an efficacious tool to allow a sustainable energy transition.

## Landscape integration in sectoral policies: some proposals

On one hand, some theoretical reflections on the Landscape concept have recently outlined that landscape has the function to integrate environmental processes and it is visible, thus landscape is a concept to use in synthesis science. From this point two landscape principles are evident in affecting sustainability: "The Landscape Medium principle demonstrates that the process of designing a shared landscape can synthesise disparate perceptions of a landscape and its functions. The Landscape Method principle pragmatically employs the imaginative artifice of design to produce potential innovations that anticipate the future" (Nassauer, 2012 p.222). On the other hand, Recommendation CM/Rec(2008)3 of the Committee of Ministers



to Member States on the guidelines for the implementation of the European Landscape Convention concerns the issue of landscape integration in sectoral policies. The text of the European Council focuses on the landscape dimension of sectoral policies. This topic is the outcome of the changed landscape culture which the European Landscape Convention expresses. Indeed Landscape is considered the place where people live every day and thus a tool to design sustainable transformations to increase human well-being. Currently some reflection and experiences exist which deal with the landscape issue integration in sectoral policies. They seek to read about integration from different points of view in order to improve qualities in policy or in design processes. The efforts concern landscape services, landscape governance and landscape narrative. From a regional and ecological planning perspective Landscape services are connected to the concept of landscape function. It means that landscape is capable of providing services to society. An evaluation of this services connected with sectoral policies could be useful to support decision making (Willemen, Hein, Verbung, 2010). The landscape services method primarily aims to translate data to conceive a sustainable landscape transformation and explores landscape qualities connected to policies visions. The term landscape governance tackles the change in scale and the organization of decision making in Landscape (Beunenn & Opdam, 2011) because of coordination and fusion of private and public resources. This approach for integration of landscape issues in sectoral policies aims to answer the question of difference in decision making concerning landscape at the central government or local scale. Landscape is considered strictly related to policies and people visions. Landscape narrative suggests that landscape should be a field of policies. Indeed sectoral policies could not actually overcome conflicts and contradictions. Therefore framing policy through landscape polysemy aims to encompass different opinions to have more participated landscape transformations (Stevenson, 2009). In conclusion different methods are proposed to embody the landscape issue in sectoral policies in order to improve the quality of landscape transformation. Therefore Design is always involved in transformation processes.

## Energy policies and Landscape Design

Referring to process: pattern: design paradigm (Nassauer & Opdam, 2008), which is the result of the intention to integrate Design in landscape ecology, this text aims to explore the role of landscape design as a lens to read about energy policies and energy projects simultaneously. Furthermore landscape design is considered a strategy to integrate policy visions and design skills in the transformation of energy landscape at the local scale. It is possible to conceive Landscape design related to the renewable energy issue, as a complex design process (strategic vision at the regional scale) and as a punctual solving-problem process (architectural and technological devices' scale). Although the regional scale is a relevant concept in implementing the energy issue in landscape transformation (Stremke, 2010), we propose that the local and punctual dimensions could also be useful to integrate the landscape issue in energy policies. The starting point of this reflection is that an energy policy, for example the photovoltaic incentives, have a huge role in the design of landscape transformations. Therefore landscape design principles might inform policies and increase the quality of future vision. Nevertheless the role of landscape design in the comprehension of changes proposed by policies is related to the methodology of scenario, it is possible to bring the knowledge of landscape design in the policies themselves. Before to analysing this proposal in a real case, it was explained how landscape design is considered in this text and what are the questions identified to test energy policies and energy designs simultaneously.

Landscape design, as all design processes, handles how questions (functional, technological, economic issues), where questions (ecological, visual, narrative issues), how much questions (reiteration, private and public choices) and then the why question linked to the social responsibility element of design. In conclusion Landscape design adds a multilevel matrix and aesthetic experiences to the design process (Lassus, 1999; Donadieu, 2012). That implies an added meaning to the project and a rethinking about the relationship between technology and aesthetics. Therefore the two previous elements are capable of connecting the regional scale, the local scale and the architectural one. Policies are inquired by three analysis categories: vision,

concept and technologies. The main question in this inquiry is what do energy policies say about landscape and it is articulated in the following specific questions: what landscape vision do energy policies suggest? What tools do energy policies propose? And finally how are technologies envisioned in energy policies?

Projects are analysed by process, aim and practices. The most relevant point is: how are the landscape characteristics considered in the design process? This problem is articulated in three different questions: what is the kind of design process involved in the project? What are the main aims of the project? How is the project made?

The following section refers to an example of photovoltaic plants. This project is analysed by the previous questions about energy policies, design processes, and landscape principles. It aims to understand the possible elements in knowledge transfer from design to policies.

### **Photovoltaic plants and changing landscape**

The development of photovoltaic technology occurred very swiftly and this was caused mainly by the mode of incentive allotment. For this reason the realisation is perceived as an opportunity to understand what the operating procedures actually are and what is its relationship with landscape. In this paragraph the solar field located in Montalto di Castro (Lazio Region) is investigated from the energy policies, energy design and landscape design points of view.

In the early Eighties the construction of a nuclear power station began and at the end of that decade, it was converted to a thermo-power plant. The plant's realization are not currently used and its pertaining land was used as a photovoltaic field. The plants realization had four different phases of construction from 2009 to 2011 and they are related to feeds in tariffs named *Secondo Conto Energia*. This energy policy envisioned the photovoltaic energy production as an industrial production. The proposed plants vision regards large photovoltaic fields sited in specific places. Therefore renewable energy is considered similar to fossil fuel energy both in production and in distribution and consumption. The technology used is named tracking photovoltaic panel in order to optimise the energy production. Energy distribution occurs through the existing infrastructure. The design approach of the project is mainly related to the technological issue. Therefore the choices connected to the "how" question are the most considered. Although this plant is designed by a "customary" approach to energy facilities, it was also conceived by a symbolic value construction for the local communities. However this element did not develop in the final realisation of the photovoltaic plant. It is possible to say that only a few components of ecological dimension of landscape are considered in this project, for instance the soil treatment. Analysing this project through the lens of landscape design principles, it has not been actually added any particular meaning to the methodology to design the plant and the relationship between technology and aesthetics is neglected. In conclusion what might landscape design have informed energy policy? On one hand, regarding a possible added meaning for the project, landscape design could help to analyse different possibilities and to suggest a potential policies framework for the future realisations. On the other hand, considering the relationship between technology and aesthetics, landscape design could contribute to adapt technological topic to every particular situations. Therefore Landscape design is capable of sharing the technological role in the energy landscape transformations. To sum up, referring to renewable energy and landscape as the same topic, calls for the sustainability of the landscape transformation and energy development. That involves the relationship between the regional scale and the punctual scale of landscape. Here, it is sustained that this problematic relationship is in the energy policies and energy design link. The proposal is that the punctual scale is capable of informing the regional one and thus it is possible to integrate landscape design knowledge in energy policies in order to envision a more sustainable energy transformation of landscapes.



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