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Transition between transitions: the contemporary energy challenges in the traditional Mediterranean landscape.

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Abstract

The contribution aims to demonstrate that the contemporary energy transition is part of a wider transitional process where the landscape plays a key role. The contemporary energy transition is a challenging step of a continuous path that involves the Mediterranean landscape throughout its entire history.

The Mediterranean landscape clearly bears the traces of the millennial action of man, who has always attempted to exploit the resources of often inaccessible territories as efficiently as possible. This has been the case, from the very beginning, also and perhaps mainly for energy supply. Thanks to an extensive literature review, the contribution aims to reconstruct in a synchronic way the main stages that led to the conception of the energy Mediterranean landscape as it is perceived and interpreted today. At the same time, it aims to present in a diachronic way the succession of energy transitions that have modified and constructed this landscape.

The adopted method consists of synthetic historical research useful to structure a critical framework able to better orient people in interpreting – and then implementing – the contemporary energy transition.

The aim of this work is therefore to structure a history of the energy landscapes in the Mediterranean context, which are an integral part of our culture. The ambition is to suggest a new perspective of the Mediterranean landscape as an object that has always been in transition – even to produce energy – and whose changes today are so urgent and necessary. This change of narratives is essential for assuring a more linear energy transition, which has an impact on the landscape, and is not only an unmanaged result, but it can also become one of the main focuses of the new architectural and landscape projects.

Keywords

Energy landscape; Transitional landscape; Landscape History; Paradigms; Energy transition.

1. Introduction

During the last decades and in current years, the urgency of climate change is pushing the European policy makers to envisage a fast and effective environmental transition. The adoption and implementation of renewable energy systems is an emerging and increasingly important issue in the current political and economic programs (EUGreenDeal, Agenda 2030, etc.). Achieving the aims of the energy transition, a lot of new large and utility-scale photovoltaic fields, in- and offshore wind power farms, geothermal plants, and other renewable energy sites, are gradually modelling the European territories.

Due to new renewable energy plants, the daily perceived European landscapes are changing, sometimes more gradually, in other cases disruptively. This cause-and-effect relation can be completely turned by the landscape design activity. (Allemand et al., 2021; Briffaud, 2014; Stremke et al., 2022). In fact, the design of the energy landscape can become the most suitable medium and most effective tool for managing the transition. (Folléa, 2019) (Figure 1). So, according to this consideration, the landscape architecture practice, which studies the conscious modifications of humans' outdoor environments and designs the future landscapes to achieve environmental, social, and aesthetic values (Jellicoe & Jellicoe, 1987) – assumes a relevant importance in the current transitional era.

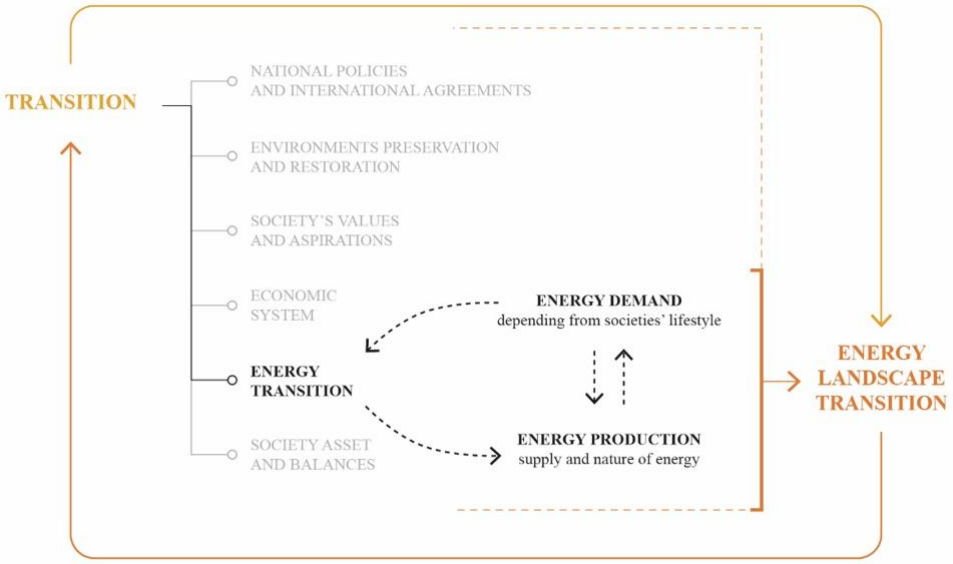

Figure 1 – The energy transition among the energy landscape transition (by the author, 2023)

The double-direction cause-and-effect link between landscape and energy production is as ancient as humanity itself. (Pasqualetti, 2013), and similar challenges to the current ones have already been faced. For this reason, this contribution offers an introductory report of the essential steps in the history of the Mediterranean energy landscapes, useful for better inscribing the current transition challenges into a wider historical framework. Investigating the complex relationship between the landscape and the energy throughout history has two main objectives. On the one side, it helps to rebuild the idea of an aesthetic appreciation and the cultural values acknowledgement within the new sustainable energy landscapes, as is the case for more historicised landscapes (for instance, the windmill landscapes, or the hydroelectric landscapes). On the other side, questioning the relation between the architectural discipline and the energy production contributes to making the energy transition a matter of study of the landscape architecture, overcoming the merely technocratic approach that has featured the academic and operative approach to the transition until today.

This investigation is quite fundamental for the Mediterranean landscape. The Mediterranean context hosts a very millennial culture that is not uniform; around the sea, the differences and the interrelated stories of different countries and populations are visible and tangible, and even the conflicts between them are valuable and merit a conscious valorisation. To take all these peculiarities into account in this short contribution would be impossible, so a broader and less specific discussion will be given here. However, these peculiarities must be studied on a case-by-case basis in order to provide interesting insights into the possible transformations of the energy landscape.

1.1. Aims and method

The goal of this contribution is to synthesise the main connections in the existing bibliography that can frame the transition of the Mediterranean energy landscapes within a broader and more historical overview. The paper has a twofold ambition. On the one hand, there is the need to build a shared cultural substrate capable of supporting the challenges of the increasingly urgent transition we are experiencing. On the other hand, it serves to innovate the narrative of the Mediterranean landscape and its history, to show that its cultural values depend, to a large extent, on energy production over the centuries. The contribution proposed by this paper is not sufficient to exhaustively address

the issue of energy transition, but it lays the first foundations to open a link between the practice of architectural design and the transformation of the energy landscapes in the Mediterranean context.

The proposed method in this contribution is a systemic, albeit synthetic, research based on the review of the literature, the artistic works, the photos, and the sources, to structure a critically cross-referenced framework. To summarise this entire research in a few pages of this contribution would be almost impossible; for this reason, here we will trace just the main links between different publications and evidence. The use of literary and narrative sources, paintings, and photographs has been of fundamental importance. The methodological approach also involves the organization of the history of Mediterranean energy landscapes into a brief but clear list of paradigmatic landscapes. Paradigms here refer to states of balance between different factors, such that a given type of energy landscape can be recognizable and identifiable even in very different geographical contexts.

2. From the issue of the transition to a transitional approach

An energy landscape corresponds to a landscape whose image and main functions (natural or not, and are then dedicated to residential, productive, cultural, etc. activities) are mainly affected by the energy production activity (Crowe, 1958; Hough, 1984; Howard, 2013; Frantal et al., 2014).

One of the first energy landscapes men made in history is the agricultural landscape. (Smil, 2017); and this is particularly relevant in the Mediterranean context, where the agricultural traditions are so old and recognisable. A very essential contribution for supporting this statement was published in 1961 by Emilio Sereni, who has the ambitious project of synthesising into a manuscript the complex, multi-level, and interrelated history of the Italian landscape related to the secular agricultural activity. (Sereni, 1961).

During centuries, however, the energy demand continues to increase, and the agricultural landscape becomes only one of the energy productive landscapes we can perceive every day. (Smil, 2017). Nowadays, the current growing implementation of the renewable energy plants around the Mediterranean landscapes is unpredictably the balance between the population, the resource extraction sites, the energy production sites, and the daily perceived landscapes. (Allemand et al., 2021). As some scholars affirm and are supported by data (among the others: Settis, 2010)Nowadays, the Italian landscape, which is described by Sereni into his popular masterpiece as a valuable, high-quality, and cultural landscape, is in danger. This thesis is also supported by several organizations interested in landscape protection and valorization (for instance, Italia or Europa Nostra).

1.2. Looking for a new balance

Figure 2 - View of the vast petrochemical complex in Gela, Sicily (by R. Pocorobba, 2009, CC by 2.0)

An interesting example of a landscape that has been strongly modified by the fossil fuel energy production (e.g., Figure 2) and, in the last decades, by the increasing spread of renewable plants, is the northern part of Salento, in the Apulia Region. Two coal-fired power plants still in operation (even if partially converted) surround the city of Brindisi, not only defining the coastline skyline, but also heavily polluting the terrestrial and marine ecosystems. This area is now also one of the European regions with the highest density of photovoltaic installations, which have replaced the olive groves affected by the Xylella fastidiosa bacterium, and the horizon is continually marked by tall wind turbines. This is a very visible condition that affects not only the Italian context but the whole Mediterranean landscape. For instance, a large collective of organisations was founded in Spain to demonstrate against the implementation of the not adequately planned large-scale renewable plants, whose visual and environmental impacts represent a very substantial threat to the natural landscape (www.aliente.org). The main slogan of this manifestation – “renovables sí, pero no así” – is a significant statement that clearly explains how much the energy transition acceptance is linked to landscape transformations, which impact the local communities perception.

So, the Mediterranean landscape is going to investigate new balances concerning its relation to energy production. While in the past it was not only the main issue that influenced the Mediterranean landscape definition, but it was also one of the key factors for highly appreciated and high-quality landscapes (which today are often protected and valorised), nowadays the energy infrastructure is usually hidden as much as possible by planting high vegetation just in front of it. It is called “landscaping practice” (Folléa, 2022) And it actually is a very insufficient attitude for adequately facing the transition. (Allemand et al., 2021; Stremke et al., 2022).

Several research studies in recent decades have contributed to turning this situation, linking the idea of the implementation of renewable energy production sites to the wider and more attractive idea of sustainable energy landscape design.. However, a first step is still missing, especially in the Mediterranean context. The gap is in the deep understanding of how this relationship has existed since antiquity, and how it has evolved and transformed over the centuries; the essential step to do is between the idea of an unpredictable transition, and the acknowledgement of the transitional nature of the landscape and the energy landscape itself.

3. The Mediterranean energy landscape throughout history

Talking about the relationship between landscape and energy is quite impossible without mentioning some fundamental authors who have provided well-founded notions of both the involved disciplines, energy and landscape.

3.1. The landscape, made by actors, perceived by spectators

As far as landscape is concerned, the bibliography of reference is vast, both in national and international contexts. Among all the possible contributions, it seems appropriate to mention Burckhardt, who, for the first time, reconstructs a true genesis of the very concept of landscape in the event that led the Aretine poet Francesco Petrarch to the ascent of Monte Ventoux (Burckhardt, 1860). From mountain to mountain, it is interesting to quote Cézanne's reflection on whether a peasant has ‘ever really seen the mountain Saint Victoire’ or whether, as an inhabitant, he experiences the landscape almost without noticing it. (Trisciuoglio, 2018). Thus, it is clearly visible that the difference in the perception of landscape that characterises the outsider's experience of landscape, from that of the insider who builds that landscape with his daily actions. This attitude could almost explain why nowadays we are unable to recognise a value in those landscapes that we build every day to meet our needs. This idea becomes particularly important in many writings and research related to the concept of landscape, and in the tension between the landscape that is observed and the landscape that is built and transformed, until it is very clearly expressed in Eugenio Turri's famous book Il paesaggio come teatro (Turri, 1998). Man, as a spectator, observes that same landscape which, as an actor, he constructs with his everyday actions. In this case, we are not talking about gardens or ornate landscapes, but daily-experienced landscapes, which means the partly natural and partly artificial landscapes created by man as testimonies to the activities he performs. (Cosgrove, 1984).

During the Sixties, the concept of ecology has been introduced, and the concept of landscape itself was affected and changed, until the meanings of environment and landscape began to overlap (McHarg, 1969). Some decades later, the concept of energy landscape has been developed (e.g., M. Pasqualetti, 2013). These concepts, despite their

provenience (UK, USA, and Northern Europe), slowly enter the cultural panorama of the Mediterranean basin, which is such an appropriate place (due to climatic and /or orographic conditions) to host energy production sites.

3.2. The energy and human history

«Both human evolution and the course of history can be seen as a continuous search for ways to control deposits and flows of energy (…)» (Smil, 2017, p.2).

The history of energy that the Czech-Canadian professor and researcher Vaclav Smil has written provides a clear idea of how that history is so closely connected to the history of mankind. This book (Smil, 2017), which sets out in chronological order the energy systems implemented over the centuries and the way they have impacted society, could almost be taken as a guiding thread to set up the narrative we are trying to propose, which shows the European landscape as a cultural landscape primarily defined by human energy needs.

This story begins with agriculture, one of the first and certainly one of the fundamental systems developed by man to obtain energy (in the form of nourishment). Agriculture, and all its implementations and advancements over the centuries, has built a type of energy landscape that finds some of its most significant and characteristic examples in the Mediterranean. (Sereni, 1961). Around the Mediterranean, the energy landscapes linked to agriculture have been many and very different. An example is the incredible lampant-oil market, which affected many Mediterranean areas (the Salento area in Apulia, Greece, and some Spanish regions), leading to an ever-expanding cultivation of the olive trees.

Later, the exploitation of renewable energy is not a new system, but was already used in antiquity, with the first windmills and water mills. Throughout history, windmills have generated some of the most iconic landscapes around the Mediterranean. Among the others, we can cite the oldest mills in the world, which also today draw the skyline of some Middle Eastern villages, and we can even go so far as to investigate their presence in the most famous European literary works, as in the case of Don Quixote de la Mancha (in the popular book by Miguel de Cervantes, 1605-1615). Also, water mills mark the history of European societies, starting from Ancient Greece: “Ceres charged nymphs to carry out the work that previously fatigued your arms. They, by giving strength to a wheel they turn, set in motion the power of four millstones” (Antipatro di Tessalonica, 1st century BC). The Mediterranean landscape was populated with numerous infrastructures related to these energy sources, such as works channelling water for energy or for irrigation purposes (for instance, in different periods: the Roman aqueducts, the brick canals for irrigating fields, the water management systems at the mouths of the great rivers, from the Po in Italy to the Nile in Egypt, etc.).

The advent of fossil fuels has disruptively changed the Mediterranean landscape. Not only the hinterlands, but even the seacoasts have been populated with huge energy plants that today, whether active or inactive, are still visible and draw the profile of many coastlines. Settis speaks contritely of this when he writes about Italy's ruined landscape. (Settis, 2010). Already in the 19th century, the spread of the coal market had led to the development of the railway network from the coasts to the hinterlands. Fossil fuels have not only changed the landscapes, but they have also changed the Mediterranean seascape too; in the Adriatic Sea, or away from the coast of Sicily or Lebanon, there are oil extraction pumps in the middle of the sea; at the same time, many container ships cross the sea all the time.

A particular phenomenon was the implementation of the hydropower systems between the 19th/20th centuries, which today still characterise many mountain landscapes around the Mediterranean basin. (Pavia, 1998). This type of landscape, often linked more to Alpine experiences, also has notable examples in southern Italy and Eastern European countries, as in the south of France, and everywhere it has been able to take on considerable aesthetic and cultural significance. (Allemand et al., 2021).

Finally, in recent decades, the energy transition has led to the development of new renewable energies. Again, changing land and seascapes (e.g., Figure 3). This energy transition is today viewed with much suspicion, taking it for granted that its impact on the landscape is negative. (Folléa introduction, in Allemand et al., 2021). Often, the failure to design these interventions has actually produced landscapes of low aesthetic and environmental quality, such as the photovoltaic landscapes in Apulia and Basilicata, the extensive solar landscapes in the most desert regions of Spain, and the wind landscapes in Sicily, Sardinia, or Tuscany.

Figure 3 - abandoned turbines and new photovoltaic plant on San Pietro Island, Sardinia (by the author, 2023)

4. Paradigms

Being able to redesign these contemporary energy landscapes in this age of transition means, first of all, being able to recognise new aesthetic values in order to give them a new cultural value. It means, therefore, initiating a transition of energy landscapes that is part of a millennial transitional history, which is, in fact, the history of Mediterranean landscapes.

The analysis carried out so far helps to make an operation that has already been done with reference to other contexts, and that can now be done specifically for the Mediterranean basin. The operation is to recognise the types of energy landscapes (in a simplifying operation, but clearly recognisable) that have followed one another throughout history. This operation was carried out, among the first, by M.J. Pasqualetti. (Pasqualetti, 2013), and has been taken up by subsequent research (de Jong & Stremke, 2020; Pistoni, 2020; Stremke & Dobbelsteen, 2013), and is reworked here with reference to the Mediterranean area. Four main types of Mediterranean energy landscapes are listed (Figure 4): 1) the energy landscape of forestry, agriculture, animal husbandry, and fishing; 2) the energy landscape of water and wind; 3) the energy landscape of fossil fuels between land and sea; 4) the energy landscape of renewable energies.

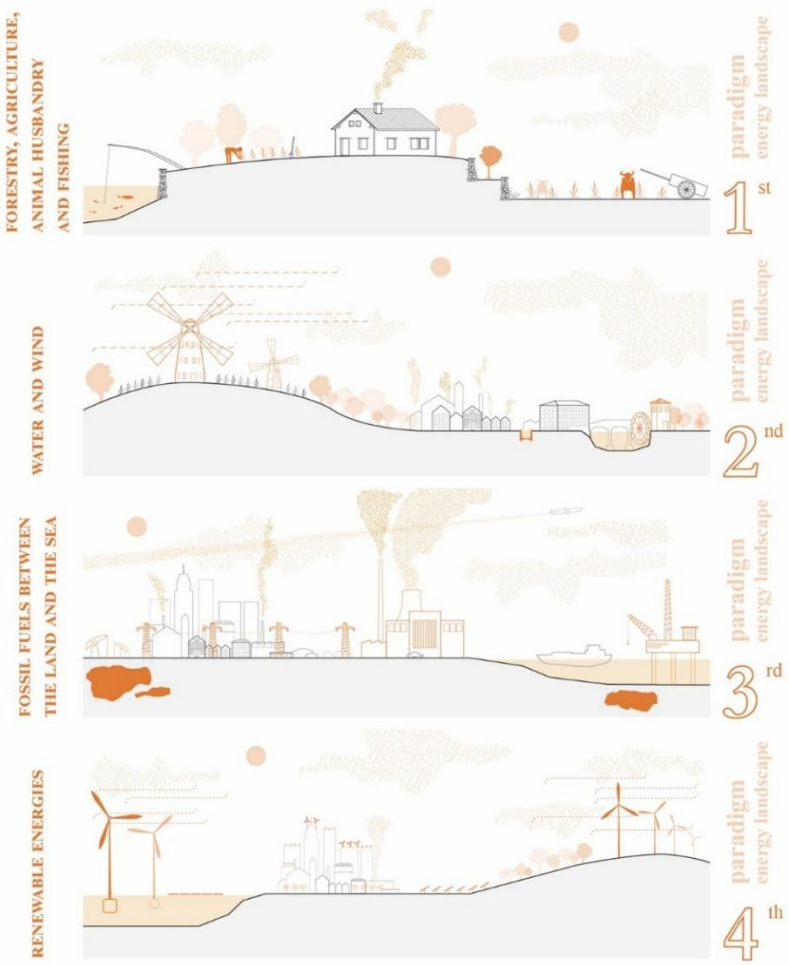

Figure 1 - diagrammatic representation of the 4 main paradigms of the Mediterranean energy landscape (by the author, 2023)

Why are new energy landscapes viewed differently from past energy landscapes? Why are wind turbine landscapes so disputed, while windmills are worthy of appearing in some of our most remarkable artistic and literary works? Why do we hate hydroelectric canalisation but visit the great ancient aqueducts as tourists? Since when, then, did we stop taking pride in our technology, designing our landscapes?

Between them, there are certainly considerable differences in size and in the possible implications for the environment and the quality of life around them. However, the thesis this short contribution seeks to support is that there is, primarily, a different cultural perception. While we are extremely proud of those energy landscapes produced by the past, we are also extremely suspicious of contemporary ones, and are unable to see the transient phenomenon of energy landscapes as a unified and seamless phenomenon.

5. Results and conclusions

This contribution invites an inversion of direction that, while requiring design considerations, asks how we design a new energy landscape. – First of all, it needs to consolidate its cultural foundations.

Therefore, as a very first step, it is necessary to move from the concept of a transition to that of transitions, looking at the current challenges as a new transition after others. The renewable energy paradigm is not a new alternative to all that has gone before, but a new step in the chain of the energy landscape transformations that have already taken place over the past years.

If it is true that what the men design and build mainly depends on the available energy (Calder, 2022) And that past energy landscape has defined landscapes rich in aesthetic and cultural values. (Stremke et al., 2022), so it's also true that the design of the landscapes of the future mainly involves the energy production activity, and that their quality will mirror the values and the aspirations of contemporary society.

This consideration gives to discipline of landscape architecture a key role in planning and managing the transition, making the design of the energy landscape in the Mediterranean context a real tool for achieving a twofold objective: assuring the energy and the environmental transition, but also exploring new possibilities for future Mediterranean landscapes, able to deal the current challenges without loosing the richness of their millenial tradition.

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The authors declare that there is no conflict of interest regarding the publication of this paper.

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