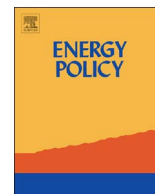




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Visibility/invisibility in the 'making' of energy landscape. Strategies and policies in the hydropower development of the Piave river (Italian Eastern Alps)[☆]

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ABSTRACT

This paper discusses the crucial role of visibility and invisibility in socio-spatial acceptability of new renewable energy landscapes. Observing hydropower development in Italian Eastern Alps, we show how visibility and invisibility were purposely used to hide spatial, social and environmental injustices. These strategies, often supported also by environmental and landscape policies, actually limit any possible collaborative 'making' of energy landscapes, which should be based on the transparency of objectives and actions.

Among several public policies and private actions, it is possible to identify ten strategies (masking, burying, camouflaging, removing, distracting, staging, digging up, prefiguring, mapping, storytelling) adopted to increase acceptability and prevent conflicts or, on the contrary, to expose the problem, revealing opaque processes and unfair spatial effects. Hiding/showing strategies - and their not directly evident relevant consequences - testify the complexity of the socio-spatial context involved in the process of energy landscape making, which deeply affects social acceptance.

This paper solicits a deeper awareness of the matter of visibility and invisibility in energy policies, which allows to "unveil" what is mendacious and misleading, and drives towards a more sustainable and fairer collaborative making of European landscapes.

“Any research on landscape could be considered a search to uncover what is false, what is invisible in the visible or to make sense of the invisible through the visible”
(Eugenio Turri, 2004, p. 82, our translation)

1. Introduction

In the last few years, several studies have focused on the relation between renewable energy development and the landscape (Nadai and Van der Horst, 2010) in order to manage its geographical implications (Bridge et al., 2013). Like other energy transitions in the past (Smil, 2010), the development of renewable energy will change Europe's socio-spatial configurations regarding the interplay between public policies and private actions. European landscapes are “recording” these processes, including changes in land use (and the addition of new landscape elements) and in the meanings and values expressed by

people.

Renewable energies are mostly decentred and diffused, and transition to these energies is intended to provide universal access to energy services and security in a renewable and sustainable manner. Unlike other energy transitions in the past, which were developed mainly through top-down processes, the present transition needs to be implemented bottom-up. Every citizen and every community is expected to contribute as both a consumer and a producer. According to this perspective, a collaborative 'making' of new energy landscapes is essential (Gailing and Röhring, 2016).

Landscapes generally involve values considered to be in danger due to the development of new forms of energy production, transformation and transportation. One of the most important factors influencing social acceptance of the new plants seems to be their visibility, and as such, it has always been considered in scientific literature, professional practices, and public policies. However, when scientific discourses focus only on the visibility of new plants, they may underestimate the extent to which transition to renewable energies is affected by contra-

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ditions and opacity, which involves more than just physical visibility; there is an invisible dimension in energy landscapes, and this influences their acceptability. In addition, visibility and invisibility seem to be intentionally exploited to hide unfair processes.

This is the research gap that this field research on hydropower in Northeast Italy begins to fill. Can a deeper knowledge of the interplay between visibility and invisibility help us reach sustainability objectives and avoid socio-spatial injustices by enabling more transparent and collaborative making of new energy landscapes? The results are addressed to energy policy makers who can play a role in fostering or limiting transparency during the transition to renewable energy.

After outlining the interplay between visibility and invisibility in the making of energy landscapes, this article presents examples of hydropower developments that occurred in Italy during the 20th and 21st centuries. It then discusses the use of visibility and invisibility in the making of hydropower landscapes, in terms of ‘displaying’ and ‘hiding’ strategies. Awareness of these topics is necessary in order to develop fairer energy policies and promote a collaborative making of new energy landscapes.

2. Landscape, visibility and energy

2.1. Visibility/invisibility in landscape theory

‘Landscape’ is defined as ‘all the visible features of an area of land’ (Oxford Dictionary online), and is commonly thought of as a portion of the land that the eye can view at once. However, not all the features in a portion of land can always be directly perceived. Some of them, for example, are not *visible* because they can be hidden by other elements of the landscape (e.g., a hill, building or row of trees), buried or covered.

Landscapes can also be defined as ‘the product of interactions between sets of natural conditions – weather, terrain, soil type, resources, etc. – and sets of cultural practices – agricultural practices, religious or spiritual beliefs, shared values and behavioural norms, the organisation of society vis-à-vis gender roles, property ownership and so on’ (Wylie, 2007: 9). Environmental dynamics, economic activities, cultural models and memories, customs, norms and power relations shape the landscape, building and changing it over time. In addition, material (*visible*) forms in a landscape reflect the immaterial (*invisible*) aspects of social life in that spatial context. In particular, they reflect the interplay among the involved actors and reveal the related power relations. It ‘can tell us about the level of democracy of the processes behind the scene’ (Castiglioni and Ferrario, forthcoming).

Landscapes involve not only objective materiality but also the meanings and values that observers attribute to materiality; they belong to the realm of *invisibility* as well *visibility*.

Landscape is therefore ‘a way of seeing’; it is a cultural representation in which symbols and narratives play relevant roles (Cosgrove, 1985). Landscapes’ meanings ‘are always buried beneath layers of ideological sediment’ (Duncan and Duncan, 1988, p. 117, quoting Barthes, 1986).

Promoters of and stakeholders in spatial transformations build the landscape, ‘setting it up as a stage destined to theatrically tell what society thinks is right and appropriate’ (Turri, 2004: 81; see also Cosgrove, 1985). The meanings embedded in the landscape make it ‘act as a social agent in the further development of a place’ (Mitchell, 2000: 94). In other words, ‘in the landscape there is always a mystifying dimension that makes it more a category of our aesthetic involvement in the world rather than of our knowledge of reality’ (Turri, 2004: 79).

The three dimensions described above (materiality, dynamics and meanings) are strongly intertwined in the making of landscapes and deal with the interaction between visibility and invisibility. The roles of different actors and their power relations also strongly influence both the construction of new landscapes in those three dimensions and the social acceptability of territorial transformations.

2.2. Visibility and acceptance of new landscapes of renewable energy

The ongoing energy transition is restricted in some ways by controversies related to the location of new energy plants. For this reason, public acceptance of energy infrastructure has been investigated in the scientific literature. People’s perceptions and place attachment influence their acceptance (Devine-Wright, 2005, 2011; Bidwell, 2013). This should not be dismissed as simply ‘nimby’ attitude (Van der Horst, 2007; Wolsink, 2007), but should be considered attentively to overcome social barriers to transition to renewable energy (Jobert et al., 2007; Pasqualetti, 2011; Bjørn Aaen et al., 2016). It should be mentioned that renewable energy plants that use different sources (wind, photovoltaic, geothermic, hydroelectric, biomass, etc.) are very different in terms of dimension and location, are based on different technologies, and have diverse environmental and visual impacts. Due to this heterogeneity, it is impossible to talk about social acceptance of renewable energy in general terms.

It is probably not a coincidence, as the literature confirms, that since the beginning of the transition to renewable energy, conflicts emerged regarding some very *visible* energy projects, such as hyper-visible wind farms (see, e.g., Bell et al., 2005; Wolsink, 2007), while struggles against less visible renewable energies, such as small-scale hydropower, are more rarely discussed in the literature (Manders et al., 2016).

Since visibility plays a primary role in public acceptance of new energy plants, it is used by experts employing a number of well acknowledged evaluation and mitigation methods (Apostol et al., 2015); landscape policies regarding renewable energy development are largely based on minimising or mitigating the *visual* impact of renewable energy plants (Nadai and Laboussière, 2015); many developers of renewable energies aim to achieve a low level of visibility.

Some authors suggest that, to let the energy transition develop, it is necessary to go beyond mere visual minimisation and aesthetic judgments and instead highlight the ethical side of transition to renewable energy, which will help the public come to terms with the new landscapes of energy (Nadai and Van Der Horst 2010; Selman, 2010) and be more accepting of renewable energy projects. According to these authors, if energy policy was viewed from a landscape perspective, it would have to consider the time dimension as well as its effects on civil society and encourage participation in the production of a more efficient and effective landscape-sensitive energy policy.

Of the different forms of renewable energy, hydroelectricity seems particularly apt for our purpose since the interplay between visibility/invisibility in its development is particularly intriguing. Moreover, hydropower was the focus of a previous energy transition in the 19th and 20th centuries (from coal to ‘white coal’), and it is one of the most promising energy sources included in the ongoing energy transition.

2.3. Visible/invisible landscapes of hydropower

Visibility has always been a crucial topic to consider when developing hydropower plants. The impact of energy plants on mountainous outstanding landscapes has been the subject of lively discussion and controversies on landscape conservation since hydropower was introduced as an energy source. Lakes and waterfalls are some of the main natural features of mountainous landscapes, but they are technically perfect to produce hydropower (as reservoirs and hydraulic jumps) (Briffaud et al., 2014). Since this opposition to hydropower was mainly focused on aesthetics, it could have been appeased simply by demanding that hydroelectric projects were better ‘landscaped’, which occurred when the first large hydropower plants appeared in Europe. In the second half of the 20th century, the conflict began to involve environmental compatibility and stopped being strictly visual.

Non-visible parts of hydropower plants have at least the same importance as the parts that we can see. There are only a few visible parts in a hydropower system (dams, power stations, penstocks), while

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