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## REVIEW ESSAY

## Energy landscape research – Lessons from Southern Europe?

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*The Moravian Geographical Reports does not often publish Book Reviews (let alone essays), but this new book on “Renewable Energies and European Landscapes”<sup>1</sup> is a well-deserved exception to the rule! It is an edited collection of essays gathered together by Frolova (University of Granada, Spain), Prados (University of Sevilla, Spain) and Nadaï (Centre International de Recherche sur l’Environnement et le Développement: CIRED –CNRS, France), based on a series of Workshops organised under the auspices of several agencies (from both Spain and France) in the period from 2007 to the present. In particular, the Spanish Network on Renewable Energies and Landscape (RESERP) began in 2010, with an emphasis on wind and solar power. Published by a well-respected agency, the question can be clearly stated at the outset: Do the editors fulfil their ambitious agenda of providing case studies of value for the emerging research on landscapes of renewable energies of Europe, writ large, i.e. beyond the ‘Southern European’ environment? Or: what is the ‘added value’ of the Southern European cases?*

## 1. Introductory remarks

Such a question is of great interest for all energy geography researchers today, as their work can be viewed as, minimally, concerned not only with the ‘local’, but also with the larger-scale implications of their findings for global issues of energy and climate change and economic development and ... effectively, of societies, as we might know them, today. The conflation of ‘local’ and ‘global’, particularly as time is always co-present with space, then, is a crucial aspect of any geographic study today – with respect to energy, or with respect to any of the many aspects of the structure- and process-oriented elements of society, again, as we might know them, today. Clearly, this is one of the problematic issues facing any critical geographer.

So, there are many ways to approach an expanded review of this book. As the ‘reviewer’, I have chosen ‘my’ way (with apologies to Frank Sinatra) and I have used an epistemological viewpoint to highlight some of the issues contained in this book: initially, my concerns were to identify some of the elements of ‘content’ and ‘context’ in the ‘debate’ about ‘renewable energy’ and ‘energy landscapes’, in order to highlight successes and failures in this particular endeavour. ‘Content’ clearly refers to “What is this book about?”, but ‘context’ is more diffuse, although it inevitably influences my evaluation of the ‘content’ as

I believe strongly that my perspectives on ‘context’ give meaning to what I read as ‘content’. In the final analysis and given space constraints, I have determined that the content of this book is well worth evaluating on its own merits. Hence, I am presenting my fuller review and evaluation of the subject book as an essay. Context, as always, can wait until a later time.

## 2. Content

To say the least, the content of this book is expansive and encompassing. It does not concern itself solely with the ‘Southern European’ experiences with renewable energy, although approximately 80% of its pages do just that. The remaining one-fifth of the content is comprised of a general overview of the (implicit) research design in Chapter 2 [“Landscapes of Energies, a Perspective on the Energy Transition” by Nadaï and Prados], and general local context and sometimes theoretical context provided for each of the case studies in the subsequent 13 chapters.

There are in total 31 contributors, most of them university or related professionals (94%), hence the approaches tend to be somewhat academic in nature. As for the countries these authors represent: Spain, 54%; France, 29%; Portugal, 7%; and Italy, 10%.

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<sup>1</sup> Frolova, M., Prados, M. J. & Nadaï, A. [eds.] (2015). *Renewable Energies and European Landscapes. Lessons from Southern European Cases*. Dordrecht, Netherlands: Springer, 299 pp. Doi: 10.1007/978-94-017-9843-3.

The issue of a ‘Southern European’ perspective on energy landscapes can be broadly accepted, although there is a chapter [Chapter 12: “Wind Energy and Natural Parks in European Countries (Spain, France and Germany)” by Deshaies and Herrero-Luque] which is clearly comparative in nature and extends the ‘Southern’ as far north as the Baltic and the North Seas! The French case studies are likely to be regarded as somewhat ‘mixed’: in Chapter 5, Labussière and Nadaï [“Wind Power Landscapes in France: Landscape and Energy Decentralization”] use the cases of the Département of Aveyron in the region of the Midi-Pyrénées (clearly south-west France), and the Département of Eure-et-Loire, which contains the cathedral city of Chartres, for which ‘Southern’ is a bit of a stretch. Regardless, by and large, we are dealing with ‘Southern Europe’, and in particular Spain: approximately 42% of the content is located in Spain.

The structure of the book is well characterised by the editors in their opening chapter [“Emerging Renewable Energy Landscapes in Southern European Countries” by Frolova, Prados and Nadaï] and can be represented as follows.

The book has five parts covering the following areas (% of total content):

- Part 1: the conceptualisation of renewable energy landscapes (13%);
- Part 2: the development of new energies and emerging landscapes (26%);
- Part 3: (traditional) hydro-power and mountain landscapes (20%);
- Part 4: (questions about) renewable energies and protected landscapes (21%); and
- Part 5: renewable energy landscape planning tools and their application (20%).

For many (if not most?) researchers in the renewable energies field, immediately one is struck by the inclusion of “hydro-power and mountain” landscapes. But it has the same representation as the “tools” (Part 5), which sets up an interesting opposition. Clearly, for most instances of renewable energy landscapes, the material or bio-physical aspects (topography, climate, etc.) of ‘landscape’ cannot be ignored. How to integrate understandings of the physical environment into the socio-political realm of renewable energy landscape creation is crucial to the development of such landscapes. The ways in which this conundrum is tackled in this book can now be approached by a more systematic overview of each contribution.

## 2.1 Conceptualisation

Chapter 1 (Frolova, Prados and Nadaï, 2015) provides an extensive overview of the field and research area, as well as an explication of the book’s structure. Accordingly, they note that the Southern European experiences in renewable energies have been a distant cousin to the reports emanating from North-Western Europe and North America. The book aims to set the record straight, especially with respect to the enormous development of renewable energies in Spain! Apart from this country focus, there is a wide range of such renewable energies represented – not only the usual well-reported wind power schemes, but also solar power (both solar photovoltaic and solar thermoelectric), hydro-power, and various forms of agro-energies (biomass, biogas and biofuel). Nonetheless, wind power developments take prime attention (6 of the 13 chapters subsequent to the

introductory two: 46% of that content), followed by solar power (31%), and then one chapter on agro-energy and two on hydropower. Thus, over three-quarters of the book concerning specific types of renewables reports on wind and solar power, perhaps a typical and representative proportion of the content of such reports.

This chapter provides a very full overview of not only the field of research on renewable energies but also the specific contributions of each chapter. For the general overview, the presentation is fairly standard in terms of the coverage on general concepts (~11 pages), then their application to the Southern European context (~4 pages), then the specifics of each chapter (~4 pages), with a final evaluation of the future (~2 pages). So, we see a narrowing down from generalities to regional specifics to case study specifics, and hopefully some meanings for “the future”. I think most readers would agree that this is a reasonable way to bring the overall problems of renewable energies and their attendant landscapes to the fore: take a set of case studies, contextualise them adequately in their regions/countries, and attempt to draw out some meanings for the future. The chapter accordingly deserves a full account of its content.

A key element in this approach depends, of course, on the definition of landscape. The authors conceptualise this issue in a striking manner (*ibid.*, p. 10):

Although landscape is approached in a different manner in each country, the policies for protecting it have been developed since the end of the nineteenth century along three main lines of thinking (Bouneau and Varaschin, 2012):

- The picturesque paradigm, which considers landscape as a part of heritage endowed with a visual dimension, akin to *veduta* in painting. From this perspective, landscape has to be protected from visual interferences (co-visibility) that could alter its visual appearance.
- The environmental paradigm, which considers landscape as a part of the environment, a natural habitat for wildlife and flora. It aims to protect this ‘natural’ landscape through the management of protected areas of different sizes (natural parks, biosphere reserves, etc.).
- The cultural paradigm, which considers landscape as the result of the interaction between nature and society. Landscape is a part of the environment that has been shaped and endowed with shared meaning and values through cultural representations and territorial practices.

It is this third approach, which is also found in the European Landscape Convention (Olwig, 2007), which informs the perspectives on landscape in the book since the perceptions of local inhabitants reflect the intimate relations of nature and society, locating such perceptions in local cultures, identities, memories and values. Clearly, the scene is set – once we ‘scale-up’ from locality to broader regional and national concerns with respect to energy planning and policy directives – for potential conflicts or disagreements between local and non-local concerns. This approach acknowledges the complexity of landscape: “renewable energy landscapes ... as heterogeneous and multidimensional – i.e. material, social, institutional, political and historical – processes embedded into a local area” (Frolova, Prados and Nadaï, 2015, p. 11), as well as the problems such a view poses for analysis of “the relations between the processes that underlie the energy

transition and the issues raised by the transformations they induce” (*ibid.*). The authors assert that this is the “analytical strand” upon which the book is based.

It is, of course, a very difficult task. In their broad overview, the editors acknowledge the difficulties involved in using case studies to demonstrate larger scale issues of policy and planning for renewable energy, as there is a clear gap between national or regional planning systems built on engineering or economic considerations and land-use planning at the local level, as at such a level the considerations change to values, representations and identities which are not seen as part of the larger scale systems. It could even be said that such scalar differences are realised at the local level when the residents affected by such changes feel that they are ‘pawns’ in some larger scale game that is played for the benefit of other regions outside of their own. Such power inequalities are clearly part of the ‘problem’ of renewable energy developments, but the political economy of the energy transition is not taken up in an explicit manner in this book.

Subsequent sections of this chapter outline the different types of renewable energy landscapes in Southern Europe – wind power, hydropower, solar PV and thermoelectric power, and agro-energy (biomass, biofuel and biogas) – which are covered by the various case studies. In their view, the lessons learned from the case studies “point to the complex, interwoven nature of the processes through which the joint assembly of a renewable energy capacity and a culturally shared landscape can be achieved” (*ibid.*, p. 12). Clearly, the case of the relatively traditional renewable landscapes of hydropower stand out as largely historical cases of benefits able to be realised ‘quickly’ (better electricity supplies available), and as the resultant of a ‘co-production’ of landscapes now seen as beneficial in and of themselves (tourism and cultural heritage benefits). In contrast, the new renewable energy landscapes do not appear to bring such advantages for the local populations (climate change is not on the horizon?).

Such an historical difference is one key to understanding some of the distinctions that can be made between traditional hydropower landscapes and those of the new renewables, and much relates back to the power differences indicated earlier. The case of wind power is exemplary in this instance as it was the first developed beyond small scales of application, becoming ‘industrialised’ and large scale ... and capitalist ... and the first decentralised energy technology to

concentrate hazards – in the form of very large clusters of very large turbines – while distributing the benefit of electricity primarily to far-off populations who do not experience... the altered views, land-use changes, ecosystem damage, noise, optical effects, and risk of accidents that come from the 400-foot high structures (*ibid.*, p. 14).

And, since it was the first renewable energy technology, it can be seen as part of the development of “a new political and economic order in rural Europe: the increasing liberalisation of the electricity market and sector” (*ibid.*), indicative, perhaps, of “our capacity to decentralise landscape and energy governance” (*ibid.*). This latter linkage to governance issues could be an important by-product of the flourishing of wind power in Europe and other countries, as problems in wind power projects siting and local acceptance have to be viewed in a broader context.

Solar power landscapes resulted from the next major development in renewable energy as the change from small- to larger-scale systems began in the first decade of this century. As in many countries, the initial major expansion was encouraged by incentive systems of feed-in tariffs which have proved to be too expensive in the last six or seven years. Solar PV ground-mounted plants and thermoelectric plants are, however, not compatible with existing land uses, unlike wind turbines. In this sense, they reflect some of the ambiguities with energy crops, competing with food production in that potential agricultural land is taken out of the rural system. Attempts to resolve such difficulties by establishing relevant guidelines for identifying the impacts of solar power developments in rural areas can be an imposition on local land-use planning authorities which are not well-equipped to handle the problems. Again, governance issues can arise.

Bio-energy landscapes are seen as a special case by the authors as biofuel production changes the very nature of local agricultural systems, making them more industrial in nature. Hence, bioenergies, as a form of renewable energy, can be contrasted with other forms of renewables in that they clearly involve agricultural policies as much as energy policies, or more broadly, environmental policies. Since they are expected to contribute to a greater extent to natural gas targets in the future, regulatory issues might be expected to increase in the future as well, as such cross-sectoral differences in policy can easily result in discrepancies in programming. In fact, it seems that the case of bioenergy landscapes are as different from ‘normal’ (i.e. wind and solar) renewable energy landscapes as the historical hydropower landscapes – in that they demonstrate a different set of factors influencing their development, just as water power landscapes did in the past. In fact, the authors assert that

(T)he lack of integration of the policies regulating the development of biogas plants along with other more global issues, such as competition between energy and food production (for land and water), environmental degradation (through GHG emissions, soil and water resource degradation, biodiversity loss, etc.) and its social consequences (through land rights infringements, local and regional food security impacts, etc.), raised doubts about the authenticity of their environmental and socioeconomic credentials (*ibid.*, p. 16).

Following this expansive and well presented introduction to the various renewable energy systems covered in the book, the authors outline the case studies, asserting that “the issues arising from landscape practices and values ... must be addressed for all kinds of renewables” and that “the analysis of the various pathways of transition to renewable energy requires a broader knowledge of this question” (*ibid.*, p. 16). The reader will certainly agree with such a proposition and might expect, then, a brief presentation of the nature of each case study/chapter in the following pages. What we have, instead, is more than a brief introduction – rather there is an relatively full account of the main points of each chapter, fulfilling what the authors describe as the intent of this first chapter, to assess “the differences and/or similarities in the case studies, policy, landscape culture and institutional contexts uncovered in the various contributions to this book in order to compare their results” (*ibid.*, p. 17). It is of course the authors’/editors’ prerogative to decide how to organise their work, but I would have approached this structuring of content somewhat differently – briefly

outlining the cases (the choice of which should clearly be left to the second chapter) and leaving a more extended comparative discussion of ‘lessons learned’ and ‘implications for the future’ to a final chapter, building hopefully on what the reader has judged for herself from each case study. In this book, we have no final summary chapter. The coverage in the case studies is outlined below in Sections 2.2–2.5.

The second chapter in this Part 1 on conceptualisation is co-authored by Alain Nadaï and Maria-José Prados (2015), who discuss the ways in which cross-national comparisons could be approached. As with other chapters in the book, there is an Abstract (also for Chapter 1), which gives the book the impression of a series of separate journal articles – rather than the integrated overall appraisal implicitly promised at the outset. The authors make the assumption that cross-national comparisons can be based on the analysis of the energy landscapes that have ‘emerged’ at the ‘crossroads’ of the development of renewable energy technologies and changes in current landscapes. Hence, the discussion tends to be double-edged: (i) as a process approach to technological development and the ways it interacts (or does not) with changing notions of landscape, which is a useful context for discussions of renewable energy development; and (ii) as a systems approach that tries to deal with the complexities of interactions as they exist and change between defined entities, especially in the policy and planning systems.

In this context there is a very useful review and evaluation of recent literature in the area of renewable energy landscapes, with some interesting comments about the roles of local and national governance, and more recently supranational processes that have resulted in a ‘re-articulation’ of landscapes, the vectors of which are wind power projects. This is because

they are locally sited but they are conceived, designed, and developed in relation with national and transnational processes, actors, and networks. So, in some ways, the “places” of our landscapes, in the sense of the web of relations which underlay these landscapes, become reconfigured in this process: climate change, climate energy policies, and the liberalisation of the electricity sector have become part of the making of landscape. (*ibid.*, p. 29)

This is an extremely valuable insight because it opens the path to conceptualising landscape in a different way – to become almost like a process itself in reconfiguring, in turn, the entities and relations that underlie its evolution. But of course, the landscape did exist before the siting of renewable energy facilities and it is the traditional, perhaps largely cultural, landscape that can often bear witness to social perceptions opposed to plant location. Siting problems have been reported in many research publications but an over-attention to locality can miss the larger context in which renewable energy landscapes have emerged: besides the usual ‘developer’ vs. ‘local population’ syndrome, larger scale issues such as the conflict between energy policy/planning and spatial/land use planning processes need to be addressed – again at varying scales. The authors contend that if there is not some merging, perhaps even a reconciliation of these two sets of interests (and actors/entities), then landscape becomes **the** central issue in the debates as the two sets of discourses are effectively opposed to each other.

The authors also attempt to bring into the discussion recent trends in cultural geography (largely) in terms of the development of so-called hybrid geographies, and forays to attempt to overcome the distinctions made between

representational and relational landscapes (*ibid.*, pp. 34–36). They even go so far as to suggest a “daring, yet inspiring, parallel” between their well-drawn distinctions between “system vs. process approach to technology, on the one hand, and representational vs. nonrepresentational approaches to landscape, on the other hand” (*ibid.*, p. 35). This reviewer feels that this is an unnecessary sidestep in the development of their argument which essentially rests (in my view) on power and scalar discrepancies as realised at local levels of implementation of renewable energy projects. As they say, planning or more broadly policy concerns: “prove that the core issue at the crossroad between energy transition and landscape is that *energy landscapes rarely fit in existing landscape qualifications*” (emphasis in original, p. 36). One might well add that although the situation will vary by country, in all locations renewable energy facilities are ‘noteworthy’ in being fully material and above the ground!

Their conclusion certainly resonates more with some possible amalgam of their identified system and process approaches to renewable energy development: “cross-national comparison of landscapes of energies should be attentive to the type of landscape tradition at work in each country but also account for the fact that the development of renewable energy projects endows these traditions with a renewed existence” (*ibid.*, p. 37). While it is not quite clear what a ‘renewed existence’ might be, controversies or conflicts over facility siting will vary by country (or even by region) as the ‘traditions’ vary so much. Hence, they conclude that the variability in landscape traditions strongly affects the methods used in the analysis of siting conflicts, and, one could add, especially if the impact of a ‘renewed existence’ only adds to the variability.

In this chapter, then, we have an illuminating and thorough discussion of many aspects of renewable energy development and why it is important to view such changes from a well-founded theoretical perspective. I am interpreting their work as providing a general broad framework for renewable energy case studies, as they say it “aims at discussing the way in which cross-national comparison shall be approached” (*ibid.*, p. 26). It does do so however, in a very loose manner as there are no directives on how such comparisons can be made. By this comment I mean that the normal approach to research design in such a case would be to elaborate some theoretical framework (which they have done, by and large), which would then be used to define parameters of interest for further research, including criteria for the **choice** of case study areas (which they have not done). The implicit research design for this study is a comparative case study design, which is inevitably instrumental in nature (i.e. the purpose of the cases is to illuminate or verify the theoretical framing). Even with the ‘traditions’ and the ‘renewed existences’ only adding variance to the phenomena of interest, some analytical factors (such as ‘degree of conflict’, etc.) could have been used to aid in the design. Sadly, they are absent.

## 2.2 New energies / emerging landscapes

Part Two of the book comprises four chapters, two on wind power (Spain and France), one on solar power (Spain) and one on agro-energies (Italy). They demonstrate well the differences between national contexts for renewable energy developments.

In the case of wind power, for example, it is clear that in the Spanish case (Baraja-Rodríguez, Herrero-Luque and Pérez-Pérez, 2015), there was a very favourable investment

climate, a developing industry for facility infrastructure and generous feed-in tariffs which lead to a ten-fold increase in installed capacity from 2000 to 2011, resulting in Spain placing second to Germany in Europe and in fourth position behind China and the United States in world rankings. This massive development is well recorded in this largely historical chapter, which also shows that the developments were quite disparate between regions, a difference that appears to be largely attributed to regional heterogeneity in governance structures. In fact, the distinctive ‘territorial cultures’ have resulted in distinctive landscapes, as the authors demonstrate that the only common factors in accounting for regional differences within Spain have been the lack of regulatory control and the limited inputs from public participation. At the same time there has been an interesting reversal of general social awareness of landscape in the country in that rural space has been afforded new functions and even new landscapes, which in turn generate new discourses of land, identity and belonging, which only add to the distinctively disaggregated nature of Spanish geographic space. The economic crisis clearly exacerbated such trends.

The authors’ contention that the Spanish case is so unique in Europe is documented as well by three interesting case studies: (1) the Cantabrian mountain range running across the North of the Iberian Peninsula and acting as a natural frontier between Atlantic and Mediterranean Spain; (2) the Ebro Valley, in particular the two high plains of La Muela and La Plana, about 20 km away from the important inland city of Zaragoza; and (3) the province of Cadiz, in the south-west corner of Andalusia (with its huge coastline on two seas, the Mediterranean and Atlantic Ocean). These case studies not only illustrate different bio-physical environments but also different urban and touristic situations, and illustrate their findings that “the deployment of wind energy has helped to liven the territorial debate and has contributed to the slow awakening of social awareness as to the value and importance of landscape in Spain” (*ibid.*, p. 45).

For these authors, one key issue concerns the limited public participation in wind power developments, with a rather illuminating conclusion (*ibid.*, p. 59):

In any case the result is that windmills are now part of the landscape in numerous Spanish regions. Their deployment has produced new discourses, new social practices and relations, many of which are clearly in their favour. In rural areas with impoverished economies, windmills are often viewed as a source of income for institutions and for local people, as a way of moving the area into the modern economy, presenting an image of clean energy and sustainability to such an extent that in the pioneering areas in which windmills have now been installed for some years, they have become symbols of the local identity.”

A rather different approach to wind power development is seen in the French case study presented by Labussière and Nadaï (2015). As in the Spanish case, there is an interesting history of the development of wind power in France through various national directives, in this case more directly related to concerns about global climate change in which renewable energy clearly plays a major role. In fact, it is the directives from the European Union which have resulted in regulations that were quite unusual in that attention was directed to policy articulated in its territorial dimensions. For many if not most members of the EU, this raised tensions between overall directives and the territorial bases of planning, not only but in particular for renewable energy projects.

Perhaps especially in France, but also in many jurisdictions, the impact of climate change is seen in challenges to the centralization of governance structures: “... a cultural shift regarding a kind of management that was traditionally centralized... they reflect the gradual emergence of a decentralized energy policy and raise the issue of its territorial governance” (*ibid.*, p. 83). In France in particular, these changes are associated with the widespread acceptance of the European Landscape Convention, which places an emphasis on ‘everyday landscapes’ and

... on a more opened governance of heritage policies; it introduces management and development issues at the heart of landscape policies. Termed “the just landscape” by some analysts, the ELC is seen as an innovative paradigm for landscape policies, which develops the dominant normative approach to landscape toward a more collective management of landscapes (Olwig, 2007). In some ways, wind power development provides a testing ground for such views (*ibid.*, p. 86).

As the authors demonstrate effectively, the dominant paradigms evident in landscape planning and protection were organised around what they define as the “state landscape”, which consisted of “numerous concentric figures” expressing “the state’s normative power” (*ibid.*, p. 87). Such representations were organised around so-called ‘heritage elements’, but the plans for wind power developments disrupted such patterns. Hence, we have conflict, often seen locally but more importantly, a reflection of the differential powers in landscape protection and energy planning emanating from higher governance levels. And more generally, the paradox that after more than ten years of one of the highest feed-in tariffs in the world, the installed capacity in France is still low.

These broader distinctions at policy and programming levels are well exemplified in two case studies presented by the authors. These cases – from the Eure-et-Loir département, which includes Chartres Cathedral, and the département of Aveyron in southwest France, which is one of the windiest French départements, illustrate well the authors’ principal arguments: “... France cannot jointly support landscape policy and wind power policy without challenging the former because of the new visual relations generated by the latter.” (*ibid.*, p. 87). In other words, the challenges brought about by global climate change are registered in many localities by necessary changes in higher level governance structures, by some sort of policy ‘decoupling’ that overcomes the disjunctions brought about by the stimulus itself. As the authors conclude, any sort of “technological dream of an “a-social” power generation technology, leaving us untouched and unchanged, resembles the Arcadian landscape: it is a utopia. It does not exempt us from the social and political work necessary to renew our relationship with energy.” (*ibid.*, p. 91).

We note that such a call for energy geography research is critical in its essential epistemological elements: ‘in our work, we research in order to work for change’. This is one of the few remarks of such a nature in this book, yet it is surely most welcomed.

In this part of the book on new energies and landscapes, it is perhaps inevitable that some strong similarities emerge regardless of the exact type of renewable energy under consideration. For example, in their Chapter 4 on solar photovoltaic power in Spain, Mérida-Rodríguez, Reyes-Corredera, Pardo-García and Zayas-Fernández (2015), a similar history of rapid expansion due to a relatively

absent regulatory system, as in the case of wind power (see above), is recounted. Up to 2008 the growth in photovoltaic energy installations in Spain is described as exponential; with the economic crisis, however, as well as an increase in regulatory powers, there has been a relative stagnation. Compared to other countries, the ground-mounted solar PV plants have dominated the landscape and considerably changed many rural environments. The chapter does not present any original case study materials, but does review a large number of such studies, especially more recent ones that address directly the social impacts of the facilities. This turn to including the public in the decision-making process for plant installations is quite new and reflects increasing concerns over social, ecological and landscape impacts.

Regardless, the authors conclude on a generally positive note:

research done so far in Spain shows a broad public acceptance of renewable energies and in particular of solar PV power due to its positive environmental connotations and the benefits it is perceived to bring to the economic development of the area in which it is located, although concerns were also shown about its high cost. There seems also to be a certain lack of knowledge and wariness regarding photovoltaic energy, largely as a result of its recent arrival on the scene, and a rejection on aesthetic grounds of its formal components (shape, colour) and its industrial nature (*ibid.*, p. 76).

This is an interesting conclusion in that the notion of the visual landscape re-enters the picture. The 'formal components' relate to the *veduta* referenced earlier in the review of the meanings of landscape by Bouneau and Varaschin (2012). Clearly, there is a challenge here for solar PV proponents, in both rural and urban situations.

The final chapter in Part Two of the book deals with the interesting and relatively new agro-energy landscapes. Ferrario and Reho (2015) examine these landscapes in the Veneto region of northern and north-eastern Italy in a very comprehensive study that shows the importance of several layers of EU and national and regional governance structures and policies on the development of agro-energies:

European policies on agroenergy can be viewed in different ways: on the one hand, they represent a synergy between energy policies sustaining renewables and agricultural policies subsidising multifunctionality, and on the other they reveal the extreme difficulty Europe has in coordinating sectoral policies with regional and spatial planning and in evaluating and controlling the consequences of such policies both locally and globally. (*ibid.*, p. 97).

The Veneto appears to be almost a showcase example of the conflicts that have arisen with respect to agro-energies because of the spatial proximity of both urban and rural areas, intermixed to a very strong degree:

Our work seeks to highlight the connection between government policy, landscape transformation and public perceptions, in three steps: we firstly analyse regional policies funding agroenergy development; secondly, we survey in quantitative and qualitative terms the landscape transformations caused by agroenergy development; and thirdly, we analyse one of the most contested new landscapes, that of biogas, in order to explore the reasons behind the conflict in greater depth (*ibid.*, p. 96).

In many ways this is one of the most satisfying chapters in the book in that it adequately accounts for the legislative and regulatory context at different scales, which in many ways afforded the strong development of biogas plants in the region and the transformations in the landscape. It is also very rewarding in its excellent coverage of the conflicts engendered by the development of biogas plants. In part these conflicts stem from what the authors call 'coexistence conflicts', as activities such as factories and farming used to co-exist well, but today with the arrival of many biogas facilities so close to residents "(T)he agrouban landscape is in deep crisis" (*ibid.*, p. 100). At the same time as providing these sobering thoughts, the authors do see a way out of the problem as it has in effect been produced by conflicting policies (i.e. the sectoral approach to agriculture does not speak to sectoral energy policies) at macro levels of concern, but also by local administrative policies that appear to be indifferent to landscape change. Essentially, they seek a new approach to local conflicts, one that would "build a spatially fairer, more democratic renewable energy system. If this happened, the new landscape of carbon neutrality would be accepted more easily because it would represent a fairer and more democratic process" (emphasis in original, *ibid.*, p. 112). It would, of course, be a different landscape!

### 2.3 Hydro-power and mountains

Part III of the book deals with relationships between hydropower development and mountain landscapes in southern Europe. There are three chapters with locations distinct enough for useful comparisons: Chapter 7 (Frolova, Jiménez-Olivencia, Sánchez-del Árbol, Requena-Galipienso and Pérez-Pérez, 2015) covers the Sierra Nevada mountain range in Andalusia (southern Spain); Briffaud, Heaulmé, André-Lamat, Davasse and Sacareau (2015) present an interesting historical study of the French central Pyrenees at the beginning of the twentieth century; and the Piave river basin in the Italian Eastern Alps is subject to critical scrutiny by Ferrario and Castiglioni (2015). These three locations adequately demonstrate the overall scope of the book in that landscape differences are seen as both space and time dependencies, and that much can be learned from public reactions to previous landscape changes (as in the construction of hydro plants) that is of value in interpreting current attitudes and perceptions of renewable energy facilities.

The Spanish case study is a very well documented account of small hydro developments in the Sierra Nevada in the past and of wind and solar projects more recently. Close attention is paid to the ways in which the various projects were received by local populations (both positively and negatively), using documentary information, fieldwork and in-depth interviews with different stakeholders. One consistent finding was that landscape values play an important role in affecting positive or negative reactions to proposals. For example, older hydro plants have become "part of the cultural heritage and have acquired a certain symbolic value, to the extent that they need to be managed as an integral part of any landscape restoration programme" (*ibid.*, p. 132), a finding that illustrates that historical and social contexts need to be taken into account in forming any direct conclusions on the effects of renewable energy facilities on landscapes. Effectively, the role of landscape values is highlighted in this important contribution, and yet the reactions of stakeholders to wind power facilities were often mixed, with some saying they had no impact on the landscape.

This case also shows the strong relationship between energy facilities and tourism:

Although the most common perception of the relationship between tourism and renewables is that the building of energy infrastructures in a particular area could cause it to lose its attractiveness for tourists, this link is far more complex and some energy infrastructures have in fact contributed to the development of tourism in Sierra Nevada. In the same way, as many industrial landscapes related with hydroelectricity have now become historical landscapes with a significant heritage and tourism value, the emerging renewable power landscapes could themselves become an important part of the local scenery, forming a future ‘historic landscape’ (*ibid.*, p. 133).

The historical study of hydro-electric developments in the Pyrenees is a fascinating detour from the other studies in the book. Attention is focussed on the Bigourdan area of the central Pyrenees and especially the Cauterets valley, the upper valley of the Gave de Pau and its tributaries (Briffaud, Heaulmé, André-Lamat, Davasse and Sacareau, 2015, p. 136), and there is an in-depth study of the protected site of Gavarnie. Initially, the proposals met with very strong resistance from preservation groups arguing in terms of landscape protection, but also from the point of view of protection of the tourist industry. The authors state that

(I)n this study our analysis focuses on the interactions within the landscape/hydropower/tourism triangle and the ambivalence of their construction using the words and actions of those directly involved. We shall demonstrate the key role played by conflictuality, a key component of this construct, by analysing how the different groups of stakeholders tried to project their own action into this space and inscribe their own point of view on the territory, thus revealing different ways of understanding the local conditions that give rise to the development and the formation of an identity (*ibid.*, p. 136).

Interesting, one might say? Yes, in that a similar statement could well be formulated to describe any current investigation of the same situation (except, perhaps, for the strange use of ‘conflictuality’?! In fact, some of the arguments described in this chapter could just as easily be used today by opposing stakeholders in renewable energy debates. The strength of the arguments used by these authors, however, is compelling:

... conflicts that occurred here between the period just prior to the First World War and immediately after the Second contributed to creating both spatial and social partitions and in so doing created new socio-spatial relations that were an integral part of a new relationship with resources in the high mountain areas. By socio-spatial relations, we are referring to social relations which take the form of a relationship with space, which are an integral part of it and/or legitimised by it. We are describing a space that illustrates social relations and at the same time also represents the matter, the symbol and the setting for these relations (*ibid.*, p. 136).

The conflicts under study in this chapter emerged from concerns of an environmental nature (the nature/society problematique expressed as concerns over ‘natural balance’ and ‘regulation’, largely seen in the form of forestry policies) compared to those more directly related to landscape.

There was a “constant back and forth” between these two approaches or paradigms that gave rise to “representations that differ not only as a result of diversity in sensitivities or interests, but also because they are grounded on fundamentally dissimilar ways of understanding reality” (*ibid.*, p. 150). The truths emerging from this historical study are just as relevant today.

The final chapter in this part of the book on mountain landscapes is primarily concerned with the northern hydrographical basin of the Piave River in the Veneto region in north-eastern Italy, where the hydroelectric potential of the main river and its largest tributaries has been exploited for more than one hundred years. Ferrario and Castiglioni (2015) take up the challenge of investigating two cases of small hydropower developments through a landscape lens: the centralina di Vigo was developed by the municipality of Vigo di Cadore in 2005 and is now in use; in comparison, the centralina del Mis was developed by a private company on land inside the Dolomiti Bellunesi National Park in 2008, but its construction was cancelled in 2012 as a result of opposition by environmental associations. The analysis was based on three kinds of sources: informal interviews with stakeholders, on-line documents (press, associations, promoters and municipalities’ websites) and fieldwork at the sites (*ibid.*, p. 165).

As in the case of biogas facility development discussed above for the same region (Ferrario and Reho, 2015), the impact of supra-local policies effectively undermines the objectives of integrating energy into the landscape, even in the face of much more local detail in this case. The authors comment succinctly that “landscape is a concept with a multitude of meanings. Its main peculiarity lies in the fact that it belongs to the spheres of both reality and representation” (Ferrario and Castiglioni, 2015, p. 157). Such complexity can, however, be seen as an advantage of taking a landscape approach:

(I)t enables us to consider different issues and mediate between them (such as fairness, both in the case of outsider and local exploitation). This helps avoid ‘yes/no’ discussions, polarised positions that necessarily lead to conflicts, and instead allows us to think in terms of ‘how’, taking into account and respecting all the different values at stake (*ibid.*, p. 170).

## 2.4 Protected landscapes

Natural parks, special heritage landscapes, national parks – the names vary but essentially we are talking about protected landscapes and, as many are also in mountainous areas, the potential for wind power, in particular, is very high. This Part Four of the book contains two case studies involving wind power and one of solar PV facilities.

The only case study from Portugal is presented by Afonso and Mendes (2015), an unusual contribution as well in using an ethnographic approach. Especially in northern Portugal, there is an evident overlap between protected areas and sites of high potential for wind power development. The authors identified three case study areas which had recently experienced such developments and where there had been strong controversies: (i) the Natural Park of Aire and Candeeiros Mountains, where the wind farm was located on communal lands and subject to the criticism that the residents had not been compensated sufficiently for the negative impacts; (ii) the Natura 2000 site of Arga Mountain (NW Portugal), where three turbines were relocated after opposition mounted on their intrusion into a symbolic

landscape regarded as highly religious in nature; and (iii) the Natural Park of Montesinho (NE Portugal), where the conflicts again centred on building on communal lands and who had the right to make the decisions (*ibid.*, p. 176).

The detailed local accounts were generated from regular visits to the field, interviewing key informants (local citizens, technicians, the mayors and chairs of parish councils, representatives from both regional and national environment and conservation organisations, and entrepreneurs from the wind power companies). There is an enormous variety of opinions expressed, some favourable, others not, and many related to what appear to be very long-standing antagonisms between (non-local) conservation and protection agencies and local residents with respect to the management of the commons or communal lands (*baldios*):

Local populations do recognize the commons as collective property. They know every other neighbour that is allowed to make use of it according to customary uses and knew their former owners. On the other hand, the natural park introduced a new conception of “collective property,” that is, the notion that local landscape and natural resources also belong to the “national community” and even – through the Natura 2000 Network – to the “Europeans” (*ibid.*, p. 185).

Thus, both scale and property rights are brought strongly into a politicised argument, but in fact the situation is more nuanced than that. For example, in the second case study site of the ‘Holy Mountain’, plans were changed to relocate three turbines:

The main section of the wind farm is located on a plateau – the Chã Grande – that the surrealist poet António Pedro once described as a “quiet atmosphere of sensitive ruins.” This is a very evocative place, with its religious temples and pastoral landscape, full of vestiges of cultural and geological past, a place full of ruins. In the environmental impact assessment (EIA) submitted by the promoters, the “presence of the wind turbines” – all twelve – was already invoked as a negative result of the construction of a wind farm. Nevertheless, the EIA also mentioned that this impact over the landscape is “a subjective matter” (*ibid.*, p. 186).

There is also an interesting argument based on this ethnographic approach that is not recorded explicitly (to my knowledge) elsewhere in the book: economic benefits are often brought to bear on siting decisions, especially in relatively deprived rural locations, but in fact it is more than that from a landscape viewpoint as it can be seen as a process “through which that energy is endowed with a qualification and an economic value cannot be understood without taking into account the social and cultural relations in which it is being embedded” (*ibid.*, p. 177). Indeed, what wind power brought to these communities was a revitalisation of traditional collective rights, reinvigorating ‘almost obsolete communitarian structures’ as an ‘assembly of neighbours’ negotiated with developers. Such local empowerment, of course, could find its impacts in revitalised landscapes as local populations would find reinforcement for their beliefs that the “landscape” was “a legacy from their ancestors and a tangible place from which to extract a livelihood” (*ibid.*, p. 189).

The second chapter (12) on wind power in this section of the book is quite different in its social scientific and somewhat distanced language: Deshaies and Herrero-Luque (2015) examine developments in natural parks in

three countries – Spain, Germany and France. One might think this comparison would be relatively straightforward but difficulties arise with the level of decision-making powers vested in regional governments, which vary greatly between the countries. Further difficulties emerge with the timing of registration of the parks (some of which had wind power plants already established before their formation as parks), as well as their designation/level of significance with respect to the protected landscape.

Clearly, siting issues predominate in the discussion: wind power turbines are ‘OK’ if they are located away from the central most aesthetic parts of the parks, so when they are located in parks, they tend to be on the peripheries. The opposition voices tend to concentrate on the visual impacts of large turbines, especially those of more recent construction. Thus, ‘protected areas’ can be seen as reflections of relatively ‘immutable non-changing traditional landscapes of great cultural and natural value’, sometimes including the effects on wildlife and even the possible development of green tourism. Add the economic arguments (‘wind power profits go to those not resident in our area’) and we have many examples of strong opposition movements to wind power in these protected areas.

The general impression that one has from this analysis of the ‘wind power vs. protected areas’ debate is that it is extremely variable. Many examples are provided which appear to be almost contradictory to each other, as local factors result in a different resolution of the siting issues. Thus, an overall finding is that

(W)ind farms have been installed in natural parks in all of these countries. In France and Spain, this development has been restricted to small areas considered of low cultural and natural heritage value. In Germany, by contrast, some natural parks have a high concentration of wind farms, while others remain free of any wind power development (*ibid.*, p. 217).

The diversity of presence/absence of wind farms in natural parks is perhaps daunting if one wishes, as these authors do, to “analyse the relationship between natural park policy and wind power development in order to identify the causes of conflict and to determine the principal factors affecting the deployment of wind farms in protected landscapes” (*ibid.*, p. 218). Certainly, the various conflicts are well covered in this chapter, often substantiating the conclusions of Pasqualetti (2011) with respect to characteristic reasons for opposition. In general, one might be able to say that the natural parks have limited the development of wind farms on their territories but the variability in the phenomena of interest is such that broader conclusions cannot be made. This is unfortunate as one could easily define a research model in which the dependent variable would be ‘presence/absence’ (or even numbers) of a wind power facility in a natural park (which would be the ‘places’ or row entries/cases under examination), including a number of well-known independent variables for the parks (e.g. size, significance level, etc.), i.e. a logistic regression model. Given the acknowledged variability, such a model might not have a high level of explanatory power, but the effects of the various factors could be estimated, as well as the possible contextual effects of ‘nation’. Certainly, as approximate as it may be, it would be an improvement on the listings of distinct site differences offered by the authors. In brief, their account is interesting but it is not analytical and therefore does not really add to our general understanding of the issues.

The final chapter (11) to be discussed here is again quite different in both language and intent, as Perrotti (2015) examines the development of solar PV installations in the vicinity of a protected area in the hinterland of the town of Bari, in the Puglia (Apulia) region in southern Italy. The Alta Murgia National Park was established in 2004 and is itself located in a larger Site of Community Importance (SCI) and a Special Protection Area ("Murgia Alta" SPA), which was established in 1998 and is part of the Natura 2000 network of protected areas. In examining solar PV power development on agricultural lands both inside and outside of the boundaries of the protected area, Perrotti effectively establishes an interesting research design of 'cases within a case' based on the principle of extreme variation (my interpretation, not hers!).

As in several other chapters in this book, there is relatively full coverage of the various layers of governance, from national to regional to local, that are represented in the landscape of Alta Murgia, with a strong recognition of the linkages between the various levels. But the exposition goes beyond the usual accounts, working from the metaphor of the 'particularly worthy' landscapes of the protected area in comparison to the 'everyday' landscapes that lie at its borders. The distinctly different decision-making processes operating 'within' and 'without' the Park, are extremely well accounted for, serving to intensify in many ways the distinctions between the two types of landscapes. The political forces that reinforced the 'meaning' of a Rural Park stressed the 'natural' in the sense of the relations between the biophysical environment and its human utilization over time, i.e. an ideology that surpassed the usual nature conservation. In contrast, outside the park one witnessed the

development of solar PV power plants in "not particularly worthy" landscapes. This tendency is especially prominent in zones that are close to protected areas. In this context, unprotected areas have been considered as the opposite – or even the "negative" – of the conterminous protected areas, without consideration for the specific qualities inherent in these landscapes and their aesthetic and ecological values. These "other" spaces have been seen as merely not specially and not particularly worthy landscapes. For this reason, they have progressively become a sort of land reservoir for those activities that could not be established within in the protected areas (sic, *ibid.*, p. 196).

In fact, the 'land reservoir' was changed drastically as investors took advantage of the generous feed-in tariff system (as elsewhere) in converting the traditional agricultural landscape into a series of solar panel enclaves. In brief, the 'everyday landscape' of the Alta Murgia was transformed into a new energy landscape, more industrial in nature, hence distancing it even more from the 'worthy' ones inside the park boundaries. It is interesting, as the author notes, that such landscape changes appear to be in conflict with the supra-level directives of the European Landscape Convention, which is widely recognised for its acknowledgement of the qualities of 'everyday' landscapes.

Drawing largely from the work of Nadaï and Labussière (2013) in the sense of finding new ways to conceptualise (and actualise) the planning process for renewable energy installations, Perrotti acutely questions 'what type of landscape' should be subject to planning processes. In terms of the better established procedures for planning the siting of wind power plants, Perrotti highlights the distinctions

made by Nadaï and Labussière in terms of 'constraint' and 'positive' approaches to planning – that the difference "lies not in the absence of recourse to constraint maps in the second but rather in how they are introduced into the planning process" (*ibid.*, p. 196) – which can be interpreted as siting solar PV installations **with** the landscape rather than **into** or perhaps **on to** the landscape. A particularly valuable case is made for the Alta Murgia in terms of integrating the traditional stone walls, as at the historical site of Quite, into planning processes:

In the very different karstic landscape of the Alta Murgia region, it is more the *stasis* of geological time than the *kinesis* of the local living forces that could reactivate the heterogeneous network of relations between the local entities. The geomorphological features of the Alta Murgia landscape and the specific lithological character of its calcareous soil (and subsoil) have influenced the development of a site-specific typology of architecture and a typical spatial organization for the local rural settlements. Hence, it is on these transcalar and transtemporal entities (geology and lithology) that planners should focus to conceive new spatial configurations of the everyday energy landscapes in Alta Murgia (*ibid.*, p. 210).

In terms of the substantive contributions to our knowledge of the development of renewable energy landscapes from this book, Perrotti's contribution must occupy the first rank.

## 2.5 Landscape planning tools

The fifth and final part of this book comprises three case studies of the implementation of landscape planning and assessment tools, with examples drawn entirely from Spanish experiences.

In Chapter 13, Andrés-Ruiz, Iranzo-García and Espejo-Marín (2015) address the issues surrounding the development of solar thermoelectric power and its attendant landscapes. Unlike solar PV landscapes, the solar power stations have differential impacts on the landscape largely as a function of the technology used. Spain was one of the first countries to develop such technologies, starting in the late 1970s with the first facility for testing concentrated solar radiation – the Almería Solar Platform (PSA), supported by the International Energy Agency. Together with government-supported research and development in the Almería Solar Electric Power Plant, Spain was the first country to demonstrate the experimental proof of the technical feasibility of the technology.

The result has been the rapid expansion of this form of renewable energy in Spain, accounting for over 2% of the electricity consumed in the country. Solar thermoelectric landscapes have become quite common in the southern part of the country, as the technology requires high levels of annual sunshine. Legislative initiatives in favour of renewable energy aided in the rapid expansion, producing changed agricultural landscapes and also some conflicts, as the plants require large amounts of space as well as a secure supply of water. The visual impact on the landscape might appear to vary with respect to the technology used, but the authors contend that the character of the changed landscape

does not depend so much on the type of technology used as on whether or not the plant is installed in a self-contained geographical area, whether there is a succession of closely sited plants or whether it contributes to create a collective image. In order to define the different configurations of helio-landscapes,

three factors must be taken into consideration: the topographic characteristics of the area in which the plant is installed, the concentration factor and public perception (*ibid.*, p. 244).

Such ‘helio-landscapes’ (i.e. including solar PV installations) have also engendered conflicts related to flora and fauna disturbances, as well as the need to be near transmission lines, some of which had to be newly constructed.

There are many repeated lessons to be learned (again!) from the introduction of (yet) another new technology in the ‘industrialisation’ of traditional rural areas from this chapter. Although the report is primarily phrased in technical language, the authors do recognise the need “to implement territorial planning policies specific to this technology and to establish administrative procedures that include a real process of social participation in which local stakeholders are actively involved in the decision-making process (*ibid.*, p. 252). Nonetheless, the discussion is primarily inwardly focused to the case of Spain: for example, 15 of the 16 references are in the Spanish language.

In Chapter 14, Mérida-Rodríguez, Lobón-Martín and Perles-Roselló (2015) discuss solar PV developments in Spain in terms of the landscapes of Andalusia, stressing the need for a more integrated approach to the planning and installation of these facilities. The approach in this chapter seems to be more akin to landscape architecture than spatial planning, as a basic criticism that they level against developments to date is the lack of integration with extant landscapes. Indeed, they contend that “rapid proliferation of photovoltaic plants has made their effective control in territorial planning difficult” and “only protected areas have remained unaffected by this phenomenon, while the expansion in ordinary landscapes, by contrast, has occurred in a disorganised, uncontrolled way with no landscape management” (*ibid.*, p. 261), fully laying the blame for this not only on local administrations but also on the economic objectives of the proponents. Their case study of Andalusia is instructive in that the very rapid expansion of solar PV plants (now accounting for more than one-third of electricity generation) has affected a variety of landscapes and could therefore contain some important lessons more generally. In addition, the researchers examined landscape impacts themselves, as well as carrying out a survey of affected populations in four study sites.

For landscape evaluation, the research demonstrated that

there are five variables: location and site of the installations, density, overall design, design of the component parts and internal organisation of these components. These variables in turn give rise to three methodological phases: identification of the landscape features of photovoltaic plants, analysis of their impacts and proposals for landscape integration (*ibid.*, p. 256).

They demonstrate that the landscape impacts can be seen as ‘intrinsic’ (i.e. to the site) and ‘extrinsic’ in terms of the changes in visual conditions. Both types of impact are evaluated extensively by the researchers, in a series of detailed recommendations about the effects of size, density, alignments, etc. Importantly for their objectives, they note that many impacts could be ameliorated by better design and management. This conclusion appears to be validated by the public surveys, which found

an important imbalance between the positive public perception of the economic and productive benefits of photovoltaic plants and the negative perception of

their effects on the landscape. The perceived negative consequences on the landscape do not however prevent an overall positive rating. To some extent these negative consequences are considered an inherent part of energy development, and some interviewees even cited a widely held principle in rural communities, namely, the freedom of the owner to use the land for whatever purpose he/she deems fit (*ibid.*, p. 270).

It is interesting that the authors do not see this ‘imbalance’ as negative, since “seemingly contradictory opinions must be seen as an opportunity rather than as a problem: there is a positive opinion about the general nature of the installations that can be extended to their location and their outward appearance” (*ibid.*, p. 270). Hence, the call for better, more integrated designs that match the landscape as understood and lived by residents with the new facilities, i.e. planning with the landscape, echoing the desires of Perrotti described above.

This interesting chapter represents another departure from the ‘normal’ discourses in the renewable energy literature in its attention to landscape architectural details, and while some critics may downplay this approach as some sort of engineering ‘technological optimism’, there is an added element of public opinion to account for the suggested changes to planning processes. In addition, the chapter could well have more general appeal: more than one-half of its references are in the English language.

The final chapter (15) in the book is on the role of Geographical Information Systems (GIS) in the development of renewable energy systems, especially wind power (Díaz-Cuevas and Domínguez-Bravo, 2015). The authors are relatively ebullient in their support for GIS, extolling virtues that appear to be emphasised in the case of Spain’s endorsement of the techniques at most levels of governance. The description afforded to these techniques by the authors: “.. effective wind power planning must identify exclusion areas according to technical (network connection, wind energy potential, noise, etc.) and biological criteria (protection of bird and bat species) and then select suitable areas in terms of wind, infrastructure and landscape conditions” (*ibid.*, p. 280), appears to define what was called a ‘negative’ planning approach earlier by Perrotti. But the authors are more sanguine in their support for GIS, noting that multi-criteria evaluation techniques are also of equivalent value in siting decisions, and that

it is necessary to establish a referential conceptual framework for each of the renewable energies before GIS can be used **at each scale and for each territory**. This conceptual framework should establish the contents and criteria that must be taken into account in each location model built using GIS. These criteria must be defined by the authorities responsible for territorial and landscape quality, who must take the opinion of local stakeholders into account. In the case of landscapes, these criteria must not be limited to mere visibility analysis or the prohibition of renewable energy plants in scenic landscapes and must include public perception and participation, given that landscapes are dynamic and changing both in their configuration and their social requirements (*ibid.*, pp. 291–292, emphasis added).

Importantly and in addition to ‘internal’ considerations in the applications of GIS, they stress that any GIS approach must be reviewed in context: firstly, that the ELC has stipulated that any landscape is worthy of consideration, even the most

‘everyday’; and that results from the application of GIS (e.g. with respect to ‘viewshed’, for example) should be regarded as relatively limited compared to ‘real world’ perceptions.

The analysis reported by these authors is quite limited – overviews of the applications of GIS at various scales in Spain, albeit limited to rather methodological concerns. Even for the two areas in Andalusia with recorded applications – La Janda and Jerez de la Frontera – there is limited empirical evidence presented. At the same time, some intriguing implications for incorporating the public into decision-making processes using GIS are discussed, especially work on 3-D presentations of views under different scenarios. This aspect of participatory planning might have been developed further by the authors, for the benefit of non-Spanish speaking readers – only one-third of the references are in the English language.

To some extent, this chapter is similar to the other two in this final part of the book in that it relies on relatively technical language even though some nods to public participation are included. In short, reliance on technical expertise is still seen as the principal way to plan energy landscapes. Also, in comparison to the other chapters in the book, these are quite ‘internally oriented’, i.e. to the Spanish experience *per se*. There are relatively few of the concerns with multi-scalar issues seen in the rest of the book. The fact that there is no final chapter does not help, of course – but then, where would the editors have placed these three chapters? There is no doubt that technical inputs to renewable energy siting issues are important, but in reality they tend to be closer to the social impacts than what seems the case here.

### 3. In the guise of a summary

Given the broad expanse of both topics and approaches under consideration in this book, it is quite difficult to find some good summary conclusions. Let me try to do this by outlining and commenting on what the editors chose to present as their ‘Challenges Ahead’ in their first chapter, to bring this essay to some interim closure.

Several challenges are outlined by the editors. Frolova, Prados and Nadaï (2015, p. 20) assert that renewable energy landscapes are ‘here to stay’ in that they “have become an essential element of the scenery of southern Europe today and should be treated as such. Protecting all emblematic landscapes from all forms of renewable energy development is not possible, nor is it a necessary or legitimate goal.” They also contend that landscape protection in general terms should evolve, presumably in its legislation and implementation, to take renewable energy into account. In brief, there are some direct policy implications that could be drawn from the various case studies.

There are also challenges concerning the ways in which renewable energy installations ‘fit’ into the landscape. Drawing on the historical account of hydropower development (Chapter 8), it is clear that those structures and the landscapes they have created are regarded as heritage landscapes today because of “their multi-scalar embedding in the pre-existing local landscapes” (*ibid.*, p. 20). The comparison is then drawn to current energy landscapes where the embedding is directed from higher levels using economic market-driven rationales, rather than respecting public interest and local economic development. Taking this argument one step further, they feel that there is evidence from several of the case studies

“that that there are variables – such as scalar integration or benefit sharing – that could be acted upon in order to improve the ways in which renewable energy projects could be integrated into future energy landscapes” (*ibid.*). It is not clear to this reviewer exactly how this might be done, although they do mention “possible ways of addressing the material aspects of renewable energy devices (size, colour, display) and their siting, which in turn requires a broader reconsideration of the often nationally based practices of landscape protection” (*ibid.*) – presumably referring to the more landscape architectural approach seen in Chapter 14 and the solar PV installations in Spain (Chapter 4).

I believe that the notion of scalar integration is in fact more broadly significant for their research, in the sense that many of the case studies reveal a lack of such integration as the various levels of governance do not speak to each other effectively. One major indication of this is the centralised nature of landscape protection in many of the countries, often predicated on traditional visual aspects of landscape rather than the relational human factors that create the landscape. Add to ‘centralised’, ‘sectoral’, and we have a compounding effect whereby economic and agricultural policies are organised vertically, supported by the dominant socio-technical planning apparatus which is also top-down and emanating from ‘the centre’. Clearly from the work by Labussière and Nadaï (2015, Chapter 5) these ‘Paris and the French desert’ effects are found in many of the countries under scrutiny here. Even the relatively decentralised system in Spain does not help in resolving this situation as one repeats the syndrome at lower levels in the governance hierarchy.

Many critical theorists would argue that if the problem is due to governance issues, then research should be oriented to changing the system. The editors make a similar suggestion:

These findings suggest the need to open the governance of landscape protection. Landscape should be integrated into territorial planning of energy as a transversal element, rather than having a separate sector-based policy, as happens in several countries. Landscape should not be considered as a fixed immutable domain that must be protected from all change. It should rather be approached as a social process, a realm that evolves within a framework of justice and democracy, in order to promote the integration of renewable energy projects as part of local territory (*ibid.*, p. 21).

There could be some important changes at a local level if these ideas saw fruition, as is evidenced in some of the Spanish case studies and perhaps most strongly in the single Portuguese study (Chapter 10), where a revitalised communitarian structure resulted from proposed changes to local landscapes. In fact, there is a very important aspect to nearly all of these accounts of locality responses to proposed change – the appeal to values, cultural values, heritage values, social values, landscape values ... perhaps indicative of the strength of residents’ identities, rooted in their lives, families, histories and their landscapes. Supporting change ‘from the ground up’ would appear to be a reasonable motif for future energy landscape research. Clearly, here is a call for more participatory forms of research, perhaps participatory action research endeavours, working with local groups to counter the pervasive powers from ‘the centre’.

Apart from these important political factors that emerge (in my reading) from the research reported in this book, there is a very strong epistemological challenge identified by the editors:

Some of the authors contributing to this book address an even more radical challenge, by calling for a reappraisal of the dominant engineering approach to energy that treats it as a quantifiable output, capacity and commodity. Such technoeconomic notions and language separate energy from its flux, dynamics and relational dimension. The stories of the different renewable energy projects and planning experiences presented in this book point to differences in the materiality and in the relationality of renewable energies. Another concept of energy may allow for a better appraisal of this relational dimension and of the varying ways in which renewable energy projects may cohabit with existing land uses or displace them (*ibid.*, p. 21).

This is perhaps the greatest challenge for energy landscape research in the future, but given political economic realities, is such a change – another concept of energy – likely? What would such a challenge look like for the residents of potentially affected localities? Perhaps it is a further call for the critical involvement of geographers in landscape research, re-orienting our efforts to changing the current inequalities of power in local renewable energy developments affecting landscapes. If so, it is, in my view, the most important ‘value added’ aspect of this excellent contribution to the research literatures on energy landscapes.

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