



**EKINS, P., BRADSHAW, M. J. &
WATSON, J. (EDS.).**

**“GLOBAL ENERGY: ISSUES,
POTENTIALS, AND POLICY
IMPLICATIONS”**

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This book is the result of several years of work at both the Energy Research Center of the United Kingdom (UKERC, <http://www.ukerc.ac.uk/>) and converging research programs on global energy trends that make up the global energy scenario. In this context, the authors identify the most relevant issues and patterns in the supply and demand of global energy. In this framework, the subtitle “Issues, Potentials, and Policy Implications” fits correctly. In this regard, the book responds

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to the principles and the purposes of the respectable and well-organized UKERC program.

The editors have deep experience on issues about the geopolitical economy of global energy. Paul Ekins, Professor of Resources and Environmental Policy and Co-Director at University College London (UKERC), has published widely on hydrogen energy and Environmental tax reform. Michael Bradshaw, of copious expertise, is currently Professor of Global Energy at Warwick Business School and has devoted himself especially to studies on Russia and the United Kingdom. Finally, Jim Watson, who has copious knowledge about energy and development, innovation systems for clean energy and energy systems, is Director of the UKERC and an Associate with SPRU research director at UKERC.

The editors convened fifty experts involved with energy issues from different institutions, which means that the book is organized as a collection of articles of diverse provenances. This broad gathering reveals the complexity of the global energy scenario and the need to apprehend it from multiple professional views and disciplinary perspectives. The book provides elements of judgment to assess the consistency of national energy policies and public-private initiatives against key issues such as energy security, efficiency, environmental challenges, accessibility, energy prices, technological innovations, sustainability, etc. and ponders them in relation to the orientations of agreements, organizations and specialized international regimes.

Considering its formal structure, the book starts with a general Introduction and follows with three wide sections. The Introduction presents conceptual problems with clarity, developing issues about contemporary civilization in its current stage of development from the perspective of the available energy resources; universal access to modern energy services; and finally, the always-controversial issue of energy prices from traditional sources and their speed, fluctuations, rise, etc.

Another aspect of growing importance discussed is the dynamics of relative prices of alternative energies.

The first section grants an enlightening map of the world's energy territories and provides a conceptual framework for the discussion of subsequent chapters. In addition, it presents a set of approaches for the analysis of sustainable energy systems and innovation. It includes the main issues of the agenda: globalization in relation to the development of economies and trade policy; energy production; problems of access to energy and changes in demand from a technological point of view; and the international climate change regime, just to name a few.

A second section, the most extensive one, is about options and choices around global energy. These section's articles are more specific. For example, Katryn Janda et al., propose traditional and alternative approaches to energy efficiency in building constructions. They suggest a comprehensive perspective of technological, social and policy formulation aspects to optimize and reduce energy demand from homes and buildings. Other chapters in the same section address the main topics around development and perspectives of various primary energy sources and energy carriers as well as their sectorial markets: fossil fuel, unconventional fossil fuels, gas markets, nuclear power (particularly after Fukushima), bioenergy resources, solar energy, water (ocean energy and hydro), wind power, network infrastructures and electricity markets.

Finally, the third section deals with future perspectives of global energy. It only covers three chapters, each of which shows the development of different scenarios about the following issues: reduction of greenhouse gas emissions; energy related to impacts on ecosystems; and a final section that synthesizes conclusions and policies in relation to energy governance and the formulation of policies around these issues in the near future.

Starting with the books' pros, from a panoramic point of view, the most remarkable theoretical characteristic about the book is the application of the "whole

systems approach". Meanwhile, from a practical perspective, the work was designed to be consulted not only by academics but also by policy makers and citizens with low energy literacy level. This broad purpose leads to the theme of governance as a great theoretical and practical issue (page 539). One of the most relevant chapters in this line of analysis and suggestions is found in chapter 26, "Policies and conclusions" written by Paul Ekins.

Consequently, it arises the key idea that governance (global, regional, national, local) is an imperative (p. 539, chap. 26) and is accomplished through regulation of markets, technical preferences, diplomacy, etc. In addition, all actors have to be involved in this subject (page 538): "policymakers, and then the businesses and citizens who both influence them and are affected by the policies they implement, have little choice but to engage with these issues". The issues are global, but the direct incidence on citizens cannot be ignored - by either costs or prices (page 120).

The work as a whole excellently contextualizes current affairs in the realm of energy, all of them considered in the framework of the energy trilemma. Chapters include an illustrative and useful series of graphs and tables. In addition, the general orientation of the book towards the understanding of the near and medium term future is the first extremely useful contribution, identified. Particularly, according to the book although some features of these scenarios are clear, there are still great uncertainties about how these issues will evolve and how the responses will be to them.

Another positive point about the book is that it discusses the transition from the "old industrial societies" (developed or developing), and a future that will have to be different. Although the most interesting part is only at the end (page 555, chapter 26). The centrality of the topics of climate change and decarbonization of the economy are remarkable. Therefore, the main question posed is not the availability of hydrocarbons (arduously discussed in the last 50 years, but now with the certainty

that there is much and for many years), but how to their utilization could be balanced with a sustainable development.

Afterwards, the authors discuss the problem of regulation of energy markets, prices and competitiveness, in a milieu in which many resources are moving from regional to global markets. Until now only oil had a world market. Now, a new boundless market for natural gas is starting to gain a foothold (sustained by the diffusion of Liquefied Natural Gas). Likewise, the book raises very hot topics with global reach, such as urbanization and new services (even in geopolitical terms: are they public or private services? Is it because they cross borders, such as through groundbreaking virtual environments, such as Google, Facebook, etc.?)

Another element worth to highlight about the book is the idea that governments must perform assertive policies. Without them, they are at the mercy of decisions taken in other spheres. As affirmed in page 9: "Given the unique role that energy plays, policymakers have neither wanted, nor have they been able, to play a detached role in energy markets; and again, in page 538:

"While having 'no policy' may be a theoretical policy option, it would certainly lead to an undesirable and perhaps a chaotic social outcome."

Nevertheless, below it is discussed some weaknesses found in the general approach. The consideration of critical infrastructures, or the risks associated with the operation thereof. The fact that systems present vulnerabilities due to climate change is present. However, there is no mention whatsoever about physical and cybernetic systems vulnerable to intentional attacks, wars, natural disasters, etc. Moreover, issues such as that of "smartness" (page 27) or the importance of smart grids (page 431) are hardly mentioned. The same happens with changes in local markets (i.e. at the retail level) and new services that may change local energy governance and its connections with national / regional levels.

Another remarkable gap is investment in infrastructure (both nationally and globally), though there are some details about innovation. In short, although it is recognized as an important issue (pages 4; 27; 37; and 500), perhaps it is not developed with the needed depth. However, there are some very clear statements about this issue, for instance in the 21st chapter, written by Paul E. Dodds and Birgit Fais. More precisely, from page 426 onwards (Network infrastructure and energy storage for low-carbon energy systems). In the outstanding chapter 23, written by Catherine Mitchell, it is discussed the regulation of markets, which is a critical aspect of energy infrastructure, although it is not focused on investments, especially those in the long term.

Another shortcoming identified is the limited use of concepts coming from the social sciences, such as governance, energy poverty, etc. For instance, the concept of energy transition is seldom mentioned. On the other hand, the book does not covers energy justice while energy poverty only appears in a reference (although Françoise Bartiaux is a specialist in the field). Vulnerability appears only in relation to climate change, but not with respect to energy.

Conjointly, the academic level of the concluding text is the result of an assemblage of factors: the research projects, the professional experience of the participants and the commitment of the institutions involved. Logically, for a book of this kind, although having a broad scope, it does not cover entirely all the energy problems neither deepens in every issue. For instance, the geopolitical analysis provided in chapter 15 mostly deals with subjects belonging to same area: natural gas markets, infrastructure, etc. Therewithal, there is nothing accounting potential electrical interconnections (Europe, Africa, the Middle East); the evolution of oil geopolitics (with the exploitation of shale oil in United States and Argentina; tar sands in Canada, with the consequences of falling prices); or the situation of nuclear technologies led by China.

Having considered the book's contributions and few minor pitfalls, this compilation greatly fulfills its objectives. Moreover, the work is a decisive

contribution to the field of energy studies, particularly covering the interaction between local, national and international levels and the way that energy related-issues embeds in such frameworks. The analysis of different cases exemplifies such phenomena, which results in variegated and rich illustrations about analyzed issues.