



BOOK REVIEW

Book

Transition to Sustainable Energy Technologies: Pathways, Sources, Mobility

Carlo Villante, Sonia Dell'Aversano and Stefano Ranieri

2025 Taylor and Francis, ISBN: 9781003631125

Reviewer

Mirela Panait , Petroleum-Gas University, Romania

mirela.matei@upg-ploiesti.ro

Cite as: Panait M 2025. Transition to Sustainable Energy Technologies: Pathways, Sources, Mobility by Carlo Villante, Sonia Dell'Aversano and Stefano Ranieri. Journal of the Academy of Business and Emerging Markets, 5(2), 41–42. <https://www.abem.ca/JABEM-2025-V5N2-book-review.pdf>

(c) Copyrights with the reviewer. This Open Access article is distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/) 

.....

The energy transition is an essential process for the future of modern society, having significant importance from several perspectives: The main goal of the energy transition is to drastically reduce the use of fossil fuels (oil, gas, coal) responsible for carbon dioxide emissions and climate change. The adoption of renewable energy sources (solar, wind, hydro, nuclear) is considered the sine qua non condition for limiting global warming and protecting ecosystems. Diversifying energy sources and reducing dependence on fossil fuel imports increase the resilience of national and regional energy systems. Thus, countries become less vulnerable to external shocks, price fluctuations, or geopolitical conflicts. The energy transition aims to ensure that energy is not only clean but also accessible to all consumers. The costs of solar and wind energy have fallen significantly in the last decade, and the energy produced in this way is, in many cases, cheaper than that generated from conventional sources, even without subsidies. The transition must simultaneously respond to three requirements: sustainability, accessibility (reasonable prices), and security (stable and reliable supply). Maintaining the balance between these objectives is difficult because renewable technologies are intermittent, and infrastructure requires massive investments and time to develop. The energy transition involves restructuring industries and creating new jobs in green sectors but also challenges for regions dependent on fossil fuels. A transition that is too fast or poorly managed can generate significant social and economic costs. The need to develop solutions for energy storage, grid efficiency, and the integration of variable sources stimulates technological progress and can bring long-term benefits to the entire economy. In conclusion, the importance of the energy transition lies in its ability to ensure a cleaner, safer, and more equitable energy future, reducing environmental impact and strengthening energy security and independence, provided that the process is managed in a balanced and realistic manner.

In this context, we would like to point out the appearance of a remarkable book, *Transition to Sustainable Energy Technologies: Pathways, Sources, Mobility* by authors Carlo Villante, Sonia Dell'Aversano, and Stefano Ranieri, published in 2025 by Taylor & Francis. The book is structured into three sections, each of which can be read independently. In the first part, *Energy Transition: History, Issues, Policies and Pathways, KETs*, the authors trace the development of global energy systems and examine the pressing challenges associated with reliance on fossil fuels. Key topics presented in this part include energy security, resource exhaustion, and the impacts of climate change. The section aims to build a

thorough understanding of why and how energy systems must transition toward sustainability, emphasizing the integration of renewable resources and the importance of policy-driven decarbonization efforts.

Part II Sustainable Energy Sources: Characteristics, Key Conversion Technologies focuses on renewable energy; this section provides an in-depth analysis of sources such as solar, wind, hydro, geothermal, and biomass. It discusses the technological features of each source, their potential to benefit the environment, and the practical challenges of incorporating them into existing energy infrastructures. The central goal is to demonstrate how renewables can supplant fossil-based systems while maintaining both long-term sustainability and economic viability.

Part III, Sustainable Mobility: Sector Evolution, Propulsion Systems, the final section, addresses the transformation of the transportation sector, a significant source of global greenhouse gas emissions. It explores a range of solutions, from traditional approaches to advanced innovations like electric vehicles, fuel cell technologies, and Mobility-as-a-Service (MaaS) platforms. The section is motivated by the need to reduce air pollution and greenhouse gas emissions, advocating for alternative propulsion systems that can underpin a more sustainable future.

In conclusion, despite the existence of numerous books that focus on the topic of energy transition, this one stands out for examining fossil fuel dependence and analyzing the local and global impacts of internal combustion engines while offering alternatives through vehicle electrification and the use of sustainable fuels. Key technologies for converting energy sources such as solar, wind, and hydro are also discussed, alongside advanced concepts such as e-fuels and mobility-as-a-service (MaaS) systems, providing a holistic vision of a sustainable energy future.

The book underlines the urgency of the transition to sustainable energy technologies, highlighting the central role of electrification of transport, development of renewable sources, and efficient management of emissions. The Kaya identity provides an analytical framework for understanding and addressing the complexity of climate change, while technical details on electric vehicles, Li-ion batteries, and renewable sources provide insight into practical solutions. The challenges related to the energy density of batteries and the local impacts of wind turbines highlight the need for a balanced and well-planned approach to the global energy transition.

Reviewer



Dr Mirela Panait (OrcID 0000-0002-5158-753X) is Professor at Faculty of Economic Sciences, Petroleum-Gas University of Ploiesti, Romania. She has significant experience in teaching courses, conducting seminars and research activities, and participating at scientific conferences. She has published seven books and over 100 scientific papers in the areas of foreign investment, capital market, corporate social responsibility and sustainable development. Dr Panait can be contacted at mirela.matei@upg-ploiesti.ro