BOOK REVIEW

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THE PHYSICS OF STOCKS AND FLOWS OF ENERGY SYSTEMS
(Applications in Energy Policy)

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INTRODUCTION


THE REVIEW

As highlighted by the author this book is implicitly structured in three parts:

1. The introduction to the subject of “modeling for energy policy,” its importance and complexity, and stock and flow perspective (i.e., system dynamics approach) as a "solution" modeling approach (Chaps. 1 and 2).

2. The physics of stocks and flows and how it deals with the complexity of energy systems (Chaps. 3 through 5).

3. The physics of stocks and flows in action; the applications of system dynamics models developed for dealing with various energy policy issues, thereby, helps to drive critical lessons to be learned (Chaps. 6 and 7).

So, initially, fundamental accumulation processes -stocks and flows- covering the demand and supply sectors of energy systems that are common to the majority of energy policy related issues are identified and described.
Then it is given the physics of these identified stocks and flows of energy systems, applying the system dynamics approach, through examples of some system dynamics simulation models.

Standing on this modeling methodology, three cases,

(i) the dynamics of green power in Ontario, Canada,

(ii) socioeconomic and environmental implications of the energy policy of Pakistan, and

(iii) the dynamic of the electricity generation capacity of Canada, are analyzed and discussed.

In the end of the book, for dealing with complex, dynamic energy policy issues, a step-by-step model based on the stock and flow perspective is presented.

The result is a very interesting and useful book that allows the reader to gain an enhanced understanding of the stocks and flows of complex systems as well as their role in energy policy, as projected by the author. This is done through relatively small text, as intended in SpringerBriefs in Complexity Series, very dense in knowledge, in which the author scientific communicator qualities are exuberantly patentable. Indeed, the text is very well written and without giving any ease of scientific kind, is accessible to large audiences.

It is important to highlight that the author is a recognized expert in system dynamics approach and here shows the ability to creatively use it in the stocks and flows of energy analysis. The three case studies presented are remarkable examples of this ability and also the step-by-step model based on the stock and flow perspective presented in the end of the book for dealing with complex, dynamic energy policy issues. Note the author’s concern to point out that “energy systems are essentially sociotechnical systems”

With all these qualities and is also not least the fact that the text is not too long, make this book an indispensable manual, very useful, to deal with complex, dynamic energy policy issues.

On the other hand, the scientific quality, educational care and solid construction to text, from bottom to top, make this book appropriate to support the teaching of subjects in Masters and PhD courses in this area.

In a word: a marvelous book, proportionating a wonderful reading, useful for managers and practitioners, teachers, researchers, and students of design and assessment of policy making for complex, dynamic energy systems. Accessible to any reader interested in these issues.