

Efficiency And Sustainability In The Energy And Chemical Industries Scientific Principles And Case Studies Second Edition Green Chemistry And Chemical Engineering

This thesis serves as a rebuttal of the ongoing constitutionalization debate within established legal scholarship and normatively argues that sustainability should guide the future structure of the international legal system. The constitutionalization process requires a paradigm to structure, orient, and govern the system as well as a fundamental supposition to guide comprehensive policy design within that system. I will contend that a sufficient paradigm for the constitutionalization of the international legal system is premised on a fundamental supposition which manifests five essential characteristics: functionality as a core foundation or operating principle; normativity; generation of consistency among the social practices of actors within the system; unity within the system's universal sphere of validity; and legitimacy which enables effectiveness of the legal system. Those who advocate constitutionalization within the WTO's existing paradigm of managerialism fail to recognize the critical flaws that hinder its functionality within an international legal context; foremost being its reliance on trade efficiency as a fundamental supposition, and its failure to protect human rights and environmental values. Drawing on scholarly literature from international law and environmental policy, this thesis will argue why trade efficiency is an inadequate fundamental supposition and it will advance sustainability as a better operating principle to structure the rights-based constitutionalization of the international legal system.

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The book focuses on efficiency analysis in enterprises and describes a broader supply-chain context to support improved sustainability. The research and its outcomes presented here provide theoretical and empirical studies on efficiency analysis in the supply chain, including operational, economic, environmental and social aspects. This book sheds new light on the efficiency-assessment framework for practitioners and includes essential tips on how to improve the sustainability of supply-chains operations.

A central asset of eco-efficiency analysis is that it does not depend on a specific evaluation of environmental impacts against economic effects. Several evaluation methods may be used, including those based on willingness-to-pay, panel procedures, and public statements on policy goals. This volume covers all aspects of eco-efficiency analysis and offers a global perspective on the subject.

This book focuses on software sustainability, regarded in terms of how software is or can be developed while taking into consideration environmental, social, and economic dimensions. The sixteen chapters cover various related issues ranging from technical aspects like energy-efficient programming techniques, formal proposals related to energy efficiency measurement, patterns to build energy-efficient software, the role of developers on energy efficient software systems and tools for detecting and refactoring code smells/energy bugs; to human aspects like its impact on software sustainability or the adaptation of ACM/IEEE guidelines for student and professional education and; and an economics-driven architectural evaluation for sustainability. Also aspects as the elements of governance and management that organizations should consider when implementing, assessing and improving Green IT or the relationship between software sustainability and the Corporate Social Responsibility of

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software companies are included. The chapters are complemented by usage scenarios and experience reports on several domains as cloud applications, agile development or e-Health, among others. As a whole, the chapters provide a complete overview of the various issues related to sustainable software development. The target readership for this book includes CxOs, (e.g. Chief Information Officers, Chief Executive Officers, Chief Technology Officers, etc.) software developers, software managers, auditors, business owners, and quality professionals. It is also intended for students of software engineering and information systems, and software researchers who want to know the state of the art regarding software sustainability.

In this book Gregor Weber deals with enterprises and the pool of challenges including energy efficiency and sustainability they are confronted with. His research results in a two level model supporting enterprises on innovative and responsible business practices. It was awarded with the “Project Sustainability 2017” by the Council of Sustainable Development of the German government as well as with the “German Industry Award 2017”. ?

For a hotel to survive, it must consistently perform at its most fluid efficiency. Inefficient performance means waste in the use of hotel inputs. Such waste is detrimental in maintaining low operating expenses that sustain the survival of a hotel in the industry. This paper aims to determine the sources of efficiency and sustainability performance of 10 De Luxe Class Hotels in Metro Manila, Philippines accredited by the Department of Tourism. The research covered a period of ten years from 2005-2014. The efficiency and productivity of the sample were assessed using slack-based and Malmquist productivity index models of the Data Envelopment Analysis (DEA). The results indicate that an average De Luxe Class Hotel is

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productive and cost efficient. However, old technology caused the downtrend in revenue. It also hinted decreasing returns to scale. Slacks revealed that an average deluxe hotel should reduce excesses in operating expenses, capital expenditure, employees and rooms to catch up with Pan Pacific Hotel Manila. Regression analysis proved that the De Luxe Class Hotels were operating at decreasing return to scale. It also revealed that older hotels were not as efficient as younger hotels. Although not statistically significant, operation of large hotels is not as efficient as their smaller counterparts. Overall, the De Luxe Class Hotels' operation is not sustainable in the long run.

Translating fundamental principles of irreversible thermodynamics into day-to-day engineering concepts, this reference provides the tools to accurately measure process efficiency and sustainability in the power and chemical industries-helping engineers to recognize why losses occur and how they can be reduced utilizing familiar thermodynamic principles. Compares the present industrial society with an emerging metabolic society in which mass production and consumption are in closer harmony with the natural environment. The first book to utilize classic thermodynamic principles for clear understanding, analysis, and optimization of work flows, environmental resources, and driving forces in the chemical and power industries.

Clean Energy for Sustainable Development: Comparisons and Contrasts of New Approaches presents information on the fundamental challenge that the energy sector faces with regard to meeting the ever growing demand for sustainable, efficient, and cleaner energy. The book compares recent developments in the field of energy technology, clean and low emission energy, and energy efficiency and environmental sustainability for industry and academia.

Rasul, Azad and Sharma, along with their team of expert contributors, provide high-end

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research findings on relevant industry themes, including clean and sustainable energy sources and technologies, renewable energy technologies and their applications, biomass and biofuels for sustainable environment, energy system and efficiency improvement, solar thermal applications, and the environmental impacts of sustainable energy systems. This book uses global institutes and case studies to explore and analyze technological advancements alongside practical applications. This approach helps readers to develop and affirm a better understanding of the relevant concepts and solutions necessary to achieve clean energy and sustainable development in both medium and large-scale industries. Compares in-depth research on a wide range of clean technologies, from global institutes in Australia, Europe, and India Evaluates the recent developments in clean technologies against the efficiency of tried and tested applications Considers case studies on the advancements of sustainable energy into industry from around the world

This book develops and analyzes dynamic decision models (DDM) with one trajectorial objective according to the methodology of multi-criteria decision making (MCDM). Moreover, DDMs which concomitantly pursue multiple objectives are analyzed, with special emphasis given to hybrid models with scalar and trajectorial objectives as well as models with multiple trajectorial objectives. Introducing the method of distance maximization crucially augments MCDM and proves to be invaluable for DDMs with nonexistent utopia trajectory or with sustainability as objective. The notions of efficiency and sustainability are formally developed and counterposed by means of the construct of trajectorial objective, which is presented here, along with its implications, as a natural advance upon the classical scalar objective.

This book is among the first to address the issue of assessing the efficiency of sustainable

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development financing from a theoretical and methodical point of view. The innovative nature of research is expressed through the study of new phenomena in finance including sustainable financial systems, sustainable finance, ESG risk and individual and institutional motivations of financial managers in the sustainability concept. The book aims to draw attention to the significant gap in the existing research. The concept of Sustainable Development, if placed in an economic category, requires a lot of attention, but seeing the cognitive category from the perspective of the discipline of finance, the latter is unsatisfactory, with questions remaining unanswered. At the same time, the rank problem, its strategic dimension and the amount of financial resources allocated and disbursed for the purposes of focusing around sustainable development, identification of financial phenomena accompanying this category is seen as a priority. Most measures financing Sustainable Development and measures of public spending efficiency are measures subject to rigor and rules due to their specificity, which means actions aimed at increasing efficiency are treated as a priority. This book will be of interest to leading representatives of academia, practitioners, executives, officials, and graduate students in economics, finance, management, statistics, law and political sciences.

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In a previous volume (ICT-Energy-Concepts Towards Zero-Power ICT; referenced below as Vol. 1), we addressed some of the fundamentals related to bridging the gap between the amount of energy required to operate portable/mobile ICT systems and the amount of energy available from ambient

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sources. The only viable solution appears to be to attack the gap from both sides, i.e. to reduce the amount of energy dissipated during computation and to improve the efficiency in energy-harvesting technologies. In this book, we build on those concepts and continue the discussion on energy efficiency and sustainability by addressing the minimisation of energy consumption at different levels across the ICT system stack, from hardware to software, as well as discussing energy consumption issues in high-performance computing (HPC), data centres and communication in sensor networks. This book was realised thanks to the contribution of the project 'Coordinating Research Efforts of the ICT-Energy Community' funded from the European Union under the Future and Emerging Technologies (FET) area of the Seventh Framework Programme for Research and Technological Development (grant agreement n. 611004).

This book challenges conventional wisdom by showing how, in some circumstances, improved energy efficiency may increase energy consumption. Relying upon energy efficiency to reduce carbon emissions could therefore be misguided. This book explores the broader implications for climate change and sustainable consumption.

North-East Asian economies face the serious challenge of sustaining the economic and social progress it has achieved without overdrawing its natural

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capital beyond their restorative capacity or does not become sinks for the residuals produced. This publication covered discussions on an alternative to the current path of development: a choice, by which governments, private sector and civil society as whole can make and collectively take actions.

Translating fundamental principles of irreversible thermodynamics into day-to-day engineering concepts, this reference provides the tools to accurately measure process efficiency and sustainability in the power and chemical industries-helping engineers to recognize why losses occur and how they can be reduced utilizing familiar thermodynamic princi

This book provides essential information on and case studies in the fields of energy technology, clean energy, energy efficiency, sustainability and the environment relevant to academics, researchers, practicing engineers, technologists and students. The individual chapters present cutting-edge research on key issues and recent developments in thermo-fluid processes, including but not limited to: energy technologies in process industries, applications of thermo-fluid processes in mining industries, applications of electrostatic precipitators in thermal power plants, biofuels, energy efficiency in building systems, etc. Helping readers develop an intuitive understanding of the relevant concepts in and solutions for achieving sustainability in medium and

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large-scale industries, the book offers a valuable resource for undergraduate, honors and postgraduate research students in the field of thermo-fluid engineering.

Fifty years after the famous essay “The Problem of Social Cost” (1960) by the Nobel laureate Ronald Coase, Law and Economics seems to have become the lingua franca of American jurisprudence, and although its influence on European jurisprudence is only moderate by comparison, it has also gained popularity in Europe. A highly influential publication of a different nature was the Brundtland Report (1987), which extended the concept of sustainability from forestry to the whole of the economy and society. According to this report, development is sustainable when it “meets the needs of the present without compromising the ability of future generations to meet their own needs”. A key requirement of sustainable development is justice to future generations. It is still a matter of fact that the law as well as the theories of justice are generally restricted to the resolution of conflicts between contemporaries and between people living in the same country. This in turn raises a number of questions: what is the philosophical justification for intergenerational justice? What bearing does sustainability have on the efficiency principle? How do we put a policy of sustainability into practice, and what is the role of the law in doing so? The present volume is devoted to

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these questions. In Part One, “Law and Economics”, the role of economic analysis and efficiency in law is examined more closely. Part Two, “Law and Sustainability”, engages with the themes of sustainable development and justice to future generations. Finally, Part Three, “Law, Economics and Sustainability”, addresses the interrelationships between the different aspects.

Traditional Chinese edition of Prosperity Without Growth: Economics for a Finite Planet. The book addresses the most important economic premise, that continued prosperity and growth in a finite world is unsustainable. So where do we go from here? Tim Jackson is Sustainable Development Commission's Economics Commissioner and Professor of Sustainable Development at the University of Surrey. In Chinese. Distributed by Tsai Fong Books, Inc.

This book presents a research study on methodology and tools for the realisation of product service systems for consumer products to facilitate the efficient energy use, enhanced service & maintenance, and environmental sustainability. The innovative aspect of methodology is the incorporation of product life cycle data acquisition, supported with information and communication technologies (e.g. software agent, information system) to enable enhanced product features. The benefits include information that encourages better use of products to reduce energy consumption, decreased downtime from enhanced service and

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maintenance, and waste minimisation via support for reuse and recycling. The research study can open new horizons for product design which are sustainable, energy efficient and environmentally sensitive. It can also contribute to the wider exploration of eco-design and development of next generation consumer products (e.g. smart home appliances).

Industrial energy efficiency has been recognized as a major contributor, in the broader set of industrial resources, to improved sustainability and circular economy. Nevertheless, the uptake of energy efficiency measures and practices is still quite low, due to the existence of several barriers. Research has broadly discussed them, together with their drivers. More recently, many researchers have highlighted the existence of several benefits, beyond mere energy savings, stemming from the adoption of such measures, for several stakeholders involved in the value chain of energy efficiency solutions. Nevertheless, a deep understanding of the relationships between the use of the energy resource and other resources in industry, together with the most important factors for the uptake of such measures—also in light of the implications on the industrial operations—is still lacking. However, such understanding could further stimulate the adoption of solutions for improved industrial energy efficiency and sustainability.

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In *On Environmental Governance*, Oran R. Young examines a variety of efforts to meet the challenge of governing human interaction with the environment in the interest of sustainability. At the same time, he considers measures to minimize restrictions on human actors in using their natural resources. Young looks at issues including climate change, biodiversity, deforestation, greenhouse gas emissions, and carbon cycle disruption in exploring impacts from the local to the global. The book draws on general ideas about the nature of governance while exploring new models for governing human-environment relations.

A critical aspect of sustainability associated with water and wastewater systems is to maintain and manage infrastructure in the most efficient and economical manner while complying with environmental regulations and keeping rates at acceptable levels. Given the high cost of fuel, our growing population, and the associated increase in energy needs, it is important to address energy use and future energy availability for the treatment of the water we drink and the water we pollute. *Water & Wastewater Infrastructure: Energy Efficiency and Sustainability* addresses these issues, detailing the processes that can assist facilities to become more energy efficient and providing guidance to ensure their sustainability. The text begins with brief descriptions of the water and wastewater treatment industries. It then describes some of the basics of energy and discusses what planning for a sustainable energy future in water and wastewater treatment plants entails. The author explores energy-saving options and

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provides case studies to demonstrate how some facilities have used equipment, technology, and operating strategies to save money and reduce their impact. The energy-efficient technologies include combined heat and power (CHP), gas turbines, microturbines, reciprocating engines, steam turbines, and fuel cells. The author also addresses biomass power and biogas. The section on sustainability and renewable energy covers hydropower, solar power, and wind power as well as energy conservation measures for treating wastewater. Nine appendices provide individual case studies that present evaluations of energy conservation measures, results, payback analysis, and conclusions. This book addresses the challenges faced by water and wastewater treatment facilities by examining how they can operate in ways that provide economic and environmental benefits, save money, reduce environmental impact, and lead to sustainability.

This book addresses key issues across the field of sustainable urban planning, and provides a unique reference tool for planners, engineers, architects, public administrators, and other experts. The evolution of cities and communities is giving rise to pressing energy and environmental problems that demand concrete solutions. In this context, urban planning is inevitably a complex activity that requires a sound analytical interpretation of ongoing developments, multidisciplinary analysis of the available tools and technologies, appropriate political management, and the ability to monitor progress objectively in order to verify the effectiveness of the policies implemented. This book is

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exceptional in both the breadth of its coverage and its focus on the interactions between different elements. Individual sections focus on strategies and tools for green planning, energy efficiency and sustainability in city planning, sustainable mobility, rating systems, and the smart city approach to improving urban-scale sustainability. The authors draw on their extensive practical experience to provide operational content supplementing the theoretical and methodological elements covered in the text, and each section features informative case studies.

The conventional “grow first, clean up later” approaches to economic growth are increasingly placing the futures of regional economies and societies at risk. The forward-thinking policymaker is tasked to promote development based on eco-efficient economic growth and at the same time, record more inclusive gains in human welfare and socio-economic progress. In order to assist policymakers in responding to such challenges, ESCAP’s “Greening of economic growth” series provides quick access to easy-to-read guidance to specific policy tools.

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