



# FOOD versus FUEL



An Informed  
Introduction to Biofuels

Edited by **Frank Rosillo-Calle** and **Francis X. Johnson**



# Food Versus Fuel An Informed Introduction To Biofuels

**Márcia Azanha Ferraz Dias de  
Moraes, David Zilberman**



## **Food Versus Fuel An Informed Introduction To Biofuels:**

*Food versus Fuel* Frank Rosillo-Calle, Francis Johnson, 2013-04-04 *Food versus Fuel* presents a high level introduction to the science and economics behind a well worn debate that will debunk myths and provide quality facts and figures for academics and practitioners in development studies environment studies and agricultural studies Compiled by an internationally renowned scientist and authority and to include perspectives from pro and anti biofuels experts and activists from the North and South the aim of this book is to bring a balanced approach to the current debate on the major issues affecting the development of biofuels in a concise and clear manner in order to provide an informed nuanced but accessible introduction grounded in science and economics rather than conjecture and controversy

**Food Versus Fuel** Francisco Rosillo-Calle, Francis X. Johnson, About the editors List of tables List of figures List of abbreviations About the contributors Introduction 1 Food versus Fuel Setting the Scene 2 Why We Should Not Be Using Biofuels 3 Why Biofuels are Important 4 Agriculture and Land Use Issues 5 The Role of Biofuels in Promoting Rural Development 6 Biofuels and Climate Change 7 Future Trends in Biomass Resources for Food and Fuel 8 Food versus Fuel Concluding Remarks Index

**Enhancing financiers' accountability for the social and environmental impacts of biofuels** Jan Willem van Gelder, Denise Kouwenhoven, 2011-06-10 This report summarises 20 case studies on investments in the production of biofuel and the feedstocks used for biofuel palm oil soybeans sugarcane and jatropha in forest rich countries in Africa Asia and Latin America The investments were financed by private entrepreneurs public financing and private financial institutions A large number of private financial institutions such as banks asset managers and pension funds were investing most of which are located outside the country where the investment took place Dozens of public financial institutions many of which are foreign play a significant role Since the availability of finance is a crucial precondition for the further growth of the biofuel sector these actors could play an important role in leveraging more sustainability in the sector However our findings suggest that most investors are not yet effectively addressing key environmental and social sustainability challenges either because they lack sustainability policies or because their policies are of insufficient quality Realising the potential influence of investors on minimising the negative social and environmental costs associated with feedstock expansion and biofuel production requires improved dissemination of high quality governance instruments Whilst private and public investors could develop and adopt better policies voluntarily we also discuss regulatory options available to governments in production and consumption countries These options could motivate or assist private financial institutions in developing and applying sound responsible financing policies

**Ethanol** Angelo Basile, Adolfo Iulianelli, Francesco Dalena, T. Nejat Veziroglu, 2018-08-28 *Ethanol Science and Engineering* reviews the most significant research findings in both ethanol production and utilization The book's contents are divided into four parts beginning with an explanation of the chemical reactions involved during the conversion of ethanol to more complex molecules Other sections focus on various processes and their potential use the modelling of

various chemical processes and finally their economic and environmental impact The book includes the most advanced production processes new technologies applications and the economic role ethanol plays today The book will be great for researchers and engineers in both academic and industry The idea of using ethanol as a fuel is one of the most promising options in the arena of alternative fuels because of it versatile use as an intermediate for producing hydrogen via reforming reactions direct fuel cells feed and or its production from biomass which is also considered a sustainable feedstock Reviews ethanol production methods from biomass Discusses the potential of ethanol as a viable future fuel Includes hydrogen production methods using ethanol in catalytic reforming processes Outlines the various technologies based on ethanol Includes ethanol powered fuel cells

**Advances in Bioenergy** Peter D. Lund, John A. Byrne, Goeran Berndes, Iacovos Vasalos, 2015-12-07 The increasing deployment of bioenergy frequently raises issues regarding the use of land and raw materials infrastructure and logistics In light of these sometimes conflicting interests Advances in Bioenergy provides an objective and wide ranging overview of the technology economics and policy of bioenergy Offering an authoritative multidisciplinary summary of the opportunities and challenges associated with bioenergy utilization with international researchers give up to date and detailed information on key issues for biomass production and conversion to energy Key features Discusses different bioenergy uses such as transportation fuels electricity and heat production Assesses emerging fields such as bio based chemicals and bio refineries Debates conditions for the mobilization of sustainable bioenergy supply chains and outlines governance systems to support this mobilization Dedicated chapters to sustainability governance and emerging tools such as certification systems and standards supporting growth of a sustainable bioenergy industry Considers the political environmental social and cultural context related to the demand for energy resources the impact of this demand on the world around us and the choices and behaviours of consumers This book will be a vital reference to engineers researchers and students that need an accessible overview of the bioenergy area It will also be of high value for politicians policymakers and industry leaders that need to stay up to date with the state of the art science and technology in this area

**Fact and Fiction in Global Energy Policy** Benjamin K. Sovacool, Marilyn A. Brown, Scott V. Valentine, 2016-04-29 A balanced examination of global energy issues Energy sustainability and climate change are two of the greatest challenges facing humankind Unraveling these complex and interconnected issues demands careful and objective assessment Fact and Fiction in Global Energy Policy aims to change the prevailing discourse by examining fifteen core energy questions from a variety of perspectives demonstrating how for each of them no clear cut answer exists Is industry the chief energy villain Can we sustainably feed and fuel the planet at the same time Is nuclear energy worth the risk Should geoengineering be outlawed Touching on pollution climate mitigation and adaptation energy efficiency government intervention and energy security the authors explore interrelated concepts of law philosophy ethics technology economics psychology sociology and public policy This book offers a much needed critical appraisal of the central energy technology and policy dilemmas of our time and the

impact of these on multiple stakeholders      **Encyclopedia of Transportation** Mark Garrett, 2014-08-13 Viewing transportation through the lens of current social economic and policy aspects this four volume reference work explores the topic of transportation across multiple disciplines within the social sciences and related areas including geography public policy business and economics The book's articles all written by experts in the field seek to answer such questions as What has been the legacy not just economically but politically and socially as well of President Eisenhower's modern interstate highway system in America With that system and the infrastructure that supports it now in a state of decline and decay what is the best path for the future at a time of enormous fiscal constraints Should California politicians plunge ahead with plans for a high speed rail that every expert says despite the allure will go largely unused and will never pay back the massive investment while at this very moment potholes go unfilled all across the state What path is best for emerging countries to keep pace with dramatic economic growth for their part What are the social and financial costs of gridlock in our cities Features Approximately 675 signed articles authored by prominent scholars are arranged in A to Z fashion and conclude with Further Readings and cross references A Chronology helps readers put individual events into historical context a Reader's Guide organizes entries by broad topical or thematic areas a detailed index helps users quickly locate entries of most immediate interest and a Resource Guide provides a list of journals books and associations and their websites While articles were written to avoid jargon as much as possible a Glossary provides quick definitions of technical terms To ensure full well rounded coverage of the field the General Editor with expertise in urban planning public policy and the environment worked alongside a Consulting Editor with a background in Civil Engineering The index Reader's Guide and cross references combine for thorough search and browse capabilities in the electronic edition Available in both print and electronic formats Encyclopedia of Transportation is an ideal reference for libraries and those who want to explore the issues that surround transportation in the United States and around the world      *Global Sustainability as a Business Imperative* J. Stoner, 2011-01-18 This first volume in the series addresses the pressing need to align business practices with the requirements of a sustainable world Delivering new models for conducting business implications of undertaking new approaches and ways businesses are transforming and being transformed by their environments      Sustainable Bioeconomy Development in the Global South Matthew Chidozie Ogwu, Sylvester Chibueze Izah, Humberto Merritt, Raul Delgado Wise, Attachai Jintrawet, 2025-01-30 This book provides background knowledge on sustainable bioeconomy development in the Global South and documents its status It promotes pertinent understanding for the sustainable creation of new value chains within the sector especially in terms of bioenergy and biomaterials as well as the definition of priority areas and supportive framework by local national regional and international agencies and consortiums This book covers the state of affairs of innovative bio based products from agriculture forestry biotechnology medicine pharmaceuticals food and feed construction materials bioenergy paper and pulp industrial goods and environmental management It also presents narrative

based reviews of bio based raw materials processing processes products and services that showcase the status of bioeconomy development in the Global South This book is a reference for trainees and trainers bioeconomy practitioners and activists students civil private and public employees and employers academics researchers environmentalists ecologists social scientists agricultural scientists economists governmental and non governmental organization biodiversity experts policymakers conservationists and industries interested in promoting sustainable bioeconomy development in the Global South *Future Energy* Trevor Letcher, 2013-11-12 As the demand for global energy increases fact based evaluations of alternative energy sources are needed in order to address the growing interest in how energy is produced provided and transported in sustainable ways *Future Energy* Second Edition provides scientists and decision makers with the knowledge they need to understand the relative importance and magnitude of various energy production methods in order to make the energy decisions needed for sustaining development and dealing with climate change The second edition of *Future Energy* looks at the present energy situation and extrapolates to future scenarios related to global warming and the increase of carbon dioxide and other greenhouse gases in the atmosphere This thoroughly revised and updated edition contains over 30 chapters on all aspects of future energy each chapter updated and expanded by expert scientists and engineers in their respective fields providing an unbiased and balanced view of the future of energy Provides readers with an up to date overview of available energy options both traditional and renewable as well as the necessary tools to make informed decisions regarding selection use and environmental impacts Covers a wide spectrum of future energy resources presented in a single book with chapters written by experts of the particular field Eleven new chapters including chapters on solar heating energy resources in developing nations and frontiers in oil and gas Arctic drilling and unconventional oil and gas sources thorium in nuclear fission ethanol and other options for future transport fuel fracking smart grids new batteries environmental issues and the energy options for China Transformations in EU biofuels markets under the Renewable Energy Directive and the implications for land use, trade and forests Johnson, F.X., Pacini, H., Smeets, E., 2013-05-31

Sugarcane Bioenergy for Sustainable Development Luis A. B. Cortez, Manoel Regis L. V. Leal, Luiz A. Horta Nogueira, 2018-10-25 In recent years there has been a rapid expansion of the growing of crops for use in bioenergy production rather than for food This has been particularly the case for sugarcane in Latin America and Africa This book examines the further potential in the context of the food versus fuel debate and as a strategy for sustainable development Detailed case studies of two countries Colombia and Mozambique are presented These address the key issues such as the balance between food security and energy security rural and land development policies and feasibility and production models for expanding bioenergy The authors then assess these issues in the context of broader sustainable development strategies including implications for economics employment generation and the environment The book will be of great interest to researchers and professionals in energy and agricultural development Environment and Society in Ethiopia Girma

Kebbede,2016-10-04 Ethiopia is facing environmental and poverty challenges and urgently needs effective management of its environmental resources Much of the Ethiopian landscape has been significantly altered and reshaped by centuries of human activities and three quarters of the rural population is living on degraded land Over the past two decades the country has seen rapid economic and population growth and unparalleled land use change This book explores the challenges of sustaining the resource base while fuelling the economy and providing for a growing population that is greatly dependent on natural resources for income and livelihoods Adopting a political ecology perspective this book comprehensively examines human impacts on the environment in Ethiopia defining the environment both in terms of the quantity and quality of renewable and non renewable natural resources With high levels of economic production and consumption also come unintended side effects waste discharges emissions of pollutants and industrial effluents These pollutants can degrade the quality of water air land and forests as well as harm the health of people animals and other living organisms if untreated or disposed of improperly This book demonstrates how the relationship between society and environment is inherently and delicately interwoven providing an account of Ethiopia s current environment and natural resource base and future considerations for environmentally sustainable development The Biomass Assessment Handbook Frank

Rosillo-Calle,Peter de Groot,Sarah L. Hemstock,Jeremy Woods,2015-06-05 The increasing importance of biomass as a renewable energy source has led to an acute need for reliable and detailed information on its assessment consumption and supply Responding to this need and overcoming the lack of standardised measurement and accounting procedures this best selling handbook provides the reader with the skills to understand the biomass resource base the tools to assess the resource and explores the pros and cons of exploitation This new edition has been fully updated and revised with new chapters on sustainability methodologies Topics covered include assessment methods for woody and herbaceous biomass biomass supply and consumption land use change remote sensing techniques food security sustainability and certification as well as vital policy issues The book includes international case studies on techniques from measuring tree volume to transporting biomass which help to illustrate step by step methods Technical appendices offer a glossary of terms energy units and other valuable resource data Bioenergy sustainability in the global South: Constraints and opportunities Brady, M.A.,Sharma, S.,Baral, H.,Nasi, R.,2023-04-30

**Mechanism Design for Sustainability** Zongwei Luo,2013-03-12 This book provides advanced analytics and decision management techniques and tools for developing sustainable competitive advantages in the studied target context In order to achieve sustainable economy the capacity to endure it is essential to understand and study the mechanisms for interactions and impact from and among these perspectives **Creating Sustainable Bioeconomies** Ivar Virgin,E. Jane Morris,2016-08-25 The growing global demand for food feed and bio based renewable material is changing the conditions for agricultural production worldwide At the same time revolutionary achievements in the field of biosciences are contributing to a transition whereby bio based alternatives for energy and materials are becoming more competitive Creating

Sustainable Bioeconomies explores the prospects for biosciences and how its innovation has the potential to help countries in the North Europe and the South Africa to move towards resource efficient agriculture and sustainable bioeconomies Throughout the book the situations of Europe and Sub Saharan Africa will be compared and contrasted and opportunities for mutual learning and collaboration are explored The chapters have been written by high profile authors and deal with a wide range of issues affecting the development of bioeconomies on both continents This book compares and contrasts the situations of these two regions as they endeavour to develop knowledge based bioeconomies This volume is suitable for those who are interested in ecological economics development economics and environmental economics It also provides action plans assisting policy makers in both areas to support the transition to knowledge based and sustainable bioeconomies

**Biofuels and the Globalization of Risk** James Smith, 2010-11-11 Biofuels and the Globalization of Risk offers a fresh compelling analysis of the politics and policies behind the biofuels story with its technological optimism and often idealized promises for the future This essential new critique argues that investment in biofuels may reconfigure risk and responsibility whereby the global South is encouraged to invest its future in growing biofuel crops often at the expense of food in order that the global North may continue its unsustainable energy consumption unabated and guilt free Thus Smith argues biofuels may constitute the biggest change in North South relationships since colonialism Routledge Handbook of Environmental

Displacement and Migration Robert McLeman, François Gemenne, 2018-03-09 The last twenty years have seen a rapid increase in scholarly activity and publications dedicated to environmental migration and displacement and the field has now reached a point in terms of profile complexity and sheer volume of reporting that a general review and assessment of existing knowledge and future research priorities is warranted So far such a product does not exist The Routledge Handbook of Environmental Displacement and Migration provides a state of the science review of research on how environmental variability and change influence current and future global migration patterns and in some instances trigger large scale population displacements Drawing together contributions from leading researchers in the field this compendium will become a go to guide for established and newly interested scholars for government and policymaking entities and for students and their instructors It explains theoretical conceptual and empirical developments that have been made in recent years describes their origins and connections to broader topics including migration research development studies and international public policy and law and highlights emerging areas where new and or additional research and reflection are warranted The structure and the nature of the book allow the reader to quickly find a concise review relevant to conducting research or developing policy on particular topics and to obtain a broad reliable survey of what is presently known about the subject

Production of Ethanol from Sugarcane in Brazil Márcia Azanha Ferraz Dias de Moraes, David Zilberman, 2014-03-31 The success of Brazil in the large scale production and use of fuel ethanol has been widely discussed and analyzed by other countries interested in adopting policies designed to encourage the use of biofuels Within this context certain questions arise



Could the Brazilian experience be replicated in other countries? What were the conditions that enabled the creation of the Brazilian Proalcool National Ethanol Program and what lessons can be learned? To examine these issues it is important to understand the functioning of the key interconnected markets: those for sugarcane, sugar and ethanol, which from their inception were the objects of extensive government intervention until 1999. Two main conditions enabled the creation of Proalcool: robust production of sugarcane and sugar tightly regulated by the government, which applied the numerous regulations then in place; and the military regime that was in place at the time, whose decision making and enforcement powers were quite broad, facilitating the carrying out of the necessary actions as well as making it easier to coordinate the activities of the various stakeholders and sectors involved. This book increases understanding of the functioning of the sugarcane supply chain in Brazil, not only during the phase of government intervention but also in recent years in the free market environment. The lessons, positive and negative, gleaned from the Brazilian experience can contribute to reflection on and the development of alternative modalities of biofuel production in other countries, making the book of interest to scholars and policy makers concerned with biofuel and renewable resources as well as economic development.

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