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Nota di contenuto	1. Biofuels as emerging and sustainable alternatives to fossil fuels: Environmental, Energetic and Economic perspectives -- 2. Life cycle assessment (LCA) of biofuel production from lignocellulosic biomass -- 3. Impact of biofuels on the environment, biodiversity, agriculture and water resources: potential solutions -- 4. Extremophilic microorganisms and their metabolic remodulation to explore unconventional cell factories for sustainable biofuel and bioenergy production -- 5. Inspiration from natural biomass utilization system for a sustainable lignocellulosic refinery -- 6. Bioengineering the rumen microbiota as an advanced biocatalyst for renewable fuels -- 7. Termite-based biorefinery as an innovative model for biohydrogen and biomethane production -- 8. Biomimics of the insect gut for advanced design of lignocellulosic biorefinery -- 9. Technological interventions to bioengineer extremophilic microorganisms for biofuel and bioenergy

productions -- 10. Global Policies and Perspectives of Biofuels and Bioenergy: Efforts to Combat Climate Change -- 11. Economics and policies of the developed nations for the promotion of lignocellulosic biofuels and bioenergy -- 12. Assessing the Market and Policies for Biofuels/Bioenergy across Asian Countries -- 13. Role Of Machine Learning And Artificial Intelligence In Biofueld And Bioenergy -- 14. Application of computational and in-silico strategies for sustainable future biofuels and bioenergy -- 15. Fourth Generation Biofuels: Genetic Engineering for Sustainable Energy.

Sommario/riassunto

This book offers a comprehensive exploration of recent trends in lignocellulosic biofuels, focusing on advancements and sustainability assessments. Edited by leading experts, it provides an in-depth analysis of biofuel production from lignocellulosic biomass, highlighting the latest technological innovations and their environmental impacts. The chapters cover a range of critical topics, including the life cycle assessment of biofuels, the socio-economic implications of bioenergy, and the integration of artificial intelligence in biofuel production. The chapters delve into the environmental, energetic, and economic perspectives of biofuels as sustainable alternatives to fossil fuels. Readers will gain insights into the challenges and solutions for biofuel production, including the role of machine learning and global policy frameworks. This volume is essential for researchers, professionals, and students in the biofuels sector. It offers valuable perspectives on the future of bioenergy, making it a must-read for anyone interested in sustainable energy solutions. Whether you're a policymaker, academic, or industry professional, this book provides the knowledge and tools needed to navigate the evolving landscape of biofuels and bioenergy.