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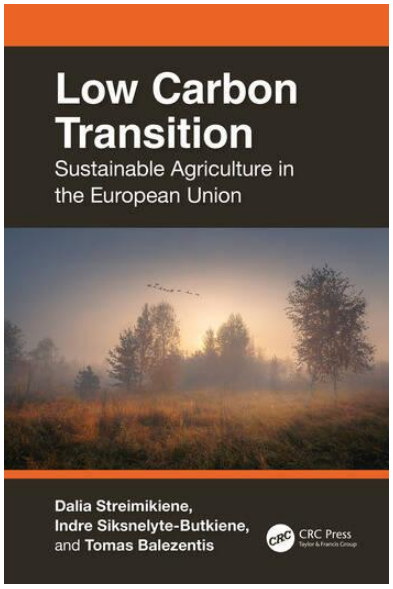
Book Review

Reviewed book: Dalia STREIMIKIENE, Indre SIKSNELYTE-BUTKIENE, Tomas BALEZENTIS (2024), *Low Carbon Transition: Sustainable Agriculture in the European Union*, CRC Press, 320 p.

Reviewer: Dr. Justas Streimikis, Kauno kolegija Higher Education Institution

JEL classification: Q01, Q56, Q58



Authors:	Dalia STREIMIKIENE, Indre SIKSNELYTE-BUTKIENE, Tomas BALEZENTIS
Authors' Affiliation:	Vilnius University, Lithuanian Centre for Social Sciences
Title:	**LOW CARBON TRANSITION: SUSTAINABLE AGRICULTURE IN THE EUROPEAN UNION**
Subtitle:	Monograph
Year:	2024
Publisher:	CRC Press
Volume:	320 pages
Type of publication:	book
Language:	English
ISBN:	9781032607900

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The transition to a low-carbon economy is a pressing global challenge, and within this broader context, agriculture plays a crucial role in ensuring sustainability and reducing greenhouse gas (GHG) emissions. In *Low Carbon Transition: Sustainable Agriculture in the European Union*, the authors provide a comprehensive analysis of the intersection between agriculture, sustainability, and climate policies in the European Union (EU). The book presents both theoretical and empirical insights into the decarbonization of the agricultural sector, assessing the implications of climate policies, technological advancements, and economic considerations.

The authors claim that an integrated approach which includes policy change, adoption of renewable energy, and transformation of business models is crucial to achieving a sustainable and resilient agricultural sector. This book is comprehensive on topics such as the European Green Deal, the Farm to Fork Strategy, circular economy, and multicriteria decision making (MCDM) models for evaluating sustainability in agriculture. This book merges policies and their implementations in an effort to provide

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operational solutions to agricultural problems, thus making a bridge between the impractical sustainability frameworks and the real agriculture issues.

1. Theoretical Foundations and Policy Frameworks

The author's analysis of the policy frameworks that govern the low-carbon transition is very thorough which is one of the book's strongest features. They scrutinize international agreements like the Paris Agreement and the EU Green Deal and their impacts on agriculture policy. The attention given to the Farm to Fork Strategy highlights the necessity of a sustainable food system, which enables agriculture to play a crucial role in achieving climate neutrality targets.

The authors examine the impediments to low-carbon policy implementation in agriculture, which include budgetary issues, lack of political will, and poor infrastructure. The authors analyze the responses by various EU member states and provide their conclusions regarding the role of public intervention in the green transition, which is very important to consider. The talk also covers the degree of implementation in various EU countries, which illustrates the difficulties of national policy alignment with the EU policy goals.

2. Greenhouse Gas Emissions and Energy Use in Agriculture

The conversation around emissions of GHG in agriculture is meaningful because the industry contributes a lot towards global emissions. The authors study emission patterns over the years, from 1990 to 2022, looking at the role of livestock, fertilizer, and land use change over time. Special focus is devoted to the two gases which have the largest share of emission from agriculture: methane (CH4) and nitrous oxide (N2O). The book highlights the need for agricultural emissions monitoring to be much more rigorous, noting the importance of modern technologies for tracking emissions.

Agriculture’s energy use is also discussed, particularly the processes through which fossil fuel materials can be transformed into renewable energy sources, such as bioenergy, wind, and solar energy. The authors convincingly show that greater reliance on renewables in farming can lead to lower emissions and greater energy independence. This part also gives successful examples of some EU countries that have advanced in the use of renewable energy in agriculture.

3. Sustainable Agriculture and Circular Economy

One major aspect the authors delve deeply into is the sustainable agriculture model within the context of the circular economy. The authors investigate climate-smart agriculture, agroecological practices, and the possible biomass energy production in farming. The book offers a comprehensive framework for evaluating sustainability in farming by integrating sustainability indicators, such as soil and water resources and biodiversity, with low-carbon transition policies.

The segment about the circular economy is very thought-provoking concerning how agricultural residues can be transformed into bioenergy, fertilizers, and other bioproducts. This serves to strengthen the argument that moving towards low-carbon agriculture is essential from a climate perspective but can concurrently enhance farmers' profitability. The authors analyze the prospects of implementing circular economy propositions and estimate the cost implications of the conventional farming system vis-a-vis the low-carbon farming system.

4. The Role of Agricultural Business and Green Initiatives

The book dedicates a chapter to the role of agribusiness in the low-carbon transition. The authors analyze corporate social responsibility (CSR) in agriculture which includes a number of green business initiatives

and activities. Issues and solutions revolving carbon farming, organic agriculture, and sustainability in food supply chains are given ample attention.

One of the most impressive aspects of this section is the use of actual case studies from different member states of the EU. These examples provide the most effective policies and triumphs, which serve great purposes for politicians and business magnates together. The role of financial incentives, such as carbon credits and green subsidies, is also discussed in detail, providing a nuanced perspective on the economic feasibility of sustainable agricultural transformations.

5. Assessing the Success of Low-Carbon Policies in Agriculture

In the last chapter, the authors analyze the implementation of low carbon policies in agriculture using Multi-Criteria Decision Making (MCDM) tools. An evaluative analysis of several EU member countries is made in which the results of their most productive efforts are examined. The use of MCDM brings together environmentally friendly policies along with their economic and social counterparts, thereby giving comprehensive coverage on the identified issues and offering real solutions that can be adopted to frame policies.

This approach increases the accuracy of the book's analysis by offering a method for evaluating the economic, social, and environmental consequences of decarbonization efforts. Because the book incorporates quantitative measures, it enables policymakers to systematically assess policy impacts and refine decision-making processes. Additionally, this chapter identifies shortcomings in existing EU policies and suggests how they can be improved.

Conclusion and Final Assessment

The monograph 'Low Carbon Transition: Sustainable Agriculture in the European Union' is written at the opportune moment because it offers a critical evaluation of climate change challenges in the agricultural sector. The author’s interdisciplinary blend of policy study, economic evaluation, and sustainability science makes the book relevant to scholars and practitioners in agricultural sustainability and policy.

The book’s major contributions lie in its detailed policy review, empirical analysis of emissions trends, and emphasis on renewable energy adoption. These are further complimented by the real-life case studies which make the book more practical. On the other hand, it would have been more balanced had there been sufficient discussion of the socio-economic realities of the small farmers at the lower end of the carbon economy. Moreover, the book would also benefit from further consideration of how external global crises, like geopolitical wars and economic recessions, influence agricultural sustainability.

This book is important as it fills a gap in the intersectional approach to climate change policy and sustainable agriculture by providing useful theoretical and practical guidance towards a low carbon agriculture in the European Union.

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SANTRAUKA

Monografijoje *Perėjimas prie mažo anglies dioksido kiekio technologijų: Tvarus žemės ūkis Europos Sąjungoje* analizuojami iššūkiai ir galimybės kuriant mažo anglies dioksido kiekio žemės ūkio sistemą Europos Sąjungoje. Autoriai – Dalia Štreimikienė, Indrė Šikšnytė-Butkienė ir Tomas Balezentis – analizuoja klimato kaitos politikos poveikį žemės ūkiui, nagrinėja atsinaujinančiųjų energijos išteklių diegimo perspektyvas ir vertina ekonomines bei socialines mažo anglies dioksido kiekio technologijų perėjimo strategijos pasekmes.

Pirmoje knygos dalyje pateikiama išsami tarptautinių ir ES politikos priemonių, įtraukiant Paryžiaus susitarimą ir Europos žaliąjį kursą, analizė, pabrėžiama jų įtaka žemės ūkio sektoriui. Autoriai aptaria kliūtis, trukdančias pereiti prie mažo anglies dioksido kiekio technologijų, ir siūlo sprendimus, pavyzdžiui, tvaraus verslo modelių diegimą ir finansines paskatas ūkininkams.

Antroje dalyje nagrinėjamas šiltnamio efektą sukeliančių dujų (ŠESD) išmetimas ES žemės ūkyje, daugiausia dėmesio skiriama metano ir azoto oksido šaltiniams. Knygoje aptariamos atsinaujinančiosios energijos alternatyvos, įtraukiant biomasės, vėjo ir saulės energijos integravimą į žemės ūkį, pateikiami sėkmingi įvairių ES valstybių narių pavyzdžiai.

Trečioje knygos dalyje daugiausia dėmesio skiriama tvariam žemės ūkiui ir žiedinės ekonomikos principams. Autoriai pabrėžia dirvožemio kokybės, vandens išteklių apsaugos ir biologinės įvairovės išsaugojimo svarbą vykdant mažai anglies dioksido į aplinką išskiriantį ūkininkavimą. Taip pat analizuojamos alternatyvios praktikos, tokios kaip agroekologija ir klimato kaitai atsparus ūkininkavimas.

Ketvirtame skyriuje nagrinėjamas žemės ūkio verslo vaidmuo pereinant prie mažo anglies dioksido kiekio technologijų ekonomikos. Jame nagrinėjama įmonių socialinė atsakomybė, ekologinių ūkių plėtra ir tvarios tiekimo grandinės. Autoriai pateikia įvairių ES šalių pavyzdžių, iliustruojančių sėkmingas strategijas ir jų įgyvendinimo iššūkius.

Galiausiai knygoje taikomi daugiakriteriai sprendimų priėmimo (MCDM) metodai, skirti mažo anglies dioksido kiekio technologijų politikos veiksmingumui įvertinti. Ši metodika leidžia nuosekliai analizuoti ekonominius, socialinius ir aplinkosaugos veiksnius, padeda priimti pagrįstus sprendimus dėl žemės ūkio ateities.

Apibendrinant galima teigti, kad ši monografija yra reikšmingas indėlis į tvaraus žemės ūkio ir klimato politikos sritį. Joje pateikiamos ir teorinės įžvalgos, ir praktiniai sprendimai, kaip pertvarkyti žemės ūkio sektorių mažo anglies dioksido kiekio technologijų ekonomikos kontekste. Nors knygoje išsamiai nagrinėjami politiniai ir technologiniai aspektai, daugiau dėmesio galėtų būti skiriama socialiniams ir ekonominiams iššūkiams, su kuriais susiduria smulkieji ūkininkai, taip pat pasaulinių krizių poveikiui žemės ūkio tvarumui.

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