

Conference Topic: Renewable Energies and Sustainable Development

**SUPPLY CHAIN MANAGEMENT OF BIOMASS FOR ENERGY
GENERATION: A CRITICAL ANALYSIS OF MAIN TRENDS**

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ABSTRACT

1. Introduction

In recent decades, interest in Supply Chain Management has grown significantly. The importance of this is related to the impact on business competitiveness. The aforementioned topic has already been debated on several aspects, however, when applied specifically on the use of biomass for power generation, studies are substantially reduced. In this context, the main objective of this article is to size, through bibliometric research, the quantity, quality and thematic diversity of studies on Supply Chain Management for biomass energy generation over the last two decades. The study carried out a bibliometric examination using the software VOSviewer and SciMat, as well as an analysis of period ranges of publications using the Web of Science database, aiming to establish the quantitative and main results of the supply chain research in the field of bioenergy, given the observed development of this area in recent years.

2. Literature overview

The main topics of the review addressed the transition from fossil to renewable energies, focusing on the complexity brought about by the Supply Chain management process. Complexity deriving from the large diversity of existing biomass energy sources (agricultural, forest, urban and animal waste); Great geographic dispersion of these sources; Low energy density of the material to be transported, which requires the improvement of supply chain management in order to adapt it to an uncertain environment and subject to both local and interregional conditions and constraints; the conditions of

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the existing infrastructure and the technical-economic-institutional environments. In this way, researches about the treatment levels of the bioenergetic supply chain was demonstrated, besides contributions that considered the factors of strategic influence of the supply network. Geographical discrepancies, as well as mathematical optimization problems have also been revived, showing, new research in the area.

3. Method

To conduct the research reported here, the Web of Science - Clarivate Analytics database of Thompson Reuters, hereinafter referred to as Web of Science, was chosen as the data source. The field label used was "Topic" (TS), which selects words in the article title, abstract, and keywords. The Boolean "AND" was chosen because of its specificity, since it limited the specific area of interest, avoiding that other words could bias the research. Only articles in English were researched, given the innovative nature of this type of document, as well as its greater ease of disclosure due to the adopted language. Two tools were used in the analysis. (a) VOSviewer: for the construction and visualization of bibliometric maps; and b) SciMAT: which allows the construction of scientific maps, as well as a better visualization of evolution within a scientific area.

4. Major findings/Results

The results of the management of the Biomass Supply Chain for Energy Generation are broad and multidisciplinary. The studies on the management of the biomass energy supply chain have been carried out by groups of researchers from the United States, England and Italy, so that it occupies a prominent place in the world energy matrix. In order to do so, a concern was expressed about the ability of the chain to self-provide, without interruption, biomass for energy generation. The studies also dealt with environmental issues, especially in the period 2013 - 2018, studying the criteria of sustainability for solid biomass, reverse logistics and sustainable supply chain design, respectively.

Other topics such as Economy and Waters were also discussed. Investigations into the economic costs of energy-related logistics processes and performed economic analysis for alternative biomass supply. Efficient water consumption was studied, becoming a growing concern in later researches.

5. Conclusion

The bibliometric study showed that the theme is relevant globally. However, continental countries, which theoretically would have the greatest interest, as well as greater difficulties in managing supply chains, in particular, energy chains, such as Brazil, India, Russia and China, have not yet been addressed, at least, from the point of view of scientific research, to this bottleneck.

Future research should involve managing the supply chain of energy biomass with sustainability issues, new technologies for conversion, storage and heat conservation. It is also recommended to use other databases to search, such as Scopus and Google Scholar, which include citations from sources other than the web of Science.

Keywords: Supply Chain Management; Energy; Biomass; Bibliometric Research.