energies

MDPI

Editorial

Bioresource Technology for Bioenergy: Development and Trends

Lyes Bennamoun

Department of Mechanical Engineering, University of New Brunswick, Fredericton, NB E3B 5A3, Canada; lyes.bennamoun@gmail.com

In 2020, the World Bioenergy Association published an interesting report about the global development of using biomass and bioenergy along with statistics and trends [1]. The report mentioned that still 81% of supplied energy comes from fossil fuels and just 13.8% comes from renewable energy sources. The report also shows that in 2019, Africa and the Americas produced 36% and 37%, respectively, of the global wood fuel production which reached 1.9 billion m^3. The study shows the importance of finding different sources of biomass, and a particular attention is given to wastes coming from agriculture. Following these guidelines, a Special Issue to be published by Energies (MDPI) was proposed. The idea behind this proposal was to assemble fundamental research linked to the biomass, bioenergy, and bioresource technology with industry through scale-up procedures, supply chain management, and life cycle assessment. The different axes proposed in the Special Issue were:

- Technology development.
- Fundamentals and resources.
- Modeling and simulation.
- Supply chain management and life cycle assessment.
- Greenhouse gas emission, environment, and climate change.
- Biomass and added value products.

Accordingly, we received nine submissions, seven of which were accepted, one of which was rejected, and one of which was withdrawn. Five research studies and two reviews were then published.

The classification of the received studies is as follows:

One research paper dealt with biomass and added value products. It can be classified in fundamentals and resources as well [2]. In this publication, producing pellets from woody and agricultural biomass was investigated. The authors also proposed a simulation of the behavior of the pellets during storage (cited five times according to Crossref, Scopus, and Web of Science).

One review can be classified in supply chain management and life cycle assessment. In this review, the authors presented the different machine learning methods that can be used to estimate the life cycle of biofuels [3] (cited one time according to Crossref, Scopus, and Web of Science).

The other review deals with the GIS technique that can be used for the estimation of bioenergy coming from agriculture residues [4]. This publication can be classified in modeling and simulation (cited three times in Scopus and Crosseref).

Three publications can be classified in the technology development field. One publication exposed the fuel properties of torrefied biomass, pyrolyzed under different conditions [5]. The authors of another publication investigated the performances of different combustion chambers for the production of gas using redgram stalk [6]. The third publication dealt with the anaerobic digestion of liquid cow manure and whey from cheese (cited two times in Crossref) [7].

check for updates

Citation: Bennamoun, L. Bioresource Technology for Bioenergy: Development and Trends. *Energies* **2022**, *15*, 1717. https://doi.org/10.3390/en15051717

Received: 5 February 2022
Accepted: 21 February 2022
Published: 25 February 2022

One publication can be classified in the fundamentals and resources axe [8]. In this publication, the authors presented some experimental results linked to the exploration of sugarcane bagasse as a source of bioenergy.

The geographical distribution of the authors is presented as follows:

- India (7)
- Taiwan (6)
- Pakistan (4)
- Greece (3)
- South Africa (3)
- Ethiopia (2)
- Saudi Arabia (2)
- Malaysia (1)
- Australia (1)
- Canada (1)
- Nigeria (1)
- France (1)
- Japan (1)
- Qatar (1)
- Sweden (1)

This Special Issue covered almost all the aspects of biomass and bioresources from exploring old and new bioresources of bioenergy, to the supply chain management and modeling and simulation side. However, no submissions related to greenhouse gas emissions, the environment, or climate change were received. We were missing submissions dealing with real life cycle assessment scenarios that are applied in industry, and submissions directly coming from industrials.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. World Bioenergy Association. Global Bioenergy Statistics 2020. Open Access Report. 2020. Available online: http://www.worldbioenergy.org/uploads/201210%20WBA%20GBS%202020.pdf (accessed on 4 February 2022).
2. Bennamoun, L.; Simo-Tagne, M.; Ndukwu, M.C. Simulation of Storage Conditions of Mixed Biomass Pellets for Bioenergy Generation: Study of the Thermodynamic Properties. *Energies* **2020**, *13*, 2544. [CrossRef]
3. Ahmad, I.; Sana, A.; Kano, M.; Cheema, I.I.; Menezes, B.C.; Shahzad, J.; Ullah, Z.; Khan, M.; Habib, A. Machine Learning Applications in Biofuels' Life Cycle: Soil, Feedstock, Production, Consumption, and Emissions. *Energies* **2021**, *14*, 5072. [CrossRef]
4. Bharti, A.; Paritosh, K.; Mandla, V.R.; Chawade, A.; Vivekanand, V. GIS Application for the Estimation of Bioenergy Potential from Agriculture Residues: An Overview. *Energies* **2021**, *14*, 898. [CrossRef]
5. Tsai, W.-T.; Jiang, T.-J.; Lin, Y.-Q.; Zhang, X.; Yeh, K.-S.; Tsai, C.-H. Fuel Properties of Torrefied Biomass from Sapindus Pericarp Extraction Residue under a Wide Range of Pyrolysis Conditions. *Energies* **2021**, *14*, 7122. [CrossRef]
6. Akkoli, K.M.; Banapurmath, N.R.; Suresh, G.; Soudagar, M.E.M.; Khan, T.M.Y.; Baig, M.A.A.; Mujtaba, M.A.; Hossain, N.; Shahapurkar, K.; Elfasakhany, A.; et al. Effect of Producer Gas from Redgram Stalk and Combustion Chamber Types on the Emission and Performance Characteristics of Diesel Engine. *Energies* **2021**, *14*, 5879. [CrossRef]
7. Dareioti, M.A.; Vavouraki, A.I.; Tsigkou, K.; Kornaros, M. Assessment of Single- vs. Two-Stage Process for the Anaerobic Digestion of Liquid Cow Manure and Cheese Whey. *Energies* **2021**, *14*, 5423. [CrossRef]
8. Nadar, D.; Naicker, K.; Lokhat, D. Ultrasonically-Assisted Dissolution of Sugarcane Bagasse during Dilute Acid Pretreatment: Experiments and Kinetic Modeling. *Energies* **2020**, *13*, 5627. [CrossRef]