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Production and potentials of Biomass residues and wastes for energy and materials recovery

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Abstract

To prevent plastic leakage and pollution, plastics have been at the top of the political agenda in Europe and around the world. The COVID-19 pandemic, on the other hand, has significantly disturbed plastic reduction policies at the regional and national levels, as well as substantial changes in plastic waste management, all of which have the potential to have detrimental environmental and human health consequences.

The rise in global population, combined with economic development, has resulted in fast urbanisation and industrialization, which has altered the population's consumption patterns, resulting in an increase in demand for energy and related services. Biomass leftovers and wastes have the potential to be significant sources of energy and materials. Forest, agricultural, and livestock residues, as well as energy crops, the organic component of municipal garbage, and other organic waste streams, can all be used to produce bioenergy. This article examines the potential energy production from biomass residues and wastes on a regional and worldwide scale, taking into account the amount of residues and wastes from main sources as well as pretreatment and conversion methods. Agricultural and forestry residues, animal residues, and municipal wastes are all examples of biomass energy sources. Statistical reports and a literature review were used to calculate the potential biomass resource quantity. In Italy country, residues from agricultural and forest, as well as urban wastes offer a substantial biomass potential. However, determining the national biomass availability is complicated not only by a lack of reliable official data, but also by a conceptual distinction: whether "available" refers to the total amount of biomass available in the territory (potential availability), or to the availability that is technically and economically viable.

This study gives an overview of plastic regulations and analyses how they were adjusted during the COVID-19 epidemic, as well as their potential environmental consequences. The sudden increase in plastic waste and composition as a result of the COVID-19 pandemic highlights the urgent need to strengthen plastic reduction policies (and put them into action as soon as possible), scale up innovation for sustainable and green plastics, and develop dynamic and responsive waste management systems. Policy recommendations and future research directions are discussed.

Biography:

Ashraf Abdelrahim is a doctoral student on Energy Science and Engineering program at University of Naples Parthenope. He majored in Mechanical Engineering at University of Khartoum, Sudan, and received MSc in Energy Engineering from the University of Khartoum in 2012. His research interests include energy management, simulation and modelling, energy consumption and planning and transition to sustainable energy systems, as well as energy efficient buildings and industry. He is involved in Parthenope's Laboratory of Thermo-fluid dynamics, Energy, and HVAC systems (LaTEC), an environment for experimental research in the above-mentioned areas. His doctoral study has been funded by National Research Council (CNR), the largest research council in Italy.

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