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PURPOSE OF THE ABSTRACT

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Renewable Resources, Recycling and Bioeconomy
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In a recent publication One Earth editorial team presented an editorial over ?the limits of Biomass? in the context of a sustainable bio-economy1 !
« Biomass is not inexhaustible but it is the main biological resource of our planet, ie food, oxygen, key ecosystem for water retention and purification, carbon sequestration and climate regulation, ?. For thousands of years biomass was also our main source of energy and building materials. However, as populations grew and energy demands increased, humanity moved away from biomass and toward non-regenerative materials. For the past 200 years, humanity has relied on carbon-rich fossil fuels as an energy source and man-made materials such as iron, steel, concrete, and plastic for construction and manufacture. Unlike biomass, these materials are non-renewable and are often disposed of rather than recycled. This has in turn resulted in the emissions of large quantities of atmospheric, terrestrial, and marine pollutants.

There is an urgent need for societal transformation, and a return to plant biomass as a primary resource has been proposed as a key solution. In theory, the re-emergence of a bioeconomy makes sense. Biomass is highly recyclable, renewable, and a major carbon sink?. In practice, however, the picture is much more complex.

A significant adjustment to our levels of biomass consumption and improved management of biomass waste would certainly be beneficial, but a concerted effort to ensure a bioeconomy that is circular in nature wherein biomass-use time through reuse and recycling is optimized and waste is repurposed as a resource is likely needed »1.

The main priorities, studies and innovative processes issued from our VALAGRO center during last 25 years are quite in agreement with the above recommendations and the emerging plans to return to a biomass- economy will be exemplified. Indeed they mainly concern the uses of entire plants or recycled products and materials with the possibility of using a breakthrough technology such as process intensification. It means for example the harvested grain, whole cobs, extracted minor components, i e all parts of the plants. Most of these works meet our needs in Fine chemicals or specialties (cosmetics, detergency, hygiene products, health, ..), biosourced and composite materials, polymers, agriculture (fertilizers, biocontrol, ..), renewable energy.

1 One Earth, editorial, volume 5, issue1, p 1-2, January 21,2022
The limits of biomass, The One Earth editorial team
DOI:https://doi.org/10.1016/j.oneear.2022.01.001

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS
biomass | entire plant valorization | mechanochesmistry | minor components

BIBLIOGRAPHY