Piloting biochar feedstock conversion – 5 potential value chains for bio-based material

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SUBAREA 1.1 Thecmochemical Technologies

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Introduction

The energy dependency of the Alpine region further increases its vulnerability to climate change and the loss of biodiversity. Biochar and green carbon from biomass residues can make a significant contribution to reduce this dependency. The project Alps4GreenC contributes to the conditions for energy sufficiency and climate protection of the region by setting the scene for a transnational utilization of biomass residues.

Approach

During the implementation of the project Alps4GreenC, biomass residues were obtained as part of the crowdsourcing campaign, where interested industry partners were invited to share their residues for piloting biochar production. With 10 feedstocks, transnational test were carried out on a lab and pilot scale using gasification or pyrolysis processes to produce green carbon. 5 of them were tested at the GreenCarbon Lab in Wieselburg and are showcased in this publication.

Residues as feedstock

In all 5 investigated cases, the residues are currently valorized either as heat/energy, as compost or as feed additive. Biochar production, however, allows for upgrading of the residue and co-production of bioenergy and green carbon products for various sectors: agriculture, steel industry, construction,…, in which the carbon is valorized as component and/or as a form of carbon dioxide storage. For all 5 investigated cases, biochar production was proven applicable, which demonstrates, how shifting production to bio-based materials can benefit in terms of energy and climate resilience.

Hedge clearance wood chips. Currently used for combustion and district heating.

Walnut shells.
100t/year, currently combusted for process heat, exceeding the local demand

Compost screen overflow. 10.000t/year, used for combustion, contaminated with plastics

Weat bran.
30.000t/year, feed additive.

Coffee chaffs.
30.000t/year, used for composting

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