

Agricultural bioresource utilization chains – Investigations with focus on food residues and blackwater in an district of Hamburg

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Traditionally, agriculture leads to products such as food and feed, but more and more additionally to bioenergy and biobased products. During the chain from an agricultural bioresource to a product, by-products and residues are generated. The majority of the residues are handled within urban waste and waste water management structures; the contained valuables often are inefficiently or not utilized.

The mass flows from primary agricultural bioresources to food consumption and its residues will be analyzed. Focus is drawn on secondary and tertiary bioresources such as food-processing residues, unconsumed food and blackwater collected via toilets. The chain analysis is done on the example of Hamburg's district of Wandsbek.

Traditionally used methods for treatment and disposal of such residues will be compared with advanced utilization options. Visionary a region can be considered as a "civilization biorefinery" if the majority of bioresources are utilized most efficiently for material and energy generation. Wandsbek city quarter "Jenfelder Au" demonstrates the combination of waste water, waste and energy management including advanced utilization of some secondary and tertiary bioresource fractions. On this example, the pathways for household kitchen wastes, grease trap residues and blackwater up to biogas and its application for the districts energy provision are followed. The return of valuables into agriculture (nutrients, organics) is aspired, but still unclear.

However, agricultural land is a limited resource today. Its sustainable use is an obligation for future generations. Based on the examples a procedure for the development of land use utilization factor on regional basis is shown. It is based on bioresource multi-branch utilization and utilization in process cascades and is open for discussion.