

Abstract: Carbon Reduction Strategies for Waste-to-Energy

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EEW Energy from Waste GmbH is Germany's leading private owner and operator of thermal waste recovery plants on 15 sites. In addition, EEW runs one each in Luxembourg and in The Netherlands. EEW treats about 5,000,000 tons of municipal and commercial & industrial waste per year and 175,000 tons of sewage sludge to supply 720,000 households with electricity and to provide about 3,800,000 MWh of heat to heating networks and process steam to the industry. In the process, EEW releases about 5,000,000 tons of CO₂-eq per year, about 57% of it biogenic. On the other hand, EEW indirectly avoids CO₂-eq emissions by replacing fossil-based energy and recycling metals from bottom ashes. However, this share is expected to decrease with an increasing share of renewable energy in the energy mix. In its 2020 Sustainability Report, EEW has thus defined the objective to be climate neutral by 2030 and climate positive by 2040. In order to achieve this, EEW needs to implement several carbon capture facilities at its existing WtE plants. By providing the gained CO₂ to the chemical industry EEW can contribute to a more circular economy in Europe. First projects are pursued in Delfzijl, The Netherlands, and Helmstedt, Germany. In Delfzijl, EEW is planning to install a 200,000 t/a capture plant by 2025. In order to achieve emission reduction targets as set by the Dutch Government, EEW is exploring possibilities to store parts of the carbon captured. The rest is supposed to be supplied to an own project requiring CO₂ and local industry. In Helmstedt, EEW intends to establish a Green Energy Hub in cooperation with Avacon. In a first step, a 25,000 t/a capture plant and a 20 MW electrolyser shall be installed to produce about 15,000 tons of green methanol per year from 2025. The presentation will provide information on EEW's CO₂ reduction strategy, the selected means to achieve reduction targets as well as up-to-date information on the current status as well as challenges and risks of ongoing projects.