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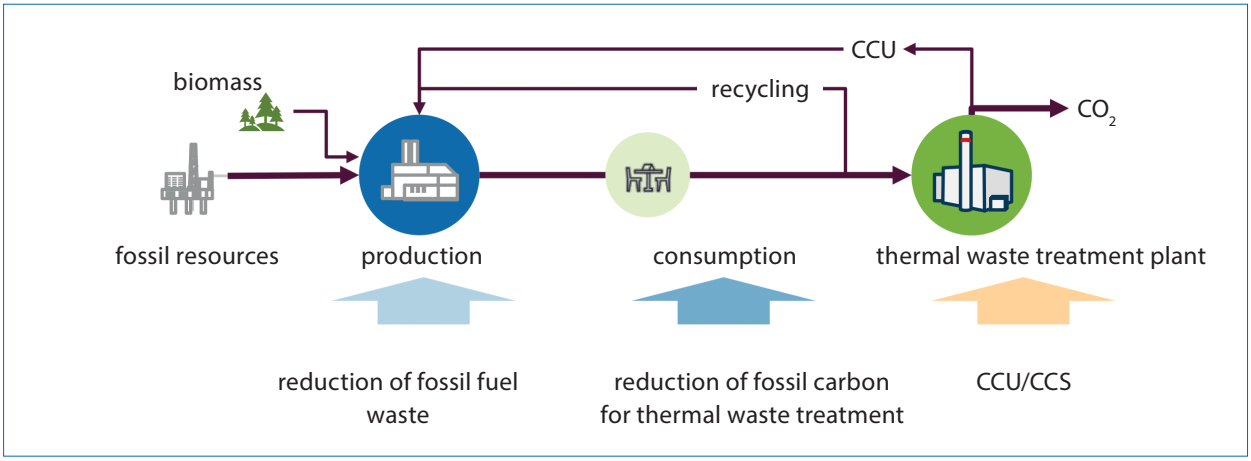
CO_2 reduction paths for thermal waste treatment in Bavaria

The bifa study, commissioned by the Bavarian State Ministry for the Environment and Consumer Protection, assesses the potential for capturing and reducing CO_2



Options for reducing CO_2 emissions from thermal waste treatment

To achieve greenhouse gas neutrality, all possible ways of reducing emissions must be examined. The waste sector is one of them.

At present, around 3.2 million tonnes of waste are disposed of in 14 municipal waste incinerators in Bavaria every year. The combustion process produces 3.3 million tonnes of CO_2. Solutions must be found for these CO_2 emissions.

The main approaches currently under discussion involve capturing the CO_2 before it is emitted and then either storing it permanently in geological formations (CCS) or using it in other processes (CCU). Amine scrubbing is by far the most advanced of the flue gas CO_2 capture technologies. The study also analyses other methods that could be developed for use in the coming years.

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>> CO_2 is captured from both fossil and biogenic waste at the thermal waste treatment plants. The separation of the fossil portions corresponds to the concept of CCS and CCU. Separation of the biogenic fractions largely opens the way to negative emissions. Negative emissions will become increasingly important as we approach greenhouse gas neutrality, to offset unavoidable residual emissions elsewhere. The current focus on CCS with fossil emissions from thermal waste treatment should therefore be extended in the future to include biogenic CO_2 emissions and their removal from the biosphere.

In addition, the greenhouse gas reduction potential of a life cycle assessment nature lies in the energetic optimisation of existing plants, in particular through the measures of flue gas heat utilisation, flue gas condensation and heat recovery from turbine exhaust steam.

CCS is not a solution for everything, but rather brings with it new issues and challenges that must be weighed against the opportunities. In an overall climate protection strategy, CCS should be positioned as a subordinate measure to greenhouse gas reduction measures. It should therefore be limited in scope. As a result of this consideration, however, the implementation of CCS in thermal waste treatment appears fundamentally sound.

To pave the way, the study identifies necessary and beneficial steps, including in the areas of regulations, geological CO_2 storage, carbon circular economy, CO_2 transport infrastructure, removing of investment barriers and R&D.

The results of the study have been and will be published in conference papers (Berlin Conference on Waste Management and Energy 2025, Bavarian Waste and Landfill Days 2025, C.A.R.M.E.N. Symposium 2025).

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Enhanced safety in the waste management industry with the LiLA collection bin

LiLA stands for 'Lithium-Light-Appliances'

The waste management industry is reporting a significant increase in fires in waste treatment plants and has identified lithium batteries (LiB) and small waste electrical and electronic equipment (WEEE) with permanently installed LiB as a possible cause of the fires.

This is supported by the significant increase in the number of small and micro electronic devices containing lithium batteries, such as disposable e-cigarettes. As consumers do not always recognise such devices as WEEE to be disposed of separately, they end up in the various municipal waste streams, e.g. in household waste or in the yellow bin, which can pose a safety risk.

In order to increase safety in the various disposal chains, GRS Service GmbH has initiated a pilot project to improve the separate collection of small and very small electrical appliances with permanently installed LiB and the safe disposal of the LiB they contain.

On behalf of GRS Service GmbH, the GRS foundation, together with ia gmbh and bifa, is carrying out pilot tests

for an additional collection system in selected regions: the LiLA collection barrel.

Scientific support

bifa was commissioned to provide scientific support for the pilot project and is carrying out, >>

>> amongst other things, a comprehensive material flow analysis. For this purpose, the condition of the batteries and the composition of the collected EAGs are also to be determined by means of disassembly.

Recommendations for action are to be derived from the results of the surveys in order to make the separate collection of small and micro electrical and electronic appliances with LiB safer and to reliably minimise fire risks in all affected disposal chains.

The investigation will start in Starnberg, Straubing, Neumarkt, Bielefeld and Potsdam Mittelmark. Others will follow in the coming months.

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3rd Regional Future Conference on Hydrogen

Hydrogen as a competitive factor for the economy

Network planning and electrolysis projects are an important factor for the coming hydrogen infrastructure. Hydrogen not only offers climate-friendly alternatives, but also new business opportunities for trade and industry.

'Hydrogen is more than just a technical solution. Hydrogen is a central building block for a sustainable energy supply,' says Prof. Dr. Nadine Warkotsch, managing director of bifa Umweltinstitut GmbH.

bifa is a member of the Hydrogen Advisory Board in the Augsburg economic area

This was initiated in 2021 and promotes and coordinates all matters relating to hydrogen. The interdisciplinary group, consisting of various institutions, meets monthly and is supported by experts. It promotes the region's development into a hydrogen innovation region and supports companies in implementing projects.

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Climate protection concept of the THA

bifa assesses carbon footprint and GHG reduction potential, and moderates the stakeholder dialogue

With over 7,500 students, the Augsburg University of Applied Sciences (THA) is one of the largest universities in Bavarian Swabia and would like to make its contribution to the Paris Agreement and the Climate Generation Contract with the aim of achieving climate neutrality by 2045.

The concrete path to climate neutrality is described in an integrated climate protection concept, which is now available *(www.tha.de/THA-klima)*. The extensive work on its creation was financed as part of the National Climate Initiative.

bifa provided support in developing the concept

Firstly, a comprehensive carbon footprint for the entire university was created for scopes 1 to 3 in accordance with the GHG protocol. Commuting by students and employees and the energy required to maintain the buildings are largely responsible for the university's GHG emissions. On this basis, bifa determined the potential for reducing GHG emissions and forecast various scenarios for reducing the impact on the climate. Together with the university's most important stakeholders, concrete measures to reduce CO_2 emissions have been formulated. To this end, bifa organised a series of workshops with the stakeholders and, together with the students, formulated a vision for the future everyday life at the climate-neutral THA.

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Cross-municipal cooperation in climate protection

bifa prepares an inter-municipal energy utilisation plan including a municipal heat plan

How can we jointly promote climate protection? These questions were posed by 17 municipalities in the Lech-Wertach region: Amberg, Bobingen, Graben, Großaitingen, Hiltenfingen, Hurlach, Igling, Kleinaitingen, Klosterlechfeld, Königsbrunn, Lamerdingen, Langerringen, Obermeitingen, Oberottmarshausen, Schwabmünchen, Untermeitingen and Wehringen.

bifa was commissioned with the creation of an inter-municipal energy utilisation plan, which was expanded to include municipal heat planning. The study provides information about the current energy situation and future demand. The potential of renewable energy supply is shown and priority areas for a grid-connected heat supply are identified. A transformation path to climate neutrality, from which customised climate protection measures can be derived, is proposed. Key players in the energy transition have been involved in municipal heating planning. In addition, the possibilities of a green waste network, heating network options, and an approach to deep geothermal energy were developed as priorities that offer important potential for a comprehensive renewable heating supply during the period under review.

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Review of the closing event of the KLIK project

Growing importance of sustainability reporting

ESRS Manual available as bifa Texts No. 74

bifa and the Swabian Chamber of Industry and Commerce (IHK Schwaben) together with BF/M-Bayreuth and the Chair of Business Administration I at the University of Bayreuth invited guests to the closing event of the BMBF-funded 'KliK – Klimaberichterstattung bei KMU' (Climate Reporting by SMEs) project.

Companies from a wide range of sectors and of all sizes came together to benefit from expert knowledge on the topics of sustainability reporting, climate risks, sustainable finance, and lending processes.

Presentation of the project results

The 'Practical Guide: Sustainability Reporting for SMEs' and the 'Handbook of European Sustainability Reporting Standards (ESRS)' were presented at the event. The publications are intended to give companies a better understanding of the sustainable lending processes and support them in implementing sustainability reporting. Both are available at: *www.bifa.de/publikationen/bifa-texte/*

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BRIEFLY INFORMED

Event

Climate Day on 10 May 2025, Augsburg Rotary Club

You can expect exciting presentations by renowned experts on topics such as consumer behaviour, waste management and the interactions between climate, water, and nature.

Bavarian Circular Economy and Resource Efficiency Days (KReTa) 19 and 20 May 2025

bifa will be represented at the sessions on the first day with the following topic: 'Greenhouse balance and environmental footprint: Sustainability as a success factor' (Thorsten Pitschke, bifa Umweltinstitut GmbH).

und im Umwelttechnologie-Cluster Bayern e. V.
www.umweltcluster.net

UmweltCluster Bayern

bifa Umweltinstitut GmbH ist Mitglied im Förderverein KUMAS e. V.
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