

References:

1. Kooperationsprogramm Interreg VI A Mecklenburg-Vorpommern / Brandenburg / Polen 2021-2027: Programmgebiet <https://www.interreg6a.net/programmgebiet/> (last accessed 26.05.2026)
2. Ashokkumar, G. Kumar, H. Lakshmanan, V.P. Chandramughi, G. Flora, R. Kothari, G. Piechota, Critical review of biogas production and upgrading from organic wastes: Recent advances, challenges and opportunities. *Biomass and Bioenergy*, 2024, Vol. 194, 2024 <https://doi.org/10.1016/j.biombioe.2024.107566>
3. / 3P. Mullai, S.M. Sambavi, S. Vishali, K. Dharmalingam, S. Sutha, S. Dinesh, T. Anandhi, Md Abdullah, A.M. Bilyaminu, A. James, An integrated review on the role of different biocatalysts, process parameters, bioreactor technologies and data-driven predictive models for upgrading biogas, *Journal of Environmental Management*, 2025, Vol. 384, <https://doi.org/10.1016/j.jenvman.2025.125508#>
4. F.M. Baena-Moreno, L. Pastor-Pérez, Q. Wang, T.R. Reina, Bio-methane and bio-methanol co-production from biogas: A profitability analysis to explore new sustainable chemical processes, *Journal of Cleaner Production*, Vol. 265, 2020 <https://doi.org/10.1016/j.jclepro.2020.121909>.
5. R. Rinaldi, G. Lombardelli, M. Gatti, C. G. Visconti, M. C. Romano, Techno-economic analysis of a biogas-to-methanol process: Study of different process configurations and conditions, *Journal of Cleaner Production*, Vol. 393., 2023 <https://doi.org/10.1016/j.jclepro.2023.136259>.
6. DVGW Deutscher Verein des Gas- und Wasserfaches e. V. (DVGW) Zukunftsbild Biomethan 2025–2045: Status, Hemmnisse, Maßnahmen, Hochlauf, DVGW-Taskforce Biomethan Abschlussbericht November 2024
7. N. Keogh, D. Corr, R. O'Shea, R.F.D. Monaghan, The gas grid as a vector for regional decarbonisation - a techno economic case study for biomethane injection and natural gas heavy goods vehicles, *Applied Energy*, Vol. 323, 2022, <https://doi.org/10.1016/j.apenergy.2022.119590>
8. INT0400111 – OrgWaste2Fuel – <https://www.interreg6a.net/bewilligte-projekte/int0400111-orgwaste2fuel/> (last accessed 26.05.2026)
9. Anaerobic Digestion (05.06.2023): Digestate from Anaerobic Digestion: A Valuable Nutrient-rich Liquid for Sustainable Agriculture / Picture Source Digestate; Credit: Agrivert <https://blog.anaerobic-digestion.com/digestate-from-anaerobic-digestion> (last accessed 26.05.2026)
10. UniTechnics KG / Produktwebsite: Bildquelle Klärschlamm <https://www.unitechnics.de/de/loesungen/planung/klaerschlamm.html> (last accessed 26.05.2026)
11. BUND Rhein-Lahn (Bund für Umwelt und Naturschutz Deutschland): Gülle auf dem Maifeld (10.03.2018) / Bildquelle: Mit Gülle abgedecktes Feld, März 2018 im Maifeld / <https://myk.bund-rlp.de/themen-projekte/guelle-nitrat/> (last accessed 26.05.2026)
12. N. Barkolias: Was ist Silage, und wie wird sie hergestellt? Bildquelle: <https://wikifarmer.com/library/de/article/was-ist-silage-und-wie-wird-sie-hergestellt> (last accessed 26.05.2026)
13. R. Vanselow (05.09.2017): Humus & Mist Teil 4: Humusdünger: Was passiert im Mist? / Bildquelle: Mist in der Landwirtschaft (extrabrandt - Pixabay.com) <https://www.artgerecht-tier.de/oekologie/d-humus-mist-teil-4-1746599016> (last accessed 26.05.2026)
14. MDR Wissen (04.09.2022) Forschung in Sachsen und Thüringen Die Melasse macht's: Grüner Klebstoff aus Milchnebenprodukt entwickelt / Bildquelle: Melasse – Rechte: IMAGO / UIG <https://www.mdr.de/wissen/naturwissenschaften-technik/melasse-gruener-klebstoff-aus-milch-nebenprodukt-entwickelt-100.html> (last accessed 26.05.2026)
Paludikultur – Bildquelle: Landwirtschaft mit Moorblick: <https://www.humintech.com/de/agrarwirtschaft/blog/paludikultur-landwirtschaft-mit-moorblick> (last accessed 26.05.2026)
15. Forst-Praxis: *Gartenabfälle gehören nicht in den Wald*. Bildquelle: AdobeStock/ mhphoto <https://www.forstpraxis.de/bussgelder-12500-euro-gruenschnitt-wald-verboden-24377> (last accessed 26.05.2026)
16. Adobe – Bildquelle: Forst Forstwirtschaft gefällte Bäume Baumfällarbeiten: <https://stock.adobe.com/de/images/forst-forstwirtschaft-gefallte-baume-baumfallarbeiten/61954011> (last accessed 26.05.2026)
17. Dreamstime – Bildquelle: Mais-Abfall: <https://de.dreamstime.com/stockfoto-mais-abfall-image42902648> (last accessed 26.05.2026)
18. Kreislaufwirtschaft mit dem Biertreber – Gewinnung eines wertvollen Nebenprodukts mit dem Flottweg Dekanter / Bildquelle: <https://www.flottweg.com/de/newsroom/news/detail/biertreber/> (last accessed 26.05.2026)
19. NUTS visual diagram: https://commons.wikimedia.org/wiki/File:NUTS_visual_diagram.jpg (last accessed 26.05.2026)
20. DBFZ Ressourcendatenbank - DE-Biomassemonitor FLOWCHARTS „Potenzialberechnungen“ Stand: 28.11.2024 /Getreidestroh (ID: DE000ABCST) https://datalab.dbfz.de/resdb/28112024_DBFZ_Ressourcendatenbank_Flowcharts_DE.pdf (last accessed 26.05.2026)
21. Kirchmeyr, F.; Stürmer, B. Overview and Categorization of European Biogas Technologies – Digester. DiBiCoo – Digital Global Biogas, 2020. URL: https://www.kompost-biogas.info/wp-content/uploads/2020/09/DiBiCoo_D2.2-Chapter-1.pdf (last accessed 26.05.2026).

22. Lindeboom, R. E. F.; Zagt, C. E.; Shin, S. G.; Weijma, J.; Plugge, C. M.; van Lier, J. B. Autogenerative High Pressure Digestion: Future Potentials and Constraints. Conference paper, TU Delft / IWA, 2013. URL: https://repository.tudelft.nl/file/File_ac1628ac-071b-43d9-aaea-c067d1e2fc68 (last accessed 26.05.2026).
23. Liebetrau, J.; Pfeiffer, D. Collection of Methods for Biogas – Methods to determine parameters for analysis purposes and parameters that describe processes in the biogas sector, Deutsches Biomasseforschungszentrum DBFZ, 2020, ISBN 978-3-946629-47-4
24. Moss, A. R. Anaerobic Digesters: Designs. University of Maryland Extension, 2013. URL: https://enst.umd.edu/sites/enst.umd.edu/files/documents/Extension/Anaerobic-Digest_Designs.pdf (last accessed 26.05.2026).
25. Simeonov, I.; Chorukova, E.; Kabaivanova, L. Two-Stage Anaerobic Digestion for Green Energy Production: A Review, *Processes* 2025, 13(2), 294 <https://doi.org/10.3390/pr13020294>
26. Ćwiertniewicz Wojciechowska, E.; Cema, G.; Ziemińska Buczyńska, A. Sewage Sludge Pretreatment: Current Status and Future Prospects. *Environmental Science and Pollution Research*, 2023, 30, 88313–88330. <https://doi.org/10.1007/s11356-023-28613-7>
27. Zhao, X.; Babu Joseph; Kuhn, J.; Ozcan, S. Biogas Reforming to Syngas: A Review. *iScience*, 2020, 23(1), 100812. <https://doi.org/10.1016/j.isci.2020.101082>
28. Mainardis, M.; Buttazzoni, M.; Goi, D. Up-Flow Anaerobic Sludge Blanket (UASB) Technology for Energy Recovery: A Review on State-of-the-Art and Recent Technological Advances. *Bioengineering*, 2020, 7(4), 103. <https://doi.org/10.3390/bioengineering7020043>
29. Steiniger, B.; Hupfau, S.; Insam, H.; Schaum, C. Exploring Anaerobic Digestion from Mesophilic to Thermophilic Temperatures – Operational and Microbial Aspects. *Fermentation*, 2023, 9, 111. <https://doi.org/10.3390/fermentation9090798>
30. Hobson, C.; Márquez, C. (Editors). Renewable Methanol Report. ATA Markets Intelligence for Methanol Institute, 2018. URL: https://sustainableworldports.org/wp-content/uploads/Methanol-Institute_2018_Renewable-methanol-report-report.pdf (last accessed 26.05.2026).
31. Patel, S. K. S.; Mardina, P.; Kim, S.-Y.; Lee, J.-K.; Kim, I.-W. Biological Methanol Production by a Type II Methanotroph *Methylocystis bryophila*. *Journal of Microbiology and Biotechnology*, 2016, 26(4), 717–724. <https://doi.org/10.4014/jmb.1601.01013>.
32. Hogendoorn, C.; Pol, A.; Nuijten, G. H. L.; Op den Camp, H. J. M. Methanol Production by “*Methylophilum furiosum*” SolV under Different Growth Conditions. *Applied and Environmental Microbiology*, 2020, 86(17), e01188-20. <https://doi.org/10.1128/AEM.01188-20>
33. European Commission. MeCO₂ – Synthesis of Methanol from Captured Carbon Dioxide Using Surplus Electricity. CORDIS Project ID 637016, Periodic Reporting for Period 3 (2018-06-01 to 2019-06-30). 2019. URL: <https://cordis.europa.eu/project/id/637016/reporting> (last accessed 26.05.2026)
34. Gentile, G.; Bonalumi, D.; Pieterse, J. A. Z.; Sebastiani, F.; Lucking, L.; Manzolini, G. Techno-Economic Assessment of the FReSMe Technology for CO₂ Emissions Mitigation and Methanol Production from Steel Plants. *Journal of CO₂ Utilization*, 2022, 56, 101852. <https://doi.org/10.1016/j.jcou.2021.101852>.
35. Joo, O. S.; Jung, K.-D.; Moon, I. CAMERE Process for Methanol Synthesis from CO₂ Hydrogenation. *Studies in Surface Science and Catalysis*, 2004, Vol. 153, 107–112 [https://ui.adsabs.harvard.edu/link_gateway/2004SSC..153...67J/doi:10.1016/S0167-2991\(04\)80221-0](https://ui.adsabs.harvard.edu/link_gateway/2004SSC..153...67J/doi:10.1016/S0167-2991(04)80221-0) (last accessed 26.05.2026)
36. González, R.; Peña, D. C.; Gómez, X. Anaerobic Co-Digestion of Wastes: Reviewing Current Status and Approaches for Enhancing Biogas Production. *Applied Sciences*, 2022, 12(17), 8884. <https://doi.org/10.3390/app12178884>
37. STRABAG Umwelttechnik GmbH. LARAN® Plug-Flow Digester – Dry Digestion Process Description and Reference Plants. Technical document / brochure, 2019. URL: <https://www.strabag-umwelttechnik.com/databases/internet/public/content.nsf/web/FA01F708E945624CC1257EE50033F358> (last accessed 26.05.2026)
38. Lee, H.; Kim, D. H. Direct Methanol Synthesis from Methane in a Plasma-Catalyst Hybrid System at Low Temperature Using Metal Oxide-Coated Glass Beads. *Scientific Reports*, 2018, 8, 9897. <https://doi.org/10.1038/s41598-018-28170-x>
39. Hink, R.; Antwi, E.; Klebingat, S.; Hayduk, M.; Gulden, J.; Uhrlandt, D.; Brandenburg, R. Towards the Effects of Plasma-Based CO₂-Dissociation and Subsequent Catalytic Green Methanol Synthesis Using Gas Mixtures of CO₂ and CO. *Journal of CO₂ Utilization*, 2026, 106, 103379. <https://doi.org/10.1016/j.jcou.2026.103379>.
40. Repsol S.A. Repsol Will Invest More Than €800 Million in the Tarragona Ecoplanta. Press release, 9 February 2025. URL: <https://bioenergyinternational.com/repsol-to-invest-over-eur-800m-in-tarragona-ecoplanta/> (last accessed 28.05.2026)
41. Enkern Inc. Ecoplanta Receives Approval: A Major Step Forward with Enkern’s Groundbreaking Waste-to-Methanol Technology. Press release, Montreal, 29 January 2025. URL: <https://enkern.com/publications/ecoplanta-receives-approval-a-major-step-forward-with-enkerns-groundbreaking-waste-to-methanol-technology> (last accessed 26.05.2026).
42. Port of Rotterdam Authority. W2C Rotterdam Project Welcomes Shell as Partner. News article / press release, 2019. URL: <https://www.portofrotterdam.com/en/news-and-press-releases/w2c-rotterdam-project-welcomes-shell-partner> (last accessed 26.05.2026).

43. IEA Bioenergy. Chemrec/BioDME – Success Story: Black Liquor Gasification to Bio-DME and Methanol. IEA Bioenergy Task 33, Success Story, November 2020. URL: https://www.ieabioenergy.com/wp-content/uploads/2020/11/19-AFF_IEABio_SuccessStories_CHEMREC_BioDME.pdf (last accessed 26.05.2026).
44. Granberg, F. Production of Bio-Electrofuels at LTU Green Fuels. Presentation, IEA Bioenergy Task 33 Workshop, 2023. URL: <https://task33.ieabioenergy.com/wp-content/uploads/sites/33/2023/09/F.-Granberg.pdf> (last accessed 26.05.2026).
45. National Renewable Energy Laboratory (NREL). Methanol from Biomass. Fact sheet NREL/SP-420-5570-Rev.2, revised January 1995. U.S. Department of Energy, Golden, CO. PDF: <https://docs.nrel.gov/docs/legosti/old/5570r2.pdf> (last accessed 26.05.2026)
46. Demir, C.; Gaikwad, R. V.; Villadsen, S. N. B.; Fosbøl, P. L. Biogas Conversion to Green Methanol via Steam Reforming in a Container-Sized Module. Department of Chemical and Biochemical Engineering, Technical University of Denmark (DTU), Presentation at EUBCE 2024, Copenhagen, 25 June 2024. https://backend.orbit.dtu.dk/ws/portalfiles/portal/371893468/Biogas_conversion_to_green_methanol_via_steam_reforming_in_a_container-sized_module.pdf (last accessed 28.05.2026).
47. Dapelo, D. Gas Mixing in Anaerobic Digestion. PhD Thesis, School of Civil Engineering, University of Birmingham, Birmingham, UK, 2016. URL: <https://etheses.bham.ac.uk/id/eprint/6879/2/Dapelo16Phd.pdf> (last accessed 28.05.2026).
48. European Energy A/S; Solar Park Kassø ApS. Kassø Power-to-X Facility – Media Kit. Media kit, March 2025. URL: <https://europeanenergy.com/wp-content/uploads/2025/03/media-kit-kasso.pdf> (last accessed 26.05.2026).
49. Carbon Recycling International (CRI). George Olah Renewable Methanol Plant – Industrial-Scale Renewable Methanol from CO₂. Project page, Svartsengi, Iceland. URL: <https://carbonrecycling.com/projects/george-olah> (last accessed 26.05.2026)
50. Fraunhofer UMSICHT; Carbon2Chem® Consortium. Methanol Synthesis from Steel Mill Gases – Phase 2 (P2). Project factsheet, 2022. URL: <https://www.umsicht.fraunhofer.de/content/dam/umsicht/en/documents/strategic-lines-of-research/carbon-cycle/phase-2/carbon2chem-methanol-synthesis-P2.pdf> (last accessed 26.05.2026)
51. Karlsruhe Institute of Technology (KIT). Press Release 023/2025: Carbon-neutral Marine Fuel from Wastewater – KIT Spin-off ICODOS and Partners Launch “Mannheim 001,” the First Facility for Carbon-neutral E-methanol Production in Sewage Plants. Press release, 24 March 2025. URL: https://www.kit.edu/kit/english/pi_2025_023_carbon-neutral-marine-fuel-from-wastewater.php (last accessed 26.05.2026).