UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Amoako, G. Dan Amoah, P. M. (2019). Determination of Caloric Values of Coconut Shells and Coconut Husks. *Journal of Material Science Research and Reviews*, 2(2), 1-7. https://doi.org/10.9734/JMSRR/2019/45639.

Ansarinasab, M. (2025). The Role of Renewable Energy Transition on Achieving Carbon Neutrality within the SDG Framework: Challenges and Prospects. *Gondwana Research*, 153(2026), 236-252. https://doi.org/10.1016/j.gr.2025.11.022.

Azarpour, A., Mohammadzadeh, O., Rezaei, N., dan Zendehboudi, S. (2022). Current Status and Future Prospects of Renewable and Sustainable Energy in North America: Progress and Challenges. *Energy Conversion and Management*, 269(2022), 115945. https://doi.org/10.1016/j.enconman.2022.115945.

Badan Pusat Statistik. (2024). *Jumlah Perusahaan Perkebunan Besar menurut Jenis Tanaman (Unit, 2023): Survei Perusahaan Perkebunan*. https://www.bps.go.id.

Batcha, M. F. M., Othaman, M. F., Sabudin, S., Mohammed, A. N., Abdullah, M. K., dan Ali, M. F. M. (2020). Combustion and Emission of Pelletized Empty Fruit Bunch and Oil Palm Shell in a Swirling Fluidized Bed Combustor. *Biomass Conversion and Biorefinery*, 10(3), 755-763. https://doi.org/10.1007/s13399-020-00903-x.

Castaneda, M., Amell, A. A., Correa, M. A., Aguilar, C. E., dan Colorado, H. A. (2023). Thermoelectric Generator Using Low-Cost Thermoelectric Modules for Low-Temperature Waste Heat Recovery. *Sustainability*, 15(2023), 3681. https://doi.org/10.3390/su15043681.

Cengel, Y. A., Boles, M. A., dan Mehmet, K. (2019). *Thermodynamics: An Engineering Approach* (9th Ed). McGraw-Hill Education.

Chen, G., Yang, K., Sun, X., Zhu, X., Chen, W., Hou, D., Cheng, Z., dan Yan, B. (2025). Advances in Biomass Chemical Looping Combustion Technology: Process Control and Comprehensive Evaluation. Journal of Environmental Chemical Engineering, 13(2025), 118142. https://doi.org/10.1016/j.jece.2025.118142

Chica, E., dan Pérez, J. F. (2019). Development and Performance Evaluation of an Improved Biomass Cookstove for Isolated Communities from Developing Countries. *Case Studies in Thermal Engineering*, 14(2019), 100435. https://doi.org/10.1016/j.csite.2019.100435.

Diez, H. E., Gómez, I. N., dan Pérez, J. F. (2018). Mass, Energy, and Exergy Analysis of the Microgasification Process in a Top-Lid Updraft Reactor: Effect of Firewood Type and Forced Primary Airflow. *Sustainable Energy Technologies and Assessments*, 29(2018), 82-91. https://doi.org/10.1016/j.seta.2018.07.003.

Diez, L. I., Mariaca, A. G., Sastresa, E. L., dan Canalis, P. (2024). On the Oxy-Combustion of Blends of Coal and Agro-Waste Biomass Under Dry and Wet Conditions. *Fuel*, 365(2024), 131265. https://doi.org/10.1016/j.fuel.2024.131265.

UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Esteves, B., Sen, U., dan Pereira, H. (2023). Influence of Chemical Composition on the Heating Value of Biomass: A Review and Bibliometric Analysis. *Energies*, 2023(16), 4226. https://doi.org/10.3390/en16104226.

Galaraga, D. R., Julio, J. D. R., German, S. S., Mendoza, J. M., dan Silvera, A.B. (2024). Proximate Analysis in Biomass: Standards, Applications, and Key Characteristics. *Result in Chemistry*, 12(2024), 101886. https://doi.org/10.1016/j.rechem.2024.101886.

Gou, M., Song, W., dan Buhian, J. (2015). Bioenergy and Biofuels: History, Status, and Perspective. *Renewable and Sustainable Energy Review*, 42(2015), 712-725. https://doi.org/10.1016/j.rser.2014.10.013.

Guler, N. U., dan Yumurtaci, Z. (2025). Techno-Economic Evaluation of Hydrogen Production via Biomass Gasification: The role of Carbon Capture and Storage in Steam and Oxygen Gasification Routes. *International Journal of Hydrogen Energy*, 188(2025), 152134. https://doi.org/10.1016/j.ijhydene.2025.152134.

Halwi, M. H., Abdullah, S. N. A., Amin, A. M., Rusli, M. H., dan Ahmad, K. (2025). Comparative Efficacy of Pseudomonas aeruginosa and Anti-Ganoderma Fertilizer in Managing Early-Stage Ganoderma boninense Infection in Oil Palm (Elaeis guineensis Jacq.). *Physiological and Molecular Plant Pathology*, 142(2026), 103108. https://doi.org/10.1016/j.pmpp.2025.103108.

Hasibuan, H. A. (2022). *Fisiologi Pasca Panen Kelapa Sawit: Bahan Baku Olah Komoditi Kelapa Sawit*. Pusat Penelitian Kelapa Sawit.

Hayat, S., Safi, A., Wahab, S., Shahzad, K., dan Chen, Y. (2023). Renewable Energy RnD and Natural Resources: A Success Story of Environmentally Friendly Financing in OECD Economies. *Resources Policy*, 83(2023), 103655. https://doi.org/10.1016/j.resourpol.2023.103655.

Hidayah, N., dan Wusko, I. U. (2020). Characterization and Analysis of Oil Palm Empty Fruit Bunch (OPEFB) Waste of PT. Kharisma Alam Persada South Borneo. *Majalah Obat Tradisional*, 25(3), 154-160. https://doi.org/10.22146/mot.52715.

Howell, N., Pimentel, A., dan Bhattacharia, S. (2021). Material Properties and Environmental Potential of Developing World-Derived Biochar Made From Common Crop Residues. *Environmental Challenges*, 4(2021), 100137. https://doi.org/10.1016/j.envc.2021.100137.

Huang, M., Li, R., Xu, J., Cheng, S., Deng, H., Zhang, B., Rong, Z., dan Li, Y. (2021). Effect of Thermal Input, Excess Air Coefficient, and Combustion Mode on Natural Gas MILD Combustion in Industrial-Scale Furnace. *Fuel*, 302(2021),121179. https://doi.org/10.1016/j.fuel.2021.121179.

International Organization for Standardization. (2014). *Solid biofuels—Determination of carbon, hydrogen and nitrogen content* (ISO 17247). https://www.iso.org.

International Organization for Standardization. (2015). *Solid biofuels—Determination of the content of volatile matter* (ISO 17246). https://www.iso.org.

UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

International Organization for Standardization. (2020). *Solid mineral fuels—Determination of gross calorific value by the bomb calorimeter method* (ISO 1928). https://www.iso.org.

International Renewable Energy Agency. (2020). *Renewable Energy Benefits: Leveraging Local Capacity for Solar PV*. IRENA Publication.

Jin, W., Si, F., Kheirkhan, S., Yu, C., Li, H., dan Wang, Y. (2023). Numerical Study on the Effect of Primary Air Ratio on Ultra-Low-Load Combustion Characteristics of a 1.050 MW Coal-Fired Boiler Considering High-Temperature Corrosion. *Applied Thermal Engineering*, 221(2023), 119811. https://doi.org/10.1016/j.applthermaleng.2022.119811.

Karurung, A. T., Pasae, Y., dan Sibandar, S. Y. (2025). Evaluasi Strategi Bagian Perekonomian Setda Kabupaten Nabire dalam Mengatasi Kelangkaan Minyak Tanah. *Jurnal Ekonomi Holistik*, 1(2), 218-224. https://doi.org/10.1610/yvgep932.

Kashyap, S. R., Pramanik, S., dan Ravikrishna, R. V. (2024). A Review of Energy-Efficient Domestic Cookstoves. *Applied Thermal Engineering*. 236(2024), 121510. https://doi.org/10.1016/j.applthermaleng.2023.121510.

Kementerian Energi dan Sumber Daya Mineral RI. (2024). *Peraturan Menteri Energi dan Sumber Daya Mineral Republik Indonesia Nomor 7 Tahun 2024 (Permen ESDM RI No. 7 Thn 2024) tentang Tarif Tenaga Listrik yang Disediakan oleh PT. Perusahaan Listrik Negara (Persero)*. KESDM RI.

Kementrian Pertanian. (2024). *Analisis Kinerja Perdagangan Komoditas Kelapa Sawit: Pusat Data dan Sistem Informasi Pertanian*. Kementan RI.

Khan, N., Sudhakar, K., dan Mamat, R. (2025). Morphological, Elemental, and Thermal Characterization of Seaweed Biomass: Effect of Open-Air and Solar Drying Methods. *Biomass and Bioenergy*, 206(2026), 108596. https://doi.org/10.1016/j.biombioe.2025.108596.

Kirch, T., Medwell, P. R., dan Birzer, C. H. (2016). Natural Draft and Forced Primary Air Combustion Properties of a Top-Lid Up-Draft Research Furnace. *Biomass and Bioenergy*, 91(2016), 108-115. https://doi.org/10.1016/j.biombioe.2016.05.003.

Kon, O. dan Caner, I. (2022). Investigation of Heat Recovery Potential According to Flue Gas Field Measurements in a Solid Fuel-Fired Building with District and Central Heating System. *Processes*, 10(2022), 2040. https://doi.org/10.3390/pr10102040.

Kuttin, K. W., An, F., Richter, A., Yu, G., Yifei, W., Wang, F., dan Ding, L. (2024). CFD Modelling of Hydrothermal Carbonized Biomass Pellets Gasification: Synergistic Effect of Pellets Size and Moisture Content on Gasification Efficiency. *International Journal of Hydrogen Energy*, 84(2024), 420-434. https://doi.org/10.2139/ssrn.4739261.

Lachman, J., Balas, M., Lisy, M., Lisa, H., Milcak, P., dan Elbl, P. (2021). An Overview of Slagging and Fouling Indicators and Their Applicability to Biomass Fuels. *Fuel Processing Technology*, 217(2021), 106804. https://doi.org/10.1016/j.fuproc.2021.106804.

Larptansuphaphol, T., dan Jitjumroonchokchai, P. (2019). Properties and Characteristics of Compressed Biofuel Production from Empty Palm Fruit

UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Bunches. *E3S Web of Conferences*, 120(1), 02001. https://doi.org/10.1051/e3sconf/201912002001.

Lee, J. T. E., Khan, M. U., Tian, H., Ee, A. W. L., Lim, E. Y., Dai, Y., Tong, Y. W., dan Ahring, B. K. (2020). Improving Methane Yield of Oil Palm Empty Fruit Bunches by Wey Oxidation Pretreatment: Mesophilic and Thermophilic Anaerobic Digestion Conditions and the Associated Global Warming Potential Effect. *Energy Conversion and Management*, 225(2020), 113438. https://doi.org/10.1016/j.enconman.2020.113438.

Leon, L. M. C. dan Marquez, C. M. D. C. (2025). Energy Potential and Emission Mitigation Through the Use of Residual Forest Biomass in Mexico (2020-2050). *Biomass and Bioenergy*, 208(2026), 108748. https://doi.org/10.2139/ssrn.5375976.

Mahyuddin, Faisal, M., Erdiwansyah, Iqbal, Muhtadin, Syahir, A. Z., dan Mamat, R. (2026). Enhancing Thermal Efficiency and Reducing Emissions in Biomass Combustion Systems for Sustainable Brick Production. *Cleaner Energy Systems*, 13(2026), 100247. https://doi.org/10.1016/j.cles.2026.100247.

Mal, R., Prasad, R., Vijay, V. K. dan Verma, A. R. (2015). The Design, Development, and Performance Evaluation of a Thermoelectric Generator (TEG) Integrated Forced Draft Biomass Cookstove. *Procedia Computer Science*, 52(2015), 723-729. https://doi.org/10.1016/j.procs.2015.05.085.

Mauladdini, R., Nawawi, D. S., dan Syafii, W. (2022). Pengaruh Zat Ekstraktif Kayu terhadap Nilai Kalor. Jurnal Ilmu Kehutanan, 16(1), 64-73. https://doi.org/10.22146/jik.v16i1.2720.

Mekonen, T. N., Delele, M. A., Gizaw, A. M., Endeshaw, M. A., Kebede, N. W., dan McAuley, K. B. (2025). Key Challenges in CFD Modeling of Biomass Gasification in Fluidized-Bed Reactors: A Review. *Biomass and Bioenergy*, 209(2026), 108893. https://doi.org/10.1016/j.biombioe.2025.108893.

Meng, X., Sun, R., Ismail, T. M., Zhou, W., Ren, X., dan Zhang, R. (2017). Parametric Studies on Corn Combustion Characteristic in a Fixed Bed: Primary Air Flow Rate and Different Corn Lengths. *Applied Thermal Engineering*, 126(2017), 702-716. https://doi.org/10.1016/j.applthermaleng.2017.07.197.

Morato, T., Vaezi, M., dan Kumar, A. (2020). Techno-Economic Assessment of Biomass Combustion Technologies to Generate Electricity in South America: A Case Study for Bolivia. *Renewable and Sustainable Energy Reviews*, 134(2020), 110154. https://doi.org/10.1016/j.rser.2020.110154.

Museum Universitas Gadjah Mada. (2019). *Tungku Hemat Energi (B3: Biomassa-Bioarang-Biogas), Karya Prof. Herman Johannes*. Museum UGM. https://www.museum.ugm.ac.id.

Noureldin, M. M. B., Bao, B., Elbashir, N.O., dan El-Halwagi. (2013). Benchmarking, Insight, and Potential for Improvement of Fischer-Tropsch-Based Biomass-to-Liquid Technology. *Clean Technology and Environmental Policy*, 16(1), 37-44. https://doi.org/10.1007/s10098-013-0589-3.

Nurika, I., Aristya, Y. I., Azizah, N., Sunyoto, N. M. S., Suhartini, S., Bugg, T. D. H., dan Barker, G. C. (2023). Enchantment of the Lignonolytic Activity of

UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Lysinibacillus sphaericus by the Addition of $MnSO_4$ and Its Impact on Subsequent Methane Production from Oil Palm Empty Fruit Bunches (OPEFB). *Bioresource Technology Reports*, 22(2023), 101394. https://doi.org/10.1016/j.biteb.2023.101394.

Ordonez, Y. J. R., Hernandez, C. J. A., Pinto, J. F. M., Maradei, P. G., dan Bizzo, W. A. (2019). Assessment of the Thermal Decomposition Kinetics of Empty Fruit Bunch, Kernel Shell, and Their Blend. *Bioresource Technology*, 292(2019), 121923. https://doi.org/10.1016/j.biortech.2019.121923.

Ozyuguran, A. dan Yaman, S. (2017). Prediction of Calorific Value of Biomass from Proximate Analysis. *Energy Procedia*, 107(2017), 130-136. https://doi.org/10.1016/j.egypro.2016.12.149.

Pambudi, N.A., Firdaus, R.A., Rizkiana, R., Ulfa, D.K., Salsabila, M.S., Suharno, dan Sukatiman. (2023). Renewable Energy in Indonesia: Current Status, Potential, and Future Development. *Sustainability*, 15(29), 2342. https://doi.org/10.3390/su15032342.

Pandit, S., Das, D. C., Das, B., Newar, P. P. (2025). An Experimental Investigation of Optimized Biomass Cookstove with TEG Integration and Solid Heat Storage for Rural Areas. *Energy*, 331(2025), 137121. https://doi.org/10.1016/j.energy.2025.137121.

Pandit, S., Mal, R., Purwar, A., dan Kumari, K. (2024). Waste Heat Regeneration from Thermoelectrik Generator Based Improved Biomass Cookstove (TIBC): Modelling of TEG System Utilizing DC-DC Converter with Fuzzy Logic MPPT. *Energy Conversion and Management*, 300(2024), 117977. https://doi.org/10.1016/j.enconman.2023.117977.

Patinha, C., Silva, C., Neves, R., Pato, P., Magalhaes, S., Lopes, I., dan Venancio, C. (2025). Water Hycinth (Eichhornia crassipes) Biomass Characterization for a Potential Exploration as an Agriculture Soil Enchanter: Linking Multi-Location Biogeochemical Profiles to Ecotoxicological Safety. *Environmental Chemistry and Ecotoxicology*, 8(2026), 101-111. https://doi.org/10.1016/j.enceco.2025.11.005.

Perusahaan Listrik Nasional. (2017). *Unit Induk Pembangunan Jaringan Jawa-Bali (PLN UIJJB) Dokumen ANDAL: PLTU Indramayu 2 x 1.000 MW. PT. PLN (Persero)*, *II-24-II-62*. PLN

Polito, J. S., Berrueta, V., Garcia, V. R., Beltran, A., Medina, E. H., Barboza, M. C., Icaza, L. A., dan Masera, O. (2024). Development and Evaluation Performance of Top-Lid Updraft Biomass Micro-Gasifier for Energy-Intensive Household Cooking Tasks in Mexico. *Sustainable Energy Technologies and Assessments*, 67(2024), 103813. https://doi.org/10.1016/j.seta.2024.103813.

Primadita, D. S., Kumara, I. N. S., dan Ariastina, W. G. (2020). A Review on Biomass for Electricity Generation in Indonesia. *Journal of Electrical Electronics and Informatics*, 4(1), 1-9. https://doi.org/10.24843/JEEI.2020.v04.i01.p01.

Priwiratama, H. dan Susanto, A. (2020). Penyakit Busuk Pangkal Batang Ganoderma : Ancaman Berkelanjutan pada Industri Kelapa Sawit. *Warta*

UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Pusat Penelitian Kelapa Sawit, 25(1), 421-444. https://doi.org/10.22302/iopri.war.warta.v25i3.20.

Rahmi, H. Y., Kusumastuti, Y., dan Hidayat, M. (2024). Isolasi Selulosa dari Tandan Kosong Kelapa Sawit Menggunakan Deep Eutectic Solvent (DES) Berbasis Kolin Klorida dan Asam Laktat. *Prosiding Seminar Hasil Penelitian dan Pengabdian kepada Masyarakat*, 7(1), 57-64. https://doi.org/10.47767/sehati_abdimas.v7i1.912.

Reed, T. B. dan Larson, L. (1996). A Wood-Gas Stove for Developing Countries. *Energy for Sustainable Development*, 3(2), 34-37. https://doi.org/10.1016/s0973-0826(08)60589-x.

Reyes, M., Perez, J. F., dan Sastre, R. (2024). Combustion Performance and Flame Front Morphology of Producer Gas from a Biomass Gasification-Based Cookstove. *Fuel*, 362(2024), 130763. https://doi.org/10.1016/j.fuel.2023.130763.

Roni, K. A., Elfidiah, E., Widaputra, Y., dan Dewi, D. K. (2021). Analisis Pengaruh Rasio Serabut dan Cangkang Kelapa Sawit sebagai Bahan Bakar pada Bioler. *Jurnal Redoks*, 6(1), 1-6. https://doi.org/10.31851/redoks.v6i1.5230.

Roth, C., Anderson, P., McLaughlin, H., Thomlinson, T., dan Wilson, K. (2014). Micro-Gasification: Cooking with Gas from Dry Biomass: An Introduction to Concepts and Applications of Wood-Gas Burning Technologies for Cooking (2nd ed.). Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH – Poverty-oriented Basic Energy Services (HERA).

Sagala, D., Frimawaty, E., dan Sodri, A. (2025). Discovering the Potential of Renewable Energy from Palm Oil Mill Effluent: Environmental Impact, Opportunities, and Challenges in the Development of Biogas and Bio-CNG. *Bioculture Journal*, 2(2), 106-122. https://doi.org/10.61511/bioculture.v2i2.2025.1295.

Sameti, M., Dominguez, C. G., dan Gaffey, J. (2025). A Data-Driven Methodology for Biomass Quantification and Bioenergy Potential Estimation: Bioenergy in Ireland. Biomass Future, 1(2026), 100010. https://doi.org/10.1016/j.bmf.2025.100010.

Schoor, T. V. D. dan Scholtens, B. (2015). Power to the People: Local Community Initiatives and the Transition to Sustainable Energy. *Renewable and Sustainable Energy Review*, 43(2015), 666-675. https://doi.org/10.1016/j.rser.2014.10.089.

Silva, A. A. R., Brito, G. F. S., Araruna, T., Gambetta, R., dan Machado, F. (2025). Thermochemical Conversion of Oil Palm Empty Fruit Bunch into Fuel Gas in a Fluidized Bed Gasifier. *Bioresource Technology*, 440(2026), 133404. https://doi.org/10.1016/j.biortech.2025.133404.

Solomon, B. D. dan Krishna, K. (2011). The Coming Sustainable Energy Transition: History, Strategies, and Outlook. *Energy Policy*, 39(12), 7567-7276. https://doi.org/10.1016/j.enpol.2011.09.009.

Sulasminingsih, S., Hafiz, F., Sari, K., dan Yuninda, S. (2023). Penggunaan biomassa sebagai energi alternatif untuk pembangkit listrik di wilayah

UNIVERSITAS GADJAH MADA
Potensi Kinerja Pembakaran Tandan Kosong Kelapa Sawit (TKKS) pada Tungku Biomassa untuk Energi Alternatif
Andi Syafe'i Haruna Fattah, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Dr. Ir. Rachmawan Budiarto, S.T., M.T.,
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

pedesaan. *Journal of Optimization System and Ergonomy Implementation*, 1(1), 42-51. https://doi.org/10.54378/joseon.v1i1.6766.

Surindra, M. D. (2026). Industrial Boiler Performance Assessment Using Combined Heat Loss and Input-Output Efficiency Methods: A Pulverized Coal Power Plant Case Study. *Eksergi*, 22(1), 30-35. https://doi.org/10.32497/eksergi.v22i01.7479.

Teng, S., Khong, K. W., dan Ha, N. C. (2020). Palm Oil and Its Environmental Impact: A Big Data Analytics Study. *Journal of Cleaner Production*, 274(2020), 122901. https://doi.org/10.1016/j.jclepro.2020.122901.

Uke, A., Sornyotha, S., Baramee, S., Tachaapaikoon, C., Pason, P., Waeonukul, R., Ratanakhanokchai, K., dan Kosugi, A. (2023). Genomic Analysis of Paenibacillus macerans Strain 16, Which Can Effectively Saccharify Oil Palm Empty Fruit Bunches Under Nutrient-Free Conditions. *Journal of Bioscience and Bioengineering*, 136(1), 1-6. https://doi.org/10.1016/j.jbiosc.2023.03.016.

Wen, S., Liang, L., Zhang, J., Gao, L., dan He, Z. (2025). Insights into Sustainable Carbon-Based Synfuel Production via Biomass and Low-Rank Coal Co-Carbonization Technology: Co-Carbonization Pathways Regulating and Decoupling Combustion Reactivity. *Journal of the Energy Institute*, 124(2026), 102357. https://doi.org/10.1016/j.joei.2025.102357.

Wibisono, H., Lovett, J., Chairani, M. S., dan Suryani, S. (2024). The Ideational Impact of Indonesia's Renewable Energy Project Failures. *Energy for Sustainable Development*, 83(2024), 101587. https://doi.org/10.1016/j.esd.2024.101587.

Wong, W. C., Tung, H. J., Nurul Fadhilah, M., Midot, F., Lau, S. Y. L., Melling, L., dan Goh, K. J. (2022). Evidence for high gene flow, nonrandom mating, and genetic bottlenecks of Ganoderma boninense infecting oil palm (Elaeis guineensis Jacq.) plantations in Malaysia and Indonesia. *Mycologia*, 114(6), 947–963. https://doi.org/10.1080/00275514.2022.2118512.

Zhou, J., Zhuang, X., Chen, H., Yu, C., Xu, J., dan Tan, X. (2018). *Bioenergy: Principles and Technologies Vol. 2.1(3. Biomass Direct Combustion Technology)*. Beijing Science Press Ltd and Walter de Gruyter GmbH.